Transportation Impact Analysis

Central Point Costco Development

Central Point, Oregon

October 2015

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Transportation Impact Analysis

Central Point Costco Development

Central Point, Oregon

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Section 1
Executive Summary

EXECUTIVE SUMMARY

Costco Wholesale is proposing to develop a new warehouse and fuel station located station located in the southwest quadrant of the Table Rock Road/Hamrick Road intersection in Central Point, Oregon. This report summarizes the evaluation of the transportation impacts of the proposed development and provides recommended mitigation measures to accommodate its development.

The analysis and evaluation completed for the Central Point Costco development resulted in the following findings:

Project Description

- Costco Wholesale is proposing to develop a new warehouse and fuel station located in the southwest quadrant of the Table Rock Road/Hamrick Road intersection in Central Point, Oregon.
    - The development plan includes a 160,000 square-foot Costco warehouse and a 24 fueling position Costco Gasoline fuel station. This new Central Point Costco will replace the existing Medford Costco located at 3639 Crater Lake Hwy in Medford, Oregon.
- The parcels of land that in which the proposed Costco would occupy are zoned as M-1 (Industrial) which allows the development of the Costco warehouse and fuel station with a conditional use permit (no land use or zoning changes are required).
- In order to best evaluate the anticipated transportation characteristics of the proposed Central Point Costco development, it was agreed that the Costco-specific data be used to most accurately represent the anticipated traffic characteristics of the unique development type.
- The proposed Costco development is estimated to generate a total of approximately 10,670 net new trips on a daily basis, 900 net new trip ends during the weekday p.m. peak hour and approximately 1,365 net new trip ends during the weekend midday peak hour.
- The distribution pattern for site generated trips was developed using zip code data from current memberships at the existing Costco warehouse located on OR 62 (Crater Lake Highway) in Medford, Oregon, as well as from the existing traffic patterns and major trip origins and destinations within the study area and the regional travel demand model.

Existing Conditions

- The study evaluated 12 off site intersections in addition to site access points.
- The study evaluated two time periods for each evaluation scenario: weekday p.m. peak hour and weekend midday peak hour.

- Based on recent traffic counts collected in May and July 2015, all of the study intersections were found to operate at acceptable operating standards during the existing weekday p.m. and weekend midday peak hours except for the Table Rock Road/Airport Road intersection during weekday p.m. peak.
    - The Table Rock Road/Airport Road intersection is stop controlled in the westbound direction. Under existing conditions in the weekday p.m. peak hour, there is high delay for the critical movement (westbound left-turn) resulting in LOS F.
- Crash data the most recent five years (2009 – 2013) at all of the study intersections was reviewed to identify historical safety trends.
    - Turning movement and rear-end crashes were the most common crash type at the intersections, accounting for approximately 82% of all crashes.
    - There were no fatality crashes.
    - Four study intersections were found to be in the 90th percentile and in compliance ODOT's SPIS: I-5 SB Ramps/E Pine Street, Table Rock Road/W Vilas Road, OR 62 (Crater Lake Highway)/W Vilas Road, and Table Rock Road/OR 99.

Build Year 2016 Analysis

- The transportation impact analysis evaluated two different future year scenarios: year 2016, the assumed build out year of the development, and year 2030 a long-term planning year.
- The 2016 build-year background traffic analysis (without inclusion of the project traffic) found that all of the study intersections are forecast to operate at acceptable levels of service and volume-to-capacity ratios during the weekday p.m. and weekend midday peak hours except for the Table Rock Road/Airport Road intersection during weekday p.m. peak hour.
    - As under existing conditions, during the weekday p.m. peak hour there is high delay for the critical movement (westbound left-turn) resulting in LOS F. In addition, the critical movement is also operating with a volume-to-capacity ratio of greater than 0.95 in the build year (2016) background conditions (with no traffic from the proposed Costco development).
- The build-year (2016) total traffic analysis (with inclusion of the project traffic) found that all study intersections will continue to operate at acceptable levels of service during the weekday p.m. and weekend midday peak hours with the exception of:
    - I-5 NB Ramps & East Pine Street exceeds ODOT standards (lane group v/c ratio ≤ 0.85) with the northbound right-turn lane group's v/c ratio of 0.87 during the weekday p.m. peak hour. The need for additional capacity for this northbound right-turn movement has been previously identified in the Final Draft IAMP: Exit 33 study which calls for the widening of the I-5 northbound off-ramp to add a second right-turn lane at the northbound approach to East Pine Street. ODOT and the City of

Central Point are currently in discussions to determine Costco's appropriate proportional fair share contribution to this improvement as mitigation for the site generated trip impacts.

- Table Rock Road & Airport Road, as under existing and 2016 background conditions, continues to operate at a LOS F during the weekend p.m. peak hour. Improvements to the Table Rock Road/Airport Road intersection are scheduled in year 2017 as part of Table Rock Road widening and a signal will be added to the intersection. This intersection is an existing deficiency; however, given that this improvement is not currently scheduled until 2017, Jackson County and the City of Central Point are currently in discussions to determine an appropriate contribution to this improvement as mitigation in the interim for the Costco project.
- Biddle Road & Airport Road experiences a higher delay for the critical movement of the westbound approach, dropping from LOS C to E during the weekday p.m. peak period due to site-generated traffic. Even with the site generated traffic, the intersection is operating at a very low volume-to-capacity ratio of 0.45 in the weekday p.m. peak hour and 0.14 in the weekday midday peak hour.

Site Access Analysis

- In the build year 2016 scenario, all site access intersections are projected to operate at acceptable levels-of-service and volume-to-capacity ratios during both the weekday p.m. and weekend midday peak hours, with the exception of the Table Rock Road/Northeast access. Note this is assuming this access is a full movement access and no improvements to Table Rock Road are completed. Under this scenario, the critical eastbound left-turn movements at the Table Rock Road/Northeast access is projected to operate at LOS F during the weekday p.m. peak hour, however, it is still projected to operate well under capacity and meet the County's operational standard.
- Even though the build year (2016) analysis showed that all of the site accesses will be able to operate as proposed upon site opening before the Table Rock Road improvements are constructed, an evaluation of access alternatives for Table Rock Road was also completed to compare how temporary improvements would impact the access operations in the interim.
- The access scenarios compared were:
  - Build Year (2016) Total Traffic Conditions (i.e., Full Access to Table Rock Road) with No Table Rock Road Improvements (as summarized above)
  - Build-Year (2016) Total Traffic Conditions with Temporary Table Rock Road Improvements (i.e., temporary widening of Table Rock Road along the site frontage to provide a center left-turn lane until the ultimate widening project is constructed)

- Build-Year (2016) Total Traffic Conditions with Restricted Right-In/Right-Out Site Accesses (restrict Table Rock Road access to right-in/right-out only until the ultimate widening project is constructed)

- The access alternatives evaluation found that:
  - Assuming full movement access and no improvements to Table Rock Road, the eastbound left-turns at the northeast access to Table Rock will experience relatively long delay (resulting in LOS F) but the access will still operate well under capacity and meet the County's operational standard during the critical time period.
  - Providing temporary widening along the site frontage to provide a temporary center turn lane will allow all Table Rock Road accesses to operate acceptably as full movements until the ultimate Table Rock Road widening improvements are constructed in 2017.
  - Restricting the site's Table Rock Road accesses to right-in/right-out only will allow those accesses to operate at acceptable levels of service and volume-to-capacity ratios. However, it will add additional left-turn movements at the Table Rock Road/Hamrick Road intersection thus resulting in over-capacity and LOS F conditions at that location. This impact could be reduced by adding temporary widening around the intersection to provide a northbound left-turn lane as well as a center refuge area north of Hamrick to allow vehicles turning left from Hamrick to make a two stage gap acceptance maneuver for the left-turn.
  - Once the ultimate Table Rock Road widening improvement is constructed in 2017, all site accesses to Table Rock Road will operate a good levels of service (LOS C or better) and volume-to-capacity ratios (v/c=0.21 or better) during the peak hour periods assuming they are full access movements.
- From a safety perspective, a predictive safety analysis found that:
  - Providing full movement accesses to Table Rock Road in the near-term with its current two lane configuration shows the probability for 1.2 crashes per year to occur combined at the two access points.
  - If these were restricted to right-in/right-out only driveways, the safety prediction lowers to a probability of 0.83 crashes per year (about a 30% decrease in probability).
  - If temporary widening was provided in the interim for a two-way left-turn lane along the site's frontage, the probability would lower to 0.76 crashes per year (about a 30% decrease in probability).
  - The safety predictive analysis also shows that once the ultimate Table Rock Road widening improvements are in place the safety prediction lowers as well to 0.77 crashes per year even with maintaining full movement accesses at both locations.

Future Year 2030 Analysis

- The future year (2030) background conditions analysis (without the project traffic) found that all study intersections will continue to operate at acceptable levels of service and volume-to-capacity ratios during the weekday p.m. and weekend midday peak hours with the following exceptions:
    - Hamrick Road & East Pine Street operates with a v/c ratio of >1.0 during the weekday p.m. peak hour
    - Biddle Road & Airport Road (as under the build year conditions) has a critical movement which operates at LOS F during the weekday p.m. peak hour although the movement is still operating under capacity with a v/c ratio of 0.55
- The future year (2030) total traffic analysis (with the project traffic) found that the site-generated trips did not impact any study intersections not previously identified in the 2030 background scenario.
- All of the proposed site accesses operate at acceptable levels of service during the weekday p.m. and weekend midday peak hours under the future year 2030 total traffic scenario. Because of the planned roadway improvements along Table Rock Road, there is a significant benefit to the traffic operations at the site accesses along Table Rock Road when compared to the build-year (2016) total traffic scenario.

Parking Assessment

- City of Central Point Municipal Code directs that a parking supply of 670 parking spaces be provided for the Costco development (assuming retail land use).
- The project is proposing to provide a total of 782 parking spaces on site.
- As part of this report, a parking demand analysis was completed to demonstrate and documents justification for the proposed increase in parking supply.
- Actual parking supply and demand data from other Costco sites in Oregon indicates that a minimum parking ratio of 4.71 spaces/1,000 sq-ft be provided in order to supply enough parking to meet Costco specific demands.
- Applying the demonstrated minimum parking supply of 4.71 spaces/1,000 sq-ft to the proposed Central Point Costco development equates to a minimum recommended parking supply of 753 spaces.
- This indicates that the proposed parking supply of 782 is slightly higher than this minimum amount but within a reasonable range and will provide an appropriate parking supply to accommodate typical peak periods as well as additional spaces for seasonal peaks as well.

Section 2
Introduction

INTRODUCTION

Kittelson & Associates, Inc. (KAI) has conducted a Transportation Impact Study (TIS) per requirements of City of Central Point's Zoning Code Section 17.05.900. The TIS examines the current transportation network and addresses the transportation impacts of the proposed Costco Wholesale development in Central Point, Oregon. The scope, methodology, and key assumptions within the TIS were reviewed and agreed upon by the City of Central Point, Jackson County, and the Oregon Department of Transportation. In addition, the City of Medford was given the opportunity to review and comment on these elements (although no comments were received).

PROJECT DESCRIPTION

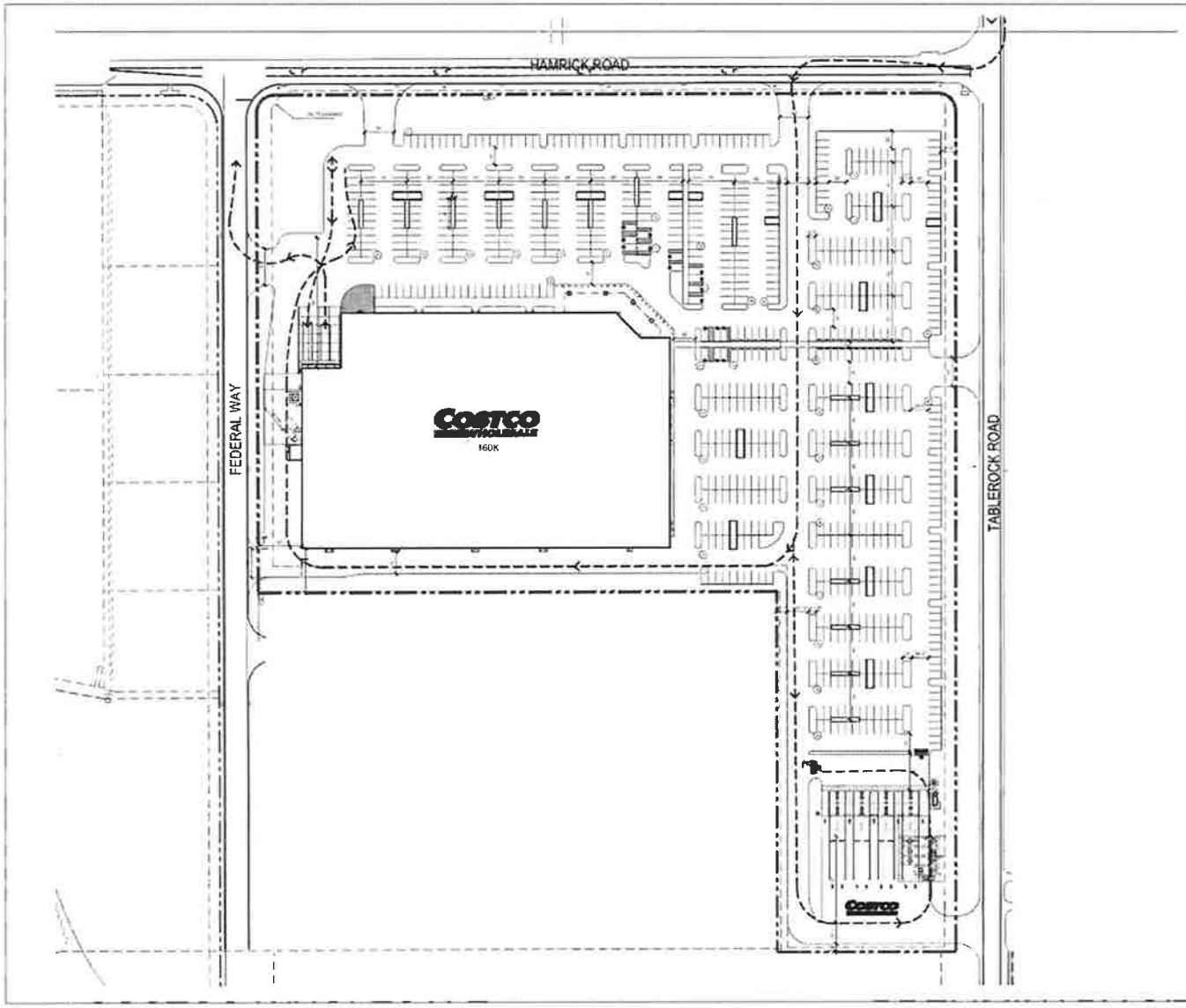
Costco Wholesale is proposing to develop a new warehouse and fuel station located roughly one mile southeast of the Interstate 5 (I-5) & Pine Street interchange in Central Point, Oregon. The site is located in the south-west quadrant of the Table Rock Road/Hamrick Road intersection. The development plan for the 18-acre site includes a 160,000 square-foot Costco warehouse and a 24 fueling position Costco Gasoline fuel station. Currently, the site is undeveloped. The development is planned to be completed and operational by October 2016. This new Central Point Costco will replace the existing Medford Costco located at 3639 Crater Lake Hwy in Medford, Oregon. The project site plan with access driveways to each of the bordering roadways is illustrated in Figure 1.

Project Location

The proposed site is situated south of Hamrick Road between Table Rock Road and Federal Way as illustrated in Figure 2 . Table Rock Road serves as the eastern boundary of the site. The property south of the site is currently owned and operated by FedEx Ground. The land use directly south, west and north of the site is designated as M-1 (Industrial) and M-2 (Industrial General) as referenced in *Central Point Comprehensive Land Use Plan 2008 – 2030* (Reference 1). The Costco development is an allowed use under the industrial zone designation with a conditions use permit.

Costco Trip Generation Characteristics

Before and after data from other comparable Costco sites was reviewed to determine a representative trip generation estimate for the development. Based on a 160,000 square foot warehouse and a 24-position gasoline facility, the proposed warehouse and fuel station is estimated to generate 10,670 net new daily trips. Of those trips, 900 net new (445 inbound, 455 outbound) trips and 1,365 net new (695 inbound, 670 outbound) trips are expected to occur during the weekday p.m. peak hour and weekend midday peak hour, respectively.



PROJECT DATA

CLIENT:	COSTCO WHOLESALE 999 LAKE DRIVE ISSAQUAH, WA
PROJECT ADDRESS:	TABLEROCK ROAD & HAMRICK ROAD CENTRAL POINT, OREGON
ZONING:	M-1
SITE AREA TOTAL:	18.28 ACRES (796,258 S.F.)
JURISDICTION	CENTRAL POINT
SETBACKS:	FRONT - 20'-0" SIDE - 15'-0" BACK - 10'-0"

BUILDING DATA:	
BUILDING AREA	160,334 S.F.
ENVELOPE	1,657 S.F.
PUMP ROOM	389 S.F.
TOTAL BUILDING	162,380 S.F.

PARKING DATA:	
PARKING PROVIDED:	
10'x20' WIDE STALLS	653 STALLS
10'x17' WIDE STALLS	113 STALLS
ACCESSIBLE STALLS	17 STALLS
TOTAL PARKING	782 STALLS
NO. OF STALLS PER 1000 SF OF BUILDING AREA:	4.81 STALLS

JURISDICTIONAL PARKING REQUIRED:
1 STALL / 200 SQFT OF SALES SPACE
(SALES SPACE = 134,664 SQFT)
= 671 STALLS

NOTES:
EXISTING CONDITIONS TO BE FIELD VERIFIED.

N

COSTCO
CENTRAL POINT, OR

14-0393-01
AUGUST 07, 2015
PRELIMINARY
SITE PLAN

SITE PLAN
CENTRAL POINT COSTCO
CENTRAL POINT, OREGON

FIGURE
1

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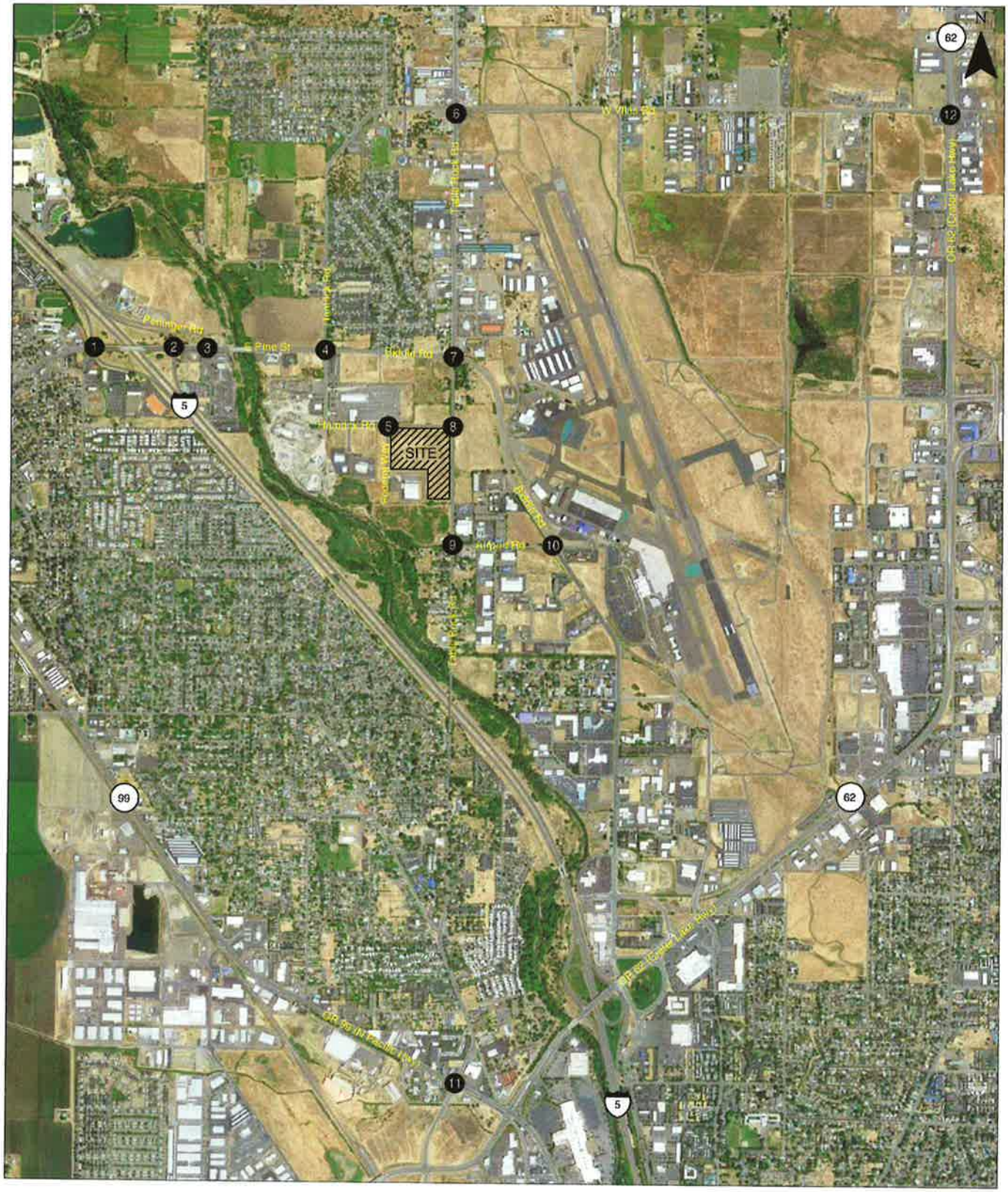

- STUDY INTERSECTION

SITE VICINITY
CENTRAL POINT, OREGON

FIGURE
2

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SCOPE OF THE REPORT

This report evaluates the following transportation issues:

- Existing roadway, land-use and transportation system conditions within the site vicinity during the weekday p.m. and weekend midday peak periods;
- Planned developments and transportation improvements for area surrounding Costco;
- Build-year 2016 background (existing traffic counts plus background growth) traffic conditions during the weekday p.m. and weekend midday peak periods;
- Costco trip generation, distribution and trip assignment estimates for the proposed development;
- Build-year 2016 total (build-year background plus site-generated trips) traffic conditions during the weekday p.m. and weekend midday peak periods;
- Build-year 2016 mitigations to study intersections impacted by site-generated trips during the weekday p.m. peak hour and weekend midday peak hour;
- Future year 2030 background (build-year 2016 background plus 14 years of regional growth) traffic conditions during the weekday p.m. and weekend midday peak periods;
- Future year 2030 total (future year background plus site-generated trips) traffic conditions during the weekday p.m. and weekend midday peak periods;
- Future year 2030 mitigations to study intersections impacted by site-generated trips during the weekday p.m. peak hour and weekend midday peak hour;
- Operational and safety assessment of the proposed site accesses (including the Table Rock Road/Hamrick Road intersection) during the weekday p.m. and weekend midday peak hours during build-year and future year total traffic conditions.
- Parking assessment for Costco site; and
- Conclusions and findings.

Section 3
Existing Conditions

EXISTING CONDITIONS

The existing conditions analysis identifies the current site conditions and operational and geometric characteristics of the roadways within the study area. These conditions will be compared with build-year (2016) and future year (2030) conditions later in this report.

KAI staff visited and inventoried the proposed Central Point Costco development site and surrounding study area in May 2015. At that time, KAI collected information regarding site conditions, adjacent land uses, and transportation facilities in the study area. In addition, existing traffic counts at the study intersections were collected in May and July 2015.

SITE CONDITIONS AND ADJACENT LAND USES

The proposed site is located roughly one mile southeast of the Interstate 5 (I-5) & Pine Street interchange in Central Point, Oregon. The land uses in the vicinity of the site are light industrial to the immediately west and south of the site, general industrial immediately north of the site and tourist and office professional, as well as low and medium density residential, north of E Pine Street/Biddle Road. The parcels of land that in which the proposed Costco would occupy are zoned as M-1 (Industrial). The M-1 zoning designation allows the development of the Costco warehouse and fuel station with a conditional use permit. No land use or zoning changes are required for the Costco warehouse and gas station at the proposed site.

TRANSPORTATION FACILITIES

The transportation system inventory identifies the current characteristics of roadways within the study area. Major roadways within the study area were identified and catalogued. Table 1 provides a summary of the existing roadway facilities included in this study.

Table 1. Existing Study Transportation Facilities and Roadways

Roadway	Complete Street Type Description[1]	Number of Lanes	Posted Speed (mph[2])	Sidewalks	Bicycle Lanes	On-Street Parking
I-5 Ramps	Rural Interstate	2	30-45	No	No	No
Pine St	Minor Arterial	4	35-45	Partial	Yes	No
Peninger Rd	Major Collector	2	25-30	Partial	Yes	No
Hamrick Rd	Local	2	30	Partial	No	No
Federal Way	Local	2	30	No	No	No
Table Rock Rd	Minor Arterial	2-4	30-45	Partial	No	Partial
Biddle Rd	Minor Arterial	4	45	Partial	Partial	No
Vilas Rd	Minor Arterial	2	45	Yes	No	No
Airport Rd	Local	2	35	Partial	No	Partial

Notes: [1] Per ODOT TransGIS; [2] mph represents miles per hour

Roadway Facilities

The roadway network in the study area is comprised of an extensive street system made up of arterial, collector, and local roads. The roadway facilities within the study area are described below:

- The I-5 Northbound and Southbound Ramps provide entry and exit accesses to/from the Interstate. Interstate 5 extends from Southern California to the Washington-Canada border. The ramps provide access to Pine Street in both directions on the west side of the study area.
- Pine Street-Biddle Road is a five lane roadway running east/west through the center of the study area. The roadway is named Pine Street west of Hamrick Road with a name change to Biddle Road east of Hamrick Road. Both segments are classified as minor arterials. The roadway is a five lane road, including two lanes in each direction and a center turn throughout the study area. There is no on-street parking on either side of the street. Bike lanes extend from the I-5 Southbound Ramp to Table Rock Road. The posted speed is 35 miles per hour between Hamrick Road and I-5 south ramp and 45 miles per hour between Hamrick Road and Airport Road.
- Peninger Road is a 2-lane, major collector, serving as a frontage road running parallel to and on the east side of I-5. The facility serves a variety of commercial and recreational businesses. There are bike lanes both north and south of the Peninger Road/Pine Street intersection and sidewalks south of the intersection. Northbound from the intersection the roadway has a posted speed of 30 miles per hour and 25 miles per hour in the southbound direction.
- Table Rock Road ranges from 2-5 lanes and runs north/south throughout the study area. The roadway has two lanes south of Biddle Road, and is a five lane road with a center turn lane north of Biddle Road. Both segments of Table Rock Road are minor arterials. The only on-street parking is provided on the east side of the roadway for a 0.15 mile segment north of Airport Road. The segment north of Biddle Road has sidewalks on both sides of the roadway until Vilas Road. The posted speed is 30 miles per hour between Airport Road and Hamrick Road, and 45 miles per hour north of Hamrick Road.
- Hamrick Road is a 2-lane roadway that will service two Costco access driveways. Hamrick Road is a local road providing access for industrial companies such as Reddaway and Knife River Materials. There is no on street parking or bike lanes, however there are segments of sidewalk on both the north/south and east/west sections of the road. The posted speed is 30 miles per hour throughout the study area section. Directly north of the site, between Table Rock Road and Federal Way, the roadway consists of a 3-lane cross section with a two-way median turn lane.
- Federal Way is a local road that currently serves FedEx Ground at the southern end of the roadway. There are two proposed access points along Federal Way. There is no posted speed sign on this segment, nor are there pedestrian or bicycle facilities.

- Airport Road is a local 2-lane road, servicing both commercial and industrial businesses. Airport Road does not have on-street parking, or bike lanes, however there is a sidewalk on the north side of the roadway.

Transit Facilities

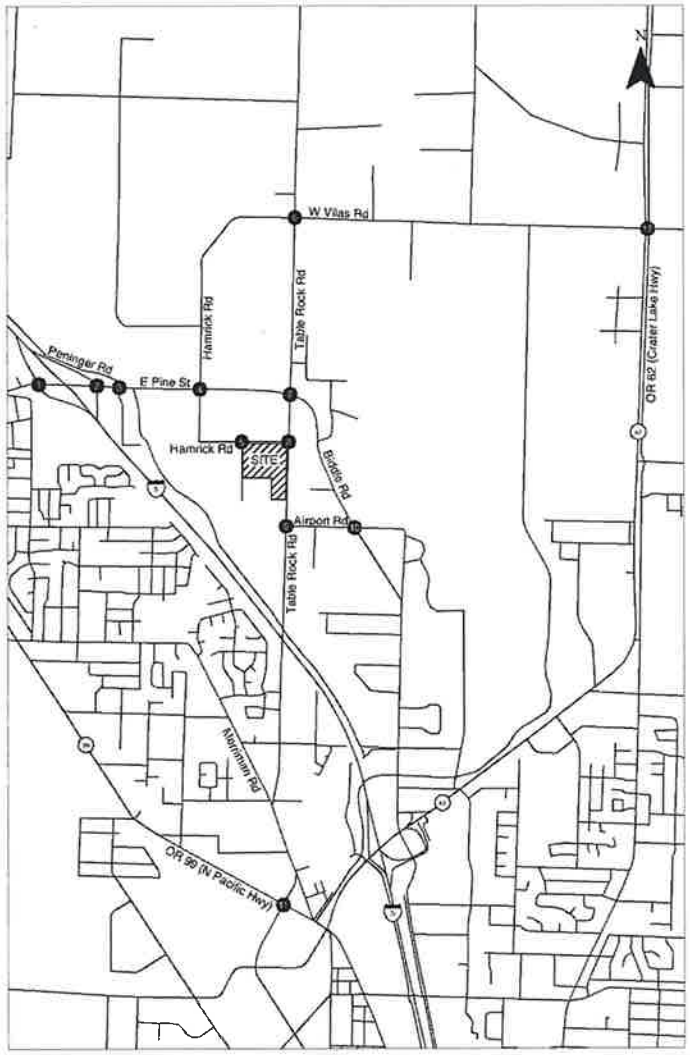
Rouge Valley Transportation District (RVTD) is a public transportation service provider, providing paratransit and fixed-route bus service within Jackson County. RVTD's central bus station is located in downtown Medford, providing eight fixed-route bus routes servicing the cities of Ashland, Central Point, Jacksonville, Medford, Phoenix, Talent, and White City. RVTD's Route 40 provides weekday service between Medford and Central Point with stops along East Pine Street west of I-5. However, Route 40 does not have any stops within the vicinity of the proposed Costco site. There are no fixed-bus routes or stops within the vicinity of the proposed site.

STUDY AREA INTERSECTIONS

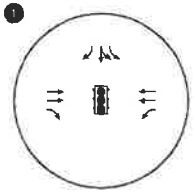
The City of Central Point has completed several studies of transportation needs in partnership with Jackson County and ODOT. The *City of Central Point's 2030 Transportation System Plan* (Reference 2) offers a comprehensive assessment of long-term transportation needs within Central Point. In addition, ODOT recently completed an *Interchange Area Management Plan (IAMP) for the I-5/East Pine Street Interchange* (Reference 3). In addition, the Jackson County TSP is currently being updated (expected adoption in October or November 2015). Recognizing the long-term transportation needs, this TIA focuses on the analysis of study intersections within the site vicinity of the proposed Central Point Costco site. Based on knowledge of the transportation network within the site's vicinity and a previous coordination meeting with the City, County and ODOT, the following 12 study intersections were identified for inclusion in this report:

1. I-5 SB Ramp & East Pine Street - (traffic signal)
2. I-5 NB Ramp & East Pine Street - (traffic signal)
3. Peninger Road & East Pine Street - (traffic signal)
4. Hamrick Road & East Pine Street - (traffic signal)
5. Federal Way & Hamrick Road - (unsignalized intersection)
6. Table Rock Road & East Vilas Road - (traffic signal)
7. Table Rock Road & Biddle Road - (traffic signal)
8. Table Rock Road & Hamrick Road - (unsignalized intersection)
9. Table Rock Road & Airport Road - (unsignalized intersection)
10. Biddle Road & Airport Road - (unsignalized intersection)
11. Table Rock Road & OR 99 (North Pacific Coast Highway) - (signalized intersection)
12. OR 62 (Crater Lake Highway) & E Vilas Road - (signalized intersection)

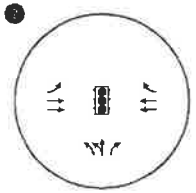
The study intersections and their traffic control and lane configurations are illustrated in Figure 3.



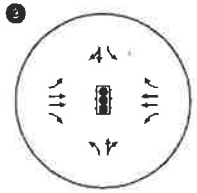
I-5 SB RAMPS & E PINE STREET



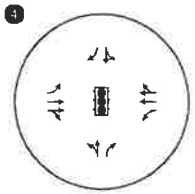
I-5 NB RAMPS & E PINE STREET



PENINGER ROAD & E PINE STREET



HAMRICK ROAD & E PINE STREET



FEDERAL WAY & HAMRICK ROAD

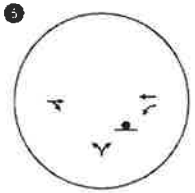
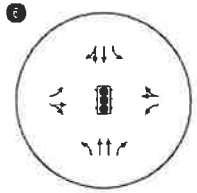


TABLE ROCK ROAD & W VILAS ROAD



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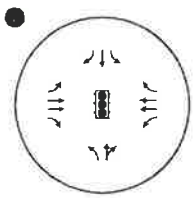

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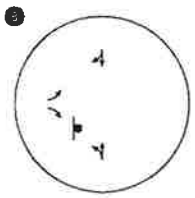
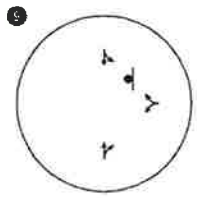


TABLE ROCK ROAD & AIRPORT ROAD



BIDDLE ROAD & AIRPORT ROAD

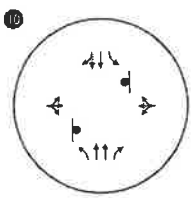
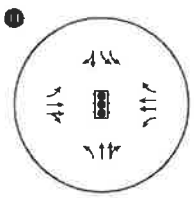
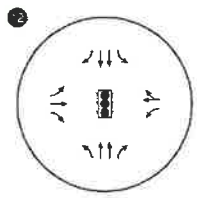


TABLE ROCK ROAD & OR 99



OR 62 & W VILAS ROAD



- STUDY INTERSECTION
- SIGNALIZED INTERSECTION
- STOP CONTROLLED INTERSECTION

STUDY INTERSECTIONS AND EXISTING LANE CONFIGURATIONS
CENTRAL POINT, OREGON

FIGURE 3

Data collection at these twelve intersections included turning movement counts collected during a typical weekday (Tuesday through Thursday) p.m. peak period (4:00 p.m. – 7:00 p.m.), and weekend midday (12:00 p.m. – 3:00 p.m.) peak period. In addition, existing lane geometry was documented, including turn pocket lengths, as well as pedestrian and bicycle facilities and the presence of transit and transit amenities. For signalized intersections, KAI obtained traffic signal timings from ODOT and the City of Central Point in order to correctly model and analyze each intersection. *Appendix "A" includes the existing weekday p.m. peak period and weekend midday peak period counts at each of the study intersections.*

In addition to analyzing the 12 study intersections, the proposed site plan includes six new driveways to access the site, each of which will be analyzed in accordance to the roadway jurisdiction it is located. As shown in Figure 1, the six proposed site access include:

- Northern full-access driveway located on Federal Way;
- Southern full-access driveway located on Federal Way;
- Eastern Hamrick Road driveway right-in/right-out access;
- Western Hamrick Road driveway full-access (full access);
- Northern full-access on Table Rock Road; and
- Southern full-access on Table Rock Road.

More information about the performance of these site accesses, as well as the assessment of access alternative scenarios, is provided later in this report.

INTERSECTION OPERATING STANDARDS

The operating standards of four jurisdictions were used to assess the operations of the 12 study intersections based on their respective location. The four jurisdictions are: City of Central Point, City of Medford, Jackson County, and Oregon Department of Transportation.

City of Central Point Operating Standards

Central Point uses performance standards based on level of service (LOS). All LOS analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual (HCM 2000)* (Reference 4) as required by the *City of Central Point's 2030 Transportation System Plan*. *HCM 2000* defines LOS as a quality measure describing operational conditions within a traffic stream, generally in terms such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. When analyzing traffic conditions, LOS is used as a measure of performance (corresponding to delay) at an intersection with values ranging from LOS "A", indicating good operations and low vehicle delay, to LOS "F", which indicates an intersection at, or over capacity with high vehicle delay. Table 2 provides the City of Central Point's LOS standards for signalized and unsignalized intersections. The City's policies require intersections to operate at LOS D or better. *A description of level of service and its criteria is presented in Appendix "B".*

Table 2. City of Central Point's Level of Service Standards

LOS	Signalized Intersection	Unsignalized Intersection
A	≤10 seconds	≤10 seconds
B	10–20 seconds	10–15 seconds
C	20–35 seconds	15–25 seconds
D	35–55 seconds	25–35 seconds
E	55–80 seconds	35–50 seconds
F	≥80 sec	≥50 sec

Jackson County Operating Standards

The acceptable motor vehicle performance standard for signalized and unsignalized intersections per *Jackson County Transportation System Plan* (Reference 5) is a volume-to-capacity ratio (V/C Ratio) no greater than 0.95 within the boundary of the Metropolitan Planning Organization and 0.85 outside of the MPO boundary. Each study intersection is within the Rogue Valley Metropolitan Planning Organization (RVMPO) boundary. Therefore, intersections falling within the County's jurisdiction will be assessed assuming a V/C ratio standard of 0.95.

ODOT Operating Standards

ODOT operates and maintains the study intersections for the ramp termini of I-5. ODOT's operating standard for interchange ramps is a maximum V/C ratio for the ramp terminal that is more restrictive than the V/C ratio for the crossroad, or 0.85 as identified in the *ODOT OHP Policy 1F Revisions* (Reference 6). For signalized intersections on arterial roads under ODOT jurisdiction, the V/C ratio must be no greater than 0.95. At intersections where one or more approaches is maintained by a city or ODOT, the more restrictive of the agency's performance standard will be applied as stated in the *Jackson County Transportation System Plan*.

Intersections within the City of Central Point and the City of Medford limits will be assessed assuming ODOT operating standards must be met. Study intersections which have governing agencies for more than one approach include OR 99/Table Rock Road and OR 62 (Crater Lake Hwy)/East Villas Road intersections. Based on the direction from the *Jackson County Transportation System Plan*, ODOT's operating standards will be applied when analyzing these locations.

Table 3 summarizes the intersection operational standards and jurisdiction administering associated with the existing study intersections. *Central Point Street Jurisdiction Map* (Reference 7) was used to determine the jurisdiction of each study intersection.

Table 3. Operational Standards for Existing Study Intersections

ID	Study Intersection	Governing Agency Standard	Traffic Control	Operating Standard
1	I-5 SB Ramp & E Pine St	ODOT	Signalized	Lane group V/C ≤ 0.85
2	I-5 NB Ramp & E Pine St	ODOT	Signalized	Lane group V/C ≤ 0.85
3	Peninger Rd & E Pine St	ODOT, County	Signalized	V/C ≤ 0.95
4	Hamrick Rd & E Pine St	County, City of Central Point	Signalized	V/C ≤ 0.95 and LOS D or better
5	Federal Way & Hamrick Rd	County, City of Central Point	Stop Control on Federal Way	V/C ≤ 0.95 and LOS D or better
6	Table Rock Rd & E Vilas Rd	County	Signalized	V/C ≤ 0.95
7	Table Rock Rd & Biddle Rd	County	Signalized	V/C ≤ 0.95
8	Table Rock Rd & Hamrick Rd	County	Stop Control on Hamrick	V/C ≤ 0.95
9	Table Rock Rd & Airport Rd	County, City of Central Point	Stop Control on Airport	V/C ≤ 0.95 and LOS D or better
10	Biddle Rd & Airport Rd	City of Medford	Two-way Stop	LOS D or better
11	Table Rock Rd & OR 99	ODOT, County	Signalized	V/C ≤ 0.95
12	OR 62 (Crater Lake Hwy) & E Vilas Rd	ODOT, County	Signalized	V/C ≤ 0.95

EXISTING PEAK HOUR TRAFFIC CONDITIONS

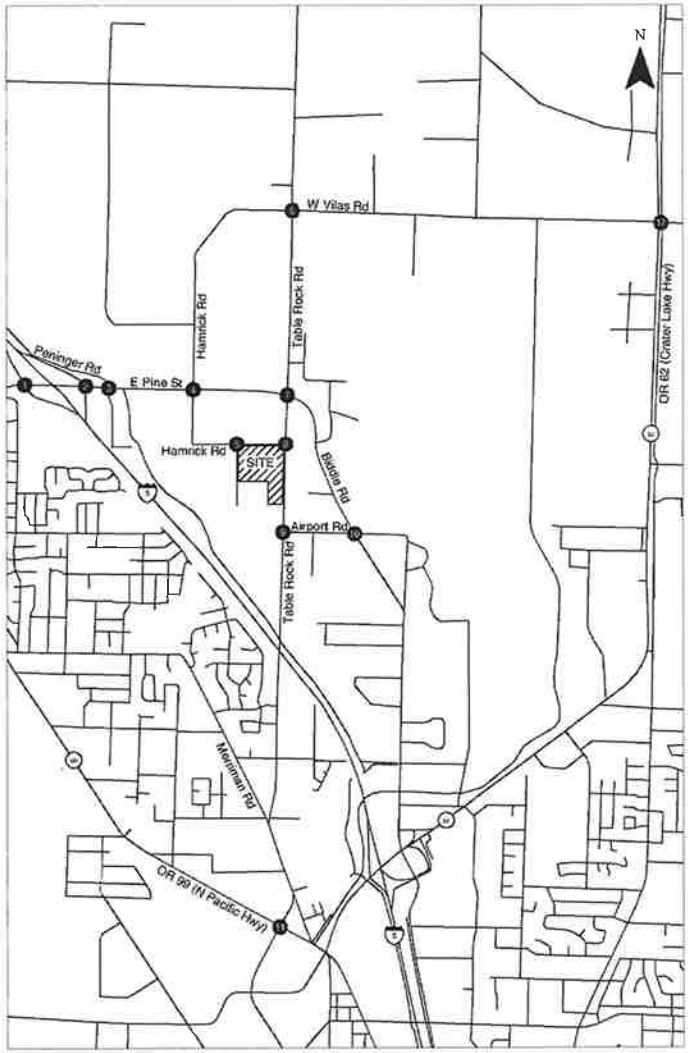
Existing peak hour traffic operations were analyzed for a typical weekday (Tuesday – Thursday) p.m. peak period (4:00 p.m. to 7:00 p.m.) and a weekend midday (12:00 p.m. to 3:00 p.m.) peak period. Existing turning movement counts collected in May and July 2015 were used in determining the existing operating conditions at each of the study intersections per jurisdictional standards.

Figure 4 provides the intersection turning movement counts and summarizes the intersection operational results for the existing weekday p.m. and weekend midday peak hour traffic conditions. As shown in Figure 4 and in Table 4, all of the study intersections operate at acceptable operating standards during the existing conditions weekday p.m. and weekend midday peak hours except for the Table Rock Road/Airport Road intersection during weekday p.m. peak. The Table Rock Road/Airport Road intersection is stop controlled in the westbound direction. Under existing conditions in the weekday p.m. peak hour, there is high delay for the critical movement (westbound left-turn) resulting in LOS F. *Appendix "C" includes the traffic operation worksheets for the existing traffic conditions scenarios.*

Table 4. Existing PM and Midday Peak Hour Traffic Operations

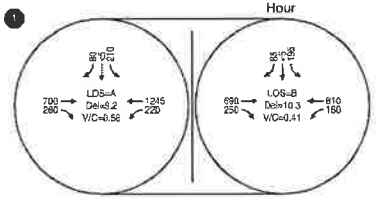
Study Intersection	Governing Agency Standard	Peak Period	Critical Movement	Existing Traffic Operations		
				LOS[1]	Delay[2]	V/C Ratio[4]
1. I-5 SB Ramp & East Pine Street	ODOT	PM Peak	-	A	9.2	0.58
		MID Peak	-	B	10.3	0.41
2. I-5 NB Ramp & East Pine Street	ODOT	PM Peak	-	C	22.6	0.61
		MID Peak	-	B	14.4	0.41
3. Peninger Road & East Pine Street	ODOT, County, City	PM Peak	-	C	20.8	0.67
		MID Peak	-	B	18.6	0.56
4. Hamrick Road & East Pine Street	County, City	PM Peak	-	C	20.8	0.79
		MID Peak	-	B	10.1	0.60
5. Federal Way & Hamrick Road	County, City	PM Peak	Northbound	A	8.8	0.02
		MID Peak	Westbound	A	7.5	0.01
6. Table Rock Road & Vilas Road	County	PM Peak	-	C	34.4	0.81
		MID Peak	-	C	20.6	0.62
7. Table Rock Road & Biddle Road	County	PM Peak	-	C	30.6	0.74
		MID Peak	-	C	21.1	0.54
8. Table Rock Road & Hamrick Road	County	PM Peak	Eastbound	C	21.5	0.01
		MID Peak	Eastbound	B	13.5	0.01
9. Table Rock Road & Airport Road	County	***PM Peak***	***Westbound***	***F***	***77.1***	***0.93***
		MID Peak	Westbound	C	15.6	0.20
10. Biddle Road & Airport Road	City of Medford	PM Peak	Westbound	C	22.1	0.26
		MID Peak	Westbound	B	10.9	0.11
11. Table Rock Road & OR 99	ODOT, County	PM Peak	-	C	25.1	0.73
		MID Peak	-	C	23.0	0.62
12. OR 62 & East Vilas Road	ODOT, County	PM Peak	-	D	44.5	0.91
		MID Peak	-	C	30.8	0.71

Notes: [1] The critical movement is reported for all unsignalized intersections based on the *2000 Highway Capacity Manual;* [2] LOS = Level of Service; [3] Delay is reported in seconds per vehicle; [4] V/C Ratio is defined as vehicle-to-capacity ratio which calculates the number of vehicles divided by the capacity of the roadway/intersection during the peak 15 minutes of the peak hour; and **Bold *and italics*** indicates an intersection operating below its jurisdiction's standards.

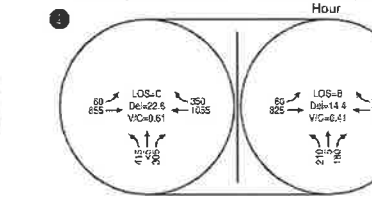


I-5 SB RAMPS & E PINE STREET

Weekday PM Peak Hour



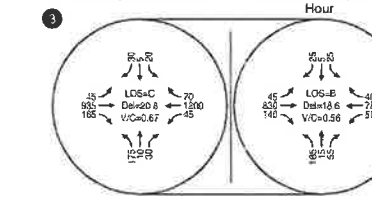
Weekend Midday Peak Hour



I-5 NB RAMPS & E PINE STREET

Weekday PM Peak Hour

Weekend Midday Peak Hour



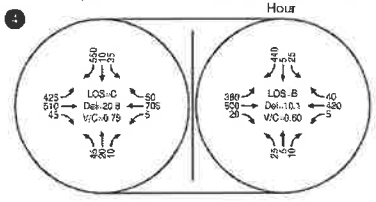
PENINGER ROAD & E PINE STREET

Weekday PM Peak Hour

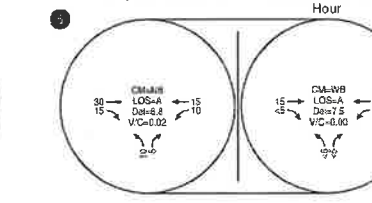
Weekend Midday Peak Hour

HAMRICK ROAD & E PINE STREET

Weekday PM Peak Hour



Weekend Midday Peak Hour



FEDERAL WAY & HAMRICK ROAD

Weekday PM Peak Hour

Weekend Midday Peak Hour

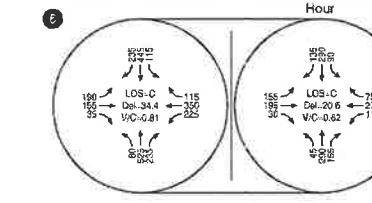


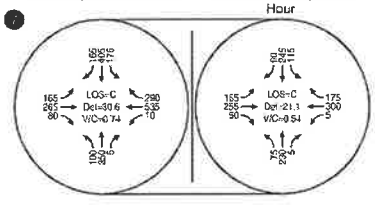
TABLE ROCK ROAD & W VILAS ROAD

Weekday PM Peak Hour

Weekend Midday Peak Hour

TABLE ROCK ROAD & BIDDLE ROAD

Weekday PM Peak Hour



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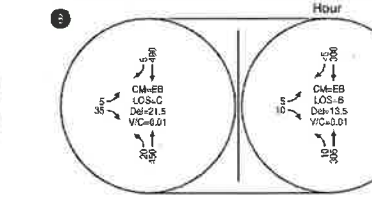


TABLE ROCK ROAD & HAMRICK ROAD

Weekday PM Peak Hour

Weekend Midday Peak Hour

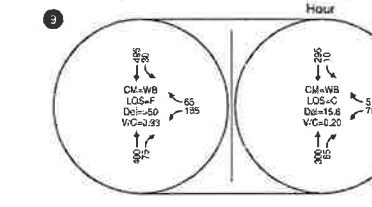


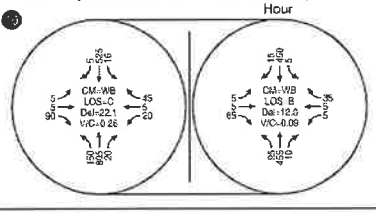
TABLE ROCK ROAD & AIRPORT ROAD

Weekday PM Peak Hour

Weekend Midday Peak Hour

BIDDLE ROAD & AIRPORT ROAD

Weekday PM Peak Hour



Weekend Midday Peak Hour

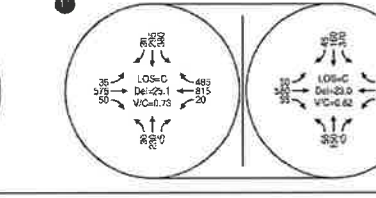
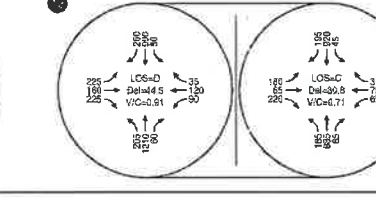


TABLE ROCK ROAD & OR 99

Weekday PM Peak Hour

Weekend Midday Peak Hour



OR 62 & W VILAS ROAD

Weekday PM Peak Hour

Weekend Midday Peak Hour

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

EXISTING TRAFFIC CONDITIONS
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 4

SAFETY HISTORY ANALYSIS

Crash data available for the most recent five years (2009 – 2013) at all of the study intersections was provided by ODOT. Crash data was analyzed to document recent crash types and severity at study intersections and identify crash trends if applicable. In addition, study intersections were screened for compliance with ODOT's Safety Priority Index System (SPIS) and 90th percentile rates using the HCM prediction model. There were no reported crashes at the two of the study intersections:

- Federal Way & Hamrick Road
- Table Rock Road & Hamrick Road

In total, there were 192 crashes between all of the study intersections within the five year study period. Table 5 provides the reported crash type and severity at each of the study intersections. *Appendix "D" includes the five year summary of crash data at each of the study intersections.*

Table 5. Crash Type and Severity (2009 - 2013) at Study Intersections

Study Intersection	Collision Type							Crash Severity			Total
	Rear End	Turning Movement	Angle	Sideswipe	Fixed Object	Ped/ Bike	Other	PDO[1]	PI[2]	Fatality	
1. I-5 SB Ramps/E Pine St	6	6	0	0	1	0	2	8	7	0	**15**
2. I-5 NB Ramps/E Pine St	7	11	0	1	1	0	1	6	15	0	**21**
3. Peninger Rd/E Pine St	3	6	0	1	0	0	0	4	6	0	**10**
4. Hamrick Rd/E Pine St	2	21	2	0	0	0	0	14	11	0	**25**
5. Federal Way & Hamrick Rd	0	0	0	0	0	0	0	0	0	0	**0**
6. Table Rock Rd & E Vilas Rd	11	12	5	0	0	0	3	17	14	0	**31**
7. Table Rock Rd & Biddle Rd	7	3	0	0	0	0	0	5	5	0	**10**
8. Table Rock Rd/Hamrick Rd	0	0	0	0	0	0	0	0	0	0	**0**
9. Table Rock Rd/Airport Rd	3	2	0	0	0	0	0	3	2	0	**5**
10. Biddle Rd/Airport Rd	3	5	5	0	0	0	0	5	8	0	**13**
11. Table Rock Rd/OR 99	17	4	2	0	3	0	1	16	11	0	**27**
10. Table Rock Rd/OR 62	13	15	3	2	0	1	1	19	16	0	**35**
Total	**72**	**85**	**17**	**4**	**5**	**1**	**8**	**97**	**95**	**0**	**192**

Notes: [1] PDO = Property Damage Only; [2] PI = Personal Injury

Turning movement and rear-end crashes were the most common crash type at the intersections, accounting for approximately 82% of all crashes. Roughly half of the reported crashes were injury crashes. There were no fatality crashes. Four study intersections were found to be in the 90th percentile and in compliance ODOT's SPIS. The four intersections include:

- I-5 SB Ramps/E Pine Street,
- Table Rock Road/W Vilas Road,
- OR 62 (Crater Lake Highway)/W Vilas Road, and
- Table Rock Road/OR 99.

Section 4
Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis identifies how the study area's transportation system will operate under build-year (2016) and future year (2030) conditions without and with the proposed Costco development in place. The impact of traffic generated by the proposed Costco development during the typical weekday p.m. and weekend midday peak hours was examined as follows:

- Other planned in-process developments and transportation improvements within the study area were documented;
- General background growth in the area was estimated;
- Project-generated trips were estimated for build-out of the project;
- Project trip-distribution patterns were derived from Costco membership data, existing traffic patterns, a region wide travel demand model and a select zone analysis within Central Point were evaluated;
- Build-year (2016) and future year (2030) conditions were analyzed with the addition of site-generated traffic at each of the study intersections and site-access points during the weekday p.m. and weekend midday peak hours;
- Operational and safety assessments were completed at each of the proposed site accesses and the intersection of Table Rock Road/Hamrick Road build-year plus project, and future year plus project scenarios; and
- On-site parking standards and proposed parking supply was evaluated.

PLANNED ROADWAY IMPROVEMENTS

This section provides a summary of transportation improvements that are planned and can be assumed to be completed under the two future year scenarios (per agency direction). These transportation improvements have been identified by the City of Central Point, Jackson County, as well as ODOT and documented in the *City of Central Point's 2030 Transportation System Plan, Final Draft IAMP: I-5 Exit 33,* and Rogue Valley Metropolitan Planning Organization's *2009 – 2034 Regional Transportation Plan* (Reference 8).

Under the direction of the City of Central Point and ODOT, KAI has assumed the planned roadway improvements listed in the *Final Draft IAMP: I-5 Exit 33* based on the year of estimated completion, as well as all Tier 1 improvements (within the site's vicinity) listed in the *City of Central Point's 2030 Transportation System Plan.* Tier 1 improvements have been defined as financially constrained projects that can be reasonably funded within the next twenty years. These improvements have been classified as either short (2008 – 2012), medium (2013 – 2017) or long-term (2018 – 2030) improvements.

Final Draft IAMP: I-5 Exit 33 Planned Improvements

The Oregon Department of Transportation and City of Central Point have identified and prioritized roadway improvements at and around the I-5/East Pine Street interchange. Based on the findings from the most recent *Final Draft IAMP: I-5 Exit 33* completed in May 2015 the following planned roadway improvements will be assumed.

- I-5 Southbound On-Ramp: The description of the planned project includes widening East Pine Street beginning at the west end of the freeway overpass to add a second westbound left-turn lane with up to 200 feet of additional storage. This project includes the widening of the southbound on-ramp to create two receiving lanes that merge to a single lane. The estimated cost of the project is $1.7 million and has been designated as low to medium priority, therefore this project will be included the future year (2030) scenarios of this TIA.
- I-5 Northbound Ramp Terminal: The description of the planned project includes widening the I-5 northbound off-ramp to add a second right-turn lane at the northbound approach to East Pine Street. The second turn lane would provide an additional 350 feet of storage for to manage queuing on the off-ramp that cannot be managed with signal timing. The estimated cost of the project is $1.3 million and has been designated as low to medium priority, therefore this project will be included the future year (2030) scenarios of this TIA.
- East Pine Street at Hamrick Road: The study verifies and calls for the implementation of Central Point TSP Tier I Project #216, which widens the west and north approaches to add a dual left-turn lane and second receiving lane.

Central Point Transportation System Plan Planned Improvements

The planned transportation improvement program prioritized roadway improvement projects between 2008 and 2030. There was no Tier I short term (2008 – 2012) projects that occurred on the study roadways within the site's vicinity. Listed below are the Tier I roadway improvement projects that will be included in future (year 2030) analyses.

- Tier I Project # 213 – Table Rock Road & South Hamrick Road Intersection: Although the City's current TSP calls for a signal at the Table Rock Road/Hamrick Road, discussions with City of Central Point and Jackson County Staff have indicated this is no longer a planned or desired improvement. ***As such, no signal at the intersection of Table Rock Road/Hamrick Road has been assumed in the analysis***.
- Tier I Project # 216 – East Pine Street & Hamrick Road: The project description includes widening the west and north approaches in order to add a second eastbound left-turn lane and second receiving lane. The project also includes restriping the northbound approach to include dual left-turns and a single through-shared-right turn lane. In addition, the project includes restriping the southbound approach to include a left-turn, through and exclusive right-turn lanes. Identified as a medium priority, this project will be included in the future year (2030) scenarios.

- Tier I Project # 218 – East Pine Street & Table Rock Road: The project description includes widening the west approach to add a second eastbound left-turn lane to help reduce queuing and minimize delay at the intersection. The project has been identified as a long-term project and will be included in the future year (2030) scenarios.
- Tier I Project # 219 – Table Rock Road & West Vilas Road: The project description includes widening to increase capacity by adding an eastbound lane and shared through-right turn movement. The project has been identified as a long-term project and will be included in the future year (2030) scenarios.

RVMPO 2009 – 2034 Regional Transportation Plan Planned Improvements

- Table Rock Road Improvements: RVMPO, the City of Central Point, and Jackson County have identified significant capacity improvements to Table Rock Road between the I-5 overpass and Biddle Road. Under Project# 821, Table Rock Road is schedule to be widened from a two lane cross section to four lanes and a continuous center turn lane, with bike lanes and sidewalks on both sides of the roadway from Biddle Road to Airport Road. South of Airport Road, Table Rock Road will be widened to a three lane cross section with bike lanes and sidewalks on both sides of the roadway continuing to the I-5 overpass. Currently, this project is scheduled to be constructed in 2017. The project will also include the signalization of the Table Rock Road/Airport Road intersection.
- Federal Way Extension: Federal Way is currently only accessible via Hamrick Road and terminates just south of the FedEx Ground freight facility entrance. The *City of Central Point Transportation System Plan* shows the potential for a future connection of Federal Way to tie into the future signalized intersection at Table Rock Road/Airport Road. While the timing of the Federal Way connection has not been determined, the signalization the Table Rock Road/Airport Road intersection will occur in 2017 with completion of the Table Rock Road widening. The extension of Federal Way will be included in the future year (2030) scenarios.
- OR 62: I-5 to Dutton Road Planned Roadway Improvement: Currently, OR 62 (Crater Lake Highway) exceeds capacity standards. ODOT and the RVMPO has completed the necessary studies to begin the Oregon 62 Expressway project, which is a multimodal solution that will increase capacity and improve safety along the corridor, a critical business connection for freight, tourism and commuters (Reference 9). The 4.5 mile project will run on the east side of the Medford Airport, parallel to Crater Lake Highway, beginning at Whittle Avenue bypassing Commerce Drive, Coker Butte Road and Vilas Road before connecting back with OR 62 just north of Corey Road. The project is projected to begin construction in late fall 2016. For the purpose of this study, KAI has incorporated the change in travel patterns and growth based on the regional travel demand model for both future year (2030) background and total traffic scenarios. Based on the travel demand models, vehicular growth at the study intersection of OR 62/W Vilas Road will not experience growth in the northbound and southbound direction to and from OR 62 between the build-year (2016) and future year

(2030) background scenarios as northbound and southbound traffic shifts to the OR62 Expressway upon completion.

PLANNED IN-PROCESS DEVELOPMENTS

In-process development plans were obtained from the City of Central Point. The in-process developments to be assumed in this study include the approved residential development for White Hawk. This development includes apartments, duplexes, and a 5.5 acre city park at the intersection of Beebe Road and Gebhard Road. The project was granted approval in 2014 and has a design year of 2017. Site-generated trips and trip distribution information from this project was derived from the *White Hawk Development Traffic Impact Analysis* (Reference 10).

BUILD-YEAR (2016) BACKGROUND TRAFFIC CONDITIONS

The build-year (2016) background scenario analyzed how the study area's transportation system will operate without the site-generated traffic in year 2016. Build-year background traffic conditions were analyzed for both the weekday p.m. and weekend midday peak hours.

Background Growth Rates

Traffic growth within the study area is expected to follow the trends adopted in the Final Draft IAMP: I-5 Exit 33. The growth described in the IAMP used models prepared by ODOT's Transportation Planning Analysis Unit (TPAU). In conjunction with the forecasted growth of households, population and employment, a base year 2006 and future year 2038 travel demand model were provided by ODOT. After review of the study area's model and previous studies a 2.0% annual growth rate was determined and agreed upon to be applied to existing turning movement counts collected at the study intersections.

Traffic Volumes

The traffic volumes developed for the build-year (2016) background scenario reflect existing traffic counts plus one year of annual background growth and in-process development traffic.

Level of Service Analysis

As mentioned previously, all level of service analyses described in this section were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* as required by the *City of Central Point 2030 Transportation Systems Plan*. Operating standards at the study intersections were assessed based on the jurisdiction in which the study intersection is located.

Intersection Operations

Figure 5 presents the build-year (2016) background traffic volumes and operations results at each of the study intersections. As under existing conditions, the results of the build-year background traffic analysis indicate that all of the study intersections are forecast to operate at acceptable levels of service and volume-to-capacity ratios during the weekday p.m. and weekend midday peak hours except for the Table Rock Road/Airport Road intersection during weekday p.m. peak hour.

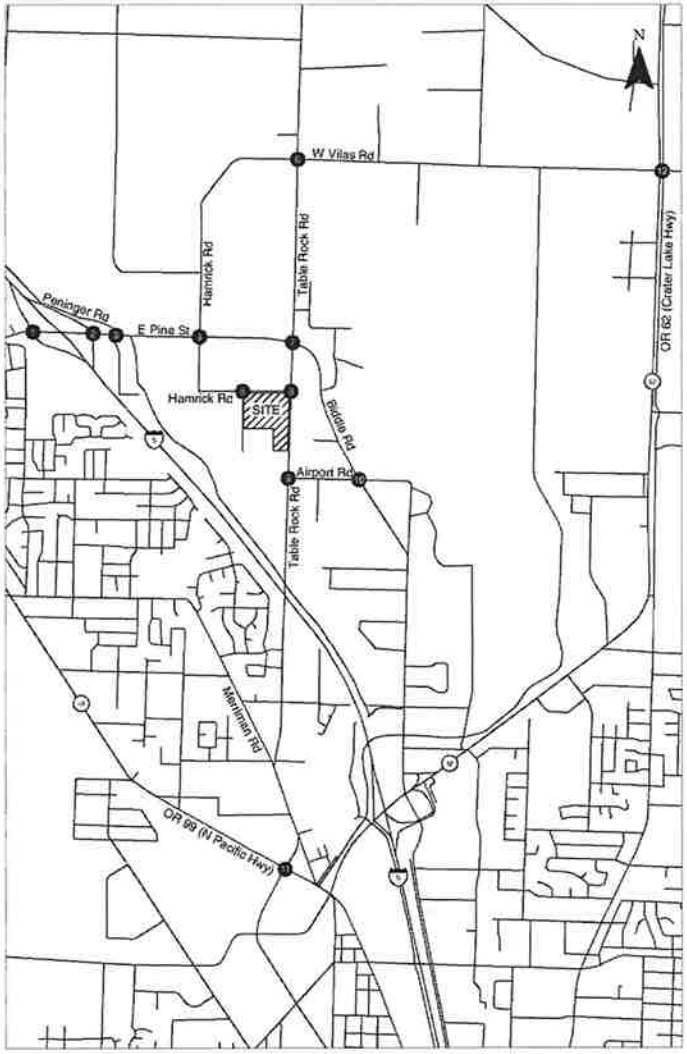
The Table Rock Road/Airport Road intersection is stop controlled in the westbound direction. As under existing conditions, during the weekday p.m. peak hour there is high delay for the critical movement (westbound left-turn) resulting in LOS F. In addition, the critical movement is also operating with a volume-to-capacity ratio of greater than 0.95 in the build year (2016) background conditions (with no traffic from the proposed Costco development).

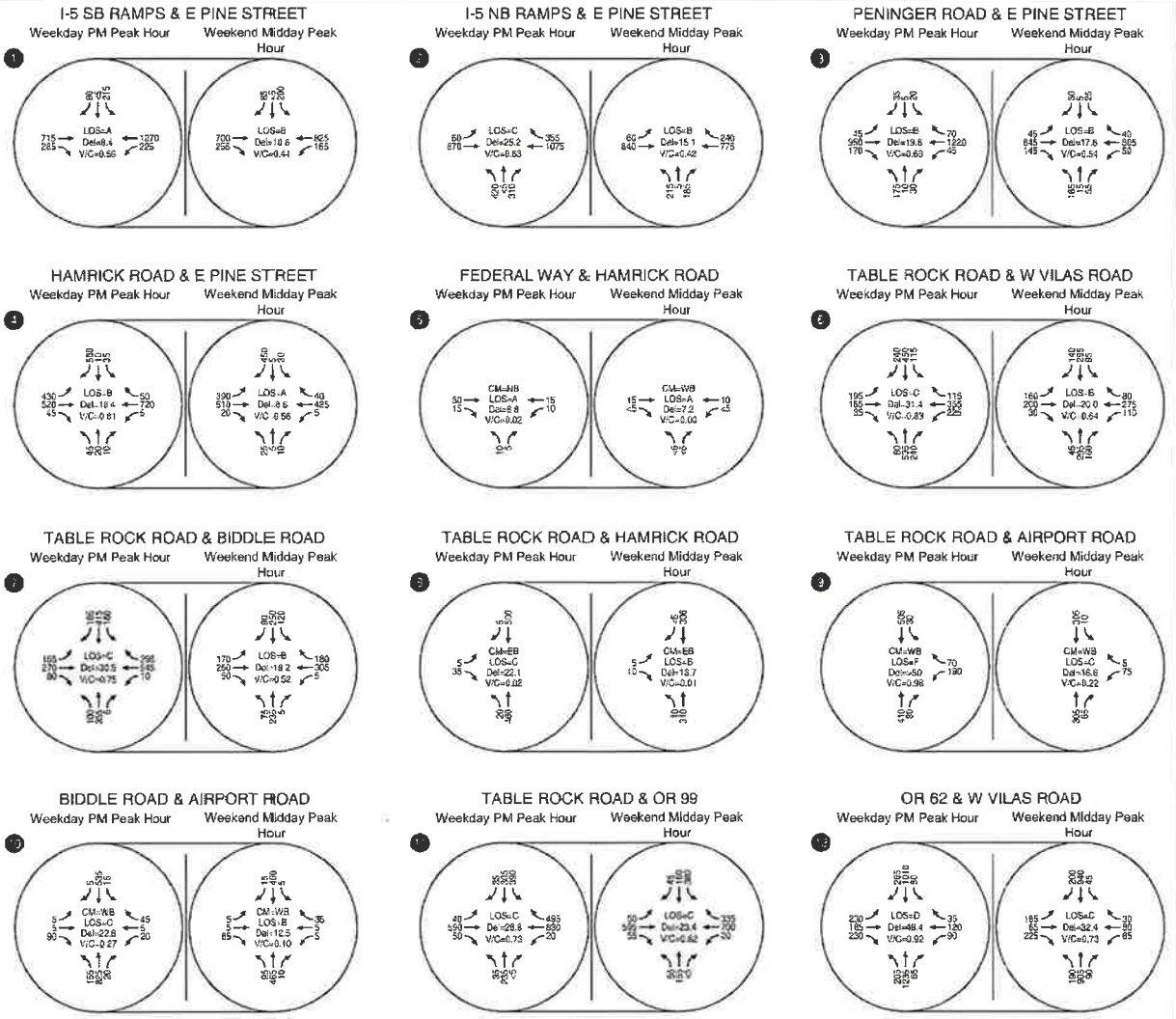
Appendix "E" contains the build-year (2016) background traffic operation worksheets.

Table 3. Build-Year (2016) Background Traffic Operation Results

Study Intersection	Governing Agency Standard	Peak Period	Critical Movement[1]	Build-Year (2016) Background Traffic Operations		
				LOS[2]	Delay[3]	V/C Ratio[4]
1. I-5 SB Ramp & East Pine Street	ODOT	PM Peak	-	A	8.4	0.59
		MID Peak	-	B	10.6	0.44
2. I-5 NB Ramp & East Pine Street	ODOT	PM Peak	-	C	25.2	0.63
		MID Peak	-	B	15.1	0.42
3. Peninger Road & East Pine Street	ODOT, County, City	PM Peak	-	B	19.6	0.68
		MID Peak	-	B	17.8	0.54
4. Hamrick Road & East Pine Street	County, City	PM Peak	-	B	18.4	0.81
		MID Peak	-	A	8.6	0.56
5. Federal Way & Hamrick Road	County, City	PM Peak	Northbound	A	8.8	0.02
		MID Peak	Westbound	A	7.2	0.01
6. Table Rock Road & Vilas Road	County	PM Peak	-	C	31.4	0.83
		MID Peak	-	B	20.0	0.64
7. Table Rock Road & Biddle Road	County	PM Peak	-	C	30.5	0.75
		MID Peak	-	B	19.2	0.52
8. Table Rock Road & Hamrick Road	County	PM Peak	Eastbound Left	C	22.1	0.02
		MID Peak	Eastbound Left	B	13.7	0.01
9. Table Rock Road & Airport Road	County	***PM Peak***	***Westbound***	***F***	***90.0***	***0.98***
		MID Peak	Westbound	C	16.6	0.22
10. Biddle Road & Airport Road	City of Medford	PM Peak	Westbound	C	22.8	0.27
		MID Peak	Westbound	B	12.5	0.10
11. Table Rock Road & OR 99	ODOT, County	PM Peak	-	C	26.8	0.73
		MID Peak	-	C	23.4	0.62
12. OR 62 & East Vilas Road	ODOT, County	PM Peak	-	D	48.4	0.92
		MID Peak	-	C	32.4	0.73

Notes: [1] The critical movement is reported for all unsignalized intersections based on the *2000 Highway Capacity Manual;* [2] LOS = Level of Service; [3] Delay is reported in seconds per vehicle; [4] V/C Ratio is defined as vehicle-to-capacity ratio which calculates the number of vehicles divided by the capacity of the roadway/intersection during the peak 15 minutes of the peak hour; and **Bold *and italics*** indicates an intersection operating below its jurisdiction's standards.





CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

BUILD-YEAR (2016) BACKGROUND TRAFFIC CONDITIONS
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 5

COSTCO TRIP GENERATION DATABASE

For the past 15 years, KAI has maintained a database of traffic data and travel characteristics for Costco Wholesale. The database contains transportation information such as trip rates, trip type percentages, and parking demand for Costco locations in the United States, as well as Canada and Mexico. A large portion of the data is from existing Costco sites in the Pacific Northwest. The data base is updated and refined each time new Costco traffic counts or information become available to KAI. In order to best evaluate the anticipated transportation characteristics of the proposed Central Point Costco development, it was agreed that the Costco database information be used in this TIS since it provides use-specific data that most accurately represents the anticipated traffic characteristics of the unique development type.

Costco has invested significant effort into developing this site-specific trip generation database for both their warehouses and their fuel stations because of the unique characteristics of Costco customer travel that exists due to membership requirements and the nature of Costco sales. These unique elements apply to the trip generation and distribution for Costco warehouses, Costco Gasoline fuel stations, and the interaction of trips between the two.

COSTCO TRIP GENERATION CHARACTERISTICS

The data collected at existing Costco developments in Oregon and Washington indicates the trip generation characteristics summarized in Table 7 including total trip ends as well as pass-by trips ends from the surrounding street systems. Generally, trip generation characteristics of Costco warehouses also include diverted trips, however, due to the location of the proposed site and its distance from I-5, OR 62 (Crater Lake Highway) and other major facilities, it was agreed with the agencies that diverted trips would essentially be considered new trips through the outlined study intersections. Therefore, a specific diverted trip reduction was not applied in this study. In addition, the pass-by trip rates used in this study are significantly lower than those found at most Costco locations. Surveys at existing Costco sites typically demonstrate pass-by rates in the range of 30-35% during the weekday and weekend peak hours. However, again due to the relatively low volumes currently on the adjacent streets to the site, pass-by trips were constrained to no more than 15% of the adjacent street volume thus resulting in pass-by rates of only 7-15%.

Table 7. Central Point Costco Development Trip Generation Estimate

	Daily			PM Peak Hour			Saturday Peak Hour		
	Total	In	Out	Total	In	Out	Total	In	Out
Total Trip Ends (External Trip Ends)	12,140	6,070	6,070	1,055	520	535	1,465	745	720
Pass-by Trip Ends (12% D, 15% PM, 7% MID)	*-1,470*	*-735*	*-735*	*-155*	*-75*	*-80*	*-100*	*-50*	*-50*
Net New Trip Ends	**10,670**	**5,335**	**5,335**	**900**	**445**	**455**	**1,365**	**695**	**670**

As shown in Table 7, the proposed Costco development is estimated to generate a total of approximately 10,670 net new trips on a daily basis, 900 net new trip ends during the weekday p.m. peak hour and approximately 1,365 net new trip ends during the weekend midday peak hour.

Pass-by Trips

A key trip characteristic considered was that of pass-by trip capture. Pass-by trips represent trips that are currently traveling on the surrounding street network for some other primary purpose (such as a trip from home to work) and stop into the site en route during their normal travel. As such, pass-by trips do not result in a net increase in traffic on the surrounding transportation system and, typically, their only effect occurs at the site driveways where they become turning movements. Again, based on existing traffic volumes on Table Rock Road and Hamrick Road, the pass-by trip reduction has been reduced to a maximum of 15% of existing weekday p.m. and weekend midday peak hour volumes along these roadways. This is compared to the 30-35% pass-by rate documented from surveys at existing Costco developments. We believe this represents a very conservative but defensible approach to the trip generation analysis.

TRIP DISTRIBUTION AND TRIP ASSIGNMENT

The trip distribution pattern for site generated trips was developed using zip code data from current memberships at the existing Costco warehouse located on OR 62 (Crater Lake Highway) in Medford, Oregon, as well as from the existing traffic patterns and major trip origins and destinations within the study area. Localized trip routing through the study intersections was assessed based on the land use, traffic counts completed at the study intersections, and general patterns in the site vicinity. Additionally, ODOT provided KAI with a base year (2006) and future year (2038) regional travel demand model, as well as a select zone analysis for the traffic analysis zone that the site will occupy. The models and select zone analysis verified the trip distribution patterns and site-generated trip assignment for the proposed Costco warehouse and fueling station.

Figure 6 illustrates the trip distribution throughout the site's vicinity. Based on the trip distribution throughout the study area, Figure 7 and Figure 8 present the site-generated turning movement counts at each of the study intersections and site accesses for the weekday p.m. and weekend midday peak hours to and from the proposed Costco site. *Appendix "F" includes the base year (2006) and future year (2038) regional travel demand models, as well as the select zone analysis provided by ODOT.*

- STUDY INTERSECTION

XX% - TRIP DISTRIBUTION

SITE-GENERATED TRIP DISTRIBUTION
CENTRAL POINT, OREGON

FIGURE
6

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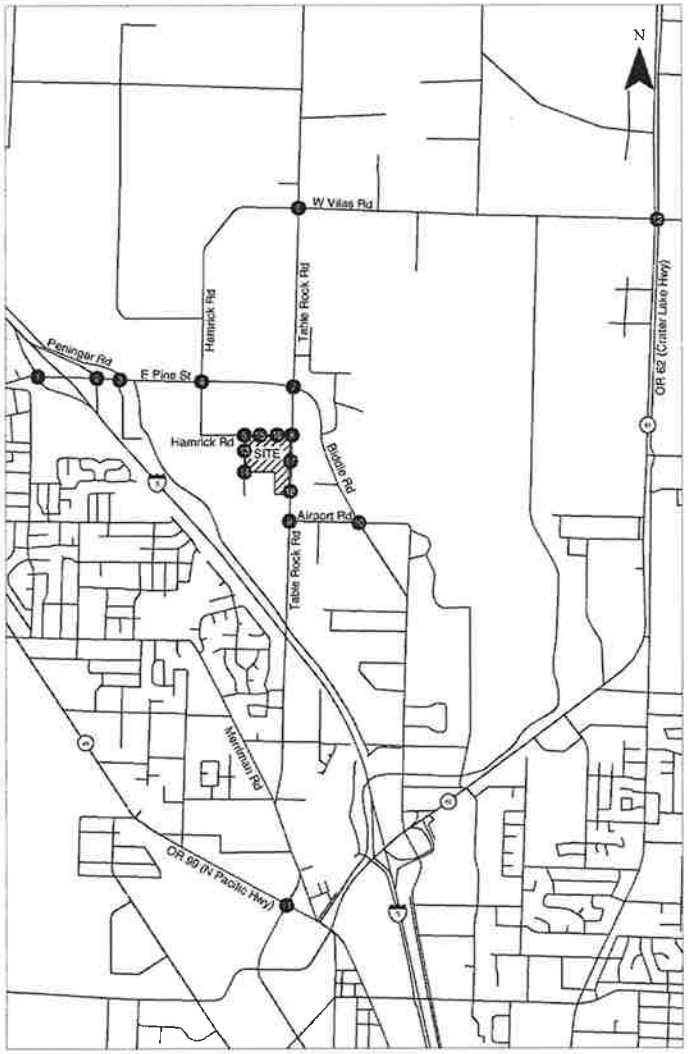
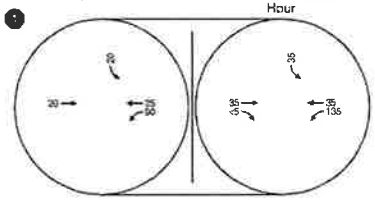
TRANSPORTATION ENGINEERING/PLANNING

H:\projects\19046 - Central Point Costco TIA\dwgs\figs\19046_FinalFigures.dwg Oct 02, 2015 - 9:24am - bkonopasek Layout Tab: TripDistribution



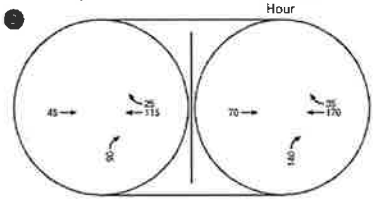
1 I-5 SB RAMPS & E PINE STREET

Weekday PM Peak Hour | Weekend Midday Peak Hour



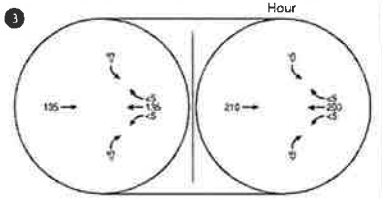
2 I-5 NB RAMPS & E PINE STREET

Weekday PM Peak Hour | Weekend Midday Peak Hour



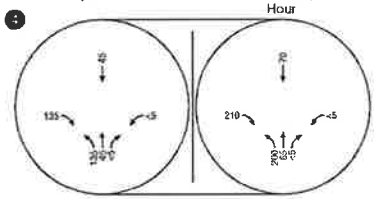
3 PENINGER ROAD & E PINE STREET

Weekday PM Peak Hour | Weekend Midday Peak Hour



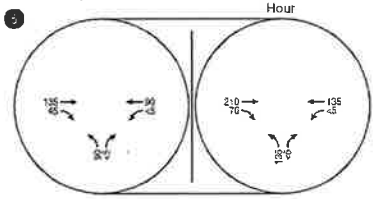
4 HAMRICK ROAD & E PINE STREET

Weekday PM Peak Hour | Weekend Midday Peak Hour



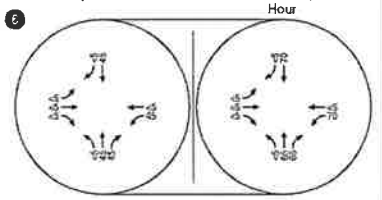
5 FEDERAL WAY & HAMRICK ROAD

Weekday PM Peak Hour | Weekend Midday Peak Hour



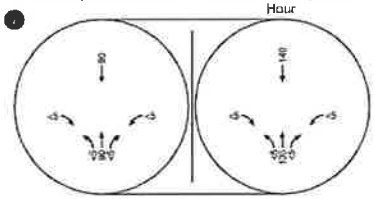
6 TABLE ROCK ROAD & W VILAS ROAD

Weekday PM Peak Hour | Weekend Midday Peak Hour



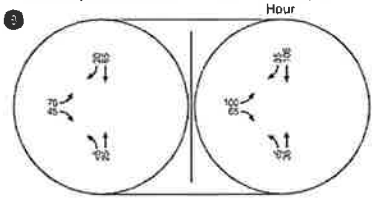
7 TABLE ROCK ROAD & BIDDLE ROAD

Weekday PM Peak Hour | Weekend Midday Peak Hour



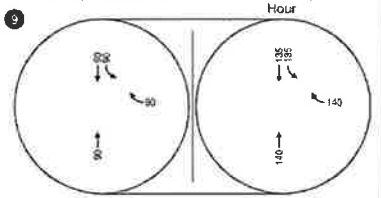
8 TABLE ROCK ROAD & HAMRICK ROAD

Weekday PM Peak Hour | Weekend Midday Peak Hour



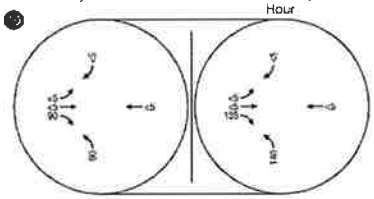
9 TABLE ROCK ROAD & AIRPORT ROAD

Weekday PM Peak Hour | Weekend Midday Peak Hour



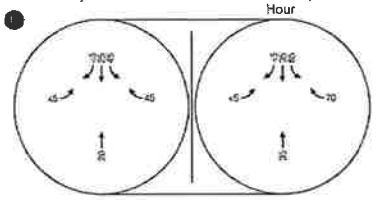
10 BIDDLE ROAD & AIRPORT ROAD

Weekday PM Peak Hour | Weekend Midday Peak Hour



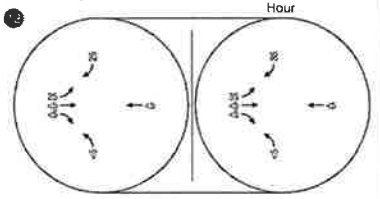
11 TABLE ROCK ROAD & OR 99

Weekday PM Peak Hour | Weekend Midday Peak Hour



12 OR 62 & W VILAS ROAD

Weekday PM Peak Hour | Weekend Midday Peak Hour



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
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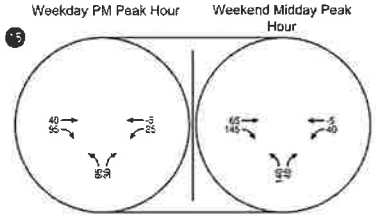
V/C = CRITICAL VOLUME TO CAPACITY RATIO

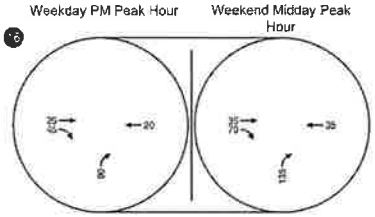
SITE-GENERATED TRIPS
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 7

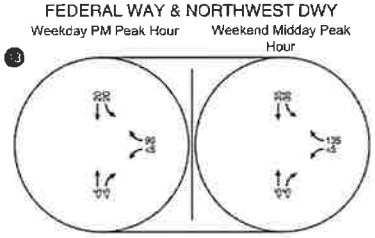
WEST HAMRICK ROAD DWY & HAMRICK ROAD



EAST HAMRICK ROAD DWY & HAMRICK ROAD



FEDERAL WAY & NORTHWEST DWY



FEDERAL WAY & SOUTHWEST DWY

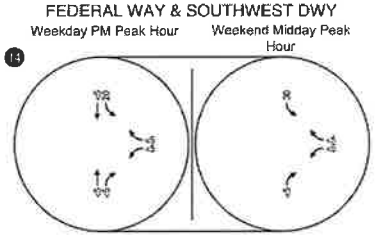


TABLE ROCK ROAD & NORTHEAST DWY

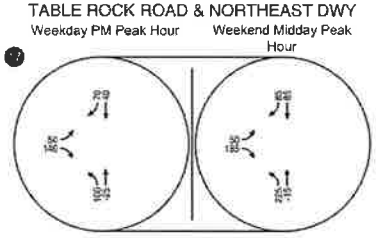
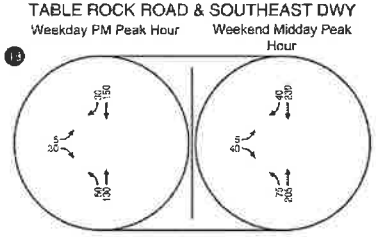


TABLE ROCK ROAD & SOUTHEAST DWY



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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

SITE-GENERATED TRIPS AT SITE ACCESSES
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 8

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TRANSPORTATION ENGINEERING PLANNING

BUILD-YEAR (2016) TOTAL TRAFFIC CONDITIONS

The build-year (2016) total traffic scenario analyzed how the study area's transportation system will operate with the site-generated traffic of the proposed Costco development. Any impacts due to site-generated traffic will be documented and mitigations will be identified at the impacted study intersections.

Traffic Volumes

Site-generated traffic volumes (shown in Figure 7 and Figure 8) were added to the build-year (2016) background traffic volumes for the weekday p.m. and weekend midday peak hours (shown in Figure 5) to arrive at the build-year (2016) total traffic conditions shown in Figure 9.

Intersection Operations

Figure 9 also summarizes the intersection operations analysis for the build-year (2016) total traffic scenario. The build-year (2016) total traffic scenario identified two additional intersections as not meeting operational standards compared to those not previously identified in the build-year (2016) background scenario.

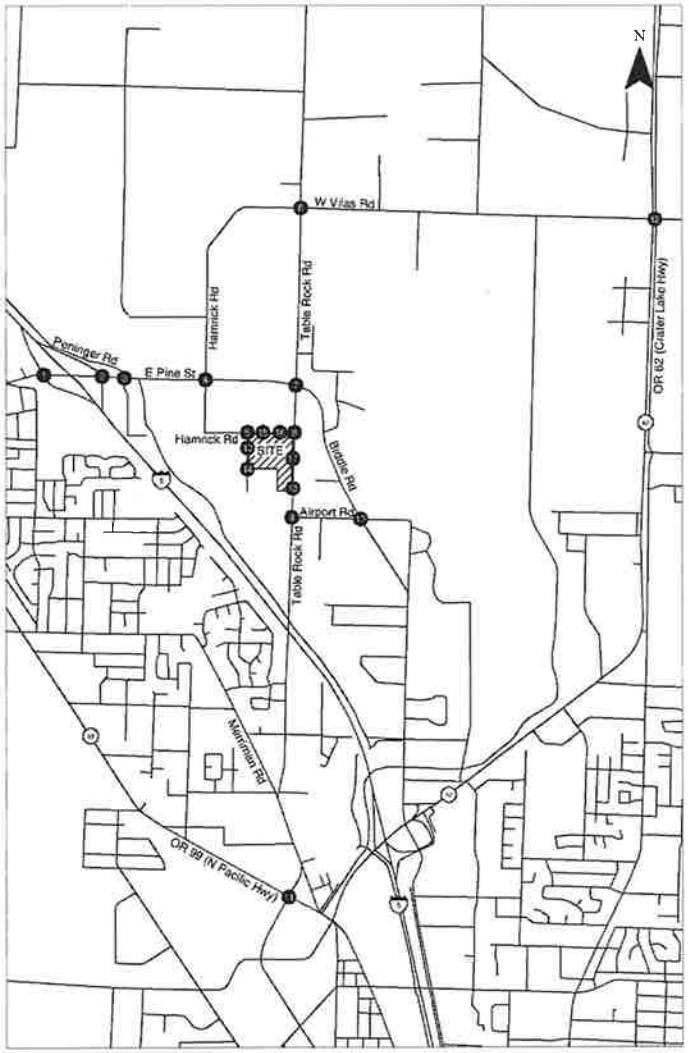
Table 6 also presents the build-year (2016) total traffic operation results at each of the study intersections. All of the study intersections operate at acceptable levels of service during the weekday p.m. and weekend midday peak hours with the exception of:

- **I-5 NB Ramps & East Pine Street** exceeds ODOT standards (lane group v/c ratio ≤ 0.85) with the northbound right-turn lane group's v/c ratio of 0.87 during the weekday p.m. peak hour.
- **Table Rock Road & Airport Road,** as under existing and 2016 background conditions, continues to operate at a LOS F during the weekend p.m. peak hour. However, delay at the intersection increases due to trips accessing Table Rock Road. During the weekend midday peak hour, site-generated traffic causes delay to increase by approximately 31 seconds, causing the level of service to drop from LOS C to LOS E.
- **Biddle Road & Airport Road** experiences a higher delay for the critical movement of the westbound approach, dropping from LOS C to E during the weekday p.m. peak period due to site-generated traffic. While no site-generated traffic is expected to be coming from the westbound approach, the delay increases because of the amount of vehicles making the northbound left at the unsignalized intersection. Even with the site generated traffic, the intersection is operating at a very low volume-to-capacity ratio of 0.45 in the weekday p.m. peak hour and 0.14 in the weekday midday peak hour.

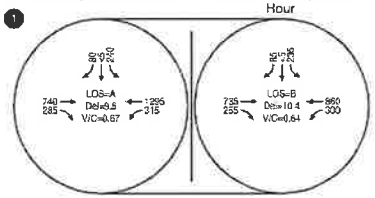
Table 4. Build-Year (2016) Total Traffic Conditions

Study Intersection	Governing Agency Standard	Peak Period	Critical Movement	Build-Year (2016) Plus Project Traffic Operations		
				LOS[1]	Delay[2]	V/C Ratio[3]
1. I-5 SB Ramp & East Pine Street	ODOT	PM Peak	-	B	9.6	0.67
		MID Peak	-	B	10.4	0.64
2. I-5 NB Ramp & East Pine Street	ODOT	***PM Peak***	-	***C***	***29.9***	***0.77***
		MID Peak	-	C	22.6	0.61
3. Peninger Road & East Pine Street	ODOT, County, City	PM Peak	-	C	21.6	0.74
		MID Peak	-	C	20.2	0.66
4. Hamrick Road & East Pine Street	County, City	PM Peak	-	C	20.1	0.81
		MID Peak	-	B	13.1	0.60
5. Federal Way & Hamrick Road	County, City	PM Peak	Northbound	B	10.9	0.18
		MID Peak	Northbound	B	12.0	0.25
6. Table Rock Road & Vilas Road	County	PM Peak	-	C	32.9	0.84
		MID Peak	-	C	21.0	0.67
7. Table Rock Road & Biddle Road	County	PM Peak	-	C	35.9	0.82
		MID Peak	-	C	24.3	0.65
8. Table Rock Road & Hamrick Road	County	PM Peak	Eastbound Left	E	43.4	0.46
		MID Peak	Eastbound Left	C	21.9	0.35
9. Table Rock Road & Airport Road	County	***PM Peak***	***Westbound***	***F***	***>100.0***	***>1.00***
		MID Peak	Westbound	E	47.8	0.77
10. Biddle Road & Airport Road	City of Medford	***PM Peak***	***Westbound***	***E***	***43.6***	***0.45***
		MID Peak	Westbound	C	16.5	0.14
11. Table Rock Road & OR 99	ODOT, County	PM Peak	-	C	28.1	0.75
		MID Peak	-	C	25.0	0.66
12. OR 62 & East Vilas Road	ODOT, County	PM Peak	-	D	51.1	0.94
		MID Peak	-	C	33.2	0.75

Notes: [1] The critical movement is reported for all unsignalized intersections based on the *2000 Highway Capacity Manual;* [2] LOS = Level of Service; [3] Delay is reported in seconds per vehicle; [4] V/C Ratio is defined as vehicle-to-capacity ratio which calculates the number of vehicles divided by the capacity of the roadway/intersection during the peak 15 minutes of the peak hour; and **Bold *and italics*** indicates an intersection operating below its jurisdiction's standards.



I-5 SB RAMPS & E PINE STREET



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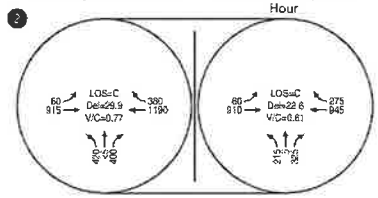
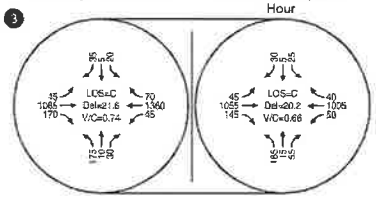
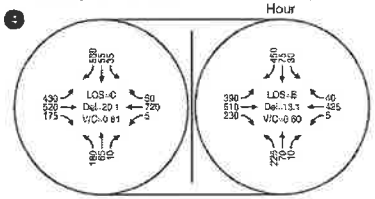


PENINGER ROAD & E PINE STREET



HAMRICK ROAD & E PINE STREET



FEDERAL WAY & HAMRICK ROAD

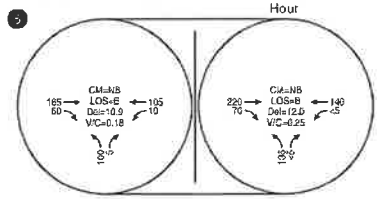


TABLE ROCK ROAD & W VILAS ROAD

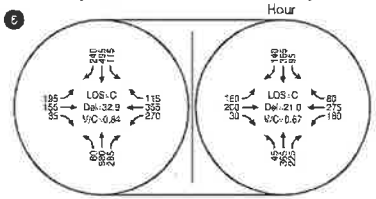
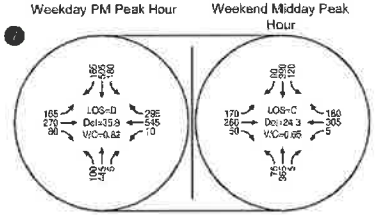


TABLE ROCK ROAD & BIDDLE ROAD



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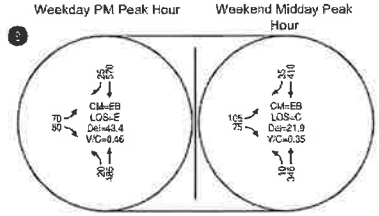
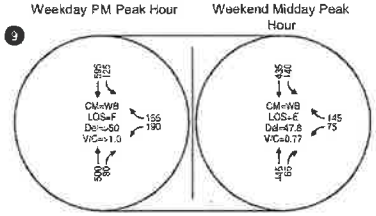


TABLE ROCK ROAD & AIRPORT ROAD



BIDDLE ROAD & AIRPORT ROAD

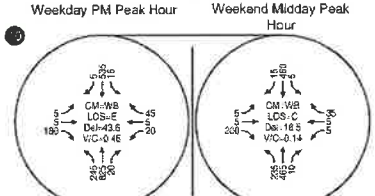
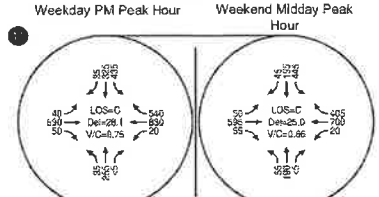
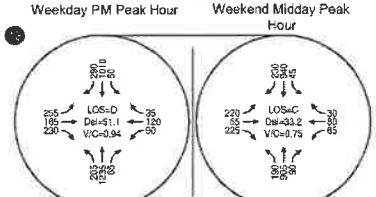


TABLE ROCK ROAD & OR 99



OR 62 & W VILAS ROAD



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

BUILD-YEAR (2016) TOTAL TRAFFIC CONDITIONS
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 9

Site Access Operations

There are six proposed driveways accessing the Central Point Costco site, two on each of the site's bordering frontage roads. On the west side of the site, two full accesses are proposed with movements accessible to northbound and southbound on Federal Way. A full access (closest to Federal Way) and right-in/right-out access (closest to Table Rock Road) are proposed on the north side of the site with access to and from Hamrick Road. Finally, there are two full accesses proposed on along Table Rock Road. The southern-most driveway on Table Rock Road would be the primary access for vehicles to access the Costco Gasoline fuel station.

Table 9 presents the traffic operations at the proposed site accesses. The governing agency's standard is determined by the roadway in which the site access is located. Figure 10 also illustrates the build-year (2016) total traffic conditions at each of the proposed site access during the weekday p.m. and weekend midday peak hour. *Appendix "G" contains the build-year (2016) total traffic operation worksheets.*

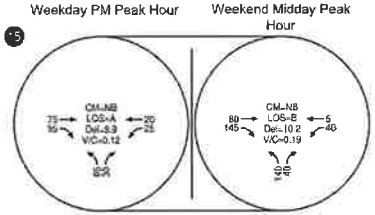
Table 9. Build-Year (2016) Total Traffic Conditions at Site Accesses

Site Access	Governing Agency Standard	Peak Period	Critical Movement	Build-Year (2016) Plus Project Traffic Operations		
				LOS[1]	Delay[2]	V/C Ratio[3]
13. Federal Way & Northwest Driveway	City of Central Point	PM Peak	Westbound	A	8.7	0.09
		MID Peak	Westbound	A	8.8	0.14
14. Federal Way & Southwest Driveway	City of Central Point	PM Peak	Westbound	A	8.7	0.01
		MID Peak	Westbound	A	8.8	0.01
15. West Hamrick Road Driveway & Hamrick Road	City of Central Point	PM Peak	Northbound Left	A	9.9	0.12
		MID Peak	Northbound Left	B	10.2	0.19
16. East Hamrick Road (Right-in/Right-out) & Hamrick Road	City of Central Point	PM Peak	Northbound Right	A	9.1	0.10
		MID Peak	Northbound Right	A	9.3	0.15
17. Table Rock Road & Northeast Driveway	Jackson County	PM Peak	Eastbound Left	F	71.2	0.52
		MID Peak	Eastbound Left	E	48.3	0.40
18. Table Rock Road & Southeast Driveway	Jackson County	PM Peak	Eastbound	C	18.6	0.12
		MID Peak	Eastbound	C	15.4	0.12

[1] The critical movement is reported for all unsignalized intersections based on the *2000 Highway Capacity Manual;* [2] LOS = Level of Service; [3] Delay is reported in seconds per vehicle; [4] V/C Ratio is defined as vehicle-to-capacity ratio which calculates the number of vehicles divided by the capacity of the roadway/intersection during the peak 15 minutes of the peak hour; and **Bold *and italics*** indicates an intersection operating below its jurisdiction's standards.

As can be seen from the table and figure, all of the site access intersections are projected to operate at acceptable levels-of-service and volume-to-capacity ratios during both the weekday p.m. and weekend midday peak hours, with the exception of the Table Rock Road/Northeast access. Note this is assuming this access is a full movement access and no improvements to Table Rock Road are completed. Under this scenario, the critical eastbound left-turn movements at the Table Rock Road/Northeast access is projected to operate at LOS F during the weekday p.m. peak hour, however, it is still projected to operate well under capacity and meet the County's operational standard with a volume-to-capacity ratio of 0.52. This means that while drivers wishing to make a left-turn out of this location will experience delay, they will still be able to find sufficient gaps in the traffic flow along Table Rock Road to complete the turn. Again, this is a near-term scenario for the first year of opening of the Costco development before the Table Rock Road widening improvements are constructed in 2017.

WEST HAMRICK ROAD DWY & HAMRICK ROAD



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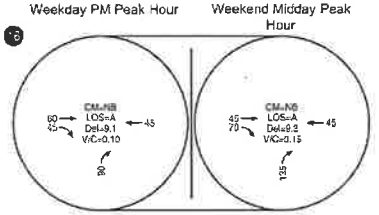
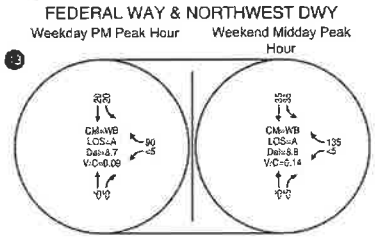


FEDERAL WAY & NORTHWEST DWY



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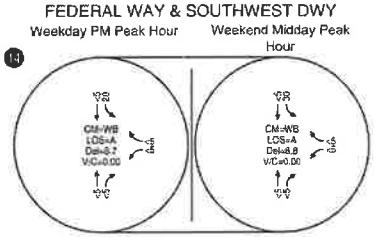


TABLE ROCK ROAD & NORTHEAST DWY

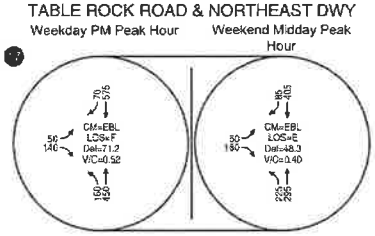
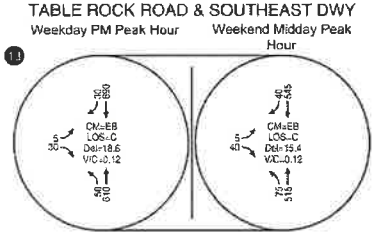


TABLE ROCK ROAD & SOUTHEAST DWY



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Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

BUILD-YEAR (2016) TOTAL TRAFFIC CONDITIONS AT SITE ACCESSES
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 10

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING PLANNING

BUILD-YEAR (2016) MITIGATIONS

This section provides a discussion on mitigations for the impacted intersections under build year (2016) total traffic conditions. As outlined above, the build year (2016) scenario identified two additional intersections as not meeting operational standards compared to those not previously identified in the build-year (2016) background scenario: the I-5 NB Ramp/E Pine Street and Table Rock Road/Airport Road intersections. Mitigations for both these locations have already been identified through previous planning efforts by the City of Central Point, Jackson County, and ODOT. These are discussed below. *Appendix "H" contains the build-year (2016) mitigated traffic operation worksheets for the intersections outlined below.*

I-5 NB Ramp & East Pine Street Mitigation

Site-generated trips increase the northbound right-turn lane's v/c ratio by 2% during the weekday p.m. peak hour, resulting in a v/c ratio for the lane group of 0.87. This is greater than ODOT's standard of a maximum v/c of 0.85 for each lane groups at a ramp interchange. The need for additional capacity for this northbound right-turn movement has been previously identified in the *Final Draft IAMP: Exit 33* study which calls for the widening of the I-5 northbound off-ramp to add a second right-turn lane at the northbound approach to East Pine Street. The second turn lane would provide an additional 350 feet of storage to manage queuing on the off-ramp that cannot be managed with signal timing. Based on the assumed parameters of the project, this project would have the following benefit at the I-5 NB Off-Ramp intersection:

- The northbound right-turn lane group would operate with a v/c ratio of 0.49 in the build-year (2016) total traffic scenario during the p.m. peak hour with the proposed improvements stated in the *Final Draft IAMP: Exit 33.*

ODOT and the City of Central Point are currently in discussions to determine Costco's appropriate proportional fair share contribution to this improvement as mitigation for the site generated trip impacts.

Table Rock Road & Airport Road Intersection

Improvements to the Table Rock Road/Airport Road intersection are scheduled in year 2017 as part of Table Rock Road widening. In addition to widening Table Rock Road at the intersection, a signal will be added to the intersection. The details of the signalized intersection have not yet been finalized; therefore, mitigated assumptions were based on the project description of Project# 821 in the RVMPO RTP. The signalized intersection has the following impact:

- With the addition of a signal, the level of service and delay improves significantly during both the weekday p.m. and weekend midday peak hour. Based on a 60 second cycle length the intersection operates at LOS A with an average delay of 9.7 seconds per vehicle and a v/c ratio of 0.51 during the weekday p.m. peak hour.

- The westbound approach improves to a LOS B with an approach delay of 15.4 seconds per vehicle with the signal, compared to LOS F and an approach delay over 100 seconds without a signal during the weekday p.m. peak hour under build-year (2016) total traffic conditions.

This intersection is an existing deficiency; however, given that this improvement is not currently scheduled until 2017, Jackson County and the City of Central Point are currently in discussions to determine an appropriate contribution to this improvement as mitigation in the interim for the Costco project.

TABLE ROCK ROAD ACCESS ALTERNATIVES

Even though the build year (2016) analysis showed that all of the site accesses will be able to operate as proposed upon site opening before the Table Rock Road improvements are constructed, an evaluation of access alternatives for Table Rock Road was also completed to compare how temporary improvements would impact the access operations in the interim until the Table Rock Road widening is completed in 2017. The access scenarios compared were:

- Build Year (2016) Total Traffic Conditions (i.e., Full Access to Table Rock Road) with No Table Rock Road Improvements (as summarized above)
- Build-Year (2016) Total Traffic Conditions with Temporary Table Rock Road Improvements (i.e., temporary widening of Table Rock Road along the site frontage to provide a center left-turn lane until the ultimate widening project is constructed)
- Build-Year (2016) Total Traffic Conditions with Restricted Right-In/Right-Out Site Accesses (restrict Table Rock Road access to right-in/right-out only until the ultimate widening project is constructed)

Operational Comparison

Table 10 compares the access operational results for these three scenarios. Also included for comparison are the operational results for the Table Rock Road/Hamrick Road intersection which does change depending on how the site's Table Rock Road accesses are configured.

Table 10. Table Rock Road Access Alternative Comparison

Study Intersection/Site Access	Governing Agency Standard	Peak Period	Critical Movement	LOS	Delay	V/C Ratio
Build-Year (2016) Total Traffic Conditions (full movement accesses/no improvements to Table Rock Rd)						
8. Table Rock Road & Hamrick Road	Jackson County	PM Peak	Eastbound Left	E	43.4	0.46
		MID Peak	Eastbound Left	C	21.9	0.35
17. Table Rock Road & Northeast Driveway	Jackson County	PM Peak	Eastbound Left	F	71.2	0.52
		MID Peak	Eastbound Left	E	48.3	0.40
18. Table Rock Road & Southeast Driveway	Jackson County	PM Peak	Eastbound	C	18.6	0.12
		MID Peak	Eastbound	C	15.4	0.12
Build-Year (2016) Total Traffic Conditions with Temporary Table Rock Widening (adding a center turn lane)						
8. Table Rock Road & Hamrick Road	Jackson County	PM Peak	Eastbound Left	C	15.7	0.19
		MID Peak	Eastbound Left	B	13.4	0.21
17. Table Rock Road & Northeast Driveway	Jackson County	PM Peak	Eastbound Left	C	20.3	0.19
		MID Peak	Eastbound Left	C	19.5	0.18
18. Table Rock Road & Southeast Driveway	Jackson County	PM Peak	Eastbound	C	15.1	0.09
		MID Peak	Eastbound	B	13.4	0.10
Build-Year (2016) Total Traffic Conditions with Table Rock Road Accesses Restricted to RI/RO						
8. Table Rock Road & Hamrick Road[1]	Jackson County	PM Peak	Eastbound Left	F	>85.0	>1.0
		MID Peak	Eastbound Left	F	>85.0	>1.0
17. Table Rock Road & Northeast Driveway	Jackson County	PM Peak	Eastbound Left	C	16.6	0.33
		MID Peak	Eastbound Left	B	14.3	0.34
18. Table Rock Road & Southeast Driveway	Jackson County	PM Peak	Eastbound	B	14.6	0.08
		MID Peak	Eastbound	B	13.0	0.09

Note: [1] Note: Adding temporary widening around the intersection to provide a northbound left-turn lane as well as a center refuge area north of Hamrick to allow vehicles turning left from Hamrick to make a two stage gap acceptance maneuver for the left-turn will improve operations to LOS E, 39.7 s/veh, and v/c=0.58 in the weekday p.m. peak hour and LOS F, 67.7 s/veh, and v/c=0.80 in the weekend midday peak hour.

The following conclusions can be drawn from the comparison in Table 10:

- Assuming full movement access and no improvements to Table Rock Road, the eastbound left-turns at the northeast access to Table Rock will experience relatively long delay (resulting in LOS F) but the access will still operate well under capacity and meet the County's operational standard with a volume-to-capacity ratio of 0.52 during the critical time period.
- Providing temporary widening along the site frontage to provide a temporary center turn lane will allow all Table Rock Road accesses to operate acceptably as full movements until the ultimate Table Rock Road widening improvements are constructed in 2017.
- Restricting the site's Table Rock Road accesses to right-in/right-out only will allow those accesses to operate at acceptable levels of service and volume-to-capacity ratios. However, it will add additional left-turn movements at the Table Rock Road/Hamrick Road intersection thus resulting in over-capacity and LOS F conditions at that location. This impact could be reduced by adding temporary widening around the intersection to provide a northbound left-turn lane as well as a center refuge area north of Hamrick to allow vehicles turning left from Hamrick to make a two stage gap acceptance maneuver for the left-turn (will improve operations to LOS E and v/c=0.58 in the weekday p.m. peak hour and LOS F and v/c=0.80 in the weekend midday peak hour.

As requested by the City of Central Point, the operations of the site accesses to Table Rock Road in the year 2017 once the Table Rock Road widening improvements are constructed were also evaluated. These were evaluated to compare operations with the accesses as full movement accesses and as right-in/right-out only accesses. Table 11 summarizes the operations of the Table Rock Road site accesses in the year 2017 once the Table Rock Road improvements are in place.

Table 11. Table Rock Road Access Operations in 2017

Study Intersection/Site Access	Governing Agency Standard	Peak Period	Critical Movement	LOS	Delay	V/C Ratio
Full Accesses Along Table Rock Road (2017 – Full Build Out of Table Rock Road)						
8. Table Rock Road & Hamrick Road	Jackson County	PM Peak	Eastbound Left	C	15.0	0.18
		MID Peak	Eastbound Left	B	13.3	0.21
17. Table Rock Road & Northeast Driveway	Jackson County	PM Peak	Eastbound Left	C	18.8	0.17
		MID Peak	Eastbound Left	C	18.7	0.17
18. Table Rock Road & Southeast Driveway	Jackson County	PM Peak	Eastbound	B	12.1	0.07
		MID Peak	Eastbound	B	11.2	0.08
Right-in/Right-out Accesses Along Table Rock Road (2017 - Full Build Out of Table Rock Road)						
8. Table Rock Road & Hamrick Road	Jackson County	PM Peak	Eastbound Left	D	35.0	0.54
		MID Peak	Eastbound Left	F	56.6	0.75
17. Table Rock Road & Northeast Driveway	Jackson County	PM Peak	Eastbound Left	B	12.4	0.24
		MID Peak	Eastbound Left	B	11.8	0.27
18. Table Rock Road & Southeast Driveway	Jackson County	PM Peak	Eastbound	B	11.3	0.05
		MID Peak	Eastbound	B	10.7	0.06

The following conclusions can be drawn from the comparison in Table 11:

- Once the ultimate Table Rock Road widening improvement is constructed in 2017, all site accesses to Table Rock Road will operate a good levels of service (LOS C or better) and volume-to-capacity ratios (v/c=0.21 or better) during the peak hour periods assuming they are full access movements.
- The accesses will also operate acceptably as right-in/right-out only accesses once the ultimate Table Rock Road improvements are constructed, however, restricting those access will add additional left-turn movements at the Table Rock Road/Hamrick Road intersection. The additional left-turn demand will cause the critical eastbound left-turn movement to go from LOS C and v/c = 0.18 to LOS D and v/s = 0.54 in the weekday p.m. peak hour and LOS B and v/c = 0.21 to LOS F and v/c = 0.75 in the weekend midday peak hour.

Safety Comparison

In addition to the access operations comparison outlined above, the predicted safety performance of the accesses under the various alternatives was reviewed. A safety analysis was performed for the Table Rock Road accesses using the predictive crash methodology from Chapter 12 of the *Highway Safety Manual,* with adjusted crash calibration factors from ODOT's, *Calibrating the Highway Safety Manual Predictive Methods for Oregon Highways*. The accesses were evaluated as unsignalized intersections (since no specific safety predictive functions are provided for accesses). The analysis looked at five scenarios:

- Table Rock Road as Two Lanes with Full Movement Access
- Table Rock Road as Two Lanes with RI/RO Only Access
- Table Rock Road as Three Lanes with Full Movement Access
- Table Rock Road as Five Lanes with Full Movement Access
- Table Rock Road as Five Lanes with RI/RO Only Access

In order to predict crashes at right-in/right-out intersections, head-on collisions and angle crashes were omitted from the prediction methodology to represent a RIRO driveway.

Table 12 summarizes the results of this evaluation and safety comparison.

Table 12. Table Rock Road Access Predictive Safety Comparison

Site Access	Predicted Annual Average Crash Frequency		
	Fatal and Injury	PDO[1]	Total
Full Access Site Driveways Along Table Rock Road (2 Lane Cross Section)			
Table Rock Road/Northeast Dwy	0.23	0.48	0.71
Table Rock Road/Southeast Dwy	0.16	0.33	0.49
Total Annual Predicted Crashes	**0.39**	**0.81**	**1.20**
Right-in/Right-out Access Only Along Table Rock Road (2 Lane Cross Section)			
Table Rock Road/Northeast Dwy	0.16	0.37	0.53
Table Rock Road/Southeast Dwy	0.10	0.20	0.30
Total Annual Predicted Crashes	**0.26**	**0.57**	**0.83**
Full Access Site Driveways Along Table Rock Road (3 Lane Cross Section)			
Table Rock Road/Northeast Dwy	0.16	0.32	0.48
Table Rock Road/Southeast Dwy	0.10	0.18	0.28
Total Annual Predicted Crashes	**0.26**	**0.50**	**0.76**
Full Access Site Driveways Along Table Rock Road (5 Lane Cross Section)			
Table Rock Road/Northeast Dwy	0.16	0.33	0.49
Table Rock Road/Southeast Dwy	0.11	0.17	0.28
Total Annual Predicted Crashes	**0.27**	**0.50**	**0.77**
Right-in/Right-out Access Only Along Table Rock Road (5 Lane Cross Section)			
Table Rock Road/Northeast Dwy	0.11	0.25	0.36
Table Rock Road/Southeast Dwy	0.07	0.13	0.20
Total Annual Predicted Crashes	**0.18**	**0.38**	**0.56**

Interpretation of the predictive safety results is complex. These are not absolute numbers and instead represent more of the probability for crashes to occur. In addition, the agencies must weigh the results of the safety predictive results with those of the traffic operational results as there are tradeoffs to each.

Providing full movement accesses to Table Rock Road in the near-term with its current two lane configuration shows the probability for 1.2 crashes per year to occur combined at the two access points. If these were restricted to right-in/right-out only driveways, the safety prediction lowers to a probability of 0.83 crashes per year (about a 30% decrease in probability). If temporary widening was provided in the interim for a two-way left-turn lane along the site's frontage, the probability would lower to 0.76 crashes per year (about a 30% decrease in probability).

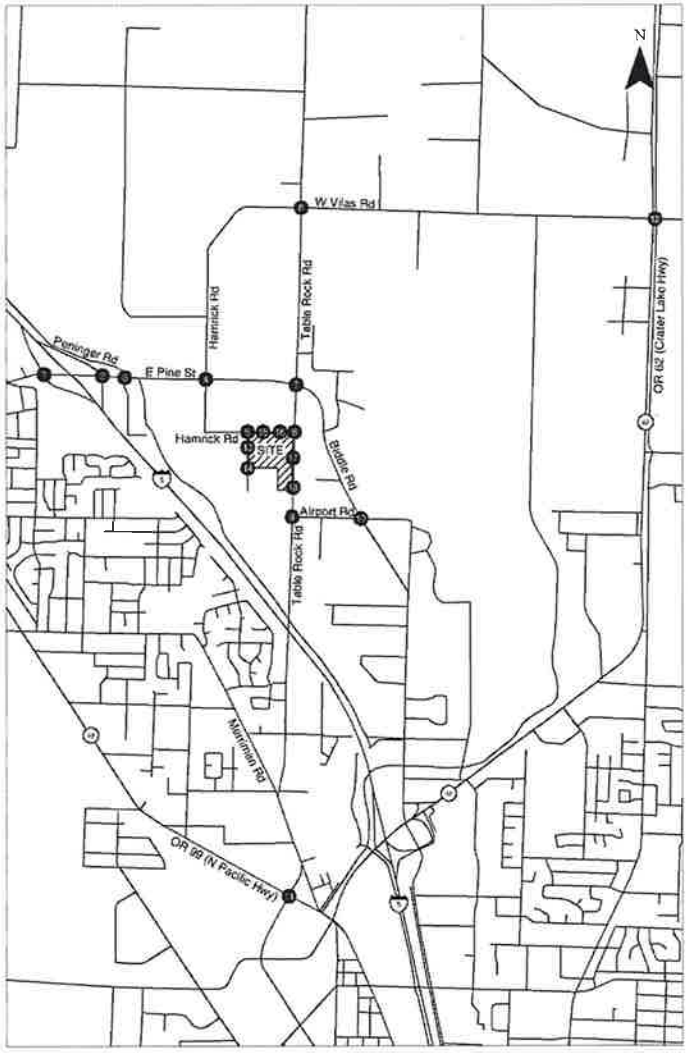
The safety predictive analysis also shows that once the ultimate Table Rock Road widening improvements are in place the safety prediction lowers as well to 0.77 crashes per year even with maintaining full movement accesses at both locations.

FUTURE YEAR (2030) BACKGROUND TRAFFIC CONDITIONS

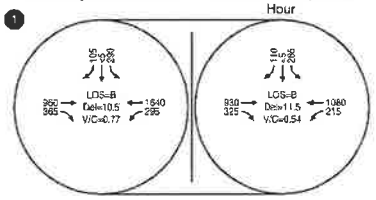
The future year (2030) background scenario analyzed how the study area's transportation system will operate without the site-generated traffic in year 2030, representing a 15 year long-term future condition at the study intersections. Future year traffic conditions were analyzed for both the weekday p.m. and weekend midday peak hours. The future year (2030) background scenario includes the planned roadway improvements and land use developments previously mentioned for the build year as well as other planned improvements that are expected to be in place by the year 2030 such as the Table Rock Road widening and the Table Rock Road/Airport Road intersection signal. *Appendix "I" contains the future year (2030) background traffic operation worksheets for the intersections outlined below.*

Traffic Volumes

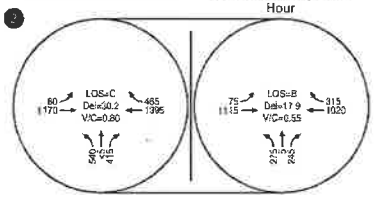
The 2030 background traffic volumes reflect existing traffic counts plus 15 years of annual background growth and in-process development traffic. Volumes along and accessing to and from OR 62 (Crater Lake Highway) were not grown by the annual growth rate due to the expected completion of the OR 62 Expressway project. The future year (2038) model provided by ODOT shows that daily volumes along OR 62 do not increase when compared to the base year (2008) volumes. The 2030 background conditions traffic volumes are summarized in Figure 11.



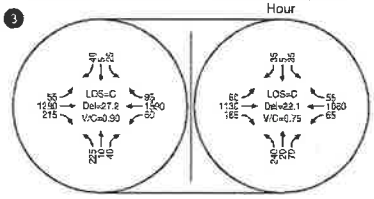
I-5 SB RAMPS & E PINE STREET



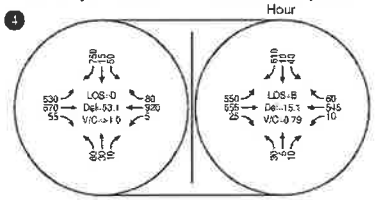
I-5 NB RAMPS & E PINE STREET



PENINGER ROAD & E PINE STREET



HAMRICK ROAD & E PINE STREET



FEDERAL WAY & HAMRICK ROAD

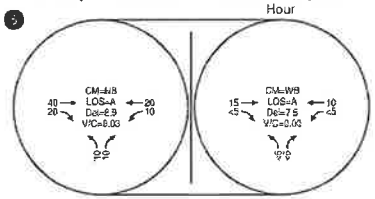


TABLE ROCK ROAD & W VILAS ROAD

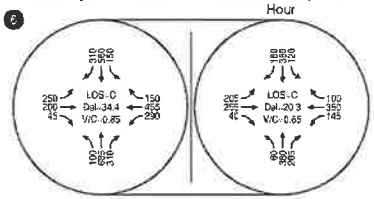


TABLE ROCK ROAD & BIDDLE ROAD

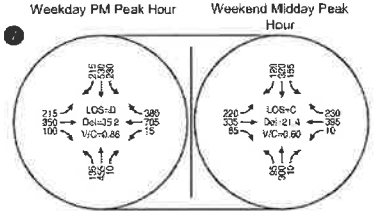


TABLE ROCK ROAD & HAMRICK ROAD

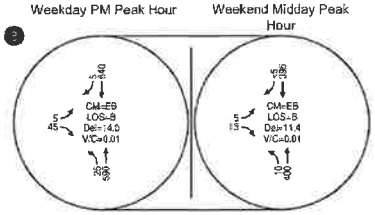
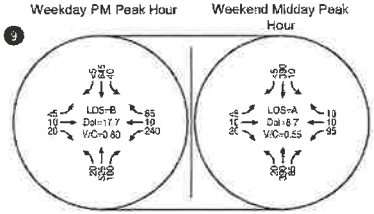


TABLE ROCK ROAD & AIRPORT ROAD



BIDDLE ROAD & AIRPORT ROAD

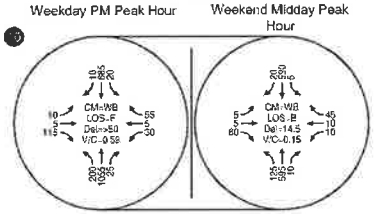
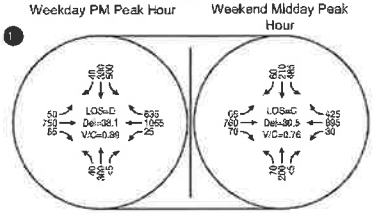
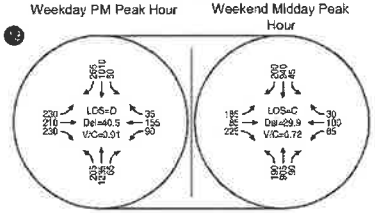


TABLE ROCK ROAD & OR 99



OR 62 & W VILAS ROAD



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME TO CAPACITY RATIO

FUTURE YEAR (2030) BACKGROUND TRAFFIC CONDITIONS
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 11

Intersection Operations

Figure 11 and Table 13 present the future year (2030) background conditions operational results at each study intersection. All of study intersections operate at acceptable levels of service and volume-to-capacity ratios during the weekday p.m. and weekend midday peak hours with the following exceptions:

- **Hamrick Road & East Pine Street** operates with a v/c ratio of >1.0 during the weekday p.m. peak hour
- **Biddle Road & Airport Road** (as under the build year conditions) has a critical movement which operates at LOS F during the weekday p.m. peak hour although the movement is still operating under capacity with a v/c ratio of 0.55

Table 13. Future Year (2030) Background Traffic Operations

Study Intersection	Governing Agency Standard	Peak Period	Critical Movement	Future Year (2030) Background Traffic Operations		
				LOS[1]	Delay[2]	V/C Ratio[3]
1. I-5 SB Ramp & East Pine Street	ODOT	PM Peak	-	B	10.5	0.77
		MID Peak	-	B	11.5	0.54
2. I-5 NB Ramp & East Pine Street	ODOT	PM Peak	-	C	30.2	0.80
		MID Peak	-	B	17.9	0.55
3. Peninger Road & East Pine Street	ODOT, County, City	PM Peak	-	C	27.2	0.90
		MID Peak	-	C	22.1	0.75
4. Hamrick Road & East Pine Street	County, City	***PM Peak***	-	***D***	***53.1***	***1.04***
		MID Peak	-	B	15.1	0.79
5. Federal Way & Hamrick Road	County, City	PM Peak	Northbound	A	8.9	0.03
		MID Peak	Northbound	A	7.5	0.01
6. Table Rock Road & Vilas Road	County	PM Peak	-	C	34.4	0.85
		MID Peak	-	C	20.3	0.65
7. Table Rock Road & Biddle Road	County	PM Peak	-	D	35.2	0.86
		MID Peak	-	C	21.4	0.60
8. Table Rock Road & Hamrick Road	County	PM Peak	Eastbound Left	B	14.0	0.01
		MID Peak	Eastbound Left	B	11.4	0.01
9. Table Rock Road & Airport Road	County	PM Peak	-	B	17.7	0.80
		MID Peak	-	A	8.7	0.55
10. Biddle Road & Airport Road	City of Medford	***PM Peak***	***Westbound***	***F***	***54.3***	***0.59***
		MID Peak	Westbound	B	14.5	0.15
11. Table Rock Road & OR 99	ODOT, County	PM Peak	-	D	38.1	0.89
		MID Peak	-	C	30.5	0.76
12. OR 62 & East Vilas Road	ODOT, County	PM Peak	-	D	40.5	0.91
		MID Peak	-	C	29.9	0.72

Notes: [1] The critical movement is reported for all unsignalized intersections based on the *2000 Highway Capacity Manual;* [2] LOS = Level of Service; [3] Delay is reported in seconds per vehicle; [4] V/C Ratio is defined as vehicle-to-capacity ratio which calculates the number of vehicles divided by the capacity of the roadway/intersection during the peak 15 minutes of the peak hour; and **Bold *and italics*** indicates an intersection operating below its jurisdiction's standards.

FUTURE YEAR (2030) TOTAL TRAFFIC CONDITIONS

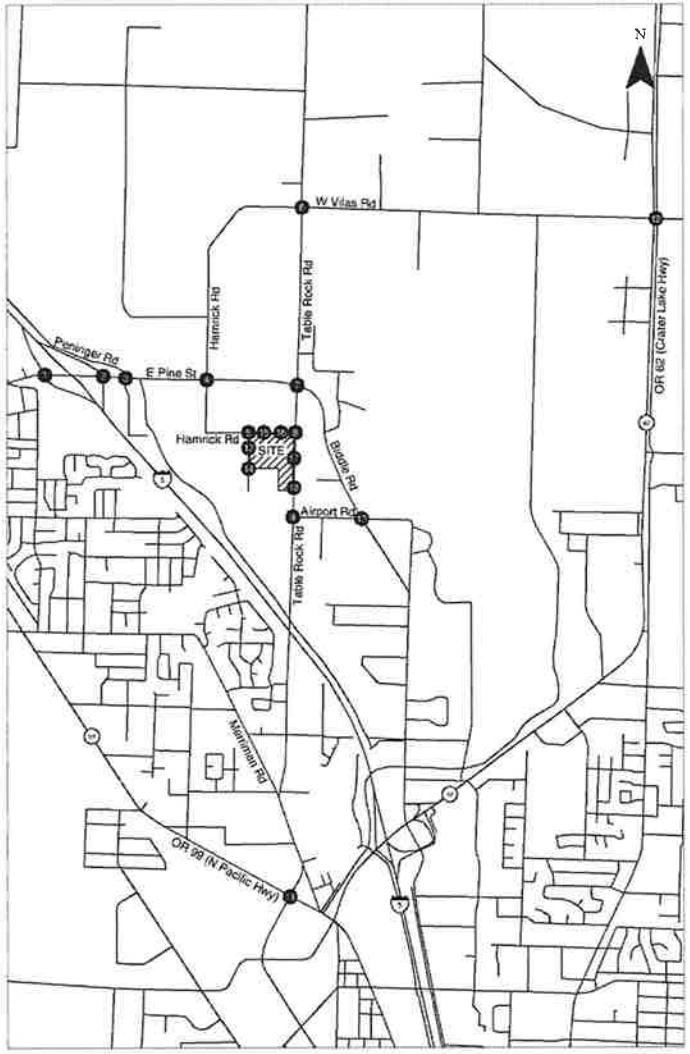
The future year (2030) total traffic scenario analyzed how the study area's transportation system will operate with Costco's site-generated trips in year 2030, representing a 15 year future condition with the addition of site-generated traffic at each of the study intersections. Future year traffic conditions were analyzed for both the weekday p.m. and weekend midday peak hours. The future year (2030) total scenario also includes the planned roadway improvements and land use developments previously mentioned. *Appendix "J" contains the future year (2030) total traffic operation worksheets for the intersections outlined below.*

Traffic Volumes

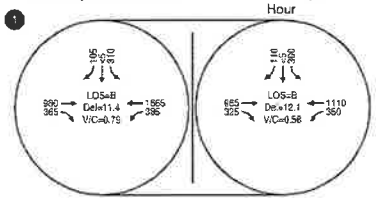
Traffic volumes for the future year (2030) total traffic scenario reflect the 2030 background scenario volumes plus the addition of site generated traffic. The future year 2030 total traffic volumes are summarized in Figure 12 for the off site study intersections.

Intersection Operations

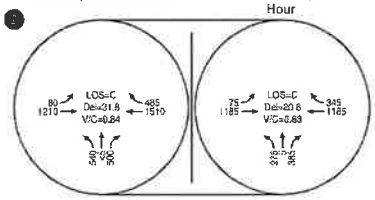
The intersection operations for the 2030 total traffic scenario are also summarized in Figure 12 and in Table 14. As can be seen from the figure and table, the future year (2030) total scenario determined that site-generated trips did not impact any study intersections not previously identified in the future year (2030) background scenario. As in the 2030 background scenario, the Hamrick Road/East Pine Street intersection operates with a v/c ratio of >1.0 during the weekday p.m. peak hour and the critical movement at the Biddle Road/Airport Road operates at LOS F during the weekday p.m. peak hour.



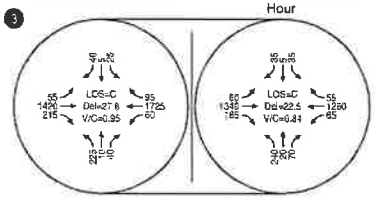
I-5 SB RAMPS & E PINE STREET



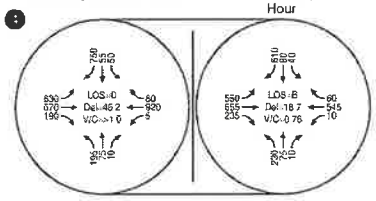
I-5 NB RAMPS & E PINE STREET



PENINGER ROAD & E PINE STREET



HAMRICK ROAD & E PINE STREET



FEDERAL WAY & HAMRICK ROAD

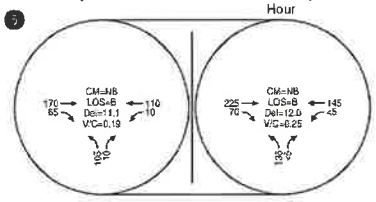


TABLE ROCK ROAD & W VILAS ROAD

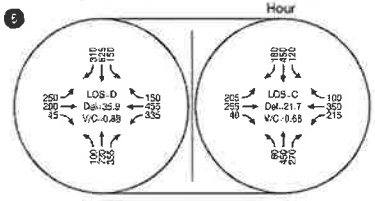


TABLE ROCK ROAD & BIDDLE ROAD

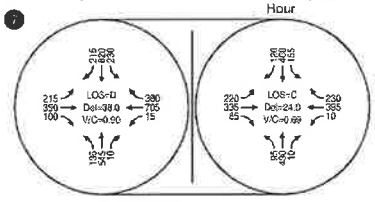


TABLE ROCK ROAD & HAMRICK ROAD

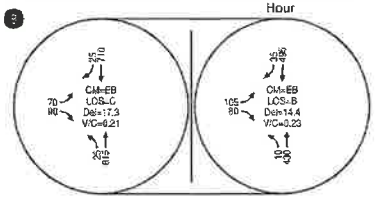
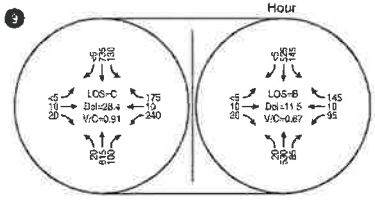


TABLE ROCK ROAD & AIRPORT ROAD



BIDDLE ROAD & AIRPORT ROAD

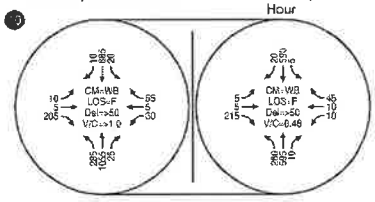
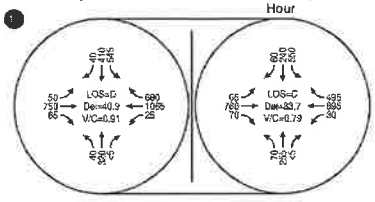
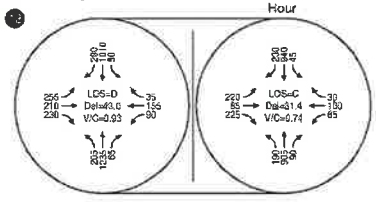


TABLE ROCK ROAD & OR 99



OR 62 & W VILAS ROAD



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME TO CAPACITY RATIO

FUTURE YEAR (2030) TOTAL TRAFFIC CONDITIONS
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 12

Table 14. Future Year (2030) Total Traffic Operations

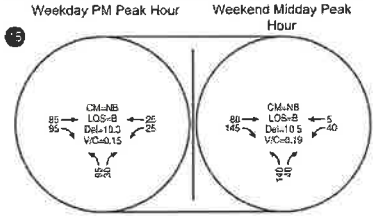
Study Intersection	Governing Agency Standard	Peak Period	Critical Movement	Future Year (2030) Background Traffic Operations		
				LOS[1]	Delay[2]	V/C Ratio[3]
1. I-5 SB Ramp & East Pine Street	ODOT	PM Peak	-	B	11.4	0.79
		MID Peak	-	B	12.1	0.58
2. I-5 NB Ramp & East Pine Street	ODOT	PM Peak	-	C	31.8	0.84
		MID Peak	-	C	20.6	0.63
3. Peninger Road & East Pine Street	ODOT, County, City	PM Peak	-	C	27.8	0.95
		MID Peak	-	C	22.5	0.84
4. Hamrick Road & East Pine Street	County, City	***PM Peak***	-	***D***	***46.2***	***1.03***
		MID Peak	-	B	18.7	0.78
5. Federal Way & Hamrick Road	County, City	PM Peak	Northbound	B	11.1	0.19
		MID Peak	Northbound	B	12.0	0.25
6. Table Rock Road & Vilas Road	County	PM Peak	-	D	35.9	0.88
		MID Peak	-	C	21.7	0.68
7. Table Rock Road & Biddle Road	County	PM Peak	-	D	38.0	0.90
		MID Peak	-	C	24.0	0.69
8. Table Rock Road & Hamrick Road	County	PM Peak	Eastbound Left	C	17.3	0.21
		MID Peak	Eastbound Left	B	14.4	0.23
9. Table Rock Road & Airport Road	County	PM Peak	-	C	28.4	0.91
		MID Peak	-	B	11.5	0.67
10. Biddle Road & Airport Road	City of Medford	***PM Peak***	***Westbound***	***F***	***>100.0***	***>1.00***
		MID Peak	***Westbound***	***F***	***51.9***	***0.48***
11. Table Rock Road & OR 99	ODOT, County	PM Peak	-	D	40.9	0.91
		MID Peak	-	C	33.7	0.79
12. OR 62 & East Vilas Road	ODOT, County	PM Peak	-	D	43.0	0.93
		MID Peak	-	C	31.4	0.74

Notes: [1] The critical movement is reported for all unsignalized intersections based on the *2000 Highway Capacity Manual;* [2] LOS = Level of Service; [3] Delay is reported in seconds per vehicle; [4] V/C Ratio is defined as vehicle-to-capacity ratio which calculates the number of vehicles divided by the capacity of the roadway/intersection during the peak 15 minutes of the peak hour; and **Bold *and italics*** indicates an intersection operating below its jurisdiction's standards.

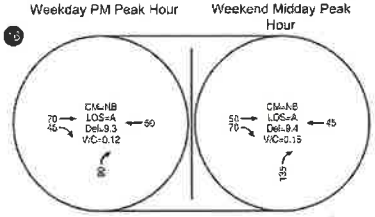
Year 2030 Site Access Operations

Figure 13 and Table 15 presents the year 2030 traffic conditions at each of the site accesses. All of the proposed site accesses operate at acceptable levels of service during the weekday p.m. and weekend midday peak hours. Because of the planned roadway improvements along Table Rock Road, there is a significant benefit to the traffic operations at the site accesses along Table Rock Road when compared to the build-year (2016) total traffic scenario.

WEST HAMRICK ROAD DWY & HAMRICK ROAD



EAST HAMRICK ROAD DWY & HAMRICK ROAD



FEDERAL WAY & NORTHWEST DWY

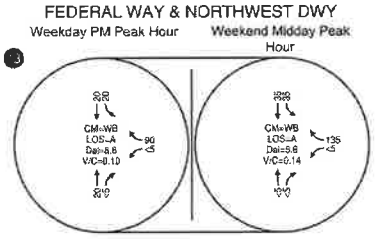
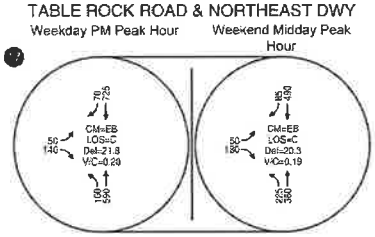


TABLE ROCK ROAD & NORTHEAST DWY



FEDERAL WAY & SOUTHWEST DWY

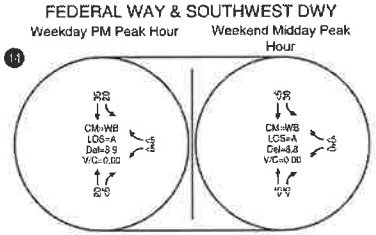
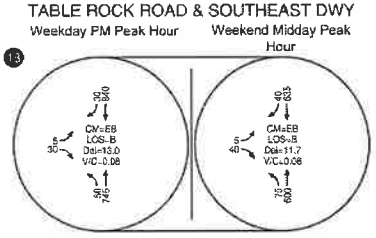


TABLE ROCK ROAD & SOUTHEAST DWY



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

FUTURE YEAR (2030) TOTAL TRAFFIC CONDITIONS AT SITE ACCESSES
WEEKDAY PM AND WEEKEND MIDDAY PEAK HOURS
CENTRAL POINT, OREGON

FIGURE 13

Table 15. Future Year (2030) Total Traffic Operations at Site Accesses

Site Access	Governing Agency Standard	Peak Period	Critical Movement	Build-Year (2016) Plus Project Traffic Operations		
				LOS[1]	Delay[2]	V/C Ratio[3]
13. Federal Way & Northwest Driveway	City of Central Point	PM Peak	Westbound	A	8.8	0.10
		MID Peak	Westbound	A	8.8	0.14
14. Federal Way & Southwest Driveway	City of Central Point	PM Peak	Westbound	A	8.9	0.01
		MID Peak	Westbound	A	8.8	0.01
15. West Hamrick Road Driveway & Hamrick Road	City of Central Point	PM Peak	Northbound Left	B	10.3	0.15
		MID Peak	Northbound Left	B	10.5	0.19
16. East Hamrick Road (Right-in/Right-out) & Hamrick Road	City of Central Point	PM Peak	Northbound Right	A	9.3	0.12
		MID Peak	Northbound Right	A	9.4	0.15
17. Table Rock Road & Northeast Driveway	Jackson County	PM Peak	Eastbound Left	C	21.8	0.20
		MID Peak	Eastbound Left	C	20.3	0.19
18. Table Rock Road & Southeast Driveway	Jackson County	PM Peak	Eastbound	B	13.0	0.08
		MID Peak	Eastbound	B	11.7	0.08

Notes: [1] The critical movement is reported for all unsignalized intersections based on the *2000 Highway Capacity Manual;* [2] LOS = Level of Service; [3] Delay is reported in seconds per vehicle; [4] V/C Ratio is defined as vehicle-to-capacity ratio which calculates the number of vehicles divided by the capacity of the roadway/intersection during the peak 15 minutes of the peak hour; and **Bold *and italics*** indicates an intersection operating below its jurisdiction's standards.

FUTURE YEAR (2030) MITIGATIONS

This section includes the mitigations to the intersections identified as not meeting operational standards in the year 2030. As outlined previously, there are two locations found to not meet standards in the year 2030 background conditions. The additional of site generated traffic did not trigger any additional locations to not meet standards in the year 2030 scenarios. The two locations found to not meet standards in the year 2030 background conditions are:

- Hamrick Road & East Pine
- Biddle Road & Airport Road

The mitigated result for each impacted intersection is outlined below. *Appendix "K" contains the future year (2030) mitigated traffic operation worksheets for the intersections outlined below.*

Hamrick Road & East Pine Street Mitigations

The intersection of Hamrick Road/East Pine Street experiences a heavy volume of vehicles making a southbound right-turn at the intersection, with a v/c ratio for that movement of above 1.0 during the p.m. peak hour of the future year (2030) background traffic conditions. There have no improvements identified beyond Project #216 stated in the City Central Point's transportation system plan. In order to mitigate the intersection, there are several options:

- The addition of a southbound right-turn lane would improve intersection operations to LOS C with an overall v/c ratio of 0.76 and average delay of 25.2 seconds per vehicle. The v/c ratio of the southbound right-turn movement would decrease from 1.27 to 0.70 with the addition of an additional turn lane.

- The addition of a second eastbound left-turn lane would also mitigate the intersection to a volume-to-capacity ratio of <0.95 (currently under review as one option in the Jackson County TSP)
- The conversion of the intersection to a roundabout would also mitigate the intersection to a volume-to-capacity ratio of <0.95 (currently under review as one option in the Jackson County TSP)

Biddle Road & Airport Road Mitigations

This intersection operates at LOS F during both the 2030 background and 2030 total traffic conditions. The project is not adding any traffic to the critical westbound approach. There are no knows plans for improvements at this location by the City of Medford but the need for mitigation is not triggered by the project.

PARKING ASSESSMENT

City of Central Point Municipal Code 17.64.040 states that all land uses shall comply with the number off-street parking requirements. These requirements for non-residential land uses are stated in Table 17.64.02B. Retail store was assumed as the general commercial use for the proposed Costco development. This use states that no more and no less than 1 parking space per 200 square-feet of net floor area (excluding storage and other non-sales or non-display areas) be provided.

Based on the proposed 160,000 square-foot warehouse, of which 134,000 is usable sales space, this would equate to a minimum and maximum requirement of 670 parking spaces for the Costco development. Municipal Code 17.64.040.B.2 states that the off-street requirements may be increased based on a parking demand analysis prepared by the applicant as part of the site plan and architectural review. The parking demand analysis shall demonstrate and documents justification for the proposed increase.

Parking Demand Analysis

The proposed site plan as illustrated in Figure 1 provides a total of 782 parking spaces which is 30% more spaces than the maximum allowed based on Central Point's Municipal Code. Based on the nature of Costco sales and operations, the proposed parking has been carefully considered and is proposed given known parking demand characteristics for Costco sites. Costco is a unique use that demonstrates the need for a particular amount of parking to accommodate typical and peak demands. In fact, one of the reasons for relocating the existing Medford Costco to Central Point is to build on a site that can provide sufficient parking supply.

Table 16 provides a summary of the documented parking supply and demand at existing Costco warehouses in Oregon (including the current Medford location).

Table 16. Typical Peak Parking Demand at Other Costco Warehouses in Oregon

Costco Site Location	Warehouse Size (sq-ft)	Parking Supply	Peak Period Parking Demand	Parking Demand per 1,000 sq-ft	Parking Supply to Maintain 90% Utilization at Peak	Minimum Recommend Parking Ratio
Clackamas, Oregon	137,000	693	670	4.89	744	5.43
Medford, Oregon	136,297	654	579	4.25	644	4.72
Aloha (Beaverton), Oregon	148,030	682	528	3.57	587	3.96
Average	**140,442**	**676**	**592**	**4.24**	**658**	**4.71**

As shown in Table 16, these three other Costco locations demonstrate a typical peak parking demand of 4.24 spaces/1,000 sq-ft. Guidelines from the Institute of Transportation Engineer's Parking Generation, 4th Edition (Reference 11) recommend that users perceive a parking lot to be "full" once utilization reaches 90% of capacity, noting that increases in illegal parking and repeating circulation occur beyond this level. Given this guidance, our recommendation is to provide sufficient parking to maintain a utilization of below 90% during the typical peak periods. Table 16 shows that, based on data from other Costco developments, the parking ratio required to maintain 90% utilization during the peak or less is a minimum of 4.71 spaces/1,000 sq-ft.

Applying the demonstrated minimum parking supply of 4.71 spaces/1,000 sq-ft to the proposed Central Point Costco development equates to a minimum recommended parking supply as summarized in Table 17.

Table 17. Central Point Costco Recommended Parking Supply

Costco Site Location	Warehouse Size (sq-ft)	Parking Supply Proposed	Minimum Recommend Parking Spaces to Maintain 90% Utilization During Peak Hour
Central Point, Oregon	160,000	782	753

The table shows that a minimum of 753 parking spaces should be supplied in order to provide sufficient capacity for the likely parking demand on site. This indicates that the proposed parking supply of 782 is slightly higher than this minimum amount but within a reasonable range and will provide an appropriate parking supply to accommodate typical peak periods as well as additional spaces for seasonal peaks as well.

In addition to parking space totals, accessible parking requirements are presented in Table 17.64.03 of the City's Municipal Code. For land uses providing a total number of parking spaces between 501 and 1,000, which applies the proposed Central Point Costco site, 2% of total parking provided is required to be accessible. Costco has planned to include approximately 2.2% or 17 of its total parking spaces to be accessible parking, based on total parking spaces equaling 782. The site plan shows that this requirement is being met.

Section 5
Conclusions & Findings

CONCLUSIONS & FINDINGS

The analysis and evaluation completed for the Central Point Costco development resulted in the following conclusions and findings:

Project Description

- Costco Wholesale is proposing to develop a new warehouse and fuel station located in the southwest quadrant of the Table Rock Road/Hamrick Road intersection in Central Point, Oregon.
    - The development plan includes a 160,000 square-foot Costco warehouse and a 24 fueling position Costco Gasoline fuel station. This new Central Point Costco will replace the existing Medford Costco located at 3639 Crater Lake Hwy in Medford, Oregon.
- The parcels of land that in which the proposed Costco would occupy are zoned as M-1 (Industrial) which allows the development of the Costco warehouse and fuel station with a conditional use permit (no land use or zoning changes are required).
- In order to best evaluate the anticipated transportation characteristics of the proposed Central Point Costco development, it was agreed that the Costco-specific data be used to most accurately represent the anticipated traffic characteristics of the unique development type.
- The proposed Costco development is estimated to generate a total of approximately 10,670 net new trips on a daily basis, 900 net new trip ends during the weekday p.m. peak hour and approximately 1,365 net new trip ends during the weekend midday peak hour.
- The distribution pattern for site generated trips was developed using zip code data from current memberships at the existing Costco warehouse located on OR 62 (Crater Lake Highway) in Medford, Oregon, as well as from the existing traffic patterns and major trip origins and destinations within the study area and the regional travel demand model.

Existing Conditions

- The study evaluated 12 off site intersections in addition to site access points.
- The study evaluated two time periods for each evaluation scenario: weekday p.m. peak hour and weekend midday peak hour.
- Based on recent traffic counts collected in May and July 2015, all of the study intersections were found to operate at acceptable operating standards during the existing weekday p.m. and weekend midday peak hours except for the Table Rock Road/Airport Road intersection during weekday p.m. peak.

- The Table Rock Road/Airport Road intersection is stop controlled in the westbound direction. Under existing conditions in the weekday p.m. peak hour, there is high delay for the critical movement (westbound left-turn) resulting in LOS F.

- Crash data the most recent five years (2009 – 2013) at all of the study intersections was reviewed to identify historical safety trends.
  - Turning movement and rear-end crashes were the most common crash type at the intersections, accounting for approximately 82% of all crashes.
  - There were no fatality crashes.
  - Four study intersections were found to be in the 90th percentile and in compliance ODOT's SPIS: I-5 SB Ramps/E Pine Street, Table Rock Road/W Vilas Road, OR 62 (Crater Lake Highway)/W Vilas Road, and Table Rock Road/OR 99.

Build Year 2016 Analysis

- The transportation impact analysis evaluated two different future year scenarios: year 2016, the assumed build out year of the development, and year 2030 a long-term planning year.
- The 2016 build-year background traffic analysis (without inclusion of the project traffic) found that all of the study intersections are forecast to operate at acceptable levels of service and volume-to-capacity ratios during the weekday p.m. and weekend midday peak hours except for the Table Rock Road/Airport Road intersection during weekday p.m. peak hour.
  - As under existing conditions, during the weekday p.m. peak hour there is high delay for the critical movement (westbound left-turn) resulting in LOS F. In addition, the critical movement is also operating with a volume-to-capacity ratio of greater than 0.95 in the build year (2016) background conditions (with no traffic from the proposed Costco development).
- The build-year (2016) total traffic analysis (with inclusion of the project traffic) found that all study intersections will continue to operate at acceptable levels of service during the weekday p.m. and weekend midday peak hours with the exception of:
  - I-5 NB Ramps & East Pine Street exceeds ODOT standards (lane group v/c ratio ≤ 0.85) with the northbound right-turn lane group's v/c ratio of 0.87 during the weekday p.m. peak hour. The need for additional capacity for this northbound right-turn movement has been previously identified in the Final Draft IAMP: Exit 33 study which calls for the widening of the I-5 northbound off-ramp to add a second right-turn lane at the northbound approach to East Pine Street. ODOT and the City of Central Point are currently in discussions to determine Costco's appropriate proportional fair share contribution to this improvement as mitigation for the site generated trip impacts.

- Table Rock Road & Airport Road, as under existing and 2016 background conditions, continues to operate at a LOS F during the weekend p.m. peak hour. Improvements to the Table Rock Road/Airport Road intersection are scheduled in year 2017 as part of Table Rock Road widening and a signal will be added to the intersection. This intersection is an existing deficiency; however, given that this improvement is not currently scheduled until 2017, Jackson County and the City of Central Point are currently in discussions to determine an appropriate contribution to this improvement as mitigation in the interim for the Costco project.
- Biddle Road & Airport Road experiences a higher delay for the critical movement of the westbound approach, dropping from LOS C to E during the weekday p.m. peak period due to site-generated traffic. Even with the site generated traffic, the intersection is operating at a very low volume-to-capacity ratio of 0.45 in the weekday p.m. peak hour and 0.14 in the weekday midday peak hour.

Site Access Analysis

- In the build year 2016 scenario, all site access intersections are projected to operate at acceptable levels-of-service and volume-to-capacity ratios during both the weekday p.m. and weekend midday peak hours, with the exception of the Table Rock Road/Northeast access. Note this is assuming this access is a full movement access and no improvements to Table Rock Road are completed. Under this scenario, the critical eastbound left-turn movements at the Table Rock Road/Northeast access is projected to operate at LOS F during the weekday p.m. peak hour, however, it is still projected to operate well under capacity and meet the County's operational standard.
- Even though the build year (2016) analysis showed that all of the site accesses will be able to operate as proposed upon site opening before the Table Rock Road improvements are constructed, an evaluation of access alternatives for Table Rock Road was also completed to compare how temporary improvements would impact the access operations in the interim.
- The access scenarios compared were:
  - Build Year (2016) Total Traffic Conditions (i.e., Full Access to Table Rock Road) with No Table Rock Road Improvements (as summarized above)
  - Build-Year (2016) Total Traffic Conditions with Temporary Table Rock Road Improvements (i.e., temporary widening of Table Rock Road along the site frontage to provide a center left-turn lane until the ultimate widening project is constructed)
  - Build-Year (2016) Total Traffic Conditions with Restricted Right-In/Right-Out Site Accesses (restrict Table Rock Road access to right-in/right-out only until the ultimate widening project is constructed)
- The access alternatives evaluation found that:

- Assuming full movement access and no improvements to Table Rock Road, the eastbound left-turns at the northeast access to Table Rock will experience relatively long delay (resulting in LOS F) but the access will still operate well under capacity and meet the County's operational standard during the critical time period.
- Providing temporary widening along the site frontage to provide a temporary center turn lane will allow all Table Rock Road accesses to operate acceptably as full movements until the ultimate Table Rock Road widening improvements are constructed in 2017.
- Restricting the site's Table Rock Road accesses to right-in/right-out only will allow those accesses to operate at acceptable levels of service and volume-to-capacity ratios. However, it will add additional left-turn movements at the Table Rock Road/Hamrick Road intersection thus resulting in over-capacity and LOS F conditions at that location. This impact could be reduced by adding temporary widening around the intersection to provide a northbound left-turn lane as well as a center refuge area north of Hamrick to allow vehicles turning left from Hamrick to make a two stage gap acceptance maneuver for the left-turn.
- Once the ultimate Table Rock Road widening improvement is constructed in 2017, all site accesses to Table Rock Road will operate a good levels of service (LOS C or better) and volume-to-capacity ratios (v/c=0.21 or better) during the peak hour periods assuming they are full access movements.

- From a safety perspective, a predictive safety analysis found that:
  - Providing full movement accesses to Table Rock Road in the near-term with its current two lane configuration shows the probability for 1.2 crashes per year to occur combined at the two access points.
  - If these were restricted to right-in/right-out only driveways, the safety prediction lowers to a probability of 0.83 crashes per year (about a 30% decrease in probability).
  - If temporary widening was provided in the interim for a two-way left-turn lane along the site's frontage, the probability would lower to 0.76 crashes per year (about a 30% decrease in probability).
  - The safety predictive analysis also shows that once the ultimate Table Rock Road widening improvements are in place the safety prediction lowers as well to 0.77 crashes per year even with maintaining full movement accesses at both locations.

Future Year 2030 Analysis

- The future year (2030) background conditions analysis (without the project traffic) found that all study intersections will continue to operate at acceptable levels of service and volume-to-capacity ratios during the weekday p.m. and weekend midday peak hours with the following exceptions:
    - Hamrick Road & East Pine Street operates with a v/c ratio of >1.0 during the weekday p.m. peak hour
    - Biddle Road & Airport Road (as under the build year conditions) has a critical movement which operates at LOS F during the weekday p.m. peak hour although the movement is still operating under capacity with a v/c ratio of 0.55
- The future year (2030) total traffic analysis (with the project traffic) found that the site-generated trips did not impact any study intersections not previously identified in the 2030 background scenario.
- All of the proposed site accesses operate at acceptable levels of service during the weekday p.m. and weekend midday peak hours under the future year 2030 total traffic scenario. Because of the planned roadway improvements along Table Rock Road, there is a significant benefit to the traffic operations at the site accesses along Table Rock Road when compared to the build-year (2016) total traffic scenario.

Parking Assessment

- City of Central Point Municipal Code directs that a parking supply of 670 parking spaces be provided for the Costco development (assuming retail land use).
- The project is proposing to provide a total of 782 parking spaces on site.
- As part of this report, a parking demand analysis was completed to demonstrate and documents justification for the proposed increase in parking supply.
- Actual parking supply and demand data from other Costco sites in Oregon indicates that a minimum parking ratio of 4.71 spaces/1,000 sq-ft be provided in order to supply enough parking to meet Costco specific demands.
- Applying the demonstrated minimum parking supply of 4.71 spaces/1,000 sq-ft to the proposed Central Point Costco development equates to a minimum recommended parking supply of 753 spaces.
- This indicates that the proposed parking supply of 782 is slightly higher than this minimum amount but within a reasonable range and will provide an appropriate parking supply to accommodate typical peak periods as well as additional spaces for seasonal peaks as well.

Section 6
References

REFERENCES

1. City of Central Point. *Central Point Comprehensive Land Use Plan 2008-2030*, Central Point, Oregon, May 2013.
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9. Oregon Department of Transportation. *OR 62: I-5 to Dutton Road,* Oregon department of Transportation, http://www.oregon.gov/ODOT/HWY/REGION3/pages/hwy62_index.aspx, April 2013.
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11. Institute of Transportation Engineers. *Parking Generation, 4th Edition,* Institute of Transportation Engineers, Washington, D.C., 2010.

Appendix A Existing Count Data

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Table Rock Rd -- Airport Rd
CITY/STATE: Central Point, OR

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DATE: Thu, May 14 2015

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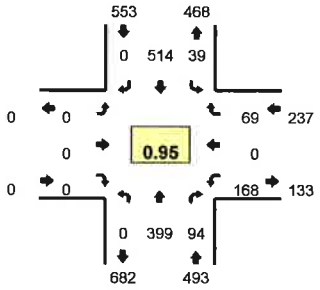
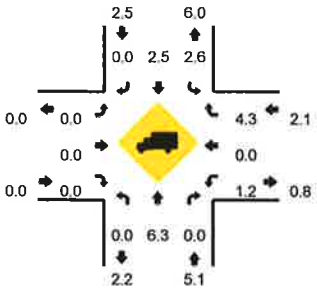
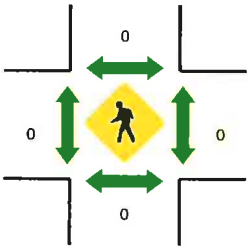
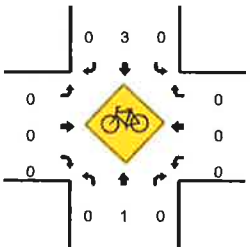
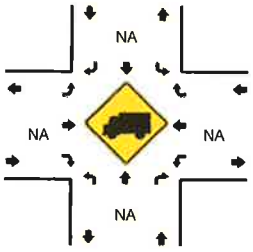
Peak 15-Min: 4:15 PM -- 4:30 PM

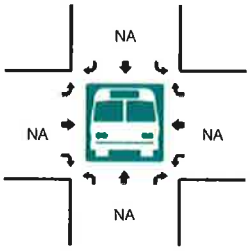












5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Airport Rd (Eastbound)				Airport Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	21	4	0	3	44	0	0	0	0	0	0	15	0	2	0	89	
4:05 PM	0	26	8	0	2	49	0	0	0	0	0	0	7	0	4	0	96	
4:10 PM	0	32	7	0	2	44	0	0	0	0	0	0	12	0	4	0	101	
4:15 PM	0	29	10	0	7	57	0	0	0	0	0	0	15	0	5	0	123	
4:20 PM	0	34	16	0	6	40	0	0	0	0	0	0	15	0	4	0	115	
4:25 PM	0	36	5	0	2	45	0	0	0	0	0	0	7	0	5	0	100	
4:30 PM	0	31	6	0	7	39	0	0	0	0	0	0	13	0	8	0	104	
4:35 PM	0	36	8	0	2	40	0	0	0	0	0	0	11	0	7	0	104	
4:40 PM	0	31	9	0	2	51	0	0	0	0	0	0	14	0	3	0	110	
4:45 PM	0	37	8	0	2	51	0	0	0	0	0	0	9	0	4	0	111	
4:50 PM	0	30	10	0	5	38	0	0	0	0	0	0	16	0	5	0	104	
4:55 PM	0	30	5	0	1	46	0	0	0	0	0	0	12	0	2	0	96	1253
5:00 PM	0	28	4	0	2	29	0	0	0	0	0	0	18	0	12	0	93	1257
5:05 PM	0	35	7	0	2	43	0	0	0	0	0	0	16	0	9	0	112	1273
5:10 PM	0	42	6	0	1	35	0	0	0	0	0	0	22	0	5	0	111	1283
5:15 PM	0	34	6	0	2	43	0	0	0	0	0	0	19	0	7	0	111	1271
5:20 PM	0	34	5	0	3	42	0	0	0	0	0	0	19	0	3	0	106	1262
5:25 PM	0	34	3	0	2	36	0	0	0	0	0	0	15	0	2	0	92	1254
5:30 PM	0	33	10	0	2	32	0	0	0	0	0	0	16	0	0	0	93	1243
5:35 PM	0	29	6	0	0	32	0	0	0	0	0	0	15	0	1	0	83	1222
5:40 PM	0	29	11	0	1	30	0	0	0	0	0	0	8	0	1	0	80	1192
5:45 PM	0	26	8	0	2	43	0	0	0	0	0	0	18	0	1	0	98	1179
5:50 PM	0	20	11	0	2	27	0	0	0	0	0	0	14	0	3	0	77	1152
5:55 PM	0	43	4	0	1	19	0	0	0	0	0	0	7	0	3	0	77	1133

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	396	124	0	60	568	0	0	0	0	0	0	148	0	56	0	1352
Heavy Trucks	0	36	0		0	16	0		0	0	0		4	0	0		56
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

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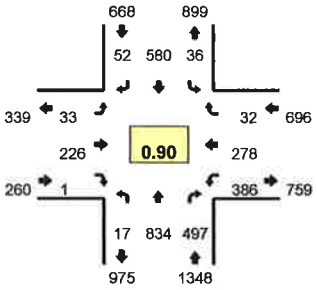
CITY/STATE: Medford, OR | **DATE:** Thu, Jul 23 2015



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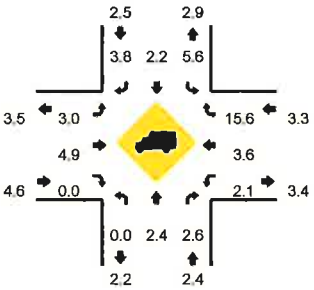

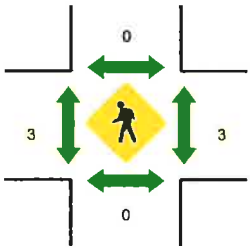

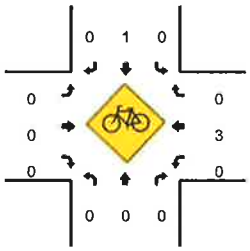

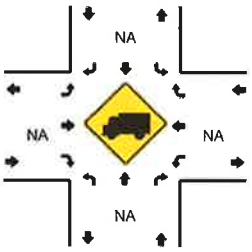

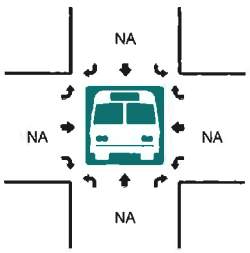

5-Min Count Period Beginning At	OR 99/N Pacific Hwy (Northbound)				OR 99/N Pacific Hwy (Southbound)				Table Rock Rd (Eastbound)				Table Rock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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4:10 PM	1	65	32	1	7	59	7	0	6	21	0	0	31	29	5	0	264	
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4:20 PM	2	71	28	0	1	40	5	0	4	20	1	0	33	21	4	0	230	
4:25 PM	0	67	40	1	1	35	3	0	0	5	0	0	35	16	3	0	206	
4:30 PM	2	64	34	1	3	44	4	0	1	14	0	0	33	32	2	0	234	
4:35 PM	0	72	38	0	3	62	5	0	3	24	0	0	16	10	3	0	236	
4:40 PM	0	69	38	1	4	38	6	0	3	20	0	0	46	40	5	0	270	
4:45 PM	1	75	32	0	1	54	6	0	2	16	0	0	38	12	3	0	240	
4:50 PM	0	62	40	0	0	47	5	0	1	24	0	0	28	30	1	0	238	
4:55 PM	1	62	40	0	2	62	3	0	3	17	1	0	24	24	2	0	241	2931
5:00 PM	2	46	33	0	2	34	4	0	1	17	0	0	37	26	3	0	205	2877
5:05 PM	1	59	46	2	6	50	4	0	1	20	0	0	33	19	3	0	244	2863
5:10 PM	0	87	53	0	4	61	1	0	5	16	0	0	26	23	4	0	280	2879
5:15 PM	1	77	44	0	2	36	2	0	6	16	0	0	45	38	2	0	269	2893
5:20 PM	0	83	46	3	4	48	7	0	1	20	0	0	37	20	3	0	272	2935
5:25 PM	3	60	43	0	6	40	3	0	5	25	0	0	19	23	1	0	228	2957
5:30 PM	0	82	44	2	2	48	6	0	2	11	0	0	37	13	2	0	249	2972
5:35 PM	1	57	42	1	3	34	6	0	5	27	0	0	23	24	3	0	226	2962
5:40 PM	2	51	36	2	4	49	3	0	3	16	0	0	30	16	4	0	216	2908
5:45 PM	3	51	30	2	5	39	3	0	3	11	0	0	20	20	2	0	189	2857
5:50 PM	0	71	37	1	5	51	5	0	3	12	1	0	23	18	3	0	230	2849
5:55 PM	2	57	31	0	2	36	3	0	4	15	0	0	24	21	0	0	195	2803
6:00 PM	2	58	41	1	1	43	3	0	7	17	0	0	30	15	0	0	218	2816

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	988	572	12	40	580	40	0	48	208	0	0	432	324	36	0	3284
Heavy Trucks	0	16	12		4	8	0		4	16	0		8	16	4		88
Pedestrians		0				0				12				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 7/30/2015 2:53 PM

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

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

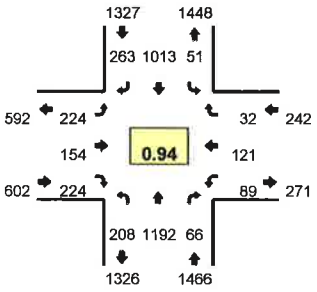
LOCATION: OR 62/Crater Lake Hwy -- E Vilas Rd

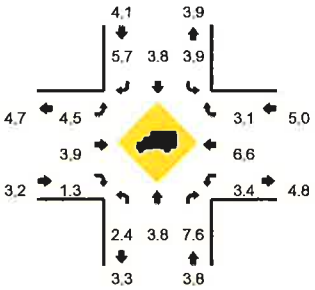
CITY/STATE: Central Point, OR

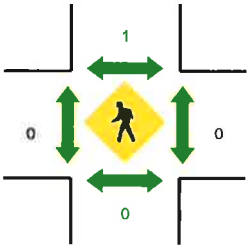
QC JOB #: 13547202

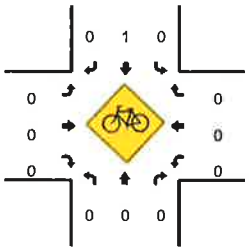
DATE: Thu, Jul 23 2015

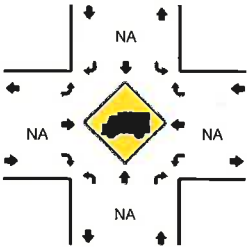
Peak-Hour: 4:25 PM -- 5:25 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

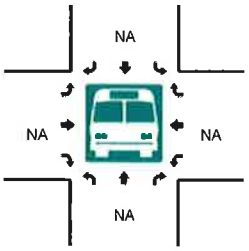












5-Min Count Period Beginning At	OR 62/Crater Lake Hwy (Northbound)				OR 62/Crater Lake Hwy (Southbound)				E Vilas Rd (Eastbound)				E Vilas Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	11	108	8	0	2	83	23	0	17	7	19	0	5	10	3	0	296	
4:05 PM	13	87	10	0	3	85	11	0	23	13	18	0	6	11	0	0	280	
4:10 PM	18	97	5	0	7	90	18	0	25	11	14	0	4	19	1	0	309	
4:15 PM	12	89	7	0	5	81	20	0	25	7	20	0	2	15	2	0	285	
4:20 PM	14	111	5	0	5	90	22	0	16	10	7	0	3	6	4	0	293	
4:25 PM	21	91	7	0	4	89	19	0	20	10	17	0	4	12	1	0	295	
4:30 PM	13	106	9	0	4	75	20	0	26	8	24	0	11	8	2	0	306	
4:35 PM	13	84	5	0	4	74	17	0	14	14	19	0	11	9	1	0	265	
4:40 PM	12	91	6	0	8	95	25	0	8	8	15	0	6	9	3	0	286	
4:45 PM	29	95	2	0	8	86	28	0	10	24	16	0	5	7	1	0	311	
4:50 PM	16	107	9	0	3	105	21	0	21	25	23	0	8	6	3	0	347	
4:55 PM	17	91	5	0	2	87	24	0	20	9	21	0	10	11	2	0	299	3572
5:00 PM	12	77	5	0	3	65	25	0	30	13	16	0	8	8	5	0	267	3543
5:05 PM	15	92	4	0	7	74	24	0	17	13	16	0	11	14	3	0	290	3553
5:10 PM	24	97	3	0	4	90	19	0	13	5	22	0	6	18	3	0	304	3548
5:15 PM	14	123	5	0	2	93	20	0	20	18	13	0	4	10	4	0	326	3589
5:20 PM	22	138	6	0	2	80	21	0	25	7	22	0	5	9	4	0	341	3637
5:25 PM	16	108	3	0	1	65	18	0	22	17	17	0	3	9	2	0	281	3623
5:30 PM	11	83	5	0	2	62	18	0	16	3	19	0	6	15	2	0	242	3559
5:35 PM	17	97	8	0	6	69	17	0	19	12	15	0	3	9	0	0	272	3566
5:40 PM	25	102	6	0	0	64	20	0	18	8	12	0	6	12	1	0	274	3554
5:45 PM	11	95	6	0	6	86	29	0	12	2	13	0	4	7	1	0	272	3515
5:50 PM	11	76	5	0	3	65	12	0	18	8	18	0	4	4	3	0	227	3395
5:55 PM	13	80	6	0	2	57	24	0	6	6	9	0	4	7	1	0	215	3311

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	240	1432	56	0	32	1052	240	0	232	120	228	0	60	148	44	0	3884
Heavy Trucks	8	32	0		0	20	16		20	0	8		0	12	4		120
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 7/30/2015 2:53 PM

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

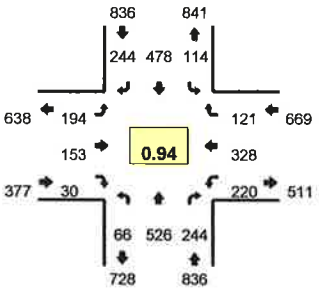
Type of peak hour being reported: Intersection Peak

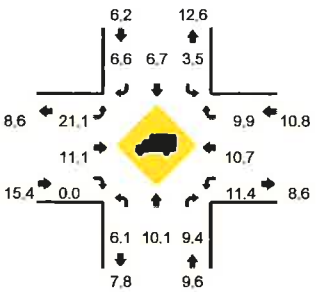
Method for determining peak hour: Total Entering Volume

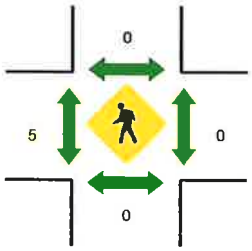
LOCATION: Table Rock Rd -- Vilas Rd
CITY/STATE: Central Point, OR

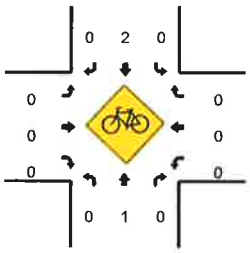
QC JOB #: 13406603
DATE: Thu, May 28 2015

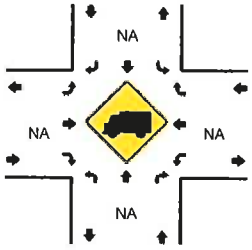
Peak-Hour: 4:10 PM -- 5:10 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

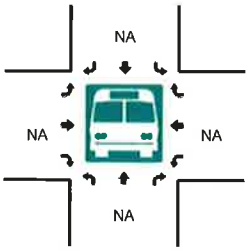












5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Vilas Rd (Eastbound)				Vilas Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	9	48	16	0	11	29	23	0	18	10	5	0	15	35	7	0	226	
4:05 PM	4	28	17	0	10	42	23	0	12	12	5	0	21	24	14	0	212	
4:10 PM	12	49	21	0	11	53	27	0	14	12	3	0	18	26	8	0	254	
4:15 PM	2	37	20	0	13	46	20	0	32	15	2	0	20	14	10	0	231	
4:20 PM	7	39	23	0	1	24	17	0	22	19	0	0	16	29	12	0	209	
4:25 PM	4	47	19	0	10	33	17	0	10	6	2	0	25	25	9	0	207	
4:30 PM	3	41	15	0	4	33	15	0	15	17	5	0	25	35	19	0	227	
4:35 PM	9	50	25	0	14	46	23	0	12	10	2	0	15	30	9	0	245	
4:40 PM	6	43	20	0	8	41	20	0	22	20	1	0	26	29	3	0	239	
4:45 PM	9	39	22	0	12	45	21	0	18	13	4	0	12	28	18	0	241	
4:50 PM	4	56	11	0	9	44	18	0	15	8	1	0	19	20	10	0	215	
4:55 PM	5	23	18	0	6	39	18	0	14	15	2	0	9	29	9	0	187	2693
5:00 PM	3	44	26	0	14	34	24	0	13	10	3	0	16	26	7	0	220	2687
5:05 PM	2	58	24	0	12	40	24	0	7	8	5	0	19	37	7	0	243	2718
5:10 PM	8	51	24	0	15	29	24	0	13	11	4	0	24	30	5	0	238	2702
5:15 PM	5	43	17	0	6	28	19	0	25	16	6	0	21	32	9	0	227	2698
5:20 PM	11	45	20	0	8	32	14	0	16	11	0	0	24	30	11	0	222	2711
5:25 PM	13	32	15	0	6	32	16	0	20	15	3	0	13	24	6	0	195	2699
5:30 PM	4	40	21	0	6	30	13	0	16	16	0	0	7	32	14	0	199	2671
5:35 PM	4	29	17	0	6	21	26	0	15	10	1	0	19	26	7	0	181	2607
5:40 PM	4	43	18	0	7	41	20	0	13	9	4	0	10	20	8	0	197	2565
5:45 PM	3	26	10	0	3	21	11	0	17	15	2	0	20	39	9	0	176	2500
5:50 PM	4	29	11	0	4	20	12	0	15	15	1	0	5	10	5	0	131	2416
5:55 PM	5	19	13	0	11	19	13	0	10	12	4	0	12	17	7	0	142	2371

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	96	528	268	0	136	528	256	0	208	172	28	0	212	348	120	0	2900
Heavy Trucks	12	44	16		0	44	8		32	12	0		28	40	20		256
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 6/4/2015 11:02 AM

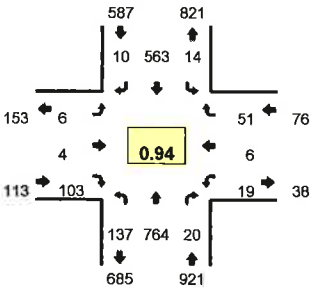
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

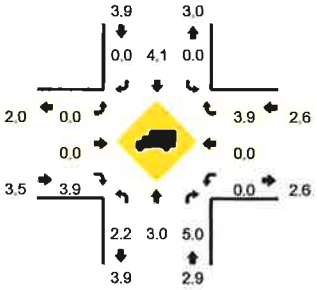
Method for determining peak hour: Total Entering Volume

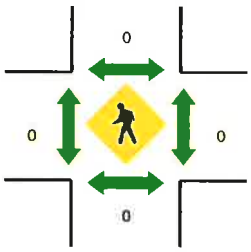
LOCATION: Biddle Rd -- Airport Rd (unsignalized)
CITY/STATE: Central Point, OR

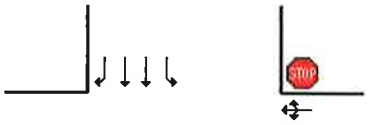
QC JOB #: 13406601
DATE: Thu, May 28 2015

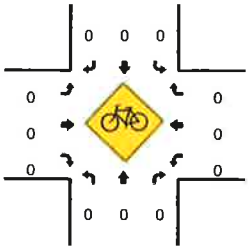


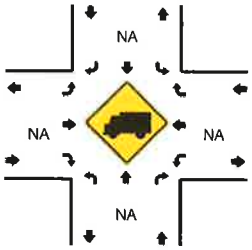
Peak-Hour: 4:10 PM -- 5:10 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

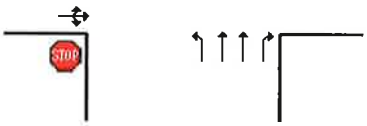


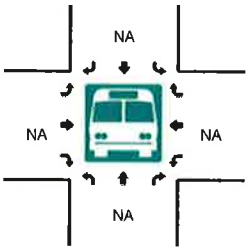












5-Min Count Period Beginning At	Biddle Rd (Northbound)				Biddle Rd (Southbound)				Airport Rd (unsignalized) (Eastbound)				Airport Rd (unsignalized) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	9	57	0	0	0	49	1	0	0	0	12	0	4	1	2	0	135	
4:05 PM	11	61	1	0	0	45	0	0	0	1	12	0	2	0	3	0	136	
4:10 PM	8	72	4	0	4	53	0	0	0	1	13	0	0	1	4	0	160	
4:15 PM	12	64	2	0	0	46	1	0	1	0	10	0	0	2	2	0	140	
4:20 PM	11	62	0	0	0	46	2	0	0	0	9	0	0	0	8	0	138	
4:25 PM	9	50	2	0	1	53	2	0	1	0	11	0	2	0	5	0	136	
4:30 PM	13	66	2	0	0	49	2	0	0	1	10	0	2	0	1	0	146	
4:35 PM	9	56	1	0	2	48	1	0	1	1	4	0	0	0	1	0	124	
4:40 PM	24	77	3	0	2	47	1	0	1	0	11	0	3	0	5	0	174	
4:45 PM	10	54	0	0	1	45	1	0	0	0	5	0	2	1	0	0	119	
4:50 PM	5	43	2	0	0	49	0	0	0	0	3	0	3	1	4	0	110	
4:55 PM	12	65	2	0	0	50	0	0	0	1	7	0	2	0	8	0	147	1665
5:00 PM	13	72	1	0	0	36	0	0	0	0	7	0	3	1	4	0	137	1667
5:05 PM	11	83	1	0	4	41	0	0	2	0	13	0	2	0	9	0	166	1697
5:10 PM	9	80	3	0	0	50	0	0	0	0	6	0	0	0	5	0	153	1690
5:15 PM	12	67	3	0	4	45	0	0	0	0	7	0	2	0	3	0	143	1693
5:20 PM	16	74	0	0	2	31	1	0	2	1	10	0	1	0	2	0	140	1695
5:25 PM	18	70	1	0	1	32	1	0	0	0	6	0	2	0	1	0	132	1691
5:30 PM	12	58	1	0	0	46	1	0	0	1	4	0	1	1	0	0	125	1670
5:35 PM	9	42	0	0	1	34	2	0	0	2	7	0	0	2	1	0	100	1646
5:40 PM	12	73	5	0	0	32	0	0	0	0	5	0	2	2	2	0	133	1605
5:45 PM	11	48	4	0	2	43	2	0	0	1	7	0	4	0	4	0	126	1612
5:50 PM	7	34	3	0	1	24	0	0	1	2	10	0	1	1	4	0	88	1590
5:55 PM	7	38	4	0	1	35	0	0	0	0	9	0	4	0	1	0	99	1542

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	144	880	16	0	16	508	0	0	8	4	108	0	28	4	84	0	1800
Heavy Trucks	4	20	4		0	24	0		0	0	0		0	0	4		56
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 6/4/2015 11:02 AM

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

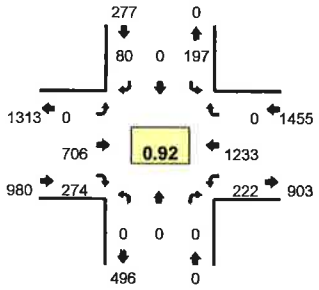
Type of peak hour being reported: Intersection Peak

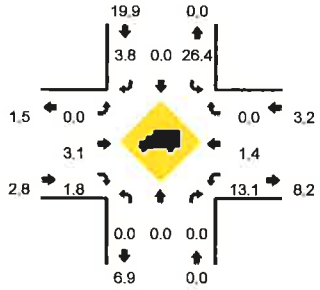
Method for determining peak hour: Total Entering Volume

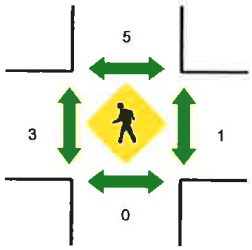
LOCATION: I-5 SB Ramps -- E Pine St
CITY/STATE: Central Point, OR

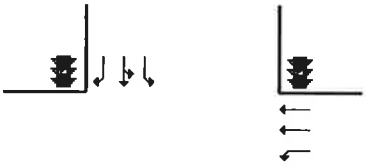
QC JOB #: 13388716
DATE: Thu, May 14 2015

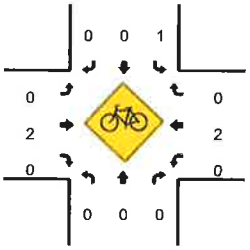
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

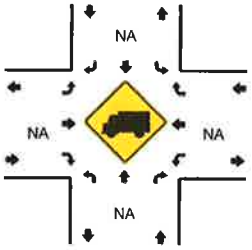


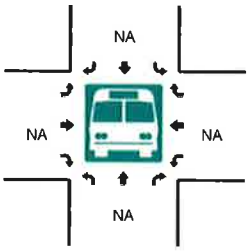












5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				E Pine St (Eastbound)				E Pine St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:10 PM	0	0	0	0	13	0	4	0	0	52	18	0	23	103	0	0	213	
4:15 PM	0	0	0	0	19	0	5	0	0	77	33	0	19	88	0	0	241	
4:20 PM	0	0	0	0	9	0	5	0	0	72	30	0	23	97	0	0	236	
4:25 PM	0	0	0	0	17	0	10	0	0	62	14	0	10	85	0	0	198	
4:30 PM	0	0	0	0	13	0	9	0	0	42	30	0	19	82	0	0	195	
4:35 PM	0	0	0	0	26	0	8	0	0	52	25	0	12	98	0	0	221	
4:40 PM	0	0	0	0	16	0	5	0	0	57	28	0	21	105	0	0	232	
4:45 PM	0	0	0	0	10	0	5	0	0	66	25	0	13	97	0	0	216	
4:50 PM	0	0	0	0	14	0	2	0	0	60	26	0	15	104	0	0	221	
4:55 PM	0	0	0	0	22	0	6	0	0	75	11	0	14	87	0	0	215	2612
5:00 PM	0	0	0	0	24	0	10	0	0	54	23	0	23	87	0	0	221	2631
5:05 PM	0	0	0	0	18	0	7	0	0	61	34	0	17	92	0	0	229	2638
5:10 PM	0	0	0	0	18	0	8	0	0	46	13	0	24	108	0	0	217	2642
5:15 PM	0	0	0	0	17	0	9	0	0	54	23	0	26	143	0	0	272	2673
5:20 PM	0	0	0	0	14	0	7	0	0	65	23	0	19	109	0	0	237	2674
5:25 PM	0	0	0	0	14	0	4	0	0	51	19	0	17	124	0	0	229	2705
5:30 PM	0	0	0	0	13	0	4	0	0	51	24	0	16	87	0	0	195	2705
5:35 PM	0	0	0	0	17	0	13	0	0	66	25	0	17	90	0	0	228	2712
5:40 PM	0	0	0	0	9	1	3	0	0	52	22	0	14	86	0	0	187	2667
5:45 PM	0	0	0	0	12	0	6	0	0	44	16	0	24	100	0	0	202	2653
5:50 PM	0	0	0	0	11	1	2	0	0	45	11	0	16	83	0	0	169	2601
5:55 PM	0	0	0	0	8	0	4	0	0	55	20	0	11	80	0	0	178	2564
6:00 PM	0	0	0	0	15	0	8	0	0	37	12	0	14	73	0	0	159	2502
6:05 PM	0	0	0	0	22	0	8	0	0	49	19	0	13	51	0	0	162	2435

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	180	0	80	0	0	680	260	0	248	1504	0	0	2952
Heavy Trucks	0	0	0		44	0	4		0	24	12		36	12	0		132
Pedestrians		0				12				0				0			12
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

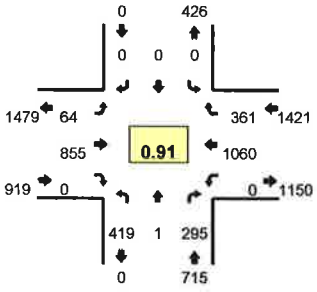
Type of peak hour being reported: Intersection Peak

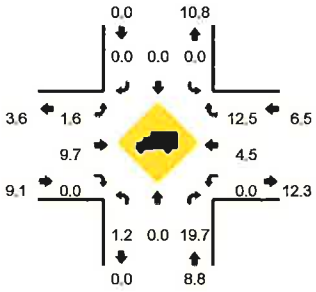
Method for determining peak hour: Total Entering Volume

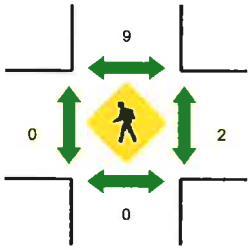
LOCATION: I-5 NB Ramps -- E Pine St
CITY/STATE: Central Point, OR

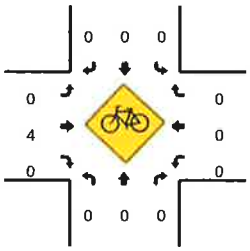
QC JOB #: 13388714
DATE: Thu, May 14 2015

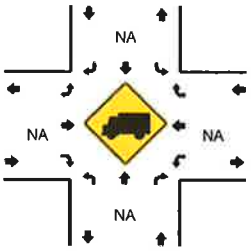
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

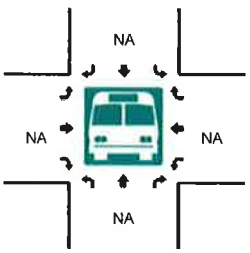












5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				E Pine St (Eastbound)				E Pine St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:05 PM	24	0	24	0	0	0	0	0	10	76	0	0	0	80	16	0	230	
4:10 PM	31	0	22	0	0	0	0	0	5	68	0	0	0	89	22	0	237	
4:15 PM	31	0	25	0	0	0	0	0	8	82	0	0	0	77	21	0	244	
4:20 PM	28	0	21	0	0	0	0	0	6	78	0	0	0	89	25	0	247	
4:25 PM	21	0	16	0	0	0	0	0	5	80	0	0	0	86	27	0	235	
4:30 PM	24	0	28	0	0	0	0	0	3	61	0	0	0	77	19	0	212	
4:35 PM	30	0	28	0	0	0	0	0	2	77	0	0	0	93	19	0	249	
4:40 PM	38	0	29	0	0	0	0	0	6	68	0	0	0	72	29	0	242	
4:45 PM	37	0	23	0	0	0	0	0	9	69	0	0	0	75	29	0	242	
4:50 PM	33	0	24	0	0	0	0	0	4	79	0	0	0	77	24	0	241	
4:55 PM	19	0	24	0	0	0	0	0	5	82	0	0	0	97	21	0	248	2860
5:00 PM	21	0	18	0	0	0	0	0	4	81	0	0	0	87	27	0	238	2865
5:05 PM	29	1	32	0	0	0	0	0	5	81	0	0	0	87	39	0	274	2909
5:10 PM	40	0	19	0	0	0	0	0	5	62	0	0	0	96	40	0	262	2934
5:15 PM	63	0	30	0	0	0	0	0	5	58	0	0	0	98	39	0	293	2983
5:20 PM	44	0	29	0	0	0	0	0	9	72	0	0	0	92	36	0	282	3018
5:25 PM	36	0	19	0	0	0	0	0	3	64	0	0	0	103	28	0	253	3036
5:30 PM	29	0	20	0	0	0	0	0	7	62	0	0	0	83	30	0	231	3055
5:35 PM	23	0	27	0	0	0	0	0	6	76	0	0	0	87	30	0	249	3055
5:40 PM	24	0	29	0	0	0	0	0	7	48	0	0	0	74	23	0	205	3018
5:45 PM	44	0	27	0	0	0	0	0	6	52	0	0	0	74	24	0	227	3003
5:50 PM	31	1	12	0	0	0	0	0	5	57	0	0	0	67	19	0	192	2954
5:55 PM	29	0	13	0	0	0	0	0	2	53	0	0	0	69	35	0	201	2907
6:00 PM	29	0	20	0	0	0	0	0	2	55	0	0	0	57	22	0	185	2854

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	588	0	312	0	0	0	0	0	76	768	0	0	0	1144	460	0	3348
Heavy Trucks	4	0	52		0	0	0		0	96	0		0	52	48		252
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	2	0		0	0	0		2
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

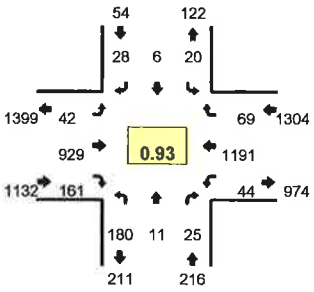
Type of peak hour being reported: Intersection Peak

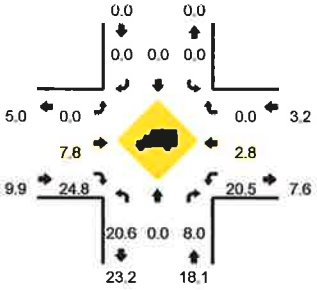
Method for determining peak hour: Total Entering Volume

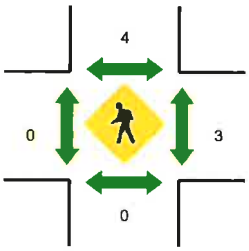
LOCATION: Peninger Rd -- E Pine St
CITY/STATE: Central Point, OR

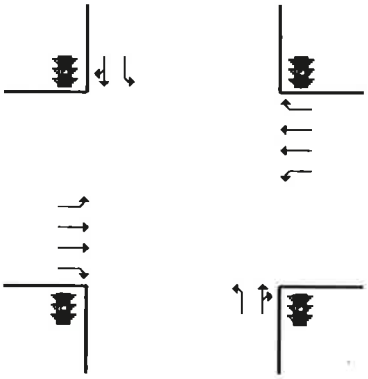
QC JOB #: 13388712
DATE: Thu, May 14 2015

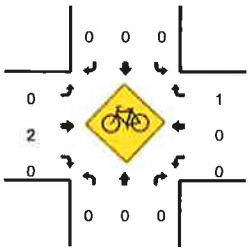
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

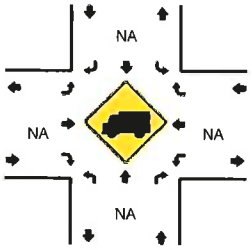


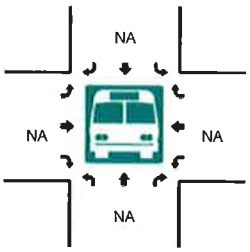












5-Min Count Period Beginning At	Peninger Rd (Northbound)				Peninger Rd (Southbound)				E Pine St (Eastbound)				E Pine St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:10 PM	20	0	2	0	3	1	3	0	2	62	15	0	4	88	5	0	205	
4:15 PM	15	0	2	0	4	0	0	0	5	96	14	0	4	81	4	0	225	
4:20 PM	15	1	1	0	2	0	3	0	2	89	9	0	0	94	3	0	219	
4:25 PM	10	0	3	0	0	1	2	0	2	81	8	0	7	92	4	0	210	
4:30 PM	14	0	5	0	0	0	3	0	3	70	16	0	5	84	8	0	208	
4:35 PM	11	0	3	0	2	1	1	0	3	78	15	0	3	99	4	0	220	
4:40 PM	12	0	3	0	1	0	3	0	6	80	12	0	3	89	8	0	217	
4:45 PM	17	0	2	0	3	1	2	0	7	70	11	0	1	87	4	0	205	
4:50 PM	13	0	1	0	1	0	2	0	4	74	16	0	5	89	5	0	210	
4:55 PM	13	2	3	0	1	0	5	0	4	87	16	0	4	87	5	0	227	2582
5:00 PM	12	2	3	0	1	0	2	0	1	82	16	0	6	102	5	0	232	2595
5:05 PM	11	0	4	0	3	1	2	0	3	96	21	0	4	104	8	0	257	2635
5:10 PM	18	0	3	0	2	1	5	0	3	58	10	0	4	119	4	0	227	2657
5:15 PM	21	2	0	0	2	1	1	0	5	81	12	0	1	111	6	0	243	2675
5:20 PM	15	2	0	0	0	0	2	0	1	76	10	0	4	114	7	0	231	2687
5:25 PM	14	0	1	0	2	0	3	0	2	69	9	0	5	98	7	0	210	2687
5:30 PM	16	2	2	0	4	1	0	0	0	69	12	0	2	94	7	0	209	2688
5:35 PM	18	1	3	0	0	1	1	0	6	87	16	0	5	97	3	0	238	2706
5:40 PM	15	2	6	0	4	1	0	0	4	61	17	0	4	87	3	0	204	2693
5:45 PM	19	0	4	0	2	0	3	0	5	61	12	0	4	77	2	0	189	2677
5:50 PM	11	2	8	0	2	0	2	0	3	47	12	0	2	73	2	0	164	2631
5:55 PM	13	0	1	0	2	1	2	0	3	53	8	0	1	83	2	0	169	2573
6:00 PM	11	2	3	0	1	0	4	0	3	62	13	0	4	64	3	0	170	2511
6:05 PM	13	2	2	0	4	0	1	0	1	65	11	0	4	57	2	0	162	2416

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	200	8	28	0	28	12	32	0	44	940	172	0	36	1336	72	0	2908
Heavy Trucks	56	0	4		0	0	0		0	60	52		12	36	0		220
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

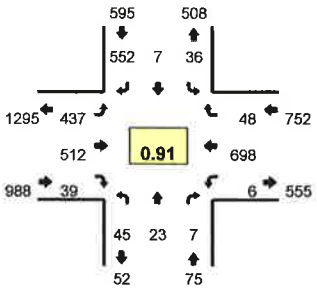
Report generated on 5/25/2015 9:11 AM

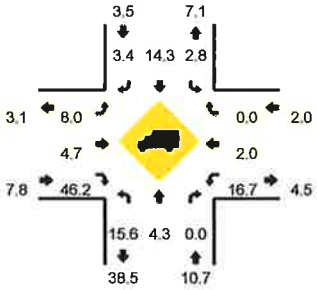
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

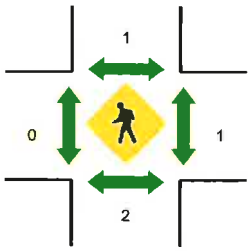
LOCATION: Hamrick Rd -- Biddle Rd | **QC JOB #:** 13388710
CITY/STATE: Central Point, OR | **DATE:** Thu, May 14 2015

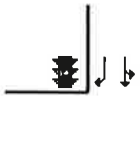
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

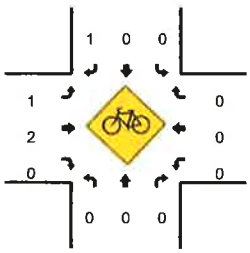


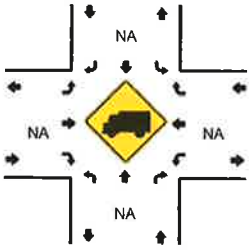


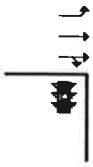
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

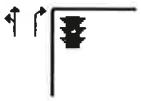


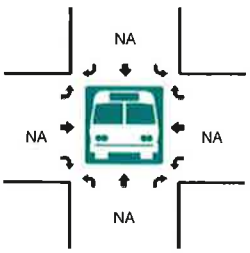












5-Min Count Period Beginning At	Hamrick Rd (Northbound)				Hamrick Rd (Southbound)				Biddle Rd (Eastbound)				Biddle Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:05 PM	1	1	1	0	3	1	44	0	45	47	1	0	0	44	4	0	192	
4:10 PM	1	0	1	0	3	1	42	0	36	42	4	0	0	52	3	0	185	
4:15 PM	6	0	0	0	2	0	55	0	41	54	7	0	1	44	2	0	212	
4:20 PM	1	2	0	0	1	0	48	0	54	59	3	0	0	43	2	0	213	
4:25 PM	2	1	0	0	3	1	50	0	34	38	3	0	2	49	2	0	185	
4:30 PM	1	1	1	0	1	2	31	0	19	40	6	0	0	59	5	0	166	
4:35 PM	3	1	1	0	3	2	63	0	42	43	3	0	0	54	4	0	219	
4:40 PM	1	2	0	0	3	0	53	0	40	47	3	0	0	38	4	0	191	
4:45 PM	3	2	0	0	4	0	54	0	43	40	1	0	0	41	2	0	190	
4:50 PM	5	0	0	0	5	2	41	0	44	36	2	0	0	57	4	0	196	
4:55 PM	3	3	0	0	2	1	41	0	36	49	4	0	1	51	4	0	195	2325
5:00 PM	4	3	1	0	0	0	41	0	24	41	6	0	0	60	2	0	182	2326
5:05 PM	8	3	3	0	3	1	47	0	45	54	4	0	1	60	4	0	233	2367
5:10 PM	4	2	1	0	6	0	42	0	27	32	4	0	1	86	7	0	212	2394
5:15 PM	5	2	0	0	2	1	34	0	38	44	2	0	1	80	5	0	214	2396
5:20 PM	4	2	0	0	3	0	50	0	33	48	5	0	1	42	3	0	191	2374
5:25 PM	4	0	1	0	3	0	41	0	32	38	3	0	0	61	5	0	188	2377
5:30 PM	1	3	0	0	2	0	45	0	33	40	2	0	1	68	4	0	199	2410
5:35 PM	6	0	1	0	6	0	51	0	38	51	3	0	0	31	2	0	189	2380
5:40 PM	4	1	1	0	3	1	40	0	32	34	2	0	0	55	3	0	176	2365
5:45 PM	4	0	0	0	1	0	35	0	32	48	1	0	0	45	0	0	166	2341
5:50 PM	1	2	1	0	7	1	46	0	33	29	1	0	1	28	2	0	152	2297
5:55 PM	4	0	0	0	5	1	32	0	25	30	1	0	0	38	3	0	139	2241
6:00 PM	1	0	0	0	0	1	39	0	22	29	2	0	0	33	6	0	133	2192

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	68	28	16	0	44	8	492	0	440	520	40	0	12	904	64	0	2636
Heavy Trucks	12	0	0		4	0	20		24	24	12		4	16	0		116
Pedestrians		8				4				0				4			16
Bicycles	0	0	0		0	0	0		1	1	0		0	0	0		2
Railroad Stopped Buses																	

Comments:

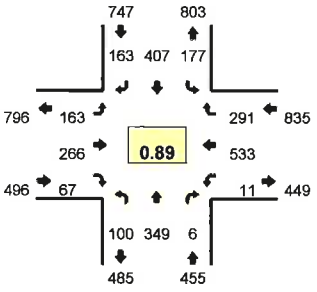
Report generated on 5/25/2015 9:11 AM

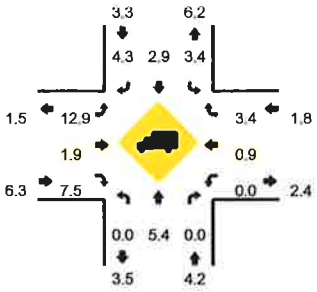
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

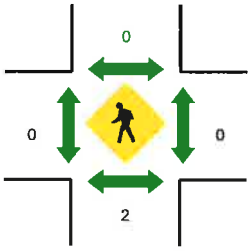
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

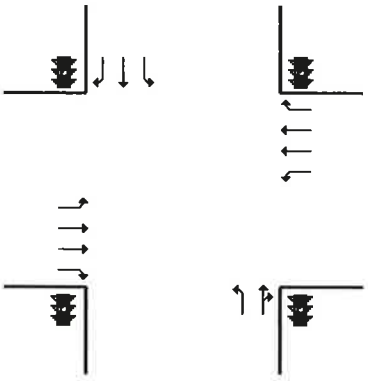
LOCATION: Table Rock Rd -- Biddle Rd | **QC JOB #:** 13388708
CITY/STATE: Central Point, OR | **DATE:** Thu, May 14 2015

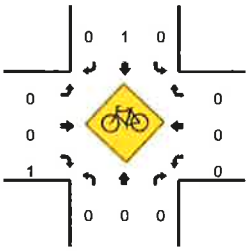
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

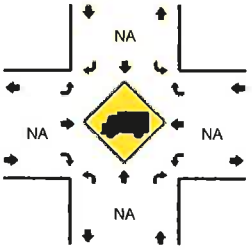


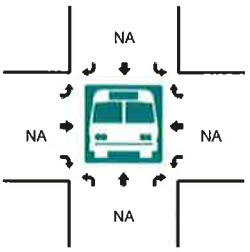












5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Biddle Rd (Eastbound)				Biddle Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	20	0	0	22	42	9	0	13	22	4	0	2	25	36	0	198	
4:05 PM	5	10	1	0	19	33	10	0	17	34	4	0	0	56	14	0	203	
4:10 PM	12	31	0	0	11	39	10	0	16	27	11	0	2	30	35	0	224	
4:15 PM	7	28	0	0	16	53	7	0	19	30	4	0	0	33	17	0	214	
4:20 PM	14	22	1	0	22	38	11	0	16	41	5	0	0	24	18	0	212	
4:25 PM	6	28	2	0	16	41	6	0	15	23	7	0	0	31	8	0	183	
4:30 PM	9	32	2	0	15	35	15	0	7	13	10	0	0	47	17	0	202	
4:35 PM	8	32	0	0	18	37	8	0	17	16	5	0	0	36	26	0	203	
4:40 PM	4	30	2	0	16	42	6	0	14	30	6	0	3	51	16	0	220	
4:45 PM	5	23	0	0	16	38	7	0	14	23	9	0	1	28	22	0	186	
4:50 PM	8	26	0	0	11	26	8	0	9	19	5	0	2	58	17	0	189	
4:55 PM	2	34	0	0	20	42	12	0	7	18	8	0	1	33	21	0	198	2432
5:00 PM	10	25	1	0	12	21	22	0	13	26	6	0	0	56	30	0	222	2456
5:05 PM	10	26	0	0	12	27	19	0	17	37	4	0	1	59	36	0	248	2501
5:10 PM	12	37	0	0	16	43	23	0	16	22	2	0	0	35	37	0	243	2520
5:15 PM	11	37	0	0	15	35	16	0	9	18	3	0	1	52	24	0	221	2527
5:20 PM	9	20	0	0	18	25	17	0	22	23	7	0	1	41	27	0	210	2525
5:25 PM	12	27	1	0	8	36	10	0	18	21	2	0	1	37	18	0	191	2533
5:30 PM	11	22	0	0	13	22	19	0	15	19	6	0	2	36	24	0	189	2520
5:35 PM	6	25	0	0	10	29	8	0	21	19	6	0	1	38	15	0	178	2495
5:40 PM	8	27	0	0	9	23	4	0	11	25	9	0	0	34	25	0	175	2450
5:45 PM	5	19	0	0	8	28	6	0	7	28	6	0	0	33	13	0	153	2417
5:50 PM	6	19	2	0	11	14	3	0	7	20	12	0	0	26	20	0	140	2368
5:55 PM	10	25	0	0	8	16	3	0	7	27	2	0	0	31	14	0	143	2313

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	128	352	4	0	160	364	256	0	184	340	48	0	4	600	412	0	2852
Heavy Trucks	0	28	0		0	8	12		12	8	4		0	12	12		96
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

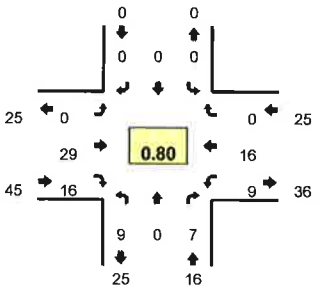
Type of peak hour being reported: Intersection Peak

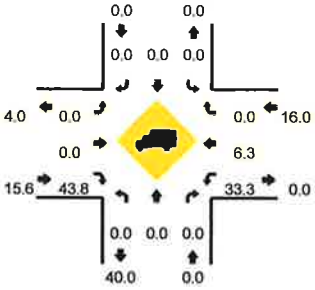
Method for determining peak hour: Total Entering Volume

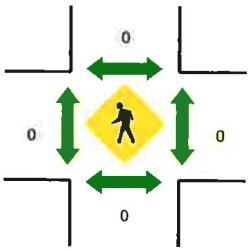
LOCATION: Federal Way -- Hamrick Rd
CITY/STATE: Central Point, OR

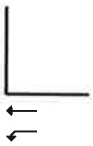
QC JOB #: 13388706
DATE: Thu, May 14 2015

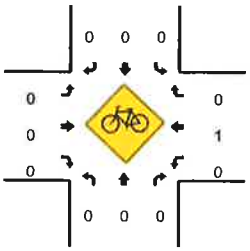
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

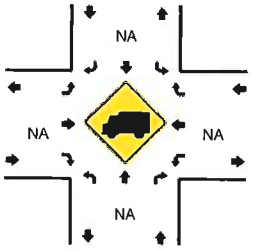


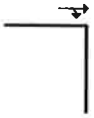


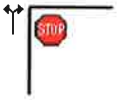


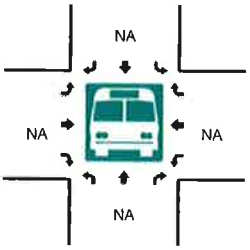












5-Min Count Period Beginning At	Federal Way (Northbound)				Federal Way (Southbound)				Hamrick Rd (Eastbound)				Hamrick Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
4:05 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	
4:10 PM	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0	4	
4:15 PM	1	0	1	0	0	0	0	0	0	2	1	0	0	1	0	0	6	
4:20 PM	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	3	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	0	0	3	2	0	1	1	0	0	7	
4:35 PM	0	0	0	0	0	0	0	0	0	4	1	0	1	1	0	0	7	
4:40 PM	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	5	
4:45 PM	1	0	1	0	0	0	0	0	0	2	2	0	0	2	0	0	8	
4:50 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
4:55 PM	3	0	0	0	0	0	0	0	0	4	1	0	0	2	0	0	10	57
5:00 PM	1	0	0	0	0	0	0	0	0	1	2	0	1	2	0	0	7	61
5:05 PM	0	0	1	0	0	0	0	0	0	4	1	0	2	1	0	0	9	68
5:10 PM	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	4	68
5:15 PM	1	0	2	0	0	0	0	0	0	1	2	0	0	3	0	0	9	71
5:20 PM	0	0	2	0	0	0	0	0	0	3	3	0	1	1	0	0	10	78
5:25 PM	1	0	1	0	0	0	0	0	0	4	1	0	0	1	0	0	8	86
5:30 PM	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	82
5:35 PM	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	3	78
5:40 PM	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	4	77
5:45 PM	1	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	5	74
5:50 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	74
5:55 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	3	67

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	0	20	0	0	0	0	0	0	32	24	0	4	20	0	0	108
Heavy Trucks	0	0	0		0	0	0		0	0	16		0	4	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

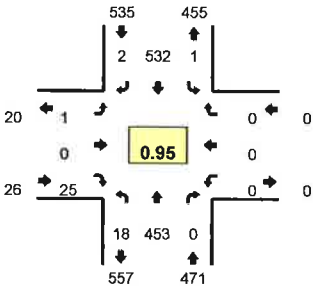
Type of peak hour being reported: Intersection Peak

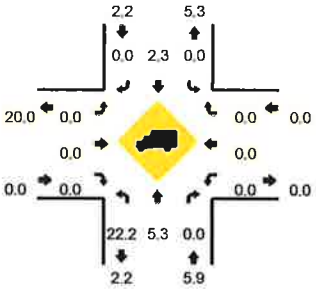
Method for determining peak hour: Total Entering Volume

LOCATION: Table Rock Rd – Hamrick Rd
CITY/STATE: Central Point, OR

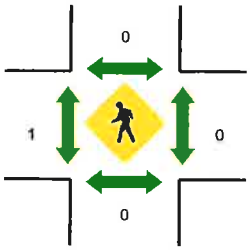
QC JOB #: 13388704
DATE: Thu, May 14 2015

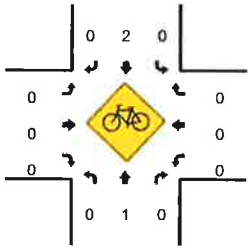
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

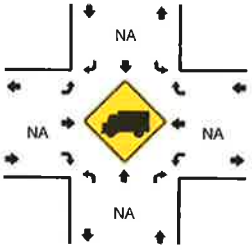


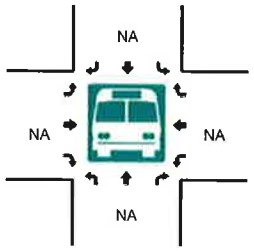


Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES









5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Hamrick Rd (Eastbound)				Hamrick Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	24	0	0	0	48	0	0	0	0	2	0	0	0	0	0	74	
4:05 PM	1	29	0	0	0	34	0	0	0	0	1	0	0	0	0	0	65	
4:10 PM	2	34	0	0	0	56	0	0	1	0	1	0	0	0	0	0	94	
4:15 PM	1	33	0	0	0	59	0	1	0	0	3	0	0	0	0	0	97	
4:20 PM	0	39	0	0	0	41	1	0	0	0	1	0	0	0	0	0	82	
4:25 PM	1	41	0	0	0	50	0	0	0	0	0	0	0	0	0	0	92	
4:30 PM	1	37	0	0	0	43	0	0	0	0	3	0	0	0	0	0	84	
4:35 PM	2	41	0	0	0	46	0	0	1	0	3	0	0	0	0	0	93	
4:40 PM	2	33	0	0	0	52	1	0	0	0	1	0	0	0	0	0	89	
4:45 PM	2	35	0	0	0	46	0	0	0	0	4	0	0	0	0	0	87	
4:50 PM	0	38	0	0	0	36	0	0	0	0	0	0	0	0	0	0	74	
4:55 PM	2	31	0	0	0	52	0	0	0	0	4	0	0	0	0	0	89	1020
5:00 PM	4	33	0	0	0	18	0	0	0	0	1	0	0	0	0	0	56	1002
5:05 PM	1	43	0	0	0	42	0	0	0	0	4	0	0	0	0	0	90	1027
5:10 PM	2	49	0	0	0	47	0	0	0	0	1	0	0	0	0	0	99	1032
5:15 PM	2	40	0	0	0	37	2	0	0	0	3	0	0	0	0	0	84	1019
5:20 PM	0	35	0	0	0	33	1	0	0	0	5	0	0	0	0	0	74	1011
5:25 PM	1	35	0	0	0	40	0	0	1	0	4	0	0	0	0	0	81	1000
5:30 PM	0	33	0	0	0	28	0	0	1	0	1	0	0	0	0	0	63	979
5:35 PM	0	30	0	0	0	37	0	0	0	0	1	0	0	0	0	0	68	954
5:40 PM	0	29	0	0	0	29	3	0	0	0	2	0	0	0	0	0	63	928
5:45 PM	0	28	0	0	0	35	0	0	1	0	1	0	0	0	0	0	65	906
5:50 PM	0	24	0	0	0	26	0	0	0	0	2	0	0	0	0	0	52	884
5:55 PM	1	43	0	0	0	18	0	0	0	0	1	0	0	0	0	0	63	858

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	452	0	0	0	600	4	4	0	0	16	0	0	0	0	0	1084
Heavy Trucks	0	40	0		0	20	0		0	0	0		0	0	0		60
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

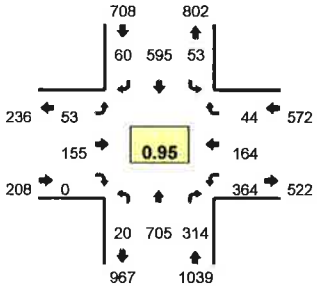
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

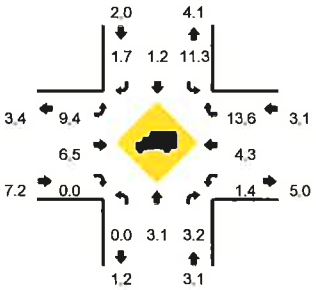
Method for determining peak hour: Total Entering Volume

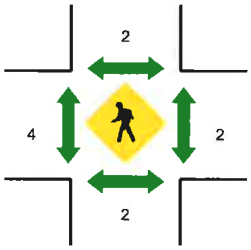
LOCATION: OR 99/N Pacific Hwy -- Table Rock Rd
CITY/STATE: Medford, OR

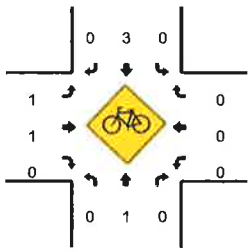
QC JOB #: 13547203
DATE: Sat, Jul 25 2015

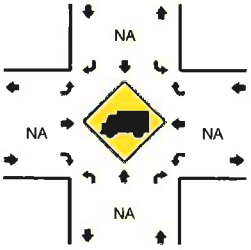


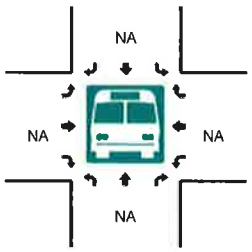
Peak-Hour: 12:05 PM -- 1:05 PM
Peak 15-Min: 12:30 PM -- 12:45 PM











5-Min Count Period Beginning At	OR 99/N Pacific Hwy (Northbound)				OR 99/N Pacific Hwy (Southbound)				Table Rock Rd (Eastbound)				Table Rock Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	1	44	28	0	4	36	4	0	9	21	0	0	22	17	2	0	188	
12:05 PM	0	68	18	2	4	62	8	0	4	15	0	0	31	19	2	0	233	
12:10 PM	1	58	25	0	6	55	3	0	3	7	0	0	30	14	5	0	207	
12:15 PM	3	59	28	0	3	37	3	0	5	6	0	0	33	17	4	0	198	
12:20 PM	0	55	14	1	4	53	6	0	5	12	0	0	24	15	4	0	193	
12:25 PM	0	63	24	0	4	56	3	0	3	19	0	0	33	13	2	0	220	
12:30 PM	1	48	33	1	6	46	3	0	5	16	0	0	29	17	6	0	211	
12:35 PM	2	58	33	0	4	43	9	0	5	13	0	0	25	11	2	0	205	
12:40 PM	1	83	32	0	2	59	8	0	4	11	0	0	32	14	5	0	251	
12:45 PM	0	43	16	2	7	44	3	0	7	15	0	0	33	9	4	0	183	
12:50 PM	0	64	40	1	3	50	5	0	4	9	0	0	28	17	6	0	227	
12:55 PM	2	42	23	0	5	41	3	0	6	15	0	0	44	4	2	0	187	2503
1:00 PM	2	64	28	1	5	49	6	0	2	17	0	0	22	14	2	0	212	2527
1:05 PM	3	48	31	1	0	49	1	0	5	12	0	0	38	14	3	0	205	2499
1:10 PM	1	41	22	3	3	56	7	0	4	8	1	0	25	17	4	0	192	2484
1:15 PM	1	51	21	1	5	55	3	0	8	5	0	0	29	15	2	0	196	2482
1:20 PM	1	60	29	1	4	52	6	0	3	9	0	0	16	14	1	0	196	2485
1:25 PM	1	52	25	2	5	49	5	0	2	7	0	0	37	13	1	0	199	2464
1:30 PM	3	66	26	2	4	35	4	0	1	11	0	0	22	10	5	0	189	2442
1:35 PM	0	47	25	1	4	53	5	0	4	6	0	0	34	20	1	0	200	2437
1:40 PM	0	48	22	2	4	54	4	0	7	22	0	0	25	12	5	0	205	2391
1:45 PM	2	48	28	1	3	40	7	0	3	11	0	0	26	11	1	1	182	2390
1:50 PM	3	56	27	2	3	48	4	0	2	13	0	0	27	24	3	0	212	2375
1:55 PM	2	47	31	2	2	42	4	0	3	5	1	0	34	11	1	0	185	2373

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	756	392	4	48	592	80	0	56	160	0	0	344	168	52	0	2668
Heavy Trucks	0	28	16		4	8	4		4	8	0		12	8	12		104
Pedestrians		4				0				12				0			16
Bicycles	0	1	0		0	1	0		0	0	0		0	0	0		2
Railroad Stopped Buses																	

Comments:

Report generated on 7/30/2015 2:53 PM

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

Type of peak hour being reported: Intersection Peak

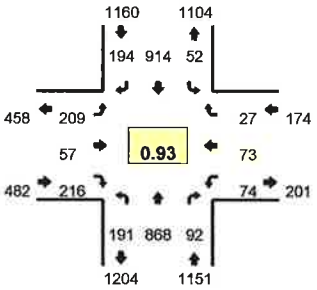
Method for determining peak hour: Total Entering Volume

LOCATION: OR 62/Crater Lake Hwy -- E Vilas Rd

QC JOB #: 13547201

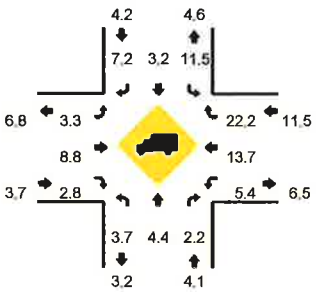
CITY/STATE: Central Point, OR

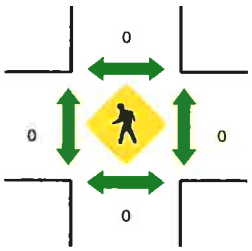
DATE: Sat, Jul 25 2015

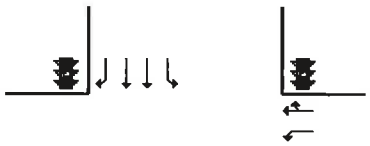


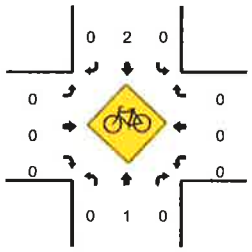
Peak-Hour: 12:00 PM -- 1:00 PM

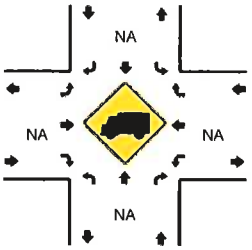
Peak 15-Min: 12:10 PM -- 12:25 PM

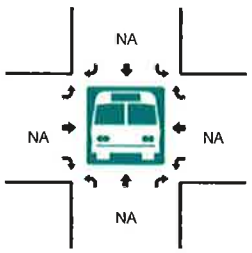












5-Min Count Period Beginning At	OR 62/Crater Lake Hwy (Northbound)				OR 62/Crater Lake Hwy (Southbound)				E Vilas Rd (Eastbound)				E Vilas Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	20	74	7	0	6	66	16	0	20	4	19	0	11	9	1	0	253	
12:05 PM	17	61	5	0	5	64	17	0	22	4	10	0	6	5	3	0	219	
12:10 PM	24	73	9	0	5	74	15	0	20	4	24	0	6	9	0	0	263	
12:15 PM	16	83	13	0	6	103	14	0	18	2	23	0	4	2	2	0	266	
12:20 PM	12	64	7	0	3	72	22	0	27	5	20	0	9	4	0	0	245	
12:25 PM	19	90	6	0	8	77	13	0	10	4	18	0	6	7	3	0	261	
12:30 PM	15	71	8	0	4	99	17	0	11	8	14	0	4	3	3	0	257	
12:35 PM	13	67	9	0	3	73	16	0	17	5	20	0	4	5	3	0	235	
12:40 PM	22	59	6	0	3	58	20	0	21	8	12	0	6	10	1	0	226	
12:45 PM	12	101	6	0	6	98	10	0	16	2	16	0	6	4	2	0	279	
12:50 PM	10	67	13	0	3	76	13	0	11	0	22	0	7	8	4	0	234	
12:55 PM	11	58	3	0	0	54	21	0	16	11	18	0	5	7	5	0	209	2967
1:00 PM	18	70	2	0	3	55	16	0	9	8	13	0	6	9	4	0	213	2927
1:05 PM	13	82	4	0	2	82	17	0	6	8	19	0	3	8	1	0	245	2953
1:10 PM	14	71	4	0	5	73	19	0	17	5	16	0	9	5	3	0	241	2931
1:15 PM	9	87	5	0	5	66	20	0	12	6	12	0	5	4	2	0	233	2878
1:20 PM	17	72	4	0	1	54	17	0	17	9	12	0	7	9	2	0	221	2854
1:25 PM	13	63	6	0	10	67	13	0	6	5	18	0	3	9	3	0	216	2809
1:30 PM	12	92	8	0	4	99	14	0	17	2	19	0	5	2	0	0	274	2826
1:35 PM	19	89	10	0	3	84	15	0	12	2	18	0	3	12	1	0	268	2859
1:40 PM	9	79	9	0	5	71	18	0	10	8	17	0	4	7	1	0	238	2871
1:45 PM	22	72	5	0	3	59	20	0	9	8	14	0	4	4	3	0	223	2815
1:50 PM	16	101	8	0	1	65	13	0	15	6	28	0	8	3	1	0	265	2846
1:55 PM	10	97	6	0	3	74	24	0	10	6	14	0	7	4	1	0	256	2893

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	208	880	116	0	56	996	204	0	260	44	268	0	76	60	8	0	3176
Heavy Trucks	0	40	0		16	32	4		4	4	4		8	12	4		128
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 7/30/2015 2:53 PM

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

Type of peak hour being reported: Intersection Peak

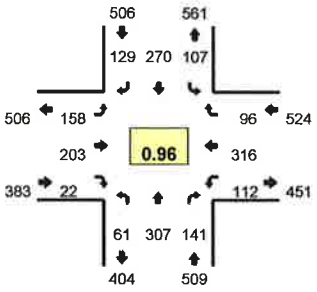
Method for determining peak hour: Total Entering Volume

LOCATION: Table Rock Rd -- Vilas Rd

CITY/STATE: Central Point, OR

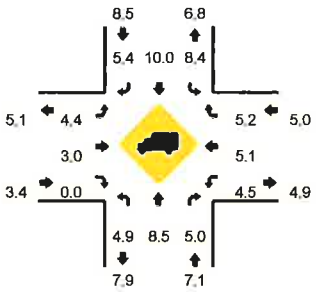
QC JOB #: 13406604

DATE: Sat, May 30 2015



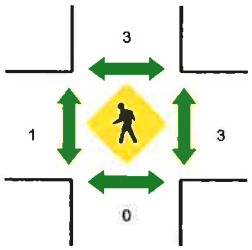
Peak-Hour: 1:45 PM -- 2:45 PM

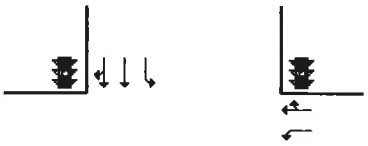
Peak 15-Min: 2:10 PM -- 2:25 PM

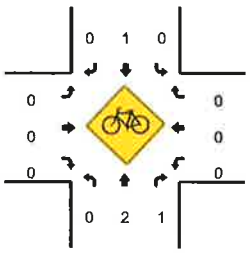


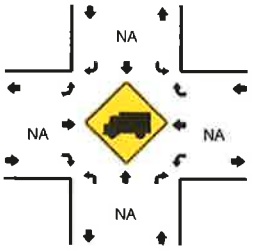
Quality Counts

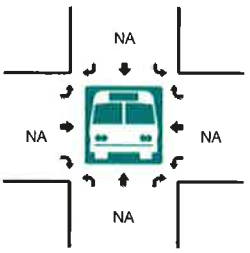
TRANSPORTATION DATA COLLECTION SERVICES











5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Vilas Rd (Eastbound)				Vilas Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
1:00 PM	5	26	12	0	4	32	15	0	22	15	4	0	7	24	5	0	171	1837
1:05 PM	3	24	5	0	9	22	6	0	10	19	2	0	11	24	7	0	142	1843
1:10 PM	8	30	23	0	7	23	12	0	9	20	1	0	5	20	6	0	164	1832
1:15 PM	3	14	22	0	2	21	9	0	10	16	1	0	6	21	10	0	135	1800
1:20 PM	4	23	9	0	9	21	5	0	15	13	1	0	5	27	11	0	143	1778
1:25 PM	1	14	18	0	9	17	10	0	20	23	2	0	9	18	4	0	145	1794
1:30 PM	2	36	14	0	14	26	16	0	9	15	2	0	6	23	5	0	168	1807
1:35 PM	2	32	10	0	7	33	7	0	7	15	3	0	6	27	5	0	154	1790
1:40 PM	1	25	8	0	5	31	8	0	12	14	1	0	12	20	4	0	141	1777
1:45 PM	4	29	13	0	5	22	14	0	14	15	0	0	12	34	8	0	170	1799
1:50 PM	6	30	9	0	11	23	10	0	12	21	1	0	7	23	6	0	159	1814
1:55 PM	1	21	10	0	4	23	10	0	12	19	2	0	8	28	9	0	147	1839
2:00 PM	2	33	10	0	11	21	7	0	10	19	3	0	12	18	8	0	154	1822
2:05 PM	7	17	12	0	11	26	6	0	13	12	2	0	11	19	5	0	141	1821
2:10 PM	5	29	13	0	9	17	8	0	13	25	3	0	11	34	14	0	181	1838
2:15 PM	5	27	12	0	11	18	13	0	15	8	0	0	9	24	12	0	154	1857
2:20 PM	6	27	17	0	8	21	11	0	10	17	2	0	5	35	5	0	164	1878
2:25 PM	6	27	13	0	6	27	6	0	15	17	3	0	11	31	4	0	166	1899
2:30 PM	7	25	7	0	6	11	11	0	18	19	4	0	8	26	7	0	149	1880
2:35 PM	8	27	17	0	8	29	21	0	15	16	1	0	6	21	6	0	175	1901
2:40 PM	4	15	8	0	17	32	12	0	11	15	1	0	12	23	12	0	162	1922
2:45 PM	4	30	10	0	12	25	9	0	15	7	5	0	5	31	5	0	158	1910
2:50 PM	2	35	12	0	10	23	16	0	8	12	2	0	8	30	4	0	162	1913
2:55 PM	6	22	15	0	8	22	10	0	14	11	5	0	2	18	5	0	138	1904

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	332	168	0	112	224	128	0	152	200	20	0	100	372	124	0	1996
Heavy Trucks	12	32	12		8	40	4		12	4	0		4	8	8		144
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 6/4/2015 11:02 AM

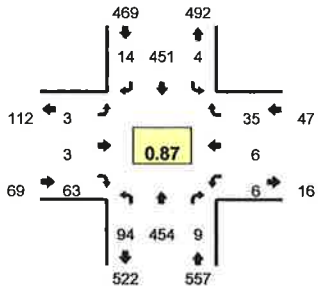
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

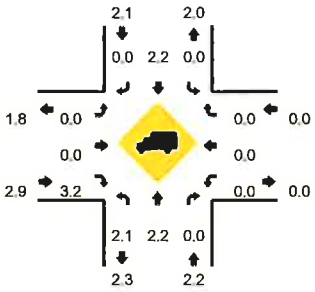
Method for determining peak hour: Total Entering Volume

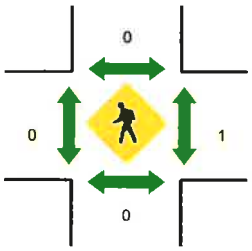
LOCATION: Biddle Rd -- Airport Rd (unsignalized)
CITY/STATE: Central Point, OR

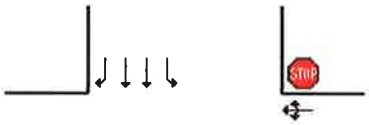
QC JOB #: 13406602
DATE: Sat, May 30 2015

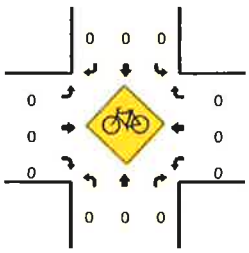


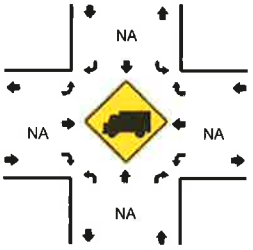
Peak-Hour: 12:10 PM -- 1:10 PM
Peak 15-Min: 12:35 PM -- 12:50 PM

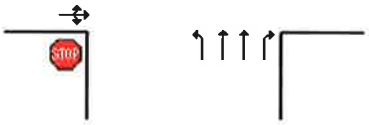


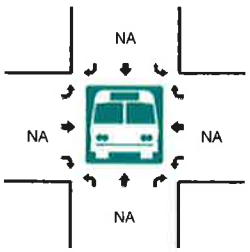












5-Min Count Period Beginning At	Biddle Rd (Northbound)				Biddle Rd (Southbound)				Airport Rd (unsignalized) (Eastbound)				Airport Rd (unsignalized) (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	5	35	0	0	1	44	0	0	0	0	4	0	1	0	5	0	95	
12:05 PM	5	36	0	0	1	34	0	0	0	0	6	0	0	2	2	0	86	
12:10 PM	11	35	0	0	0	35	1	0	0	0	7	0	2	0	0	0	91	
12:15 PM	5	43	0	0	1	47	0	0	0	1	1	0	0	0	2	0	100	
12:20 PM	9	27	1	0	0	41	1	0	1	0	3	0	0	0	1	0	84	
12:25 PM	11	33	1	1	0	30	2	0	1	0	2	0	0	2	3	0	86	
12:30 PM	6	26	2	0	0	33	3	0	0	1	7	0	0	1	6	0	85	
12:35 PM	11	50	1	0	1	45	0	0	0	1	8	0	1	1	5	0	124	
12:40 PM	5	43	1	1	0	30	1	0	0	0	8	0	1	0	3	0	93	
12:45 PM	9	49	0	0	0	37	2	0	0	0	4	0	2	1	8	0	112	
12:50 PM	7	36	0	0	0	39	0	0	0	0	8	0	0	1	4	0	95	
12:55 PM	7	27	2	0	1	33	0	0	0	0	9	0	0	0	3	0	82	1133
1:00 PM	6	45	1	0	1	34	2	0	1	0	4	0	0	0	0	0	94	1132
1:05 PM	5	40	0	0	0	47	2	0	0	0	2	0	0	0	0	0	96	1142
1:10 PM	9	35	1	0	0	34	1	0	1	0	6	0	0	1	3	0	91	1142
1:15 PM	4	40	0	0	1	34	0	0	0	1	4	0	0	0	0	0	84	1126
1:20 PM	4	30	1	0	0	32	0	0	1	0	2	0	1	2	1	0	74	1116
1:25 PM	4	35	0	0	1	31	0	0	1	2	6	0	0	0	2	0	82	1112
1:30 PM	8	39	2	0	0	33	0	0	0	0	7	0	0	0	0	0	89	1116
1:35 PM	5	31	0	0	1	40	0	0	0	1	9	0	1	0	3	0	91	1083
1:40 PM	7	48	0	0	0	34	0	0	2	1	4	0	0	0	4	0	100	1090
1:45 PM	6	31	0	0	0	37	1	0	0	0	7	0	0	0	1	0	83	1061
1:50 PM	6	33	1	0	0	30	0	0	0	0	3	0	1	0	1	0	75	1041
1:55 PM	7	27	0	0	0	28	0	0	0	1	2	0	0	0	0	0	65	1024

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	100	568	8	4	4	448	12	0	0	4	80	0	16	8	64	0	1316
Heavy Trucks	4	16	0		0	4	0		0	0	8		0	0	0		32
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 6/4/2015 11:02 AM

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

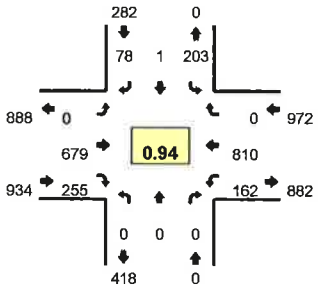
Type of peak hour being reported: Intersection Peak

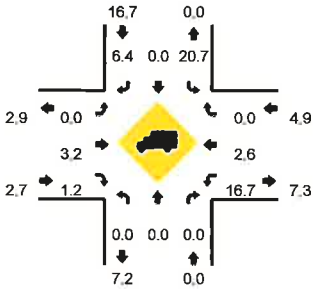
Method for determining peak hour: Total Entering Volume

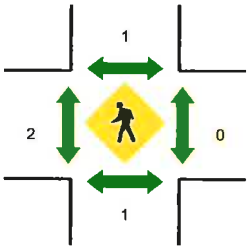
LOCATION: I-5 SB Ramps -- E Pine St
CITY/STATE: Central Point, OR

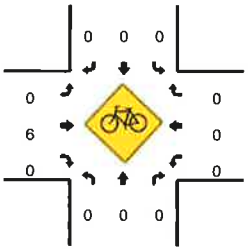
QC JOB #: 13388715
DATE: Sat, May 16 2015

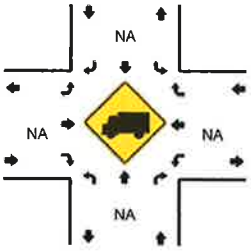
Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:45 PM -- 1:00 PM

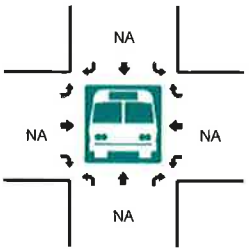












5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				E Pine St (Eastbound)				E Pine St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	0	0	0	16	0	4	0	0	52	23	0	11	60	0	0	166	
11:35 AM	0	0	0	0	16	0	8	0	0	41	27	0	16	61	0	0	169	
11:40 AM	0	0	0	0	14	0	2	0	0	44	22	0	13	50	0	0	145	
11:45 AM	0	0	0	0	13	0	8	0	0	48	28	0	12	68	0	0	177	
11:50 AM	0	0	0	0	10	0	6	0	0	58	18	0	18	60	0	0	170	
11:55 AM	0	0	0	0	20	0	8	0	0	52	32	0	17	64	0	0	193	2022
12:00 PM	0	0	0	0	26	1	3	0	0	55	20	0	7	59	0	0	171	2037
12:05 PM	0	0	0	0	16	0	4	0	0	54	30	0	15	63	0	0	182	2055
12:10 PM	0	0	0	0	24	0	6	0	0	48	15	0	9	74	0	0	176	2063
12:15 PM	0	0	0	0	18	0	3	0	0	50	23	0	15	65	0	0	174	2049
12:20 PM	0	0	0	0	12	0	9	0	0	73	27	0	12	64	0	0	197	2084
12:25 PM	0	0	0	0	17	0	7	0	0	42	17	0	10	71	0	0	164	2084
12:30 PM	0	0	0	0	8	0	7	0	0	67	19	0	17	72	0	0	190	2108
12:35 PM	0	0	0	0	14	0	6	0	0	64	10	0	13	64	0	0	171	2110
12:40 PM	0	0	0	0	16	0	7	0	0	60	25	0	11	59	0	0	178	2143
12:45 PM	0	0	0	0	16	0	9	0	0	57	15	0	19	73	0	0	189	2155
12:50 PM	0	0	0	0	18	0	9	0	0	49	23	0	13	79	0	0	191	2176
12:55 PM	0	0	0	0	18	0	8	0	0	60	31	0	21	67	0	0	205	2188
1:00 PM	0	0	0	0	22	0	4	0	0	55	20	0	3	66	0	0	170	2187
1:05 PM	0	0	0	0	9	0	10	0	0	55	25	0	17	50	0	0	166	2171
1:10 PM	0	0	0	0	12	0	5	0	0	50	28	0	18	57	0	0	170	2165
1:15 PM	0	0	0	0	18	0	6	0	0	60	21	0	12	59	0	0	176	2167
1:20 PM	0	0	0	0	14	0	3	0	0	62	16	0	11	60	0	0	166	2136
1:25 PM	0	0	0	0	14	0	7	0	0	54	26	0	20	57	0	0	178	2150

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	208	0	104	0	0	664	276	0	212	876	0	0	2340
Heavy Trucks	0	0	0		44	0	8		0	24	0		52	24	0		152
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

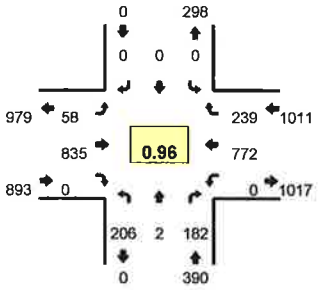
Type of peak hour being reported: Intersection Peak

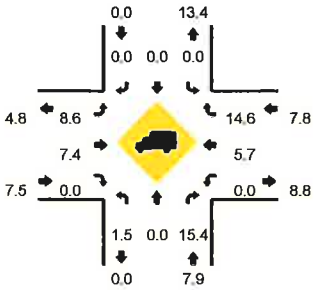
Method for determining peak hour: Total Entering Volume

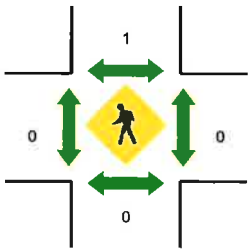
LOCATION: I-5 NB Ramps -- E Pine St
CITY/STATE: Central Point, OR

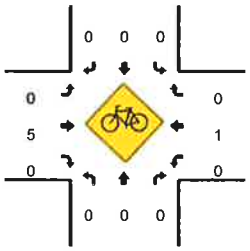
QC JOB #: 13388713
DATE: Sat, May 16 2015

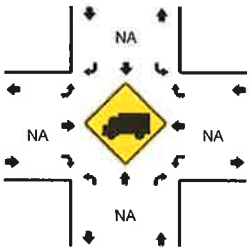
Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:40 PM -- 12:55 PM

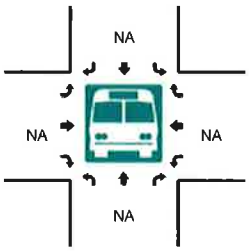












5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				E Pine St (Eastbound)				E Pine St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	18	0	17	0	0	0	0	0	2	76	0	0	0	63	25	0	201	
11:35 AM	23	0	21	0	0	0	0	0	2	57	0	0	0	50	18	0	171	
11:40 AM	15	0	22	0	0	0	0	0	7	52	0	0	0	56	19	0	171	
11:45 AM	18	0	16	0	0	0	0	0	2	67	0	0	0	57	15	0	175	
11:50 AM	15	0	16	0	0	0	0	0	7	61	0	0	0	62	28	0	189	
11:55 AM	26	0	17	0	0	0	0	0	6	56	0	0	0	51	14	0	170	2133
12:00 PM	15	0	20	0	0	0	0	0	6	72	0	0	0	52	18	0	183	2156
12:05 PM	19	0	14	0	0	0	0	0	4	80	0	1	0	66	23	0	207	2176
12:10 PM	16	0	13	0	0	0	0	0	6	60	0	0	0	75	24	0	194	2188
12:15 PM	15	0	10	0	0	0	0	0	6	70	0	0	0	54	18	0	173	2190
12:20 PM	21	2	16	0	0	0	0	0	3	80	0	0	0	61	23	0	206	2213
12:25 PM	20	0	16	0	0	0	0	0	4	53	0	0	0	57	18	0	168	2208
12:30 PM	19	0	16	0	0	0	0	0	6	62	0	0	0	70	9	0	182	2189
12:35 PM	15	0	13	0	0	0	0	0	7	84	0	0	0	62	17	0	198	2216
12:40 PM	20	0	16	0	0	0	0	0	6	67	0	0	0	55	23	0	187	2232
12:45 PM	8	0	18	0	0	0	0	0	3	75	0	0	0	84	20	0	208	2265
12:50 PM	18	0	23	0	0	0	0	0	3	62	0	0	0	74	24	0	204	2280
12:55 PM	20	0	7	0	0	0	0	0	3	70	0	0	0	62	22	0	184	2294
1:00 PM	23	0	15	0	0	0	0	0	3	66	0	0	0	50	17	0	174	2285
1:05 PM	14	1	17	0	0	0	0	0	9	76	0	0	0	58	20	0	195	2273
1:10 PM	13	0	21	0	0	0	0	0	12	47	0	0	0	60	13	0	166	2245
1:15 PM	16	0	20	0	0	0	0	0	8	67	0	0	0	62	14	0	187	2259
1:20 PM	10	0	10	0	0	0	0	0	2	75	0	0	0	55	11	0	163	2216
1:25 PM	15	0	30	0	0	0	0	0	1	68	0	0	0	69	6	0	189	2237

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	184	0	228	0	0	0	0	0	48	816	0	0	0	852	268	0	2396
Heavy Trucks	4	0	48		0	0	0		0	56	0		0	64	32		204
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad Stopped Buses																	

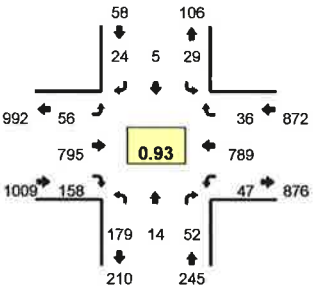
Comments:

Report generated on 5/25/2015 9:11 AM

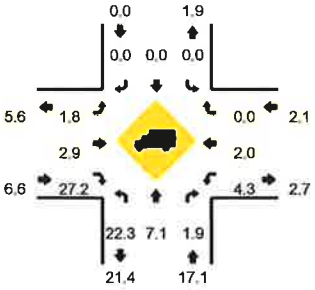
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

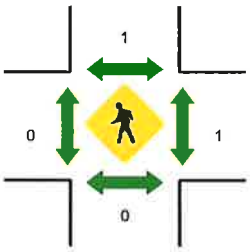
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

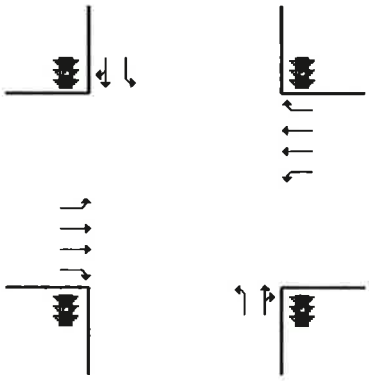
LOCATION: Peninger Rd -- E Pine St | **QC JOB #:** 13388711
CITY/STATE: Central Point, OR | **DATE:** Sat, May 16 2015

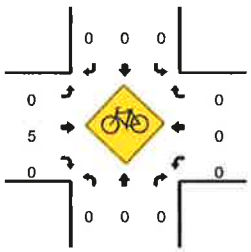


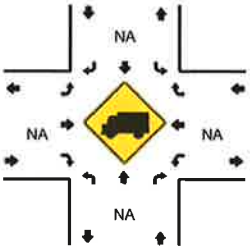
Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:45 PM -- 1:00 PM

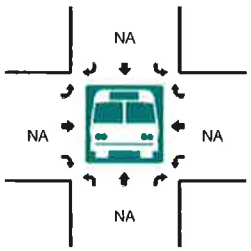












5-Min Count Period Beginning At	Peninger Rd (Northbound)				Peninger Rd (Southbound)				E Pine St (Eastbound)				E Pine St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	12	0	2	0	1	2	1	0	8	67	11	0	6	72	5	0	187	
11:35 AM	14	0	4	0	3	0	1	0	7	57	9	0	3	51	0	0	149	
11:40 AM	16	0	4	0	5	1	1	0	4	69	9	0	2	56	7	0	174	
11:45 AM	8	0	1	0	3	0	4	0	4	59	11	0	3	60	2	0	155	
11:50 AM	21	3	6	0	2	1	2	0	4	63	7	0	0	64	9	0	182	
11:55 AM	11	5	4	0	4	0	4	0	4	54	13	0	0	50	2	0	151	1985
12:00 PM	16	2	2	0	4	1	2	0	6	60	21	0	2	62	4	0	182	2026
12:05 PM	22	1	1	0	4	0	1	0	7	66	16	0	2	55	1	0	176	2027
12:10 PM	12	0	4	0	2	1	1	0	1	58	8	0	7	81	3	0	178	2034
12:15 PM	9	1	6	0	1	1	0	0	7	78	8	0	3	62	3	0	179	2054
12:20 PM	16	1	4	0	2	0	3	0	4	78	19	0	4	61	3	0	195	2080
12:25 PM	14	5	6	0	2	2	2	0	8	51	10	0	5	60	3	0	168	2076
12:30 PM	17	0	4	0	5	0	5	0	1	67	8	0	3	60	1	0	171	2060
12:35 PM	11	2	7	0	0	0	3	0	3	77	12	0	2	64	2	0	183	2094
12:40 PM	18	0	4	0	3	0	2	0	3	55	18	0	8	54	3	0	168	2088
12:45 PM	17	1	2	0	3	0	2	0	6	71	15	0	4	84	3	0	208	2141
12:50 PM	12	1	6	0	1	0	3	0	6	68	16	0	2	81	4	0	200	2159
12:55 PM	15	0	6	0	2	0	0	0	4	66	7	0	5	65	6	0	176	2184
1:00 PM	19	1	2	0	1	1	1	0	1	74	10	0	3	50	6	0	169	2171
1:05 PM	17	2	2	0	2	0	3	0	1	85	11	0	3	52	4	0	182	2177
1:10 PM	14	1	2	0	1	0	2	0	2	50	6	0	1	55	3	0	137	2136
1:15 PM	13	0	1	0	2	0	1	0	8	67	19	0	6	63	2	0	182	2139
1:20 PM	19	0	4	0	2	1	2	0	4	57	19	0	2	45	2	0	157	2101
1:25 PM	11	1	3	0	4	0	4	0	5	75	14	0	5	60	7	0	189	2122

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	176	8	56	0	24	0	20	0	64	820	152	0	44	920	52	0	2336
Heavy Trucks	48	0	0		0	0	0		0	36	28		0	24	0		136
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

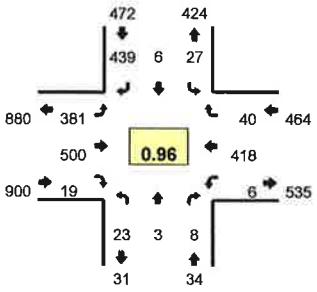
Type of peak hour being reported: Intersection Peak

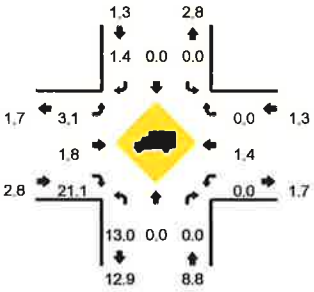
Method for determining peak hour: Total Entering Volume

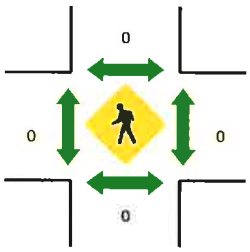
LOCATION: Hamrick Rd -- Biddle Rd
CITY/STATE: Central Point, OR

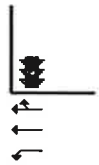
QC JOB #: 13388709
DATE: Sat, May 16 2015

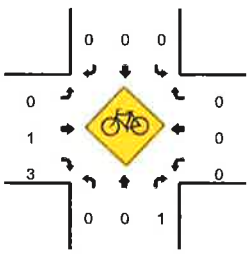
Peak-Hour: 12:10 PM -- 1:10 PM
Peak 15-Min: 12:45 PM -- 1:00 PM

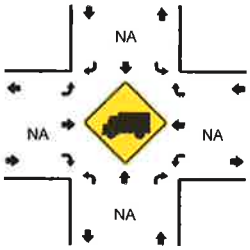


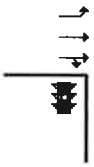


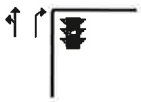


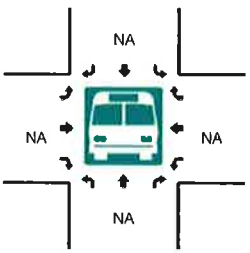












5-Min Count Period Beginning At	Hamrick Rd (Northbound)				Hamrick Rd (Southbound)				Biddle Rd (Eastbound)				Biddle Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:40 AM	1	0	0	0	0	0	23	0	35	41	1	0	0	33	2	0	136	
11:45 AM	3	0	1	0	5	0	32	0	31	31	1	0	0	34	5	0	143	
11:50 AM	3	0	0	0	2	0	39	0	28	32	0	0	1	35	3	0	143	
11:55 AM	0	0	0	0	5	0	33	0	29	42	2	0	0	22	2	0	135	1688
12:00 PM	2	0	0	0	1	0	27	0	28	39	1	0	0	43	2	0	143	1710
12:05 PM	3	0	0	0	3	4	33	0	30	27	1	0	0	32	0	0	133	1686
12:10 PM	1	0	0	0	2	0	55	0	30	44	2	0	0	27	6	0	167	1701
12:15 PM	1	0	1	0	2	1	30	0	33	41	1	0	0	39	4	0	153	1707
12:20 PM	2	1	1	0	2	0	35	0	28	40	0	0	0	30	3	0	142	1712
12:25 PM	2	0	2	0	1	0	28	0	39	47	0	0	2	42	5	0	168	1720
12:30 PM	2	1	1	0	2	2	47	0	31	37	1	0	0	36	2	0	162	1750
12:35 PM	2	0	0	0	3	0	30	0	36	52	1	0	1	28	2	0	155	1780
12:40 PM	2	0	0	0	3	2	32	0	25	30	1	0	0	37	3	0	135	1779
12:45 PM	1	0	0	0	5	0	55	0	31	39	0	0	0	38	6	0	175	1811
12:50 PM	0	0	0	0	2	0	42	0	23	33	5	0	0	43	3	0	151	1819
12:55 PM	5	0	1	0	4	0	32	0	35	47	4	0	0	32	3	0	163	1847
1:00 PM	2	1	2	0	1	0	33	0	39	50	2	0	1	30	2	0	163	1867
1:05 PM	3	0	0	0	0	1	20	0	31	40	2	0	2	36	1	0	136	1870
1:10 PM	2	0	1	0	4	1	38	0	33	29	3	0	0	25	4	0	140	1843
1:15 PM	2	0	0	0	1	0	34	0	36	27	2	0	0	34	2	0	138	1828
1:20 PM	1	0	1	0	2	0	27	0	28	38	1	0	0	29	3	0	130	1816
1:25 PM	1	1	0	0	3	1	36	0	46	40	4	0	0	27	3	0	162	1810
1:30 PM	0	0	1	0	3	0	26	0	38	42	1	0	0	40	2	0	153	1801
1:35 PM	0	1	0	0	2	0	34	0	28	38	3	0	0	37	3	0	146	1792

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	0	4	0	44	0	516	0	356	476	36	0	0	452	48	0	1956
Heavy Trucks	4	0	0		0	0	8		24	12	4		0	0	0		52
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

Type of peak hour being reported: Intersection Peak

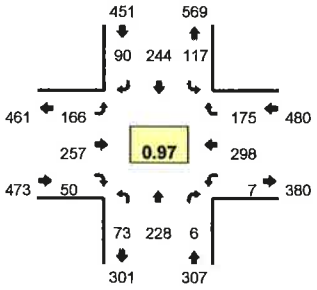
Method for determining peak hour: Total Entering Volume

LOCATION: Table Rock Rd -- Biddle Rd

QC JOB #: 13388707

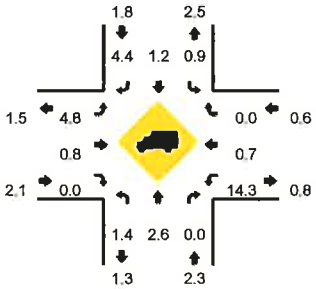
CITY/STATE: Central Point, OR

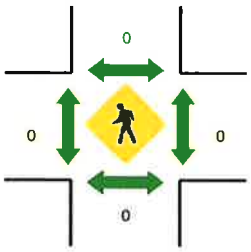
DATE: Sat, May 16 2015

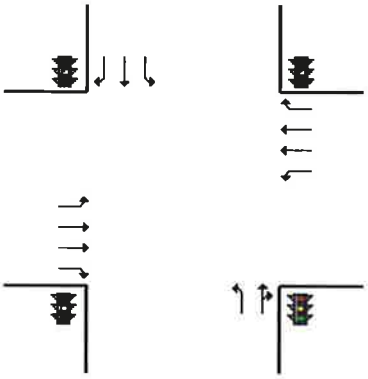


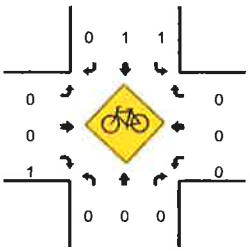
Peak-Hour: 12:10 PM -- 1:10 PM

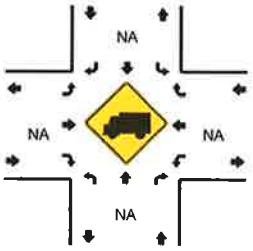
Peak 15-Min: 12:55 PM -- 1:10 PM

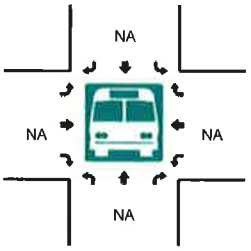












5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Biddle Rd (Eastbound)				Biddle Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:40 AM	2	13	1	0	8	11	3	0	14	28	7	0	0	29	11	0	127	
11:45 AM	7	19	1	0	12	16	8	0	10	26	2	0	0	30	8	0	139	
11:50 AM	5	18	0	0	13	19	7	0	11	16	7	0	0	24	13	0	133	
11:55 AM	4	24	0	0	16	20	8	0	11	24	7	0	1	28	12	0	155	1592
12:00 PM	4	24	1	0	11	17	2	0	12	23	5	0	1	25	12	0	137	1611
12:05 PM	5	23	0	0	7	16	3	0	7	16	6	0	0	23	12	0	118	1607
12:10 PM	10	21	0	0	8	14	7	0	18	24	3	0	1	28	26	0	160	1640
12:15 PM	6	17	1	0	6	20	3	0	16	21	4	0	0	24	12	0	130	1638
12:20 PM	6	15	3	0	10	23	6	0	11	20	2	0	0	33	15	0	144	1638
12:25 PM	3	21	0	0	8	21	7	0	19	15	3	0	0	27	10	0	134	1639
12:30 PM	3	11	0	0	15	18	6	0	14	18	6	0	1	29	12	0	133	1647
12:35 PM	10	23	0	0	10	21	7	0	14	27	6	0	1	22	13	0	154	1664
12:40 PM	9	16	1	0	7	18	11	0	21	15	4	0	1	26	16	0	145	1682
12:45 PM	6	16	0	0	9	22	9	0	7	23	4	0	0	23	11	0	130	1673
12:50 PM	4	22	0	0	18	25	9	0	10	17	3	0	0	18	16	0	142	1682
12:55 PM	5	18	1	0	6	15	8	0	11	27	6	0	0	26	22	0	145	1672
1:00 PM	4	19	0	0	3	15	7	0	15	26	8	0	3	27	11	0	138	1673
1:05 PM	7	29	0	0	17	32	10	0	10	24	1	0	0	15	11	0	156	1711
1:10 PM	5	16	0	0	8	19	6	0	14	19	9	0	3	26	12	0	137	1688
1:15 PM	6	21	1	0	5	19	8	0	7	22	3	0	0	20	13	0	125	1683
1:20 PM	4	20	0	0	16	22	6	0	9	25	3	0	1	18	17	0	141	1680
1:25 PM	6	23	0	0	7	12	9	0	10	22	7	0	1	27	16	0	140	1686
1:30 PM	4	20	0	0	7	18	5	0	12	25	9	0	1	28	9	0	138	1691
1:35 PM	3	22	1	0	9	24	8	0	14	20	9	0	0	25	14	0	149	1686

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	264	4	0	104	248	100	0	144	308	60	0	12	272	176	0	1756
Heavy Trucks	0	0	0		0	4	4		8	4	0		0	0	0		20
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		1	1	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

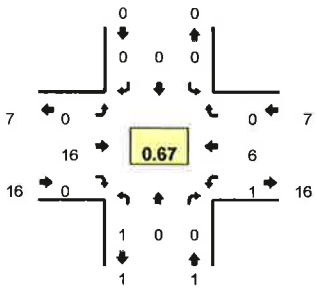
Type of peak hour being reported: Intersection Peak

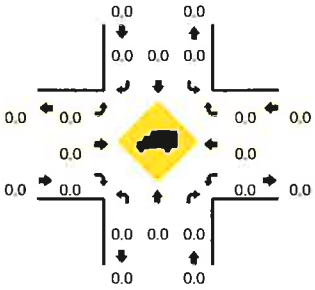
Method for determining peak hour: Total Entering Volume

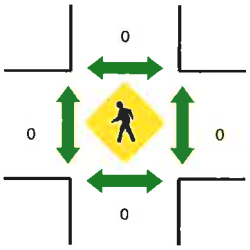
LOCATION: Federal Way -- Hamrick Rd
CITY/STATE: Central Point, OR

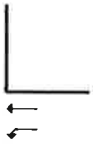
QC JOB #: 13388705
DATE: Sat, May 16 2015

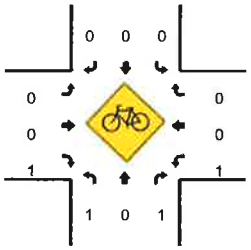
Peak-Hour: 12:05 PM -- 1:05 PM
Peak 15-Min: 12:25 PM -- 12:40 PM

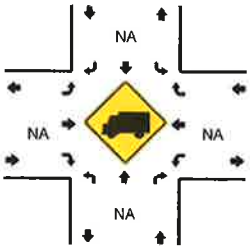


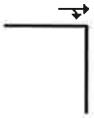


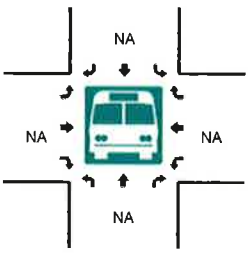












5-Min Count Period Beginning At	Federal Way (Northbound)				Federal Way (Southbound)				Hamrick Rd (Eastbound)				Hamrick Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:35 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
11:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
11:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
11:55 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	16
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
12:05 PM	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4	17
12:10 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	18
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
12:20 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	14
12:25 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	17
12:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	16
12:35 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	19
12:40 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3	22
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	22
12:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
12:55 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	21
1:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	24
1:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
1:10 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	22
1:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	24
1:20 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	23
1:25 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	21
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	20

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	28	0	0	0	8	0	0	36
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	1		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Table Rock Rd -- Hamrick Rd

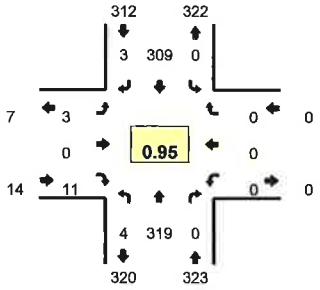
CITY/STATE: Central Point, OR

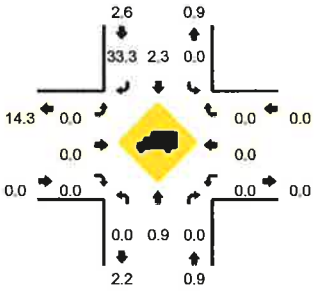
QC JOB #: 13388703

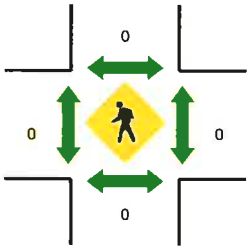
DATE: Sat, May 16 2015

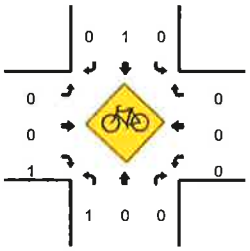
Peak-Hour: 12:35 PM -- 1:35 PM

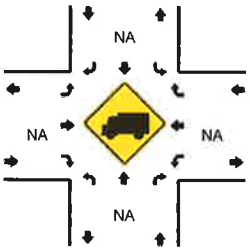
Peak 15-Min: 1:05 PM -- 1:20 PM

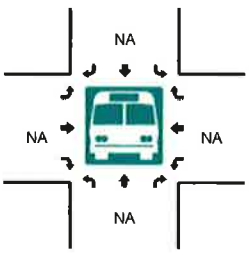












5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Hamrick Rd (Eastbound)				Hamrick Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	0	28	0	0	0	22	0	0	0	0	0	0	0	0	0	0	50	559
12:05 PM	0	30	0	0	0	23	0	0	0	0	3	0	0	0	0	0	56	563
12:10 PM	0	28	0	0	0	18	0	0	0	0	1	0	0	0	0	0	47	573
12:15 PM	1	22	0	0	0	21	0	0	0	0	0	0	0	0	0	0	44	573
12:20 PM	0	23	0	0	0	26	0	0	0	0	1	0	0	0	0	0	50	575
12:25 PM	2	24	0	1	0	24	0	0	0	0	1	0	0	0	0	0	52	584
12:30 PM	0	15	0	0	0	24	0	0	0	0	1	0	0	0	0	0	40	589
12:35 PM	1	35	0	0	0	29	0	0	3	0	2	0	0	0	0	0	70	602
12:40 PM	2	25	0	0	0	23	0	0	0	0	1	0	0	0	0	0	51	612
12:45 PM	0	21	0	0	0	26	0	0	0	0	0	0	0	0	0	0	47	612
12:50 PM	0	25	0	0	0	27	0	0	0	0	0	0	0	0	0	0	52	618
12:55 PM	1	27	0	0	0	20	0	0	0	0	1	0	0	0	0	0	49	608
1:00 PM	0	23	0	0	0	27	0	0	0	0	2	0	0	0	0	0	52	610
1:05 PM	0	31	0	0	0	31	0	0	0	0	0	0	0	0	0	0	62	616
1:10 PM	0	21	0	0	0	29	2	0	0	0	2	0	0	0	0	0	54	623
1:15 PM	0	30	0	0	0	23	0	0	0	0	1	0	0	0	0	0	54	633
1:20 PM	0	23	0	0	0	28	0	0	0	0	1	0	0	0	0	0	52	635
1:25 PM	0	35	0	0	0	20	0	0	0	0	1	0	0	0	0	0	56	639
1:30 PM	0	23	0	0	0	26	1	0	0	0	0	0	0	0	0	0	50	649
1:35 PM	0	20	0	0	0	35	0	0	0	0	0	0	0	0	0	0	55	634
1:40 PM	1	21	0	0	0	31	0	0	0	0	0	0	0	0	0	0	53	636
1:45 PM	1	21	0	0	0	20	0	0	0	0	0	0	0	0	0	0	42	631
1:50 PM	2	22	0	0	0	22	0	0	0	0	1	0	0	0	0	0	47	626
1:55 PM	0	27	0	0	0	19	0	0	0	0	2	0	0	0	0	0	48	625

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	328	0	0	0	332	8	0	0	0	12	0	0	0	0	0	680
Heavy Trucks	0	4	0		0	16	4		0	0	0		0	0	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

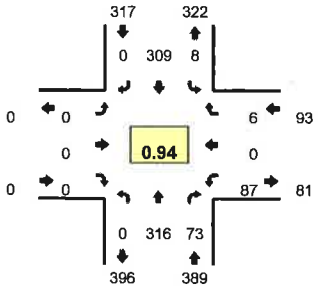
Type of peak hour being reported: Intersection Peak

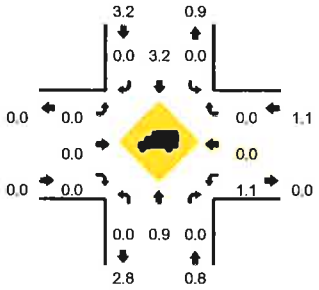
Method for determining peak hour: Total Entering Volume

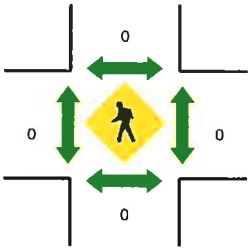
LOCATION: Table Rock Rd -- Airport Rd
CITY/STATE: Central Point, OR

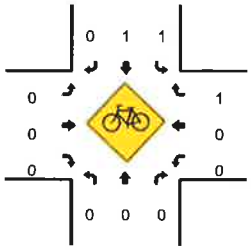
QC JOB #: 13388701
DATE: Sat, May 16 2015

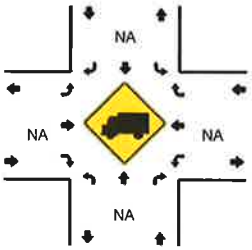
Peak-Hour: 12:35 PM -- 1:35 PM
Peak 15-Min: 1:05 PM -- 1:20 PM

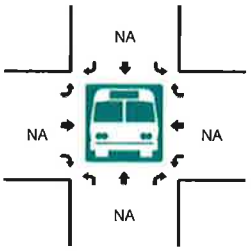












5-Min Count Period Beginning At	Table Rock Rd (Northbound)				Table Rock Rd (Southbound)				Airport Rd (Eastbound)				Airport Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
12:00 PM	0	27	9	0	0	19	0	0	0	0	0	0	8	0	2	0	65	711
12:05 PM	0	29	4	0	0	29	0	0	0	0	0	0	9	0	3	0	74	728
12:10 PM	0	27	6	0	0	22	0	0	0	0	0	0	8	0	0	0	63	739
12:15 PM	0	23	3	0	0	20	0	0	0	0	0	0	3	0	2	0	51	737
12:20 PM	0	19	5	0	1	22	0	0	0	0	0	0	8	0	0	0	55	733
12:25 PM	0	28	4	0	0	24	0	0	0	0	0	0	9	0	0	0	65	737
12:30 PM	0	14	5	0	1	26	0	0	0	0	0	0	3	0	1	0	50	743
12:35 PM	0	34	8	0	0	30	0	0	0	0	0	0	3	0	2	0	77	748
12:40 PM	0	26	3	0	2	27	0	0	0	0	0	0	1	0	0	0	59	751
12:45 PM	0	21	5	0	1	24	0	0	0	0	0	0	8	0	0	0	59	746
12:50 PM	0	24	4	0	1	21	0	0	0	0	0	0	7	0	0	0	57	746
12:55 PM	0	29	7	0	0	27	0	0	0	0	0	0	7	0	1	0	71	746
1:00 PM	0	24	7	0	1	25	0	0	0	0	0	0	7	0	0	0	64	745
1:05 PM	0	30	7	0	1	29	0	0	0	0	0	0	8	0	0	0	75	746
1:10 PM	0	21	6	0	0	30	0	0	0	0	0	0	9	0	0	0	66	749
1:15 PM	0	30	9	0	0	25	0	0	0	0	0	0	8	0	0	0	72	770
1:20 PM	0	20	4	0	1	27	0	0	0	0	0	0	12	0	1	0	65	780
1:25 PM	0	34	8	0	1	21	0	0	0	0	0	0	3	0	1	0	68	783
1:30 PM	0	23	5	0	0	23	0	0	0	0	0	0	14	0	1	0	66	799
1:35 PM	0	19	4	0	0	26	0	0	0	0	0	0	9	0	0	0	58	780
1:40 PM	0	21	3	0	1	36	0	0	0	0	0	0	6	0	1	0	68	789
1:45 PM	0	21	3	0	1	23	0	0	0	0	0	0	6	0	2	0	56	786
1:50 PM	0	21	6	0	0	21	0	0	0	0	0	0	4	0	1	0	53	782
1:55 PM	0	28	8	0	0	22	0	0	0	0	0	0	7	0	0	0	65	776

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	324	88	0	4	336	0	0	0	0	0	0	100	0	0	0	852
Heavy Trucks	0	4	0		0	20	0		0	0	0		0	0	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 5/25/2015 9:11 AM

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

Appendix B Level of Service Description

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Airport Road & Table Rock Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	1	1	2	0	0
2013 TOTAL	0	0	3	3	0	0	0	3	0	2	1	3	0	0
YEAR: 2012														
REAR-END	0	2	0	2	0	2	0	1	1	2	0	2	0	0
2012 TOTAL	0	2	0	2	0	2	0	1	1	2	0	2	0	0
FINAL TOTAL	0	2	3	5	0	2	0	4	1	4	1	5	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

Appendix E Build-Year (2016) Background Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↕	↱
Volume (vph)	0	716	286	226	1271	0	0	0	0	216	0	82
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1454	1662	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.30	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1454	523	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	787	314	248	1397	0	0	0	0	237	0	90
RTOR Reduction (vph)	0	0	112	0	0	0	0	0	0	0	0	71
Lane Group Flow (vph)	0	787	202	248	1397	0	0	0	0	118	119	19
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		60.6	60.6	73.9	73.9					12.1	12.1	12.1
Effective Green, g (s)		61.1	61.1	74.4	74.4					12.6	12.6	12.6
Actuated g/C Ratio		0.64	0.64	0.78	0.78					0.13	0.13	0.13
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1944	935	521	2480					209	209	197
v/s Ratio Prot		0.26		0.05	c0.44							
v/s Ratio Perm			0.14	0.33						0.07	0.08	0.01
v/c Ratio		0.40	0.22	0.48	0.56					0.56	0.57	0.10
Uniform Delay, d1		8.2	7.0	3.5	4.0					38.6	38.7	36.2
Progression Factor		1.00	1.00	0.34	0.37					1.00	1.00	1.00
Incremental Delay, d2		0.6	0.5	0.4	0.8					2.8	2.9	0.2
Delay (s)		8.8	7.6	1.6	2.3					41.4	41.5	36.4
Level of Service		A	A	A	A					D	D	D
Approach Delay (s)		8.4			2.2			0.0			40.1	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	871	0	0	1075	357	422	1	309	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	1468			
Flt Permitted	0.16	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	282	3197			3292	1442	1576	1580	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	947	0	0	1168	388	459	1	336	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	160	0	0	108	0	0	0
Lane Group Flow (vph)	66	947	0	0	1168	228	229	231	228	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	65.4	65.4			55.9	55.9	20.6	20.6	20.6			
Effective Green, g (s)	65.4	65.4			55.9	55.9	20.6	20.6	20.6			
Actuated g/C Ratio	0.69	0.69			0.59	0.59	0.22	0.22	0.22			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	266	2200			1937	848	341	342	318			
v/s Ratio Prot	0.01	c0.30			c0.35							
v/s Ratio Perm	0.16					0.16	0.15	0.15	c0.16			
v/c Ratio	0.25	0.43			0.60	0.27	0.67	0.68	0.72			
Uniform Delay, d1	7.4	6.6			12.5	9.6	34.1	34.1	34.5			
Progression Factor	0.92	1.22			1.53	5.60	1.00	1.00	1.00			
Incremental Delay, d2	0.3	0.6			1.1	0.6	4.7	4.7	7.0			
Delay (s)	7.1	8.6			20.1	54.1	38.8	38.9	41.5			
Level of Service	A	A			C	D	D	D	D			
Approach Delay (s)		8.5			28.6			39.9			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	25.2	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)	13.5
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	952	169	46	1222	72	177	8	29	18	5	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1338		1659	1481	
Flt Permitted	0.13	1.00	1.00	0.21	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	236	3079	1175	305	3260	1450	1031	1338		1746	1481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1035	184	50	1328	78	192	9	32	20	5	36
RTOR Reduction (vph)	0	0	76	0	0	31	0	27	0	0	34	0
Lane Group Flow (vph)	48	1035	108	50	1328	47	192	14	0	20	7	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	58.2	55.4	55.4	60.0	56.3	56.3	22.9	13.3		8.7	3.6	
Effective Green, g (s)	59.2	55.9	55.9	61.0	56.8	56.8	22.9	13.8		8.7	4.1	
Actuated g/C Ratio	0.62	0.59	0.59	0.64	0.60	0.60	0.24	0.15		0.09	0.04	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	196	1811	691	243	1949	866	296	194		155	63	
v/s Ratio Prot	0.01	0.34		c0.01	c0.41		c0.10	0.01		0.01	0.00	
v/s Ratio Perm	0.14		0.09	0.12		0.03	c0.06			0.00		
v/c Ratio	0.24	0.57	0.16	0.21	0.68	0.05	0.65	0.07		0.13	0.10	
Uniform Delay, d1	9.2	12.1	8.9	7.5	13.0	7.9	31.7	35.1		39.3	43.7	
Progression Factor	1.81	1.47	4.03	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.2	0.4	0.3	1.9	0.1	4.8	0.1		0.4	1.0	
Delay (s)	17.1	19.0	36.2	7.8	14.9	8.1	36.5	35.2		39.7	44.7	
Level of Service	B	B	D	A	B	A	D	D		D	D	
Approach Delay (s)		21.4			14.3			36.3			43.1	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	522	44	5	720	50	46	21	8	36	9	562
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	3040		1385	3259		2780	1558		1612	1577	1444
Flt Permitted	0.15	1.00		0.41	1.00		0.75	1.00		0.74	1.00	1.00
Satd. Flow (perm)	457	3040		602	3259		2198	1558		1249	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	479	580	49	6	800	56	51	23	9	40	10	624
RTOR Reduction (vph)	0	3	0	0	4	0	0	8	0	0	0	20
Lane Group Flow (vph)	479	626	0	6	852	0	51	24	0	40	10	604
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	65.9	61.3		27.4	26.8		6.1	6.1		6.1	6.1	41.2
Effective Green, g (s)	65.9	61.3		27.4	26.8		6.1	6.1		6.1	6.1	41.2
Actuated g/C Ratio	0.81	0.75		0.34	0.33		0.07	0.07		0.07	0.07	0.51
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1458	2286		208	1071		164	116		93	118	729
v/s Ratio Prot	0.14	0.21		0.00	c0.26			0.02			0.01	c0.36
v/s Ratio Perm	0.12			0.01			0.02			0.03		0.06
v/c Ratio	0.33	0.27		0.03	0.80		0.31	0.20		0.43	0.08	0.83
Uniform Delay, d1	5.5	3.2		18.1	24.9		35.7	35.4		36.0	35.1	17.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	4.4		0.8	0.6		2.3	0.2	7.6
Delay (s)	5.6	3.3		18.2	29.3		36.5	36.1		38.4	35.3	24.7
Level of Service	A	A		B	C		D	D		D	D	C
Approach Delay (s)		4.3			29.2			36.3			25.7	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	30	16	8	15	9	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	38	20	10	19	11	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			58		86	48
vC1, stage 1 conf vol					48	
vC2, stage 2 conf vol					39	
vCu, unblocked vol			58		86	48
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1370		936	1027

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	58	10	19	20
Volume Left	0	10	0	11
Volume Right	20	0	0	9
cSH	1700	1370	1700	974
Volume to Capacity	0.03	0.01	0.01	0.02
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.0	7.6	0.0	8.8
Lane LOS		A		A
Approach Delay (s)	0.0	2.7		8.8
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	157	37	227	357	115	80	536	242	116	452	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1553		1539	1521		1598	3079	1377	1614	2951	
Flt Permitted	0.21	1.00		0.61	1.00		0.20	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	319	1553		993	1521		340	3079	1377	432	2951	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	209	169	40	244	384	124	86	576	260	125	486	259
RTOR Reduction (vph)	0	7	0	0	10	0	0	0	192	0	63	0
Lane Group Flow (vph)	209	202	0	244	498	0	86	576	68	125	682	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	47.5	35.2		44.1	33.5		27.9	24.2	24.2	32.5	26.5	
Effective Green, g (s)	47.5	35.2		44.1	33.5		27.9	24.2	24.2	32.5	26.5	
Actuated g/C Ratio	0.52	0.38		0.48	0.36		0.30	0.26	0.26	0.35	0.29	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	315	594		538	553		153	809	362	229	850	
v/s Ratio Prot	c0.09	0.13		0.05	c0.33		0.02	0.19		c0.04	c0.23	
v/s Ratio Perm	0.25			0.16			0.15		0.05	0.16		
v/c Ratio	0.66	0.34		0.45	0.90		0.56	0.71	0.19	0.55	0.80	
Uniform Delay, d1	15.5	20.2		14.8	27.7		24.4	30.7	26.3	21.7	30.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	0.1		0.2	17.4		2.8	2.8	0.2	1.4	5.4	
Delay (s)	19.6	20.3		15.0	45.0		27.2	33.5	26.5	23.1	35.7	
Level of Service	B	C		B	D		C	C	C	C	D	
Approach Delay (s)		19.9			35.3			30.9			33.9	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	271	80	11	544	297	102	356	6	181	415	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1471	3260	1355	1660	3292	1444	1662	1664		1614	1699	1412
Flt Permitted	0.33	1.00	1.00	0.46	1.00	1.00	0.35	1.00		0.24	1.00	1.00
Satd. Flow (perm)	513	3260	1355	806	3292	1444	619	1664		413	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	187	304	90	12	611	334	115	400	7	203	466	187
RTOR Reduction (vph)	0	0	57	0	0	255	0	1	0	0	0	118
Lane Group Flow (vph)	187	304	33	12	611	79	115	406	0	203	466	69
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	36.7	34.7	34.7	22.1	22.1	22.1	31.9	28.1		42.5	34.7	34.7
Effective Green, g (s)	36.7	34.7	34.7	22.1	22.1	22.1	31.9	28.1		42.5	34.7	34.7
Actuated g/C Ratio	0.39	0.37	0.37	0.24	0.24	0.24	0.34	0.30		0.45	0.37	0.37
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	335	1205	501	195	775	340	252	498		320	628	522
v/s Ratio Prot	c0.08	0.09		0.00	c0.19		0.02	c0.24		c0.07	0.27	
v/s Ratio Perm	0.14		0.02	0.01		0.05	0.14			0.22		0.05
v/c Ratio	0.56	0.25	0.07	0.06	0.79	0.23	0.46	0.82		0.63	0.74	0.13
Uniform Delay, d1	27.0	20.5	19.1	27.7	33.7	29.0	23.5	30.5		18.1	25.7	19.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.2	0.1	0.0	5.6	0.5	0.5	10.2		3.0	4.9	0.1
Delay (s)	28.1	20.7	19.2	27.7	39.2	29.4	23.9	40.7		21.1	30.5	19.7
Level of Service	C	C	B	C	D	C	C	D		C	C	B
Approach Delay (s)		22.9			35.7			37.0			25.9	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	34	19	461	502	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	37	21	501	546	4
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	1091	549	551			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	970	267	270			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	94	98			
cM capacity (veh/h)	213	598	918			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	3	37	522	550
Volume Left	3	0	21	0
Volume Right	0	37	0	4
cSH	213	598	918	1700
Volume to Capacity	0.02	0.06	0.02	0.32
Queue Length 95th (ft)	1	5	2	0
Control Delay (s)	22.1	11.4	0.6	0.0
Lane LOS	C	B	A	
Approach Delay (s)	12.3		0.6	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

DESCRIPTION OF LEVEL-OF-SERVICE METHODS AND CRITERIA

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from "A" to "F".[1]

Signalized Intersections

The six level-of-service grades are described qualitatively for signalized intersections in Table B1. Additionally, Table B2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, Level of Service "D" is generally considered to represent the minimum acceptable design standard.

Table B1 Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

[1]Most of the material in this attachment is adapted from the Transportation Research Board, Highway Capacity Manual, (2000).

Table B2 Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

Unsignalized Intersections

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The 2000 Highway Capacity Manual (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of level of service for unsignalized intersections is presented in Table B4. Using this definition, Level of Service "E" is generally considered to represent the minimum acceptable design standard.

Table B3 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	• Nearly all drivers find freedom of operation. • Very seldom is there more than one vehicle in queue.
B	• Some drivers begin to consider the delay an inconvenience. • Occasionally there is more than one vehicle in queue.
C	• Many times there is more than one vehicle in queue. • Most drivers feel restricted, but not objectionably so.
D	• Often there is more than one vehicle in queue. • Drivers feel quite restricted.
E	• Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. • There is almost always more than one vehicle in queue. • Drivers find the delays approaching intolerable levels.
F	• Forced flow. • Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table B4 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less galling than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level of service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

Appendix C Existing Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱
Volume (vph)	0	702	280	222	1246	0	0	0	0	212	0	80
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1454	1662	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.30	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1454	521	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	771	308	244	1369	0	0	0	0	233	0	88
RTOR Reduction (vph)	0	0	119	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	0	771	189	244	1369	0	0	0	0	116	117	29
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		57.7	57.7	72.1	72.1					13.9	13.9	13.9
Effective Green, g (s)		58.2	58.2	72.6	72.6					14.4	14.4	14.4
Actuated g/C Ratio		0.61	0.61	0.76	0.76					0.15	0.15	0.15
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1851	890	523	2420					238	238	225
v/s Ratio Prot		0.26		0.05	c0.43							
v/s Ratio Perm			0.13	0.31						0.07	0.07	0.02
v/c Ratio		0.42	0.21	0.47	0.57					0.49	0.49	0.13
Uniform Delay, d1		9.6	8.2	4.1	4.7					36.9	36.9	34.9
Progression Factor		1.00	1.00	0.32	0.56					1.00	1.00	1.00
Incremental Delay, d2		0.7	0.5	0.4	0.8					1.1	1.2	0.2
Delay (s)		10.3	8.7	1.7	3.4					38.1	38.1	35.1
Level of Service		B	A	A	A					D	D	D
Approach Delay (s)		9.8			3.2			0.0			37.3	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	854	0	0	1054	350	414	1	303	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	1468			
Flt Permitted	0.17	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	296	3197			3292	1442	1576	1580	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	928	0	0	1146	380	450	1	329	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	154	0	0	119	0	0	0
Lane Group Flow (vph)	65	928	0	0	1146	226	225	226	210	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	66.3	66.3			56.6	56.6	19.7	19.7	19.7			
Effective Green, g (s)	66.3	66.3			56.6	56.6	19.7	19.7	19.7			
Actuated g/C Ratio	0.70	0.70			0.60	0.60	0.21	0.21	0.21			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	281	2231			1961	859	326	327	304			
v/s Ratio Prot	0.01	c0.29			c0.35							
v/s Ratio Perm	0.15					0.16	0.14	0.14	c0.14			
v/c Ratio	0.23	0.42			0.58	0.26	0.69	0.69	0.69			
Uniform Delay, d1	6.8	6.1			11.9	9.2	34.8	34.8	34.8			
Progression Factor	0.63	0.96			1.33	4.90	1.00	1.00	1.00			
Incremental Delay, d2	0.3	0.5			1.0	0.6	5.7	5.7	6.1			
Delay (s)	4.6	6.4			16.7	45.7	40.5	40.5	41.0			
Level of Service	A	A			B	D	D	D	D			
Approach Delay (s)		6.3			23.9			40.7			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	933	166	45	1198	71	174	8	28	18	5	32
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1343		1659	1481	
Flt Permitted	0.12	1.00	1.00	0.21	1.00	1.00	0.73	1.00		0.82	1.00	
Satd. Flow (perm)	219	3079	1175	302	3260	1450	1032	1343		1426	1481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	1014	180	49	1302	77	189	9	30	20	5	35
RTOR Reduction (vph)	0	0	80	0	0	34	0	26	0	0	33	0
Lane Group Flow (vph)	47	1014	100	49	1302	43	189	13	0	20	7	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	56.1	52.1	52.1	56.7	52.4	52.4	25.6	13.4		12.6	4.9	
Effective Green, g (s)	57.1	52.6	52.6	57.7	52.9	52.9	25.6	13.9		12.6	5.4	
Actuated g/C Ratio	0.60	0.55	0.55	0.61	0.56	0.56	0.27	0.15		0.13	0.06	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	199	1704	650	238	1815	807	330	196		208	84	
v/s Ratio Prot	c0.01	0.33		0.01	c0.40		c0.10	0.01		0.01	0.00	
v/s Ratio Perm	0.13		0.08	0.11		0.03	c0.06			0.00		
v/c Ratio	0.24	0.60	0.15	0.21	0.72	0.05	0.57	0.07		0.10	0.08	
Uniform Delay, d1	10.6	14.1	10.3	8.8	15.5	9.6	29.5	35.0		36.2	42.5	
Progression Factor	1.64	1.32	3.08	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.4	0.4	0.3	2.5	0.1	2.4	0.1		0.2	0.6	
Delay (s)	17.8	20.1	32.3	9.1	18.0	9.7	31.9	35.1		36.4	43.0	
Level of Service	B	C	C	A	B	A	C	D		D	D	
Approach Delay (s)		21.8			17.3			32.4			40.8	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	20.8	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)	16.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	423	512	43	5	706	49	45	21	8	35	9	551
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0			4.5	4.5		4.5	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1539	3040		1385	3258			1483	1467		1607	1444
Flt Permitted	0.17	1.00		0.42	1.00			0.76	1.00		0.72	1.00
Satd. Flow (perm)	269	3040		609	3258			1173	1467		1204	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	470	569	48	6	784	54	50	23	9	39	10	612
RTOR Reduction (vph)	0	3	0	0	4	0	0	0	8	0	0	12
Lane Group Flow (vph)	470	614	0	6	834	0	0	73	1	0	49	600
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8		8	4	4	4
Actuated Green, G (s)	72.9	68.1		32.7	31.9			8.6	8.6		8.6	45.6
Effective Green, g (s)	72.9	68.1		32.7	31.9			8.6	8.6		8.6	45.6
Actuated g/C Ratio	0.80	0.75		0.36	0.35			0.09	0.09		0.09	0.50
Clearance Time (s)	4.0	5.0		4.0	5.0			4.5	4.5		4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0			2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	731	2274		225	1142			110	138		113	723
v/s Ratio Prot	0.26	0.20		0.00	c0.26							c0.34
v/s Ratio Perm	0.25			0.01				0.06	0.00		0.04	0.08
v/c Ratio	0.64	0.27		0.03	0.73			0.66	0.01		0.43	0.83
Uniform Delay, d1	12.6	3.6		18.9	25.8			39.8	37.3		38.9	19.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.7	0.1		0.0	2.6			12.7	0.0		1.9	7.7
Delay (s)	14.4	3.7		18.9	28.4			52.5	37.3		40.8	27.0
Level of Service	B	A		B	C			D	D		D	C
Approach Delay (s)		8.3			28.3			50.9			28.1	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	29	16	8	15	9	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	36	20	10	19	11	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			56		85	46
vC1, stage 1 conf vol					46	
vC2, stage 2 conf vol					39	
vCu, unblocked vol			56		85	46
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1372		936	1029

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	56	10	19	20
Volume Left	0	10	0	11
Volume Right	20	0	0	9
cSH	1700	1372	1700	975
Volume to Capacity	0.03	0.01	0.01	0.02
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.0	7.6	0.0	8.8
Lane LOS		A		A
Approach Delay (s)	0.0	2.7		8.8
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	154	36	223	350	113	78	525	237	114	443	236
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1553		1539	1521		1598	3079	1377	1614	2950	
Flt Permitted	0.20	1.00		0.63	1.00		0.19	1.00	1.00	0.23	1.00	
Satd. Flow (perm)	308	1553		1020	1521		321	3079	1377	394	2950	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	204	166	39	240	376	122	84	565	255	123	476	254
RTOR Reduction (vph)	0	7	0	0	10	0	0	0	194	0	60	0
Lane Group Flow (vph)	204	198	0	240	488	0	84	565	61	123	670	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	52.5	37.9		46.5	34.9		29.2	23.5	23.5	34.8	26.3	
Effective Green, g (s)	52.5	37.9		46.5	34.9		29.2	23.5	23.5	34.8	26.3	
Actuated g/C Ratio	0.54	0.39		0.48	0.36		0.30	0.24	0.24	0.36	0.27	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	336	603		548	544		170	742	331	246	795	
v/s Ratio Prot	c0.09	0.13		0.05	c0.32		0.03	0.18		c0.04	c0.23	
v/s Ratio Perm	0.24			0.16			0.12		0.04	0.13		
v/c Ratio	0.61	0.33		0.44	0.90		0.49	0.76	0.19	0.50	0.84	
Uniform Delay, d1	15.5	20.9		15.8	29.6		26.0	34.4	29.4	22.8	33.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1	0.1		0.2	17.0		0.8	4.4	0.2	0.6	8.0	
Delay (s)	17.6	21.0		16.0	46.6		26.9	38.8	29.6	23.4	41.6	
Level of Service	B	C		B	D		C	D	C	C	D	
Approach Delay (s)		19.3			36.7			35.1			39.0	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	266	78	11	533	291	100	349	6	177	407	163
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1471	3260	1355	1660	3292	1444	1662	1664		1614	1699	1412
Flt Permitted	0.34	1.00	1.00	0.45	1.00	1.00	0.34	1.00		0.26	1.00	1.00
Satd. Flow (perm)	522	3260	1355	795	3292	1444	601	1664		448	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	183	299	88	12	599	327	112	392	7	199	457	183
RTOR Reduction (vph)	0	0	57	0	0	254	0	1	0	0	0	116
Lane Group Flow (vph)	183	299	31	12	599	73	112	398	0	199	457	67
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	34.7	32.7	32.7	20.8	20.8	20.8	34.8	28.9		44.0	34.1	34.1
Effective Green, g (s)	34.7	32.7	32.7	20.8	20.8	20.8	34.8	28.9		44.0	34.1	34.1
Actuated g/C Ratio	0.37	0.35	0.35	0.22	0.22	0.22	0.37	0.31		0.47	0.36	0.36
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	323	1138	473	184	731	320	290	513		348	618	514
v/s Ratio Prot	c0.08	0.09		0.00	c0.18		0.02	0.24		c0.07	c0.27	
v/s Ratio Perm	0.13		0.02	0.01		0.05	0.12			0.20		0.05
v/c Ratio	0.57	0.26	0.06	0.07	0.82	0.23	0.39	0.78		0.57	0.74	0.13
Uniform Delay, d1	27.7	21.8	20.3	28.6	34.6	29.8	20.3	29.4		16.8	25.9	19.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.1	0.1	7.4	0.5	0.3	7.5		1.4	4.8	0.1
Delay (s)	29.1	22.0	20.4	28.7	42.1	30.3	20.6	36.9		18.3	30.7	20.0
Level of Service	C	C	C	C	D	C	C	D		B	C	B
Approach Delay (s)		24.0			37.8			33.3			25.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	33	19	452	492	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	36	21	491	535	4
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.78	0.78	0.78			
vC, conflicting volume	1071	538	540			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	947	261	264			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	94	98			
cM capacity (veh/h)	222	607	929			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	3	36	512	539
Volume Left	3	0	21	0
Volume Right	0	36	0	4
cSH	222	607	929	1700
Volume to Capacity	0.01	0.06	0.02	0.32
Queue Length 95th (ft)	1	5	2	0
Control Delay (s)	21.5	11.3	0.6	0.0
Lane LOS	C	B	A	
Approach Delay (s)	12.2		0.6	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	184	67	402	77	31	493
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	196	71	428	82	33	524
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1059	469			510	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1059	469			510	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	19	88			97	
cM capacity (veh/h)	241	590			1035	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	267	510	557
Volume Left	196	0	33
Volume Right	71	82	0
cSH	286	1700	1035
Volume to Capacity	0.93	0.30	0.03
Queue Length 95th (ft)	223	0	2
Control Delay (s)	77.1	0.0	0.9
Lane LOS	F		A
Approach Delay (s)	77.1	0.0	0.9
Approach LOS	F		

Intersection Summary			
Average Delay	15.8		
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑	↱	↰	↑↑	
Volume (veh/h)	6	4	89	22	3	43	152	807	19	16	523	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	4	97	24	3	47	165	877	21	17	568	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1424	1815	288	1626	1811	439	568			877		
vC1, stage 1 conf vol	607	607		1208	1208							
vC2, stage 2 conf vol	817	1208		418	603							
vCu, unblocked vol	1424	1815	288	1626	1811	439	568			877		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	97	98	86	84	98	92	83			98		
cM capacity (veh/h)	215	184	715	149	183	566	1000			741		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	108	74	165	439	439	21	17	379	197
Volume Left	7	24	165	0	0	0	17	0	0
Volume Right	97	47	0	0	0	21	0	0	8
cSH	568	283	1000	1700	1700	1700	741	1700	1700
Volume to Capacity	0.19	0.26	0.17	0.26	0.26	0.01	0.02	0.22	0.12
Queue Length 95th (ft)	17	25	15	0	0	0	2	0	0
Control Delay (s)	12.8	22.1	9.3	0.0	0.0	0.0	10.0	0.0	0.0
Lane LOS	B	C	A				A		
Approach Delay (s)	12.8	22.1	1.4				0.3		
Approach LOS	B	C							

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	48.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	576	50	18	816	487	32	229	1	382	297	32
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3209		1662	3228	1443	1614	3165		3162	1643	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3209		1662	3228	1443	1614	3165		3162	1643	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	640	56	20	907	541	36	254	1	424	330	36
RTOR Reduction (vph)	0	4	0	0	0	237	0	0	0	0	3	0
Lane Group Flow (vph)	41	692	0	20	907	304	36	255	0	424	363	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)			1			1						3
Heavy Vehicles (%)	5%	2%	4%	0%	3%	2%	3%	5%	0%	2%	4%	12%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.4	34.9		2.4	32.9	49.3	4.1	16.6		16.4	28.9	
Effective Green, g (s)	4.4	34.9		2.4	32.9	49.3	4.1	16.6		16.4	28.9	
Actuated g/C Ratio	0.05	0.40		0.03	0.38	0.56	0.05	0.19		0.19	0.33	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	79	1278		45	1212	812	75	599		591	542	
v/s Ratio Prot	c0.03	0.22		0.01	c0.28	0.07	0.02	0.08		c0.13	c0.22	
v/s Ratio Perm						0.14						
v/c Ratio	0.52	0.54		0.44	0.75	0.37	0.48	0.43		0.72	0.67	
Uniform Delay, d1	40.6	20.2		41.9	23.8	10.6	40.7	31.3		33.4	25.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.5		2.5	2.6	0.1	1.8	0.5		3.5	3.3	
Delay (s)	43.0	20.7		44.5	26.3	10.7	42.5	31.8		36.9	28.5	
Level of Service	D	C		D	C	B	D	C		D	C	
Approach Delay (s)		21.9			20.8			33.1			33.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	17.3
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	226	161	224	88	118	33	203	1209	62	48	989	262
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	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	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	1699	1473	1614	1581		1630	3228	1377	1599	3228	1386
Flt Permitted	0.42	1.00	1.00	0.39	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	712	1699	1473	661	1581		1630	3228	1377	1599	3228	1386
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	243	173	241	95	127	35	218	1300	67	52	1063	282
RTOR Reduction (vph)	0	0	209	0	8	0	0	0	38	0	0	80
Lane Group Flow (vph)	243	173	32	95	154	0	218	1300	29	52	1063	202
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	32.2	15.9	15.9	32.4	16.0		14.6	50.4	50.4	5.1	59.9	59.9
Effective Green, g (s)	32.2	15.9	15.9	32.4	16.0		14.6	50.4	50.4	5.1	59.9	59.9
Actuated g/C Ratio	0.27	0.13	0.13	0.27	0.14		0.12	0.43	0.43	0.04	0.51	0.51
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	315	228	197	313	213		201	1375	586	68	1634	701
v/s Ratio Prot	c0.11	0.10		0.04	0.10		c0.13	c0.40		0.03	0.33	
v/s Ratio Perm	c0.10		0.02	0.04					0.02			0.15
v/c Ratio	0.77	0.76	0.16	0.30	0.72		1.08	0.95	0.05	0.76	0.65	0.29
Uniform Delay, d1	41.9	49.4	45.3	39.4	49.0		51.9	32.6	19.9	56.0	21.5	16.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.1	13.5	0.4	0.6	11.5		87.8	13.3	0.0	39.2	0.9	0.2
Delay (s)	53.0	62.8	45.7	39.9	60.6		139.7	45.9	19.9	95.2	22.4	17.1
Level of Service	D	E	D	D	E		F	D	B	F	C	B
Approach Delay (s)		52.9			52.9			57.7			24.1	
Approach LOS		D			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	21.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰↑	↱
Volume (vph)	0	688	250	161	810	0	0	0	0	196	0	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1454	1662	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.31	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1454	542	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	756	275	177	890	0	0	0	0	215	0	93
RTOR Reduction (vph)	0	0	100	0	0	0	0	0	0	0	0	79
Lane Group Flow (vph)	0	756	175	177	890	0	0	0	0	107	108	14
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		60.1	60.1	72.5	72.5					13.5	13.5	13.5
Effective Green, g (s)		60.6	60.6	73.0	73.0					14.0	14.0	14.0
Actuated g/C Ratio		0.64	0.64	0.77	0.77					0.15	0.15	0.15
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1928	927	515	2433					232	232	219
v/s Ratio Prot		c0.25		0.03	c0.28							
v/s Ratio Perm			0.12	0.23						0.07	0.07	0.01
v/c Ratio		0.39	0.19	0.34	0.37					0.46	0.47	0.06
Uniform Delay, d1		8.3	7.1	3.5	3.5					37.0	37.1	34.9
Progression Factor		1.00	1.00	0.73	1.16					1.00	1.00	1.00
Incremental Delay, d2		0.6	0.5	0.3	0.4					1.1	1.1	0.1
Delay (s)		8.9	7.5	2.9	4.5					38.1	38.2	34.9
Level of Service		A	A	A	A					D	D	C
Approach Delay (s)		8.5			4.2			0.0			37.2	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	825	0	0	762	235	209	3	180	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1661	3197			3292	1442	1576	1582	1468			
Flt Permitted	0.29	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	503	3197			3292	1442	1576	1582	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	897	0	0	828	255	227	3	196	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	87	0	0	138	0	0	0
Lane Group Flow (vph)	64	897	0	0	828	168	116	114	58	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	72.2	72.2			62.7	62.7	13.8	13.8	13.8			
Effective Green, g (s)	72.2	72.2			62.7	62.7	13.8	13.8	13.8			
Actuated g/C Ratio	0.76	0.76			0.66	0.66	0.15	0.15	0.15			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	443	2429			2172	951	228	229	213			
v/s Ratio Prot	0.01	c0.28			0.25							
v/s Ratio Perm	0.10					0.12	c0.07	0.07	0.04			
v/c Ratio	0.14	0.37			0.38	0.18	0.51	0.50	0.27			
Uniform Delay, d1	3.5	3.8			7.3	6.2	37.5	37.4	36.1			
Progression Factor	0.55	1.06			1.37	4.18	1.00	1.00	1.00			
Incremental Delay, d2	0.1	0.4			0.5	0.4	1.3	1.2	0.5			
Delay (s)	2.0	4.4			10.5	26.3	38.8	38.6	36.7			
Level of Service	A	A			B	C	D	D	D			
Approach Delay (s)		4.3			14.3			37.8			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	828	142	49	787	41	183	14	53	24	5	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1332		1659	1488	
Flt Permitted	0.28	1.00	1.00	0.24	1.00	1.00	0.73	1.00		0.82	1.00	
Satd. Flow (perm)	483	3079	1175	350	3260	1450	1037	1332		1426	1488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	900	154	53	855	45	199	15	58	26	5	29
RTOR Reduction (vph)	0	0	70	0	0	20	0	49	0	0	27	0
Lane Group Flow (vph)	49	900	84	53	855	25	199	24	0	26	7	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	55.2	51.2	51.2	58.0	52.6	52.6	25.4	14.1		11.7	4.9	
Effective Green, g (s)	56.2	51.7	51.7	59.0	53.1	53.1	25.4	14.6		11.7	5.4	
Actuated g/C Ratio	0.59	0.54	0.54	0.62	0.56	0.56	0.27	0.15		0.12	0.06	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	341	1675	639	281	1822	810	328	204		192	84	
v/s Ratio Prot	0.01	c0.29		c0.01	0.26		c0.10	0.02		0.01	0.00	
v/s Ratio Perm	0.08		0.07	0.11		0.02	c0.06			0.01		
v/c Ratio	0.14	0.54	0.13	0.19	0.47	0.03	0.61	0.12		0.14	0.08	
Uniform Delay, d1	8.6	13.9	10.6	8.1	12.5	9.4	29.8	34.6		37.2	42.4	
Progression Factor	1.44	1.16	2.55	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.2	0.4	0.2	0.9	0.1	3.2	0.2		0.3	0.6	
Delay (s)	12.5	17.4	27.5	8.3	13.4	9.5	33.0	34.8		37.5	43.0	
Level of Service	B	B	C	A	B	A	C	C		D	D	
Approach Delay (s)		18.6			12.9			33.5			40.6	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	381	500	19	6	418	40	23	3	8	27	6	439
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0			4.5	4.5		4.5	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.96	1.00
Satd. Flow (prot)	1539	3107		1385	3246			1452	1468		1608	1444
Flt Permitted	0.33	1.00		0.43	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	537	3107		634	3246			1517	1468		1673	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	423	556	21	7	464	44	26	3	9	30	7	488
RTOR Reduction (vph)	0	1	0	0	6	0	0	0	9	0	0	65
Lane Group Flow (vph)	423	576	0	7	502	0	0	29	0	0	37	423
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8		8	4	4	4
Actuated Green, G (s)	47.6	43.0		18.4	17.8			2.4	2.4		2.4	28.2
Effective Green, g (s)	47.6	43.0		18.4	17.8			2.4	2.4		2.4	28.2
Actuated g/C Ratio	0.80	0.72		0.31	0.30			0.04	0.04		0.04	0.47
Clearance Time (s)	4.0	5.0		4.0	5.0			4.5	4.5		4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0			2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	864	2245		203	971			61	59		67	684
v/s Ratio Prot	0.21	0.19		0.00	0.15							c0.27
v/s Ratio Perm	c0.18			0.01				0.02	0.00		0.02	0.02
v/c Ratio	0.49	0.26		0.03	0.52			0.48	0.01		0.55	0.62
Uniform Delay, d1	2.4	2.8		14.4	17.3			27.9	27.4		28.0	11.6
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	0.1		0.1	0.6			4.2	0.0		7.7	1.4
Delay (s)	2.7	2.9		14.4	17.9			32.1	27.4		35.7	13.1
Level of Service	A	A		B	B			C	C		D	B
Approach Delay (s)		2.8			17.9			31.0			14.7	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	13	0	1	8	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	16	0	1	10	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			16		29	16
vC1, stage 1 conf vol					16	
vC2, stage 2 conf vol					12	
vCu, unblocked vol			16		29	16
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1421		982	1069

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	16	1	10	0
Volume Left	0	1	0	0
Volume Right	0	0	0	0
cSH	1700	1421	1700	1700
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	7.5	0.0	0.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.8		0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	156	194	29	110	269	77	45	291	156	91	289	136
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1445	1561		1539	1529		1597	3079	1377	1614	2969	
Flt Permitted	0.32	1.00		0.61	1.00		0.47	1.00	1.00	0.46	1.00	
Satd. Flow (perm)	491	1561		988	1529		784	3079	1377	785	2969	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	168	209	31	118	289	83	48	313	168	98	311	146
RTOR Reduction (vph)	0	4	0	0	10	0	0	0	137	0	50	0
Lane Group Flow (vph)	168	236	0	118	362	0	48	313	31	98	407	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	34.0	26.3		25.0	20.3		14.8	11.7	11.7	19.2	13.9	
Effective Green, g (s)	34.0	26.3		25.0	20.3		14.8	11.7	11.7	19.2	13.9	
Actuated g/C Ratio	0.53	0.41		0.39	0.32		0.23	0.18	0.18	0.30	0.22	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	420	641		426	484		220	562	251	304	644	
v/s Ratio Prot	c0.07	0.15		0.02	c0.24		0.01	0.10		c0.03	c0.14	
v/s Ratio Perm	0.15			0.09			0.04		0.02	0.07		
v/c Ratio	0.40	0.37		0.28	0.75		0.22	0.56	0.12	0.32	0.63	
Uniform Delay, d1	8.8	13.1		12.9	19.6		19.5	23.8	21.9	16.7	22.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.1	5.5		0.2	1.0	0.2	0.2	1.8	
Delay (s)	9.0	13.2		13.0	25.1		19.7	24.8	22.0	17.0	24.5	
Level of Service	A	B		B	C		B	C	C	B	C	
Approach Delay (s)		11.5			22.2			23.4			23.2	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	257	50	7	298	175	73	228	6	117	244	90
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1471	3260	1357	1661	3292	1444	1662	1662		1614	1699	1412
Flt Permitted	0.55	1.00	1.00	0.38	1.00	1.00	0.59	1.00		0.43	1.00	1.00
Satd. Flow (perm)	852	3260	1357	660	3292	1444	1034	1662		731	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	187	289	56	8	335	197	82	256	7	131	274	101
RTOR Reduction (vph)	0	0	38	0	0	164	0	1	0	0	0	70
Lane Group Flow (vph)	187	289	18	8	335	33	82	262	0	131	274	31
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	23.4	21.4	21.4	11.4	11.4	11.4	22.3	17.7		28.9	21.0	21.0
Effective Green, g (s)	23.4	21.4	21.4	11.4	11.4	11.4	22.3	17.7		28.9	21.0	21.0
Actuated g/C Ratio	0.35	0.32	0.32	0.17	0.17	0.17	0.33	0.26		0.43	0.31	0.31
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	392	1028	428	122	553	242	382	433		414	526	437
v/s Ratio Prot	c0.08	0.09		0.00	c0.10		0.01	c0.16		c0.04	0.16	
v/s Ratio Perm	0.09		0.01	0.01		0.02	0.06			0.10		0.02
v/c Ratio	0.48	0.28	0.04	0.07	0.61	0.14	0.21	0.61		0.32	0.52	0.07
Uniform Delay, d1	18.6	17.4	16.1	23.7	26.1	24.0	16.1	22.0		12.4	19.3	16.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.3	0.1	0.1	2.1	0.3	0.1	2.5		0.2	1.1	0.1
Delay (s)	19.0	17.7	16.2	23.8	28.2	24.3	16.2	24.5		12.6	20.3	16.6
Level of Service	B	B	B	C	C	C	B	C		B	C	B
Approach Delay (s)		18.0			26.7			22.5			17.6	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	10	8	304	300	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	11	9	330	326	1
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.91	0.91	0.91			
vC, conflicting volume	675	328	328			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	592	209	210			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	99	99			
cM capacity (veh/h)	425	759	1139			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	3	11	339	327
Volume Left	3	0	9	0
Volume Right	0	11	0	1
cSH	425	759	1139	1700
Volume to Capacity	0.01	0.01	0.01	0.19
Queue Length 95th (ft)	1	1	1	0
Control Delay (s)	13.5	9.8	0.3	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.7		0.3	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	72	6	299	64	8	297
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	77	6	318	68	9	316
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	685	352			386	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	685	352			386	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	81	99			99	
cM capacity (veh/h)	411	687			1151	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	83	386	324
Volume Left	77	0	9
Volume Right	6	68	0
cSH	424	1700	1151
Volume to Capacity	0.20	0.23	0.01
Queue Length 95th (ft)	18	0	1
Control Delay (s)	15.6	0.0	0.3
Lane LOS	C		A
Approach Delay (s)	15.6	0.0	0.3
Approach LOS	C		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑	↱	↰	↑↑	
Volume (veh/h)	3	3	63	6	6	35	94	454	9	4	451	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	3	68	7	7	38	102	493	10	4	490	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	999	1204	253	1022	1197	247	490			493		
vC1, stage 1 conf vol	507	507		698	698							
vC2, stage 2 conf vol	492	698		324	499							
vCu, unblocked vol	999	1204	253	1022	1197	247	490			493		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	99	99	91	98	98	95	90			100		
cM capacity (veh/h)	367	346	753	319	329	753	1069			1039		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	75	51	102	247	247	10	4	327	179
Volume Left	3	7	102	0	0	0	4	0	0
Volume Right	68	38	0	0	0	10	0	0	15
cSH	686	563	1069	1700	1700	1700	1039	1700	1700
Volume to Capacity	0.11	0.09	0.10	0.15	0.15	0.01	0.00	0.19	0.11
Queue Length 95th (ft)	9	7	8	0	0	0	0	0	0
Control Delay (s)	10.9	12.0	8.7	0.0	0.0	0.0	8.5	0.0	0.0
Lane LOS	B	B	A				A		
Approach Delay (s)	10.9	12.0	1.5				0.1		
Approach LOS	B	B							

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	35.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	582	53	22	685	327	54	152	0	371	159	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3139		1630	3197	1316	1662	3228		3072	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3139		1630	3197	1316	1662	3228		3072	1646	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	54	647	59	24	761	363	60	169	0	412	177	50
RTOR Reduction (vph)	0	4	0	0	0	154	0	0	0	0	8	0
Lane Group Flow (vph)	54	702	0	24	761	209	60	169	0	412	219	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	6.1	35.8		2.6	32.3	48.2	6.3	12.0		15.9	21.6	
Effective Green, g (s)	6.1	35.8		2.6	32.3	48.2	6.3	12.0		15.9	21.6	
Actuated g/C Ratio	0.07	0.43		0.03	0.39	0.58	0.08	0.14		0.19	0.26	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	117	1344		50	1235	758	125	463		584	425	
v/s Ratio Prot	c0.03	c0.22		0.01	c0.24	0.05	0.04	0.05		c0.13	c0.13	
v/s Ratio Perm						0.11						
v/c Ratio	0.46	0.52		0.48	0.62	0.28	0.48	0.37		0.71	0.51	
Uniform Delay, d1	37.2	17.6		39.8	20.7	8.9	37.1	32.4		31.7	26.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		2.6	0.9	0.1	1.1	0.5		3.2	1.1	
Delay (s)	38.2	18.0		42.5	21.6	9.0	38.1	32.8		34.8	27.6	
Level of Service	D	B		D	C	A	D	C		C	C	
Approach Delay (s)		19.4			18.0			34.2			32.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	83.6	Sum of lost time (s)	17.3
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	182	65	219	66	76	28	185	885	86	46	921	194
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	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	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	1699	1473	1614	1568		1630	3228	1377	1599	3228	1386
Flt Permitted	0.62	1.00	1.00	0.71	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1043	1699	1473	1209	1568		1630	3228	1377	1599	3228	1386
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	196	70	235	71	82	30	199	952	92	49	990	209
RTOR Reduction (vph)	0	0	202	0	11	0	0	0	59	0	0	70
Lane Group Flow (vph)	196	70	33	71	101	0	199	952	33	49	990	139
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	29.2	13.8	13.8	25.6	12.0		14.9	36.1	36.1	5.0	46.0	46.0
Effective Green, g (s)	29.2	13.8	13.8	25.6	12.0		14.9	36.1	36.1	5.0	46.0	46.0
Actuated g/C Ratio	0.29	0.14	0.14	0.26	0.12		0.15	0.36	0.36	0.05	0.46	0.46
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	392	235	204	366	189		244	1172	500	80	1493	641
v/s Ratio Prot	c0.08	0.04		0.03	0.06		c0.12	c0.29		0.03	0.31	
v/s Ratio Perm	c0.07		0.02	0.02					0.02			0.10
v/c Ratio	0.50	0.30	0.16	0.19	0.54		0.82	0.81	0.07	0.61	0.66	0.22
Uniform Delay, d1	30.4	38.4	37.7	29.1	41.1		40.9	28.6	20.7	46.3	20.7	15.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.7	0.4	0.3	2.9		18.6	4.4	0.1	13.1	1.1	0.2
Delay (s)	31.4	39.2	38.1	29.4	44.0		59.5	33.0	20.7	59.4	21.8	16.1
Level of Service	C	D	D	C	D		E	C	C	E	C	B
Approach Delay (s)		35.6			38.3			36.3			22.3	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	99.4	Sum of lost time (s)	21.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Appendix D Crash Data at Study Intersections

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Airport Road & Biddle Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2013 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2012														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	2	0	2	0	0
2012 TOTAL	0	0	3	3	0	0	0	2	1	3	0	3	0	0
YEAR: 2011														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	3	0	3	0	4	0	3	0	3	0	3	0	0
2011 TOTAL	0	4	0	4	0	5	0	4	0	4	0	4	0	0
YEAR: 2010														
ANGLE	0	2	1	3	0	2	0	2	1	3	0	3	0	0
REAR-END	0	1	1	2	0	3	0	2	0	2	0	2	0	0
2010 TOTAL	0	3	2	5	0	5	0	4	1	5	0	5	0	0
FINAL TOTAL	0	8	5	13	0	11	0	11	2	13	0	13	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Vilas Road & Table Rock Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
ANGLE	0	1	0	1	0	1	1	1	0	0	1	1	0	0
REAR-END	0	1	2	3	0	1	0	2	1	2	1	3	0	0
TURNING MOVEMENTS	0	1	3	4	0	1	1	2	2	3	1	4	0	0
2013 TOTAL	0	3	5	8	0	3	2	5	3	5	3	8	0	0
YEAR: 2012														
BACKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
REAR-END	0	1	0	1	0	1	1	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	3	0	3	0	5	0	0	3	2	1	3	0	0
2012 TOTAL	0	4	1	5	0	6	1	2	3	4	1	5	0	0
YEAR: 2011														
ANGLE	0	1	0	1	0	2	0	1	0	1	0	1	0	0
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	2	3	0	1	0	3	0	2	1	3	0	0
2011 TOTAL	0	2	3	5	0	3	0	5	0	4	1	5	0	0
YEAR: 2010														
ANGLE	0	2	0	2	0	3	0	2	0	2	0	2	0	0
MISCELLANEOUS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
REAR-END	0	2	1	3	0	4	0	3	0	3	0	3	0	0
2010 TOTAL	0	4	2	6	0	7	0	6	0	6	0	6	0	0
YEAR: 2009														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
NON-COLLISION	0	1	0	1	0	1	0	1	0	1	0	1	0	0
REAR-END	0	1	2	3	0	1	0	2	1	2	1	3	0	0
TURNING MOVEMENTS	0	2	0	2	0	3	0	2	0	2	0	2	0	0
2009 TOTAL	0	4	3	7	0	5	0	6	1	6	1	7	0	0
FINAL TOTAL	0	17	14	31	0	24	3	24	7	25	6	31	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

OR 99 Rogue Valley Higway & W Table Rock Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
HEAD-ON	0	1	0	1	0	2	0	1	0	1	0	1	0	0
REAR-END	0	4	3	7	0	5	0	4	3	7	0	7	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	5	4	9	0	7	0	6	3	9	0	9	0	0
YEAR: 2011														
ANGLE	0	1	0	1	0	2	0	1	0	1	0	1	0	0
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	1	0	1	0	1
REAR-END	0	2	0	2	0	2	0	2	0	2	0	2	0	0
2011 TOTAL	0	3	1	4	0	4	0	4	0	4	0	4	0	1
YEAR: 2010														
ANGLE	0	1	0	1	0	1	0	0	1	1	0	1	0	0
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	1	0	1	0	1
REAR-END	0	4	0	4	0	5	0	2	2	3	1	4	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2010 TOTAL	0	6	1	7	0	7	0	4	3	6	1	7	0	1
YEAR: 2009														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	1	0	1
REAR-END	0	2	2	4	0	4	0	4	0	4	0	4	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	2	0	2	0	0
2009 TOTAL	0	2	5	7	0	4	0	6	1	6	1	7	0	1
FINAL TOTAL	0	16	11	27	0	22	0	20	7	25	2	27	0	3

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

OR 62 Crater Lake Highway & Vilas Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
BACKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2012														
REAR-END	0	3	2	5	0	3	0	3	2	4	1	5	0	0
TURNING MOVEMENTS	0	1	3	4	0	1	0	4	0	4	0	4	0	0
2012 TOTAL	0	4	5	9	0	4	0	7	2	8	1	9	0	0
YEAR: 2011														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	2	0	2	0	3	0	2	0	2	0	2	0	0
2011 TOTAL	0	3	0	3	0	4	0	3	0	3	0	3	0	0
YEAR: 2010														
ANGLE	0	2	0	2	0	3	1	1	1	0	2	2	0	0
TURNING MOVEMENTS	0	3	0	3	0	3	0	3	0	1	2	3	0	0
2010 TOTAL	0	5	0	5	0	6	1	4	1	1	4	5	0	0
YEAR: 2009														
ANGLE	0	0	1	1	0	0	0	1	0	0	1	1	0	0
PEDESTRIAN	0	1	0	1	0	1	0	1	0	1	0	1	0	1
REAR-END	0	5	2	7	0	6	0	7	0	6	1	7	0	0
SIDESWIPE - MEETING	0	0	1	1	0	0	0	0	1	1	0	1	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	0	0	0	1	0	0
TURNING MOVEMENTS	0	1	5	6	0	1	0	5	0	6	0	6	0	0
2009 TOTAL	0	7	10	17	0	8	0	14	1	14	2	17	0	1
FINAL TOTAL	0	19	16	35	0	22	1	29	4	27	7	35	0	1

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Hamrick Rd & E Pine St / Biddle Rd
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
TURNING MOVEMENTS	0	3	2	5	0	5	0	5	0	4	1	5	0	0
2013 TOTAL	0	3	2	5	0	5	0	5	0	4	1	5	0	0
YEAR: 2012														
TURNING MOVEMENTS	0	1	2	3	0	1	1	3	0	2	1	3	0	0
2012 TOTAL	0	1	2	3	0	1	1	3	0	2	1	3	0	0
YEAR: 2011														
ANGLE	0	0	1	1	0	0	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	1	0	1	0	0
2011 TOTAL	0	1	1	2	0	1	0	0	2	2	0	2	0	0
YEAR: 2010														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
REAR-END	0	2	0	2	0	2	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	3	3	6	0	11	0	6	0	5	1	6	0	0
2010 TOTAL	0	5	4	9	0	13	0	9	0	8	1	9	0	0
YEAR: 2009														
ANGLE	0	0	1	1	0	0	0	0	0	1	0	1	0	0
REAR-END	0	0	2	2	0	0	0	1	1	1	1	2	0	0
TURNING MOVEMENTS	0	1	2	3	0	1	0	3	0	2	1	3	0	0
2009 TOTAL	0	1	5	6	0	1	0	4	1	4	2	6	0	0
FINAL TOTAL	0	11	14	25	0	21	1	21	3	20	5	25	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

E Pine Street & Peninger Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
REAR-END	0	2	0	2	0	3	0	2	0	2	0	2	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	2	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	2	0	1	1	2	0	0
2013 TOTAL	0	3	2	5	0	4	2	5	0	4	1	5	0	0
YEAR: 2012														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2012 TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0
YEAR: 2011														
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	2	0	2	0	0
2011 TOTAL	0	1	1	2	0	1	0	1	1	2	0	2	0	0
YEAR: 2010														
TURNING MOVEMENTS	0	1	0	1	0	1	1	0	1	1	0	1	0	0
2010 TOTAL	0	1	0	1	0	1	1	0	1	1	0	1	0	0
FINAL TOTAL	0	6	4	10	0	7	3	8	2	9	1	10	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

E Pine Street & I-5 Southbound Ramps
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	1	0	1	0	1
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2013 TOTAL	0	0	2	2	0	0	0	2	0	2	0	2	0	1
YEAR: 2012														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	1	1	1	2	0	2	0	0
2012 TOTAL	0	1	2	3	0	1	1	2	1	3	0	3	0	0
YEAR: 2011														
TURNING MOVEMENTS	0	1	1	2	0	1	2	2	0	2	0	2	0	0
2011 TOTAL	0	1	1	2	0	1	2	2	0	2	0	2	0	0
YEAR: 2010														
BACKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
NON-COLLISION	0	1	0	1	0	1	1	1	0	1	0	1	0	1
REAR-END	0	1	1	2	0	1	0	2	0	2	0	2	0	0
2010 TOTAL	0	2	2	4	0	2	1	4	0	4	0	4	0	1
YEAR: 2009														
REAR-END	0	1	1	2	0	1	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	2	0	2	0	2	1	2	0	2	0	2	0	0
2009 TOTAL	0	3	1	4	0	3	1	4	0	4	0	4	0	0
FINAL TOTAL	0	7	8	15	0	7	5	14	1	15	0	15	0	2

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

E Pine Street & I-5 Northbound Ramps
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
TURNING MOVEMENTS	0	2	1	3	0	2	1	3	0	1	2	3	0	0
2013 TOTAL	0	3	1	4	0	3	1	4	0	2	2	4	0	1
YEAR: 2012														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	0	1	0	0	0
TURNING MOVEMENTS	0	2	0	2	0	2	0	1	1	0	2	2	0	0
2012 TOTAL	0	2	2	4	0	2	0	3	1	1	3	3	0	0
YEAR: 2011														
REAR-END	0	2	1	3	0	2	0	2	0	3	0	3	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	2	0	2	0	0
2011 TOTAL	0	2	3	5	0	2	0	3	1	5	0	5	0	0
YEAR: 2010														
BACKING	0	1	0	1	0	1	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	3	0	1	0	1	0	1	0	0
2010 TOTAL	0	2	0	2	0	4	0	1	1	2	0	2	0	0
YEAR: 2009														
REAR-END	0	3	0	3	0	4	0	2	1	3	0	3	0	0
TURNING MOVEMENTS	0	3	0	3	0	3	2	2	1	2	1	3	0	0
2009 TOTAL	0	6	0	6	0	7	2	4	2	5	1	6	0	0
FINAL TOTAL	0	15	6	21	0	18	3	15	5	15	6	20	0	1

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Biddle Road & Table Rock Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
REAR-END	0	1	2	3	0	3	0	2	1	2	1	3	0	0
2013 TOTAL	0	1	2	3	0	3	0	2	1	2	1	3	0	0
YEAR: 2012														
REAR-END	0	2	0	2	0	2	0	1	1	2	0	2	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
2012 TOTAL	0	3	1	4	0	3	0	2	2	3	1	4	0	0
YEAR: 2011														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2011 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2010														
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2010 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
YEAR: 2009														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2009 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FINAL TOTAL	0	5	5	10	0	7	0	6	4	8	2	10	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Airport Road & Table Rock Road
January 1, 2009 through December 2013

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2013														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	1	1	2	0	0
2013 TOTAL	0	0	3	3	0	0	0	3	0	2	1	3	0	0
YEAR: 2012														
REAR-END	0	2	0	2	0	2	0	1	1	2	0	2	0	0
2012 TOTAL	0	2	0	2	0	2	0	1	1	2	0	2	0	0
FINAL TOTAL	0	2	3	5	0	2	0	4	1	4	1	5	0	0

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

Appendix E Build-Year (2016) Background Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↕	↱
Volume (vph)	0	716	286	226	1271	0	0	0	0	216	0	82
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1454	1662	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.30	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1454	523	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	787	314	248	1397	0	0	0	0	237	0	90
RTOR Reduction (vph)	0	0	112	0	0	0	0	0	0	0	0	71
Lane Group Flow (vph)	0	787	202	248	1397	0	0	0	0	118	119	19
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		60.6	60.6	73.9	73.9					12.1	12.1	12.1
Effective Green, g (s)		61.1	61.1	74.4	74.4					12.6	12.6	12.6
Actuated g/C Ratio		0.64	0.64	0.78	0.78					0.13	0.13	0.13
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1944	935	521	2480					209	209	197
v/s Ratio Prot		0.26		0.05	c0.44							
v/s Ratio Perm			0.14	0.33						0.07	0.08	0.01
v/c Ratio		0.40	0.22	0.48	0.56					0.56	0.57	0.10
Uniform Delay, d1		8.2	7.0	3.5	4.0					38.6	38.7	36.2
Progression Factor		1.00	1.00	0.34	0.37					1.00	1.00	1.00
Incremental Delay, d2		0.6	0.5	0.4	0.8					2.8	2.9	0.2
Delay (s)		8.8	7.6	1.6	2.3					41.4	41.5	36.4
Level of Service		A	A	A	A					D	D	D
Approach Delay (s)		8.4			2.2			0.0			40.1	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	871	0	0	1075	357	422	1	309	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	1468			
Flt Permitted	0.16	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	282	3197			3292	1442	1576	1580	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	947	0	0	1168	388	459	1	336	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	160	0	0	108	0	0	0
Lane Group Flow (vph)	66	947	0	0	1168	228	229	231	228	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	65.4	65.4			55.9	55.9	20.6	20.6	20.6			
Effective Green, g (s)	65.4	65.4			55.9	55.9	20.6	20.6	20.6			
Actuated g/C Ratio	0.69	0.69			0.59	0.59	0.22	0.22	0.22			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	266	2200			1937	848	341	342	318			
v/s Ratio Prot	0.01	c0.30			c0.35							
v/s Ratio Perm	0.16					0.16	0.15	0.15	c0.16			
v/c Ratio	0.25	0.43			0.60	0.27	0.67	0.68	0.72			
Uniform Delay, d1	7.4	6.6			12.5	9.6	34.1	34.1	34.5			
Progression Factor	0.92	1.22			1.53	5.60	1.00	1.00	1.00			
Incremental Delay, d2	0.3	0.6			1.1	0.6	4.7	4.7	7.0			
Delay (s)	7.1	8.6			20.1	54.1	38.8	38.9	41.5			
Level of Service	A	A			C	D	D	D	D			
Approach Delay (s)		8.5			28.6			39.9			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	25.2	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)	13.5
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	952	169	46	1222	72	177	8	29	18	5	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1338		1659	1481	
Flt Permitted	0.13	1.00	1.00	0.21	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	236	3079	1175	305	3260	1450	1031	1338		1746	1481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1035	184	50	1328	78	192	9	32	20	5	36
RTOR Reduction (vph)	0	0	76	0	0	31	0	27	0	0	34	0
Lane Group Flow (vph)	48	1035	108	50	1328	47	192	14	0	20	7	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	58.2	55.4	55.4	60.0	56.3	56.3	22.9	13.3		8.7	3.6	
Effective Green, g (s)	59.2	55.9	55.9	61.0	56.8	56.8	22.9	13.8		8.7	4.1	
Actuated g/C Ratio	0.62	0.59	0.59	0.64	0.60	0.60	0.24	0.15		0.09	0.04	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	196	1811	691	243	1949	866	296	194		155	63	
v/s Ratio Prot	0.01	0.34		c0.01	c0.41		c0.10	0.01		0.01	0.00	
v/s Ratio Perm	0.14		0.09	0.12		0.03	c0.06			0.00		
v/c Ratio	0.24	0.57	0.16	0.21	0.68	0.05	0.65	0.07		0.13	0.10	
Uniform Delay, d1	9.2	12.1	8.9	7.5	13.0	7.9	31.7	35.1		39.3	43.7	
Progression Factor	1.81	1.47	4.03	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.2	0.4	0.3	1.9	0.1	4.8	0.1		0.4	1.0	
Delay (s)	17.1	19.0	36.2	7.8	14.9	8.1	36.5	35.2		39.7	44.7	
Level of Service	B	B	D	A	B	A	D	D		D	D	
Approach Delay (s)		21.4			14.3			36.3			43.1	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	522	44	5	720	50	46	21	8	36	9	562
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	3040		1385	3259		2780	1558		1612	1577	1444
Flt Permitted	0.15	1.00		0.41	1.00		0.75	1.00		0.74	1.00	1.00
Satd. Flow (perm)	457	3040		602	3259		2198	1558		1249	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	479	580	49	6	800	56	51	23	9	40	10	624
RTOR Reduction (vph)	0	3	0	0	4	0	0	8	0	0	0	20
Lane Group Flow (vph)	479	626	0	6	852	0	51	24	0	40	10	604
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	65.9	61.3		27.4	26.8		6.1	6.1		6.1	6.1	41.2
Effective Green, g (s)	65.9	61.3		27.4	26.8		6.1	6.1		6.1	6.1	41.2
Actuated g/C Ratio	0.81	0.75		0.34	0.33		0.07	0.07		0.07	0.07	0.51
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1458	2286		208	1071		164	116		93	118	729
v/s Ratio Prot	0.14	0.21		0.00	c0.26			0.02			0.01	c0.36
v/s Ratio Perm	0.12			0.01			0.02			0.03		0.06
v/c Ratio	0.33	0.27		0.03	0.80		0.31	0.20		0.43	0.08	0.83
Uniform Delay, d1	5.5	3.2		18.1	24.9		35.7	35.4		36.0	35.1	17.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	4.4		0.8	0.6		2.3	0.2	7.6
Delay (s)	5.6	3.3		18.2	29.3		36.5	36.1		38.4	35.3	24.7
Level of Service	A	A		B	C		D	D		D	D	C
Approach Delay (s)		4.3			29.2			36.3			25.7	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	30	16	8	15	9	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	38	20	10	19	11	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			58		86	48
vC1, stage 1 conf vol					48	
vC2, stage 2 conf vol					39	
vCu, unblocked vol			58		86	48
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1370		936	1027

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	58	10	19	20
Volume Left	0	10	0	11
Volume Right	20	0	0	9
cSH	1700	1370	1700	974
Volume to Capacity	0.03	0.01	0.01	0.02
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.0	7.6	0.0	8.8
Lane LOS		A		A
Approach Delay (s)	0.0	2.7		8.8
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	157	37	227	357	115	80	536	242	116	452	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1553		1539	1521		1598	3079	1377	1614	2951	
Flt Permitted	0.21	1.00		0.61	1.00		0.20	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	319	1553		993	1521		340	3079	1377	432	2951	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	209	169	40	244	384	124	86	576	260	125	486	259
RTOR Reduction (vph)	0	7	0	0	10	0	0	0	192	0	63	0
Lane Group Flow (vph)	209	202	0	244	498	0	86	576	68	125	682	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	47.5	35.2		44.1	33.5		27.9	24.2	24.2	32.5	26.5	
Effective Green, g (s)	47.5	35.2		44.1	33.5		27.9	24.2	24.2	32.5	26.5	
Actuated g/C Ratio	0.52	0.38		0.48	0.36		0.30	0.26	0.26	0.35	0.29	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	315	594		538	553		153	809	362	229	850	
v/s Ratio Prot	c0.09	0.13		0.05	c0.33		0.02	0.19		c0.04	c0.23	
v/s Ratio Perm	0.25			0.16			0.15		0.05	0.16		
v/c Ratio	0.66	0.34		0.45	0.90		0.56	0.71	0.19	0.55	0.80	
Uniform Delay, d1	15.5	20.2		14.8	27.7		24.4	30.7	26.3	21.7	30.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	0.1		0.2	17.4		2.8	2.8	0.2	1.4	5.4	
Delay (s)	19.6	20.3		15.0	45.0		27.2	33.5	26.5	23.1	35.7	
Level of Service	B	C		B	D		C	C	C	C	D	
Approach Delay (s)		19.9			35.3			30.9			33.9	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	271	80	11	544	297	102	356	6	181	415	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1471	3260	1355	1660	3292	1444	1662	1664		1614	1699	1412
Flt Permitted	0.33	1.00	1.00	0.46	1.00	1.00	0.35	1.00		0.24	1.00	1.00
Satd. Flow (perm)	513	3260	1355	806	3292	1444	619	1664		413	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	187	304	90	12	611	334	115	400	7	203	466	187
RTOR Reduction (vph)	0	0	57	0	0	255	0	1	0	0	0	118
Lane Group Flow (vph)	187	304	33	12	611	79	115	406	0	203	466	69
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	36.7	34.7	34.7	22.1	22.1	22.1	31.9	28.1		42.5	34.7	34.7
Effective Green, g (s)	36.7	34.7	34.7	22.1	22.1	22.1	31.9	28.1		42.5	34.7	34.7
Actuated g/C Ratio	0.39	0.37	0.37	0.24	0.24	0.24	0.34	0.30		0.45	0.37	0.37
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	335	1205	501	195	775	340	252	498		320	628	522
v/s Ratio Prot	c0.08	0.09		0.00	c0.19		0.02	c0.24		c0.07	0.27	
v/s Ratio Perm	0.14		0.02	0.01		0.05	0.14			0.22		0.05
v/c Ratio	0.56	0.25	0.07	0.06	0.79	0.23	0.46	0.82		0.63	0.74	0.13
Uniform Delay, d1	27.0	20.5	19.1	27.7	33.7	29.0	23.5	30.5		18.1	25.7	19.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.2	0.1	0.0	5.6	0.5	0.5	10.2		3.0	4.9	0.1
Delay (s)	28.1	20.7	19.2	27.7	39.2	29.4	23.9	40.7		21.1	30.5	19.7
Level of Service	C	C	B	C	D	C	C	D		C	C	B
Approach Delay (s)		22.9			35.7			37.0			25.9	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	34	19	461	502	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	37	21	501	546	4
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	1091	549	551			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	970	267	270			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	94	98			
cM capacity (veh/h)	213	598	918			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	3	37	522	550
Volume Left	3	0	21	0
Volume Right	0	37	0	4
cSH	213	598	918	1700
Volume to Capacity	0.02	0.06	0.02	0.32
Queue Length 95th (ft)	1	5	2	0
Control Delay (s)	22.1	11.4	0.6	0.0
Lane LOS	C	B	A	
Approach Delay (s)	12.3		0.6	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	188	68	410	79	32	503
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	200	72	436	84	34	535
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1081	478			520	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1081	478			520	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	14	88			97	
cM capacity (veh/h)	233	583			1026	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	272	520	569
Volume Left	200	0	34
Volume Right	72	84	0
cSH	277	1700	1026
Volume to Capacity	0.98	0.31	0.03
Queue Length 95th (ft)	245	0	3
Control Delay (s)	90.0	0.0	0.9
Lane LOS	F		A
Approach Delay (s)	90.0	0.0	0.9
Approach LOS	F		

Intersection Summary			
Average Delay	18.4		
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	4	91	22	3	44	155	823	19	16	533	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	4	99	24	3	48	168	895	21	17	579	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1452	1849	293	1657	1846	447	579			895		
vC1, stage 1 conf vol	618	618		1232	1232							
vC2, stage 2 conf vol	834	1232		426	614							
vCu, unblocked vol	1452	1849	293	1657	1846	447	579			895		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	97	98	86	83	98	91	83			98		
cM capacity (veh/h)	208	178	709	143	177	559	991			730		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	110	75	168	447	447	21	17	386	201
Volume Left	7	24	168	0	0	0	17	0	0
Volume Right	99	48	0	0	0	21	0	0	8
cSH	562	277	991	1700	1700	1700	730	1700	1700
Volume to Capacity	0.20	0.27	0.17	0.26	0.26	0.01	0.02	0.23	0.12
Queue Length 95th (ft)	18	27	15	0	0	0	2	0	0
Control Delay (s)	13.0	22.8	9.4	0.0	0.0	0.0	10.1	0.0	0.0
Lane LOS	B	C	A				B		
Approach Delay (s)	13.0	22.8	1.5				0.3		
Approach LOS	B	C							

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	49.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	588	51	18	832	497	33	234	1	390	303	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3141		1630	3197	1317	1662	3226		3072	1684	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3141		1630	3197	1317	1662	3226		3072	1684	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	42	653	57	20	924	552	37	260	1	433	337	37
RTOR Reduction (vph)	0	5	0	0	0	134	0	0	0	0	3	0
Lane Group Flow (vph)	42	705	0	20	924	418	37	261	0	433	371	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	3.5	37.4		1.9	35.8	54.5	4.1	18.4		18.7	33.0	
Effective Green, g (s)	3.5	37.4		1.9	35.8	54.5	4.1	18.4		18.7	33.0	
Actuated g/C Ratio	0.04	0.40		0.02	0.38	0.58	0.04	0.20		0.20	0.35	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	60	1253		33	1221	766	72	633		613	593	
v/s Ratio Prot	c0.03	0.22		0.01	c0.29	0.11	0.02	0.08		c0.14	c0.22	
v/s Ratio Perm						0.21						
v/c Ratio	0.70	0.56		0.61	0.76	0.55	0.51	0.41		0.71	0.63	
Uniform Delay, d1	44.6	21.8		45.5	25.2	12.0	43.8	32.9		34.9	25.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.9	0.6		19.6	2.7	0.4	2.6	0.4		3.0	2.1	
Delay (s)	69.5	22.4		65.2	27.9	12.4	46.4	33.4		38.0	27.3	
Level of Service	E	C		E	C	B	D	C		D	C	
Approach Delay (s)		25.0			22.7			35.0			33.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	93.7	Sum of lost time (s)	17.3
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	164	228	90	120	34	207	1233	63	49	1009	267
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	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	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	1699	1473	1614	1579		1630	3228	1377	1599	3228	1386
Flt Permitted	0.41	1.00	1.00	0.38	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	693	1699	1473	652	1579		1630	3228	1377	1599	3228	1386
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	248	176	245	97	129	37	223	1326	68	53	1085	287
RTOR Reduction (vph)	0	0	212	0	8	0	0	0	40	0	0	81
Lane Group Flow (vph)	248	176	33	97	158	0	223	1326	28	53	1085	206
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	33.2	16.2	16.2	33.8	16.5		15.6	49.4	49.4	5.1	59.9	59.9
Effective Green, g (s)	33.2	16.2	16.2	33.8	16.5		15.6	49.4	49.4	5.1	59.9	59.9
Actuated g/C Ratio	0.28	0.14	0.14	0.28	0.14		0.13	0.41	0.41	0.04	0.50	0.50
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	321	230	199	323	218		212	1334	569	68	1618	694
v/s Ratio Prot	c0.11	0.10		0.04	0.10		c0.14	c0.41		0.03	0.34	
v/s Ratio Perm	c0.10		0.02	0.04					0.02			0.15
v/c Ratio	0.77	0.77	0.17	0.30	0.73		1.05	0.99	0.05	0.78	0.67	0.30
Uniform Delay, d1	42.1	49.8	45.7	39.2	49.3		52.0	34.9	21.0	56.6	22.4	17.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.0	14.0	0.4	0.5	11.4		76.1	23.1	0.0	41.9	1.1	0.2
Delay (s)	53.1	63.9	46.1	39.7	60.7		128.1	58.0	21.0	98.6	23.5	17.7
Level of Service	D	E	D	D	E		F	E	C	F	C	B
Approach Delay (s)		53.4			53.0			66.1			25.1	
Approach LOS		D			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	119.5	Sum of lost time (s)	21.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↕	↱
Volume (vph)	0	702	255	164	826	0	0	0	0	200	0	87
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	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
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3197	1423	1397	3260					1327	1327	1381
Flt Permitted		1.00	1.00	0.31	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3197	1423	457	3260					1327	1327	1381
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	755	274	176	888	0	0	0	0	215	0	94
RTOR Reduction (vph)	0	0	98	0	0	0	0	0	0	0	0	81
Lane Group Flow (vph)	0	755	176	176	888	0	0	0	0	107	108	13
Confl. Peds. (#/hr)	2		1	1		2	4					4
Confl. Bikes (#/hr)			6									
Heavy Vehicles (%)	0%	4%	2%	19%	2%	0%	0%	0%	0%	19%	0%	6%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		60.4	60.4	73.2	73.2					12.8	12.8	12.8
Effective Green, g (s)		60.9	60.9	73.7	73.7					13.3	13.3	13.3
Actuated g/C Ratio		0.64	0.64	0.78	0.78					0.14	0.14	0.14
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		2049	912	441	2529					185	185	193
v/s Ratio Prot		0.24		c0.04	0.27							
v/s Ratio Perm			0.12	c0.27						0.08	0.08	0.01
v/c Ratio		0.37	0.19	0.40	0.35					0.58	0.58	0.07
Uniform Delay, d1		8.0	7.0	3.5	3.3					38.2	38.3	35.5
Progression Factor		1.00	1.00	1.01	1.25					1.00	1.00	1.00
Incremental Delay, d2		0.5	0.5	0.4	0.4					3.6	3.9	0.1
Delay (s)		8.5	7.5	3.9	4.5					41.8	42.1	35.6
Level of Service		A	A	A	A					D	D	D
Approach Delay (s)		8.2			4.4			0.0			40.0	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	842	0	0	777	240	213	3	184	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1553	3107			3137	1273	1564	1570	1271			
Flt Permitted	0.29	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	478	3107			3137	1273	1564	1570	1271			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	886	0	0	818	253	224	3	194	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	85	0	0	151	0	0	0
Lane Group Flow (vph)	63	886	0	0	818	168	114	113	43	0	0	0
Confl. Peds. (#/hr)	2					2						
Confl. Bikes (#/hr)			5			1						
Heavy Vehicles (%)	7%	7%	0%	0%	6%	14%	1%	0%	17%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	72.6	72.6			63.1	63.1	13.4	13.4	13.4			
Effective Green, g (s)	72.6	72.6			63.1	63.1	13.4	13.4	13.4			
Actuated g/C Ratio	0.76	0.76			0.66	0.66	0.14	0.14	0.14			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	421	2374			2083	845	220	221	179			
v/s Ratio Prot	0.01	c0.29			c0.26							
v/s Ratio Perm	0.11					0.13	c0.07	0.07	0.03			
v/c Ratio	0.15	0.37			0.39	0.20	0.52	0.51	0.24			
Uniform Delay, d1	3.3	3.7			7.2	6.2	37.8	37.8	36.3			
Progression Factor	0.67	1.18			1.48	4.62	1.00	1.00	1.00			
Incremental Delay, d2	0.1	0.4			0.5	0.5	1.5	1.5	0.5			
Delay (s)	2.3	4.8			11.2	29.0	39.3	39.3	36.8			
Level of Service	A	A			B	C	D	D	D			
Approach Delay (s)		4.6			15.4			38.1			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	845	145	50	803	42	187	14	54	24	5	28
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1630	3228	1153	1568	3260	1453	1374	1477		1659	1525	
Flt Permitted	0.28	1.00	1.00	0.24	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	476	3228	1153	397	3260	1453	1062	1477		1746	1525	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	49	909	156	54	863	45	201	15	58	26	5	30
RTOR Reduction (vph)	0	0	69	0	0	19	0	49	0	0	29	0
Lane Group Flow (vph)	49	909	87	54	863	26	201	24	0	26	6	0
Confl. Peds. (#/hr)	2					2			2	2		
Confl. Bikes (#/hr)			5									
Heavy Vehicles (%)	2%	3%	26%	6%	2%	0%	21%	7%	2%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	56.1	52.4	52.4	59.1	53.9	53.9	24.4	14.0		9.8	3.9	
Effective Green, g (s)	57.1	52.9	52.9	60.1	54.4	54.4	24.4	14.5		9.8	4.4	
Actuated g/C Ratio	0.60	0.56	0.56	0.63	0.57	0.57	0.26	0.15		0.10	0.05	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	337	1797	642	321	1866	832	325	225		174	70	
v/s Ratio Prot	0.01	c0.28		c0.01	0.26		c0.10	0.02		0.01	0.00	
v/s Ratio Perm	0.08		0.08	0.10		0.02	c0.05			0.01		
v/c Ratio	0.15	0.51	0.14	0.17	0.46	0.03	0.62	0.11		0.15	0.09	
Uniform Delay, d1	8.2	13.0	10.1	7.6	11.8	8.8	30.5	34.7		38.7	43.4	
Progression Factor	1.37	1.14	2.73	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.0	0.4	0.2	0.8	0.1	3.5	0.2		0.4	0.8	
Delay (s)	11.4	15.7	27.9	7.8	12.6	8.9	34.0	34.8		39.1	44.2	
Level of Service	B	B	C	A	B	A	C	C		D	D	
Approach Delay (s)		17.2			12.2			34.2			42.0	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	389	510	19	6	426	41	23	3	8	28	6	448
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3131	3218		1662	3251		2854	1559		1662	1750	1473
Flt Permitted	0.37	1.00		0.45	1.00		1.00	1.00		1.00	1.00	1.00
Satd. Flow (perm)	1208	3218		780	3251		3004	1559		1750	1750	1473
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)	405	531	20	6	444	43	24	3	8	29	6	467
RTOR Reduction (vph)	0	2	0	0	5	0	0	8	0	0	0	99
Lane Group Flow (vph)	405	549	0	6	482	0	24	3	0	29	6	368
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	2%	21%	0%	1%	0%	13%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	34.0	29.5		14.9	14.4		2.2	2.2		2.2	2.2	17.8
Effective Green, g (s)	34.0	29.5		14.9	14.4		2.2	2.2		2.2	2.2	17.8
Actuated g/C Ratio	0.74	0.65		0.33	0.32		0.05	0.05		0.05	0.05	0.39
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1555	2077		263	1024		144	75		84	84	573
v/s Ratio Prot	0.09	0.17		0.00	c0.15			0.00			0.00	c0.22
v/s Ratio Perm	0.10			0.01			0.01			0.02		0.03
v/c Ratio	0.26	0.26		0.02	0.47		0.17	0.05		0.35	0.07	0.64
Uniform Delay, d1	2.0	3.5		10.5	12.6		20.9	20.7		21.1	20.8	11.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		0.0	0.5		0.4	0.2		1.8	0.3	2.2
Delay (s)	2.0	3.6		10.5	13.1		21.3	20.9		22.8	21.0	13.5
Level of Service	A	A		B	B		C	C		C	C	B
Approach Delay (s)		2.9			13.0			21.2			14.2	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	45.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	13	0	1	8	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	23	0	2	14	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			23		41	23
vC1, stage 1 conf vol					23	
vC2, stage 2 conf vol					18	
vCu, unblocked vol			23		41	23
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1605		972	1059

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	23	2	14	0
Volume Left	0	2	0	0
Volume Right	0	0	0	0
cSH	1700	1605	1700	1700
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	7.2	0.0	0.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.8		0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	159	198	30	112	274	79	46	297	159	93	295	139
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1539	1608		1539	1602		1524	3050	1383	1525	2897	
Flt Permitted	0.31	1.00		0.60	1.00		0.45	1.00	1.00	0.46	1.00	
Satd. Flow (perm)	499	1608		977	1602		720	3050	1383	735	2897	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	175	218	33	123	301	87	51	326	175	102	324	153
RTOR Reduction (vph)	0	5	0	0	10	0	0	0	142	0	53	0
Lane Group Flow (vph)	175	246	0	123	378	0	51	326	33	102	424	0
Confl. Peds. (#/hr)	3		1	1		3	2		1	1		2
Confl. Bikes (#/hr)									1			1
Heavy Vehicles (%)	8%	7%	3%	8%	5%	6%	9%	9%	5%	9%	9%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	32.8	25.3		24.4	19.9		14.4	11.8	11.8	18.6	13.9	
Effective Green, g (s)	32.8	25.3		24.4	19.9		14.4	11.8	11.8	18.6	13.9	
Actuated g/C Ratio	0.53	0.41		0.39	0.32		0.23	0.19	0.19	0.30	0.22	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	427	653		423	511		199	577	261	279	646	
v/s Ratio Prot	c0.06	0.15		0.02	c0.24		0.01	0.11		c0.03	c0.15	
v/s Ratio Perm	0.15			0.09			0.05		0.02	0.08		
v/c Ratio	0.41	0.38		0.29	0.74		0.26	0.56	0.13	0.37	0.66	
Uniform Delay, d1	8.8	13.0		12.5	18.9		19.1	22.9	21.0	16.5	22.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.1	4.8		0.2	1.0	0.2	0.3	2.2	
Delay (s)	9.1	13.1		12.7	23.7		19.3	24.0	21.1	16.8	24.2	
Level of Service	A	B		B	C		B	C	C	B	C	
Approach Delay (s)		11.4			21.0			22.6			22.9	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	262	51	7	304	179	74	233	6	119	249	92
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	3292	1488	1458	3292	1488	1646	1694		1646	1733	1412
Flt Permitted	0.56	1.00	1.00	0.40	1.00	1.00	0.59	1.00		0.52	1.00	1.00
Satd. Flow (perm)	936	3292	1488	620	3292	1488	1027	1694		893	1733	1412
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	174	270	53	7	313	185	76	240	6	123	257	95
RTOR Reduction (vph)	0	0	36	0	0	153	0	1	0	0	0	70
Lane Group Flow (vph)	174	270	17	7	313	32	76	245	0	123	257	25
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	5%	1%	0%	14%	1%	0%	1%	3%	0%	1%	1%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	21.4	19.4	19.4	10.5	10.5	10.5	19.1	14.8		21.5	16.0	16.0
Effective Green, g (s)	21.4	19.4	19.4	10.5	10.5	10.5	19.1	14.8		21.5	16.0	16.0
Actuated g/C Ratio	0.35	0.32	0.32	0.17	0.17	0.17	0.32	0.25		0.36	0.27	0.27
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	434	1059	478	116	573	259	369	415		387	459	374
v/s Ratio Prot	c0.06	0.08		0.00	c0.10		0.01	0.14		c0.03	c0.15	
v/s Ratio Perm	0.08		0.01	0.01		0.02	0.05			0.08		0.02
v/c Ratio	0.40	0.25	0.04	0.06	0.55	0.12	0.21	0.59		0.32	0.56	0.07
Uniform Delay, d1	15.4	15.1	14.0	20.8	22.7	21.0	14.8	20.1		13.5	19.1	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	0.1	0.1	1.3	0.3	0.1	2.4		0.2	1.6	0.1
Delay (s)	15.6	15.3	14.1	20.9	24.0	21.3	14.9	22.5		13.7	20.7	16.7
Level of Service	B	B	B	C	C	C	B	C		B	C	B
Approach Delay (s)		15.3			23.0			20.7			18.1	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	10	8	310	306	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	11	9	337	333	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.91	0.91	0.91			
vC, conflicting volume	688	333	334			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610	222	222			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	418	751	1240			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	3	11	346	334
Volume Left	3	0	9	0
Volume Right	0	11	0	1
cSH	418	751	1240	1700
Volume to Capacity	0.01	0.01	0.01	0.20
Queue Length 95th (ft)	1	1	1	0
Control Delay (s)	13.7	9.9	0.3	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.7		0.3	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	73	6	305	65	8	303
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	82	7	343	73	9	340
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	738	379			416	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	738	379			416	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	99			99	
cM capacity (veh/h)	385	672			1154	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	89	416	349
Volume Left	82	0	9
Volume Right	7	73	0
cSH	398	1700	1154
Volume to Capacity	0.22	0.24	0.01
Queue Length 95th (ft)	21	0	1
Control Delay (s)	16.6	0.0	0.3
Lane LOS	C		A
Approach Delay (s)	16.6	0.0	0.3
Approach LOS	C		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	3	64	6	6	36	96	463	9	4	460	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	3	3	74	7	7	41	110	532	10	5	529	16
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					3.5							
Percent Blockage					0							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1078	1300	272	1103	1292	267	529			533		
vC1, stage 1 conf vol	546	546		754	754							
vC2, stage 2 conf vol	532	754		349	538							
vCu, unblocked vol	1078	1300	272	1103	1292	267	529			533		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	90	98	98	94	89			100		
cM capacity (veh/h)	339	321	722	289	303	736	1035			1044		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	80	55	110	266	266	10	5	352	192
Volume Left	3	7	110	0	0	0	5	0	0
Volume Right	74	41	0	0	0	10	0	0	16
cSH	655	537	1035	1700	1700	1700	1044	1700	1700
Volume to Capacity	0.12	0.10	0.11	0.16	0.16	0.01	0.00	0.21	0.11
Queue Length 95th (ft)	10	9	9	0	0	0	0	0	0
Control Delay (s)	11.3	12.5	8.9	0.0	0.0	0.0	8.5	0.0	0.0
Lane LOS	B	B	A				A		
Approach Delay (s)	11.3	12.5	1.5				0.1		
Approach LOS	B	B							

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	35.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	594	54	22	699	334	55	155	0	378	162	46
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1554	3080		1630	3137	1306	1662	3228		2932	1665	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1554	3080		1630	3137	1306	1662	3228		2932	1665	
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)	53	632	57	23	744	355	59	165	0	402	172	49
RTOR Reduction (vph)	0	5	0	0	0	158	0	0	0	0	9	0
Lane Group Flow (vph)	53	684	0	23	744	197	59	165	0	402	212	0
Confl. Peds. (#/hr)	1		2	2		1	3		2	2		3
Confl. Bikes (#/hr)			1						1			3
Heavy Vehicles (%)	7%	7%	0%	2%	6%	13%	0%	3%	3%	10%	1%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	6.1	32.5		2.1	28.5	45.2	6.3	12.9		16.7	23.3	
Effective Green, g (s)	6.1	32.5		2.1	28.5	45.2	6.3	12.9		16.7	23.3	
Actuated g/C Ratio	0.07	0.40		0.03	0.35	0.55	0.08	0.16		0.20	0.29	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	116	1228		42	1096	724	128	510		600	476	
v/s Ratio Prot	c0.03	c0.22		0.01	c0.24	0.06	0.04	0.05		c0.14	c0.13	
v/s Ratio Perm						0.10						
v/c Ratio	0.46	0.56		0.55	0.68	0.27	0.46	0.32		0.67	0.45	
Uniform Delay, d1	36.1	18.9		39.2	22.6	9.5	36.0	30.4		29.9	23.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.6		7.6	1.7	0.1	1.0	0.4		2.3	0.7	
Delay (s)	37.2	19.5		46.8	24.3	9.6	36.9	30.8		32.2	24.5	
Level of Service	D	B		D	C	A	D	C		C	C	
Approach Delay (s)		20.8			20.1			32.4			29.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	17.3
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

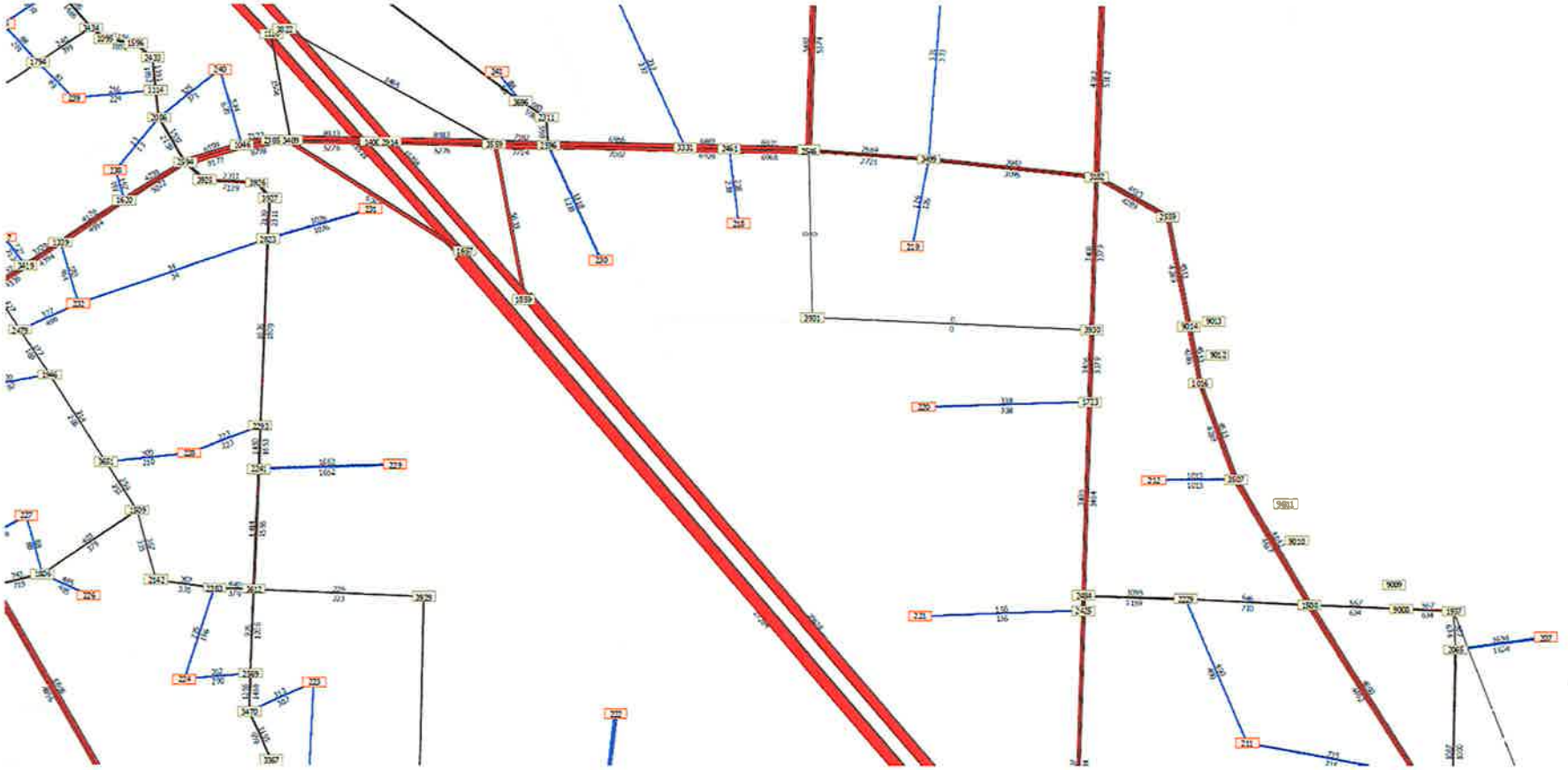
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	66	223	67	78	29	189	903	88	47	939	198
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.98	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	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1599	1620	1430	1614	1463		1599	3197	1428	1498	3228	1360
Flt Permitted	0.59	1.00	1.00	0.71	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1000	1620	1430	1208	1463		1599	3197	1428	1498	3228	1360
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	200	71	240	72	84	31	203	971	95	51	1010	213
RTOR Reduction (vph)	0	0	207	0	10	0	0	0	60	0	0	66
Lane Group Flow (vph)	200	71	33	72	105	0	203	971	35	51	1010	147
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	4%	8%	4%	3%	11%	25%	4%	4%	2%	11%	3%	7%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	30.8	14.8	14.8	26.6	12.7		18.0	39.1	39.1	6.7	50.4	50.4
Effective Green, g (s)	30.8	14.8	14.8	26.6	12.7		18.0	39.1	39.1	6.7	50.4	50.4
Actuated g/C Ratio	0.29	0.14	0.14	0.25	0.12		0.17	0.37	0.37	0.06	0.47	0.47
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	378	224	198	353	173		269	1170	522	93	1523	641
v/s Ratio Prot	c0.08	0.04		0.03	0.07		c0.13	c0.30		0.03	0.31	
v/s Ratio Perm	c0.07		0.02	0.02					0.02			0.11
v/c Ratio	0.53	0.32	0.17	0.20	0.61		0.75	0.83	0.07	0.55	0.66	0.23
Uniform Delay, d1	33.4	41.4	40.6	32.0	44.7		42.3	30.8	22.0	48.6	21.7	16.7
Progression Factor	1.00	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	0.8	0.4	0.3	5.9		11.4	5.0	0.1	6.5	1.1	0.2
Delay (s)	34.7	42.3	41.0	32.3	50.6		53.7	35.8	22.0	55.1	22.8	16.9
Level of Service	C	D	D	C	D		D	D	C	E	C	B
Approach Delay (s)		38.7			43.6			37.7			23.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	106.8	Sum of lost time (s)	21.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

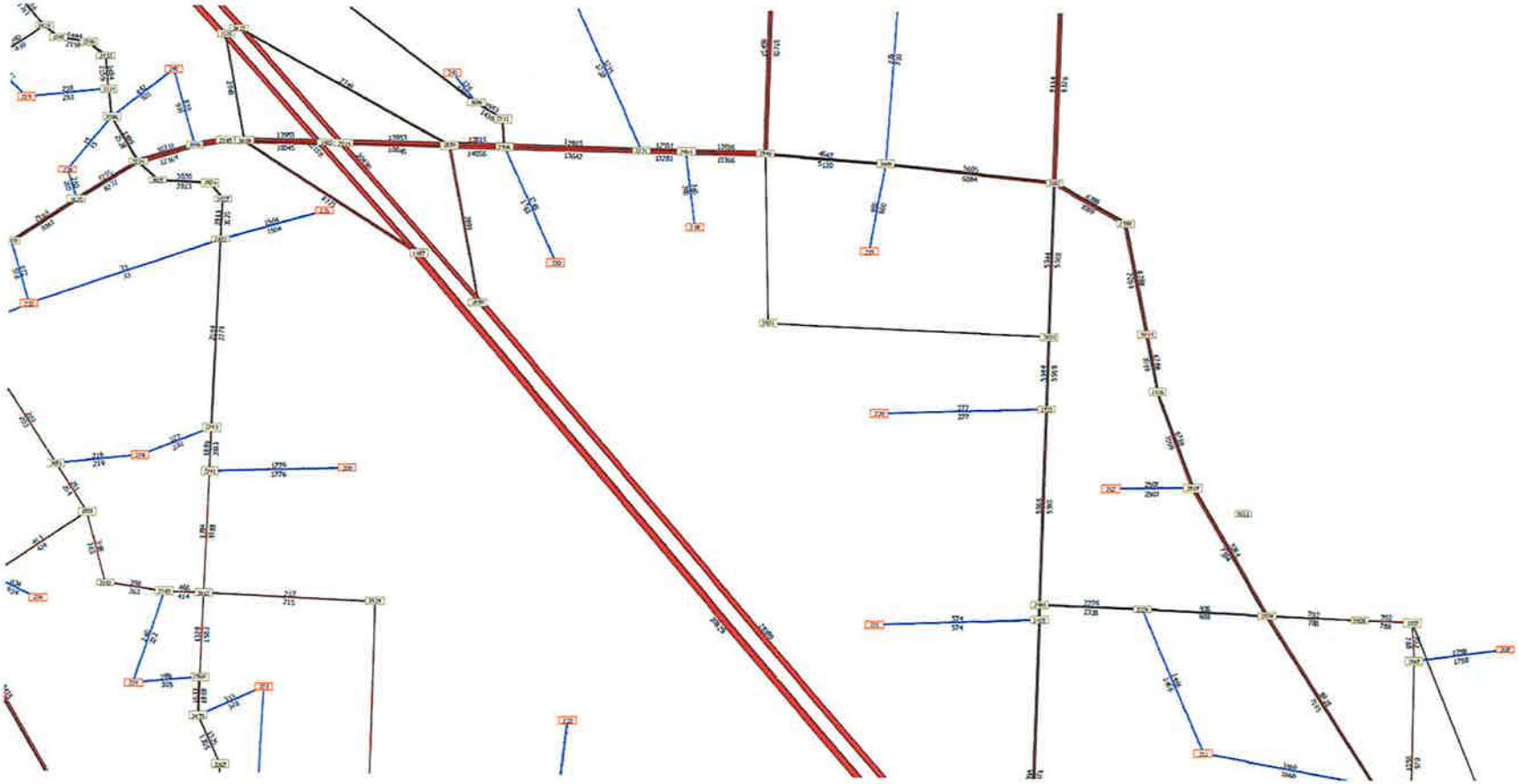
! Phase conflict between lane groups.
c Critical Lane Group

Appendix F Base Year (2006) and Future Year (2038) Regional Travel Demand Model

2006 Daily Model Plot



2038 Daily Model Plot



Select Zone Analysis

Appendix G Build-Year (2016) Total Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↰	↱
Volume (vph)	0	738	286	317	1294	0	0	0	0	238	0	82
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1454	1662	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.28	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1454	494	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	811	314	348	1422	0	0	0	0	262	0	90
RTOR Reduction (vph)	0	0	122	0	0	0	0	0	0	0	0	70
Lane Group Flow (vph)	0	811	192	348	1422	0	0	0	0	131	131	20
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		57.7	57.7	73.6	73.6					12.4	12.4	12.4
Effective Green, g (s)		58.2	58.2	74.1	74.1					12.9	12.9	12.9
Actuated g/C Ratio		0.61	0.61	0.78	0.78					0.14	0.14	0.14
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1851	890	531	2470					214	214	202
v/s Ratio Prot		0.27		c0.08	0.45							
v/s Ratio Perm			0.13	c0.43						c0.08	0.08	0.01
v/c Ratio		0.44	0.22	0.66	0.58					0.61	0.61	0.10
Uniform Delay, d1		9.7	8.2	4.5	4.2					38.7	38.7	36.0
Progression Factor		1.00	1.00	1.40	0.25					1.00	1.00	1.00
Incremental Delay, d2		0.8	0.6	2.0	0.8					4.4	4.4	0.2
Delay (s)		10.5	8.8	8.3	1.8					43.1	43.1	36.1
Level of Service		B	A	A	A					D	D	D
Approach Delay (s)		10.0			3.1			0.0			41.3	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	916	0	0	1189	380	422	1	398	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	1468			
Flt Permitted	0.11	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	196	3197			3292	1442	1576	1580	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	996	0	0	1292	413	459	1	433	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	190	0	0	87	0	0	0
Lane Group Flow (vph)	66	996	0	0	1292	223	229	231	346	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	60.3	60.3			51.3	51.3	25.7	25.7	25.7			
Effective Green, g (s)	60.3	60.3			51.3	51.3	25.7	25.7	25.7			
Actuated g/C Ratio	0.63	0.63			0.54	0.54	0.27	0.27	0.27			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	193	2029			1777	778	426	427	397			
v/s Ratio Prot	0.02	c0.31			c0.39							
v/s Ratio Perm	0.20					0.15	0.15	0.15	c0.24			
v/c Ratio	0.34	0.49			0.73	0.29	0.54	0.54	0.87			
Uniform Delay, d1	11.1	9.2			16.5	11.9	29.6	29.6	33.1			
Progression Factor	0.78	1.05			1.46	5.74	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.8			1.9	0.7	1.0	1.1	18.4			
Delay (s)	9.3	10.4			26.0	68.9	30.6	30.7	51.5			
Level of Service	A	B			C	E	C	C	D			
Approach Delay (s)		10.4			36.4			40.8			0.0	
Approach LOS		B			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1085	169	46	1358	72	177	8	29	18	5	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1338		1659	1481	
Flt Permitted	0.10	1.00	1.00	0.17	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	181	3079	1175	244	3260	1450	1031	1338		1746	1481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1179	184	50	1476	78	192	9	32	20	5	36
RTOR Reduction (vph)	0	0	75	0	0	31	0	27	0	0	34	0
Lane Group Flow (vph)	48	1179	109	50	1476	47	192	14	0	20	7	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	58.6	55.9	55.9	60.6	56.9	56.9	22.4	13.2		8.3	3.6	
Effective Green, g (s)	59.6	56.4	56.4	61.6	57.4	57.4	22.4	13.7		8.3	4.1	
Actuated g/C Ratio	0.63	0.59	0.59	0.65	0.60	0.60	0.24	0.14		0.09	0.04	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	163	1827	697	208	1969	876	289	192		148	63	
v/s Ratio Prot	0.01	0.38		c0.01	c0.45		c0.10	0.01		0.01	0.00	
v/s Ratio Perm	0.17		0.09	0.14		0.03	c0.06			0.01		
v/c Ratio	0.29	0.65	0.16	0.24	0.75	0.05	0.66	0.07		0.14	0.10	
Uniform Delay, d1	10.2	12.7	8.6	7.9	13.6	7.7	32.1	35.1		39.7	43.7	
Progression Factor	1.94	1.66	4.69	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	1.4	0.4	0.4	2.7	0.1	5.7	0.1		0.4	1.0	
Delay (s)	20.5	22.5	40.9	8.4	16.3	7.8	37.8	35.3		40.1	44.7	
Level of Service	C	C	D	A	B	A	D	D		D	D	
Approach Delay (s)		24.8			15.6			37.3			43.2	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	522	177	5	720	50	182	67	8	36	54	562
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	2779		1385	3259		2780	1578		1612	1577	1444
Flt Permitted	0.16	1.00		0.36	1.00		0.72	1.00		0.70	1.00	1.00
Satd. Flow (perm)	493	2779		521	3259		2101	1578		1193	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	479	580	197	6	800	56	202	74	9	40	60	624
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	0	20
Lane Group Flow (vph)	479	754	0	6	852	0	202	79	0	40	60	604
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	62.6	58.0		30.2	29.6		13.4	13.4		13.4	13.4	42.4
Effective Green, g (s)	62.6	58.0		30.2	29.6		13.4	13.4		13.4	13.4	42.4
Actuated g/C Ratio	0.73	0.68		0.35	0.35		0.16	0.16		0.16	0.16	0.50
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1206	1885		190	1128		329	247		186	247	716
v/s Ratio Prot	0.13	0.27		0.00	c0.26			0.05			0.04	c0.29
v/s Ratio Perm	0.16			0.01			0.10			0.03		0.13
v/c Ratio	0.40	0.40		0.03	0.76		0.61	0.32		0.22	0.24	0.84
Uniform Delay, d1	7.0	6.1		18.1	24.7		33.6	32.0		31.5	31.6	18.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2		0.0	3.1		2.9	0.5		0.4	0.4	8.8
Delay (s)	7.2	6.3		18.1	27.9		36.5	32.5		31.9	32.0	27.5
Level of Service	A	A		B	C		D	C		C	C	C
Approach Delay (s)		6.6			27.8			35.4			28.1	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	163	61	8	106	100	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	204	76	10	132	125	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			280		394	242
vC1, stage 1 conf vol					242	
vC2, stage 2 conf vol					152	
vCu, unblocked vol			280		394	242
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		83	99
cM capacity (veh/h)			1124		739	802

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	280	10	132	134
Volume Left	0	10	0	125
Volume Right	76	0	0	9
cSH	1700	1124	1700	743
Volume to Capacity	0.16	0.01	0.08	0.18
Queue Length 95th (ft)	0	1	0	16
Control Delay (s)	0.0	8.2	0.0	10.9
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		10.9
Approach LOS				B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	157	37	272	357	115	80	581	287	116	496	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1553		1539	1521		1598	3079	1377	1614	2963	
Flt Permitted	0.20	1.00		0.59	1.00		0.18	1.00	1.00	0.23	1.00	
Satd. Flow (perm)	311	1553		962	1521		304	3079	1377	395	2963	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	209	169	40	292	384	124	86	625	309	125	533	259
RTOR Reduction (vph)	0	8	0	0	10	0	0	0	223	0	52	0
Lane Group Flow (vph)	209	201	0	292	498	0	86	625	86	125	740	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	48.3	35.4		46.1	34.3		30.3	26.6	26.6	34.7	28.8	
Effective Green, g (s)	48.3	35.4		46.1	34.3		30.3	26.6	26.6	34.7	28.8	
Actuated g/C Ratio	0.50	0.37		0.48	0.36		0.32	0.28	0.28	0.36	0.30	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	309	574		534	545		146	855	382	218	891	
v/s Ratio Prot	c0.09	0.13		0.07	c0.33		0.02	0.20		c0.04	c0.25	
v/s Ratio Perm	0.25			0.20			0.16		0.06	0.17		
v/c Ratio	0.68	0.35		0.55	0.91		0.59	0.73	0.22	0.57	0.83	
Uniform Delay, d1	16.7	21.8		15.9	29.3		24.7	31.3	26.6	22.1	31.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.6	0.1		0.6	19.5		3.9	3.1	0.2	2.3	6.5	
Delay (s)	21.3	22.0		16.5	48.7		28.6	34.4	26.8	24.3	37.7	
Level of Service	C	C		B	D		C	C	C	C	D	
Approach Delay (s)		21.6			37.0			31.6			35.9	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	95.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	271	80	11	544	297	102	447	6	181	504	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1471	3260	1355	1660	3292	1444	1662	1664		1614	1699	1412
Flt Permitted	0.32	1.00	1.00	0.46	1.00	1.00	0.25	1.00		0.17	1.00	1.00
Satd. Flow (perm)	488	3260	1355	799	3292	1444	435	1664		284	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	187	304	90	12	611	334	115	502	7	203	566	187
RTOR Reduction (vph)	0	0	58	0	0	242	0	1	0	0	0	112
Lane Group Flow (vph)	187	304	32	12	611	92	115	508	0	203	566	75
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	37.6	35.6	35.6	23.2	23.2	23.2	37.7	33.6		48.3	40.2	40.2
Effective Green, g (s)	37.6	35.6	35.6	23.2	23.2	23.2	37.7	33.6		48.3	40.2	40.2
Actuated g/C Ratio	0.37	0.35	0.35	0.23	0.23	0.23	0.37	0.33		0.48	0.40	0.40
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	310	1153	479	190	759	333	213	555		277	678	564
v/s Ratio Prot	c0.08	0.09		0.00	c0.19		0.02	c0.31		c0.08	0.33	
v/s Ratio Perm	0.15		0.02	0.01		0.06	0.18			0.27		0.05
v/c Ratio	0.60	0.26	0.07	0.06	0.81	0.28	0.54	0.92		0.73	0.83	0.13
Uniform Delay, d1	30.6	23.2	21.5	30.1	36.6	31.8	23.8	32.1		19.5	27.2	19.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2	0.1	0.1	6.5	0.6	1.3	20.1		8.3	9.0	0.1
Delay (s)	32.8	23.4	21.6	30.1	43.1	32.4	25.2	52.3		27.8	36.2	19.3
Level of Service	C	C	C	C	D	C	C	D		C	D	B
Approach Delay (s)		26.1			39.2			47.3			31.1	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	71	79	19	484	569	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	86	21	526	618	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1201	634	648			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1075	268	288			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	54	84	97			
cM capacity (veh/h)	168	545	824			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	77	86	547	647
Volume Left	77	0	21	0
Volume Right	0	86	0	28
cSH	168	545	824	1700
Volume to Capacity	0.46	0.16	0.03	0.38
Queue Length 95th (ft)	54	14	2	0
Control Delay (s)	43.4	12.8	0.7	0.0
Lane LOS	E	B	A	
Approach Delay (s)	27.3		0.7	0.0
Approach LOS	D			

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	188	157	499	79	123	594
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	200	167	531	84	131	632
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1466	573			615	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1466	573			615	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	0	68			86	
cM capacity (veh/h)	121	515			946	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	367	615	763
Volume Left	200	0	131
Volume Right	167	84	0
cSH	186	1700	946
Volume to Capacity	1.97	0.36	0.14
Queue Length 95th (ft)	690	0	12
Control Delay (s)	497.9	0.0	3.3
Lane LOS	F		A
Approach Delay (s)	497.9	0.0	3.3
Approach LOS	F		

Intersection Summary			
Average Delay	106.2		
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	4	182	22	3	44	244	823	19	16	533	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	4	198	24	3	48	265	895	21	17	579	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1645	2043	293	1949	2039	447	579			895		
vC1, stage 1 conf vol	618	618		1425	1425							
vC2, stage 2 conf vol	1027	1425		524	614							
vCu, unblocked vol	1645	2043	293	1949	2039	447	579			895		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	95	97	72	66	97	91	73			98		
cM capacity (veh/h)	141	125	709	70	124	559	991			730		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	209	75	265	447	447	21	17	386	201
Volume Left	7	24	265	0	0	0	17	0	0
Volume Right	198	48	0	0	0	21	0	0	8
cSH	579	166	991	1700	1700	1700	730	1700	1700
Volume to Capacity	0.36	0.45	0.27	0.26	0.26	0.01	0.02	0.23	0.12
Queue Length 95th (ft)	41	52	27	0	0	0	2	0	0
Control Delay (s)	14.7	43.6	10.0	0.0	0.0	0.0	10.1	0.0	0.0
Lane LOS	B	E	A				B		
Approach Delay (s)	14.7	43.6	2.2				0.3		
Approach LOS	B	E							

Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	57.5%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	588	51	18	832	541	33	256	1	435	326	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3141		1630	3197	1317	1662	3226		3072	1686	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3141		1630	3197	1317	1662	3226		3072	1686	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	42	653	57	20	924	601	37	284	1	483	362	37
RTOR Reduction (vph)	0	5	0	0	0	115	0	0	0	0	3	0
Lane Group Flow (vph)	42	705	0	20	924	486	37	285	0	483	396	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	3.5	38.2		2.0	36.7	57.5	4.2	18.6		20.8	35.2	
Effective Green, g (s)	3.5	38.2		2.0	36.7	57.5	4.2	18.6		20.8	35.2	
Actuated g/C Ratio	0.04	0.39		0.02	0.38	0.59	0.04	0.19		0.21	0.36	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	58	1238		33	1210	781	72	619		659	612	
v/s Ratio Prot	c0.03	0.22		0.01	c0.29	0.13	0.02	0.09		c0.16	c0.24	
v/s Ratio Perm						0.24						
v/c Ratio	0.72	0.57		0.61	0.76	0.62	0.51	0.46		0.73	0.65	
Uniform Delay, d1	46.2	22.9		47.1	26.3	12.7	45.4	34.7		35.5	25.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	31.2	0.6		19.6	2.9	1.1	2.6	0.5		3.6	2.4	
Delay (s)	77.5	23.5		66.7	29.2	13.8	47.9	35.2		39.1	28.1	
Level of Service	E	C		E	C	B	D	D		D	C	
Approach Delay (s)		26.5			23.7			36.7			34.1	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	17.3
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	164	228	90	120	34	207	1233	63	49	1009	290
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	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	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	1699	1473	1614	1579		1630	3228	1377	1599	3228	1386
Flt Permitted	0.41	1.00	1.00	0.38	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	684	1699	1473	645	1579		1630	3228	1377	1599	3228	1386
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	272	176	245	97	129	37	223	1326	68	53	1085	312
RTOR Reduction (vph)	0	0	212	0	8	0	0	0	40	0	0	90
Lane Group Flow (vph)	272	176	33	97	158	0	223	1326	28	53	1085	222
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	35.0	16.3	16.3	35.8	16.7		15.6	49.4	49.4	5.1	59.9	59.9
Effective Green, g (s)	35.0	16.3	16.3	35.8	16.7		15.6	49.4	49.4	5.1	59.9	59.9
Actuated g/C Ratio	0.29	0.13	0.13	0.29	0.14		0.13	0.41	0.41	0.04	0.49	0.49
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	337	228	197	342	217		209	1313	560	67	1592	683
v/s Ratio Prot	c0.12	0.10		0.04	0.10		c0.14	c0.41		0.03	0.34	
v/s Ratio Perm	c0.11		0.02	0.04					0.02			0.16
v/c Ratio	0.81	0.77	0.17	0.28	0.73		1.07	1.01	0.05	0.79	0.68	0.33
Uniform Delay, d1	42.4	50.8	46.5	38.6	50.2		52.9	36.0	21.8	57.6	23.5	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.2	14.9	0.4	0.5	11.6		81.1	27.3	0.0	45.6	1.2	0.3
Delay (s)	55.6	65.6	46.9	39.1	61.8		134.0	63.3	21.8	103.2	24.7	18.8
Level of Service	E	E	D	D	E		F	E	C	F	C	B
Approach Delay (s)		55.1			53.4			71.3			26.3	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	121.4	Sum of lost time (s)	21.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	91	0	0	22	22
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	99	0	0	24	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	72	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	0			0	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	91			99	
cM capacity (veh/h)	848	1091			1636	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	0	48
Volume Left	2	0	24
Volume Right	99	0	0
cSH	1084	1700	1636
Volume to Capacity	0.09	0.00	0.01
Queue Length 95th (ft)	8	0	1
Control Delay (s)	8.7	0.0	3.7
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	3.7
Approach LOS	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	2	0	2	22	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	0	2	24	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	51	1			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	51	1			2	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	872	1089			1633	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	2	26
Volume Left	2	0	24
Volume Right	2	2	0
cSH	969	1700	1633
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	8.7	0.0	6.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	6.6
Approach LOS	A		

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	76	94	27	18	96	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	102	29	20	104	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			185		212	134
vC1, stage 1 conf vol					134	
vC2, stage 2 conf vol					78	
vCu, unblocked vol			185		212	134
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			98		88	97
cM capacity (veh/h)			1224		841	921

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	185	29	20	104	30
Volume Left	0	29	0	104	0
Volume Right	102	0	0	0	30
cSH	1700	1224	1700	841	921
Volume to Capacity	0.11	0.02	0.01	0.12	0.03
Queue Length 95th (ft)	0	2	0	11	3
Control Delay (s)	0.0	8.0	0.0	9.9	9.0
Lane LOS		A		A	A
Approach Delay (s)	0.0	4.8		9.7	
Approach LOS				A	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	59	45	0	46	0	91
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	49	0	50	0	99
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			113		139	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					50	
vCu, unblocked vol			113		139	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			1304		901	975

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	50	99
Volume Left	0	0	0
Volume Right	49	0	99
cSH	1700	1700	975
Volume to Capacity	0.07	0.03	0.10
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	50	141	161	453	576	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	153	175	492	626	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1509	666	705			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1509	666	705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	48	67	78			
cM capacity (veh/h)	105	462	810			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	54	153	667	704
Volume Left	54	0	175	0
Volume Right	0	153	0	78
cSH	105	462	810	1700
Volume to Capacity	0.52	0.33	0.22	0.41
Queue Length 95th (ft)	59	36	20	0
Control Delay (s)	71.2	16.6	5.2	0.0
Lane LOS	F	C	A	
Approach Delay (s)	30.9		5.2	0.0
Approach LOS	D			

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	29	50	609	688	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	32	54	662	748	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1535	765	780			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1535	765	780			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	95	92	93			
cM capacity (veh/h)	120	406	758			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	37	716	779
Volume Left	5	54	0
Volume Right	32	0	32
cSH	301	758	1700
Volume to Capacity	0.12	0.07	0.46
Queue Length 95th (ft)	10	6	0
Control Delay (s)	18.6	1.9	0.0
Lane LOS	C	A	
Approach Delay (s)	18.6	1.9	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↕	↱
Volume (vph)	0	738	286	317	1294	0	0	0	0	238	0	82
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1454	1662	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.28	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1454	494	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	811	314	348	1422	0	0	0	0	262	0	90
RTOR Reduction (vph)	0	0	122	0	0	0	0	0	0	0	0	70
Lane Group Flow (vph)	0	811	192	348	1422	0	0	0	0	131	131	20
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		57.7	57.7	73.6	73.6					12.4	12.4	12.4
Effective Green, g (s)		58.2	58.2	74.1	74.1					12.9	12.9	12.9
Actuated g/C Ratio		0.61	0.61	0.78	0.78					0.14	0.14	0.14
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1851	890	531	2470					214	214	202
v/s Ratio Prot		0.27		c0.08	0.45							
v/s Ratio Perm			0.13	c0.43						c0.08	0.08	0.01
v/c Ratio		0.44	0.22	0.66	0.58					0.61	0.61	0.10
Uniform Delay, d1		9.7	8.2	4.5	4.2					38.7	38.7	36.0
Progression Factor		1.00	1.00	1.40	0.25					1.00	1.00	1.00
Incremental Delay, d2		0.8	0.6	2.0	0.8					4.4	4.4	0.2
Delay (s)		10.5	8.8	8.3	1.8					43.1	43.1	36.1
Level of Service		B	A	A	A					D	D	D
Approach Delay (s)		10.0			3.1			0.0			41.3	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	916	0	0	1189	380	422	1	398	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	1468			
Flt Permitted	0.11	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	196	3197			3292	1442	1576	1580	1468			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	996	0	0	1292	413	459	1	433	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	190	0	0	87	0	0	0
Lane Group Flow (vph)	66	996	0	0	1292	223	229	231	346	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	60.3	60.3			51.3	51.3	25.7	25.7	25.7			
Effective Green, g (s)	60.3	60.3			51.3	51.3	25.7	25.7	25.7			
Actuated g/C Ratio	0.63	0.63			0.54	0.54	0.27	0.27	0.27			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	193	2029			1777	778	426	427	397			
v/s Ratio Prot	0.02	c0.31			c0.39							
v/s Ratio Perm	0.20					0.15	0.15	0.15	c0.24			
v/c Ratio	0.34	0.49			0.73	0.29	0.54	0.54	0.87			
Uniform Delay, d1	11.1	9.2			16.5	11.9	29.6	29.6	33.1			
Progression Factor	0.78	1.05			1.46	5.74	1.00	1.00	1.00			
Incremental Delay, d2	0.7	0.8			1.9	0.7	1.0	1.1	18.4			
Delay (s)	9.3	10.4			26.0	68.9	30.6	30.7	51.5			
Level of Service	A	B			C	E	C	C	D			
Approach Delay (s)		10.4			36.4			40.8			0.0	
Approach LOS		B			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1085	169	46	1358	72	177	8	29	18	5	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1338		1659	1481	
Flt Permitted	0.10	1.00	1.00	0.17	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	181	3079	1175	244	3260	1450	1031	1338		1746	1481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1179	184	50	1476	78	192	9	32	20	5	36
RTOR Reduction (vph)	0	0	75	0	0	31	0	27	0	0	34	0
Lane Group Flow (vph)	48	1179	109	50	1476	47	192	14	0	20	7	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	58.6	55.9	55.9	60.6	56.9	56.9	22.4	13.2		8.3	3.6	
Effective Green, g (s)	59.6	56.4	56.4	61.6	57.4	57.4	22.4	13.7		8.3	4.1	
Actuated g/C Ratio	0.63	0.59	0.59	0.65	0.60	0.60	0.24	0.14		0.09	0.04	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	163	1827	697	208	1969	876	289	192		148	63	
v/s Ratio Prot	0.01	0.38		c0.01	c0.45		c0.10	0.01		0.01	0.00	
v/s Ratio Perm	0.17		0.09	0.14		0.03	c0.06			0.01		
v/c Ratio	0.29	0.65	0.16	0.24	0.75	0.05	0.66	0.07		0.14	0.10	
Uniform Delay, d1	10.2	12.7	8.6	7.9	13.6	7.7	32.1	35.1		39.7	43.7	
Progression Factor	1.94	1.66	4.69	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	1.4	0.4	0.4	2.7	0.1	5.7	0.1		0.4	1.0	
Delay (s)	20.5	22.5	40.9	8.4	16.3	7.8	37.8	35.3		40.1	44.7	
Level of Service	C	C	D	A	B	A	D	D		D	D	
Approach Delay (s)		24.8			15.6			37.3			43.2	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	522	177	5	720	50	182	67	8	36	54	562
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	2779		1385	3259		2780	1578		1612	1577	1444
Flt Permitted	0.16	1.00		0.36	1.00		0.72	1.00		0.70	1.00	1.00
Satd. Flow (perm)	493	2779		521	3259		2101	1578		1193	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	479	580	197	6	800	56	202	74	9	40	60	624
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	0	20
Lane Group Flow (vph)	479	754	0	6	852	0	202	79	0	40	60	604
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	62.6	58.0		30.2	29.6		13.4	13.4		13.4	13.4	42.4
Effective Green, g (s)	62.6	58.0		30.2	29.6		13.4	13.4		13.4	13.4	42.4
Actuated g/C Ratio	0.73	0.68		0.35	0.35		0.16	0.16		0.16	0.16	0.50
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1206	1885		190	1128		329	247		186	247	716
v/s Ratio Prot	0.13	0.27		0.00	c0.26			0.05			0.04	c0.29
v/s Ratio Perm	0.16			0.01			0.10			0.03		0.13
v/c Ratio	0.40	0.40		0.03	0.76		0.61	0.32		0.22	0.24	0.84
Uniform Delay, d1	7.0	6.1		18.1	24.7		33.6	32.0		31.5	31.6	18.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2		0.0	3.1		2.9	0.5		0.4	0.4	8.8
Delay (s)	7.2	6.3		18.1	27.9		36.5	32.5		31.9	32.0	27.5
Level of Service	A	A		B	C		D	C		C	C	C
Approach Delay (s)		6.6			27.8			35.4			28.1	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	163	61	8	106	100	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	204	76	10	132	125	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			280		394	242
vC1, stage 1 conf vol					242	
vC2, stage 2 conf vol					152	
vCu, unblocked vol			280		394	242
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		83	99
cM capacity (veh/h)			1124		739	802

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	280	10	132	134
Volume Left	0	10	0	125
Volume Right	76	0	0	9
cSH	1700	1124	1700	743
Volume to Capacity	0.16	0.01	0.08	0.18
Queue Length 95th (ft)	0	1	0	16
Control Delay (s)	0.0	8.2	0.0	10.9
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		10.9
Approach LOS				B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	157	37	272	357	115	80	581	287	116	496	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1553		1539	1521		1598	3079	1377	1614	2963	
Flt Permitted	0.20	1.00		0.59	1.00		0.18	1.00	1.00	0.23	1.00	
Satd. Flow (perm)	311	1553		962	1521		304	3079	1377	395	2963	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	209	169	40	292	384	124	86	625	309	125	533	259
RTOR Reduction (vph)	0	8	0	0	10	0	0	0	223	0	52	0
Lane Group Flow (vph)	209	201	0	292	498	0	86	625	86	125	740	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	48.3	35.4		46.1	34.3		30.3	26.6	26.6	34.7	28.8	
Effective Green, g (s)	48.3	35.4		46.1	34.3		30.3	26.6	26.6	34.7	28.8	
Actuated g/C Ratio	0.50	0.37		0.48	0.36		0.32	0.28	0.28	0.36	0.30	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	309	574		534	545		146	855	382	218	891	
v/s Ratio Prot	c0.09	0.13		0.07	c0.33		0.02	0.20		c0.04	c0.25	
v/s Ratio Perm	0.25			0.20			0.16		0.06	0.17		
v/c Ratio	0.68	0.35		0.55	0.91		0.59	0.73	0.22	0.57	0.83	
Uniform Delay, d1	16.7	21.8		15.9	29.3		24.7	31.3	26.6	22.1	31.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.6	0.1		0.6	19.5		3.9	3.1	0.2	2.3	6.5	
Delay (s)	21.3	22.0		16.5	48.7		28.6	34.4	26.8	24.3	37.7	
Level of Service	C	C		B	D		C	C	C	C	D	
Approach Delay (s)		21.6			37.0			31.6			35.9	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	95.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	271	80	11	544	297	102	447	6	181	504	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1471	3260	1355	1660	3292	1444	1662	1664		1614	1699	1412
Flt Permitted	0.32	1.00	1.00	0.46	1.00	1.00	0.25	1.00		0.17	1.00	1.00
Satd. Flow (perm)	488	3260	1355	799	3292	1444	435	1664		284	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	187	304	90	12	611	334	115	502	7	203	566	187
RTOR Reduction (vph)	0	0	58	0	0	242	0	1	0	0	0	112
Lane Group Flow (vph)	187	304	32	12	611	92	115	508	0	203	566	75
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	37.6	35.6	35.6	23.2	23.2	23.2	37.7	33.6		48.3	40.2	40.2
Effective Green, g (s)	37.6	35.6	35.6	23.2	23.2	23.2	37.7	33.6		48.3	40.2	40.2
Actuated g/C Ratio	0.37	0.35	0.35	0.23	0.23	0.23	0.37	0.33		0.48	0.40	0.40
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	310	1153	479	190	759	333	213	555		277	678	564
v/s Ratio Prot	c0.08	0.09		0.00	c0.19		0.02	c0.31		c0.08	0.33	
v/s Ratio Perm	0.15		0.02	0.01		0.06	0.18			0.27		0.05
v/c Ratio	0.60	0.26	0.07	0.06	0.81	0.28	0.54	0.92		0.73	0.83	0.13
Uniform Delay, d1	30.6	23.2	21.5	30.1	36.6	31.8	23.8	32.1		19.5	27.2	19.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2	0.1	0.1	6.5	0.6	1.3	20.1		8.3	9.0	0.1
Delay (s)	32.8	23.4	21.6	30.1	43.1	32.4	25.2	52.3		27.8	36.2	19.3
Level of Service	C	C	C	C	D	C	C	D		C	D	B
Approach Delay (s)		26.1			39.2			47.3			31.1	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	71	79	19	484	569	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	86	21	526	618	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1201	634	648			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1075	268	288			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	54	84	97			
cM capacity (veh/h)	168	545	824			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	77	86	547	647
Volume Left	77	0	21	0
Volume Right	0	86	0	28
cSH	168	545	824	1700
Volume to Capacity	0.46	0.16	0.03	0.38
Queue Length 95th (ft)	54	14	2	0
Control Delay (s)	43.4	12.8	0.7	0.0
Lane LOS	E	B	A	
Approach Delay (s)	27.3		0.7	0.0
Approach LOS	D			

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	188	157	499	79	123	594
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	200	167	531	84	131	632
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1466	573			615	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1466	573			615	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	0	68			86	
cM capacity (veh/h)	121	515			946	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	367	615	763
Volume Left	200	0	131
Volume Right	167	84	0
cSH	186	1700	946
Volume to Capacity	1.97	0.36	0.14
Queue Length 95th (ft)	690	0	12
Control Delay (s)	497.9	0.0	3.3
Lane LOS	F		A
Approach Delay (s)	497.9	0.0	3.3
Approach LOS	F		

Intersection Summary			
Average Delay	106.2		
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	4	182	22	3	44	244	823	19	16	533	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	4	198	24	3	48	265	895	21	17	579	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1645	2043	293	1949	2039	447	579			895		
vC1, stage 1 conf vol	618	618		1425	1425							
vC2, stage 2 conf vol	1027	1425		524	614							
vCu, unblocked vol	1645	2043	293	1949	2039	447	579			895		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	95	97	72	66	97	91	73			98		
cM capacity (veh/h)	141	125	709	70	124	559	991			730		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	209	75	265	447	447	21	17	386	201
Volume Left	7	24	265	0	0	0	17	0	0
Volume Right	198	48	0	0	0	21	0	0	8
cSH	579	166	991	1700	1700	1700	730	1700	1700
Volume to Capacity	0.36	0.45	0.27	0.26	0.26	0.01	0.02	0.23	0.12
Queue Length 95th (ft)	41	52	27	0	0	0	2	0	0
Control Delay (s)	14.7	43.6	10.0	0.0	0.0	0.0	10.1	0.0	0.0
Lane LOS	B	E	A				B		
Approach Delay (s)	14.7	43.6	2.2				0.3		
Approach LOS	B	E							

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	588	51	18	832	541	33	256	1	435	326	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3141		1630	3197	1317	1662	3226		3072	1686	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3141		1630	3197	1317	1662	3226		3072	1686	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	42	653	57	20	924	601	37	284	1	483	362	37
RTOR Reduction (vph)	0	5	0	0	0	115	0	0	0	0	3	0
Lane Group Flow (vph)	42	705	0	20	924	486	37	285	0	483	396	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	3.5	38.2		2.0	36.7	57.5	4.2	18.6		20.8	35.2	
Effective Green, g (s)	3.5	38.2		2.0	36.7	57.5	4.2	18.6		20.8	35.2	
Actuated g/C Ratio	0.04	0.39		0.02	0.38	0.59	0.04	0.19		0.21	0.36	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	58	1238		33	1210	781	72	619		659	612	
v/s Ratio Prot	c0.03	0.22		0.01	c0.29	0.13	0.02	0.09		c0.16	c0.24	
v/s Ratio Perm						0.24						
v/c Ratio	0.72	0.57		0.61	0.76	0.62	0.51	0.46		0.73	0.65	
Uniform Delay, d1	46.2	22.9		47.1	26.3	12.7	45.4	34.7		35.5	25.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	31.2	0.6		19.6	2.9	1.1	2.6	0.5		3.6	2.4	
Delay (s)	77.5	23.5		66.7	29.2	13.8	47.9	35.2		39.1	28.1	
Level of Service	E	C		E	C	B	D	D		D	C	
Approach Delay (s)		26.5			23.7			36.7			34.1	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	17.3
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	164	228	90	120	34	207	1233	63	49	1009	290
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	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	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	1699	1473	1614	1579		1630	3228	1377	1599	3228	1386
Flt Permitted	0.41	1.00	1.00	0.38	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	684	1699	1473	645	1579		1630	3228	1377	1599	3228	1386
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	272	176	245	97	129	37	223	1326	68	53	1085	312
RTOR Reduction (vph)	0	0	212	0	8	0	0	0	40	0	0	90
Lane Group Flow (vph)	272	176	33	97	158	0	223	1326	28	53	1085	222
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	35.0	16.3	16.3	35.8	16.7		15.6	49.4	49.4	5.1	59.9	59.9
Effective Green, g (s)	35.0	16.3	16.3	35.8	16.7		15.6	49.4	49.4	5.1	59.9	59.9
Actuated g/C Ratio	0.29	0.13	0.13	0.29	0.14		0.13	0.41	0.41	0.04	0.49	0.49
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	337	228	197	342	217		209	1313	560	67	1592	683
v/s Ratio Prot	c0.12	0.10		0.04	0.10		c0.14	c0.41		0.03	0.34	
v/s Ratio Perm	c0.11		0.02	0.04					0.02			0.16
v/c Ratio	0.81	0.77	0.17	0.28	0.73		1.07	1.01	0.05	0.79	0.68	0.33
Uniform Delay, d1	42.4	50.8	46.5	38.6	50.2		52.9	36.0	21.8	57.6	23.5	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.2	14.9	0.4	0.5	11.6		81.1	27.3	0.0	45.6	1.2	0.3
Delay (s)	55.6	65.6	46.9	39.1	61.8		134.0	63.3	21.8	103.2	24.7	18.8
Level of Service	E	E	D	D	E		F	E	C	F	C	B
Approach Delay (s)		55.1			53.4			71.3			26.3	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	121.4	Sum of lost time (s)	21.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	91	0	0	22	22
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	99	0	0	24	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	72	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	0			0	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	91			99	
cM capacity (veh/h)	848	1091			1636	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	0	48
Volume Left	2	0	24
Volume Right	99	0	0
cSH	1084	1700	1636
Volume to Capacity	0.09	0.00	0.01
Queue Length 95th (ft)	8	0	1
Control Delay (s)	8.7	0.0	3.7
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	3.7
Approach LOS	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	2	0	2	22	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	0	2	24	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	51	1			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	51	1			2	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	872	1089			1633	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	2	26
Volume Left	2	0	24
Volume Right	2	2	0
cSH	969	1700	1633
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	8.7	0.0	6.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	6.6
Approach LOS	A		

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	76	94	27	18	96	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	102	29	20	104	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			185		212	134
vC1, stage 1 conf vol					134	
vC2, stage 2 conf vol					78	
vCu, unblocked vol			185		212	134
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			98		88	97
cM capacity (veh/h)			1224		841	921

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	185	29	20	104	30
Volume Left	0	29	0	104	0
Volume Right	102	0	0	0	30
cSH	1700	1224	1700	841	921
Volume to Capacity	0.11	0.02	0.01	0.12	0.03
Queue Length 95th (ft)	0	2	0	11	3
Control Delay (s)	0.0	8.0	0.0	9.9	9.0
Lane LOS		A		A	A
Approach Delay (s)	0.0	4.8		9.7	
Approach LOS				A	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	59	45	0	46	0	91
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	49	0	50	0	99
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			113		139	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					50	
vCu, unblocked vol			113		139	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			1304		901	975

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	50	99
Volume Left	0	0	0
Volume Right	49	0	99
cSH	1700	1700	975
Volume to Capacity	0.07	0.03	0.10
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	50	141	161	453	576	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	153	175	492	626	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1509	666	705			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1509	666	705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	48	67	78			
cM capacity (veh/h)	105	462	810			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	54	153	667	704
Volume Left	54	0	175	0
Volume Right	0	153	0	78
cSH	105	462	810	1700
Volume to Capacity	0.52	0.33	0.22	0.41
Queue Length 95th (ft)	59	36	20	0
Control Delay (s)	71.2	16.6	5.2	0.0
Lane LOS	F	C	A	
Approach Delay (s)	30.9		5.2	0.0
Approach LOS	D			

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	29	50	609	688	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	32	54	662	748	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1535	765	780			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1535	765	780			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	95	92	93			
cM capacity (veh/h)	120	406	758			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	37	716	779
Volume Left	5	54	0
Volume Right	32	0	32
cSH	301	758	1700
Volume to Capacity	0.12	0.07	0.46
Queue Length 95th (ft)	10	6	0
Control Delay (s)	18.6	1.9	0.0
Lane LOS	C	A	
Approach Delay (s)	18.6	1.9	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		

Appendix H Build-Year (2016)
Mitigated Traffic
Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰	↑↑					↰	↑	↱
Volume (vph)	0	738	286	317	1294	0	0	0	0	238	0	82
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1454	1662	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.28	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1454	494	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	811	314	348	1422	0	0	0	0	262	0	90
RTOR Reduction (vph)	0	0	122	0	0	0	0	0	0	0	0	70
Lane Group Flow (vph)	0	811	192	348	1422	0	0	0	0	131	131	20
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		57.7	57.7	73.6	73.6					12.4	12.4	12.4
Effective Green, g (s)		58.2	58.2	74.1	74.1					12.9	12.9	12.9
Actuated g/C Ratio		0.61	0.61	0.78	0.78					0.14	0.14	0.14
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1851	890	531	2470					214	214	202
v/s Ratio Prot		0.27		c0.08	0.45							
v/s Ratio Perm			0.13	c0.43						c0.08	0.08	0.01
v/c Ratio		0.44	0.22	0.66	0.58					0.61	0.61	0.10
Uniform Delay, d1		9.7	8.2	4.5	4.2					38.7	38.7	36.0
Progression Factor		1.00	1.00	1.24	0.38					1.00	1.00	1.00
Incremental Delay, d2		0.8	0.6	2.1	0.8					4.4	4.4	0.2
Delay (s)		10.5	8.8	7.7	2.4					43.1	43.1	36.1
Level of Service		B	A	A	A					D	D	D
Approach Delay (s)		10.0			3.4			0.0			41.3	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	916	0	0	1189	380	422	1	398	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	2561			
Flt Permitted	0.13	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	230	3197			3292	1442	1576	1580	2561			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	996	0	0	1292	413	459	1	433	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	168	0	0	165	0	0	0
Lane Group Flow (vph)	66	996	0	0	1292	245	229	231	268	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	65.6	65.6			56.3	56.3	20.4	20.4	20.4			
Effective Green, g (s)	65.6	65.6			56.3	56.3	20.4	20.4	20.4			
Actuated g/C Ratio	0.69	0.69			0.59	0.59	0.21	0.21	0.21			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	231	2207			1950	854	338	339	549			
v/s Ratio Prot	0.01	c0.31			c0.39							
v/s Ratio Perm	0.18					0.17	0.15	0.15	0.10			
v/c Ratio	0.29	0.45			0.66	0.29	0.68	0.68	0.49			
Uniform Delay, d1	8.3	6.6			13.0	9.5	34.3	34.3	32.7			
Progression Factor	0.63	1.00			1.53	5.41	1.00	1.00	1.00			
Incremental Delay, d2	0.5	0.6			1.3	0.6	4.8	5.1	0.5			
Delay (s)	5.6	7.2			21.2	52.0	39.1	39.4	33.2			
Level of Service	A	A			C	D	D	D	C			
Approach Delay (s)		7.1			28.6			36.3			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	24.3	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)	13.5
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	1085	169	46	1358	72	177	8	29	18	5	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1338		1659	1481	
Flt Permitted	0.10	1.00	1.00	0.17	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	181	3079	1175	244	3260	1450	1031	1338		1746	1481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1179	184	50	1476	78	192	9	32	20	5	36
RTOR Reduction (vph)	0	0	75	0	0	31	0	27	0	0	34	0
Lane Group Flow (vph)	48	1179	109	50	1476	47	192	14	0	20	7	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	58.6	55.9	55.9	60.6	56.9	56.9	22.4	13.2		8.3	3.6	
Effective Green, g (s)	59.6	56.4	56.4	61.6	57.4	57.4	22.4	13.7		8.3	4.1	
Actuated g/C Ratio	0.63	0.59	0.59	0.65	0.60	0.60	0.24	0.14		0.09	0.04	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	163	1827	697	208	1969	876	289	192		148	63	
v/s Ratio Prot	0.01	0.38		c0.01	c0.45		c0.10	0.01		0.01	0.00	
v/s Ratio Perm	0.17		0.09	0.14		0.03	c0.06			0.01		
v/c Ratio	0.29	0.65	0.16	0.24	0.75	0.05	0.66	0.07		0.14	0.10	
Uniform Delay, d1	10.2	12.7	8.6	7.9	13.6	7.7	32.1	35.1		39.7	43.7	
Progression Factor	1.71	1.40	3.61	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.6	0.4	0.4	2.7	0.1	5.7	0.1		0.4	1.0	
Delay (s)	18.2	19.4	31.6	8.4	16.3	7.8	37.8	35.3		40.1	44.7	
Level of Service	B	B	C	A	B	A	D	D		D	D	
Approach Delay (s)		21.0			15.6			37.3			43.2	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	431	522	177	5	720	50	182	67	8	36	54	562
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	2779		1385	3259		2780	1578		1612	1577	1444
Flt Permitted	0.16	1.00		0.36	1.00		0.72	1.00		0.70	1.00	1.00
Satd. Flow (perm)	493	2779		521	3259		2101	1578		1193	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	479	580	197	6	800	56	202	74	9	40	60	624
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	0	20
Lane Group Flow (vph)	479	754	0	6	852	0	202	79	0	40	60	604
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	62.6	58.0		30.2	29.6		13.4	13.4		13.4	13.4	42.4
Effective Green, g (s)	62.6	58.0		30.2	29.6		13.4	13.4		13.4	13.4	42.4
Actuated g/C Ratio	0.73	0.68		0.35	0.35		0.16	0.16		0.16	0.16	0.50
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1206	1885		190	1128		329	247		186	247	716
v/s Ratio Prot	0.13	0.27		0.00	c0.26			0.05			0.04	c0.29
v/s Ratio Perm	0.16			0.01			0.10			0.03		0.13
v/c Ratio	0.40	0.40		0.03	0.76		0.61	0.32		0.22	0.24	0.84
Uniform Delay, d1	7.0	6.1		18.1	24.7		33.6	32.0		31.5	31.6	18.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2		0.0	3.1		2.9	0.5		0.4	0.4	8.8
Delay (s)	7.2	6.3		18.1	27.9		36.5	32.5		31.9	32.0	27.5
Level of Service	A	A		B	C		D	C		C	C	C
Approach Delay (s)		6.6			27.8			35.4			28.1	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	163	61	8	106	100	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	204	76	10	132	125	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			280		394	242
vC1, stage 1 conf vol					242	
vC2, stage 2 conf vol					152	
vCu, unblocked vol			280		394	242
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		83	99
cM capacity (veh/h)			1124		739	802

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	280	10	132	134
Volume Left	0	10	0	125
Volume Right	76	0	0	9
cSH	1700	1124	1700	743
Volume to Capacity	0.16	0.01	0.08	0.18
Queue Length 95th (ft)	0	1	0	16
Control Delay (s)	0.0	8.2	0.0	10.9
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		10.9
Approach LOS				B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	157	37	272	357	115	80	581	287	116	496	241
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1553		1539	1521		1598	3079	1377	1614	2963	
Flt Permitted	0.20	1.00		0.59	1.00		0.18	1.00	1.00	0.23	1.00	
Satd. Flow (perm)	311	1553		962	1521		304	3079	1377	395	2963	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	209	169	40	292	384	124	86	625	309	125	533	259
RTOR Reduction (vph)	0	8	0	0	10	0	0	0	223	0	52	0
Lane Group Flow (vph)	209	201	0	292	498	0	86	625	86	125	740	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	48.3	35.4		46.1	34.3		30.3	26.6	26.6	34.7	28.8	
Effective Green, g (s)	48.3	35.4		46.1	34.3		30.3	26.6	26.6	34.7	28.8	
Actuated g/C Ratio	0.50	0.37		0.48	0.36		0.32	0.28	0.28	0.36	0.30	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	309	574		534	545		146	855	382	218	891	
v/s Ratio Prot	c0.09	0.13		0.07	c0.33		0.02	0.20		c0.04	c0.25	
v/s Ratio Perm	0.25			0.20			0.16		0.06	0.17		
v/c Ratio	0.68	0.35		0.55	0.91		0.59	0.73	0.22	0.57	0.83	
Uniform Delay, d1	16.7	21.8		15.9	29.3		24.7	31.3	26.6	22.1	31.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.6	0.1		0.6	19.5		3.9	3.1	0.2	2.3	6.5	
Delay (s)	21.3	22.0		16.5	48.7		28.6	34.4	26.8	24.3	37.7	
Level of Service	C	C		B	D		C	C	C	C	D	
Approach Delay (s)		21.6			37.0			31.6			35.9	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	95.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	271	80	11	544	297	102	447	6	181	504	166
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1471	3260	1355	1660	3292	1444	1662	1664		1614	1699	1412
Flt Permitted	0.32	1.00	1.00	0.46	1.00	1.00	0.25	1.00		0.17	1.00	1.00
Satd. Flow (perm)	488	3260	1355	799	3292	1444	435	1664		284	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	187	304	90	12	611	334	115	502	7	203	566	187
RTOR Reduction (vph)	0	0	58	0	0	242	0	1	0	0	0	112
Lane Group Flow (vph)	187	304	32	12	611	92	115	508	0	203	566	75
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	37.6	35.6	35.6	23.2	23.2	23.2	37.7	33.6		48.3	40.2	40.2
Effective Green, g (s)	37.6	35.6	35.6	23.2	23.2	23.2	37.7	33.6		48.3	40.2	40.2
Actuated g/C Ratio	0.37	0.35	0.35	0.23	0.23	0.23	0.37	0.33		0.48	0.40	0.40
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	310	1153	479	190	759	333	213	555		277	678	564
v/s Ratio Prot	c0.08	0.09		0.00	c0.19		0.02	c0.31		c0.08	0.33	
v/s Ratio Perm	0.15		0.02	0.01		0.06	0.18			0.27		0.05
v/c Ratio	0.60	0.26	0.07	0.06	0.81	0.28	0.54	0.92		0.73	0.83	0.13
Uniform Delay, d1	30.6	23.2	21.5	30.1	36.6	31.8	23.8	32.1		19.5	27.2	19.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2	0.1	0.1	6.5	0.6	1.3	20.1		8.3	9.0	0.1
Delay (s)	32.8	23.4	21.6	30.1	43.1	32.4	25.2	52.3		27.8	36.2	19.3
Level of Service	C	C	C	C	D	C	C	D		C	D	B
Approach Delay (s)		26.1			39.2			47.3			31.1	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	71	79	19	484	569	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	86	21	526	618	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1201	634	648			
vC1, stage 1 conf vol	634					
vC2, stage 2 conf vol	567					
vCu, unblocked vol	1075	268	288			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	81	84	97			
cM capacity (veh/h)	415	545	824			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	77	86	21	526	647
Volume Left	77	0	21	0	0
Volume Right	0	86	0	0	28
cSH	415	545	824	1700	1700
Volume to Capacity	0.19	0.16	0.03	0.31	0.38
Queue Length 95th (ft)	17	14	2	0	0
Control Delay (s)	15.7	12.8	9.5	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	14.2		0.4		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	188	157	499	79	123	594
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1430	3113		1568	3260
Flt Permitted	0.95	1.00	1.00		0.30	1.00
Satd. Flow (perm)	1630	1430	3113		493	3260
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	200	167	531	84	131	632
RTOR Reduction (vph)	0	127	21	0	0	0
Lane Group Flow (vph)	200	40	594	0	131	632
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	2%	4%	5%	0%	6%	2%
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Actuated Green, G (s)	11.0	11.0	17.5		26.3	26.3
Effective Green, g (s)	11.0	11.0	17.5		26.3	26.3
Actuated g/C Ratio	0.24	0.24	0.38		0.57	0.57
Clearance Time (s)	4.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	387	339	1176		379	1851
v/s Ratio Prot	c0.12		c0.19		0.03	c0.19
v/s Ratio Perm		0.03			0.16	
v/c Ratio	0.52	0.12	0.50		0.35	0.34
Uniform Delay, d1	15.3	13.8	11.1		5.2	5.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.2	0.2	0.3		0.6	0.1
Delay (s)	16.5	14.0	11.4		5.8	5.5
Level of Service	B	B	B		A	A
Approach Delay (s)	15.4		11.4			5.5
Approach LOS	B		B			A

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	4	182	22	3	44	244	823	19	16	533	7
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5			4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.87			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1524			1676	1458	1630	3228	1387	1568	3223	
Flt Permitted		0.99			0.67	1.00	0.32	1.00	1.00	0.32	1.00	
Satd. Flow (perm)		1506			1181	1458	546	3228	1387	525	3223	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	4	198	24	3	48	265	895	21	17	579	8
RTOR Reduction (vph)	0	174	0	0	0	42	0	0	9	0	1	0
Lane Group Flow (vph)	0	35	0	0	27	6	265	895	12	17	586	0
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	0%	0%	0%	2%	2%	3%	5%	6%	3%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)		5.6			5.6	5.6	31.9	26.6	26.6	18.9	18.1	
Effective Green, g (s)		5.6			5.6	5.6	31.9	26.6	26.6	18.9	18.1	
Actuated g/C Ratio		0.12			0.12	0.12	0.69	0.57	0.57	0.41	0.39	
Clearance Time (s)		4.5			4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		181			142	175	591	1846	793	231	1254	
v/s Ratio Prot							c0.09	c0.28		0.00	0.18	
v/s Ratio Perm		c0.02			0.02	0.00	0.22		0.01	0.03		
v/c Ratio		0.19			0.19	0.03	0.45	0.48	0.02	0.07	0.47	
Uniform Delay, d1		18.4			18.4	18.1	3.3	5.9	4.3	8.3	10.6	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5			0.7	0.1	0.5	0.2	0.0	0.1	0.3	
Delay (s)		18.9			19.1	18.1	3.9	6.1	4.3	8.4	10.9	
Level of Service		B			B	B	A	A	A	A	B	
Approach Delay (s)		18.9			18.5			5.6			10.8	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	256	1	435	326	33	18	832	541	38	588	51
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3166		1630	3197	1313	1662	3030		3072	1690	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3166		1630	3197	1313	1662	3030		3072	1690	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	37	284	1	483	362	37	20	924	601	42	653	57
RTOR Reduction (vph)	0	0	0	0	0	27	0	57	0	0	2	0
Lane Group Flow (vph)	37	285	0	483	362	10	20	1468	0	42	708	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	3.8	16.1		6.4	18.7	23.3	2.4	42.1		4.6	44.3	
Effective Green, g (s)	3.8	16.1		6.4	18.7	23.3	2.4	42.1		4.6	44.3	
Actuated g/C Ratio	0.04	0.19		0.07	0.22	0.27	0.03	0.49		0.05	0.51	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	70	589		120	691	353	46	1474		163	865	
v/s Ratio Prot	0.02	0.09		c0.30	c0.11	0.00	c0.01	c0.48		0.01	0.42	
v/s Ratio Perm						0.01						
v/c Ratio	0.53	0.48		4.03	0.52	0.03	0.43	1.00		0.26	0.82	
Uniform Delay, d1	40.5	31.5		40.0	30.0	23.3	41.4	22.1		39.3	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	3.3	0.6		1380.9	0.7	0.0	2.4	22.3		0.3	6.1	
Delay (s)	43.8	32.1		1421.0	30.7	23.3	43.8	44.4		39.6	23.8	
Level of Service	D	C		F	C	C	D	D		D	C	
Approach Delay (s)		33.5			791.7			44.4			24.7	
Approach LOS		C			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	227.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	17.3
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	164	228	90	120	34	207	1233	63	49	1009	290
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	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	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	1699	1473	1614	1579		1630	3228	1377	1599	3228	1386
Flt Permitted	0.41	1.00	1.00	0.38	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	684	1699	1473	645	1579		1630	3228	1377	1599	3228	1386
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	272	176	245	97	129	37	223	1326	68	53	1085	312
RTOR Reduction (vph)	0	0	212	0	8	0	0	0	40	0	0	90
Lane Group Flow (vph)	272	176	33	97	158	0	223	1326	28	53	1085	222
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	35.0	16.3	16.3	35.8	16.7		15.6	49.4	49.4	5.1	59.9	59.9
Effective Green, g (s)	35.0	16.3	16.3	35.8	16.7		15.6	49.4	49.4	5.1	59.9	59.9
Actuated g/C Ratio	0.29	0.13	0.13	0.29	0.14		0.13	0.41	0.41	0.04	0.49	0.49
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	337	228	197	342	217		209	1313	560	67	1592	683
v/s Ratio Prot	c0.12	0.10		0.04	0.10		c0.14	c0.41		0.03	0.34	
v/s Ratio Perm	c0.11		0.02	0.04					0.02			0.16
v/c Ratio	0.81	0.77	0.17	0.28	0.73		1.07	1.01	0.05	0.79	0.68	0.33
Uniform Delay, d1	42.4	50.8	46.5	38.6	50.2		52.9	36.0	21.8	57.6	23.5	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.2	14.9	0.4	0.5	11.6		81.1	27.3	0.0	45.6	1.2	0.3
Delay (s)	55.6	65.6	46.9	39.1	61.8		134.0	63.3	21.8	103.2	24.7	18.8
Level of Service	E	E	D	D	E		F	E	C	F	C	B
Approach Delay (s)		55.1			53.4			71.3			26.3	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	121.4	Sum of lost time (s)	21.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	91	0	0	22	22
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	99	0	0	24	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	72	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	0			0	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	91			99	
cM capacity (veh/h)	848	1091			1636	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	0	48
Volume Left	2	0	24
Volume Right	99	0	0
cSH	1084	1700	1636
Volume to Capacity	0.09	0.00	0.01
Queue Length 95th (ft)	8	0	1
Control Delay (s)	8.7	0.0	3.7
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	3.7
Approach LOS	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	2	0	2	22	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	0	2	24	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	51	1			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	51	1			2	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	872	1089			1633	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	2	26
Volume Left	2	0	24
Volume Right	2	2	0
cSH	969	1700	1633
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	8.7	0.0	6.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	6.6
Approach LOS	A		

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	76	94	27	18	96	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	102	29	20	104	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			185		212	134
vC1, stage 1 conf vol					134	
vC2, stage 2 conf vol					78	
vCu, unblocked vol			185		212	134
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			98		88	97
cM capacity (veh/h)			1224		841	921

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	185	29	20	104	30
Volume Left	0	29	0	104	0
Volume Right	102	0	0	0	30
cSH	1700	1224	1700	841	921
Volume to Capacity	0.11	0.02	0.01	0.12	0.03
Queue Length 95th (ft)	0	2	0	11	3
Control Delay (s)	0.0	8.0	0.0	9.9	9.0
Lane LOS		A		A	A
Approach Delay (s)	0.0	4.8		9.7	
Approach LOS				A	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	59	45	0	46	0	91
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	49	0	50	0	99
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			113		139	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					50	
vCu, unblocked vol			113		139	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			1304		901	975

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	50	99
Volume Left	0	0	0
Volume Right	49	0	99
cSH	1700	1700	975
Volume to Capacity	0.07	0.03	0.10
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	50	141	161	453	576	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	153	175	492	626	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1509	666	705			
vC1, stage 1 conf vol	666					
vC2, stage 2 conf vol	842					
vCu, unblocked vol	1509	666	705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	81	67	78			
cM capacity (veh/h)	289	462	810			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	54	153	175	492	704
Volume Left	54	0	175	0	0
Volume Right	0	153	0	0	78
cSH	289	462	810	1700	1700
Volume to Capacity	0.19	0.33	0.22	0.29	0.41
Queue Length 95th (ft)	17	36	20	0	0
Control Delay (s)	20.3	16.6	10.7	0.0	0.0
Lane LOS	C	C	B		
Approach Delay (s)	17.6		2.8		0.0
Approach LOS	C				

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	29	50	609	688	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	32	54	662	748	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				726		
pX, platoon unblocked	0.80					
vC, conflicting volume	1535	765	780			
vC1, stage 1 conf vol	765					
vC2, stage 2 conf vol	771					
vCu, unblocked vol	1544	765	780			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	92	93			
cM capacity (veh/h)	315	406	758			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	37	54	662	779
Volume Left	5	54	0	0
Volume Right	32	0	0	32
cSH	390	758	1700	1700
Volume to Capacity	0.09	0.07	0.39	0.46
Queue Length 95th (ft)	8	6	0	0
Control Delay (s)	15.2	10.1	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	15.2	0.8		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	71	79	19	484	569	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	86	21	526	618	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1201	634	648			
vC1, stage 1 conf vol	634					
vC2, stage 2 conf vol	567					
vCu, unblocked vol	1075	268	288			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	81	84	97			
cM capacity (veh/h)	415	545	824			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	77	86	21	526	647
Volume Left	77	0	21	0	0
Volume Right	0	86	0	0	28
cSH	415	545	824	1700	1700
Volume to Capacity	0.19	0.16	0.03	0.31	0.38
Queue Length 95th (ft)	17	14	2	0	0
Control Delay (s)	15.7	12.8	9.5	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	14.2		0.4		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	76	94	27	18	96	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	102	29	20	104	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			185		212	134
vC1, stage 1 conf vol					134	
vC2, stage 2 conf vol					78	
vCu, unblocked vol			185		212	134
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			98		88	97
cM capacity (veh/h)			1224		841	921

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	185	29	20	104	30
Volume Left	0	29	0	104	0
Volume Right	102	0	0	0	30
cSH	1700	1224	1700	841	921
Volume to Capacity	0.11	0.02	0.01	0.12	0.03
Queue Length 95th (ft)	0	2	0	11	3
Control Delay (s)	0.0	8.0	0.0	9.9	9.0
Lane LOS		A		A	A
Approach Delay (s)	0.0	4.8		9.7	
Approach LOS				A	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	59	45	0	46	0	91
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	49	0	50	0	99
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			113		139	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					50	
vCu, unblocked vol			113		139	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			1304		901	975

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	50	99
Volume Left	0	0	0
Volume Right	49	0	99
cSH	1700	1700	975
Volume to Capacity	0.07	0.03	0.10
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	50	141	161	453	576	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	153	175	492	626	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1509	666	705			
vC1, stage 1 conf vol	666					
vC2, stage 2 conf vol	842					
vCu, unblocked vol	1509	666	705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	81	67	78			
cM capacity (veh/h)	289	462	810			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	54	153	175	492	704
Volume Left	54	0	175	0	0
Volume Right	0	153	0	0	78
cSH	289	462	810	1700	1700
Volume to Capacity	0.19	0.33	0.22	0.29	0.41
Queue Length 95th (ft)	17	36	20	0	0
Control Delay (s)	20.3	16.6	10.7	0.0	0.0
Lane LOS	C	C	B		
Approach Delay (s)	17.6		2.8		0.0
Approach LOS	C				

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	29	50	609	688	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	32	54	662	748	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1535	765	780			
vC1, stage 1 conf vol	765					
vC2, stage 2 conf vol	771					
vCu, unblocked vol	1535	765	780			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	92	93			
cM capacity (veh/h)	328	406	758			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	37	54	662	779
Volume Left	5	54	0	0
Volume Right	32	0	0	32
cSH	392	758	1700	1700
Volume to Capacity	0.09	0.07	0.39	0.46
Queue Length 95th (ft)	8	6	0	0
Control Delay (s)	15.1	10.1	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	15.1	0.8		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	126	79	210	484	569	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	137	86	228	526	618	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1616	634	648			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1665	268	288			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	0	84	72			
cM capacity (veh/h)	55	545	824			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	137	86	754	647
Volume Left	137	0	228	0
Volume Right	0	86	0	28
cSH	55	545	824	1700
Volume to Capacity	2.51	0.16	0.28	0.38
Queue Length 95th (ft)	349	14	28	0
Control Delay (s)	845.5	12.8	6.4	0.0
Lane LOS	F	B	A	
Approach Delay (s)	524.6		6.4	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	75.0		
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	76	94	237	18	96	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	102	258	20	104	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			185		668	134
vC1, stage 1 conf vol					134	
vC2, stage 2 conf vol					535	
vCu, unblocked vol			185		668	134
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			79		77	97
cM capacity (veh/h)			1224		450	921

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	185	258	20	104	30
Volume Left	0	258	0	104	0
Volume Right	102	0	0	0	30
cSH	1700	1224	1700	450	921
Volume to Capacity	0.11	0.21	0.01	0.23	0.03
Queue Length 95th (ft)	0	20	0	22	3
Control Delay (s)	0.0	8.7	0.0	15.4	9.0
Lane LOS		A		C	A
Approach Delay (s)	0.0	8.1		14.0	
Approach LOS				B	

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	59	45	0	256	0	146
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	49	0	278	0	159
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			113		367	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					278	
vCu, unblocked vol			113		367	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	84
cM capacity (veh/h)			1304		739	975

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	278	159
Volume Left	0	0	0
Volume Right	49	0	159
cSH	1700	1700	975
Volume to Capacity	0.07	0.16	0.16
Queue Length 95th (ft)	0	0	14
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	141	0	660	576	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	153	0	717	626	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1384	666	705			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1384	666	705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	67	100			
cM capacity (veh/h)	160	462	810			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	153	717	704
Volume Left	0	0	0
Volume Right	153	0	78
cSH	462	1700	1700
Volume to Capacity	0.33	0.42	0.41
Queue Length 95th (ft)	36	0	0
Control Delay (s)	16.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	16.6	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	29	0	660	688	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	32	0	717	748	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1482	765	780			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1482	765	780			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	92	100			
cM capacity (veh/h)	139	406	758			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	32	717	779
Volume Left	0	0	0
Volume Right	32	0	32
cSH	406	1700	1700
Volume to Capacity	0.08	0.42	0.46
Queue Length 95th (ft)	6	0	0
Control Delay (s)	14.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	126	79	210	484	569	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	137	86	228	526	618	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)					1076	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1616	634	648			
vC1, stage 1 conf vol	634					
vC2, stage 2 conf vol	983					
vCu, unblocked vol	1665	268	288			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	42	84	72			
cM capacity (veh/h)	235	545	824			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	137	86	228	526	647
Volume Left	137	0	228	0	0
Volume Right	0	86	0	0	28
cSH	235	545	824	1700	1700
Volume to Capacity	0.58	0.16	0.28	0.31	0.38
Queue Length 95th (ft)	82	14	28	0	0
Control Delay (s)	39.7	12.8	11.0	0.0	0.0
Lane LOS	E	B	B		
Approach Delay (s)	29.3		3.3		0.0
Approach LOS	D				

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	76	94	237	18	96	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	102	258	20	104	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			185		668	134
vC1, stage 1 conf vol					134	
vC2, stage 2 conf vol					535	
vCu, unblocked vol			185		668	134
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			79		77	97
cM capacity (veh/h)			1224		450	921

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	185	258	20	104	30
Volume Left	0	258	0	104	0
Volume Right	102	0	0	0	30
cSH	1700	1224	1700	450	921
Volume to Capacity	0.11	0.21	0.01	0.23	0.03
Queue Length 95th (ft)	0	20	0	22	3
Control Delay (s)	0.0	8.7	0.0	15.4	9.0
Lane LOS		A		C	A
Approach Delay (s)	0.0	8.1		14.0	
Approach LOS				B	

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	59	45	0	256	0	146
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	49	0	278	0	159
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			113		367	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					278	
vCu, unblocked vol			113		367	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	84
cM capacity (veh/h)			1304		739	975

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	113	278	159
Volume Left	0	0	0
Volume Right	49	0	159
cSH	1700	1700	975
Volume to Capacity	0.07	0.16	0.16
Queue Length 95th (ft)	0	0	14
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	141	0	660	576	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	153	0	717	626	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1384	666	705			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1384	666	705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	67	100			
cM capacity (veh/h)	160	462	810			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	153	717	704
Volume Left	0	0	0
Volume Right	153	0	78
cSH	462	1700	1700
Volume to Capacity	0.33	0.42	0.41
Queue Length 95th (ft)	36	0	0
Control Delay (s)	16.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	16.6	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	29	0	660	688	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	32	0	717	748	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1482	765	780			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1482	765	780			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	92	100			
cM capacity (veh/h)	139	406	758			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	32	717	779
Volume Left	0	0	0
Volume Right	32	0	32
cSH	406	1700	1700
Volume to Capacity	0.08	0.42	0.46
Queue Length 95th (ft)	6	0	0
Control Delay (s)	14.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	104	77	8	344	410	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	113	84	9	374	446	39
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	858	466	486			
vC1, stage 1 conf vol	466					
vC2, stage 2 conf vol	391					
vCu, unblocked vol	705	222	246			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	79	87	99			
cM capacity (veh/h)	543	665	983			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	113	84	9	374	485
Volume Left	113	0	9	0	0
Volume Right	0	84	0	0	39
cSH	543	665	983	1700	1700
Volume to Capacity	0.21	0.13	0.01	0.22	0.29
Queue Length 95th (ft)	19	11	1	0	0
Control Delay (s)	13.4	11.2	8.7	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	12.4		0.2		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	78	144	40	4	139	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	157	43	4	151	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			241		254	163
vC1, stage 1 conf vol					163	
vC2, stage 2 conf vol					91	
vCu, unblocked vol			241		254	163
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			96		81	95
cM capacity (veh/h)			1163		807	887

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	241	43	4	151	42
Volume Left	0	43	0	151	0
Volume Right	157	0	0	0	42
cSH	1700	1163	1700	807	887
Volume to Capacity	0.14	0.04	0.00	0.19	0.05
Queue Length 95th (ft)	0	3	0	17	4
Control Delay (s)	0.0	8.2	0.0	10.5	9.3
Lane LOS		A		B	A
Approach Delay (s)	0.0	7.5		10.2	
Approach LOS				B	

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	47	70	0	44	0	134
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	51	76	0	48	0	146
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			127		137	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					48	
vCu, unblocked vol			127		137	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			1288		901	974

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	127	48	146
Volume Left	0	0	0
Volume Right	76	0	146
cSH	1700	1700	974
Volume to Capacity	0.07	0.03	0.15
Queue Length 95th (ft)	0	0	13
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	49	183	224	295	403	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	199	243	321	438	92
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1293	485	531			
vC1, stage 1 conf vol	485					
vC2, stage 2 conf vol	808					
vCu, unblocked vol	1293	485	531			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	82	66	74			
cM capacity (veh/h)	301	585	946			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	53	199	243	321	530
Volume Left	53	0	243	0	0
Volume Right	0	199	0	0	92
cSH	301	585	946	1700	1700
Volume to Capacity	0.18	0.34	0.26	0.19	0.31
Queue Length 95th (ft)	16	37	26	0	0
Control Delay (s)	19.5	14.3	10.1	0.0	0.0
Lane LOS	C	B	B		
Approach Delay (s)	15.4		4.4		0.0
Approach LOS	C				

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	39	75	514	545	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	42	82	559	592	45
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1337	616	638			
vC1, stage 1 conf vol	616					
vC2, stage 2 conf vol	722					
vCu, unblocked vol	1337	616	638			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	91	91			
cM capacity (veh/h)	363	494	860			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	48	82	559	637
Volume Left	5	82	0	0
Volume Right	42	0	0	45
cSH	474	860	1700	1700
Volume to Capacity	0.10	0.09	0.33	0.37
Queue Length 95th (ft)	8	8	0	0
Control Delay (s)	13.4	9.6	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.4	1.2		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	158	77	307	344	410	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	172	84	334	374	446	39
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					1076	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1508	466	486			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1509	222	246			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	0	87	66			
cM capacity (veh/h)	72	665	983			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	172	84	708	485
Volume Left	172	0	334	0
Volume Right	0	84	0	39
cSH	72	665	983	1700
Volume to Capacity	2.40	0.13	0.34	0.29
Queue Length 95th (ft)	411	11	38	0
Control Delay (s)	762.5	11.2	7.4	0.0
Lane LOS	F	B	A	
Approach Delay (s)	516.3		7.4	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	94.7		
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	78	144	339	4	139	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	157	368	4	151	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			241		904	163
vC1, stage 1 conf vol					163	
vC2, stage 2 conf vol					741	
vCu, unblocked vol			241		904	163
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			68		52	95
cM capacity (veh/h)			1163		314	887

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	241	368	4	151	42
Volume Left	0	368	0	151	0
Volume Right	157	0	0	0	42
cSH	1700	1163	1700	314	887
Volume to Capacity	0.14	0.32	0.00	0.48	0.05
Queue Length 95th (ft)	0	34	0	62	4
Control Delay (s)	0.0	9.5	0.0	26.7	9.3
Lane LOS		A		D	A
Approach Delay (s)	0.0	9.4		22.8	
Approach LOS				C	

Intersection Summary			
Average Delay	9.8		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	47	70	0	343	0	188
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	51	76	0	373	0	204
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			127		462	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					373	
vCu, unblocked vol			127		462	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	79
cM capacity (veh/h)			1288		672	974

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	127	373	204
Volume Left	0	0	0
Volume Right	76	0	204
cSH	1700	1700	974
Volume to Capacity	0.07	0.22	0.21
Queue Length 95th (ft)	0	0	20
Control Delay (s)	0.0	0.0	9.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.7
Approach LOS			A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	183	0	589	403	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	199	0	640	438	92
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1125	485	531			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1125	485	531			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	66	100			
cM capacity (veh/h)	229	585	946			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	199	640	530
Volume Left	0	0	0
Volume Right	199	0	92
cSH	585	1700	1700
Volume to Capacity	0.34	0.38	0.31
Queue Length 95th (ft)	37	0	0
Control Delay (s)	14.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.3	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	39	0	589	545	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	42	0	640	592	45
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1256	616	638			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1256	616	638			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	91	100			
cM capacity (veh/h)	191	494	860			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	42	640	637
Volume Left	0	0	0
Volume Right	42	0	45
cSH	494	1700	1700
Volume to Capacity	0.09	0.38	0.37
Queue Length 95th (ft)	7	0	0
Control Delay (s)	13.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	158	77	307	344	410	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	172	84	334	374	446	39
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)					1076	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1508	466	486			
vC1, stage 1 conf vol	466					
vC2, stage 2 conf vol	1041					
vCu, unblocked vol	1509	222	246			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.4			
p0 queue free %	20	87	66			
cM capacity (veh/h)	213	665	983			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	172	84	334	374	485
Volume Left	172	0	334	0	0
Volume Right	0	84	0	0	39
cSH	213	665	983	1700	1700
Volume to Capacity	0.80	0.13	0.34	0.22	0.29
Queue Length 95th (ft)	146	11	38	0	0
Control Delay (s)	67.6	11.2	10.5	0.0	0.0
Lane LOS	F	B	B		
Approach Delay (s)	49.1		5.0		0.0
Approach LOS	E				

Intersection Summary			
Average Delay	11.1		
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	78	144	339	4	139	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	157	368	4	151	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			241		904	163
vC1, stage 1 conf vol					163	
vC2, stage 2 conf vol					741	
vCu, unblocked vol			241		904	163
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			68		52	95
cM capacity (veh/h)			1163		314	887

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	241	368	4	151	42
Volume Left	0	368	0	151	0
Volume Right	157	0	0	0	42
cSH	1700	1163	1700	314	887
Volume to Capacity	0.14	0.32	0.00	0.48	0.05
Queue Length 95th (ft)	0	34	0	62	4
Control Delay (s)	0.0	9.5	0.0	26.7	9.3
Lane LOS		A		D	A
Approach Delay (s)	0.0	9.4		22.8	
Approach LOS				C	

Intersection Summary			
Average Delay	9.8		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	47	70	0	343	0	188
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	51	76	0	373	0	204
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			127		462	89
vC1, stage 1 conf vol					89	
vC2, stage 2 conf vol					373	
vCu, unblocked vol			127		462	89
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	79
cM capacity (veh/h)			1288		672	974

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	127	373	204
Volume Left	0	0	0
Volume Right	76	0	204
cSH	1700	1700	974
Volume to Capacity	0.07	0.22	0.21
Queue Length 95th (ft)	0	0	20
Control Delay (s)	0.0	0.0	9.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.7
Approach LOS			A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	183	0	589	403	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	199	0	640	438	92
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1125	485	531			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1125	485	531			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	66	100			
cM capacity (veh/h)	229	585	946			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	199	640	530
Volume Left	0	0	0
Volume Right	199	0	92
cSH	585	1700	1700
Volume to Capacity	0.34	0.38	0.31
Queue Length 95th (ft)	37	0	0
Control Delay (s)	14.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.3	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	39	0	589	545	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	42	0	640	592	45
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1256	616	638			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1256	616	638			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	91	100			
cM capacity (veh/h)	191	494	860			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	42	640	637
Volume Left	0	0	0
Volume Right	42	0	45
cSH	494	1700	1700
Volume to Capacity	0.09	0.38	0.37
Queue Length 95th (ft)	7	0	0
Control Delay (s)	13.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	71	81	20	504	589	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	88	22	548	640	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	973	335	669			
vC1, stage 1 conf vol	655					
vC2, stage 2 conf vol	317					
vCu, unblocked vol	973	335	669			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	82	87	97			
cM capacity (veh/h)	436	666	799			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	77	88	22	274	274	427	242
Volume Left	77	0	22	0	0	0	0
Volume Right	0	88	0	0	0	0	28
cSH	436	666	799	1700	1700	1700	1700
Volume to Capacity	0.18	0.13	0.03	0.16	0.16	0.25	0.14
Queue Length 95th (ft)	16	11	2	0	0	0	0
Control Delay (s)	15.0	11.2	9.6	0.0	0.0	0.0	0.0
Lane LOS	C	B	A				
Approach Delay (s)	13.0		0.4			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	50	141	161	475	598	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	153	175	516	650	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1298	365	729			
vC1, stage 1 conf vol	690					
vC2, stage 2 conf vol	608					
vCu, unblocked vol	1298	365	729			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	83	76	77			
cM capacity (veh/h)	314	637	755			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	54	153	175	258	258	433	295
Volume Left	54	0	175	0	0	0	0
Volume Right	0	153	0	0	0	0	78
cSH	314	637	755	1700	1700	1700	1700
Volume to Capacity	0.17	0.24	0.23	0.15	0.15	0.25	0.17
Queue Length 95th (ft)	15	23	22	0	0	0	0
Control Delay (s)	18.8	12.4	11.2	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	14.1		2.8			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	29	50	630	709	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	32	54	685	771	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1238	402	803			
vC1, stage 1 conf vol	787					
vC2, stage 2 conf vol	451					
vCu, unblocked vol	1238	402	803			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	95	92			
cM capacity (veh/h)	355	603	704			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	37	54	342	342	514	288
Volume Left	5	54	0	0	0	0
Volume Right	32	0	0	0	0	32
cSH	547	704	1700	1700	1700	1700
Volume to Capacity	0.07	0.08	0.20	0.20	0.30	0.17
Queue Length 95th (ft)	5	6	0	0	0	0
Control Delay (s)	12.1	10.5	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	12.1	0.8			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	126	81	231	504	589	26
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	137	88	251	548	640	28
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	1431	335	669			
vC1, stage 1 conf vol	655					
vC2, stage 2 conf vol	776					
vCu, unblocked vol	1431	335	669			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	46	87	69			
cM capacity (veh/h)	252	666	799			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	137	88	251	274	274	427	242
Volume Left	137	0	251	0	0	0	0
Volume Right	0	88	0	0	0	0	28
cSH	252	666	799	1700	1700	1700	1700
Volume to Capacity	0.54	0.13	0.31	0.16	0.16	0.25	0.14
Queue Length 95th (ft)	74	11	34	0	0	0	0
Control Delay (s)	35.0	11.2	11.6	0.0	0.0	0.0	0.0
Lane LOS	D	B	B				
Approach Delay (s)	25.7		3.6			0.0	
Approach LOS	D						

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	141	0	680	598	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	153	0	739	650	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1060	365	729			
vC1, stage 1 conf vol	690					
vC2, stage 2 conf vol	370					
vCu, unblocked vol	1060	365	729			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	76	100			
cM capacity (veh/h)	416	637	755			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	153	0	370	370	433	295
Volume Left	0	0	0	0	0	0
Volume Right	153	0	0	0	0	78
cSH	637	1700	1700	1700	1700	1700
Volume to Capacity	0.24	0.00	0.22	0.22	0.25	0.17
Queue Length 95th (ft)	23	0	0	0	0	0
Control Delay (s)	12.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	12.4	0.0			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	29	0	680	709	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	32	0	739	771	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1157	402	803			
vC1, stage 1 conf vol	787					
vC2, stage 2 conf vol	370					
vCu, unblocked vol	1157	402	803			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	95	100			
cM capacity (veh/h)	377	603	704			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	32	0	370	370	514	288
Volume Left	0	0	0	0	0	0
Volume Right	32	0	0	0	0	32
cSH	603	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.00	0.22	0.22	0.30	0.17
Queue Length 95th (ft)	4	0	0	0	0	0
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.3	0.0			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	104	78	8	357	423	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	113	85	9	388	460	39
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	692	250	500			
vC1, stage 1 conf vol	480					
vC2, stage 2 conf vol	211					
vCu, unblocked vol	692	250	500			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	79	89	99			
cM capacity (veh/h)	549	755	937			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	113	85	9	194	194	307	192
Volume Left	113	0	9	0	0	0	0
Volume Right	0	85	0	0	0	0	39
cSH	549	755	937	1700	1700	1700	1700
Volume to Capacity	0.21	0.11	0.01	0.11	0.11	0.18	0.11
Queue Length 95th (ft)	19	9	1	0	0	0	0
Control Delay (s)	13.3	10.4	8.9	0.0	0.0	0.0	0.0
Lane LOS	B	B	A				
Approach Delay (s)	12.0		0.2			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	49	183	224	308	417	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	199	243	335	453	92
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1155	274	547			
vC1, stage 1 conf vol	500					
vC2, stage 2 conf vol	654					
vCu, unblocked vol	1155	274	547			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	83	73	73			
cM capacity (veh/h)	316	729	897			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	53	199	243	167	167	302	243
Volume Left	53	0	243	0	0	0	0
Volume Right	0	199	0	0	0	0	92
cSH	316	729	897	1700	1700	1700	1700
Volume to Capacity	0.17	0.27	0.27	0.10	0.10	0.18	0.14
Queue Length 95th (ft)	15	28	28	0	0	0	0
Control Delay (s)	18.7	11.8	10.5	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	13.2		4.4			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	39	75	527	558	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	42	82	573	607	45
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1079	327	652			
vC1, stage 1 conf vol	630					
vC2, stage 2 conf vol	449					
vCu, unblocked vol	1079	327	652			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	94	90			
cM capacity (veh/h)	404	674	812			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	48	82	286	286	404	247
Volume Left	5	82	0	0	0	0
Volume Right	42	0	0	0	0	45
cSH	627	812	1700	1700	1700	1700
Volume to Capacity	0.08	0.10	0.17	0.17	0.24	0.15
Queue Length 95th (ft)	6	8	0	0	0	0
Control Delay (s)	11.2	9.9	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.2	1.2			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	158	78	307	357	423	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	172	85	334	388	460	39
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	1342	250	500			
vC1, stage 1 conf vol	480					
vC2, stage 2 conf vol	861					
vCu, unblocked vol	1342	250	500			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	25	89	64			
cM capacity (veh/h)	229	755	937			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	172	85	334	194	194	307	192
Volume Left	172	0	334	0	0	0	0
Volume Right	0	85	0	0	0	0	39
cSH	229	755	937	1700	1700	1700	1700
Volume to Capacity	0.75	0.11	0.36	0.11	0.11	0.18	0.11
Queue Length 95th (ft)	130	9	41	0	0	0	0
Control Delay (s)	56.6	10.4	10.9	0.0	0.0	0.0	0.0
Lane LOS	F	B	B				
Approach Delay (s)	41.3		5.1			0.0	
Approach LOS	E						

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	183	0	602	417	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	199	0	654	453	92
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	828	274	547			
vC1, stage 1 conf vol	500					
vC2, stage 2 conf vol	327					
vCu, unblocked vol	828	274	547			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	73	100			
cM capacity (veh/h)	510	729	897			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	199	0	327	327	302	243
Volume Left	0	0	0	0	0	0
Volume Right	199	0	0	0	0	92
cSH	729	1700	1700	1700	1700	1700
Volume to Capacity	0.27	0.00	0.19	0.19	0.18	0.14
Queue Length 95th (ft)	28	0	0	0	0	0
Control Delay (s)	11.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.8	0.0			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	39	0	602	558	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	42	0	654	607	45
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	957	327	652			
vC1, stage 1 conf vol	630					
vC2, stage 2 conf vol	327					
vCu, unblocked vol	957	327	652			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	94	100			
cM capacity (veh/h)	450	674	812			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	42	0	327	327	404	247
Volume Left	0	0	0	0	0	0
Volume Right	42	0	0	0	0	45
cSH	674	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.00	0.19	0.19	0.24	0.15
Queue Length 95th (ft)	5	0	0	0	0	0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.7	0.0			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix I Future Year (2030)
Background Traffic
Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↕	↱
Volume (vph)	0	958	366	293	1642	0	0	0	0	289	0	104
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1468	3225	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.21	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1468	713	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1053	402	322	1804	0	0	0	0	318	0	114
RTOR Reduction (vph)	0	0	142	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	0	1053	260	322	1804	0	0	0	0	159	159	55
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		61.0	61.0	72.5	72.5					13.5	13.5	13.5
Effective Green, g (s)		61.5	61.5	73.0	73.0					14.0	14.0	14.0
Actuated g/C Ratio		0.65	0.65	0.77	0.77					0.15	0.15	0.15
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1956	950	746	2433					232	232	219
v/s Ratio Prot		0.35		0.03	c0.57							
v/s Ratio Perm			0.18	0.30						c0.10	0.10	0.04
v/c Ratio		0.54	0.27	0.43	0.74					0.69	0.69	0.25
Uniform Delay, d1		9.1	7.2	4.6	5.9					38.4	38.4	35.9
Progression Factor		1.00	1.00	0.37	0.61					1.00	1.00	1.00
Incremental Delay, d2		1.1	0.7	0.2	1.3					7.4	7.4	0.4
Delay (s)		10.1	7.9	1.9	4.9					45.9	45.9	36.3
Level of Service		B	A	A	A					D	D	D
Approach Delay (s)		9.5			4.5			0.0			43.3	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	1168	0	0	1394	464	541	1	413	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	2561			
Flt Permitted	0.08	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	142	3197			3292	1442	1576	1580	2561			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	1270	0	0	1515	504	588	1	449	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	210	0	0	108	0	0	0
Lane Group Flow (vph)	85	1270	0	0	1515	294	294	295	341	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	64.0	64.0			55.4	55.4	22.0	22.0	22.0			
Effective Green, g (s)	64.0	64.0			55.4	55.4	22.0	22.0	22.0			
Actuated g/C Ratio	0.67	0.67			0.58	0.58	0.23	0.23	0.23			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	161	2153			1919	840	364	365	593			
v/s Ratio Prot	0.02	c0.40			c0.46							
v/s Ratio Perm	0.33					0.20	0.19	0.19	0.13			
v/c Ratio	0.53	0.59			0.79	0.35	0.81	0.81	0.57			
Uniform Delay, d1	12.6	8.4			15.3	10.4	34.5	34.5	32.4			
Progression Factor	0.90	1.21			1.65	6.60	1.00	1.00	1.00			
Incremental Delay, d2	2.0	1.0			1.7	0.6	12.0	12.0	1.1			
Delay (s)	13.4	11.2			26.9	69.1	46.5	46.5	33.5			
Level of Service	B	B			C	E	D	D	C			
Approach Delay (s)		11.3			37.4			40.9			0.0	
Approach LOS		B			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	1288	217	61	1589	95	227	10	40	27	7	42
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1331		1659	1488	
Flt Permitted	0.07	1.00	1.00	0.11	1.00	1.00	0.72	1.00		0.83	1.00	
Satd. Flow (perm)	126	3079	1175	162	3260	1450	1019	1331		1456	1488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	1400	236	66	1727	103	247	11	43	29	8	46
RTOR Reduction (vph)	0	0	98	0	0	43	0	36	0	0	43	0
Lane Group Flow (vph)	61	1400	138	66	1727	60	247	18	0	29	11	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	58.2	55.0	55.0	58.4	55.1	55.1	23.7	15.5		8.5	4.8	
Effective Green, g (s)	59.2	55.5	55.5	59.4	55.6	55.6	23.7	16.0		8.5	5.3	
Actuated g/C Ratio	0.62	0.58	0.58	0.63	0.59	0.59	0.25	0.17		0.09	0.06	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	138	1798	686	150	1907	848	303	224		138	83	
v/s Ratio Prot	0.02	0.45		c0.02	c0.53		c0.12	0.01		0.01	0.01	
v/s Ratio Perm	0.26		0.12	0.26		0.04	c0.08			0.01		
v/c Ratio	0.44	0.78	0.20	0.44	0.91	0.07	0.82	0.08		0.21	0.13	
Uniform Delay, d1	15.3	15.1	9.3	10.8	17.4	8.5	32.4	33.3		40.2	42.7	
Progression Factor	1.53	1.48	4.33	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	2.8	0.5	1.5	7.7	0.2	15.4	0.1		0.8	0.9	
Delay (s)	24.7	25.0	40.8	12.3	25.1	8.7	47.8	33.4		40.9	43.6	
Level of Service	C	C	D	B	C	A	D	C		D	D	
Approach Delay (s)		27.2			23.7			45.2			42.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	628	668	56	7	922	78	59	30	10	48	13	748
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	3041		1385	3253		2780	1561		1611	1577	1444
Flt Permitted	0.11	1.00		0.35	1.00		0.75	1.00		0.73	1.00	1.00
Satd. Flow (perm)	339	3041		507	3253		2190	1561		1235	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	698	742	62	8	1024	87	66	33	11	53	14	831
RTOR Reduction (vph)	0	3	0	0	5	0	0	10	0	0	0	10
Lane Group Flow (vph)	698	801	0	8	1106	0	66	34	0	53	14	821
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	87.9	83.1		45.5	44.7		8.0	8.0		8.0	8.0	47.2
Effective Green, g (s)	87.9	83.1		45.5	44.7		8.0	8.0		8.0	8.0	47.2
Actuated g/C Ratio	0.83	0.79		0.43	0.42		0.08	0.08		0.08	0.08	0.45
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1267	2397		225	1379		166	118		93	119	646
v/s Ratio Prot	0.20	0.26		0.00	c0.34			0.02			0.01	c0.47
v/s Ratio Perm	0.25			0.02			0.03			0.04		0.10
v/c Ratio	0.55	0.33		0.04	0.80		0.40	0.29		0.57	0.12	1.27
Uniform Delay, d1	17.2	3.2		17.3	26.5		46.4	46.0		47.0	45.4	29.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1		0.0	3.7		1.1	1.0		6.4	0.3	133.9
Delay (s)	17.6	3.3		17.3	30.2		47.5	47.0		53.4	45.7	163.0
Level of Service	B	A		B	C		D	D		D	D	F
Approach Delay (s)		10.0			30.1			47.3			154.7	
Approach LOS		A			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	53.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	38	21	10	20	12	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	48	26	12	25	15	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			74		111	61
vC1, stage 1 conf vol					61	
vC2, stage 2 conf vol					50	
vCu, unblocked vol			74		111	61
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		98	99
cM capacity (veh/h)			1351		917	1010

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	74	12	25	26
Volume Left	0	12	0	15
Volume Right	26	0	0	11
cSH	1700	1351	1700	955
Volume to Capacity	0.04	0.01	0.01	0.03
Queue Length 95th (ft)	0	1	0	2
Control Delay (s)	0.0	7.7	0.0	8.9
Lane LOS		A		A
Approach Delay (s)	0.0	2.6		8.9
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	17.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	201	47	292	457	148	102	685	309	149	580	308
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	2950		1539	2890		1599	3079	1377	1614	2964	
Flt Permitted	0.18	1.00		0.59	1.00		0.13	1.00	1.00	0.21	1.00	
Satd. Flow (perm)	280	2950		951	2890		211	3079	1377	362	2964	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	267	216	51	314	491	159	110	737	332	160	624	331
RTOR Reduction (vph)	0	16	0	0	27	0	0	0	223	0	64	0
Lane Group Flow (vph)	267	251	0	314	623	0	110	737	109	160	891	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	44.0	25.9		40.2	24.0		38.4	31.9	31.9	40.4	32.9	
Effective Green, g (s)	44.0	25.9		40.2	24.0		38.4	31.9	31.9	40.4	32.9	
Actuated g/C Ratio	0.45	0.27		0.41	0.25		0.39	0.33	0.33	0.41	0.34	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	342	783		489	711		175	1007	450	246	1000	
v/s Ratio Prot	c0.14	0.09		0.11	c0.22		0.04	0.24		c0.05	c0.30	
v/s Ratio Perm	0.21			0.16			0.20		0.08	0.22		
v/c Ratio	0.78	0.32		0.64	0.88		0.63	0.73	0.24	0.65	0.89	
Uniform Delay, d1	19.8	28.7		21.2	35.3		21.6	29.0	24.0	19.9	30.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.2	0.1		2.2	11.4		5.0	2.6	0.2	4.6	10.1	
Delay (s)	30.0	28.8		23.3	46.7		26.6	31.6	24.2	24.5	40.7	
Level of Service	C	C		C	D		C	C	C	C	D	
Approach Delay (s)		29.4			39.1			29.1			38.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	213	349	102	14	705	380	133	456	8	231	531	216
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2854	3260	1369	1662	3292	1444	1662	3161		1614	1699	1412
Flt Permitted	0.21	1.00	1.00	0.39	1.00	1.00	0.18	1.00		0.33	1.00	1.00
Satd. Flow (perm)	644	3260	1369	681	3292	1444	323	3161		557	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	239	392	115	16	792	427	149	512	9	260	597	243
RTOR Reduction (vph)	0	0	75	0	0	261	0	1	0	0	0	121
Lane Group Flow (vph)	239	392	40	16	792	166	149	520	0	260	597	122
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	38.5	36.5	36.5	28.8	28.8	28.8	40.5	33.8		51.0	40.3	40.3
Effective Green, g (s)	38.5	36.5	36.5	28.8	28.8	28.8	40.5	33.8		51.0	40.3	40.3
Actuated g/C Ratio	0.37	0.35	0.35	0.27	0.27	0.27	0.39	0.32		0.49	0.38	0.38
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	429	1133	475	200	902	396	210	1017		403	652	541
v/s Ratio Prot	c0.05	0.12		0.00	c0.24		0.05	0.16		c0.08	c0.35	
v/s Ratio Perm	0.16		0.03	0.02		0.11	0.23			0.23		0.09
v/c Ratio	0.56	0.35	0.08	0.08	0.88	0.42	0.71	0.51		0.65	0.92	0.23
Uniform Delay, d1	35.8	25.4	23.0	28.1	36.4	31.2	24.0	28.9		17.4	30.7	21.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	0.3	0.1	0.1	9.9	0.9	8.6	0.5		2.7	17.8	0.3
Delay (s)	36.7	25.7	23.2	28.2	46.3	32.2	32.7	29.4		20.0	48.6	22.1
Level of Service	D	C	C	C	D	C	C	C		C	D	C
Approach Delay (s)		28.8			41.2			30.1			36.0	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	43	25	592	642	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	47	27	643	698	5
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	1078	353	704			
vC1, stage 1 conf vol	702					
vC2, stage 2 conf vol	376					
vCu, unblocked vol	1078	353	704			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	93	96			
cM capacity (veh/h)	405	649	773			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	4	47	27	322	322	465	238
Volume Left	4	0	27	0	0	0	0
Volume Right	0	47	0	0	0	0	5
cSH	405	649	773	1700	1700	1700	1700
Volume to Capacity	0.01	0.07	0.04	0.19	0.19	0.27	0.14
Queue Length 95th (ft)	1	6	3	0	0	0	0
Control Delay (s)	14.0	11.0	9.8	0.0	0.0	0.0	0.0
Lane LOS	B	B	A				
Approach Delay (s)	11.2		0.4			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	12	22	240	12	87	22	527	101	40	644	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.92		1.00	0.87		1.00	0.98		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1603		1630	1468		1662	1634		1568	3258	
Flt Permitted		0.99		0.73	1.00		0.36	1.00		0.21	1.00	
Satd. Flow (perm)		1589		1256	1468		635	1634		339	3258	
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)	2	13	23	255	13	93	23	561	107	43	685	2
RTOR Reduction (vph)	0	17	0	0	69	0	0	10	0	0	1	0
Lane Group Flow (vph)	0	21	0	255	37	0	23	658	0	43	686	0
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	0%	0%	0%	2%	0%	4%	0%	5%	0%	6%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.7		14.7	14.7		28.2	27.3		30.0	28.2	
Effective Green, g (s)		14.7		14.7	14.7		28.2	27.3		30.0	28.2	
Actuated g/C Ratio		0.26		0.26	0.26		0.49	0.48		0.52	0.49	
Clearance Time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		407		322	376		328	778		216	1603	
v/s Ratio Prot					0.03		0.00	c0.40		c0.01	0.21	
v/s Ratio Perm		0.01		c0.20			0.03			0.10		
v/c Ratio		0.05		0.79	0.10		0.07	0.85		0.20	0.43	
Uniform Delay, d1		16.0		19.9	16.2		7.5	13.2		8.5	9.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		12.5	0.1		0.1	8.4		0.5	0.2	
Delay (s)		16.1		32.4	16.4		7.6	21.6		9.0	9.5	
Level of Service		B		C	B		A	C		A	A	
Approach Delay (s)		16.1			27.7			21.1			9.5	
Approach LOS		B			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑	↱	↰	↑↑	
Volume (veh/h)	8	5	116	29	4	56	198	1054	25	21	683	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	5	126	32	4	61	215	1146	27	23	742	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1859	2369	376	2122	2364	573	742			1146		
vC1, stage 1 conf vol	793	793		1576	1576							
vC2, stage 2 conf vol	1066	1576		546	788							
vCu, unblocked vol	1859	2369	376	2122	2364	573	742			1146		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	93	95	80	58	96	87	75			96		
cM capacity (veh/h)	119	100	627	76	103	463	861			583		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	140	97	215	573	573	27	23	495	257
Volume Left	9	32	215	0	0	0	23	0	0
Volume Right	126	61	0	0	0	27	0	0	10
cSH	427	164	861	1700	1700	1700	583	1700	1700
Volume to Capacity	0.33	0.59	0.25	0.34	0.34	0.02	0.04	0.29	0.15
Queue Length 95th (ft)	35	78	25	0	0	0	3	0	0
Control Delay (s)	17.5	54.3	10.6	0.0	0.0	0.0	11.4	0.0	0.0
Lane LOS	C	F	B				B		
Approach Delay (s)	17.5	54.3	1.6				0.3		
Approach LOS	C	F							

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	752	65	24	1065	636	42	299	1	499	388	42
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3141		1630	3197	1316	1662	3227		3072	1685	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3141		1630	3197	1316	1662	3227		3072	1685	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	53	836	72	27	1183	707	47	332	1	554	431	47
RTOR Reduction (vph)	0	5	0	0	0	73	0	0	0	0	3	0
Lane Group Flow (vph)	53	903	0	27	1183	634	47	333	0	554	475	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.1	50.3		3.1	49.3	73.5	6.5	21.6		24.2	39.3	
Effective Green, g (s)	4.1	50.3		3.1	49.3	73.5	6.5	21.6		24.2	39.3	
Actuated g/C Ratio	0.04	0.43		0.03	0.42	0.63	0.06	0.19		0.21	0.34	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	56	1356		43	1352	830	92	598		638	568	
v/s Ratio Prot	c0.03	0.29		0.02	c0.37	0.16	0.03	0.10		c0.18	c0.28	
v/s Ratio Perm						0.32						
v/c Ratio	0.95	0.67		0.63	0.88	0.76	0.51	0.56		0.87	0.84	
Uniform Delay, d1	56.1	26.4		56.1	30.8	15.3	53.5	43.1		44.6	35.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	99.1	1.3		18.8	6.6	3.8	2.0	1.1		11.6	10.4	
Delay (s)	155.2	27.7		74.9	37.4	19.1	55.4	44.2		56.2	46.0	
Level of Service	F	C		E	D	B	E	D		E	D	
Approach Delay (s)		34.7			31.2			45.6			51.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	116.5	Sum of lost time (s)	17.3
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	210	228	90	155	34	207	1233	63	49	1009	267
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	3228	1473	1614	3020		1630	3228	1377	1599	3228	1398
Flt Permitted	0.53	1.00	1.00	0.48	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	898	3228	1473	819	3020		1630	3228	1377	1599	3228	1398
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	248	226	245	97	167	37	223	1326	68	53	1085	287
RTOR Reduction (vph)	0	0	216	0	14	0	0	0	39	0	0	77
Lane Group Flow (vph)	248	226	29	97	190	0	223	1326	29	53	1085	210
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	28.9	13.4	13.4	26.7	12.3		15.6	49.2	49.2	5.1	59.7	59.7
Effective Green, g (s)	28.9	13.4	13.4	26.7	12.3		15.6	49.2	49.2	5.1	59.7	59.7
Actuated g/C Ratio	0.25	0.12	0.12	0.24	0.11		0.14	0.43	0.43	0.04	0.53	0.53
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	323	380	173	293	326		223	1398	596	71	1696	734
v/s Ratio Prot	c0.10	0.07		0.04	0.06		c0.14	c0.41		0.03	0.34	
v/s Ratio Perm	c0.09		0.02	0.04					0.02			0.15
v/c Ratio	0.77	0.59	0.17	0.33	0.58		1.00	0.95	0.05	0.75	0.64	0.29
Uniform Delay, d1	39.4	47.5	45.1	38.9	48.2		49.0	31.0	18.7	53.6	19.3	15.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.5	2.5	0.5	0.7	2.6		60.3	13.5	0.0	34.2	0.8	0.2
Delay (s)	49.9	50.0	45.5	39.6	50.8		109.3	44.5	18.7	87.8	20.1	15.3
Level of Service	D	D	D	D	D		F	D	B	F	C	B
Approach Delay (s)		48.4			47.2			52.4			21.6	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	21.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↕	↱
Volume (vph)	0	929	326	214	1078	0	0	0	0	264	0	111
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1468	3225	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.22	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1468	745	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1021	358	235	1185	0	0	0	0	290	0	122
RTOR Reduction (vph)	0	0	126	0	0	0	0	0	0	0	0	93
Lane Group Flow (vph)	0	1021	232	235	1185	0	0	0	0	145	145	29
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		61.0	61.0	72.2	72.2					13.8	13.8	13.8
Effective Green, g (s)		61.5	61.5	72.7	72.7					14.3	14.3	14.3
Actuated g/C Ratio		0.65	0.65	0.77	0.77					0.15	0.15	0.15
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1956	950	758	2423					237	237	223
v/s Ratio Prot		c0.34		0.02	c0.37							
v/s Ratio Perm			0.16	0.21						c0.09	0.09	0.02
v/c Ratio		0.52	0.24	0.31	0.49					0.61	0.61	0.13
Uniform Delay, d1		8.9	7.0	4.2	4.2					37.8	37.8	34.9
Progression Factor		1.00	1.00	0.58	1.25					1.00	1.00	1.00
Incremental Delay, d2		1.0	0.6	0.2	0.6					4.0	4.0	0.2
Delay (s)		9.9	7.6	2.6	5.9					41.7	41.7	35.1
Level of Service		A	A	A	A					D	D	D
Approach Delay (s)		9.3			5.3			0.0			39.8	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	1116	0	0	1019	314	273	4	244	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1582	2561			
Flt Permitted	0.20	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	343	3197			3292	1442	1576	1582	2561			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	1213	0	0	1108	341	297	4	265	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	119	0	0	159	0	0	0
Lane Group Flow (vph)	84	1213	0	0	1108	222	151	150	106	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	71.7	71.7			61.9	61.9	14.3	14.3	14.3			
Effective Green, g (s)	71.7	71.7			61.9	61.9	14.3	14.3	14.3			
Actuated g/C Ratio	0.75	0.75			0.65	0.65	0.15	0.15	0.15			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	332	2412			2144	939	237	238	385			
v/s Ratio Prot	0.01	c0.38			0.34							
v/s Ratio Perm	0.18					0.15	c0.10	0.09	0.04			
v/c Ratio	0.25	0.50			0.52	0.24	0.64	0.63	0.28			
Uniform Delay, d1	4.6	4.6			8.7	6.8	37.9	37.9	35.8			
Progression Factor	0.63	1.18			1.59	5.57	1.00	1.00	1.00			
Incremental Delay, d2	0.3	0.7			0.7	0.5	4.8	4.7	0.3			
Delay (s)	3.2	6.1			14.5	38.4	42.8	42.6	36.0			
Level of Service	A	A			B	D	D	D	D			
Approach Delay (s)		5.9			20.1			39.6			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	1129	185	66	1059	56	239	18	71	33	7	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1331		1659	1496	
Flt Permitted	0.16	1.00	1.00	0.14	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	287	3079	1175	204	3260	1450	1026	1331		1746	1496	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	1227	201	72	1151	61	260	20	77	36	8	38
RTOR Reduction (vph)	0	0	91	0	0	27	0	67	0	0	36	0
Lane Group Flow (vph)	64	1227	110	72	1151	34	260	30	0	36	10	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	55.9	51.6	51.6	56.3	51.8	51.8	25.9	12.3		12.7	3.6	
Effective Green, g (s)	56.9	52.1	52.1	57.3	52.3	52.3	25.9	12.8		12.7	4.1	
Actuated g/C Ratio	0.60	0.55	0.55	0.60	0.55	0.55	0.27	0.13		0.13	0.04	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	241	1688	644	185	1794	798	338	179		225	64	
v/s Ratio Prot	0.01	c0.40		c0.02	0.35		c0.14	0.02		0.02	0.01	
v/s Ratio Perm	0.15		0.09	0.21		0.02	c0.07			0.01		
v/c Ratio	0.27	0.73	0.17	0.39	0.64	0.04	0.77	0.17		0.16	0.15	
Uniform Delay, d1	9.8	16.1	10.7	10.6	14.8	9.8	30.7	36.4		36.1	43.8	
Progression Factor	1.45	1.15	2.87	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	2.5	0.5	1.0	1.8	0.1	10.1	0.3		0.3	1.5	
Delay (s)	14.6	21.0	31.2	11.6	16.6	9.9	40.8	36.7		36.5	45.3	
Level of Service	B	C	C	B	B	A	D	D		D	D	
Approach Delay (s)		22.1			16.0			39.7			41.4	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	549	653	25	8	546	62	30	6	10	38	9	608
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		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	0.99		1.00	0.98		1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	3106		1385	3241		2780	1518		1612	1577	1444
Flt Permitted	0.19	1.00		0.37	1.00		0.87	1.00		0.87	1.00	1.00
Satd. Flow (perm)	610	3106		533	3241		2545	1518		1476	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	610	726	28	9	607	69	33	7	11	42	10	676
RTOR Reduction (vph)	0	1	0	0	7	0	0	10	0	0	0	26
Lane Group Flow (vph)	610	753	0	9	669	0	33	8	0	42	10	650
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	65.3	60.7		22.5	21.9		4.6	4.6		4.6	4.6	44.0
Effective Green, g (s)	65.3	60.7		22.5	21.9		4.6	4.6		4.6	4.6	44.0
Actuated g/C Ratio	0.82	0.76		0.28	0.28		0.06	0.06		0.06	0.06	0.55
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1680	2374		157	893		147	87		85	91	800
v/s Ratio Prot	0.18	0.24		0.00	c0.21			0.01			0.01	c0.40
v/s Ratio Perm	0.12			0.02			0.01			0.03		0.05
v/c Ratio	0.36	0.32		0.06	0.75		0.22	0.09		0.49	0.11	0.81
Uniform Delay, d1	3.7	2.9		20.7	26.2		35.7	35.4		36.3	35.5	14.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1		0.1	3.7		0.6	0.3		3.3	0.4	6.2
Delay (s)	3.8	3.0		20.8	29.9		36.3	35.7		39.5	35.8	20.5
Level of Service	A	A		C	C		D	D		D	D	C
Approach Delay (s)		3.4			29.8			36.1			21.8	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	17	0	1	10	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	21	0	1	12	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			21		36	21
vC1, stage 1 conf vol					21	
vC2, stage 2 conf vol					15	
vCu, unblocked vol			21		36	21
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1415		976	1062

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	21	1	12	0
Volume Left	0	1	0	0
Volume Right	0	0	0	0
cSH	1700	1415	1700	1700
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	7.5	0.0	0.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.7		0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	253	38	145	351	101	59	381	204	119	378	178
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	2965		1539	2904		1598	3079	1377	1614	2980	
Flt Permitted	0.31	1.00		0.56	1.00		0.37	1.00	1.00	0.37	1.00	
Satd. Flow (perm)	472	2965		910	2904		621	3079	1377	628	2980	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	219	272	41	156	377	109	63	410	219	128	406	191
RTOR Reduction (vph)	0	11	0	0	24	0	0	0	172	0	55	0
Lane Group Flow (vph)	219	302	0	156	462	0	63	410	47	128	542	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	30.0	19.9		21.3	14.2		16.4	13.5	13.5	22.2	16.4	
Effective Green, g (s)	30.0	19.9		21.3	14.2		16.4	13.5	13.5	22.2	16.4	
Actuated g/C Ratio	0.48	0.32		0.34	0.23		0.26	0.22	0.22	0.36	0.26	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	427	947		382	661		208	667	298	315	784	
v/s Ratio Prot	c0.11	0.10		0.05	c0.16		0.01	0.13		c0.04	c0.18	
v/s Ratio Perm	0.14			0.09			0.07		0.03	0.11		
v/c Ratio	0.51	0.32		0.41	0.70		0.30	0.61	0.16	0.41	0.69	
Uniform Delay, d1	10.3	16.1		15.0	22.1		17.6	22.0	19.8	14.2	20.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.3	2.6		0.3	1.4	0.2	0.3	2.4	
Delay (s)	10.7	16.1		15.3	24.7		17.9	23.5	20.0	14.5	23.1	
Level of Service	B	B		B	C		B	C	B	B	C	
Approach Delay (s)		13.9			22.4			21.9			21.6	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	337	66	9	395	228	96	298	8	153	319	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2854	3260	1370	1662	3292	1444	1662	3158		1614	1699	1412
Flt Permitted	0.49	1.00	1.00	0.37	1.00	1.00	0.49	1.00		0.45	1.00	1.00
Satd. Flow (perm)	1487	3260	1370	650	3292	1444	861	3158		770	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	245	379	74	10	444	256	108	335	9	172	358	135
RTOR Reduction (vph)	0	0	51	0	0	204	0	2	0	0	0	91
Lane Group Flow (vph)	245	379	23	10	444	52	108	342	0	172	358	44
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	24.1	22.1	22.1	14.4	14.4	14.4	24.2	19.2		32.0	23.1	23.1
Effective Green, g (s)	24.1	22.1	22.1	14.4	14.4	14.4	24.2	19.2		32.0	23.1	23.1
Actuated g/C Ratio	0.34	0.31	0.31	0.20	0.20	0.20	0.34	0.27		0.45	0.33	0.33
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	666	1017	427	140	669	293	350	856		454	554	460
v/s Ratio Prot	c0.04	0.12		0.00	c0.13		0.02	0.11		c0.05	c0.21	
v/s Ratio Perm	0.08		0.02	0.01		0.04	0.08			0.12		0.03
v/c Ratio	0.37	0.37	0.05	0.07	0.66	0.18	0.31	0.40		0.38	0.65	0.10
Uniform Delay, d1	18.4	19.0	17.0	22.7	26.0	23.3	16.4	21.1		12.0	20.4	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.4	0.1	0.1	2.7	0.4	0.2	0.4		0.2	2.7	0.1
Delay (s)	18.6	19.4	17.1	22.8	28.6	23.7	16.6	21.4		12.2	23.1	16.7
Level of Service	B	B	B	C	C	C	B	C		B	C	B
Approach Delay (s)		18.9			26.8			20.3			19.0	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	13	10	398	393	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	14	11	433	427	1
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	667	215	429			
vC1, stage 1 conf vol	429					
vC2, stage 2 conf vol	238					
vCu, unblocked vol	667	215	429			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	98	99			
cM capacity (veh/h)	570	795	1002			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	4	14	11	216	216	285	143
Volume Left	4	0	11	0	0	0	0
Volume Right	0	14	0	0	0	0	1
cSH	570	795	1002	1700	1700	1700	1700
Volume to Capacity	0.01	0.02	0.01	0.13	0.13	0.17	0.08
Queue Length 95th (ft)	1	1	1	0	0	0	0
Control Delay (s)	11.4	9.6	8.6	0.0	0.0	0.0	0.0
Lane LOS	B	A	A				
Approach Delay (s)	10.0		0.2			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↰	↦		↰	↦		↰	↑↦	
Volume (vph)	2	12	22	94	12	8	22	391	84	10	389	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.92		1.00	0.94		1.00	0.97		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1603		1630	1616		1662	1630		1568	3257	
Flt Permitted		0.99		0.73	1.00		0.51	1.00		0.40	1.00	
Satd. Flow (perm)		1584		1256	1616		890	1630		659	3257	
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)	2	13	23	100	13	9	23	416	89	11	414	2
RTOR Reduction (vph)	0	19	0	0	8	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	19	0	100	14	0	23	495	0	11	416	0
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	0%	0%	0%	2%	0%	4%	0%	5%	0%	6%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.4		7.4	7.4		24.5	23.8		24.5	23.8	
Effective Green, g (s)		7.4		7.4	7.4		24.5	23.8		24.5	23.8	
Actuated g/C Ratio		0.16		0.16	0.16		0.54	0.52		0.54	0.52	
Clearance Time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		258		204	263		492	854		369	1707	
v/s Ratio Prot					0.01		c0.00	c0.30		0.00	0.13	
v/s Ratio Perm		0.01		c0.08			0.02			0.02		
v/c Ratio		0.07		0.49	0.06		0.05	0.58		0.03	0.24	
Uniform Delay, d1		16.1		17.3	16.0		4.9	7.4		5.0	5.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		1.9	0.1		0.0	1.0		0.0	0.1	
Delay (s)		16.2		19.1	16.1		4.9	8.3		5.0	6.0	
Level of Service		B		B	B		A	A		A	A	
Approach Delay (s)		16.2			18.6			8.2			5.9	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	4	82	8	8	46	123	593	12	5	589	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	4	89	9	9	50	134	645	13	5	640	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1305	1573	330	1334	1563	322	640			645		
vC1, stage 1 conf vol	661	661		912	912							
vC2, stage 2 conf vol	644	912		422	651							
vCu, unblocked vol	1305	1573	330	1334	1563	322	640			645		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	98	98	87	96	96	93	86			99		
cM capacity (veh/h)	268	259	672	219	238	673	940			910		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	98	67	134	322	322	13	5	427	233
Volume Left	4	9	134	0	0	0	5	0	0
Volume Right	89	50	0	0	0	13	0	0	20
cSH	590	448	940	1700	1700	1700	910	1700	1700
Volume to Capacity	0.17	0.15	0.14	0.19	0.19	0.01	0.01	0.25	0.14
Queue Length 95th (ft)	15	13	12	0	0	0	0	0	0
Control Delay (s)	12.3	14.5	9.5	0.0	0.0	0.0	9.0	0.0	0.0
Lane LOS	B	B	A				A		
Approach Delay (s)	12.3	14.5	1.6				0.1		
Approach LOS	B	B							

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	43.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	760	69	29	894	427	71	198	0	484	208	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3139		1630	3197	1317	1662	3228		3072	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3139		1630	3197	1317	1662	3228		3072	1646	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	71	844	77	32	993	474	79	220	0	538	231	66
RTOR Reduction (vph)	0	4	0	0	0	132	0	0	0	0	9	0
Lane Group Flow (vph)	71	917	0	32	993	342	79	220	0	538	288	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	7.6	46.0		3.1	41.5	64.4	8.0	14.6		22.9	29.5	
Effective Green, g (s)	7.6	46.0		3.1	41.5	64.4	8.0	14.6		22.9	29.5	
Actuated g/C Ratio	0.07	0.44		0.03	0.40	0.62	0.08	0.14		0.22	0.28	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	118	1389		48	1276	816	127	453		677	467	
v/s Ratio Prot	c0.04	0.29		0.02	c0.31	0.09	0.05	0.07		c0.18	c0.18	
v/s Ratio Perm						0.17						
v/c Ratio	0.60	0.66		0.67	0.78	0.42	0.62	0.49		0.79	0.62	
Uniform Delay, d1	46.7	22.8		49.9	27.2	10.1	46.5	41.2		38.3	32.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.8	1.1		23.8	3.1	0.1	6.6	0.8		6.0	2.4	
Delay (s)	52.5	23.9		73.7	30.3	10.3	53.1	42.0		44.3	34.7	
Level of Service	D	C		E	C	B	D	D		D	C	
Approach Delay (s)		26.0			24.9			44.9			40.9	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	103.9	Sum of lost time (s)	17.3
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	85	223	67	100	29	189	903	88	47	939	198
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	3228	1473	1614	3000		1630	3228	1377	1599	3228	1398
Flt Permitted	0.66	1.00	1.00	0.69	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1116	3228	1473	1181	3000		1630	3228	1377	1599	3228	1398
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	200	91	240	72	108	31	203	971	95	51	1010	213
RTOR Reduction (vph)	0	0	209	0	21	0	0	0	60	0	0	65
Lane Group Flow (vph)	200	91	31	72	118	0	203	971	35	51	1010	148
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	29.0	13.2	13.2	21.4	9.4		17.7	37.6	37.6	5.0	50.3	50.3
Effective Green, g (s)	29.0	13.2	13.2	21.4	9.4		17.7	37.6	37.6	5.0	50.3	50.3
Actuated g/C Ratio	0.29	0.13	0.13	0.21	0.09		0.17	0.37	0.37	0.05	0.50	0.50
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	393	419	191	300	277		284	1195	510	78	1599	692
v/s Ratio Prot	c0.08	0.03		0.03	0.04		c0.12	c0.30		0.03	0.31	
v/s Ratio Perm	c0.07		0.02	0.02					0.03			0.11
v/c Ratio	0.51	0.22	0.16	0.24	0.43		0.71	0.81	0.07	0.65	0.63	0.21
Uniform Delay, d1	30.8	39.5	39.2	33.7	43.5		39.5	28.8	20.6	47.4	18.8	14.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.3	0.4	0.4	1.1		8.3	4.3	0.1	18.0	0.8	0.2
Delay (s)	31.8	39.8	39.6	34.1	44.6		47.8	33.1	20.7	65.4	19.6	14.6
Level of Service	C	D	D	C	D		D	C	C	E	B	B
Approach Delay (s)		36.7			41.0			34.5			20.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	21.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Appendix J Future Year (2030) Total Traffic Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↕	↱
Volume (vph)	0	980	366	384	1665	0	0	0	0	311	0	104
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1468	3225	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.20	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1468	667	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1077	402	422	1830	0	0	0	0	342	0	114
RTOR Reduction (vph)	0	0	151	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	0	1077	251	422	1830	0	0	0	0	171	171	56
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		58.7	58.7	71.7	71.7					14.3	14.3	14.3
Effective Green, g (s)		59.2	59.2	72.2	72.2					14.8	14.8	14.8
Actuated g/C Ratio		0.62	0.62	0.76	0.76					0.16	0.16	0.16
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1883	914	749	2406					245	245	231
v/s Ratio Prot		0.36		0.05	c0.58							
v/s Ratio Perm			0.17	0.37						c0.11	0.11	0.04
v/c Ratio		0.57	0.27	0.56	0.76					0.70	0.70	0.24
Uniform Delay, d1		10.5	8.1	5.8	6.5					38.0	38.0	35.2
Progression Factor		1.00	1.00	0.47	0.66					1.00	1.00	1.00
Incremental Delay, d2		1.3	0.7	0.4	1.3					7.7	7.7	0.4
Delay (s)		11.8	8.9	3.2	5.6					45.7	45.7	35.6
Level of Service		B	A	A	A					D	D	D
Approach Delay (s)		11.0			5.2			0.0			43.2	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	1212	0	0	1508	487	541	1	502	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1580	2561			
Flt Permitted	0.07	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	115	3197			3292	1442	1576	1580	2561			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	1317	0	0	1639	529	588	1	546	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	214	0	0	108	0	0	0
Lane Group Flow (vph)	85	1317	0	0	1639	315	294	295	438	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	64.8	64.8			56.5	56.5	21.2	21.2	21.2			
Effective Green, g (s)	64.8	64.8			56.5	56.5	21.2	21.2	21.2			
Actuated g/C Ratio	0.68	0.68			0.59	0.59	0.22	0.22	0.22			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	140	2180			1957	857	351	352	571			
v/s Ratio Prot	0.02	c0.41			c0.50							
v/s Ratio Perm	0.39					0.22	0.19	0.19	0.17			
v/c Ratio	0.61	0.60			0.84	0.37	0.84	0.84	0.77			
Uniform Delay, d1	14.6	8.2			15.5	10.0	35.3	35.3	34.6			
Progression Factor	1.05	1.05			1.73	6.74	1.00	1.00	1.00			
Incremental Delay, d2	5.1	1.0			1.9	0.5	15.6	15.6	5.9			
Delay (s)	20.5	9.6			28.8	67.8	50.8	50.8	40.4			
Level of Service	C	A			C	E	D	D	D			
Approach Delay (s)		10.3			38.3			45.8			0.0	
Approach LOS		B			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	1422	217	61	1726	95	227	10	40	27	7	42
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1330		1659	1488	
Flt Permitted	0.07	1.00	1.00	0.09	1.00	1.00	0.72	1.00		1.00	1.00	
Satd. Flow (perm)	122	3079	1175	128	3260	1450	1019	1330		1746	1488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	1546	236	66	1876	103	247	11	43	29	8	46
RTOR Reduction (vph)	0	0	93	0	0	40	0	37	0	0	45	0
Lane Group Flow (vph)	61	1546	143	66	1876	63	247	17	0	29	9	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	60.2	57.0	57.0	60.6	57.2	57.2	21.6	12.2		6.9	2.0	
Effective Green, g (s)	61.2	57.5	57.5	61.6	57.7	57.7	21.6	12.7		6.9	2.5	
Actuated g/C Ratio	0.64	0.61	0.61	0.65	0.61	0.61	0.23	0.13		0.07	0.03	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	138	1863	711	134	1980	880	282	177		122	39	
v/s Ratio Prot	0.02	0.50		c0.02	c0.58		c0.14	0.01		0.01	0.01	
v/s Ratio Perm	0.27		0.12	0.30		0.04	c0.06			0.00		
v/c Ratio	0.44	0.83	0.20	0.49	0.95	0.07	0.88	0.09		0.24	0.24	
Uniform Delay, d1	16.6	14.9	8.4	11.5	17.2	7.7	34.3	36.1		40.4	45.3	
Progression Factor	1.25	1.29	3.47	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	3.4	0.5	2.1	11.1	0.2	24.7	0.2		1.0	4.2	
Delay (s)	22.0	22.6	29.7	13.6	28.4	7.8	59.0	36.3		41.4	49.5	
Level of Service	C	C	C	B	C	A	E	D		D	D	
Approach Delay (s)		23.5			26.9			54.9			46.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	628	668	190	7	922	78	195	76	10	48	57	748
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	2824		1385	3253		2780	1577		1611	1577	1444
Flt Permitted	0.09	1.00		0.30	1.00		0.72	1.00		0.66	1.00	1.00
Satd. Flow (perm)	277	2824		438	3253		2095	1577		1112	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	698	742	211	8	1024	87	217	84	11	53	63	831
RTOR Reduction (vph)	0	15	0	0	5	0	0	4	0	0	0	9
Lane Group Flow (vph)	698	938	0	8	1106	0	217	91	0	53	63	822
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	87.9	83.1		45.6	44.8		16.1	16.1		16.1	16.1	55.2
Effective Green, g (s)	87.9	83.1		45.6	44.8		16.1	16.1		16.1	16.1	55.2
Actuated g/C Ratio	0.77	0.73		0.40	0.39		0.14	0.14		0.14	0.14	0.49
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1147	2067		182	1284		297	223		157	223	702
v/s Ratio Prot	0.21	0.33		0.00	c0.34			0.06			0.04	c0.40
v/s Ratio Perm	0.26			0.02			0.10			0.05		0.17
v/c Ratio	0.61	0.45		0.04	0.86		0.73	0.41		0.34	0.28	1.17
Uniform Delay, d1	22.7	6.1		20.7	31.5		46.6	44.4		43.9	43.5	29.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3		0.1	6.4		8.4	0.9		0.9	0.5	91.5
Delay (s)	23.4	6.3		20.8	37.9		55.0	45.2		44.8	44.0	120.7
Level of Service	C	A		C	D		E	D		D	D	F
Approach Delay (s)		13.6			37.7			52.1			111.3	
Approach LOS		B			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	113.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	171	65	10	111	103	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	214	81	12	139	129	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			295		418	254
vC1, stage 1 conf vol					254	
vC2, stage 2 conf vol					164	
vCu, unblocked vol			295		418	254
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			99		82	99
cM capacity (veh/h)			1109		725	789

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	295	12	139	140
Volume Left	0	12	0	129
Volume Right	81	0	0	11
cSH	1700	1109	1700	730
Volume to Capacity	0.17	0.01	0.08	0.19
Queue Length 95th (ft)	0	1	0	18
Control Delay (s)	0.0	8.3	0.0	11.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.7		11.1
Approach LOS				B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	201	47	337	457	148	102	731	355	149	625	308
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	2950		1539	2890		1599	3079	1377	1614	2973	
Flt Permitted	0.21	1.00		0.51	1.00		0.12	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	313	2950		823	2890		198	3079	1377	325	2973	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	267	216	51	362	491	159	110	786	382	160	672	331
RTOR Reduction (vph)	0	16	0	0	27	0	0	0	244	0	54	0
Lane Group Flow (vph)	267	251	0	362	623	0	110	786	138	160	949	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	40.8	22.7		44.2	24.4		40.5	34.0	34.0	43.5	35.5	
Effective Green, g (s)	40.8	22.7		44.2	24.4		40.5	34.0	34.0	43.5	35.5	
Actuated g/C Ratio	0.41	0.23		0.44	0.24		0.40	0.34	0.34	0.43	0.35	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	331	666		503	701		170	1041	465	243	1050	
v/s Ratio Prot	c0.15	0.08		c0.14	c0.22		0.04	0.26		c0.05	c0.32	
v/s Ratio Perm	0.18			0.17			0.22		0.10	0.23		
v/c Ratio	0.81	0.38		0.72	0.89		0.65	0.76	0.30	0.66	0.90	
Uniform Delay, d1	22.8	32.9		20.7	36.7		21.9	29.5	24.5	19.8	30.9	
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	0.1		4.1	12.8		6.2	3.0	0.3	4.8	10.8	
Delay (s)	35.5	33.0		24.8	49.5		28.1	32.6	24.7	24.6	41.7	
Level of Service	D	C		C	D		C	C	C	C	D	
Approach Delay (s)		34.3			40.7			29.8			39.3	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	213	349	102	14	705	380	133	547	8	231	620	216
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2854	3260	1369	1662	3292	1444	1662	3162		1614	1699	1412
Flt Permitted	0.21	1.00	1.00	0.38	1.00	1.00	0.14	1.00		0.28	1.00	1.00
Satd. Flow (perm)	640	3260	1369	671	3292	1444	250	3162		480	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	239	392	115	16	792	427	149	615	9	260	697	243
RTOR Reduction (vph)	0	0	78	0	0	257	0	1	0	0	0	95
Lane Group Flow (vph)	239	392	37	16	792	170	149	623	0	260	697	148
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	36.9	34.9	34.9	29.9	29.9	29.9	43.3	38.3		55.5	46.5	46.5
Effective Green, g (s)	36.9	34.9	34.9	29.9	29.9	29.9	43.3	38.3		55.5	46.5	46.5
Actuated g/C Ratio	0.34	0.32	0.32	0.28	0.28	0.28	0.40	0.35		0.51	0.43	0.43
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	352	1054	442	199	912	400	165	1122		385	732	608
v/s Ratio Prot	c0.04	0.12		0.00	c0.24		c0.04	0.20		0.08	c0.41	
v/s Ratio Perm	0.19		0.03	0.02		0.12	0.32			0.26		0.10
v/c Ratio	0.68	0.37	0.08	0.08	0.87	0.42	0.90	0.56		0.68	0.95	0.24
Uniform Delay, d1	39.3	28.1	25.4	28.7	37.1	31.9	29.0	28.0		16.5	29.6	19.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.1	0.4	0.1	0.1	9.0	0.9	42.3	0.7		3.7	22.3	0.2
Delay (s)	43.3	28.5	25.5	28.8	46.2	32.9	71.3	28.6		20.2	52.0	19.8
Level of Service	D	C	C	C	D	C	E	C		C	D	B
Approach Delay (s)		32.8			41.4			36.8			38.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	107.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	72	89	25	615	709	27
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	78	97	27	668	771	29
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	1175	401	801			
vC1, stage 1 conf vol	786					
vC2, stage 2 conf vol	389					
vCu, unblocked vol	1175	401	801			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	79	84	96			
cM capacity (veh/h)	370	604	705			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	78	97	27	334	334	514	286
Volume Left	78	0	27	0	0	0	0
Volume Right	0	97	0	0	0	0	29
cSH	370	604	705	1700	1700	1700	1700
Volume to Capacity	0.21	0.16	0.04	0.20	0.20	0.30	0.17
Queue Length 95th (ft)	20	14	3	0	0	0	0
Control Delay (s)	17.3	12.1	10.3	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	14.4		0.4			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	12	22	240	12	176	22	616	101	131	735	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.92		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1603		1630	1450		1662	1638		1568	3259	
Flt Permitted		0.99		0.73	1.00		0.34	1.00		0.13	1.00	
Satd. Flow (perm)		1585		1256	1450		590	1638		219	3259	
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)	2	13	23	255	13	187	23	655	107	139	782	2
RTOR Reduction (vph)	0	17	0	0	140	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	21	0	255	60	0	23	753	0	139	784	0
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	0%	0%	0%	2%	0%	4%	0%	5%	0%	6%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.1		15.1	15.1		28.1	27.2		33.9	30.1	
Effective Green, g (s)		15.1		15.1	15.1		28.1	27.2		33.9	30.1	
Actuated g/C Ratio		0.25		0.25	0.25		0.47	0.46		0.57	0.51	
Clearance Time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		401		318	367		294	747		210	1645	
v/s Ratio Prot					0.04		0.00	c0.46		c0.04	0.24	
v/s Ratio Perm		0.01		c0.20			0.04			0.33		
v/c Ratio		0.05		0.80	0.16		0.08	1.01		0.66	0.48	
Uniform Delay, d1		16.8		20.8	17.3		8.5	16.2		11.0	9.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		13.5	0.2		0.1	35.0		7.6	0.2	
Delay (s)		16.9		34.4	17.5		8.6	51.2		18.6	9.8	
Level of Service		B		C	B		A	D		B	A	
Approach Delay (s)		16.9			27.0			50.0			11.2	
Approach LOS		B			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑	↱	↰	↑↑	
Volume (veh/h)	8	5	207	29	4	56	287	1054	25	21	683	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	5	225	32	4	61	312	1146	27	23	742	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2053	2562	376	2414	2558	573	742			1146		
vC1, stage 1 conf vol	793	793		1770	1770							
vC2, stage 2 conf vol	1260	1770		645	788							
vCu, unblocked vol	2053	2562	376	2414	2558	573	742			1146		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	88	91	64	0	93	87	64			96		
cM capacity (veh/h)	71	63	627	7	59	463	861			583		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	239	97	312	573	573	27	23	495	257
Volume Left	9	32	312	0	0	0	23	0	0
Volume Right	225	61	0	0	0	27	0	0	10
cSH	421	21	861	1700	1700	1700	583	1700	1700
Volume to Capacity	0.57	4.50	0.36	0.34	0.34	0.02	0.04	0.29	0.15
Queue Length 95th (ft)	86	Err	42	0	0	0	3	0	0
Control Delay (s)	24.2	Err	11.5	0.0	0.0	0.0	11.4	0.0	0.0
Lane LOS	C	F	B				B		
Approach Delay (s)	24.2	Err	2.4				0.3		
Approach LOS	C	F							

Intersection Summary				
Average Delay	376.4			
Intersection Capacity Utilization	68.7%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	752	65	24	1065	680	42	321	1	544	411	42
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3141		1630	3197	1317	1662	3227		3072	1686	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3141		1630	3197	1317	1662	3227		3072	1686	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	53	836	72	27	1183	756	47	357	1	604	457	47
RTOR Reduction (vph)	0	5	0	0	0	65	0	0	0	0	3	0
Lane Group Flow (vph)	53	903	0	27	1183	691	47	358	0	604	501	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.2	50.7		3.2	49.7	75.9	6.7	22.2		26.2	41.7	
Effective Green, g (s)	4.2	50.7		3.2	49.7	75.9	6.7	22.2		26.2	41.7	
Actuated g/C Ratio	0.04	0.42		0.03	0.42	0.63	0.06	0.19		0.22	0.35	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	56	1331		43	1328	835	93	598		672	587	
v/s Ratio Prot	c0.03	0.29		0.02	c0.37	0.18	0.03	0.11		c0.20	c0.30	
v/s Ratio Perm						0.34						
v/c Ratio	0.95	0.68		0.63	0.89	0.83	0.51	0.60		0.90	0.85	
Uniform Delay, d1	57.6	27.9		57.6	32.4	16.8	54.8	44.6		45.4	36.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	99.1	1.4		18.8	7.9	6.4	1.6	1.6		14.5	11.6	
Delay (s)	156.7	29.3		76.4	40.3	23.2	56.4	46.2		59.9	47.7	
Level of Service	F	C		E	D	C	E	D		E	D	
Approach Delay (s)		36.3			34.2			47.4			54.4	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	119.6	Sum of lost time (s)	17.3
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	253	210	228	90	155	34	207	1233	63	49	1009	290
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	3228	1473	1614	3020		1630	3228	1377	1599	3228	1398
Flt Permitted	0.53	1.00	1.00	0.48	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	890	3228	1473	809	3020		1630	3228	1377	1599	3228	1398
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	272	226	245	97	167	37	223	1326	68	53	1085	312
RTOR Reduction (vph)	0	0	216	0	14	0	0	0	39	0	0	86
Lane Group Flow (vph)	272	226	29	97	190	0	223	1326	29	53	1085	226
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	31.0	13.5	13.5	28.8	12.4		15.6	49.2	49.2	5.1	59.7	59.7
Effective Green, g (s)	31.0	13.5	13.5	28.8	12.4		15.6	49.2	49.2	5.1	59.7	59.7
Actuated g/C Ratio	0.27	0.12	0.12	0.25	0.11		0.13	0.43	0.43	0.04	0.52	0.52
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	345	376	171	315	323		219	1372	585	70	1665	721
v/s Ratio Prot	c0.12	0.07		0.04	0.06		c0.14	c0.41		0.03	0.34	
v/s Ratio Perm	c0.09		0.02	0.03					0.02			0.16
v/c Ratio	0.79	0.60	0.17	0.31	0.59		1.02	0.97	0.05	0.76	0.65	0.31
Uniform Delay, d1	39.5	48.5	46.0	38.3	49.2		50.1	32.4	19.5	54.7	20.4	16.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.3	2.7	0.5	0.6	2.7		65.6	16.8	0.0	36.6	0.9	0.3
Delay (s)	50.8	51.2	46.5	38.9	51.9		115.7	49.2	19.6	91.3	21.3	16.4
Level of Service	D	D	D	D	D		F	D	B	F	C	B
Approach Delay (s)		49.5			47.7			57.1			22.8	
Approach LOS		D			D			E			C	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	115.7	Sum of lost time (s)	21.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	91	21	2	22	22
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	99	23	2	24	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	96	24			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	96	24			25	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	91			99	
cM capacity (veh/h)	821	1058			1603	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	25	48
Volume Left	2	0	24
Volume Right	99	2	0
cSH	1052	1700	1603
Volume to Capacity	0.10	0.01	0.01
Queue Length 95th (ft)	8	0	1
Control Delay (s)	8.8	0.0	3.7
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	3.7
Approach LOS	A		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	22.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	2	21	2	22	33
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	23	2	24	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	108	24			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108	24			25	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	808	1058			1603	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	25	60
Volume Left	2	0	24
Volume Right	2	2	0
cSH	916	1700	1603
Volume to Capacity	0.00	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	8.9	0.0	3.0
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	3.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	87	94	27	25	96	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	109	118	34	31	120	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			226		266	168
vC1, stage 1 conf vol					168	
vC2, stage 2 conf vol					99	
vCu, unblocked vol			226		266	168
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			97		85	96
cM capacity (veh/h)			1179		804	882

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	226	34	31	120	35
Volume Left	0	34	0	120	0
Volume Right	118	0	0	0	35
cSH	1700	1179	1700	804	882
Volume to Capacity	0.13	0.03	0.02	0.15	0.04
Queue Length 95th (ft)	0	2	0	13	3
Control Delay (s)	0.0	8.1	0.0	10.3	9.3
Lane LOS		A		B	A
Approach Delay (s)	0.0	4.2		10.0	
Approach LOS				B	

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	70	45	0	52	0	91
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	88	56	0	65	0	114
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			144		181	116
vC1, stage 1 conf vol					116	
vC2, stage 2 conf vol					65	
vCu, unblocked vol			144		181	116
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	88
cM capacity (veh/h)			1269		872	942

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	144	65	114
Volume Left	0	0	0
Volume Right	56	0	114
cSH	1700	1700	942
Volume to Capacity	0.08	0.04	0.12
Queue Length 95th (ft)	0	0	10
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	50	141	161	590	726	72
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	153	175	641	789	78
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1500	435	868			
vC1, stage 1 conf vol	829					
vC2, stage 2 conf vol	671					
vCu, unblocked vol	1500	435	868			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	80	73	74			
cM capacity (veh/h)	268	574	661			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	54	153	175	321	321	526	341
Volume Left	54	0	175	0	0	0	0
Volume Right	0	153	0	0	0	0	78
cSH	268	574	661	1700	1700	1700	1700
Volume to Capacity	0.20	0.27	0.26	0.19	0.19	0.31	0.20
Queue Length 95th (ft)	19	27	27	0	0	0	0
Control Delay (s)	21.8	13.5	12.4	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	15.7		2.7			0.0	
Approach LOS	C						

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	29	50	745	838	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	32	54	810	911	32
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				726		
pX, platoon unblocked						
vC, conflicting volume	1441	472	943			
vC1, stage 1 conf vol	928					
vC2, stage 2 conf vol	514					
vCu, unblocked vol	1441	472	943			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	98	94	91			
cM capacity (veh/h)	301	543	616			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	37	54	405	405	607	335
Volume Left	5	54	0	0	0	0
Volume Right	32	0	0	0	0	32
cSH	486	616	1700	1700	1700	1700
Volume to Capacity	0.08	0.09	0.24	0.24	0.36	0.20
Queue Length 95th (ft)	6	7	0	0	0	0
Control Delay (s)	13.0	11.4	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	13.0	0.7			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱	↰↰	↑↑					↰	↕	↱
Volume (vph)	0	964	326	348	1111	0	0	0	0	299	0	111
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3023	1468	3225	3167					1576	1576	1488
Flt Permitted		1.00	1.00	0.20	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3023	1468	686	3167					1576	1576	1488
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1059	358	382	1221	0	0	0	0	329	0	122
RTOR Reduction (vph)	0	0	134	0	0	0	0	0	0	0	0	89
Lane Group Flow (vph)	0	1059	224	382	1221	0	0	0	0	164	165	33
Confl. Peds. (#/hr)	9					9			2	2		
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	2%	10%	0%	0%	5%	11%	1%	0%	20%	0%	0%	0%
Turn Type		NA	Perm	pm+pt	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	6						4		4
Actuated Green, G (s)		58.9	58.9	71.5	71.5					14.5	14.5	14.5
Effective Green, g (s)		59.4	59.4	72.0	72.0					15.0	15.0	15.0
Actuated g/C Ratio		0.63	0.63	0.76	0.76					0.16	0.16	0.16
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.6	4.6	2.5	4.6					2.5	2.5	2.5
Lane Grp Cap (vph)		1890	917	749	2400					248	248	234
v/s Ratio Prot		c0.35		0.05	c0.39							
v/s Ratio Perm			0.15	0.34						0.10	0.10	0.02
v/c Ratio		0.56	0.24	0.51	0.51					0.66	0.67	0.14
Uniform Delay, d1		10.3	7.9	5.5	4.5					37.6	37.6	34.4
Progression Factor		1.00	1.00	0.71	1.04					1.00	1.00	1.00
Incremental Delay, d2		1.2	0.6	0.4	0.6					5.8	5.9	0.2
Delay (s)		11.5	8.5	4.2	5.4					43.5	43.6	34.6
Level of Service		B	A	A	A					D	D	C
Approach Delay (s)		10.7			5.1			0.0			41.1	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	1186	0	0	1186	347	273	4	383	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	1.00	0.95			0.95	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	1662	3197			3292	1442	1576	1582	2561			
Flt Permitted	0.15	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	258	3197			3292	1442	1576	1582	2561			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	1289	0	0	1289	377	297	4	416	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	135	0	0	134	0	0	0
Lane Group Flow (vph)	84	1289	0	0	1289	242	151	150	282	0	0	0
Confl. Peds. (#/hr)	5					5	2		1	1		2
Confl. Bikes (#/hr)			2			1						
Heavy Vehicles (%)	0%	4%	2%	12%	1%	0%	0%	0%	0%	23%	0%	5%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8		8			
Actuated Green, G (s)	70.6	70.6			61.0	61.0	15.4	15.4	15.4			
Effective Green, g (s)	70.6	70.6			61.0	61.0	15.4	15.4	15.4			
Actuated g/C Ratio	0.74	0.74			0.64	0.64	0.16	0.16	0.16			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.5	4.6			4.6	4.6	2.5	2.5	2.5			
Lane Grp Cap (vph)	267	2375			2113	925	255	256	415			
v/s Ratio Prot	0.02	c0.40			c0.39							
v/s Ratio Perm	0.22					0.17	0.10	0.09	c0.11			
v/c Ratio	0.31	0.54			0.61	0.26	0.59	0.59	0.68			
Uniform Delay, d1	6.2	5.3			10.0	7.3	36.9	36.8	37.5			
Progression Factor	0.48	0.98			1.72	6.09	1.00	1.00	1.00			
Incremental Delay, d2	0.4	0.8			0.9	0.5	3.1	2.8	4.0			
Delay (s)	3.4	5.9			18.1	45.0	40.0	39.7	41.5			
Level of Service	A	A			B	D	D	D	D			
Approach Delay (s)		5.8			24.2			40.8			0.0	
Approach LOS		A			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	20.6	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)	13.5
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	1338	185	66	1260	56	239	18	71	33	7	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	3079	1175	1385	3260	1450	1341	1331		1659	1496	
Flt Permitted	0.11	1.00	1.00	0.09	1.00	1.00	0.73	1.00		1.00	1.00	
Satd. Flow (perm)	201	3079	1175	136	3260	1450	1026	1331		1746	1496	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	1454	201	72	1370	61	260	20	77	36	8	38
RTOR Reduction (vph)	0	0	86	0	0	26	0	66	0	0	36	0
Lane Group Flow (vph)	64	1454	115	72	1370	35	260	31	0	36	10	0
Confl. Peds. (#/hr)	3					3			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	8%	24%	20%	2%	0%	24%	0%	18%	0%	0%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4			8		
Actuated Green, G (s)	57.3	53.7	53.7	57.9	54.0	54.0	24.4	12.6		10.9	3.6	
Effective Green, g (s)	58.3	54.2	54.2	58.9	54.5	54.5	24.4	13.1		10.9	4.1	
Actuated g/C Ratio	0.61	0.57	0.57	0.62	0.57	0.57	0.26	0.14		0.11	0.04	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.0	4.5		4.0	4.5	
Vehicle Extension (s)	2.5	1.0	1.0	2.5	1.0	1.0	3.0	2.5		3.0	4.0	
Lane Grp Cap (vph)	186	1756	670	142	1870	831	317	183		193	64	
v/s Ratio Prot	0.01	c0.47		c0.02	0.42		c0.14	0.02		0.01	0.01	
v/s Ratio Perm	0.20		0.10	0.29		0.02	c0.07			0.01		
v/c Ratio	0.34	0.83	0.17	0.51	0.73	0.04	0.82	0.17		0.19	0.15	
Uniform Delay, d1	10.7	16.6	9.7	12.3	14.9	8.8	32.1	36.1		37.7	43.8	
Progression Factor	1.42	1.07	2.56	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	3.9	0.5	2.1	2.6	0.1	15.5	0.3		0.5	1.5	
Delay (s)	15.9	21.7	25.4	14.4	17.5	8.9	47.5	36.5		38.2	45.3	
Level of Service	B	C	C	B	B	A	D	D		D	D	
Approach Delay (s)		21.9			17.0			44.5			42.2	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	549	653	233	8	546	62	231	73	10	38	78	608
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	2766		1385	3241		2780	1577		1612	1577	1444
Flt Permitted	0.21	1.00		0.29	1.00		0.70	1.00		0.70	1.00	1.00
Satd. Flow (perm)	658	2766		424	3241		2050	1577		1183	1577	1444
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	610	726	259	9	607	69	257	81	11	42	87	676
RTOR Reduction (vph)	0	27	0	0	7	0	0	4	0	0	0	26
Lane Group Flow (vph)	610	958	0	9	669	0	257	88	0	42	87	650
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	60.0	55.4		26.0	25.4		16.0	16.0		16.0	16.0	46.6
Effective Green, g (s)	60.0	55.4		26.0	25.4		16.0	16.0		16.0	16.0	46.6
Actuated g/C Ratio	0.70	0.65		0.30	0.30		0.19	0.19		0.19	0.19	0.55
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1294	1792		135	962		383	295		221	295	787
v/s Ratio Prot	0.17	0.35		0.00	c0.21			0.06			0.06	c0.30
v/s Ratio Perm	0.16			0.02			0.13			0.04		0.15
v/c Ratio	0.47	0.53		0.07	0.70		0.67	0.30		0.19	0.29	0.83
Uniform Delay, d1	7.0	8.1		21.2	26.6		32.3	29.9		29.3	29.9	16.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.4		0.2	2.4		4.2	0.4		0.3	0.4	6.9
Delay (s)	7.2	8.6		21.3	29.0		36.5	30.3		29.6	30.3	23.0
Level of Service	A	A		C	C		D	C		C	C	C
Approach Delay (s)		8.0			28.9			34.8			24.1	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	225	70	1	144	134	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	281	88	1	180	168	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			369		508	325
vC1, stage 1 conf vol					325	
vC2, stage 2 conf vol					182	
vCu, unblocked vol			369		508	325
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		75	100
cM capacity (veh/h)			1038		678	721

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	369	1	180	168
Volume Left	0	1	0	168
Volume Right	88	0	0	0
cSH	1700	1038	1700	678
Volume to Capacity	0.22	0.00	0.11	0.25
Queue Length 95th (ft)	0	0	0	24
Control Delay (s)	0.0	8.5	0.0	12.0
Lane LOS		A		B
Approach Delay (s)	0.0	0.1		12.0
Approach LOS				B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	253	38	214	351	101	59	448	271	119	448	178
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	2965		1539	2904		1598	3079	1377	1614	3001	
Flt Permitted	0.30	1.00		0.56	1.00		0.26	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	464	2965		910	2904		444	3079	1377	617	3001	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	219	272	41	230	377	109	63	482	291	128	482	191
RTOR Reduction (vph)	0	10	0	0	24	0	0	0	218	0	42	0
Lane Group Flow (vph)	219	303	0	230	462	0	63	482	73	128	631	0
Confl. Peds. (#/hr)	1					1	3					3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	15%	11%	3%	8%	9%	15%	4%	8%	8%	3%	5%	7%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	30.7	18.0		24.5	14.8		20.5	16.5	16.5	22.9	17.7	
Effective Green, g (s)	30.7	18.0		24.5	14.8		20.5	16.5	16.5	22.9	17.7	
Actuated g/C Ratio	0.47	0.28		0.37	0.23		0.31	0.25	0.25	0.35	0.27	
Clearance Time (s)	3.0	5.0		3.0	5.0		3.0	5.0	5.0	3.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	2.5	2.5	1.0	2.5	
Lane Grp Cap (vph)	411	816		434	657		209	776	347	295	812	
v/s Ratio Prot	c0.11	0.10		0.08	c0.16		0.02	0.16		c0.03	c0.21	
v/s Ratio Perm	0.14			0.12			0.08		0.05	0.12		
v/c Ratio	0.53	0.37		0.53	0.70		0.30	0.62	0.21	0.43	0.78	
Uniform Delay, d1	11.3	19.1		15.0	23.3		16.3	21.7	19.3	15.2	22.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.1		0.5	2.8		0.3	1.3	0.2	0.4	4.5	
Delay (s)	12.0	19.2		15.6	26.1		16.6	23.0	19.5	15.5	26.6	
Level of Service	B	B		B	C		B	C	B	B	C	
Approach Delay (s)		16.2			22.7			21.3			24.8	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	218	337	66	9	395	228	96	432	8	153	458	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2854	3260	1370	1662	3292	1444	1662	3161		1614	1699	1412
Flt Permitted	0.49	1.00	1.00	0.35	1.00	1.00	0.31	1.00		0.37	1.00	1.00
Satd. Flow (perm)	1487	3260	1370	612	3292	1444	549	3161		633	1699	1412
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	245	379	74	10	444	256	108	485	9	172	515	135
RTOR Reduction (vph)	0	0	52	0	0	206	0	1	0	0	0	81
Lane Group Flow (vph)	245	379	22	10	444	50	108	493	0	172	515	54
Confl. Peds. (#/hr)			2	2								
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	13%	2%	7%	0%	1%	3%	0%	5%	0%	3%	3%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	25.9	23.9	23.9	16.0	16.0	16.0	33.1	28.7		40.9	32.6	32.6
Effective Green, g (s)	25.9	23.9	23.9	16.0	16.0	16.0	33.1	28.7		40.9	32.6	32.6
Actuated g/C Ratio	0.32	0.29	0.29	0.20	0.20	0.20	0.41	0.35		0.50	0.40	0.40
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	1.5	4.6	4.6	1.5	3.8	3.8	1.5	3.5		1.5	3.5	3.5
Lane Grp Cap (vph)	615	956	401	127	646	283	283	1113		417	679	564
v/s Ratio Prot	c0.04	0.12		0.00	c0.13		0.02	0.16		c0.04	c0.30	
v/s Ratio Perm	0.09		0.02	0.01		0.03	0.13			0.16		0.04
v/c Ratio	0.40	0.40	0.05	0.08	0.69	0.18	0.38	0.44		0.41	0.76	0.10
Uniform Delay, d1	22.7	23.0	20.7	26.6	30.4	27.3	16.0	20.3		11.7	21.1	15.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.1	0.1	3.2	0.4	0.3	0.3		0.2	5.0	0.1
Delay (s)	22.9	23.5	20.8	26.7	33.7	27.7	16.3	20.6		11.9	26.1	15.3
Level of Service	C	C	C	C	C	C	B	C		B	C	B
Approach Delay (s)		23.0			31.4			19.8			21.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	104	80	10	431	497	36
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	113	87	11	468	540	39
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					1076	
pX, platoon unblocked						
vC, conflicting volume	817	291	580			
vC1, stage 1 conf vol	561					
vC2, stage 2 conf vol	256					
vCu, unblocked vol	817	291	580			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	77	88	99			
cM capacity (veh/h)	495	711	869			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	113	87	11	234	234	360	219
Volume Left	113	0	11	0	0	0	0
Volume Right	0	87	0	0	0	0	39
cSH	495	711	869	1700	1700	1700	1700
Volume to Capacity	0.23	0.12	0.01	0.14	0.14	0.21	0.13
Queue Length 95th (ft)	22	10	1	0	0	0	0
Control Delay (s)	14.4	10.8	9.2	0.0	0.0	0.0	0.0
Lane LOS	B	B	A				
Approach Delay (s)	12.8		0.2			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	12	22	94	12	147	22	530	84	144	523	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.92		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1603		1630	1454		1662	1639		1568	3258	
Flt Permitted		0.98		0.73	1.00		0.44	1.00		0.25	1.00	
Satd. Flow (perm)		1573		1256	1454		775	1639		412	3258	
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)	2	13	23	100	13	156	23	564	89	153	556	2
RTOR Reduction (vph)	0	20	0	0	133	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	18	0	100	36	0	23	646	0	153	558	0
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	0%	0%	0%	2%	0%	4%	0%	5%	0%	6%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.1		8.1	8.1		30.4	29.5		36.4	32.5	
Effective Green, g (s)		8.1		8.1	8.1		30.4	29.5		36.4	32.5	
Actuated g/C Ratio		0.15		0.15	0.15		0.55	0.54		0.66	0.59	
Clearance Time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		231		184	214		442	879		354	1925	
v/s Ratio Prot					0.02		0.00	c0.39		c0.03	0.17	
v/s Ratio Perm		0.01		c0.08			0.03			0.25		
v/c Ratio		0.08		0.54	0.17		0.05	0.73		0.43	0.29	
Uniform Delay, d1		20.2		21.7	20.5		5.6	9.8		5.5	5.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		3.3	0.4		0.0	3.2		0.8	0.1	
Delay (s)		20.4		25.0	20.9		5.6	13.0		6.3	5.6	
Level of Service		C		C	C		A	B		A	A	
Approach Delay (s)		20.4			22.4			12.7			5.8	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↑↑			↑↑	
Volume (veh/h)	4	4	216	8	8	46	262	593	12	5	589	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	4	235	9	9	50	285	645	13	5	640	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1607	1875	330	1782	1865	322	640			645		
vC1, stage 1 conf vol	661	661		1214	1214							
vC2, stage 2 conf vol	946	1214		568	651							
vCu, unblocked vol	1607	1875	330	1782	1865	322	640			645		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	97	97	65	66	93	93	70			99		
cM capacity (veh/h)	157	161	672	26	133	673	940			910		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	243	67	285	322	322	13	5	427	233
Volume Left	4	9	285	0	0	0	5	0	0
Volume Right	235	50	0	0	0	13	0	0	20
cSH	602	141	940	1700	1700	1700	910	1700	1700
Volume to Capacity	0.40	0.48	0.30	0.19	0.19	0.01	0.01	0.25	0.14
Queue Length 95th (ft)	49	55	32	0	0	0	0	0	0
Control Delay (s)	15.0	51.9	10.5	0.0	0.0	0.0	9.0	0.0	0.0
Lane LOS	B	F	B				A		
Approach Delay (s)	15.0	51.9	3.2				0.1		
Approach LOS	B	F							

Intersection Summary				
Average Delay	5.3			
Intersection Capacity Utilization	59.6%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	760	69	29	894	496	71	253	0	551	241	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3139		1630	3197	1317	1662	3228		3072	1653	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1614	3139		1630	3197	1317	1662	3228		3072	1653	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	71	844	77	32	993	551	79	281	0	612	268	66
RTOR Reduction (vph)	0	5	0	0	0	89	0	0	0	0	7	0
Lane Group Flow (vph)	71	916	0	32	993	462	79	281	0	612	327	0
Confl. Peds. (#/hr)							3		4	4		3
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	3%	5%	0%	2%	4%	12%	0%	3%	2%	5%	2%	4%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	5.6	43.7		3.1	41.2	67.0	8.3	17.2		25.8	34.7	
Effective Green, g (s)	5.6	43.7		3.1	41.2	67.0	8.3	17.2		25.8	34.7	
Actuated g/C Ratio	0.05	0.41		0.03	0.38	0.63	0.08	0.16		0.24	0.32	
Clearance Time (s)	4.0	4.5		4.0	4.5	4.0	4.0	4.8		4.0	4.8	
Vehicle Extension (s)	2.0	3.0		2.0	3.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	84	1280		47	1229	823	128	518		740	535	
v/s Ratio Prot	c0.04	0.29		0.02	c0.31	0.14	0.05	0.09		c0.20	c0.20	
v/s Ratio Perm						0.22						
v/c Ratio	0.85	0.72		0.68	0.81	0.56	0.62	0.54		0.83	0.61	
Uniform Delay, d1	50.3	26.5		51.5	29.4	11.6	47.9	41.3		38.5	30.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	48.9	1.9		27.7	4.0	0.5	6.1	1.2		7.2	2.1	
Delay (s)	99.3	28.4		79.2	33.4	12.1	53.9	42.5		45.7	32.6	
Level of Service	F	C		E	C	B	D	D		D	C	
Approach Delay (s)		33.5			26.9			45.0			41.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	107.1	Sum of lost time (s)	17.3
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	219	85	223	67	100	29	189	903	88	47	939	231
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1598	3228	1473	1614	3000		1630	3228	1377	1599	3228	1398
Flt Permitted	0.66	1.00	1.00	0.69	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1116	3228	1473	1181	3000		1630	3228	1377	1599	3228	1398
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	235	91	240	72	108	31	203	971	95	51	1010	248
RTOR Reduction (vph)	0	0	209	0	21	0	0	0	60	0	0	77
Lane Group Flow (vph)	235	91	31	72	118	0	203	971	35	51	1010	171
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	3%	1%	3%	7%	6%	2%	3%	8%	4%	3%	5%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		5!	6!		1!	2!	
Permitted Phases	7		7	3					6			2
Actuated Green, G (s)	32.3	13.8	13.8	23.7	9.5		17.8	38.5	38.5	5.0	51.3	51.3
Effective Green, g (s)	32.3	13.8	13.8	23.7	9.5		17.8	38.5	38.5	5.0	51.3	51.3
Actuated g/C Ratio	0.31	0.13	0.13	0.23	0.09		0.17	0.37	0.37	0.05	0.49	0.49
Clearance Time (s)	6.0	4.5	4.5	6.0	4.5		4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	427	423	193	324	270		275	1180	503	75	1572	681
v/s Ratio Prot	c0.10	0.03		0.03	0.04		c0.12	c0.30		0.03	0.31	
v/s Ratio Perm	c0.07		0.02	0.02					0.03			0.12
v/c Ratio	0.55	0.22	0.16	0.22	0.44		0.74	0.82	0.07	0.68	0.64	0.25
Uniform Delay, d1	30.5	40.9	40.6	33.7	45.4		41.5	30.3	21.7	49.4	20.2	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.3	0.4	0.3	1.1		9.9	4.8	0.1	22.4	0.9	0.2
Delay (s)	32.1	41.2	41.0	34.0	46.5		51.4	35.1	21.8	71.8	21.1	16.0
Level of Service	C	D	D	C	D		D	D	C	E	C	B
Approach Delay (s)		37.3			42.2			36.7			22.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	105.3	Sum of lost time (s)	21.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	134	0	2	35	36
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	146	0	2	38	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	116	1			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	116	1			2	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	87			98	
cM capacity (veh/h)	792	1089			1633	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	148	2	77
Volume Left	2	0	38
Volume Right	146	2	0
cSH	1083	1700	1633
Volume to Capacity	0.14	0.00	0.02
Queue Length 95th (ft)	12	0	2
Control Delay (s)	8.8	0.0	3.7
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	3.7
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	2	0	2	35	1
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	0	2	38	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	78	1			2	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	78	1			2	
tC, single (s)	6.7	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.8	3.3			2.2	
p0 queue free %	100	100			98	
cM capacity (veh/h)	833	1089			1633	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	2	39
Volume Left	2	0	38
Volume Right	2	2	0
cSH	944	1700	1633
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	8.8	0.0	7.1
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	7.1
Approach LOS	A		

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	81	144	40	7	139	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	157	43	8	151	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			245		261	166
vC1, stage 1 conf vol					166	
vC2, stage 2 conf vol					95	
vCu, unblocked vol			245		261	166
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			96		81	95
cM capacity (veh/h)			1160		803	883

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	245	43	8	151	42
Volume Left	0	43	0	151	0
Volume Right	157	0	0	0	42
cSH	1700	1160	1700	803	883
Volume to Capacity	0.14	0.04	0.00	0.19	0.05
Queue Length 95th (ft)	0	3	0	17	4
Control Delay (s)	0.0	8.2	0.0	10.5	9.3
Lane LOS		A		B	A
Approach Delay (s)	0.0	7.0		10.2	
Approach LOS				B	

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	50	70	0	46	0	134
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	76	0	50	0	146
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			130		142	92
vC1, stage 1 conf vol					92	
vC2, stage 2 conf vol					50	
vCu, unblocked vol			130		142	92
tC, single (s)			4.4		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.5		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			1284		897	970

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	130	50	146
Volume Left	0	0	0
Volume Right	76	0	146
cSH	1700	1700	970
Volume to Capacity	0.08	0.03	0.15
Queue Length 95th (ft)	0	0	13
Control Delay (s)	0.0	0.0	9.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	49	183	224	383	492	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	199	243	416	535	92
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1277	315	628			
vC1, stage 1 conf vol	582					
vC2, stage 2 conf vol	695					
vCu, unblocked vol	1277	315	628			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	81	71	71			
cM capacity (veh/h)	288	686	831			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	53	199	243	208	208	357	271
Volume Left	53	0	243	0	0	0	0
Volume Right	0	199	0	0	0	0	92
cSH	288	686	831	1700	1700	1700	1700
Volume to Capacity	0.19	0.29	0.29	0.12	0.12	0.21	0.16
Queue Length 95th (ft)	17	30	31	0	0	0	0
Control Delay (s)	20.3	12.4	11.1	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	14.1		4.1			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	39	75	601	634	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	42	82	653	689	45
Pedestrians	1					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				726		
pX, platoon unblocked						
vC, conflicting volume	1202	368	735			
vC1, stage 1 conf vol	712					
vC2, stage 2 conf vol	490					
vCu, unblocked vol	1202	368	735			
tC, single (s)	6.8	6.9	4.5			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	93	89			
cM capacity (veh/h)	366	634	751			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	48	82	327	327	459	274
Volume Left	5	82	0	0	0	0
Volume Right	42	0	0	0	0	45
cSH	586	751	1700	1700	1700	1700
Volume to Capacity	0.08	0.11	0.19	0.19	0.27	0.16
Queue Length 95th (ft)	7	9	0	0	0	0
Control Delay (s)	11.7	10.4	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	11.7	1.2			0.0	
Approach LOS	B					

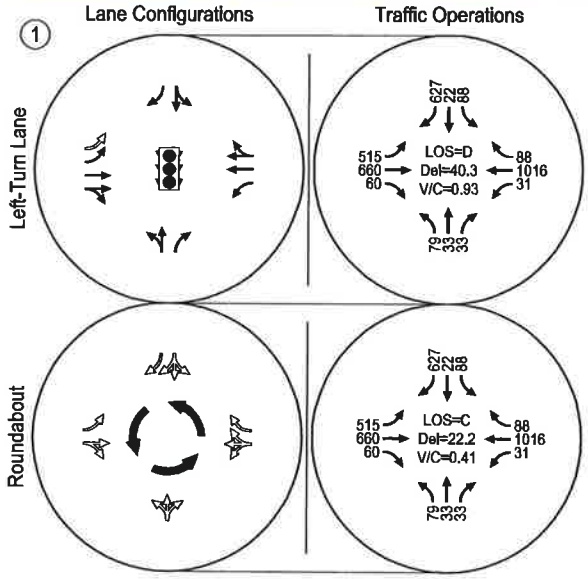
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix K Future Year (2030)
Mitigated Traffic
Operation Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	650	668	190	7	922	82	195	77	10	48	58	757
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		0.97	1.00		1.00	1.00	0.88
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2986	2824		1385	3251		2780	1578		1612	1577	2542
Flt Permitted	0.10	1.00		0.30	1.00		0.72	1.00		0.66	1.00	1.00
Satd. Flow (perm)	309	2824		438	3251		2093	1578		1114	1577	2542
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	722	742	211	8	1024	91	217	86	11	53	64	841
RTOR Reduction (vph)	0	15	0	0	5	0	0	4	0	0	0	16
Lane Group Flow (vph)	722	938	0	8	1110	0	217	93	0	53	64	825
Confl. Peds. (#/hr)	1		2	2		1			1	1		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	42%	20%	1%	0%	16%	10%	0%	3%	11%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases	2			6			8			4	4	4
Actuated Green, G (s)	84.4	79.7		45.8	45.1		15.7	15.7		15.7	15.7	51.0
Effective Green, g (s)	84.4	79.7		45.8	45.1		15.7	15.7		15.7	15.7	51.0
Actuated g/C Ratio	0.77	0.73		0.42	0.41		0.14	0.14		0.14	0.14	0.47
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.5	4.5	4.0
Vehicle Extension (s)	2.5	4.3		2.5	4.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	1100	2053		189	1337		299	226		159	225	1182
v/s Ratio Prot	0.21	0.33		0.00	c0.34			0.06			0.04	c0.22
v/s Ratio Perm	0.29			0.02			c0.10			0.05		0.10
v/c Ratio	0.66	0.46		0.04	0.83		0.73	0.41		0.33	0.28	0.70
Uniform Delay, d1	22.7	6.1		18.9	28.8		44.9	42.7		42.2	41.9	23.2
Progression Factor	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		0.1	4.7		8.0	0.9		0.9	0.5	1.7
Delay (s)	23.9	6.4		19.0	33.6		52.9	43.6		43.1	42.4	24.9
Level of Service	C	A		B	C		D	D		D	D	C
Approach Delay (s)		13.9			33.5			50.0			27.1	
Approach LOS		B			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	109.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



- NEW LANE
- STOP SIGN
- TRAFFIC SIGNAL

#1 - Hamrick Road/E Pine Street-Biddle Road Alternative Traffic Operations Jackson County, OR

Figure 1

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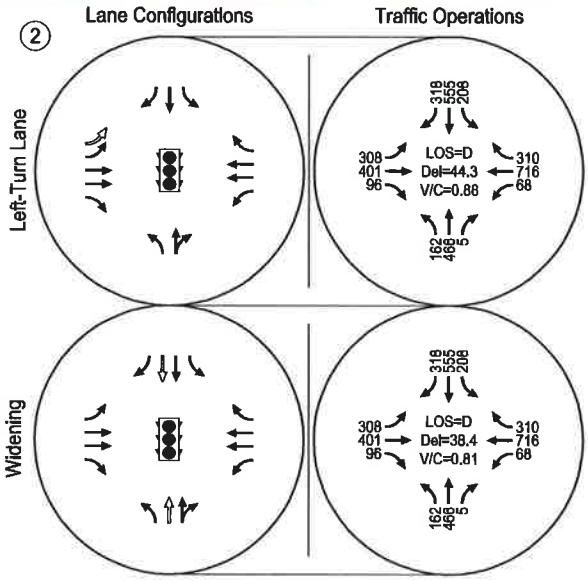

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- NEW LANE
- STOP SIGN
- TRAFFIC SIGNAL

#2 - Table Rock Road/Biddle Road
Alternative Traffic Operations
Jackson County, OR

Figure
2

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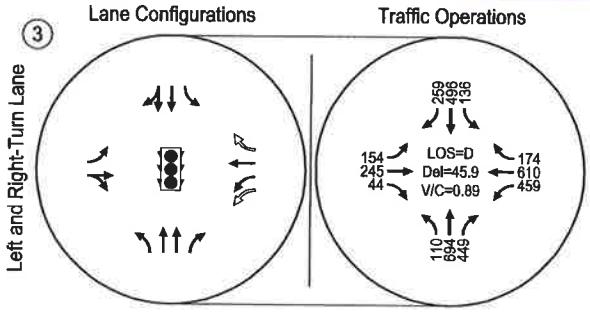

- NEW LANE
- STOP SIGN
- TRAFFIC SIGNAL

#3 - Table Rock Road/Vilas Road
Alternative Traffic Operations
Jackson County, OR

Figure
3

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