REDMOND
Transportation System Plan

Date:	May 15, 2019	Project #: 17720 ODOT PA #27456
To:	Redmond Project Advisory Committee (PAC) Redmond TSP Project Management Team (PMT)	
Subject:	Alternatives Analysis (Tech Memo #6)	

Per Task 4.2 of the scope for the Redmond Transportation System Plan (TSP) and our work to-date on the project, this technical memorandum presents alternative solutions that address deficiencies and needs identified in the Existing Conditions analyses, Future No Build analyses, and by the Project Management Team (PMT), Project Advisory Committee (PAC), and via comments received at various venues from the public, including an Open House. The enclosed memorandum includes:

- A brief summary of the key needs identified in the Future No Build Analyses;
- Recommended Projects for Inclusion into the TSP, by mode, including:
    - Vehicular Needs
        - Functional Classification system
        - Street Cross-Sections
        - Street improvements
        - Key Intersection Improvement Locations
        - Key Safety Improvements
    - Pedestrian Needs
        - Pathway Improvements for both pedestrians and cyclists
        - Sidewalk Improvements
    - Bike Needs
        - On-Street and Off-Street Improvements
    - Transit System Needs
    - Freight Needs
    - Airport Master Plan

SUMMARY OF FUTURE NEEDS

As documented in *Technical Memorandum #5: Future Needs Analysis*, key transportation system needs within the City of Redmond includes:

- A number of primary street corridors are anticipated to experience increased congestion in the future, such as along OR 126 within the Urban Growth Boundary (UGB), Maple Avenue between US 97 and Northwest Way, Yew Avenue between Airport Way and S 27th Street and US 97 south of SW Glacier Avenue.
    - Multimodal circulation and capacity improvements are needed to support continued economic growth and vitality within the city and to offer a variety of route and mode choices to help alleviate this congestion.
    - The City and ODOT are currently engaged in the South US 97 corridor planning efforts to address long-term transportation and land use needs along US 97 to the south of Glacier Avenue. At this point, a preferred alternative for this corridor is under review.
- Approximately 50 arterial and collector intersections are anticipated to need geometric and/or traffic control modifications in the next twenty years to maintain a desired quality of service for future users.
- A number of streets within the City lack sidewalks. The City should consider prioritization of new sidewalks and pathways that connect neighborhoods to schools, commercial areas, and other key destinations – particularly in the poorer areas of the community.
- "Lower stress" bike facilities are needed to support commuting, recreational, and personal travel.
- The bicycle trail system should be expanded to encourage greater access, including inter agency coordination.
- Increased transit options are needed to facilitate travel throughout the city.

CONSIDERATION OF IMPROVEMENTS

As outlined in the *Goals and Evaluation Approach* memo (January 2018), a preliminary list of potential multimodal improvements was screened by the PMT relative to construction feasibility, financial feasibility, and the ability of an improvement to address a documented transportation need. A refined set of improvement options were forwarded on for evaluation relative to key performance criteria. Appendix A provides the rating of the refined improvement categories versus the evaluation criteria. Based on this evaluation, the PMT identified a recommended set of multimodal projects for inclusion into the TSP. A discussion of these improvements, by mode, is provided below.

VEHICULAR NEEDS

The preliminary screening evaluation identified arterial and collector streets that experience or are projected to experience traffic congestion and delay and/or are lacking pedestrian and bicycle facilities that comfortably serve a broad range of users. To meet the identified street system needs, the TSP focuses strategies that improve connections between existing neighborhoods, employment, and commercial areas; provide connections to newly developed areas; improve safety for all travelers; and increase the efficiency of the existing system.

Functional Classification of Streets

The City's street functional classification system organizes the roadway network as a balanced hierarchy of mobility and access to, through, and between different types of land uses. Some factors that are considered in setting a roadway's functional classification are average daily traffic (ADT) volumes, street connectivity, spacing of streets, and the mix and amounts of different travel modes on a typical segment (e.g., bikes and cars). As the community continues to grow and mature, the City will revisit functional classifications periodically to ensure that particular street classifications are still appropriate.

The PMT evaluated the City's previously adopted functional classification system and simplified and combined some of the categories that have seldomly been applied. The new simplified system of streets will provide more certainty for both private development investment expectations as well as for City construction process. Per the PMT discussions, the functional classification system will categorize streets in the city as:

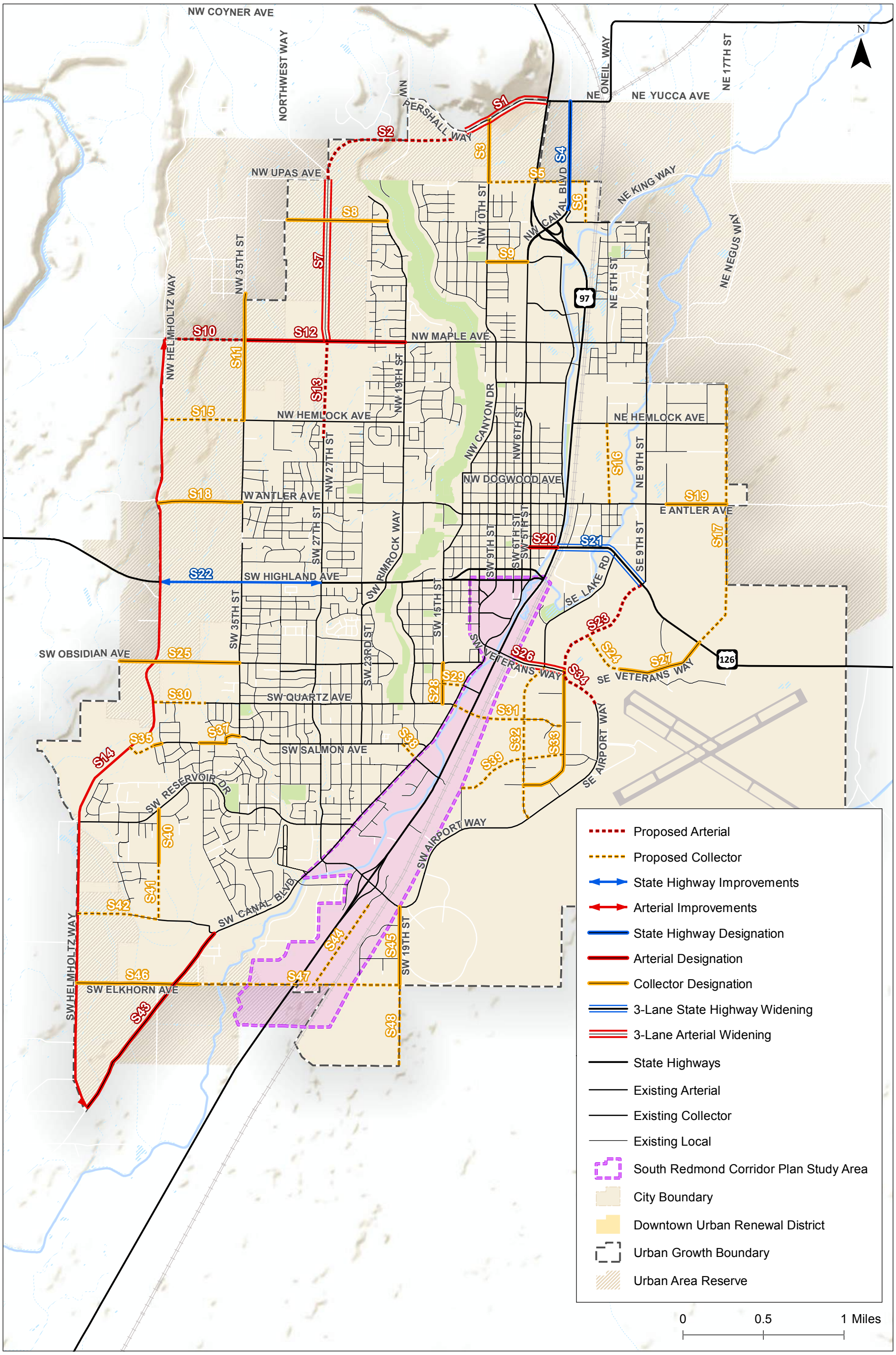
- Standard Local Residential
- Industrial Street
- Minor Collector
- Major Collector
- Minor Arterial

In addition to recommending changes to the functional classification system, the PMT also identified a number of streets that needed a change in designation is desired to reflect the intended function and form of the roadway, respond to land use patterns and economic growth opportunities, and provide further guidance to the operation and construction of all streets and roads within the City's UGB.

Based on this review, the PMT identified twenty corridors in need of modification of functional classification. These corridors are summarized in Table 1 below and shown in Figure 1.

Table 1: Identified Street Classification Modifications

Map ID	Corridor	S-W Limit	E-N Limit	Proposed Designation
S3	NW 10th St	NW Upas Way	NW Pershall Way	Collector Designation
S4	NW Canal Blvd	NE King Way	NE Oneil Way	State Highway Designation
S8	NW Spruce Ave	NW 33rd	NW 22nd	Collector Designation
S9	NW Quince Ave	NW 10th St	NW 6th St	Collector Designation
S11	NW 35th St	NW Hemlock	NW Oak Ave	Collector Designation
S12	NW Maple Ave	NW 35th St	NW 19th St	Arterial Designation
S18	W Antler Ave	SW Helmholtz Way	SW 35th St	Collector Designation
S19	E Antler Ave	11th Street	NE 17th St	Collector Designation
S20	SW Evergreen Ave	SW 6th St	US 97	Arterial Designation
S25	SW Obsidian Ave	UGB	SW 35th St	Collector Designation
S27	SE Veterans Way	east of SE Airport Way	OR 126	Collector Designation
S28	SW 15th St	SW Quartz	SW Obsidian Ave	Collector Designation
S29	SW Pumice Ave	SW 15th St	SW Canal Blvd	Proposed Collector
S33	SE 9th St	SE 6th St	SE Veterans Way	Collector Designation
S35	SW Salmon Ave	SW Forked Horn Butte	SW 43rd St	Collector Designation
S37	SW Salmon Ave	SW 39th St	SW 35th St	Collector Designation
S40	SW 43rd St	SW Yew Ave	SW Reservoir Dr	Collector Designation
S43	SW Canal Blvd	SW Helmholtz Way	SW Badger Ave	Arterial Designation
S45	SW 19th St	SW Elkhorn Ave	SW Airport Way	Collector Designation
S46	SW Elkhorn Ave	SW Helmholtz Way	SW 39th St	Collector Designation



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Future Corridor Alternatives
Redmond, Oregon

Figure **1**

Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl

Street Design Standards

Street design standards provide information on how streets within each of the functional classifications "look and feel." The City's Street Design Standards identify how existing streets can be modified and new streets can be constructed to accommodate the needs of people with disabilities, riding bicycles, using transit, walking, driving automobiles, and moving freight. In the past, most street design standards were primarily oriented toward moving vehicular traffic, providing rudimentary bike lanes and sidewalks for pedestrians. The PMT has recommended a number of modifications to the design standards to ensure streets provide comprehensive and integrated transportation networks that serve all modes of transportation and create quality facilities that invite people of all ages and abilities to pursue active transportation.

Redmond Engineering Standards maintain more specific design elements for each of these sections, including applicable variances and pavement design requirements. The typical sections identified by the PMT and presented herein are intended to provide general guidance on right-of-way width requirements, number and type of lanes, pedestrian facilities and bicycle facilities by functional classification type. In some cases, additional features may be added on a case-by-case basis and per the direction of the City Engineer, such as wider sidewalks, multi-use paths, protected bicycle facilities, protected parking bays, or medians.

The typical sections are illustrated in Figure 2 through Figure 6.

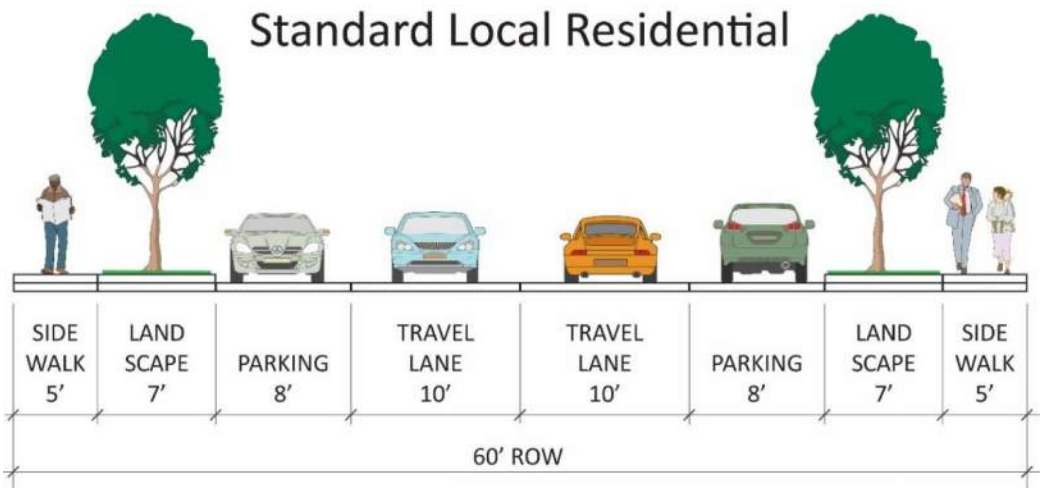
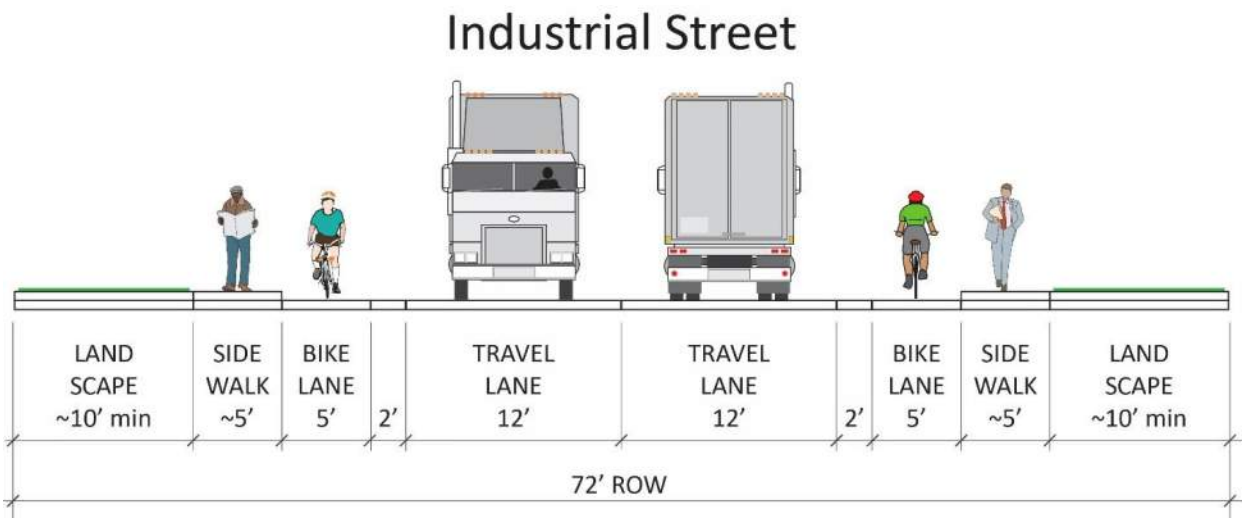


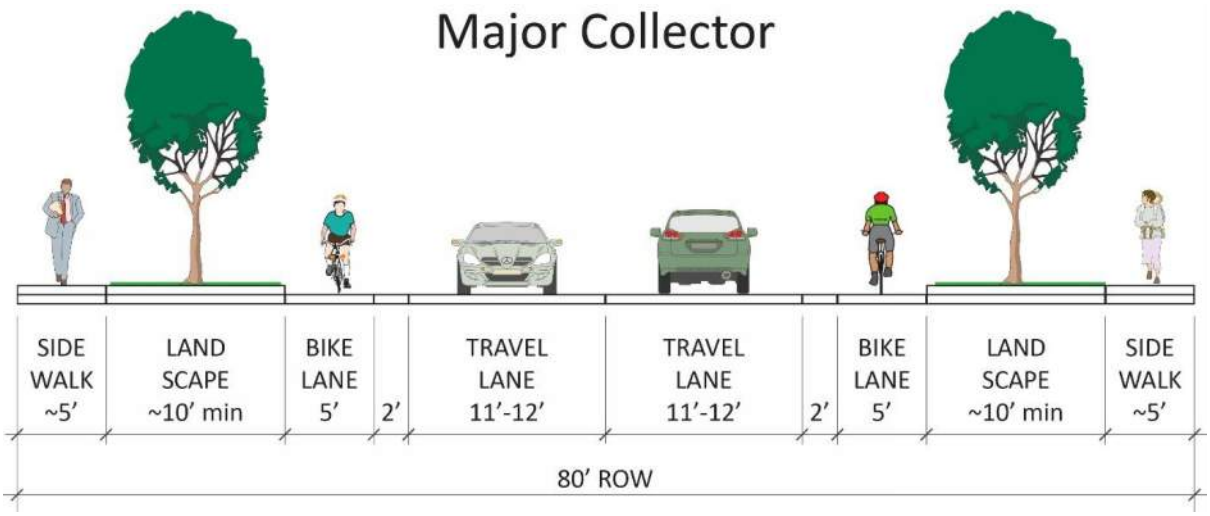
Figure 2: Standard Local Residential Typical Section



Note: Landscape & sidewalk width can be varied

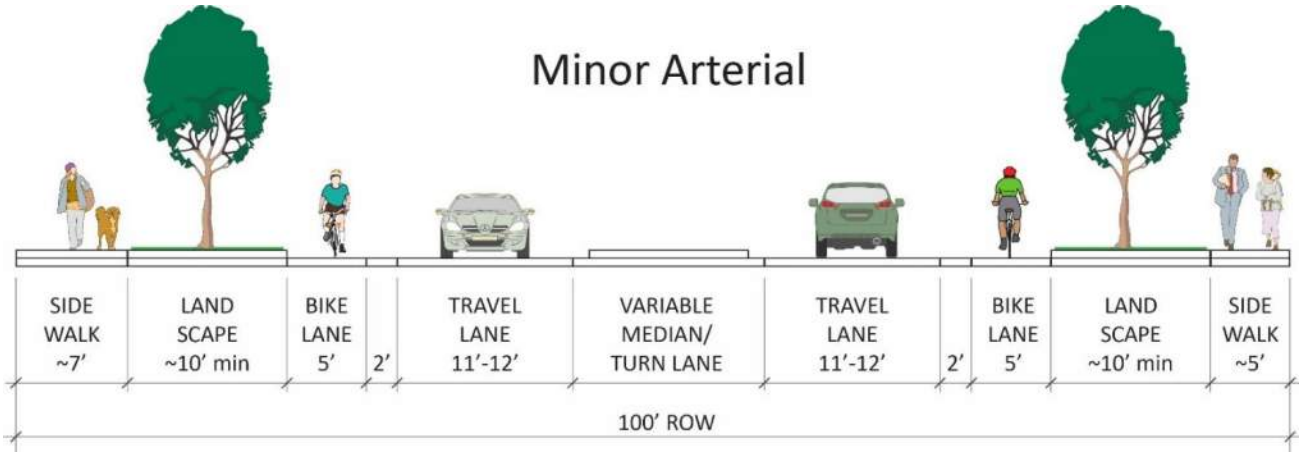
Figure 3: Industrial Street Typical Section

Figure 4: Minor Collector Typical Section



Note: Landscape & sidewalk width can be varied

Figure 5: Major Collector Typical Section



Note: Landscape & sidewalk width can be varied

Figure 6: Minor Arterial Typical Section

Street Capacity Improvements

The TSP analysis conducted to-date as well as other ongoing City planning projects identified arterial and collector streets that experience or are projected to experience traffic congestion and delay, lack pedestrian and bicycle facilities that comfortably serve a broad range of users, and/or could hinder implementation of the provision of future reliable transit services in a cost effective manner. To address these issues in a prioritized way, Table 2 reflects the six corridors identified by the PMT as areas of strategic focus for corridor capacity improvements. These corridors are also shown in Figure 1.

Table 2: Identified Strategic Street Capacity Investment Corridors

Map ID	Corridor	S-W Limit	E-N Limit	Improvement
S1	Pershall Way	New Pershall Arterial	US 97	Widen to 3-Lane Arterial
S7	Northwest Way	Maple Ave	NW Upas Ave	Widen to 3 Lanes
S14	SW/NW Helmholtz Way	SW Canal Boulevard	NW Maple Avenue	Widen roadway to add center turn lane
S21	OR 126	US 97	SE 9th St	Widen to 3 Lanes
S22	OR 126	SW Helmholtz Way	SW 27th St	Upgrade roadway as necessary
S26	SW Veterans	Railroad	SE 1st St	Widen to 3 Lanes (turn lanes where needed)

Roadway widening and similar improvements to these key corridors can help accommodate growth and economic development in the region and continue to shape the urban context for the City. Such improvements can improve mobility and connectivity as well as create opportunities to incorporate bicycle, pedestrian, and transit facilities where they do not exist.

New Planned Streets

To meet the identified street system needs, the PMT also identified a number of new streets to improve connectivity between and within existing neighborhoods, employment, and commercial areas; provide connections to newly developed/developing areas; and to provide alternative travel routes for all modes to existing streets. As part of this review, twenty-three streets were identified for extension and/or providing new connections. These projects are summarized in Table 3 and shown in Figure 1.

Table 3: New Planned Streets

Map ID	Corridor	S-W Limit	E-N Limit	Improvement
S2	NW Pershall Way	NW Upas Way	NW Pershall Way	Proposed 3-Lane Arterial
S5	NW Upas Ave	NW 10th St	East of NW Canal Blvd	Proposed Collector & Overcrossing
S6	NE 3rd	King Way	UGB	Proposed Collector
S10	NW Maple Ave	SW Helmholtz Way	NW 35th St	Proposed 3-Lane Arterial
S13	NW 27th St	NW Hemlock Ave	NW Maple Ave	Proposed Arterial
S15	NW Hemlock Ave	NW Helmholtz Way	NW 35th St	Proposed Collector
S16	NE 5th St	E Antler Ave	NE Hemlock Ave	Proposed Collector
S17	NE 17th St	OR 126	NE Kingwood	Proposed Collector
S23	SE 9th St	Veterans Way	OR 126	Proposed Arterial
S24	Veterans Way	SE 1st St	Veterans Way	Proposed Collector
S29	SW Pumice Ave	SW 15th St	SW Canal Blvd	Proposed Collector
S30	SW Quartz Ave	SW Helmholtz Way	SW 37th St	Proposed Collector
S31	SW Quartz Ave	SW Canal Blvd	Airport Way	Proposed Collector
S32	6th St	Airport Way	Veterans Way	Proposed Collector
S34	SE Airport Way	SE Airport Way	SW Veterans Way	Proposed Arterial
S35	SW 45th St	SW Salmon Ave	SW Helmholtz Way	Proposed Collector
S38	SW Odem Medo	SW Canal Blvd	SW 19th St	Proposed Collector
S39	SE Salmon Drive	13th Street	S 1st St	Proposed Collector

Map ID	Corridor	S-W Limit	E-N Limit	Improvement
S41	SW 43rd St	SW Badger Ave	SW Yew Ave	Proposed Collector
S42	SW Badger Ave	SW Helmholtz Way	SW 43rd St	Proposed Collector
S44	SW 21st St	SW Elkhorn Ave	south of SW Airport Ave	Proposed Collector
S47	SW Elkhorn Ave	SW Canal Blvd.	SW 19th St	Proposed Collector and Overcrossing
S48	SW 19th St	UGB	SW Elkhorn Ave	Proposed Collector

Intersection Capacity Improvements

Intersection capacity improvements are typically related to modifications that are lower in cost than a typical street corridor project and are ones that generally do not often require significant right-of-way acquisition. The TSP is not inclusive of all of the intersection projects that the City will pursue over the next twenty years. Rather, the projects highlighted by the PMT are those that the City can pursue to strategically improve the operational efficiency of specific intersections and important roadways. These projects can enhance system operations and can be completed as opportunities arise. Table 4 through Table 6 and Figure 7 summarize the strategic intersection capacity improvement locations identified by the PMT. In some cases, preferred intersection improvement options are identified. In all cases, the City will review the appropriate intersection control options at the time of project development and delivery. Operational results for the identified capacity improvements are provided in Appendix B.

Table 4: Identified Intersection Control Additions

Map ID	N-S Street	E-W Street	Improvement	Description
I3	NW Canal Blvd	NE King Way	Consider traffic signal or roundabout	Signal Preferred
I4	NW Helmholtz Way	NW Maple Ave	Consider traffic signal or roundabout	-
I5	NW 35th St	NW Maple Ave	Consider traffic signal or roundabout	Signal Preferred
I6	NW 27th St	NW Maple Ave	Consider traffic signal or roundabout	Roundabout Preferred
I7	NW 19th St	NW Maple Ave	Consider traffic signal or roundabout	Signal Preferred
I8	NW 9th St	NW Maple Ave	Consider traffic signal or roundabout	Signal Preferred
I10	NE 5th St	NE Maple Ave	Consider traffic signal or roundabout	-
I11	NE 9th St	NE Maple Ave	Consider traffic signal or roundabout	-
I13	NW 6th St	NW Kingwood Ave	Consider traffic signal or roundabout	Signal Preferred
I14	NW 27th St	NW Hemlock Ave	Consider traffic signal or roundabout	Signal Preferred
I15	NE 9th St	NE Hemlock Ave	Consider traffic signal or roundabout	Signal Preferred
I16	NW 27th St	W Antler Ave	Consider traffic signal or roundabout	Signal Preferred
I17	NE 9th St	E Antler Ave	Consider traffic signal or roundabout	Signal Preferred
I22	SW Helmholtz Way	OR 126	Consider traffic signal or roundabout	Roundabout Preferred
I23	SW 35th St	OR 126	Consider traffic signal or roundabout	Signal Preferred
I25	SW 15th St	OR 126	Consider traffic signal modification or roundabout	-
I29	SE 9th St	OR 126	Consider traffic signal or roundabout	Roundabout Preferred
I30	SW Helmholtz Way	SW Obsidian Ave	Consider traffic signal or roundabout	-
I31	SW 27th St	SW Obsidian Ave	Consider traffic signal or roundabout	Signal Preferred
I34	SE 9th St	SW Veterans Way	Consider traffic signal or roundabout	Roundabout Preferred

Map ID	N-S Street	E-W Street	Improvement	Description
I36	SE Veterans Way	OR 126	Consider traffic signal or roundabout	Signal Preferred
I37	SW Canal Blvd	SW Pumice	Consider traffic signal or roundabout	Disconnect SW Obsidian Ave
I38	SW Canal Blvd	SW Quartz Ave	Consider traffic signal or roundabout	Signal Preferred
I39	SW Helmholtz Way	SW Salmon Ave	Consider traffic signal or roundabout	
I40	SW 27th St	SW Salmon Ave	Consider traffic signal or roundabout	Signal Preferred
I41	SW Helmholtz Way	SW Wickiup Ave	Consider traffic signal or roundabout	Signal Preferred
I42	SW 27th St	SW Wickiup Ave	Consider traffic signal or roundabout	Roundabout Preferred
I45	SW 19th St	SW Airport Way	Consider traffic signal or roundabout	Roundabout Preferred
I46	SW Canal Blvd	SW Badger Ave	Consider traffic signal or roundabout	-
I47	SW Helmholtz Way	SW Elkhorn Ave	Consider traffic signal or roundabout	-
I48	SW Canal Blvd	SW Elkhorn Ave	Consider traffic signal or roundabout	-
I49	SW Helmholtz Way	SW Canal Blvd	Consider traffic signal or roundabout	Roundabout Preferred

Note: ODOT intersections will require traffic control evaluations

Table 5: Identified Intersection Capacity Improvements

Map ID	N-S Street	E-W Street	Improvement	Description
I2	NW 10th St	NW Pershall Way	Consider Additional Lanes	Add Eastbound Right-Turn
I19	SE Lake Rd	OR 126	Consider Access Management	Create Right-In/Right-Out in Conjunction with 9th Street Project
I24	SW Rimrock Way	OR 126	Consider Additional Lanes	Carry Westbound Lane through Intersection; Add Southbound and Westbound Right-Turns
I32	US 97	Veterans Way	Improvement to be identified by South Corridor Project	
I33	SW Lake Rd	SW Veterans Way	Consider Access Management	Create Right-In/Right-Out in Conjunction with 9th Street Project
I35	SE 10th St	SE Veterans Way	Consider Intersection Control Change	Remove Stop Signs on Veterans in Conjunction with 9th Street Project

Grade-Separated Intersection Improvements

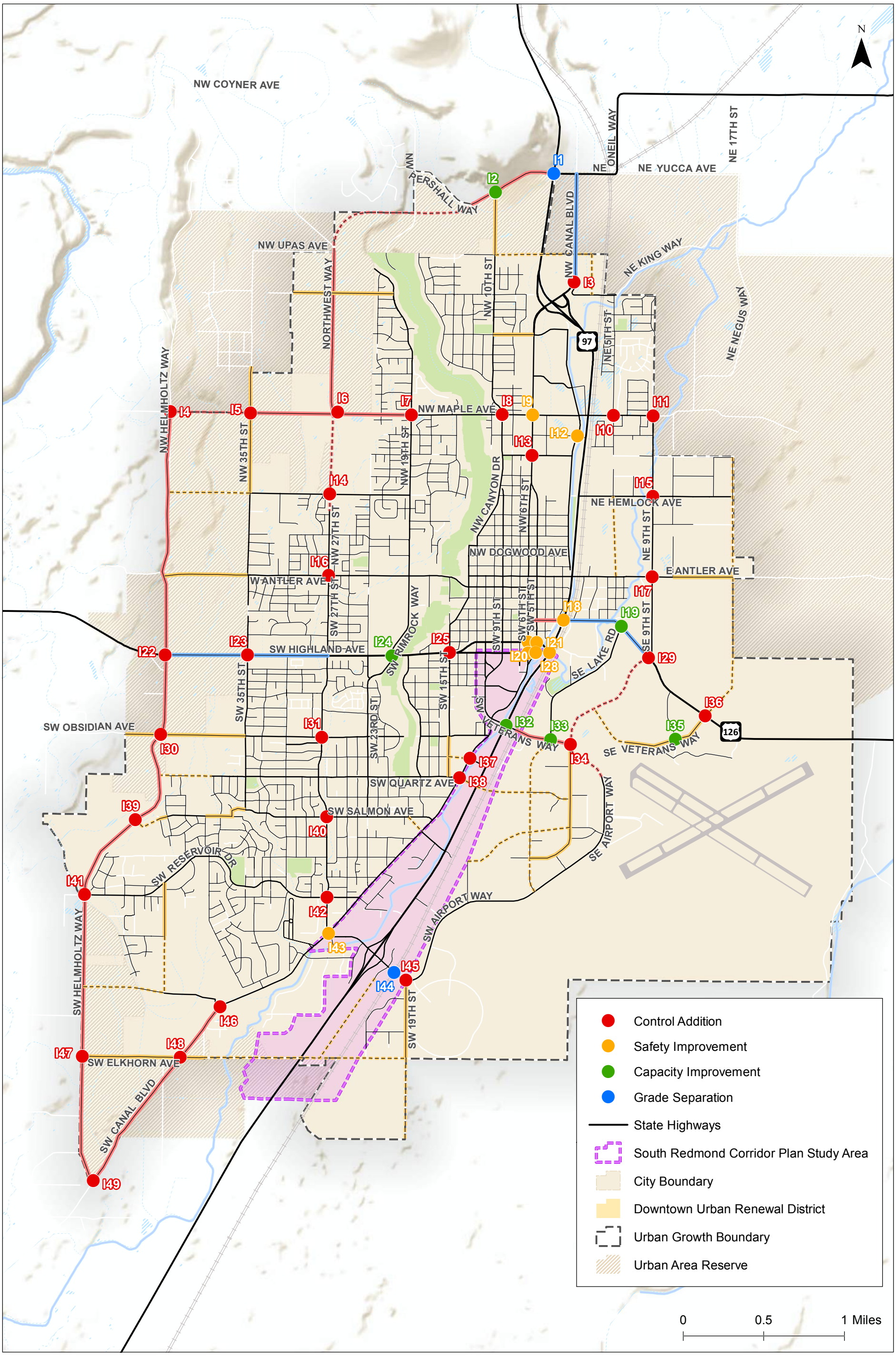
Three intersections were identified for grade separation to eliminate conflict points and improve traffic flows. One intersection was identified for future evaluation. These are identified in Table 6 and shown in Figure 7. A brief description of each is included below:

- **US 97/O'Neil Highway:** The Interchange Area Management Plan (IAMP) for this location identified the need to provide a grade-separated overcrossing of US 97 that would connect O'Neil Highway to Pershall Way. An interim option is to restrict the US 97/O'Neil Highway intersection to right-in, right-out.
- **Airport Way Rail Crossing:** Airport Way connects US 97 to the Redmond Airport. US 97 and the Redmond Airport are both critical statewide infrastructure as identified in the Oregon Resilience Plan. The planned grade-separation would eliminate the at-grade rail crossing between the highway and airport.

- **US 97/Elkhorn Avenue:** Construct overcrossing of US 97 as part of the Elkhorn Avenue extension from Canal Boulevard to SW 19th Street.
- **US 97/Hemlock Avenue:** Conduct a study to evaluate a possible grade-separated crossing of US 97.

Table 6: Identified Grade Separation Projects

Map ID	N-S Street	E-W Street	Improvement	Description
I1	US 97	O'Neil Hwy	North Interchange IAMP Project	Interim project would modify US 97/O'Neil Hwy intersection to Right-In/Right-Out; eventual project would result in grade-separation
I44	Railroad	SW Airport Way	Grade Separated Crossing	Remove Existing At-Grade Rail Crossing
S47	US 97	Elkhorn Avenue	Grade Separated Crossing	Construct US 97 overcrossing at part of roadway extension.



Future Intersection Alternatives
Redmond, Oregon

Figure **7**

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl

Key Multi-Use Pathways

Multi-use pathways are paved, separated from streets and are designed for both walking and bicycling. Where space allows, corridors with high usage may be developed with redundant paths to separate people walking from people biking. The paths for people walking or running may be unpaved depending on intended use. The multiuse pathway system improves continuity for bicyclists and pedestrians to move freely throughout the transportation network and helps to eliminate barriers to east-west access, particularly through the Dry Canyon and across US 97. Twenty-one new multi-use pathways have been identified for inclusion into the TSP. These projects are summarized in Table 7 and shown in Figure 8.

Table 7: Identified Key Multi-Use Pathways

Map ID	Corridor	S-W Limit	E-N Limit
B1	SW/NW Helmholz Way	SW Umatilla Ave	NW Canal Blvd
B2	NW Pershall Way	Dry Canyon Trail	B1
B5	NW Spruce Ave	NW Helmholtz Way	NW 19th St
B11	NW Maple Ave	NW Helmholtz Way	west of NW 22nd St
B12	NW 35th St	NW Dogwood Ave	NW Upas Way
B13	NW 27th St	NW Greenwood Ave	NW Upas Way
B17	SW 39th St	SW Quartz Ave	NW Maple Ave
B18	NW Hemlock Ave	NW Helmholtz Way	NW 19th St
B19	NW 29th St	NW Hemlock Ave	UGB
B28	Lateral E Pilot Butte Canal	OR 126	NE Kingwood Ave
B46	OR 126	SE Jackson St	UGB
B47	SW 35th St	SW Quartz Ave	W Antler Ave
B52	SW Quartz Ave	SW Helmholtz Way	SW 35th St
B55	SW Quartz Ave	SW Canal Blvd	SE Airport Way
B56	SE Airport Way/SE 9th St	Railroad	OR 126
B61	SW 19th St	SW Canal Blvd	SW Reindeer Ave
B62	SW Canal Blvd/Pilot Butte Canal	SW 27th St	NE King Way
B67	SW Helmholtz Way	SW Canal Blvd	SW Reservoir Dr
B69	Pilot Butte Canal	SW Elkhorn Ave	SW Canal Blvd
B71	SW Canal Blvd	SW Helmholtz Way	SW Elkhorn Ave

Key Bicycle Corridors

In addition to the multiuse pathways, new bike boulevards, bike lanes, quiet streets and protected bike lanes will serve the cyclists of Redmond in the future. A brief description of each is provided below.

- A quiet street is a bike route on a low-volume, low-speed street that has been optimized for bicycle travel. These boulevards contain different features depending on adjacent land uses, however they are all intended to contain wayfinding signs, pavement markings, and

intersection treatments. Some may also feature diversion to reduce automobile volumes and traffic calming to slow motor vehicle speeds.

- A bike lane is a marked space along a length of roadway that is designated for use by people bicycling. Wheelchair users and some motorized scooters are allowed in bike lanes.
- Buffered bike lanes feature a buffer strip to provide space between the bike lane and the auto lane or parked cars.
- A protected bike lane, sometimes called a "cycle track", is an exclusive bicycle facility adjacent to, but separated from, the roadway. Separation is generally achieved using planters, parked cars, curbs, or posts to separate people biking from people driving. They are best on roads with few cross streets and driveways, particularly on roadways with high auto volumes and speeds. A protected bike lane provides a logical extension of a shared use path because it provides the sensation of riding on a path due to the separation from motorized traffic.

Fifty-two bicycle corridors were identified for inclusion into the TSP. These projects are summarized in Table 8 and shown in Figure 8.

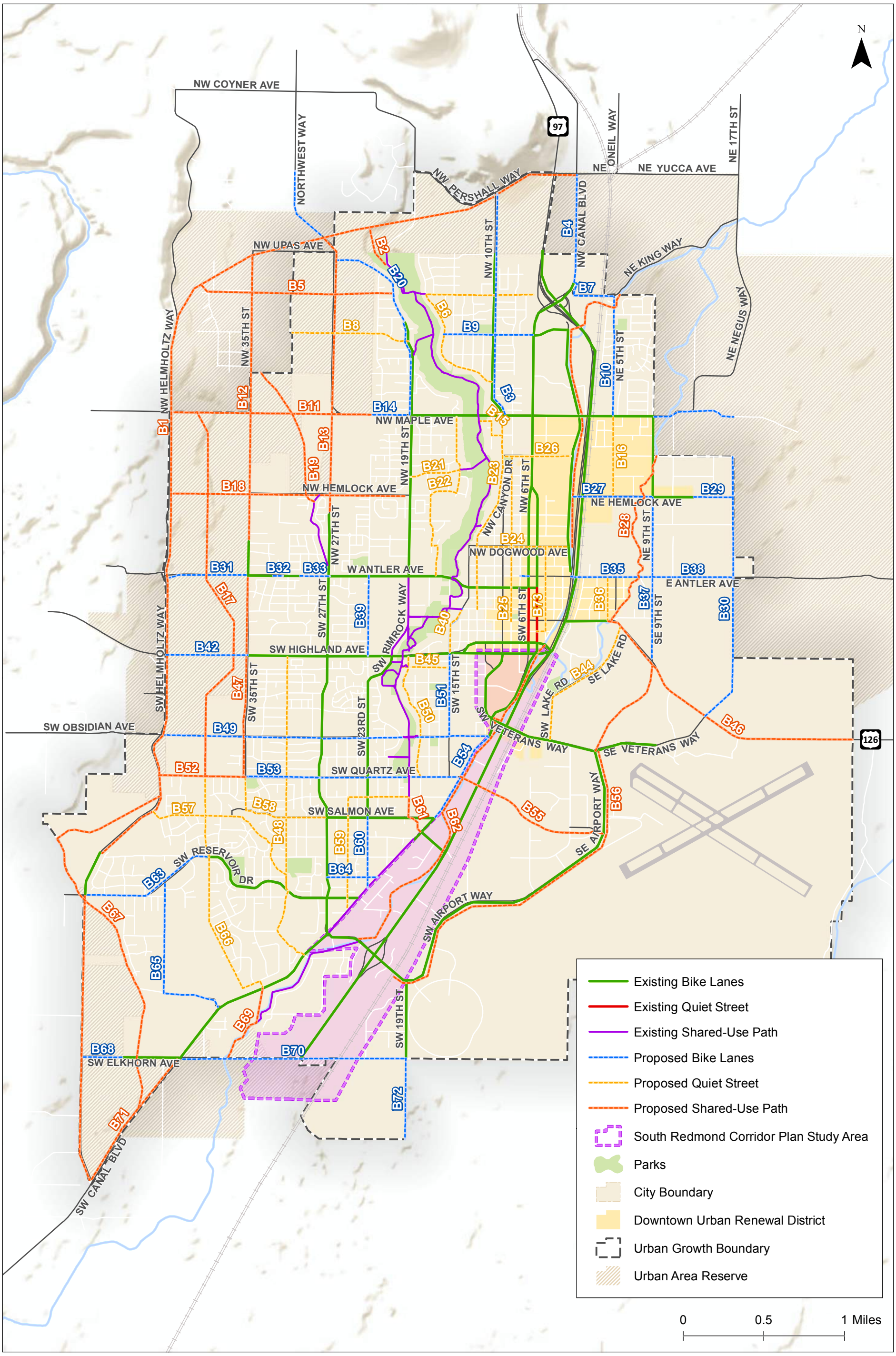
Crossing improvements, though not specifically identified in the TSP, may be provided when bicycle facilities are constructed that cross major roads. The need for and type of crossing treatment will be evaluated at the time of project development and design.

The City of Redmond will consider upgrades to existing bicycle facilities (such as including a marked buffer) on a case-by-case basis. Such upgrades typically occur in conjunction with scheduled maintenance operations.

Table 8: Identified Key Bicycle Corridors

Map ID	Corridor	S-W Limit	E-N Limit	Improvement
B3	NW 10th St	NW Maple Ave	NW Pershall Way	Bike Lanes
B4	NW Canal Blvd	NE King Way	NE Yucca Ave	Bike Lanes
B6	NW Canyon Dr/NW Spruce Ave	NW 10th St	US 97	Quiet Street
B7	NE King Way	NW Canal Blvd	NE 5th St	Bike Lanes
B8	NW Quince Ave	UGB	NW 19th St	Quiet Street
B9	NW Quince Ave	NW Canyon Dr	NW 6th St	Bike Lanes
B10	NE 5th St	NE Negus Way	NE King Way	Bike Lanes
B14	NW Maple Ave	west of NW 22nd St	NW 19th St	Bike Lanes
B15	NW 10th St/NW Larch/NW Rockcrest Ct	Dry Canyon Trail	NW 9th St	Quiet Street
B16	NE 5th St	NE Hemlock Ave	NE Maple Ave	Quiet Street
B20	NW 19th St	NW Maple Ave.	Northwest Way	Bike Lanes
B21	NW Ivy Ave	NW 19th St	NW Rimrock Ct	Quiet Street
B22	NW 17th St/NW Rimrock Ct	W Antler Ave	NW Maple Ave	Quiet Street
B23	NW Canyon Dr	SW Deschutes Ave	NW Maple Ave	Quiet Street
B24	NW Dogwood Ave	NW Canyon Dr	NW Canal Blvd	Quiet Street
B25	SW 8th St	SW Evergreen Ave	NW Kingwood Ave	Quiet Street

Map ID	Corridor	S-W Limit	E-N Limit	Improvement
B26	NW Kingwood Ave	NW Canyon Dr	NW Canal Blvd	Quiet Street
B27	NE Hemlock Ave	NW Canal Blvd	NE 9th St	Bike Lanes/Crossing
B29	NE Hemlock Ave	west of NE 15th St	NE 17th St	Bike Lanes
B30	SE 17th St	OR 126	NE Kingwood Ave	Bike Lanes
B31	W Antler Ave	SW Helmholtz Way	SW 35th St	Bike Lanes
B32	W Antler Ave	NW 32nd Ct	SW 31st St	Bike Lanes
B33	W Antler Ave	NW 29th St	SW 27th St	Bike Lanes
B35	E Antler Ave	SW 7th St	NE 17th St	Bike Lanes/Crossing
B36	SE Jackson St	OR 126	E Antler Ave	Quiet Street
B37	SE 9th St	OR 126	NE Hemlock Ave	Bike Lanes
B38	E Antler Ave	SE 9th St	NE 17th St	Bike Lanes
B39	SW 23rd St	SW Highland Ave	W Antler Ave	Bike Lanes
B40	SW 15th St	SW Highland Ave	SW Deschutes Ave	Quiet Street
B42	SW Highland Ave	SW Helmholtz Way	SW 35th St	Bike Lanes
B44	SW Lake Rd	SW Veterans Way	OR 126	Quiet Street
B45	SW Juniper Ave	Dry Canyon Trail	SW 15th St	Quiet Street
B48	SW 31st St	SW Canal Blvd	SW Highland Ave	Quiet Street
B49	SW Obsidian Ave	SW Helmholtz Way	SW Canal Blvd	Bike Lanes
B50	SW Canyon Dr	SW Quartz Ave	SW Highland Ave	Quiet Street
B51	SW 15th St	SW Obsidian Ave	SW Highland Ave	Bike Lanes
B53	SW Quartz Ave	SW 35th St	SW Canal Blvd	Bike Lanes
B54	SW Canal Blvd	SW Salmon Ave	SW Obsidian Ave	Bike Lanes
B57	SW Salmon Ave/SW Valleyview Dr/SW 32nd Ct	SW Helmholtz Way	SW 31st St	Quiet Street
B58	SW 35th St/SW Salmon Ave	SW Quartz Ave	SW 27th St	Quiet Street
B59	SW 25th St/SW Reindeer Ave	SW Canal Blvd	Dry Canyon Trail/SW 19th St	Quiet Street
B60	SW 23rd St	SW Canal Blvd	SW Salmon Ave	Bike Lanes
B63	SW Reservoir Dr	SW Helmholtz Way	SW 39th St	Bike Lanes
B64	Volcano Avenue	27th Street	SW Canal Boulevard	Bike Lanes
B65	SW 43rd St/SW Badger Ave	SW Canal Blvd	SW Reservoir Dr	Bike Lanes
B66	SW Cascade Vista Dr/SW Antelope Ave	SW Canal Blvd	SW Quartz Ave	Quiet Street
B68	SW Elkhorn Ave	SW Helmholtz Way	Lateral B Canal	Bike Lanes
B70	SW Elkhorn Ave	SW Canal Blvd	SW 19th St	Bike Lanes
B72	SW 19th St	UGB	SW Elkhorn Ave	Bike Lanes
B73	SW 4th St/SW Forest/SW 5th	SW Highland	SW Dogwood Ave	Quiet Street



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Existing and Planned Bicycle Facilities
Redmond, Oregon

Figure **8**

Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl

Key Pedestrian Improvements

Sidewalks are paved walkways adjacent to streets. Sidewalks are particularly important for providing basic mobility for people with disabilities. Setback sidewalks (featuring a planted barrier between the sidewalk and travel way) can create more comfort and safety for people walking. All streets within the City are anticipated to have sidewalks over time. Key priority sidewalk investment areas, as identified by the PMT, are reflected in Figure 9 and listed in Table 9 and Table 10. Sidewalks gaps are shown in Figure 10. The identified improvements are intended to prioritize sidewalk facilities along ADA routes, as defined by the City of Redmond.

Crossing improvements, though not specifically identified, may be provided when pedestrian facilities are constructed that cross major roads. The need for and type of crossing treatment will be evaluated at the time of project development and design.

Table 9: Identified Priority Pedestrian Improvements – Sidewalk and Ramp Additions

Map ID	Corridor	S-W Limit	E-N Limit	Street Side	Note
P4	NW 10th St	NW 9th St	NW Quince Ave	West	Add Sidewalk or Ramps
P5	NE 5th St	NE Negus Way	NE Oak Ave	West	Add Sidewalk or Ramps
P6	NW Maple Ave	NW 22nd St	NW 19th St	Both	Add Sidewalk or Ramps
P8	NW 9th St	NW Hemlock Ave	NW Maple Ave	Both	Add Sidewalk or Ramps
P9	NW 6th St	North of NW Larch Ave	NW Maple Ave	Both	Add Sidewalk or Ramps
P11	NW 6th St	NW Jackpine Ave	NW Larch Ave	East	Add Sidewalk or Ramps
P12	NW 6th St	South of NW Kingwood Ave	South of Larch Ave	West	Add Sidewalk or Ramps
P13	NW Larch Ave	NW 6th St	NW 4th St	Both	Add Sidewalk or Ramps
P14	NW Larch Ave	NW 4th St	West of NW Canal Blvd	South	Add Sidewalk or Ramps
P16	NW Kingwood Ave	NW 6th St	NW Canal Blvd	Both	Add Sidewalk or Ramps
P18	NW 6th St	North of NW Jackpine Ave	South of NW Kingwood Ave	West	Add Sidewalk or Ramps
P19	NW 6th St	NW Jackpine Ave	NW Kingwood Ave	East	Add Sidewalk or Ramps
P20	NW Canal Blvd	NW Elm Ave	NW Larch Ave	West	Add Sidewalk or Ramps
P21	NW Hemlock Ave	NW Canyon Dr	NW 9th St	Both	Add Sidewalk or Ramps
P23	NW 9th St	W Antler Ave	NW Greenwood Ave	Both	Add Sidewalk or Ramps
P24	NW Dogwood Ave	NW Canyon Dr	NW 10th St	South	Add Sidewalk or Ramps
P29	W Antler Ave	NW 32nd Ct	NW 27th St	Both	Add Sidewalk or Ramps
P34	SW 23rd St	SW Glacier Pl	SW Glacier Ave	East	Add Sidewalk or Ramps
P35	SW Highland Ave	SW 31st St	SW 24th Ct	North	Add Sidewalk or Ramps
P37	SW Highland Ave	SW Indian Cir	SW 27th St	South	Add Sidewalk or Ramps
P40	SW 15th St	SW Metolius Ave	SW Indian Ave	Both	Add Sidewalk or Ramps
P44	SW Obsidian Ave	SW 33rd St	SW 31st St	South	Add Sidewalk or Ramps
P46	SW Obsidian Ave	SW 23rd St	SW 21st Pl	South	Add Sidewalk or Ramps
P48	SW Obsidian Ave	SW Canyon Dr	SW 17th St	North	Add Sidewalk or Ramps
P50	SW Obsidian Ave	SW Canyon Dr	East of SW 15th St	South	Add Sidewalk or Ramps
P52	SW Veterans Way/SE Airport Way	US 97	SE Salmon Dr	Both	Add Sidewalk or Ramps

Map ID	Corridor	S-W Limit	E-N Limit	Street Side	Note
P57	SW Canal Blvd	North of SW Salmon Ave	South of SW Obsidian Ave	West	Add Sidewalk or Ramps
P59	SW Salmon Ave	SW 31st St	SW 29th St	South	Add Sidewalk or Ramps
P66	SW Xero Ln	West of SW 34th St	SW 31st St	Both	Add Sidewalk or Ramps
P67	SW 31st St	SW 33rd St	SW Savannah Ct	West	Add Sidewalk or Ramps
P69	SW 31st St	SW Timber Ct	SW 33rd St	East	Add Sidewalk or Ramps
P70	SW 31st St	SW Xero Ln	SW Volcano Way	Both	Add Sidewalk or Ramps
P71	SW Canal Blvd	SW 27th St	SW Timber Ave	East	Add Sidewalk or Ramps
P72	SE Airport Way	Railroad Line	South of Fairgrounds north entrance	Both	Add Sidewalk or Ramps

Table 10: Identified Priority Pedestrian Improvements – Sidewalk and Ramp ADA Upgrades

Map ID	Corridor	S-W Limit	E-N Limit	Street Side	Note
P1	NW 10th St	NW Redwood Ave	NW Teak Ave	West	Upgrade Sidewalk or Ramps
P2	NW 10th St	NW Oak Pl	NW Teak Ave	East	Upgrade Sidewalk or Ramps
P3	NE 5th St	NE Cheyenne Dr	NE Quince Ln	East	Upgrade Sidewalk or Ramps
P7	NE Negus Way	NE 5th St	NE 7th St	Both	Upgrade Sidewalk or Ramps
P10	NW 6th St	North of NW Kingwood Ave	North of NW Larch Ave	West	Upgrade Sidewalk or Ramps
P15	NE 5th St	NE Larch Ave	NE Negus Way	Both	Upgrade Sidewalk or Ramps
P17	NW 6th St	NW Jackpine Ave	NW Kingwood Ave	West	Upgrade Sidewalk or Ramps
P22	NW 9th St	NW Fir Ave	NW Hemlock Ave	Both	Upgrade Sidewalk or Ramps
P25	NW Dogwood Ave	NW Canyon Dr	NW 10th St	North	Upgrade Sidewalk or Ramps
P26	NW Dogwood Ave	NW 10th St	NW 6th St	Both	Upgrade Sidewalk or Ramps
P27	NW Elm Ave	NW 27th St	NW 25th St	Both	Upgrade Sidewalk or Ramps
P28	NW 27th St	NW Cedar Ave	NW Elm Ave	Both	Upgrade Sidewalk or Ramps
P30	W Antler Ave	SW 27th St	SW Rimrock Way	Both	Upgrade Sidewalk or Ramps
P31	SW 23rd St	SW Highland Ave	W Antler Ave	Both	Upgrade Sidewalk or Ramps
P32	W Evergreen Ave	SW Canyon Dr	SW 8th St	Both	Upgrade Sidewalk or Ramps
P33	SW 7th St	SW Indian Ave	SW Black Butte Blvd	Both	Upgrade Sidewalk or Ramps
P36	SW Highland Ave	SW 31st St	SW Indian Cir	South	Upgrade Sidewalk or Ramps
P38	SW 31st St	SW Savanna Ct	SW Highland Ave	Both	Upgrade Sidewalk or Ramps
P39	SW 27th St	SW Metolius Ave	SW Highland Ave	East	Upgrade Sidewalk or Ramps
P41	SW Veterans Way	SW Canal Blvd	SW Indian Ave	Both	Upgrade Sidewalk or Ramps
P42	SW Obsidian Ave	SW 35th St	Dry Canyon	North	Upgrade Sidewalk or Ramps
P43	SW Obsidian Ave	SW 35th St	SW 33rd St	South	Upgrade Sidewalk or Ramps
P45	SW Obsidian Ave	SW 31st St	SW 23rd St	South	Upgrade Sidewalk or Ramps
P47	SW Obsidian Ave	SW 21st Pl	SW Rimrock Way	South	Upgrade Sidewalk or Ramps
P49	SW Obsidian Ave	SW 17th St	SW 15th St	North	Upgrade Sidewalk or Ramps
P51	SW Obsidian Ave	East of SW 15th St	SW Canal Blvd	Both	Upgrade Sidewalk or Ramps
P53	S 1st St	SE Salmon Dr	SW Veterans Way	Both	Upgrade Sidewalk or Ramps
P54	SE Salmon Dr	S 1st St	West of Timber Ave	Both	Upgrade Sidewalk or Ramps
P55	SW Quartz Ave	SW 35th St	SW Canal Blvd	Both	Upgrade Sidewalk or Ramps
P56	SW 23rd St	SW Salmon Ave	SW Quartz Ave	Both	Upgrade Sidewalk or Ramps
P58	SW Salmon Ave	SW 31st St	SW Canal Blvd	North	Upgrade Sidewalk or Ramps

Map ID	Corridor	S-W Limit	E-N Limit	Street Side	Note
P60	SW Salmon Ave	SW 29th St	SW Canal Blvd	South	Upgrade Sidewalk or Ramps
P61	SW 39th St	SW 35th St	SW Salmon Ave	Both	Upgrade Sidewalk or Ramps
P62	SW Reservoir Dr	SW 39th St	SW 36th St	Both	Upgrade Sidewalk or Ramps
P63	SW 36th St	SW 35th St	SW Reservoir Dr	Both	Upgrade Sidewalk or Ramps
P64	SW 35th St	SW Cascade Vista Dr	SW 36th St	Both	Upgrade Sidewalk or Ramps
P65	SW Xero Ln	SW 35th St	West of SW 34th St	Both	Upgrade Sidewalk or Ramps

Key Transit Corridors

The provision of high-quality, available, and reliable transit service fundamentally supports the environment, economic development, and equity for all travelers. The TSP includes both key north-south and east-west transit within all quadrants of the City's UGB between the downtown urban core, residential neighborhoods, existing and planned pedestrian and bicycle corridors, jobs, health care, schools and places of interest. These corridors correlate with the planned Redmond Transit Hub located at the corner of SW Kalama Avenue and SW Canal Blvd. Multimodal infrastructure along these corridors will be pursued by the City to enhance the accessibility of future transit service.

The City and Cascades East Transit will continue to work to refine these transit corridors and identify a program to implement more robust transit service within Redmond. Specifically, the City intends to explore various service options in partnership with Cascades East Transit (CET) to better serve the community. Initial recommendations from the Regional Transit Master Plan (COIC, 2013) suggest implementing fixed-route service. That document also included short-, mid-, and long-term service concepts that should be considered.

As documented within the Regional Transit Master Plan, the suggested transit routes would serve approximately 50-80 percent of the City's population and employment with transit access when implemented.

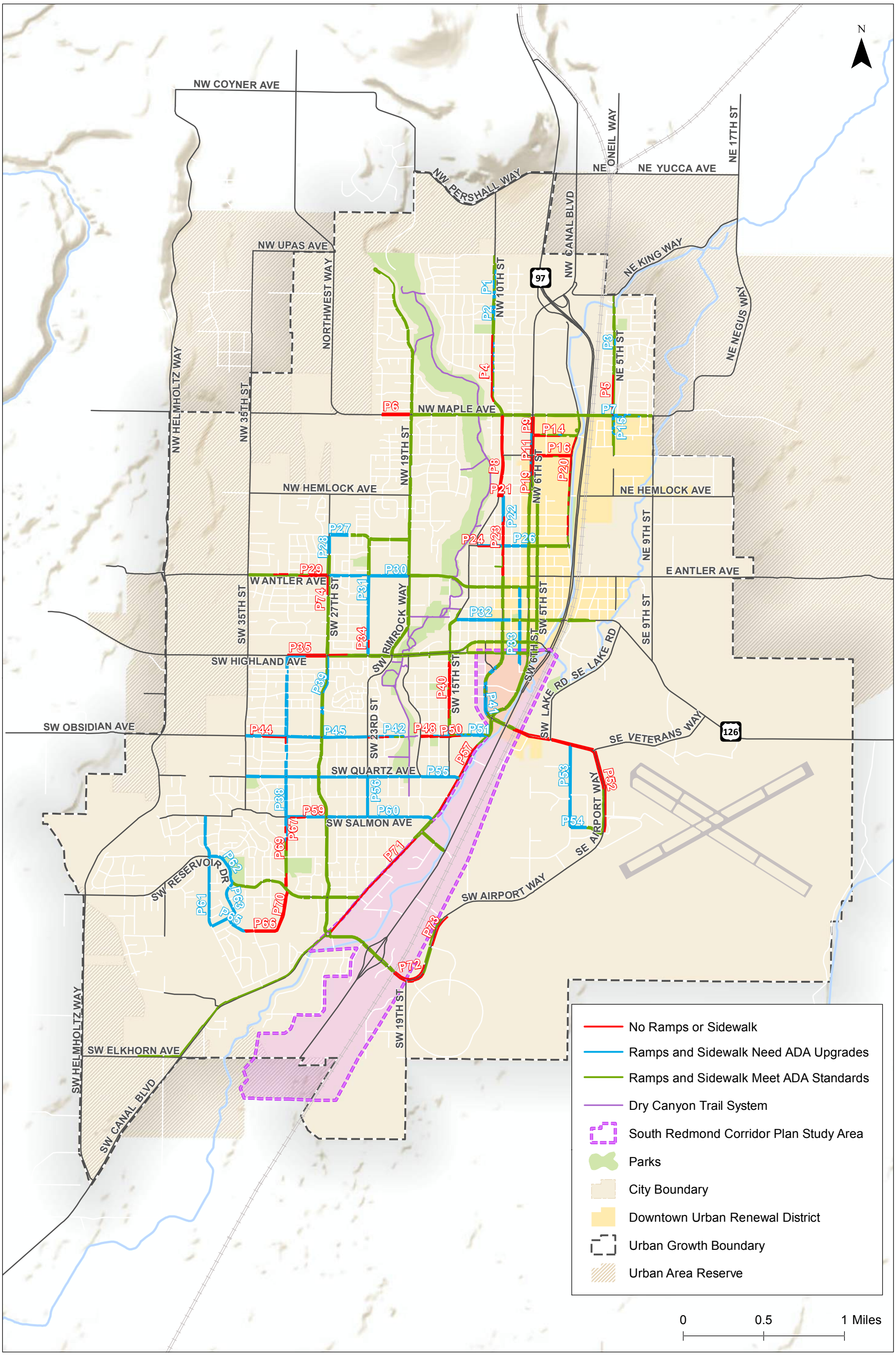
The key transit corridors identified by the PMT are shown in Figure 10.

Key Freight Routes

Both the TSP and the many state policies and plans recognize the important role that an efficient and reliable transportation system plays in supporting the region's economy, growth, and quality of life. Within the City, highways, city streets, airports, pipelines, and railways provide freight mobility. Trucks, rail, and air service must function together to ensure the efficient and timely movement of freight to, within, and through the community.

As part of the needs analysis, changes to the existing freight and truck routes were identified to ensure consistency with state and federal designations and guidance and in reflection of ongoing planning

efforts. In particular, the PMT identified potential freight routes that provide alternative access points to the industrial lands east of US 97 both to the north and south of OR 126. As shown in Figure 11, these routes utilize SW Airport Way, SE 9th Street, and NE Hemlock Avenue.



Priority (ADA) Pedestrian Routes
Redmond, Oregon

Figure **9**

Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl

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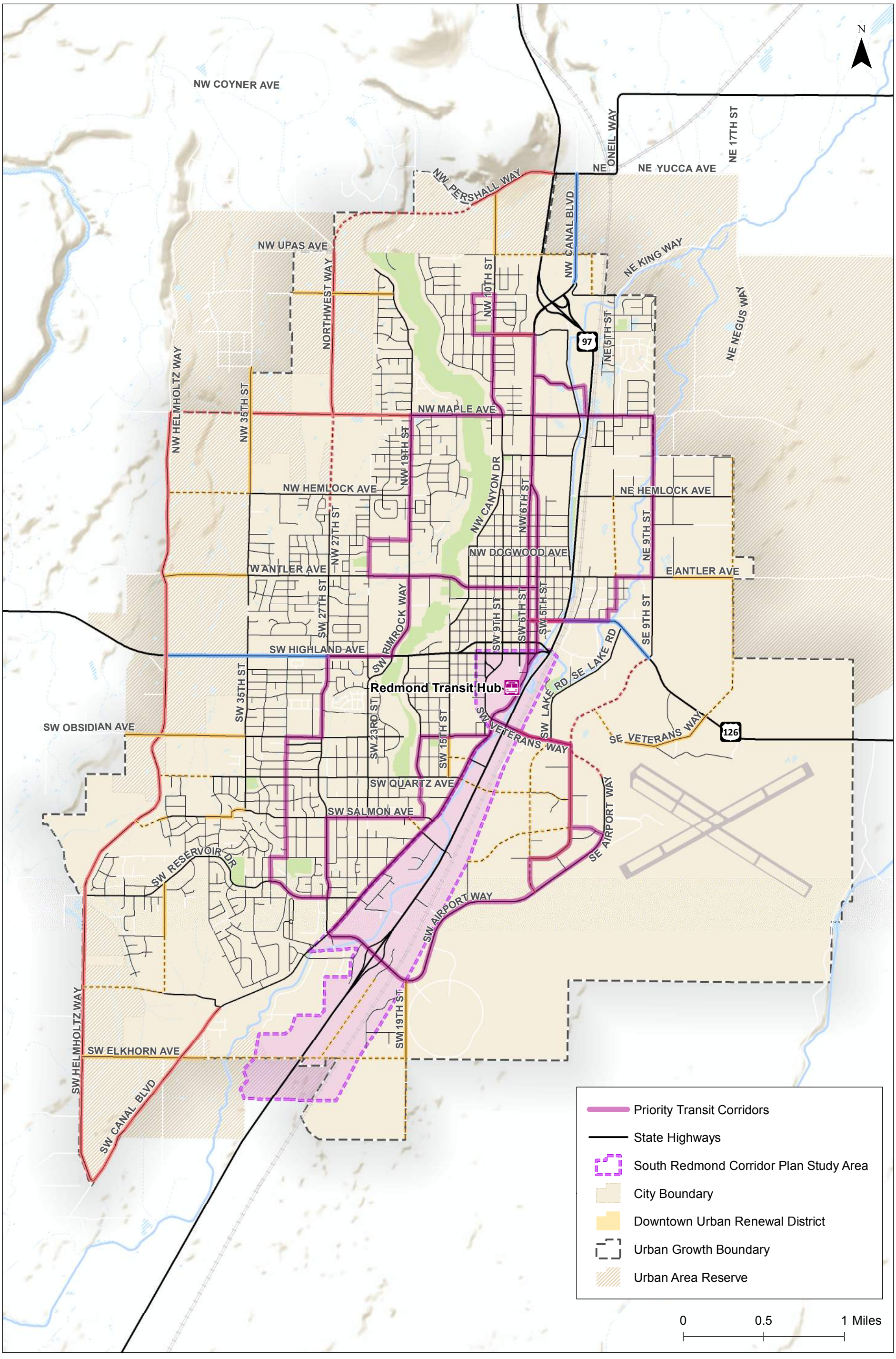

Future Transit Corridors
Redmond, Oregon

Figure **10**

Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl

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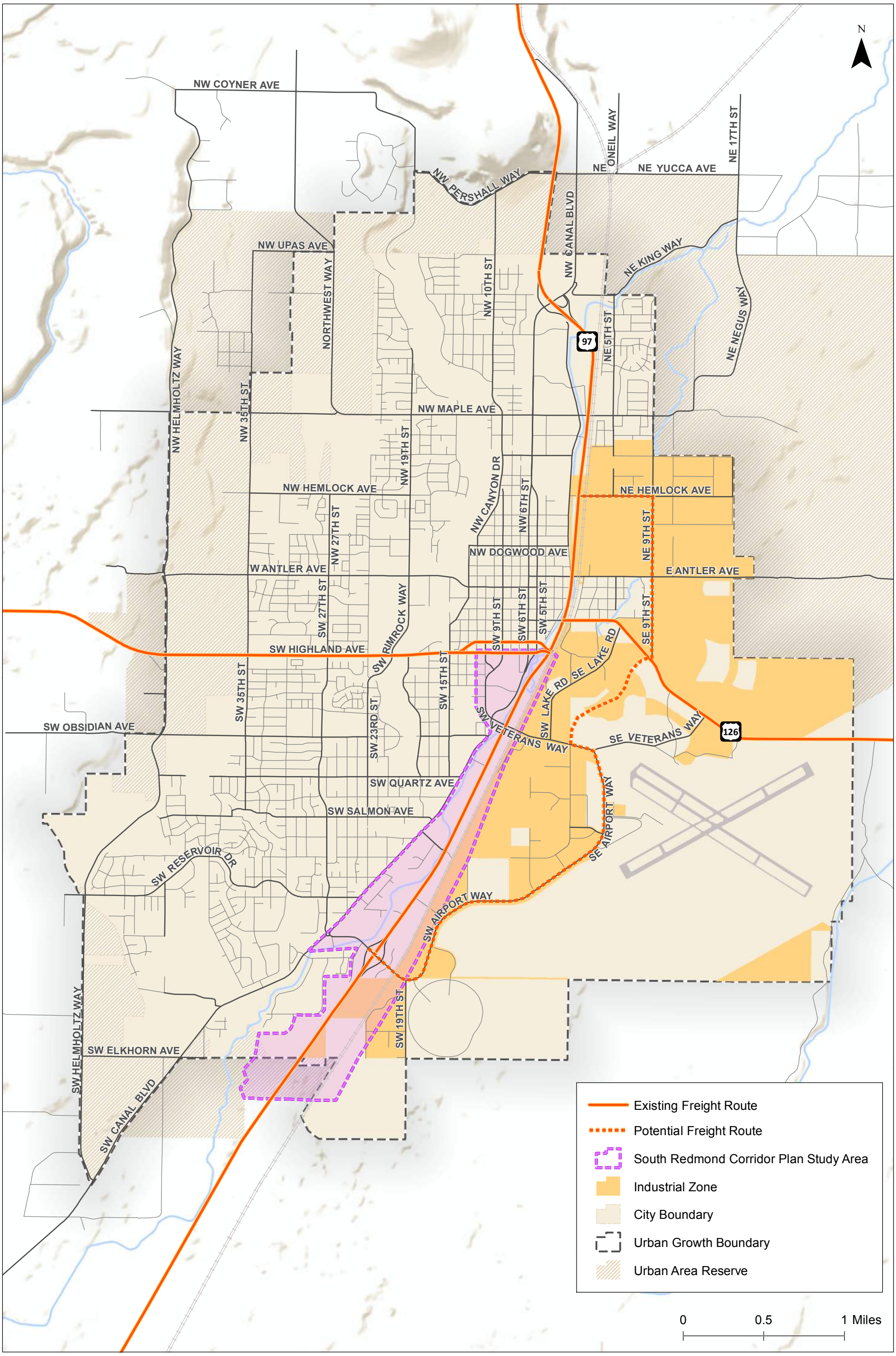

Future Freight Routes
Redmond, Oregon

Figure **11**

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl

Airport Master Plan Recommendations

Key recommendations for the ongoing Airport Master Plan will be incorporated into the TSP prior to adoption.

VEHICULAR SYSTEM PERFORMANCE

The City uses motor vehicle level of service (LOS) standards to evaluate acceptable vehicular performance on the local, collector, and arterial streets. LOS standards are presented as grades A (free flow traffic conditions) to F (congested traffic conditions). ODOT uses mobility targets based on volume to capacity (V/C) ratios to evaluate acceptable vehicular performance on state facilities. As V/C ratios approach 1.0, traffic congestion increases.

In some cases, it may not be possible or desirable to meet the designated mobility target or LOS standard. In those cases, an alternative mix of strategies such as land use, transportation demand management, safety improvements or increased use of active modes may be applied.

To understand the effectiveness of the identified TSP projects in addressing the needs previously identified, anticipated year 2040 intersection performance were assessed at several key locations throughout the City. The results from this analysis are shown in Table 10 and Table 11 and Figure 12.

Locations not meeting identified performance standards are highlighted in red. These locations will be discussed by the PMT for possible alternative performance criteria and/or other mitigation measures.

Table 11: Future Year 2040 Study Intersection Performance

Study Intersection		Existing Control	Without Improvements		Proposed Control	With Improvements	
			v/c	LOS		v/c	LOS
1	NW Canal Blvd/ US 97 NB Ramps	Signal	0.51	A	No change	0.74	A
2	NW Canal Blvd/ US 97 SB Ramps	Signal	0.47	A	No change	0.67	A
3	NW Maple Ave/ NW 19th St	AWSC	**1.25**	**F**	Signal	0.77	C
4	NW Maple Ave/ NW 6th St	Signal	0.78	C	No change	0.81	C
5	NW Larch Ave/ NW Canal Blvd	TWSC	0.31	B	No change	0.28	B
6	NE Hemlock Ave/ NE 9th St	AWSC	0.51	B	Signal	0.45	B
7	W Antler Ave/ SW Helmholtz Way	TWSC	0.54	C	TWSC	0.24	C
8	W Antler Ave/ SW 27th St	AWSC	0.43	B	Signal	0.62	B
9	W Antler Ave/ SW Rimrock Way	Signal	0.67	C	No change	0.68	C
10	SW Black Butte Blvd/ SW 6th St	Signal	0.50	A	No change	0.50	A
11	SW Black Butte Blvd/ SW 5th St	Signal	0.56	A	No change	0.52	A
12	E Antler Ave/ NE 9th St	TWSC	0.07	B	Signal	0.30	A
13	SW Evergreen Ave/ SW 6th St	Signal	0.53	A	No change	0.65	B
14	SW Evergreen Ave/ SW 5th St	Signal	0.70	B	No change	0.66	B

	Study Intersection	Existing Control	Without Improvements		Proposed Control	With Improvements	
			v/c	LOS		v/c	LOS
15	SW Evergreen Ave/ US 97	Signal	**1.11**	**F**	No change	**1.23**	**F**
16	OR 126 (SW Glacier Ave)/ SW 11th St	Signal	0.57	A	No change	0.61	A
17	OR 126 (SW Glacier Ave)/ SW 9th St	Signal	0.55	A	No change	0.58	B
21	OR 126 (SW Highland Ave) / SW Helmholtz Way	TWSC	**>1.0**	**F**	Roundabout	**0.92**	**D**
22	OR 126 (SW Highland Ave)/ SW 27th St	Signal	**>1.0**	**F**	No change	**>1.0**	**F**
23	OR 126 (SW Highland Ave)/ SW Rimrock Way	Signal	**>1.0**	**E**	Lane Additions	**1.0**	**C**
24	OR 126 (SW Highland Ave)/ SW 15th St	Signal	**0.88**	**C**	No change	**0.97**	**D**
25	OR 126 (SW Highland Ave)/ SW 11th St	Signal	0.51	A	No change	0.54	A
26	OR 126 (SW Highland Ave)/ SW 9th St	Signal	0.54	B	No change	0.57	B
29	OR 126/ SE 9th St	TWSC	**0.97**	**F**	Roundabout	0.62	B
30	SW Obsidian Ave/ SW 27th St	AWSC	0.76	C	No change	0.49	B
31	SW Obsidian Ave/ SW 23rd St	TWSC	0.29	C	No change	0.18	C
34	SW Veterans Way/ SE Airport Way*	AWSC	0.80	C	-	-	-
35	SW Veterans Way/ OR 126	TWSC	**0.92**	**F**	Signal	**0.84**	**C**
36	SW Salmon Ave/ SW 27th St	AWSC	>1.0	E	Signal	0.67	C
39	SW Wickiup Ave/ SW Helmholtz Way	TWSC	0.29	C	Signal	0.49	B
40	SW Wickiup Ave / SW 27th St	AWSC	>1.0	E	Roundabout	0.67	B
44	SE Airport Way/ SW 19th St	TWSC	**>1.0**	**F**	Roundabout	0.54	B
45	S Canal Blvd / SW Helmholtz Way	TWSC	0.46	C	Roundabout	0.64	B

Note: Fluctuations in travel demand model runs result in some variations between "existing control" and "proposed control" where no improvements are proposed.

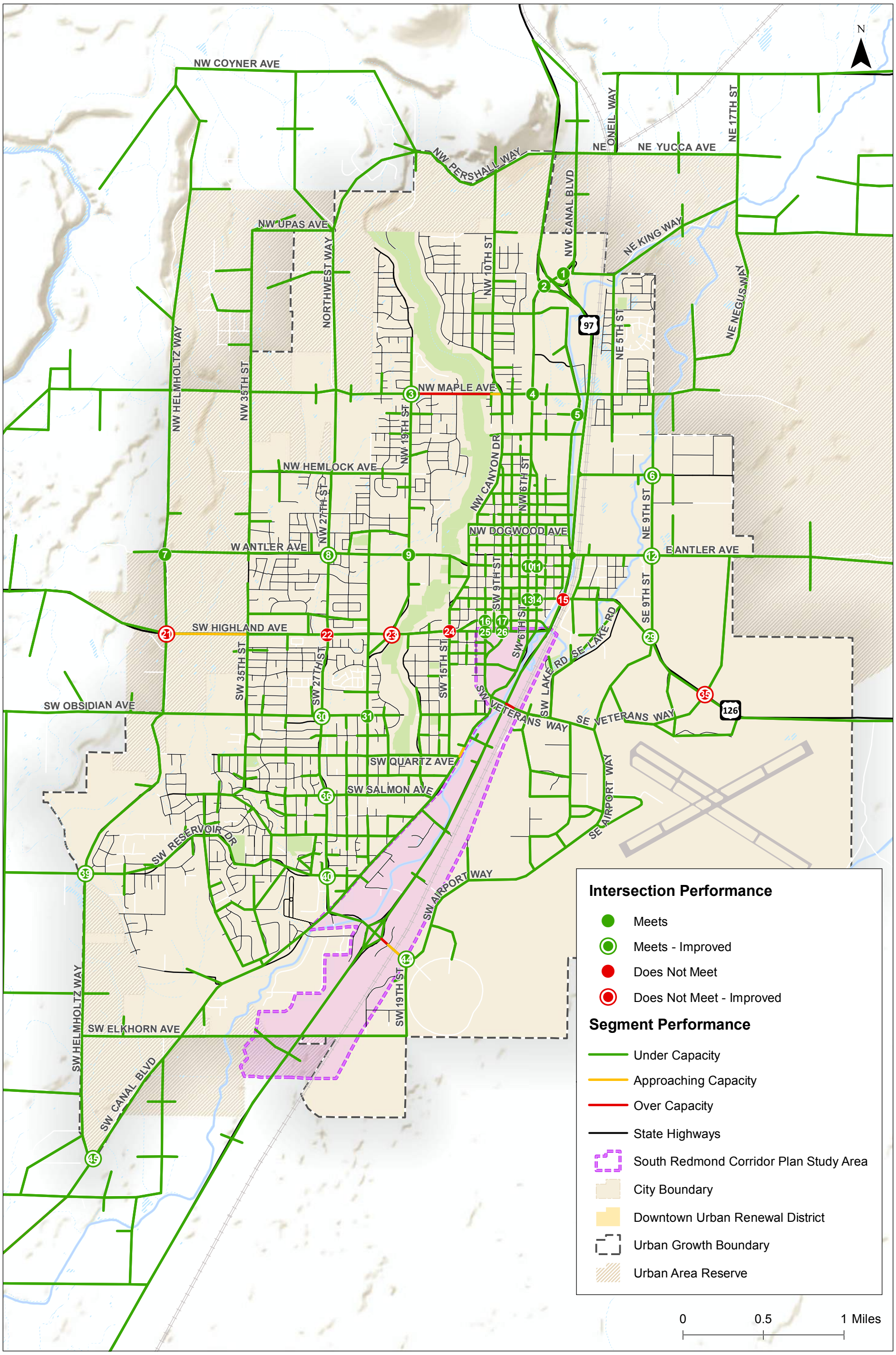
*Removed with corridor improvements

Table 12: Future Year 2040 Study Segment Performance

Segment	Travel Direction	v/c (without improvements)	v/c (with improvements)
Canal Blvd (near Badger Ave)	Northbound	0.99	0.84
	Southbound	0.93	0.76
OR 126 (near SW 35th St)	Eastbound	0.57	0.54
	Westbound	0.65	0.63
OR 126 (near SW Veterans Way)	Eastbound	0.27	0.27
	Westbound	0.28	0.28
US 97 (near SW Glacier Ave)	Northbound	**1.14**	**1.21**
	Southbound	**1.01**	**1.00**
US 97 (near NW Canal Blvd)	Northbound	0.99	**1.10**
	Southbound	0.83	0.87

NEXT STEPS

The Alternatives identified herein will be presented to the PAC and at an Open House at a forthcoming date. Based on the feedback, the list of multimodal projects will be refined and planning-level cost estimates will be developed to enable the city to consider the ability of the projected revenue stream to meet future demands.



Future (2040) Intersection and Segment Performance with Improvements
Redmond, Oregon

Figure **12**

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Coordinate System: NAD 1983 Oregon Statewide Lambert Feet Intl

Appendix A Project Category Evaluation

	Project Ratings						
Project Category	**Balances impacts to developable parcels with system and community needs;**	**Minimizes impacts to Goal 5 resources**	**Supports or enhances the ability to implement the Oregon Resiliency Plan and/or other key state or regional projects**	**Leverages future transportation investments to reduce access, economic, safety and health disparities between neighborhoods, particularly those with greater populations of low income, minority, youth and/or elderly population than the City as a whole.**	**Addresses key connectivity needs on the collector and arterial street system**	**Addresses known safety issues**	**Supports enhanced multimodal access to major activity centers and/or economic development priority areas within the City as well as the region**
Strategic Street Capacity Investment Corridors	●	●	◒	●	●	◒	●
New Planned Streets	●	●	◒	●	●	◒	●
Intersection Control Additions	●	●	○	◒	●	◒	●
Intersection Capacity Improvements	●	●	○	◒	●	◒	●
Grade Separation Projects	●	●	●	◒	●	●	●
Multi-use Pathways	●	●	○	●	◒	●	●
Bicycle Corridors	●	●	○	●	◒	●	●
Pedestrian Improvements	●	●	○	●	◒	●	●

	Provides pedestrian and bicycle connectivity to key transit corridors	**Provides pedestrian and bicycle connectivity to key routes to school**	**Addresses key gaps in the bicycle system**	**Addresses key gaps in the pedestrian system**	**Improves freight mobility on designated freight, truck, rail and air routes**	**Improves mobility for through traffic on state highways; and**	**Leverages public and private investments**
Strategic Street Capacity Investment Corridors	●	●	●	●	●	◒	◒
New Planned Streets	●	●	●	●	●	◒	◒
Intersection Control Additions	◒	◒	◒	◒	●	◒	◒
Intersection Capacity Improvements	◒	◒	◒	◒	●	◒	◒
Grade Separation Projects	◒	◒	●	●	●	●	◒
Multi-use Pathways	●	●	●	●	○	○	◒
Bicycle Corridors	●	●	●	○	○	○	◒
Pedestrian Improvements	●	●	○	●	○	○	◒

Appendix B Future Intersection Operational Analyses with Improvements

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	197	464	8	359	522	78
Future Volume (vph)	197	464	8	359	522	78
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	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
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1733	1458	1421	1716	1630	1458
Flt Permitted	1.00	1.00	0.45	1.00	0.95	1.00
Satd. Flow (perm)	1733	1458	673	1716	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	504	9	390	567	85
RTOR Reduction (vph)	0	365	0	0	0	36
Lane Group Flow (vph)	214	139	9	390	567	49
Heavy Vehicles (%)	1%	2%	17%	2%	2%	2%
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases		6	2			4
Actuated Green, G (s)	17.0	17.0	22.6	22.6	29.9	29.9
Effective Green, g (s)	17.0	17.0	22.6	22.6	29.9	29.9
Actuated g/C Ratio	0.28	0.28	0.37	0.37	0.49	0.49
Clearance Time (s)	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
Lane Grp Cap (vph)	479	403	260	630	792	708
v/s Ratio Prot	0.12		0.00	c0.23	c0.35	
v/s Ratio Perm		0.10	0.01			0.03
v/c Ratio	0.45	0.35	0.03	0.62	0.72	0.07
Uniform Delay, d1	18.4	17.8	12.7	15.9	12.5	8.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.5	0.1	1.8	3.1	0.0
Delay (s)	19.0	18.3	12.7	17.7	15.6	8.4
Level of Service	B	B	B	B	B	A
Approach Delay (s)	18.5			17.6	14.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	214	504	9	390	567	85
v/c Ratio	0.42	0.64	0.03	0.70	0.67	0.11
Control Delay	19.9	6.4	12.0	23.8	18.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	6.4	12.0	23.8	18.2	4.4
Queue Length 50th (ft)	55	0	2	114	124	2
Queue Length 95th (ft)	131	68	9	188	#387	27
Internal Link Dist (ft)	689			452	761	
Turn Bay Length (ft)			200			175
Base Capacity (vph)	1230	1181	304	1568	842	788
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.43	0.03	0.25	0.67	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	646	127	214	667	0	0	0	0	16	0	188
Future Volume (vph)	0	646	127	214	667	0	0	0	0	16	0	188
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
Lane Util. Factor		0.95		1.00	1.00						1.00	1.00
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		0.98		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3205		1662	1716						1662	1458
Flt Permitted		1.00		0.20	1.00						0.95	1.00
Satd. Flow (perm)		3205		352	1716						1662	1458
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)	0	702	138	233	725	0	0	0	0	17	0	204
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	0	124
Lane Group Flow (vph)	0	821	0	233	725	0	0	0	0	0	17	80
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%
Turn Type		NA		pm+pt	NA					Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases				2						8		8
Actuated Green, G (s)		18.6		29.8	29.8						8.3	8.3
Effective Green, g (s)		18.6		29.8	29.8						8.3	8.3
Actuated g/C Ratio		0.39		0.63	0.63						0.18	0.18
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)		1265		409	1085						292	256
v/s Ratio Prot		0.26		0.08	c0.42							
v/s Ratio Perm				0.28							0.01	c0.06
v/c Ratio		0.65		0.57	0.67						0.06	0.31
Uniform Delay, d1		11.6		5.2	5.5						16.1	16.9
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		1.2		1.8	1.6						0.1	0.7
Delay (s)		12.8		7.0	7.1						16.2	17.6
Level of Service		B		A	A						B	B
Approach Delay (s)		12.8			7.1			0.0			17.5	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

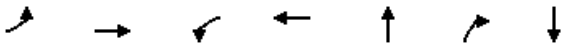
Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	840	233	725	17	204
v/c Ratio	0.66	0.58	0.67	0.06	0.54
Control Delay	14.3	11.3	9.9	18.4	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	11.3	9.9	18.4	12.8
Queue Length 50th (ft)	85	20	93	4	12
Queue Length 95th (ft)	158	#65	247	19	67
Internal Link Dist (ft)	3583		689	648	
Turn Bay Length (ft)		250			275
Base Capacity (vph)	1924	405	1433	1172	1072
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.58	0.51	0.01	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	250	109	332	409	104	151	69	261	55	45	14
Future Volume (vph)	14	250	109	332	409	104	151	69	261	55	45	14
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			4.5	4.5		4.5	
Lane Util. Factor	1.00	1.00		1.00	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	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.95		1.00	0.97			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	
Satd. Flow (prot)	1662	1623		1645	1689			1692	1473		1680	
Flt Permitted	0.33	1.00		0.24	1.00			0.74	1.00		0.79	
Satd. Flow (perm)	581	1623		424	1689			1294	1473		1359	
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)	15	266	116	353	435	111	161	73	278	59	48	15
RTOR Reduction (vph)	0	17	0	0	9	0	0	0	161	0	3	0
Lane Group Flow (vph)	15	365	0	353	537	0	0	234	117	0	119	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8			4			6		6			
Actuated Green, G (s)	28.1	26.9		43.0	37.8			37.7	37.7		37.7	
Effective Green, g (s)	28.1	26.9		43.0	37.8			37.7	37.7		37.7	
Actuated g/C Ratio	0.32	0.30		0.48	0.42			0.42	0.42		0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0			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)	197	489		370	715			546	622		574	
v/s Ratio Prot	0.00	0.22		c0.13	0.32							
v/s Ratio Perm	0.02			c0.33				c0.18	0.08		0.09	
v/c Ratio	0.08	0.75		0.95	0.75			0.43	0.19		0.21	
Uniform Delay, d1	21.4	28.1		18.4	21.7			18.2	16.2		16.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	6.1		34.7	4.4			0.5	0.1		0.2	
Delay (s)	21.6	34.2		53.1	26.2			18.7	16.3		16.5	
Level of Service	C	C		D	C			B	B		B	
Approach Delay (s)		33.7			36.7			17.4			16.5	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	15	382	353	546	234	278	122
v/c Ratio	0.05	0.82	0.96	0.73	0.41	0.35	20.33
Control Delay	12.6	42.2	58.4	26.6	21.0	3.7	9007.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	42.2	58.4	26.6	21.0	3.7	9007.6
Queue Length 50th (ft)	4	180	125	217	84	0	~132
Queue Length 95th (ft)	14	284	#288	#450	172	48	#259
Internal Link Dist (ft)		906		3891	5211		1243
Turn Bay Length (ft)	100		75			100	
Base Capacity (vph)	296	640	367	791	566	801	8
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.60	0.96	0.69	0.41	0.35	15.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	201	186	190	263	29	266	403	250	48	349	193
Future Volume (vph)	113	201	186	190	263	29	266	403	250	48	349	193
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	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1598	1733	1454	1646	1691		1646	3115		1539	3090	
Flt Permitted	0.42	1.00	1.00	0.46	1.00		0.25	1.00		0.32	1.00	
Satd. Flow (perm)	699	1733	1454	805	1691		426	3115		511	3090	
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)	124	221	204	209	289	32	292	443	275	53	384	212
RTOR Reduction (vph)	0	0	150	0	4	0	0	99	0	0	83	0
Lane Group Flow (vph)	124	221	54	209	317	0	292	619	0	53	513	0
Confl. Peds. (#/hr)	2		1	1		2	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	4%	1%	1%	1%	2%	0%	1%	1%	0%	8%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	24.4	19.0	19.0	28.2	20.9		32.6	24.8		24.1	20.3	
Effective Green, g (s)	24.4	19.0	19.0	28.2	20.9		32.6	24.8		24.1	20.3	
Actuated g/C Ratio	0.34	0.27	0.27	0.39	0.29		0.46	0.35		0.34	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	306	461	386	403	494		336	1081		227	878	
v/s Ratio Prot	0.03	0.13		c0.05	c0.19		c0.10	0.20		0.01	0.17	
v/s Ratio Perm	0.11		0.04	0.15			c0.30			0.07		
v/c Ratio	0.41	0.48	0.14	0.52	0.64		0.87	0.57		0.23	0.58	
Uniform Delay, d1	17.0	22.0	20.0	15.2	22.0		14.1	19.0		16.3	21.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.8	0.2	1.1	2.8		20.5	0.7		0.5	1.0	
Delay (s)	17.9	22.8	20.1	16.3	24.8		34.6	19.7		16.8	22.9	
Level of Service	B	C	C	B	C		C	B		B	C	
Approach Delay (s)		20.7			21.5			24.0			22.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	124	221	204	209	321	292	718	53	596
v/c Ratio	0.36	0.49	0.39	0.53	0.62	0.88	0.59	0.18	0.66
Control Delay	16.8	26.2	5.9	20.3	28.4	47.6	18.3	13.8	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	26.2	5.9	20.3	28.4	47.6	18.3	13.8	22.1
Queue Length 50th (ft)	30	77	0	54	118	77	110	12	91
Queue Length 95th (ft)	77	161	47	123	235	#264	201	37	169
Internal Link Dist (ft)		3891			719		1235		3583
Turn Bay Length (ft)	200		200	100		100		100	
Base Capacity (vph)	350	864	827	395	846	330	1563	302	1487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.26	0.25	0.53	0.38	0.88	0.46	0.18	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	141	23	11	27	3	14	35	41	99	23	25
Future Vol, veh/h	17	141	23	11	27	3	14	35	41	99	23	25
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	20	0	0	0	0	0	0	0	11	0
Mvmt Flow	20	166	27	13	32	4	16	41	48	116	27	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	195	0	0	309	282	183	325	294	34
Stage 1	-	-	-	-	-	-	221	221	-	59	59	-
Stage 2	-	-	-	-	-	-	88	61	-	266	235	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.61	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.61	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4.099	3.3
Pot Cap-1 Maneuver	1589	-	-	1390	-	-	647	630	865	632	602	1045
Stage 1	-	-	-	-	-	-	786	724	-	958	828	-
Stage 2	-	-	-	-	-	-	925	848	-	744	694	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1589	-	-	1387	-	-	595	614	862	555	587	1045
Mov Cap-2 Maneuver	-	-	-	-	-	-	595	614	-	555	587	-
Stage 1	-	-	-	-	-	-	774	713	-	945	820	-
Stage 2	-	-	-	-	-	-	861	840	-	651	683	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	2	11	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	703	1589	-	-	1387	-	-	609
HCM Lane V/C Ratio	0.151	0.013	-	-	0.009	-	-	0.284
HCM Control Delay (s)	11	7.3	0	-	7.6	0	-	13.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	17	149	36	17	33	69	229	11	5	81	15
Future Volume (vph)	50	17	149	36	17	33	69	229	11	5	81	15
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
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.91			0.95		1.00	0.99			1.00	0.85
Flt Protected		0.99			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1494			1600		1352	1721			1697	918
Flt Permitted		0.90			0.80		0.95	1.00			1.00	1.00
Satd. Flow (perm)		1357			1308		1352	1721			1697	918
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	57	19	169	41	19	38	78	260	12	6	92	17
RTOR Reduction (vph)	0	97	0	0	27	0	0	2	0	0	0	13
Lane Group Flow (vph)	0	148	0	0	71	0	78	271	0	0	98	4
Heavy Vehicles (%)	0%	11%	6%	0%	8%	0%	23%	1%	0%	0%	3%	62%
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	Perm
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)		10.8			10.8		13.9	13.9			10.8	10.8
Effective Green, g (s)		10.8			10.8		13.9	13.9			10.8	10.8
Actuated g/C Ratio		0.22			0.22		0.28	0.28			0.22	0.22
Clearance Time (s)		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
Lane Grp Cap (vph)		299			288		383	488			374	202
v/s Ratio Prot							0.06	c0.16			c0.06	
v/s Ratio Perm		c0.11			0.05							0.00
v/c Ratio		0.50			0.25		0.20	0.56			0.26	0.02
Uniform Delay, d1		16.7			15.7		13.3	14.9			15.8	15.0
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		1.3			0.4		0.3	1.4			0.4	0.0
Delay (s)		18.0			16.2		13.6	16.3			16.2	15.0
Level of Service		B			B		B	B			B	B
Approach Delay (s)		18.0			16.2			15.7			16.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	245	98	78	273	98	17
v/c Ratio	0.62	0.31	0.21	0.56	0.26	0.07
Control Delay	17.3	15.0	16.3	21.0	21.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	15.0	16.3	21.0	21.5	0.5
Queue Length 50th (ft)	28	14	16	61	22	0
Queue Length 95th (ft)	99	52	51	150	73	0
Internal Link Dist (ft)	782	827		2579	629	
Turn Bay Length (ft)			100			
Base Capacity (vph)	783	715	807	1028	799	471
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.14	0.10	0.27	0.12	0.04

Intersection Summary

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	42	0	53	0	334	92	46	150	0
Future Vol, veh/h	0	0	0	42	0	53	0	334	92	46	150	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	1	0	8	0
Mvmt Flow	0	0	0	48	0	60	0	380	105	52	170	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	737	759	170	707	707	432	170	0	0	484	0	0
Stage 1	275	275	-	432	432	-	-	-	-	-	-	-
Stage 2	462	484	-	275	275	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	337	338	879	353	363	628	1420	-	-	1089	-	-
Stage 1	736	686	-	606	586	-	-	-	-	-	-	-
Stage 2	584	555	-	736	686	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	292	320	879	339	344	628	1420	-	-	1089	-	-
Mov Cap-2 Maneuver	292	320	-	339	344	-	-	-	-	-	-	-
Stage 1	736	650	-	606	586	-	-	-	-	-	-	-
Stage 2	528	555	-	697	650	-	-	-	-	-	-	-

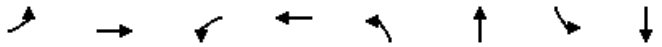
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.3	0	2
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1420	-	-	-	456	1089	-	-
HCM Lane V/C Ratio	-	-	-	-	0.237	0.048	-	-
HCM Control Delay (s)	0	-	-	0	15.3	8.5	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.9	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	87	111	133	114	40	118	268	137	19	148	7
Future Volume (vph)	6	87	111	133	114	40	118	268	137	19	148	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		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		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	0.92		1.00	0.96		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1544		1644	1682		1660	1644		1662	1736	
Flt Permitted	0.65	1.00		0.43	1.00		0.56	1.00		0.33	1.00	
Satd. Flow (perm)	1132	1544		739	1682		971	1644		572	1736	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	7	99	126	151	130	45	134	305	156	22	168	8
RTOR Reduction (vph)	0	58	0	0	14	0	0	19	0	0	2	0
Lane Group Flow (vph)	7	167	0	151	161	0	134	442	0	22	174	0
Confl. Peds. (#/hr)			3	3			3		1	1		3
Heavy Vehicles (%)	0%	3%	2%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	17.2	16.3		25.2	20.3		27.4	22.6		21.6	19.7	
Effective Green, g (s)	17.2	16.3		25.2	20.3		27.4	22.6		21.6	19.7	
Actuated g/C Ratio	0.27	0.26		0.40	0.32		0.43	0.35		0.34	0.31	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	313	395		361	536		469	583		226	536	
v/s Ratio Prot	0.00	0.11		c0.03	0.10		c0.02	c0.27		0.00	0.10	
v/s Ratio Perm	0.01			c0.13			0.10			0.03		
v/c Ratio	0.02	0.42		0.42	0.30		0.29	0.76		0.10	0.32	
Uniform Delay, d1	17.0	19.8		13.2	16.3		11.3	18.1		14.5	16.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.9		0.3	0.4		0.1	5.6		0.1	0.4	
Delay (s)	17.1	20.6		13.5	16.7		11.5	23.8		14.5	17.2	
Level of Service	B	C		B	B		B	C		B	B	
Approach Delay (s)		20.5			15.2			21.0			16.9	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	63.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	7	225	151	175	134	461	22	176
v/c Ratio	0.02	0.53	0.40	0.29	0.27	0.70	0.06	0.33
Control Delay	14.3	20.6	17.9	16.7	11.9	23.4	10.3	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	20.6	17.9	16.7	11.9	23.4	10.3	19.6
Queue Length 50th (ft)	1	40	28	29	26	105	4	49
Queue Length 95th (ft)	10	122	86	113	63	#317	16	104
Internal Link Dist (ft)		5288		2545		2548		1288
Turn Bay Length (ft)	50		100		75		100	
Base Capacity (vph)	428	957	384	1019	499	875	358	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.24	0.39	0.17	0.27	0.53	0.06	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	122	38	83	222	231	80	457	83	76	333	96
Future Volume (vph)	78	122	38	83	222	231	80	457	83	76	333	96
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	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.98		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)	1622	1665		1628	1733	1445	1662	1683		1662	1683	
Flt Permitted	0.43	1.00		0.57	1.00	1.00	0.36	1.00		0.19	1.00	
Satd. Flow (perm)	733	1665		980	1733	1445	626	1683		339	1683	
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)	84	131	41	89	239	248	86	491	89	82	358	103
RTOR Reduction (vph)	0	14	0	0	0	175	0	6	0	0	10	0
Lane Group Flow (vph)	84	158	0	89	239	73	86	574	0	82	451	0
Confl. Peds. (#/hr)	12		2	2		12	1		4	4		1
Heavy Vehicles (%)	2%	1%	0%	2%	1%	0%	0%	1%	2%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	21.0	16.2		21.0	16.2	22.6	36.2	31.5		39.6	33.2	
Effective Green, g (s)	21.0	16.2		21.0	16.2	22.6	36.2	31.5		39.6	33.2	
Actuated g/C Ratio	0.27	0.21		0.27	0.21	0.29	0.47	0.41		0.51	0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.0	3.5		2.0	3.5	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	255	350		308	365	509	358	689		284	726	
v/s Ratio Prot	c0.02	0.09		0.02	c0.14	0.01	0.01	c0.34		c0.02	0.27	
v/s Ratio Perm	0.07			0.06		0.04	0.10			0.12		
v/c Ratio	0.33	0.45		0.29	0.65	0.14	0.24	0.83		0.29	0.62	
Uniform Delay, d1	21.6	26.5		21.5	27.8	20.0	11.9	20.3		12.1	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.1		0.2	4.4	0.0	0.1	8.5		0.2	1.7	
Delay (s)	21.9	27.6		21.7	32.2	20.1	12.0	28.8		12.3	18.6	
Level of Service	C	C		C	C	C	B	C		B	B	
Approach Delay (s)		25.7			25.3			26.7			17.7	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	172	89	239	248	86	580	82	461
v/c Ratio	0.30	0.46	0.27	0.64	0.41	0.22	0.85	0.29	0.61
Control Delay	20.3	28.1	19.6	36.1	4.7	11.7	35.7	13.0	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	28.1	19.6	36.1	4.7	11.7	35.7	13.0	23.2
Queue Length 50th (ft)	28	67	30	109	0	19	248	18	174
Queue Length 95th (ft)	58	123	60	181	44	48	#499	46	319
Internal Link Dist (ft)		2545		3983			2700		5211
Turn Bay Length (ft)	125		150		225	175		225	
Base Capacity (vph)	284	639	332	653	612	400	733	290	755
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.27	0.27	0.37	0.41	0.21	0.79	0.28	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	82	89	22	136	0	0	0	0	16	681	151
Future Volume (vph)	0	82	89	22	136	0	0	0	0	16	681	151
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.95	
Frpb, ped/bikes		1.00			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		0.93			1.00						0.97	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1627			1738						3184	
Flt Permitted		1.00			0.93						1.00	
Satd. Flow (perm)		1627			1631						3184	
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)	0	86	94	23	143	0	0	0	0	17	717	159
RTOR Reduction (vph)	0	65	0	0	0	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	115	0	0	166	0	0	0	0	0	867	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		10.0			10.0						20.1	
Effective Green, g (s)		10.0			10.0						20.1	
Actuated g/C Ratio		0.25			0.25						0.50	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		405			406						1595	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.10						0.27	
v/c Ratio		0.28			0.41						0.54	
Uniform Delay, d1		12.2			12.6						6.9	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.4			0.7						0.4	
Delay (s)		12.5			13.3						7.2	
Level of Service		B			B						A	
Approach Delay (s)		12.5			13.3			0.0			7.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	180	166	893
v/c Ratio	0.39	0.41	0.56
Control Delay	11.3	18.2	8.2
Queue Delay	0.0	0.0	0.0
Total Delay	11.3	18.2	8.2
Queue Length 50th (ft)	16	31	56
Queue Length 95th (ft)	68	92	120
Internal Link Dist (ft)	3983	187	3118
Turn Bay Length (ft)			
Base Capacity (vph)	1088	1061	2728
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	0.16	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	27	0	0	48	13	128	790	8	0	0	0
Future Volume (vph)	72	27	0	0	48	13	128	790	8	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.97			1.00				
Flt Protected		0.96			1.00			0.99				
Satd. Flow (prot)		1689			1648			3263				
Flt Permitted		0.74			1.00			0.99				
Satd. Flow (perm)		1297			1648			3263				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	82	31	0	0	55	15	145	898	9	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	113	0	0	58	0	0	1051	0	0	0	0
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	17%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		8.0			8.0			28.0				
Effective Green, g (s)		8.0			8.0			28.0				
Actuated g/C Ratio		0.17			0.17			0.61				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		225			286			1986				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.09						0.32				
v/c Ratio		0.50			0.20			0.53				
Uniform Delay, d1		17.2			16.3			5.2				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		1.8			0.3			0.3				
Delay (s)		19.0			16.6			5.5				
Level of Service		B			B			A				
Approach Delay (s)		19.0			16.6			5.5			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	46.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	113	70	1052
v/c Ratio	0.41	0.19	0.49
Control Delay	21.7	14.8	7.1
Queue Delay	0.0	0.0	0.0
Total Delay	21.7	14.8	7.1
Queue Length 50th (ft)	22	10	74
Queue Length 95th (ft)	72	42	148
Internal Link Dist (ft)	187	470	1008
Turn Bay Length (ft)			
Base Capacity (vph)	635	814	2800
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.18	0.09	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	4	7	12	3	8	6	146	2	4	230	24
Future Volume (vph)	23	4	7	12	3	8	6	146	2	4	230	24
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	4.5		4.0	4.5	
Lane Util. Factor		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	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.95		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1604			1495		1108	1680		1108	1600	
Flt Permitted		1.00			1.00		0.58	1.00		0.65	1.00	
Satd. Flow (perm)		1657			1535		681	1680		759	1600	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	26	5	8	14	3	9	7	166	2	5	261	27
RTOR Reduction (vph)	0	8	0	0	9	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	31	0	0	17	0	7	168	0	5	284	0
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	0%	0%	0%	0%	25%	50%	4%	0%	50%	8%	4%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		1.2			1.2		23.8	22.9		23.8	22.9	
Effective Green, g (s)		1.2			1.2		23.8	22.9		23.8	22.9	
Actuated g/C Ratio		0.03			0.03		0.63	0.61		0.63	0.61	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		53			49		442	1025		490	977	
v/s Ratio Prot							c0.00	0.10		0.00	c0.18	
v/s Ratio Perm		c0.02			0.01		0.01			0.01		
v/c Ratio		0.59			0.35		0.02	0.16		0.01	0.29	
Uniform Delay, d1		17.9			17.8		2.5	3.2		2.5	3.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.7			4.3		0.0	0.1		0.0	0.2	
Delay (s)		33.6			22.1		2.5	3.2		2.5	3.6	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		33.6			22.1			3.2			3.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	26	7	168	5	288
v/c Ratio	0.11	0.08	0.01	0.11	0.01	0.21
Control Delay	10.2	9.9	2.2	4.0	2.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	9.9	2.2	4.0	2.0	4.2
Queue Length 50th (ft)	4	2	0	0	0	0
Queue Length 95th (ft)	24	18	3	56	3	95
Internal Link Dist (ft)	792	663		2596		2579
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	1243	1153	677	1680	716	1600
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.01	0.10	0.01	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	72	15	96	61	0	0	0	0	152	967	30
Future Volume (vph)	0	72	15	96	61	0	0	0	0	152	967	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.95	
Frpb, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			0.99						0.99	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.97						0.99	
Satd. Flow (prot)		1672			1680						3234	
Flt Permitted		1.00			0.76						0.99	
Satd. Flow (perm)		1672			1311						3234	
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)	0	80	17	107	68	0	0	0	0	169	1074	33
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	84	0	0	175	0	0	0	0	0	1274	0
Confl. Peds. (#/hr)	21		19	19		21	16		26	26		16
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	1%	1%	3%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		12.6			12.6						30.4	
Effective Green, g (s)		12.6			12.6						30.4	
Actuated g/C Ratio		0.24			0.24						0.57	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		397			311						1854	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.13						0.39	
v/c Ratio		0.21			0.56						0.69	
Uniform Delay, d1		16.2			17.8						8.0	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.3			2.3						1.1	
Delay (s)		16.5			20.1						9.0	
Level of Service		B			C						A	
Approach Delay (s)		16.5			20.1			0.0			9.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	53.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	97	175	1276
v/c Ratio	0.24	0.57	0.69
Control Delay	16.6	27.2	11.1
Queue Delay	0.0	0.0	0.0
Total Delay	16.6	27.2	11.1
Queue Length 50th (ft)	23	55	127
Queue Length 95th (ft)	54	107	249
Internal Link Dist (ft)	369	175	1004
Turn Bay Length (ft)			
Base Capacity (vph)	822	636	2203
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.12	0.28	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	174	0	0	130	375	27	571	34	0	0	0
Future Volume (vph)	41	174	0	0	130	375	27	571	34	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			0.99			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.90			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1709			1516			3287				
Flt Permitted		0.77			1.00			1.00				
Satd. Flow (perm)		1334			1516			3287				
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)	46	193	0	0	144	417	30	634	38	0	0	0
RTOR Reduction (vph)	0	0	0	0	84	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	239	0	0	477	0	0	696	0	0	0	0
Confl. Peds. (#/hr)	2		3	3		2	1		1	1		1
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	1%	0%	0%	2%	3%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		20.7			20.7			18.3				
Effective Green, g (s)		20.7			20.7			18.3				
Actuated g/C Ratio		0.42			0.42			0.37				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		563			640			1227				
v/s Ratio Prot					c0.31							
v/s Ratio Perm		0.18						0.21				
v/c Ratio		0.42			0.75			0.57				
Uniform Delay, d1		10.0			11.9			12.2				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.5			4.7			0.6				
Delay (s)		10.5			16.7			12.8				
Level of Service		B			B			B				
Approach Delay (s)		10.5			16.7			12.8			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	239	561	702
v/c Ratio	0.43	0.79	0.58
Control Delay	13.8	18.9	15.4
Queue Delay	0.1	0.0	0.0
Total Delay	13.9	18.9	15.4
Queue Length 50th (ft)	44	89	79
Queue Length 95th (ft)	118	260	160
Internal Link Dist (ft)	175	838	646
Turn Bay Length (ft)			
Base Capacity (vph)	898	1068	2080
Starvation Cap Reductn	83	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.53	0.34

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	138	96	366	291	159	290	1510	299	140	1227	33
Future Volume (vph)	68	138	96	366	291	159	290	1510	299	140	1227	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	5.0		4.5	5.0		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	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		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	1.00
Frt	1.00	0.94		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1630	1617		1614	1602		1630	3107	1417	1646	3107	1488
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1630	1617		1614	1602		1630	3107	1417	1646	3107	1488
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)	72	145	101	385	306	167	305	1589	315	147	1292	35
RTOR Reduction (vph)	0	17	0	0	14	0	0	0	187	0	0	24
Lane Group Flow (vph)	72	229	0	385	459	0	305	1589	128	147	1292	11
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	1%	1%	3%	1%	8%	2%	7%	5%	1%	7%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Prot	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6	6	5	2	
Permitted Phases												2
Actuated Green, G (s)	9.1	29.1		24.6	44.6		22.6	57.3	57.3	10.5	45.2	45.2
Effective Green, g (s)	9.1	29.1		24.6	44.6		22.6	57.3	57.3	10.5	45.2	45.2
Actuated g/C Ratio	0.06	0.21		0.17	0.32		0.16	0.40	0.40	0.07	0.32	0.32
Clearance Time (s)	4.5	5.0		4.5	5.0		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
Lane Grp Cap (vph)	104	332		280	504		260	1258	573	122	992	475
v/s Ratio Prot	0.04	0.14		c0.24	c0.29		c0.19	c0.51	0.09	0.09	0.42	
v/s Ratio Perm												0.01
v/c Ratio	0.69	0.69		1.38	0.91		1.17	1.26	0.22	1.20	1.30	0.02
Uniform Delay, d1	64.8	52.0		58.4	46.5		59.5	42.1	27.5	65.5	48.1	33.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.1	5.8		189.7	20.7		110.9	124.9	0.2	146.7	143.5	0.0
Delay (s)	82.9	57.8		248.2	67.2		170.3	167.0	27.7	212.2	191.6	33.0
Level of Service	F	E		F	E		F	F	C	F	F	C
Approach Delay (s)		63.5			148.4			147.6			189.9	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	155.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	141.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	72	246	385	473	305	1589	315	147	1292	35
v/c Ratio	0.69	0.70	1.38	0.91	1.17	1.27	0.41	1.20	1.30	0.06
Control Delay	98.4	58.3	232.4	67.6	161.7	161.8	4.8	199.3	182.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.4	58.3	232.4	67.6	161.7	161.8	4.8	199.3	182.4	0.2
Queue Length 50th (ft)	67	193	~479	405	~343	~990	0	~168	~820	0
Queue Length 95th (ft)	#151	290	#725	#565	#565	#1205	64	#331	#1022	0
Internal Link Dist (ft)		838		3278		1074			1019	
Turn Bay Length (ft)	150		450		275		575	350		100
Base Capacity (vph)	109	451	280	614	260	1256	760	122	992	573
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.55	1.38	0.77	1.17	1.27	0.41	1.20	1.30	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	63	1505	0	0	0	0	0	32	24
Future Volume (vph)	0	0	0	63	1505	0	0	0	0	0	32	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.95	
Frpb, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.94	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					3256						3091	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					3256						3091	
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)	0	0	0	68	1636	0	0	0	0	0	35	26
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1701	0	0	0	0	0	37	0
Confl. Peds. (#/hr)	3		1	1		3	3		2	2		3
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					59.8						5.1	
Effective Green, g (s)					59.8						5.1	
Actuated g/C Ratio					0.81						0.07	
Clearance Time (s)					4.5						4.5	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					2634						213	
v/s Ratio Prot											c0.01	
v/s Ratio Perm					0.52							
v/c Ratio					0.65						0.17	
Uniform Delay, d1					2.8						32.4	
Progression Factor					1.00						1.00	
Incremental Delay, d2					0.6						0.4	
Delay (s)					3.4						32.8	
Level of Service					A						C	
Approach Delay (s)		0.0			3.4			0.0			32.8	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	SBT
Lane Group Flow (vph)	1704	61
v/c Ratio	0.62	0.19
Control Delay	4.1	25.6
Queue Delay	0.2	0.0
Total Delay	4.3	25.6
Queue Length 50th (ft)	121	8
Queue Length 95th (ft)	187	30
Internal Link Dist (ft)	472	448
Turn Bay Length (ft)		
Base Capacity (vph)	3014	860
Starvation Cap Reductn	444	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.66	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1096	20	409	143	0	0	0	0
Future Volume (vph)	0	0	0	0	1096	20	409	143	0	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				
Lane Util. Factor					0.95		0.91	0.91				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	0.97				
Satd. Flow (prot)					3251		1482	3056				
Flt Permitted					1.00		0.95	0.97				
Satd. Flow (perm)					3251		1482	3056				
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)	0	0	0	0	1191	22	445	155	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	51	51	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1212	0	171	327	0	0	0	0
Confl. Peds. (#/hr)	3					3	1					1
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Actuated Green, G (s)					32.1		14.5	14.5				
Effective Green, g (s)					32.1		14.5	14.5				
Actuated g/C Ratio					0.58		0.26	0.26				
Clearance Time (s)					4.5		4.5	4.5				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1876		386	796				
v/s Ratio Prot					c0.37							
v/s Ratio Perm							c0.12	0.11				
v/c Ratio					0.65		0.44	0.41				
Uniform Delay, d1					7.9		17.2	17.0				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.8		0.8	0.3				
Delay (s)					8.7		18.0	17.4				
Level of Service					A		B	B				
Approach Delay (s)		0.0			8.7			17.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1213	222	378
v/c Ratio	0.66	0.51	0.45
Control Delay	10.7	18.7	17.3
Queue Delay	0.0	0.0	0.0
Total Delay	10.7	18.7	17.3
Queue Length 50th (ft)	119	43	43
Queue Length 95th (ft)	264	141	110
Internal Link Dist (ft)	765		275
Turn Bay Length (ft)			
Base Capacity (vph)	2980	983	2002
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.23	0.19

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	121	653	0	0	0	0	0	660	361
Future Volume (vph)	0	0	0	121	653	0	0	0	0	0	660	361
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.95	
Frpb, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.95	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3217						3112	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3217						3112	
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	0	0	130	702	0	0	0	0	0	710	388
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	41	0
Lane Group Flow (vph)	0	0	0	0	817	0	0	0	0	0	1057	0
Confl. Peds. (#/hr)			2	2			2		2	2		2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%	0%
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					26.2						36.7	
Effective Green, g (s)					26.2						36.7	
Actuated g/C Ratio					0.36						0.51	
Clearance Time (s)					4.5						4.5	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					1172						1588	
v/s Ratio Prot											c0.34	
v/s Ratio Perm					0.25							
v/c Ratio					0.70						0.67	
Uniform Delay, d1					19.5						13.0	
Progression Factor					1.00						1.00	
Incremental Delay, d2					1.8						1.1	
Delay (s)					21.3						14.1	
Level of Service					C						B	
Approach Delay (s)		0.0			21.3			0.0			14.1	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	SBT
Lane Group Flow (vph)	832	1098
v/c Ratio	0.71	0.68
Control Delay	24.3	15.1
Queue Delay	0.3	0.0
Total Delay	24.7	15.1
Queue Length 50th (ft)	155	165
Queue Length 95th (ft)	298	291
Internal Link Dist (ft)	179	644
Turn Bay Length (ft)		
Base Capacity (vph)	1745	2423
Starvation Cap Reductn	386	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.61	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	650	192	108	645	0	0	0	0
Future Volume (vph)	0	0	0	0	650	192	108	645	0	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				
Lane Util. Factor					0.95	1.00	0.91	0.91				
Frpb, ped/bikes					1.00	0.99	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					3228	1440	1513	3182				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					3228	1440	1513	3182				
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)	0	0	0	0	707	209	117	701	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	100	47	9	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	707	109	58	704	0	0	0	0
Confl. Peds. (#/hr)	1					1			1	1		
Heavy Vehicles (%)	0%	0%	0%	0%	3%	2%	0%	0%	0%	0%	0%	0%
Turn Type					NA	Perm	Perm	NA				
Protected Phases					4			6				
Permitted Phases						4	6					
Actuated Green, G (s)					20.5	20.5	20.4	20.4				
Effective Green, g (s)					20.5	20.5	20.4	20.4				
Actuated g/C Ratio					0.41	0.41	0.41	0.41				
Clearance Time (s)					4.5	4.5	4.5	4.5				
Vehicle Extension (s)					3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)					1326	591	618	1300				
v/s Ratio Prot					c0.22							
v/s Ratio Perm						0.08	0.04	0.22				
v/c Ratio					0.53	0.19	0.09	0.54				
Uniform Delay, d1					11.1	9.4	9.1	11.2				
Progression Factor					1.00	1.00	1.00	1.00				
Incremental Delay, d2					0.4	0.2	0.1	0.5				
Delay (s)					11.5	9.5	9.1	11.7				
Level of Service					B	A	A	B				
Approach Delay (s)		0.0			11.1			11.3			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	707	209	105	713
v/c Ratio	0.54	0.31	0.16	0.55
Control Delay	13.8	4.9	5.3	13.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.8	4.9	5.3	13.7
Queue Length 50th (ft)	73	6	4	75
Queue Length 95th (ft)	164	47	35	169
Internal Link Dist (ft)	478			255
Turn Bay Length (ft)		125	75	
Base Capacity (vph)	2685	1225	1379	2885
Starvation Cap Reductn	0	0	0	99
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.17	0.08	0.26

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	SEL	SER
Lane Configurations									
Traffic Volume (vph)	542	166	374	1556	1253	436	0	0	0
Future Volume (vph)	542	166	374	1556	1253	436	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	5.5	5.5				
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95				
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00				
Frt	1.00	0.85	1.00	1.00	0.96				
Flt Protected	0.95	1.00	0.95	1.00	1.00				
Satd. Flow (prot)	3131	1473	3162	3167	3021				
Flt Permitted	0.95	1.00	0.95	1.00	1.00				
Satd. Flow (perm)	3131	1473	3162	3167	3021				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	571	175	394	1638	1319	459	0	0	0
RTOR Reduction (vph)	0	133	0	0	0	0	0	0	0
Lane Group Flow (vph)	571	42	394	1638	1778	0	0	0	0
Confl. Bikes (#/hr)						1			
Heavy Vehicles (%)	3%	1%	2%	5%	6%	3%	2%	2%	2%
Turn Type	Prot	Perm	Prot	NA	NA		Perm		
Protected Phases	8		1	6	2				
Permitted Phases		3					2		
Actuated Green, G (s)	28.8	28.8	21.8	93.2	66.9				
Effective Green, g (s)	28.8	28.8	21.8	93.2	66.9				
Actuated g/C Ratio	0.22	0.22	0.17	0.71	0.51				
Clearance Time (s)	4.5	4.5	4.5	5.5	5.5				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	683	321	522	2236	1531				
v/s Ratio Prot	c0.18		0.12	c0.52	c0.59				
v/s Ratio Perm		0.03							
v/c Ratio	0.84	0.13	0.75	0.73	1.16				
Uniform Delay, d1	49.3	41.5	52.6	11.8	32.5				
Progression Factor	1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	8.7	0.2	6.1	1.3	80.3				
Delay (s)	58.1	41.7	58.7	13.1	112.8				
Level of Service	E	D	E	B	F				
Approach Delay (s)	54.2			21.9	112.8			0.0	
Approach LOS	D			C	F			A	

Intersection Summary			
HCM 2000 Control Delay	62.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	132.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	571	175	394	1638	1778
v/c Ratio	0.84	0.39	0.76	0.73	1.16
Control Delay	61.5	9.2	62.9	15.0	112.1
Queue Delay	0.1	0.0	0.0	0.0	0.0
Total Delay	61.5	9.2	62.9	15.0	112.1
Queue Length 50th (ft)	242	3	168	410	~951
Queue Length 95th (ft)	328	66	237	595	#1276
Internal Link Dist (ft)	383			2738	1074
Turn Bay Length (ft)		200	325		
Base Capacity (vph)	870	532	783	2497	1529
Starvation Cap Reductn	11	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.33	0.50	0.66	1.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

MOVEMENT SUMMARY

Site: [21 - SW Helmholtz @ OR 126]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Helmholtz Way											
3	L2	36	0.0	0.550	15.1	LOS C	2.9	73.3	0.75	0.84	30.5
8	T1	315	0.0	0.550	15.1	LOS C	2.9	73.3	0.75	0.84	30.4
18	R2	128	1.0	0.228	9.4	LOS A	0.8	21.0	0.65	0.65	31.9
Approach		479	0.3	0.550	13.6	LOS B	2.9	73.3	0.73	0.79	30.8
East: OR 126											
1	L2	173	3.0	0.917	34.8	LOS D	14.8	379.2	1.00	1.37	24.0
6	T1	645	3.0	0.917	34.8	LOS D	14.8	379.2	1.00	1.37	23.9
16	R2	103	0.0	0.123	5.5	LOS A	0.5	11.7	0.50	0.44	33.8
Approach		921	2.7	0.917	31.5	LOS D	14.8	379.2	0.94	1.27	24.7
North: SW Helmholtz Way											
7	L2	38	0.0	0.226	8.4	LOS A	0.8	20.6	0.62	0.62	33.0
4	T1	105	8.0	0.226	8.4	LOS A	0.8	20.6	0.62	0.62	32.7
14	R2	96	0.0	0.159	7.9	LOS A	0.6	14.4	0.62	0.62	32.6
Approach		239	3.5	0.226	8.2	LOS A	0.8	20.6	0.62	0.62	32.7
West: OR 126											
5	L2	162	0.0	0.841	23.0	LOS C	11.4	294.1	0.92	0.99	27.4
2	T1	705	5.0	0.841	23.0	LOS C	11.4	294.1	0.92	0.99	27.3
12	R2	68	5.0	0.072	4.4	LOS A	0.3	6.7	0.40	0.28	34.2
Approach		936	4.1	0.841	21.6	LOS C	11.4	294.1	0.88	0.94	27.7
All Vehicles		2575	2.8	0.917	22.4	LOS C	14.8	379.2	0.85	1.00	27.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	732	48	236	869	233	70	328	132	214	285	70
Future Volume (vph)	162	732	48	236	869	233	70	328	132	214	285	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.7	5.0		4.7	5.0		4.7	5.0		4.7	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	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	0.99		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
Frt	1.00	0.99		1.00	0.97		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)	1662	1671		1662	1647		1583	1636		1630	1733	1410
Flt Permitted	0.10	1.00		0.09	1.00		0.36	1.00		0.16	1.00	1.00
Satd. Flow (perm)	179	1671		160	1647		606	1636		272	1733	1410
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)	171	771	51	248	915	245	74	345	139	225	300	74
RTOR Reduction (vph)	0	2	0	0	10	0	0	14	0	0	0	56
Lane Group Flow (vph)	171	820	0	248	1150	0	74	470	0	225	300	18
Confl. Peds. (#/hr)	1					1	1		1	1		1
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	5%	2%	1%	2%	1%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	45.4	39.1		56.0	45.0		28.9	23.9		31.5	25.2	25.2
Effective Green, g (s)	45.4	39.1		56.0	45.0		28.9	23.9		31.5	25.2	25.2
Actuated g/C Ratio	0.45	0.39		0.56	0.45		0.29	0.24		0.31	0.25	0.25
Clearance Time (s)	4.7	5.0		4.7	5.0		4.7	5.0		4.7	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	173	647		270	734		221	387		169	432	352
v/s Ratio Prot	0.06	0.49		c0.11	c0.70		0.02	0.29		c0.08	0.17	
v/s Ratio Perm	0.38			0.40			0.08			c0.33		0.01
v/c Ratio	0.99	1.27		0.92	1.57		0.33	1.21		1.33	0.69	0.05
Uniform Delay, d1	24.0	30.9		29.0	28.0		27.4	38.5		32.6	34.4	28.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	64.4	132.0		33.6	261.7		0.9	117.5		183.8	4.8	0.1
Delay (s)	88.4	162.9		62.6	289.6		28.3	156.0		216.4	39.2	28.8
Level of Service	F	F		E	F		C	F		F	D	C
Approach Delay (s)		150.1			249.6			139.1			104.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	180.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	19.4
Intersection Capacity Utilization	131.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	171	822	248	1160	74	484	225	300	74
v/c Ratio	0.98	1.25	0.91	1.54	0.31	1.24	1.33	0.69	0.15
Control Delay	88.0	156.0	60.7	276.6	26.5	162.0	212.5	44.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.0	156.0	60.7	276.6	26.5	162.0	212.5	44.5	0.7
Queue Length 50th (ft)	60	~663	108	~1051	32	~377	~144	179	0
Queue Length 95th (ft)	#198	#898	#255	#1304	65	#577	#298	#300	0
Internal Link Dist (ft)		5185		1541		2675		2548	
Turn Bay Length (ft)	225		275		125		150		150
Base Capacity (vph)	174	655	274	751	240	390	169	436	486
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	1.25	0.91	1.54	0.31	1.24	1.33	0.69	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	848	9	294	1133	386	21	219	196	258	180	107
Future Volume (vph)	146	848	9	294	1133	386	21	219	196	258	180	107
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	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.99	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		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3223		1662	3292	1414	1662	1733	1468	1662	1733	1467
Flt Permitted	0.13	1.00		0.12	1.00	1.00	0.64	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	224	3223		212	3292	1414	1115	1733	1468	635	1733	1467
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)	155	902	10	313	1205	411	22	233	209	274	191	114
RTOR Reduction (vph)	0	1	0	0	0	188	0	0	162	0	0	83
Lane Group Flow (vph)	155	911	0	313	1205	223	22	233	47	274	191	31
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	5%	3%	0%	0%	1%	3%	0%	1%	0%	0%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	36.2	29.7		47.8	36.8	43.3	22.0	19.6	19.6	30.2	23.7	23.7
Effective Green, g (s)	36.2	29.7		47.8	36.8	43.3	22.0	19.6	19.6	30.2	23.7	23.7
Actuated g/C Ratio	0.41	0.34		0.55	0.42	0.50	0.25	0.22	0.22	0.35	0.27	0.27
Clearance Time (s)	4.5	4.5		4.5	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	3.0	3.0	3.0
Lane Grp Cap (vph)	193	1095		341	1386	773	295	388	329	295	469	397
v/s Ratio Prot	0.06	0.28		c0.14	0.37	0.02	0.00	0.13		c0.07	0.11	
v/s Ratio Perm	0.27			c0.36		0.14	0.02		0.03	c0.25		0.02
v/c Ratio	0.80	0.83		0.92	0.87	0.29	0.07	0.60	0.14	0.93	0.41	0.08
Uniform Delay, d1	18.8	26.6		22.3	23.1	13.0	24.8	30.4	27.2	27.2	26.1	23.7
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	20.9	5.5		28.5	6.1	0.2	0.1	2.6	0.2	33.8	0.6	0.1
Delay (s)	39.7	32.1		50.9	29.2	13.2	24.9	33.0	27.4	61.0	26.7	23.8
Level of Service	D	C		D	C	B	C	C	C	E	C	C
Approach Delay (s)		33.2			29.3			30.1			42.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	912	313	1205	411	22	233	209	274	191	114
v/c Ratio	0.78	0.81	0.89	0.84	0.46	0.06	0.68	0.46	1.00	0.39	0.22
Control Delay	43.4	32.6	49.1	29.3	3.7	19.2	41.7	7.6	82.9	28.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	32.6	49.1	29.3	3.7	19.2	41.7	7.6	82.9	28.9	2.5
Queue Length 50th (ft)	36	224	111	287	8	8	116	0	116	76	0
Queue Length 95th (ft)	#155	#372	#302	#482	57	23	190	53	#274	156	17
Internal Link Dist (ft)		394		1820			1014			2700	
Turn Bay Length (ft)	225		200		200	200		175	250		250
Base Capacity (vph)	200	1146	351	1444	903	349	657	686	275	657	658
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.80	0.89	0.83	0.46	0.06	0.35	0.30	1.00	0.29	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	1065	59	47	1384	48	278	86	82	37	36	90
Future Volume (vph)	48	1065	59	47	1384	48	278	86	82	37	36	90
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	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	0.99		1.00	0.99			0.98			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1662	3204		1662	3243			1625			1559	
Flt Permitted	0.08	1.00		0.12	1.00			0.69			0.86	
Satd. Flow (perm)	143	3204		208	3243			1161			1353	
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)	52	1158	64	51	1504	52	302	93	89	40	39	98
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	9	0
Lane Group Flow (vph)	52	1222	0	51	1553	0	0	484	0	0	168	0
Confl. Peds. (#/hr)	1		8	8		1	6		1	1		6
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	1%	3%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	49.0	49.0		49.0	49.0			41.8			41.8	
Effective Green, g (s)	49.0	49.0		49.0	49.0			41.8			41.8	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.42			0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	70	1589		103	1608			491			572	
v/s Ratio Prot		0.38			c0.48							
v/s Ratio Perm	0.36			0.25				c0.42			0.12	
v/c Ratio	0.74	0.77		0.50	0.97			0.99			0.29	
Uniform Delay, d1	19.9	20.3		16.6	24.1			28.2			18.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	34.2	2.3		3.7	15.0			36.6			0.3	
Delay (s)	54.1	22.6		20.3	39.1			64.8			19.1	
Level of Service	D	C		C	D			E			B	
Approach Delay (s)		23.9			38.5			64.8			19.1	
Approach LOS		C			D			E			B	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	52	1222	51	1556	484	177
v/c Ratio	0.73	0.77	0.50	0.97	0.99	0.30
Control Delay	78.5	24.7	38.1	41.0	67.1	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	24.7	38.1	41.0	67.1	18.7
Queue Length 50th (ft)	25	325	21	490	294	65
Queue Length 95th (ft)	#101	414	#77	#672	#509	116
Internal Link Dist (ft)		1820		1191	423	675
Turn Bay Length (ft)	125		125			
Base Capacity (vph)	71	1588	102	1610	505	597
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.77	0.50	0.97	0.96	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	855	384	0	0	0	0	0	0	14	86	0
Future Volume (vph)	0	855	384	0	0	0	0	0	0	14	86	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5									4.0	
Lane Util. Factor		0.95									0.95	
Frpb, ped/bikes		1.00									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3096									3302	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3096									3302	
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)	0	929	417	0	0	0	0	0	0	15	93	0
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1300	0	0	0	0	0	0	0	0	94	0
Confl. Peds. (#/hr)							3					3
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA								Perm	NA	
Protected Phases		2									4	
Permitted Phases										4		
Actuated Green, G (s)		37.7									5.6	
Effective Green, g (s)		37.7									5.6	
Actuated g/C Ratio		0.73									0.11	
Clearance Time (s)		4.5									4.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2253									356	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.03	
v/c Ratio		0.58									0.26	
Uniform Delay, d1		3.3									21.2	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.4									0.4	
Delay (s)		3.7									21.6	
Level of Service		A									C	
Approach Delay (s)		3.7			0.0			0.0			21.6	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	5.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	8.5
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	SBT
Lane Group Flow (vph)	1346	108
v/c Ratio	0.56	0.22
Control Delay	4.3	20.1
Queue Delay	0.0	0.0
Total Delay	4.3	20.1
Queue Length 50th (ft)	66	13
Queue Length 95th (ft)	123	36
Internal Link Dist (ft)	1097	269
Turn Bay Length (ft)		
Base Capacity (vph)	3098	1491
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	866	0	0	0	0	0	508	144	0	0	0
Future Volume (vph)	38	866	0	0	0	0	0	508	144	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			
Lane Util. Factor		0.95						0.95	1.00			
Frpb, ped/bikes		1.00						1.00	1.00			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		1.00						1.00	1.00			
Satd. Flow (prot)		3250						3260	1488			
Flt Permitted		1.00						1.00	1.00			
Satd. Flow (perm)		3250						3260	1488			
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)	41	931	0	0	0	0	0	546	155	0	0	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	70	0	0	0
Lane Group Flow (vph)	0	964	0	0	0	0	0	546	85	0	0	0
Confl. Peds. (#/hr)							2					2
Heavy Vehicles (%)	4%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Turn Type	Perm	NA						NA	Perm			
Protected Phases		2						8				
Permitted Phases	2								8			
Actuated Green, G (s)		24.6						16.3	16.3			
Effective Green, g (s)		24.6						16.3	16.3			
Actuated g/C Ratio		0.49						0.33	0.33			
Clearance Time (s)		4.5						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1602						1064	486			
v/s Ratio Prot								c0.17				
v/s Ratio Perm		0.30							0.06			
v/c Ratio		0.60						0.51	0.17			
Uniform Delay, d1		9.1						13.6	12.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.6						0.4	0.2			
Delay (s)		9.8						14.0	12.2			
Level of Service		A						B	B			
Approach Delay (s)		9.8			0.0			13.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	972	546	155
v/c Ratio	0.61	0.52	0.28
Control Delay	11.5	16.7	7.8
Queue Delay	0.0	0.0	0.0
Total Delay	11.5	16.7	7.8
Queue Length 50th (ft)	94	64	10
Queue Length 95th (ft)	194	141	53
Internal Link Dist (ft)	460	568	
Turn Bay Length (ft)			175
Base Capacity (vph)	3043	2567	1193
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.21	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱							↰	↑↑	
Traffic Volume (vph)	0	884	69	0	0	0	0	0	0	168	589	0
Future Volume (vph)	0	884	69	0	0	0	0	0	0	168	589	0
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	
Lane Util. Factor		0.95	1.00							1.00	0.95	
Frpb, ped/bikes		1.00	0.99							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3260	1469							1657	3292	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3260	1469							1657	3292	
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)	0	931	73	0	0	0	0	0	0	177	620	0
RTOR Reduction (vph)	0	0	30	0	0	0	0	0	0	67	0	0
Lane Group Flow (vph)	0	931	43	0	0	0	0	0	0	110	620	0
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		2									4	
Permitted Phases			2							4		
Actuated Green, G (s)		25.7	25.7							19.9	19.9	
Effective Green, g (s)		25.7	25.7							19.9	19.9	
Actuated g/C Ratio		0.48	0.48							0.37	0.37	
Clearance Time (s)		4.0	4.0							4.0	4.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		1563	704							615	1222	
v/s Ratio Prot		c0.29									c0.19	
v/s Ratio Perm			0.03							0.07		
v/c Ratio		0.60	0.06							0.18	0.51	
Uniform Delay, d1		10.2	7.5							11.3	13.1	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.6	0.0							0.1	0.3	
Delay (s)		10.8	7.5							11.5	13.4	
Level of Service		B	A							B	B	
Approach Delay (s)		10.5			0.0			0.0			13.0	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	931	73	177	620
v/c Ratio	0.60	0.10	0.26	0.51
Control Delay	13.0	4.4	7.6	16.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.0	4.4	7.6	16.0
Queue Length 50th (ft)	99	2	13	73
Queue Length 95th (ft)	217	24	62	166
Internal Link Dist (ft)	782			261
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	2939	1330	1269	2474
Starvation Cap Reductn	0	0	0	102
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.05	0.14	0.26

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	407	658	0	0	0	0	0	324	51	0	0	0
Future Volume (vph)	407	658	0	0	0	0	0	324	51	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				
Lane Util. Factor	0.91	0.91						0.95				
Frt	1.00	1.00						0.98				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1513	3114						3257				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1513	3114						3257				
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)	438	708	0	0	0	0	0	348	55	0	0	0
RTOR Reduction (vph)	153	8	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	219	766	0	0	0	0	0	388	0	0	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA						NA				
Protected Phases		8						6				
Permitted Phases	8											
Actuated Green, G (s)	21.7	21.7						11.5				
Effective Green, g (s)	21.7	21.7						11.5				
Actuated g/C Ratio	0.51	0.51						0.27				
Clearance Time (s)	4.5	4.5						4.5				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	778	1601						887				
v/s Ratio Prot								c0.12				
v/s Ratio Perm	0.15	0.25										
v/c Ratio	0.28	0.48						0.44				
Uniform Delay, d1	5.8	6.6						12.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.2	0.2						0.3				
Delay (s)	6.0	6.8						13.0				
Level of Service	A	A						B				
Approach Delay (s)		6.6			0.0			13.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	372	774	403
v/c Ratio	0.40	0.49	0.45
Control Delay	2.9	7.9	15.3
Queue Delay	0.1	0.0	0.0
Total Delay	3.0	7.9	15.3
Queue Length 50th (ft)	6	52	37
Queue Length 95th (ft)	43	114	94
Internal Link Dist (ft)		156	664
Turn Bay Length (ft)	75		
Base Capacity (vph)	1480	3030	2867
Starvation Cap Reductn	225	495	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.30	0.31	0.14

Intersection Summary

MOVEMENT SUMMARY

Site: [29 - SE 9th St @ OR 126]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SE 9th St											
3	L2	36	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	32.6
8	T1	33	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	32.5
18	R2	43	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	31.6
Approach		112	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	32.2
East: OR 126											
1	L2	30	1.0	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	32.9
6	T1	415	4.0	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	32.8
16	R2	160	6.0	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	31.8
Approach		605	4.4	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	32.5
North: SE 9th St											
7	L2	180	6.0	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	31.2
4	T1	24	1.0	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	31.3
14	R2	138	4.0	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	30.4
Approach		342	4.8	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	30.9
West: OR 126											
5	L2	82	2.0	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	31.5
2	T1	540	3.0	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	31.5
12	R2	27	1.0	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	30.7
Approach		649	2.8	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	31.5
All Vehicles		1709	3.6	0.621	10.5	LOS B	5.2	131.8	0.61	0.51	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	31	57	22	30	1	117	396	18	4	248	80
Future Volume (vph)	35	31	57	22	30	1	117	396	18	4	248	80
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			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	
Frt		0.94			1.00		1.00	0.99		1.00	0.96	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1559			1709		1614	1722		1662	1665	
Flt Permitted		0.90			0.85		0.38	1.00		0.50	1.00	
Satd. Flow (perm)		1419			1479		650	1722		872	1665	
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)	39	34	63	24	33	1	130	440	20	4	276	89
RTOR Reduction (vph)	0	39	0	0	1	0	0	2	0	0	15	0
Lane Group Flow (vph)	0	97	0	0	57	0	130	458	0	4	350	0
Confl. Peds. (#/hr)	1		1	1		1						
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	3%	0%	4%	0%	0%	0%	3%	1%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		8.9			8.9		28.1	22.9		19.3	18.5	
Effective Green, g (s)		8.9			8.9		28.1	22.9		19.3	18.5	
Actuated g/C Ratio		0.20			0.20		0.62	0.50		0.42	0.41	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		276			288		510	864		382	675	
v/s Ratio Prot							c0.03	c0.27		0.00	0.21	
v/s Ratio Perm		c0.07			0.04		0.13			0.00		
v/c Ratio		0.35			0.20		0.25	0.53		0.01	0.52	
Uniform Delay, d1		15.9			15.4		4.2	7.7		7.6	10.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8			0.3		0.3	0.6		0.0	0.7	
Delay (s)		16.6			15.7		4.5	8.3		7.6	10.9	
Level of Service		B			B		A	A		A	B	
Approach Delay (s)		16.6			15.7			7.5			10.8	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	45.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	58	130	460	4	365
v/c Ratio	0.41	0.19	0.24	0.50	0.01	0.58
Control Delay	16.4	18.4	5.3	9.4	4.2	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	18.4	5.3	9.4	4.2	15.2
Queue Length 50th (ft)	18	12	11	46	0	66
Queue Length 95th (ft)	70	44	33	197	3	152
Internal Link Dist (ft)	1098	1419		1239		2675
Turn Bay Length (ft)			75		125	
Base Capacity (vph)	946	969	552	1604	555	1540
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.06	0.24	0.29	0.01	0.24

Intersection Summary

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	2	18	0	2	13	11	370	11	14	257	47
Future Vol, veh/h	41	2	18	0	2	13	11	370	11	14	257	47
Conflicting Peds, #/hr	4	0	0	0	0	4	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	44	2	19	0	2	14	12	394	12	15	273	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	765	759	300	762	778	403	325	0	0	405	0	0
Stage 1	330	330	-	423	423	-	-	-	-	-	-	-
Stage 2	435	429	-	339	355	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	323	338	744	324	330	652	1246	-	-	1165	-	-
Stage 1	687	649	-	613	591	-	-	-	-	-	-	-
Stage 2	604	587	-	680	633	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	306	328	743	307	320	650	1246	-	-	1161	-	-
Mov Cap-2 Maneuver	306	328	-	307	320	-	-	-	-	-	-	-
Stage 1	677	637	-	606	584	-	-	-	-	-	-	-
Stage 2	580	580	-	650	622	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	11.5	0.2	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	371	571	1161	-	-
HCM Lane V/C Ratio	0.009	-	-	0.175	0.028	0.013	-	-
HCM Control Delay (s)	7.9	0	-	16.7	11.5	8.1	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	219	129	139	385	212	131	268	89	185	356	10
Future Volume (vph)	9	219	129	139	385	212	131	268	89	185	356	10
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	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	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	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1661	1699	1473	1646	3228	1438	1646	1733	1444	3193	1726	
Flt Permitted	0.52	1.00	1.00	0.40	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	902	1699	1473	699	3228	1438	1646	1733	1444	3193	1726	
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)	9	228	134	145	401	221	136	279	93	193	371	10
RTOR Reduction (vph)	0	0	80	0	0	146	0	0	55	0	1	0
Lane Group Flow (vph)	9	228	54	145	401	75	136	279	38	193	380	0
Confl. Peds. (#/hr)	3					3	3		1	1		3
Heavy Vehicles (%)	0%	3%	1%	1%	3%	1%	1%	1%	2%	1%	1%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases	2		2	6		6			8			
Actuated Green, G (s)	20.2	19.2	30.3	30.4	25.4	25.4	11.1	23.4	30.6	8.7	21.0	
Effective Green, g (s)	20.2	19.2	30.3	30.4	25.4	25.4	11.1	23.4	30.6	8.7	21.0	
Actuated g/C Ratio	0.27	0.26	0.41	0.41	0.34	0.34	0.15	0.31	0.41	0.12	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	254	437	678	376	1100	490	245	544	670	372	486	
v/s Ratio Prot	0.00	c0.13	0.01	c0.04	0.12		c0.08	0.16	0.01	0.06	c0.22	
v/s Ratio Perm	0.01		0.03	0.12		0.05			0.02			
v/c Ratio	0.04	0.52	0.08	0.39	0.36	0.15	0.56	0.51	0.06	0.52	0.78	
Uniform Delay, d1	19.9	23.7	13.6	14.8	18.5	17.1	29.4	20.9	13.2	30.9	24.6	
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	1.1	0.1	0.7	0.2	0.1	2.7	0.8	0.0	1.2	8.0	
Delay (s)	20.0	24.8	13.6	15.5	18.7	17.2	32.1	21.7	13.3	32.2	32.7	
Level of Service	B	C	B	B	B	B	C	C	B	C	C	
Approach Delay (s)		20.7			17.7			23.0			32.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	9	228	134	145	401	221	136	279	93	193	381
v/c Ratio	0.03	0.61	0.19	0.41	0.35	0.34	0.54	0.49	0.14	0.50	0.75
Control Delay	17.4	34.7	3.6	21.8	20.8	5.4	39.7	22.7	3.2	37.9	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	34.7	3.6	21.8	20.8	5.4	39.7	22.7	3.2	37.9	33.9
Queue Length 50th (ft)	2	91	0	43	64	0	55	96	0	41	149
Queue Length 95th (ft)	13	189	31	102	150	54	135	182	23	92	284
Internal Link Dist (ft)		693			446			553			1860
Turn Bay Length (ft)	125		200	175		150	225		125	250	
Base Capacity (vph)	366	765	778	354	1455	768	334	932	670	417	803
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.30	0.17	0.41	0.28	0.29	0.41	0.30	0.14	0.46	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	108	319	287	307	147	379	1676	134	59	1313	51
Future Volume (vph)	65	108	319	287	307	147	379	1676	134	59	1313	51
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	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1661	1683	1464	1583	3072		1646	3059		1599	3068	
Flt Permitted	0.25	1.00	1.00	0.50	1.00		0.06	1.00		0.06	1.00	
Satd. Flow (perm)	434	1683	1464	837	3072		102	3059		106	3068	
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)	70	116	343	309	330	158	408	1802	144	63	1412	55
RTOR Reduction (vph)	0	0	31	0	41	0	0	3	0	0	2	0
Lane Group Flow (vph)	70	116	312	309	447	0	408	1943	0	63	1465	0
Confl. Peds. (#/hr)	7					7			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	1%	5%	2%	3%	1%	7%	12%	4%	8%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	27.5	22.4	47.0	34.3	25.8		92.5	78.6		72.8	63.4	
Effective Green, g (s)	27.5	22.4	47.0	34.3	25.8		92.5	78.6		72.8	63.4	
Actuated g/C Ratio	0.20	0.16	0.34	0.25	0.19		0.67	0.57		0.53	0.46	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	132	274	548	255	576		345	1749		158	1415	
v/s Ratio Prot	0.02	0.07	0.10	c0.07	0.15		c0.21	0.64		0.03	0.48	
v/s Ratio Perm	0.09		0.11	c0.23			c0.58			0.18		
v/c Ratio	0.53	0.42	0.57	1.21	0.78		1.18	1.11		0.40	1.04	
Uniform Delay, d1	46.3	51.7	36.9	51.3	53.0		47.1	29.4		28.5	37.0	
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	1.1	1.4	125.9	6.5		107.9	58.6		1.7	33.6	
Delay (s)	50.4	52.8	38.3	177.2	59.5		155.0	88.0		30.2	70.6	
Level of Service	D	D	D	F	E		F	F		C	E	
Approach Delay (s)		43.1			105.1			99.6			69.0	
Approach LOS		D			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	85.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	137.4	Sum of lost time (s)	18.5
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	70	116	343	309	488	408	1946	63	1467
v/c Ratio	0.47	0.44	0.65	1.25	0.78	1.17	1.10	0.33	1.04
Control Delay	49.7	55.9	35.6	181.9	56.1	141.0	81.6	22.1	70.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	55.9	35.6	181.9	56.1	141.0	81.6	22.1	70.4
Queue Length 50th (ft)	48	93	208	~317	199	~387	~1074	18	~743
Queue Length 95th (ft)	89	155	310	#520	263	#652	#1332	60	#977
Internal Link Dist (ft)		446			2921		4483		2738
Turn Bay Length (ft)	175			150		150		175	
Base Capacity (vph)	148	452	528	247	907	349	1777	197	1414
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.26	0.65	1.25	0.54	1.17	1.10	0.32	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

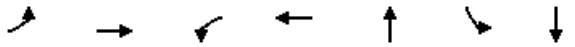
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	119	149	92	246	64
Future Vol, veh/h	32	119	149	92	246	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	9	5	9	4	4
Mvmt Flow	35	129	162	100	267	70
Number of Lanes	1	1	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.1	11.7	12.7
HCM LOS	A	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	79%	0%	0%	62%
Vol Thru, %	0%	100%	0%	38%
Vol Right, %	21%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	310	32	119	241
LT Vol	246	0	0	149
Through Vol	0	32	0	92
RT Vol	64	0	119	0
Lane Flow Rate	337	35	129	262
Geometry Grp	2	7	7	5
Degree of Util (X)	0.474	0.055	0.184	0.386
Departure Headway (Hd)	5.059	5.734	5.128	5.302
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	708	618	691	671
Service Time	3.134	3.533	2.927	3.39
HCM Lane V/C Ratio	0.476	0.057	0.187	0.39
HCM Control Delay	12.7	8.9	9.1	11.7
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	2.6	0.2	0.7	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	586	3	267	349	37	0	5	92	119	10	37
Future Volume (vph)	13	586	3	267	349	37	0	5	92	119	10	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1630	1695		1630	1647			1457		1630	1514	
Flt Permitted	0.52	1.00		0.12	1.00			1.00		0.43	1.00	
Satd. Flow (perm)	891	1695		204	1647			1457		736	1514	
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.92	0.93	0.92	0.93	0.92	0.92	0.92
Adj. Flow (vph)	14	630	3	287	375	40	0	5	99	129	11	40
RTOR Reduction (vph)	0	0	0	0	2	0	0	90	0	0	31	0
Lane Group Flow (vph)	14	633	0	287	413	0	0	14	0	129	20	0
Heavy Vehicles (%)	2%	3%	40%	2%	5%	2%	0%	2%	3%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	29.8	28.7		49.9	43.8			7.0		15.9	15.9	
Effective Green, g (s)	29.8	28.7		49.9	43.8			7.0		15.9	15.9	
Actuated g/C Ratio	0.40	0.38		0.67	0.59			0.09		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	365	650		444	964			136		215	321	
v/s Ratio Prot	0.00	c0.37		c0.14	0.25			0.01		c0.04	0.01	
v/s Ratio Perm	0.01			0.29						c0.09		
v/c Ratio	0.04	0.97		0.65	0.43			0.10		0.60	0.06	
Uniform Delay, d1	13.7	22.7		15.3	8.6			31.0		25.4	23.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	28.6		3.2	0.3			0.3		4.5	0.1	
Delay (s)	13.7	51.3		18.5	8.9			31.4		29.9	23.6	
Level of Service	B	D		B	A			C		C	C	
Approach Delay (s)		50.5			12.8			31.4			28.1	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	14	633	287	415	104	129	51
v/c Ratio	0.03	1.07	0.62	0.40	0.44	0.53	0.14
Control Delay	8.0	84.2	18.7	9.8	15.1	32.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	84.2	18.7	9.8	15.1	32.6	11.4
Queue Length 50th (ft)	2	~318	67	73	2	47	4
Queue Length 95th (ft)	9	#615	156	213	46	101	31
Internal Link Dist (ft)		2626		631	1973		4566
Turn Bay Length (ft)	150		150			100	
Base Capacity (vph)	814	593	611	1034	564	243	545
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.07	0.47	0.40	0.18	0.53	0.09

Intersection Summary

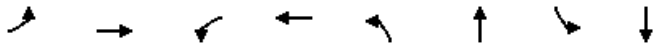
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	59	30	90	126	89	62	430	74	38	270	5
Future Volume (vph)	15	59	30	90	126	89	62	430	74	38	270	5
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		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1660	1650		1645	1596		1662	1697		1662	1711	
Flt Permitted	0.61	1.00		0.54	1.00		0.49	1.00		0.23	1.00	
Satd. Flow (perm)	1061	1650		930	1596		853	1697		399	1711	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	17	67	34	102	143	101	70	489	84	43	307	6
RTOR Reduction (vph)	0	22	0	0	28	0	0	7	0	0	1	0
Lane Group Flow (vph)	17	79	0	102	216	0	70	566	0	43	312	0
Confl. Peds. (#/hr)	3		1	1		3						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	3%	0%	1%	0%	0%	2%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	14.7	13.9		22.7	17.9		29.3	26.4		28.3	25.9	
Effective Green, g (s)	14.7	13.9		22.7	17.9		29.3	26.4		28.3	25.9	
Actuated g/C Ratio	0.22	0.21		0.35	0.27		0.45	0.40		0.43	0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	350		374	436		417	683		218	676	
v/s Ratio Prot	0.00	0.05		c0.02	c0.14		c0.01	c0.33		0.01	0.18	
v/s Ratio Perm	0.01			0.07			0.07			0.08		
v/c Ratio	0.07	0.23		0.27	0.49		0.17	0.83		0.20	0.46	
Uniform Delay, d1	19.9	21.3		15.0	20.0		10.6	17.5		12.2	14.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.4	0.9		0.2	8.2		0.4	0.5	
Delay (s)	20.0	21.7		15.4	20.9		10.8	25.7		12.6	15.1	
Level of Service	C	C		B	C		B	C		B	B	
Approach Delay (s)		21.4			19.3			24.1			14.8	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	17	101	102	244	70	573	43	313
v/c Ratio	0.05	0.31	0.27	0.49	0.14	0.77	0.14	0.43
Control Delay	19.2	23.3	20.8	22.7	9.0	25.3	9.4	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	23.3	20.8	22.7	9.0	25.3	9.4	16.8
Queue Length 50th (ft)	5	27	31	67	11	188	7	88
Queue Length 95th (ft)	19	71	71	168	38	#417	26	194
Internal Link Dist (ft)		602		599		2595		1305
Turn Bay Length (ft)	100		100		75		75	
Base Capacity (vph)	335	771	374	820	503	1120	307	1104
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.13	0.27	0.30	0.14	0.51	0.14	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	216	0	543	0	339	166	316	340	0
Future Volume (vph)	0	0	0	216	0	543	0	339	166	316	340	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					5.0	5.0		5.0	5.0	5.0	5.0	
Lane Util. Factor					1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes					1.00	0.98		1.00	1.00	1.00	1.00	
Flpb, ped/bikes					0.99	1.00		1.00	1.00	1.00	1.00	
Frt					1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected					0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)					1641	1436		1733	1473	1662	1733	
Flt Permitted					0.76	1.00		1.00	1.00	0.31	1.00	
Satd. Flow (perm)					1308	1436		1733	1473	549	1733	
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)	0	0	0	225	0	566	0	353	173	329	354	0
RTOR Reduction (vph)	0	0	0	0	0	327	0	0	120	0	0	0
Lane Group Flow (vph)	0	0	0	0	225	239	0	353	53	329	354	0
Confl. Peds. (#/hr)	4		10	10		4	3					3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	1%	0%	1%	0%
Turn Type				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)					14.9	14.9		17.0	17.0	30.8	30.8	
Effective Green, g (s)					14.9	14.9		17.0	17.0	30.8	30.8	
Actuated g/C Ratio					0.27	0.27		0.31	0.31	0.55	0.55	
Clearance Time (s)					5.0	5.0		5.0	5.0	5.0	5.0	
Vehicle Extension (s)					2.0	2.0		3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)					349	384		528	449	479	958	
v/s Ratio Prot								0.20		c0.11	0.20	
v/s Ratio Perm					c0.17	0.17			0.04	c0.27		
v/c Ratio					0.64	0.62		0.67	0.12	0.69	0.37	
Uniform Delay, d1					18.1	17.9		16.9	13.9	8.2	7.0	
Progression Factor					1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2					3.0	2.2		3.2	0.1	3.3	0.2	
Delay (s)					21.1	20.2		20.1	14.1	11.4	7.2	
Level of Service					C	C		C	B	B	A	
Approach Delay (s)		0.0			20.4			18.1			9.2	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	225	566	353	173	329	354
v/c Ratio	0.65	0.80	0.68	0.31	0.69	0.37
Control Delay	29.0	14.9	25.5	4.8	18.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	14.9	25.5	4.8	18.2	9.3
Queue Length 50th (ft)	67	32	101	0	54	58
Queue Length 95th (ft)	146	#162	206	37	#152	134
Internal Link Dist (ft)	931		2881			465
Turn Bay Length (ft)				100	100	
Base Capacity (vph)	533	850	773	752	487	996
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.67	0.46	0.23	0.68	0.36

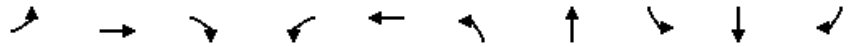
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	21	218	15	33	21	409	1903	16	13	1491	319
Future Volume (vph)	282	21	218	15	33	21	409	1903	16	13	1491	319
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	5.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1563	1579	1436	1661	1594		1646	3194		1662	3107	1426
Flt Permitted	0.52	0.52	1.00	0.65	1.00		0.06	1.00		0.06	1.00	1.00
Satd. Flow (perm)	853	848	1436	1135	1594		96	3194		104	3107	1426
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)	300	22	232	16	35	22	435	2024	17	14	1586	339
RTOR Reduction (vph)	0	0	59	0	17	0	0	0	0	0	0	100
Lane Group Flow (vph)	159	163	173	16	40	0	435	2041	0	14	1586	239
Confl. Peds. (#/hr)	1		1	1		1	2		1	1		2
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	1%	0%	3%	0%	0%	7%	1%	4%	0%	0%	7%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	3	8	1	7	4		1	6		5	2	3
Permitted Phases	8		8	4			6			2		2
Actuated Green, G (s)	27.3	27.3	46.1	15.2	12.9		98.4	90.4		70.3	67.3	76.7
Effective Green, g (s)	27.3	27.3	46.1	15.2	12.9		98.4	90.4		70.3	67.3	76.7
Actuated g/C Ratio	0.20	0.20	0.34	0.11	0.09		0.72	0.66		0.51	0.49	0.56
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	219	219	536	135	150		365	2112		87	1529	800
v/s Ratio Prot	0.05	c0.05	0.06	0.00	0.02		c0.23	0.64		0.00	0.51	0.02
v/s Ratio Perm	0.09	c0.10	0.06	0.01			c0.63			0.08		0.15
v/c Ratio	0.73	0.74	0.32	0.12	0.27		1.19	0.97		0.16	1.04	0.30
Uniform Delay, d1	50.1	51.4	33.7	54.5	57.5		47.2	21.7		22.3	34.7	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.3	12.8	0.4	0.4	1.0		110.3	12.5		0.9	33.3	0.2
Delay (s)	61.4	64.2	34.0	54.9	58.4		157.5	34.2		23.2	68.0	16.0
Level of Service	E	E	C	D	E		F	C		C	E	B
Approach Delay (s)		50.8			57.7			55.9			58.6	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	56.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	136.7	Sum of lost time (s)	21.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	159	163	232	16	57	435	2041	14	1586	339
v/c Ratio	0.79	0.81	0.41	0.09	0.35	1.14	0.92	0.09	1.04	0.37
Control Delay	76.3	78.5	19.9	43.3	44.5	130.0	27.8	10.1	66.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	78.5	19.9	43.3	44.5	130.0	27.8	10.1	66.5	6.0
Queue Length 50th (ft)	129	132	77	11	31	~385	603	3	~758	39
Queue Length 95th (ft)	#207	#215	162	31	74	#670	#1259	12	#1026	110
Internal Link Dist (ft)		931			261		4040		4483	
Turn Bay Length (ft)	150		125	150		100		150		275
Base Capacity (vph)	201	287	564	170	394	380	2213	153	1529	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.57	0.41	0.09	0.14	1.14	0.92	0.09	1.04	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	13	1	46	10	66	6	380	94	72	194	8
Future Volume (vph)	4	13	1	46	10	66	6	380	94	72	194	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		3.5			3.5		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.93		1.00	0.97		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1718			1592		1662	1698		1662	1660	
Flt Permitted		0.94			0.88		0.63	1.00		0.33	1.00	
Satd. Flow (perm)		1632			1435		1098	1698		573	1660	
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)	4	13	1	47	10	68	6	392	97	74	200	8
RTOR Reduction (vph)	0	1	0	0	55	0	0	11	0	0	1	0
Lane Group Flow (vph)	0	17	0	0	70	0	6	478	0	74	207	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		8.5			8.5		21.3	20.5		27.3	23.5	
Effective Green, g (s)		8.5			8.5		21.3	20.5		27.3	23.5	
Actuated g/C Ratio		0.18			0.18		0.46	0.44		0.59	0.51	
Clearance Time (s)		3.5			3.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		299			263		514	751		427	842	
v/s Ratio Prot							0.00	c0.28		c0.01	c0.12	
v/s Ratio Perm		0.01			c0.05		0.01			0.09		
v/c Ratio		0.06			0.27		0.01	0.64		0.17	0.25	
Uniform Delay, d1		15.6			16.2		6.8	10.0		4.8	6.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.5		0.0	1.8		0.2	0.2	
Delay (s)		15.7			16.8		6.8	11.8		5.0	6.6	
Level of Service		B			B		A	B		A	A	
Approach Delay (s)		15.7			16.8			11.7			6.1	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	125	6	489	74	208
v/c Ratio	0.06	0.37	0.01	0.65	0.14	0.23
Control Delay	19.4	14.7	3.7	15.6	4.1	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	14.7	3.7	15.6	4.1	6.4
Queue Length 50th (ft)	4	14	1	102	5	16
Queue Length 95th (ft)	20	61	3	219	19	79
Internal Link Dist (ft)	831	737		9408		839
Turn Bay Length (ft)			250		250	
Base Capacity (vph)	1083	975	641	1504	557	1506
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.13	0.01	0.33	0.13	0.14

Intersection Summary

MOVEMENT SUMMARY

Site: [40 - SW 27th @ SW Wickiup]

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW 27th											
3	L2	195	2.0	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	31.1
8	T1	586	1.0	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	31.1
18	R2	12	0.0	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	30.3
Approach		792	1.2	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	31.1
East: SW Wickiup											
1	L2	9	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.9
6	T1	141	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.9
16	R2	8	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.0
Approach		158	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.8
North: SW 27th											
7	L2	4	0.0	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	34.2
4	T1	271	1.0	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	34.1
14	R2	34	3.0	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	33.1
Approach		309	1.2	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	34.0
West: SW Wickiup											
5	L2	34	3.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	34.6
2	T1	101	1.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	34.6
12	R2	60	0.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	33.6
Approach		195	1.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	34.3
All Vehicles		1453	1.1	0.671	10.0	LOS B	6.4	161.6	0.59	0.44	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [41 - SW 27th @ SW Canal Blvd]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Canal Dr											
3	L2	191	5.0	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	30.7
8	T1	221	1.0	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	30.7
18	R2	127	3.0	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	29.9
Approach		538	2.9	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	30.5
East: SW Yew Ave											
1	L2	110	0.0	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	21.3
6	T1	602	1.0	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	21.3
16	R2	141	0.0	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	20.9
Approach		853	0.7	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	21.2
North: SW Canal Blvd											
7	L2	101	0.0	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	26.3
4	T1	210	1.0	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	26.2
14	R2	77	0.0	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	25.7
Approach		388	0.5	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	26.1
West: SW 27th St											
5	L2	17	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	33.4
2	T1	266	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	33.3
12	R2	66	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	32.4
Approach		350	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	33.1
All Vehicles		2130	1.1	0.976	28.0	LOS D	25.2	633.0	0.85	1.13	25.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	256	232	352	741	0	0	0	0	109	0	183
Future Volume (vph)	0	256	232	352	741	0	0	0	0	109	0	183
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1667	1423	1567	1733						1662	1458
Flt Permitted		1.00	1.00	0.47	1.00						0.95	1.00
Satd. Flow (perm)		1667	1423	776	1733						1662	1458
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)	0	278	252	383	805	0	0	0	0	118	0	199
RTOR Reduction (vph)	0	0	144	0	0	0	0	0	0	0	0	91
Lane Group Flow (vph)	0	278	108	383	805	0	0	0	0	0	118	108
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	0%	5%	2%	6%	1%	0%	0%	0%	0%	0%	0%	2%
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)		23.0	23.0	34.0	34.0						9.7	9.7
Effective Green, g (s)		23.0	23.0	34.0	34.0						9.7	9.7
Actuated g/C Ratio		0.43	0.43	0.63	0.63						0.18	0.18
Clearance Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		713	609	579	1097						300	263
v/s Ratio Prot		0.17		0.07	c0.46							
v/s Ratio Perm			0.08	0.34							0.07	c0.07
v/c Ratio		0.39	0.18	0.66	0.73						0.39	0.41
Uniform Delay, d1		10.5	9.5	5.5	6.7						19.4	19.5
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.4	0.1	2.8	2.6						0.9	1.0
Delay (s)		10.9	9.6	8.3	9.3						20.3	20.5
Level of Service		B	A	A	A						C	C
Approach Delay (s)		10.3			9.0			0.0			20.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	53.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	278	252	383	805	118	199
v/c Ratio	0.39	0.34	0.66	0.73	0.39	0.56
Control Delay	13.4	3.3	13.6	13.4	23.6	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	3.3	13.6	13.4	23.6	16.5
Queue Length 50th (ft)	56	0	46	137	35	25
Queue Length 95th (ft)	127	37	#141	#429	72	75
Internal Link Dist (ft)	1380			488	462	
Turn Bay Length (ft)		75	150			200
Base Capacity (vph)	750	777	579	1137	935	868
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.32	0.66	0.71	0.13	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	250	0	0	662	188	430	1	247	0	0	0
Future Volume (vph)	115	250	0	0	662	188	430	1	247	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0			5.0	5.0	5.0	5.0				
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00				
Frpb, ped/bikes	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				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	1599	1667			1683	1395	1630	1431				
Flt Permitted	0.12	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	205	1667			1683	1395	1630	1431				
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)	125	272	0	0	720	204	467	1	268	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	60	0	173	0	0	0	0
Lane Group Flow (vph)	125	272	0	0	720	144	467	96	0	0	0	0
Confl. Peds. (#/hr)	3		1	1		3						
Heavy Vehicles (%)	4%	5%	0%	0%	4%	4%	2%	0%	4%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA				
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8					
Actuated Green, G (s)	37.3	37.3			27.8	27.8	25.8	25.8				
Effective Green, g (s)	37.3	37.3			27.8	27.8	25.8	25.8				
Actuated g/C Ratio	0.51	0.51			0.38	0.38	0.35	0.35				
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	190	850			640	530	575	505				
v/s Ratio Prot	c0.04	0.16			c0.43			0.07				
v/s Ratio Perm	0.29					0.10	c0.29					
v/c Ratio	0.66	0.32			1.12	0.27	0.81	0.19				
Uniform Delay, d1	15.6	10.5			22.6	15.7	21.5	16.4				
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00				
Incremental Delay, d2	8.0	0.2			75.2	0.3	8.6	0.2				
Delay (s)	23.6	10.7			97.8	15.9	30.0	16.6				
Level of Service	C	B			F	B	C	B				
Approach Delay (s)		14.8			79.8			25.1			0.0	
Approach LOS		B			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	125	272	720	204	467	269
v/c Ratio	0.66	0.32	1.13	0.35	0.81	0.40
Control Delay	31.9	13.4	103.8	11.9	33.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	13.4	103.8	11.9	33.3	4.1
Queue Length 50th (ft)	30	71	~399	33	186	0
Queue Length 95th (ft)	#94	139	#660	91	296	43
Internal Link Dist (ft)		488	979			520
Turn Bay Length (ft)	150			100		
Base Capacity (vph)	190	849	637	588	740	796
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.32	1.13	0.35	0.63	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

MOVEMENT SUMMARY

Site: [44 - SW 19th @ SE Airport Way]

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW 19th St											
3	L2	267	0.0	0.329	7.8	LOS A	1.6	40.7	0.60	0.55	31.5
18	R2	21	8.0	0.329	7.8	LOS A	1.6	40.7	0.60	0.55	30.5
Approach		288	0.6	0.329	7.8	LOS A	1.6	40.7	0.60	0.55	31.4
East: SE Airport Way											
1	L2	10	0.0	0.536	10.4	LOS B	3.5	90.7	0.61	0.50	32.7
6	T1	527	5.0	0.536	10.4	LOS B	3.5	90.7	0.61	0.50	32.5
Approach		537	4.9	0.536	10.4	LOS B	3.5	90.7	0.61	0.50	32.5
West: SE Airport Way											
2	T1	428	3.0	0.427	7.0	LOS A	2.8	73.7	0.09	0.02	34.2
12	R2	123	16.0	0.427	7.0	LOS A	2.8	73.7	0.09	0.02	32.9
Approach		551	5.9	0.427	7.0	LOS A	2.8	73.7	0.09	0.02	33.9
All Vehicles		1376	4.4	0.536	8.5	LOS A	3.5	90.7	0.40	0.32	32.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [45 - SW Helmholtz @ SW Canal]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
NorthEast: SW Canal											
6x	T1	198	1.0	0.240	6.9	LOS A	1.1	27.3	0.58	0.53	34.3
16x	R2	2	0.0	0.240	6.9	LOS A	1.1	27.3	0.58	0.53	33.4
Approach		200	1.0	0.240	6.9	LOS A	1.1	27.3	0.58	0.53	34.3
NorthWest: SW Helmholtz											
7x	L2	7	0.0	0.221	5.4	LOS A	1.0	27.0	0.39	0.26	34.9
14x	R2	233	4.0	0.221	5.4	LOS A	1.0	27.0	0.39	0.26	33.7
Approach		239	3.9	0.221	5.4	LOS A	1.0	27.0	0.39	0.26	33.8
SouthWest: SW Canal											
5x	L2	479	1.0	0.636	10.3	LOS B	7.1	179.4	0.12	0.02	31.3
2x	T1	388	0.0	0.636	10.3	LOS B	7.1	179.4	0.12	0.02	31.3
Approach		867	0.6	0.636	10.3	LOS B	7.1	179.4	0.12	0.02	31.3
All Vehicles		1307	1.2	0.636	8.9	LOS A	7.1	179.4	0.24	0.14	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	197	464	8	359	522	78
Future Volume (vph)	197	464	8	359	522	78
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	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
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1733	1458	1421	1716	1630	1458
Flt Permitted	1.00	1.00	0.45	1.00	0.95	1.00
Satd. Flow (perm)	1733	1458	673	1716	1630	1458
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	504	9	390	567	85
RTOR Reduction (vph)	0	365	0	0	0	36
Lane Group Flow (vph)	214	139	9	390	567	49
Heavy Vehicles (%)	1%	2%	17%	2%	2%	2%
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	4	
Permitted Phases		6	2			4
Actuated Green, G (s)	17.0	17.0	22.6	22.6	29.9	29.9
Effective Green, g (s)	17.0	17.0	22.6	22.6	29.9	29.9
Actuated g/C Ratio	0.28	0.28	0.37	0.37	0.49	0.49
Clearance Time (s)	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
Lane Grp Cap (vph)	479	403	260	630	792	708
v/s Ratio Prot	0.12		0.00	c0.23	c0.35	
v/s Ratio Perm		0.10	0.01			0.03
v/c Ratio	0.45	0.35	0.03	0.62	0.72	0.07
Uniform Delay, d1	18.4	17.8	12.7	15.9	12.5	8.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.5	0.1	1.8	3.1	0.0
Delay (s)	19.0	18.3	12.7	17.7	15.6	8.4
Level of Service	B	B	B	B	B	A
Approach Delay (s)	18.5			17.6	14.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	214	504	9	390	567	85
v/c Ratio	0.42	0.64	0.03	0.70	0.67	0.11
Control Delay	19.9	6.4	12.0	23.8	18.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	6.4	12.0	23.8	18.2	4.4
Queue Length 50th (ft)	55	0	2	114	124	2
Queue Length 95th (ft)	131	68	9	188	#387	27
Internal Link Dist (ft)	689			452	761	
Turn Bay Length (ft)			200			175
Base Capacity (vph)	1230	1181	304	1568	842	788
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.43	0.03	0.25	0.67	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	646	127	214	667	0	0	0	0	16	0	188
Future Volume (vph)	0	646	127	214	667	0	0	0	0	16	0	188
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
Lane Util. Factor		0.95		1.00	1.00						1.00	1.00
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		0.98		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		3205		1662	1716						1662	1458
Flt Permitted		1.00		0.20	1.00						0.95	1.00
Satd. Flow (perm)		3205		352	1716						1662	1458
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)	0	702	138	233	725	0	0	0	0	17	0	204
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	0	124
Lane Group Flow (vph)	0	821	0	233	725	0	0	0	0	0	17	80
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%
Turn Type		NA		pm+pt	NA					Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases				2						8		8
Actuated Green, G (s)		18.6		29.8	29.8						8.3	8.3
Effective Green, g (s)		18.6		29.8	29.8						8.3	8.3
Actuated g/C Ratio		0.39		0.63	0.63						0.18	0.18
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)		1265		409	1085						292	256
v/s Ratio Prot		0.26		0.08	c0.42							
v/s Ratio Perm				0.28							0.01	c0.06
v/c Ratio		0.65		0.57	0.67						0.06	0.31
Uniform Delay, d1		11.6		5.2	5.5						16.1	16.9
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		1.2		1.8	1.6						0.1	0.7
Delay (s)		12.8		7.0	7.1						16.2	17.6
Level of Service		B		A	A						B	B
Approach Delay (s)		12.8			7.1			0.0			17.5	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	47.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

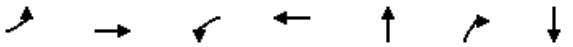
Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	840	233	725	17	204
v/c Ratio	0.66	0.58	0.67	0.06	0.54
Control Delay	14.3	11.3	9.9	18.4	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	11.3	9.9	18.4	12.8
Queue Length 50th (ft)	85	20	93	4	12
Queue Length 95th (ft)	158	#65	247	19	67
Internal Link Dist (ft)	3583		689	648	
Turn Bay Length (ft)		250			275
Base Capacity (vph)	1924	405	1433	1172	1072
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.58	0.51	0.01	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	250	109	332	409	104	151	69	261	55	45	14
Future Volume (vph)	14	250	109	332	409	104	151	69	261	55	45	14
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			4.5	4.5		4.5	
Lane Util. Factor	1.00	1.00		1.00	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	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.95		1.00	0.97			1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00		0.98	
Satd. Flow (prot)	1662	1623		1645	1689			1692	1473		1680	
Flt Permitted	0.33	1.00		0.24	1.00			0.74	1.00		0.79	
Satd. Flow (perm)	581	1623		424	1689			1294	1473		1359	
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)	15	266	116	353	435	111	161	73	278	59	48	15
RTOR Reduction (vph)	0	17	0	0	9	0	0	0	161	0	3	0
Lane Group Flow (vph)	15	365	0	353	537	0	0	234	117	0	119	0
Confl. Peds. (#/hr)			3	3								
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4			6		5	2	
Permitted Phases	8			4			6		6			
Actuated Green, G (s)	28.1	26.9		43.0	37.8			37.7	37.7		37.7	
Effective Green, g (s)	28.1	26.9		43.0	37.8			37.7	37.7		37.7	
Actuated g/C Ratio	0.32	0.30		0.48	0.42			0.42	0.42		0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0			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)	197	489		370	715			546	622		574	
v/s Ratio Prot	0.00	0.22		c0.13	0.32							
v/s Ratio Perm	0.02			c0.33				c0.18	0.08		0.09	
v/c Ratio	0.08	0.75		0.95	0.75			0.43	0.19		0.21	
Uniform Delay, d1	21.4	28.1		18.4	21.7			18.2	16.2		16.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	6.1		34.7	4.4			0.5	0.1		0.2	
Delay (s)	21.6	34.2		53.1	26.2			18.7	16.3		16.5	
Level of Service	C	C		D	C			B	B		B	
Approach Delay (s)		33.7			36.7			17.4			16.5	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	15	382	353	546	234	278	122
v/c Ratio	0.05	0.82	0.96	0.73	0.41	0.35	20.33
Control Delay	12.6	42.2	58.4	26.6	21.0	3.7	9007.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	42.2	58.4	26.6	21.0	3.7	9007.6
Queue Length 50th (ft)	4	180	125	217	84	0	~132
Queue Length 95th (ft)	14	284	#288	#450	172	48	#259
Internal Link Dist (ft)		906		3891	5211		1243
Turn Bay Length (ft)	100		75			100	
Base Capacity (vph)	296	640	367	791	566	801	8
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.60	0.96	0.69	0.41	0.35	15.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	201	186	190	263	29	266	403	250	48	349	193
Future Volume (vph)	113	201	186	190	263	29	266	403	250	48	349	193
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	4.5		4.0	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1598	1733	1454	1646	1691		1646	3115		1539	3090	
Flt Permitted	0.42	1.00	1.00	0.46	1.00		0.25	1.00		0.32	1.00	
Satd. Flow (perm)	699	1733	1454	805	1691		426	3115		511	3090	
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)	124	221	204	209	289	32	292	443	275	53	384	212
RTOR Reduction (vph)	0	0	150	0	4	0	0	99	0	0	83	0
Lane Group Flow (vph)	124	221	54	209	317	0	292	619	0	53	513	0
Confl. Peds. (#/hr)	2		1	1		2	2					2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	4%	1%	1%	1%	2%	0%	1%	1%	0%	8%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)	24.4	19.0	19.0	28.2	20.9		32.6	24.8		24.1	20.3	
Effective Green, g (s)	24.4	19.0	19.0	28.2	20.9		32.6	24.8		24.1	20.3	
Actuated g/C Ratio	0.34	0.27	0.27	0.39	0.29		0.46	0.35		0.34	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	306	461	386	403	494		336	1081		227	878	
v/s Ratio Prot	0.03	0.13		c0.05	c0.19		c0.10	0.20		0.01	0.17	
v/s Ratio Perm	0.11		0.04	0.15			c0.30			0.07		
v/c Ratio	0.41	0.48	0.14	0.52	0.64		0.87	0.57		0.23	0.58	
Uniform Delay, d1	17.0	22.0	20.0	15.2	22.0		14.1	19.0		16.3	21.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.8	0.2	1.1	2.8		20.5	0.7		0.5	1.0	
Delay (s)	17.9	22.8	20.1	16.3	24.8		34.6	19.7		16.8	22.9	
Level of Service	B	C	C	B	C		C	B		B	C	
Approach Delay (s)		20.7			21.5			24.0			22.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	124	221	204	209	321	292	718	53	596
v/c Ratio	0.36	0.49	0.39	0.53	0.62	0.88	0.59	0.18	0.66
Control Delay	16.8	26.2	5.9	20.3	28.4	47.6	18.3	13.8	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	26.2	5.9	20.3	28.4	47.6	18.3	13.8	22.1
Queue Length 50th (ft)	30	77	0	54	118	77	110	12	91
Queue Length 95th (ft)	77	161	47	123	235	#264	201	37	169
Internal Link Dist (ft)		3891			719		1235		3583
Turn Bay Length (ft)	200		200	100		100		100	
Base Capacity (vph)	350	864	827	395	846	330	1563	302	1487
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.26	0.25	0.53	0.38	0.88	0.46	0.18	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	141	23	11	27	3	14	35	41	99	23	25
Future Vol, veh/h	17	141	23	11	27	3	14	35	41	99	23	25
Conflicting Peds, #/hr	0	0	2	2	0	0	0	0	2	2	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	20	0	0	0	0	0	0	0	11	0
Mvmt Flow	20	166	27	13	32	4	16	41	48	116	27	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	35	0	0	195	0	0	309	282	183	325	294	34
Stage 1	-	-	-	-	-	-	221	221	-	59	59	-
Stage 2	-	-	-	-	-	-	88	61	-	266	235	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.61	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.61	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4.099	3.3
Pot Cap-1 Maneuver	1589	-	-	1390	-	-	647	630	865	632	602	1045
Stage 1	-	-	-	-	-	-	786	724	-	958	828	-
Stage 2	-	-	-	-	-	-	925	848	-	744	694	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1589	-	-	1387	-	-	595	614	862	555	587	1045
Mov Cap-2 Maneuver	-	-	-	-	-	-	595	614	-	555	587	-
Stage 1	-	-	-	-	-	-	774	713	-	945	820	-
Stage 2	-	-	-	-	-	-	861	840	-	651	683	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	2	11	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	703	1589	-	-	1387	-	-	609
HCM Lane V/C Ratio	0.151	0.013	-	-	0.009	-	-	0.284
HCM Control Delay (s)	11	7.3	0	-	7.6	0	-	13.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	17	149	36	17	33	69	229	11	5	81	15
Future Volume (vph)	50	17	149	36	17	33	69	229	11	5	81	15
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
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.91			0.95		1.00	0.99			1.00	0.85
Flt Protected		0.99			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1494			1600		1352	1721			1697	918
Flt Permitted		0.90			0.80		0.95	1.00			1.00	1.00
Satd. Flow (perm)		1357			1308		1352	1721			1697	918
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	57	19	169	41	19	38	78	260	12	6	92	17
RTOR Reduction (vph)	0	97	0	0	27	0	0	2	0	0	0	13
Lane Group Flow (vph)	0	148	0	0	71	0	78	271	0	0	98	4
Heavy Vehicles (%)	0%	11%	6%	0%	8%	0%	23%	1%	0%	0%	3%	62%
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	Perm
Protected Phases		4			8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)		10.8			10.8		13.9	13.9			10.8	10.8
Effective Green, g (s)		10.8			10.8		13.9	13.9			10.8	10.8
Actuated g/C Ratio		0.22			0.22		0.28	0.28			0.22	0.22
Clearance Time (s)		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
Lane Grp Cap (vph)		299			288		383	488			374	202
v/s Ratio Prot							0.06	c0.16			c0.06	
v/s Ratio Perm		c0.11			0.05							0.00
v/c Ratio		0.50			0.25		0.20	0.56			0.26	0.02
Uniform Delay, d1		16.7			15.7		13.3	14.9			15.8	15.0
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		1.3			0.4		0.3	1.4			0.4	0.0
Delay (s)		18.0			16.2		13.6	16.3			16.2	15.0
Level of Service		B			B		B	B			B	B
Approach Delay (s)		18.0			16.2			15.7			16.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	245	98	78	273	98	17
v/c Ratio	0.62	0.31	0.21	0.56	0.26	0.07
Control Delay	17.3	15.0	16.3	21.0	21.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	15.0	16.3	21.0	21.5	0.5
Queue Length 50th (ft)	28	14	16	61	22	0
Queue Length 95th (ft)	99	52	51	150	73	0
Internal Link Dist (ft)	782	827		2579	629	
Turn Bay Length (ft)			100			
Base Capacity (vph)	783	715	807	1028	799	471
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.14	0.10	0.27	0.12	0.04

Intersection Summary

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	42	0	53	0	334	92	46	150	0
Future Vol, veh/h	0	0	0	42	0	53	0	334	92	46	150	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	1	0	8	0
Mvmt Flow	0	0	0	48	0	60	0	380	105	52	170	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	737	759	170	707	707	432	170	0	0	484	0	0
Stage 1	275	275	-	432	432	-	-	-	-	-	-	-
Stage 2	462	484	-	275	275	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	337	338	879	353	363	628	1420	-	-	1089	-	-
Stage 1	736	686	-	606	586	-	-	-	-	-	-	-
Stage 2	584	555	-	736	686	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	292	320	879	339	344	628	1420	-	-	1089	-	-
Mov Cap-2 Maneuver	292	320	-	339	344	-	-	-	-	-	-	-
Stage 1	736	650	-	606	586	-	-	-	-	-	-	-
Stage 2	528	555	-	697	650	-	-	-	-	-	-	-

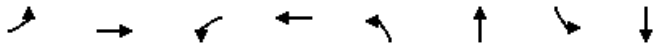
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.3	0	2
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1420	-	-	-	456	1089	-	-
HCM Lane V/C Ratio	-	-	-	-	0.237	0.048	-	-
HCM Control Delay (s)	0	-	-	0	15.3	8.5	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.9	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	87	111	133	114	40	118	268	137	19	148	7
Future Volume (vph)	6	87	111	133	114	40	118	268	137	19	148	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		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		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	0.92		1.00	0.96		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1662	1544		1644	1682		1660	1644		1662	1736	
Flt Permitted	0.65	1.00		0.43	1.00		0.56	1.00		0.33	1.00	
Satd. Flow (perm)	1132	1544		739	1682		971	1644		572	1736	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	7	99	126	151	130	45	134	305	156	22	168	8
RTOR Reduction (vph)	0	58	0	0	14	0	0	19	0	0	2	0
Lane Group Flow (vph)	7	167	0	151	161	0	134	442	0	22	174	0
Confl. Peds. (#/hr)			3	3			3		1	1		3
Heavy Vehicles (%)	0%	3%	2%	1%	0%	0%	0%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	17.2	16.3		25.2	20.3		27.4	22.6		21.6	19.7	
Effective Green, g (s)	17.2	16.3		25.2	20.3		27.4	22.6		21.6	19.7	
Actuated g/C Ratio	0.27	0.26		0.40	0.32		0.43	0.35		0.34	0.31	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	313	395		361	536		469	583		226	536	
v/s Ratio Prot	0.00	0.11		c0.03	0.10		c0.02	c0.27		0.00	0.10	
v/s Ratio Perm	0.01			c0.13			0.10			0.03		
v/c Ratio	0.02	0.42		0.42	0.30		0.29	0.76		0.10	0.32	
Uniform Delay, d1	17.0	19.8		13.2	16.3		11.3	18.1		14.5	16.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.9		0.3	0.4		0.1	5.6		0.1	0.4	
Delay (s)	17.1	20.6		13.5	16.7		11.5	23.8		14.5	17.2	
Level of Service	B	C		B	B		B	C		B	B	
Approach Delay (s)		20.5			15.2			21.0			16.9	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	63.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	7	225	151	175	134	461	22	176
v/c Ratio	0.02	0.53	0.40	0.29	0.27	0.70	0.06	0.33
Control Delay	14.3	20.6	17.9	16.7	11.9	23.4	10.3	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	20.6	17.9	16.7	11.9	23.4	10.3	19.6
Queue Length 50th (ft)	1	40	28	29	26	105	4	49
Queue Length 95th (ft)	10	122	86	113	63	#317	16	104
Internal Link Dist (ft)		5288		2545		2548		1288
Turn Bay Length (ft)	50		100		75		100	
Base Capacity (vph)	428	957	384	1019	499	875	358	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.24	0.39	0.17	0.27	0.53	0.06	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	122	38	83	222	231	80	457	83	76	333	96
Future Volume (vph)	78	122	38	83	222	231	80	457	83	76	333	96
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	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.98		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)	1622	1665		1628	1733	1445	1662	1683		1662	1683	
Flt Permitted	0.43	1.00		0.57	1.00	1.00	0.36	1.00		0.19	1.00	
Satd. Flow (perm)	733	1665		980	1733	1445	626	1683		339	1683	
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)	84	131	41	89	239	248	86	491	89	82	358	103
RTOR Reduction (vph)	0	14	0	0	0	175	0	6	0	0	10	0
Lane Group Flow (vph)	84	158	0	89	239	73	86	574	0	82	451	0
Confl. Peds. (#/hr)	12		2	2		12	1		4	4		1
Heavy Vehicles (%)	2%	1%	0%	2%	1%	0%	0%	1%	2%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	21.0	16.2		21.0	16.2	22.6	36.2	31.5		39.6	33.2	
Effective Green, g (s)	21.0	16.2		21.0	16.2	22.6	36.2	31.5		39.6	33.2	
Actuated g/C Ratio	0.27	0.21		0.27	0.21	0.29	0.47	0.41		0.51	0.43	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.0	3.5		2.0	3.5	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	255	350		308	365	509	358	689		284	726	
v/s Ratio Prot	c0.02	0.09		0.02	c0.14	0.01	0.01	c0.34		c0.02	0.27	
v/s Ratio Perm	0.07			0.06		0.04	0.10			0.12		
v/c Ratio	0.33	0.45		0.29	0.65	0.14	0.24	0.83		0.29	0.62	
Uniform Delay, d1	21.6	26.5		21.5	27.8	20.0	11.9	20.3		12.1	17.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.1		0.2	4.4	0.0	0.1	8.5		0.2	1.7	
Delay (s)	21.9	27.6		21.7	32.2	20.1	12.0	28.8		12.3	18.6	
Level of Service	C	C		C	C	C	B	C		B	B	
Approach Delay (s)		25.7			25.3			26.7			17.7	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	84	172	89	239	248	86	580	82	461
v/c Ratio	0.30	0.46	0.27	0.64	0.41	0.22	0.85	0.29	0.61
Control Delay	20.3	28.1	19.6	36.1	4.7	11.7	35.7	13.0	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	28.1	19.6	36.1	4.7	11.7	35.7	13.0	23.2
Queue Length 50th (ft)	28	67	30	109	0	19	248	18	174
Queue Length 95th (ft)	58	123	60	181	44	48	#499	46	319
Internal Link Dist (ft)		2545		3983			2700		5211
Turn Bay Length (ft)	125		150		225	175		225	
Base Capacity (vph)	284	639	332	653	612	400	733	290	755
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.27	0.27	0.37	0.41	0.21	0.79	0.28	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	82	89	22	136	0	0	0	0	16	681	151
Future Volume (vph)	0	82	89	22	136	0	0	0	0	16	681	151
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.95	
Frpb, ped/bikes		1.00			1.00						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		0.93			1.00						0.97	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1627			1738						3184	
Flt Permitted		1.00			0.93						1.00	
Satd. Flow (perm)		1627			1631						3184	
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)	0	86	94	23	143	0	0	0	0	17	717	159
RTOR Reduction (vph)	0	65	0	0	0	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	115	0	0	166	0	0	0	0	0	867	0
Confl. Peds. (#/hr)	1					1	1		1	1		1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		10.0			10.0						20.1	
Effective Green, g (s)		10.0			10.0						20.1	
Actuated g/C Ratio		0.25			0.25						0.50	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		405			406						1595	
v/s Ratio Prot		0.07										
v/s Ratio Perm					c0.10						0.27	
v/c Ratio		0.28			0.41						0.54	
Uniform Delay, d1		12.2			12.6						6.9	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.4			0.7						0.4	
Delay (s)		12.5			13.3						7.2	
Level of Service		B			B						A	
Approach Delay (s)		12.5			13.3			0.0			7.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	180	166	893
v/c Ratio	0.39	0.41	0.56
Control Delay	11.3	18.2	8.2
Queue Delay	0.0	0.0	0.0
Total Delay	11.3	18.2	8.2
Queue Length 50th (ft)	16	31	56
Queue Length 95th (ft)	68	92	120
Internal Link Dist (ft)	3983	187	3118
Turn Bay Length (ft)			
Base Capacity (vph)	1088	1061	2728
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	0.16	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	27	0	0	48	13	128	790	8	0	0	0
Future Volume (vph)	72	27	0	0	48	13	128	790	8	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.97			1.00				
Flt Protected		0.96			1.00			0.99				
Satd. Flow (prot)		1689			1648			3263				
Flt Permitted		0.74			1.00			0.99				
Satd. Flow (perm)		1297			1648			3263				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	82	31	0	0	55	15	145	898	9	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	113	0	0	58	0	0	1051	0	0	0	0
Confl. Peds. (#/hr)							2		1	1		2
Heavy Vehicles (%)	0%	0%	0%	0%	4%	0%	0%	1%	17%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		8.0			8.0			28.0				
Effective Green, g (s)		8.0			8.0			28.0				
Actuated g/C Ratio		0.17			0.17			0.61				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		225			286			1986				
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.09						0.32				
v/c Ratio		0.50			0.20			0.53				
Uniform Delay, d1		17.2			16.3			5.2				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		1.8			0.3			0.3				
Delay (s)		19.0			16.6			5.5				
Level of Service		B			B			A				
Approach Delay (s)		19.0			16.6			5.5			0.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	46.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	113	70	1052
v/c Ratio	0.41	0.19	0.49
Control Delay	21.7	14.8	7.1
Queue Delay	0.0	0.0	0.0
Total Delay	21.7	14.8	7.1
Queue Length 50th (ft)	22	10	74
Queue Length 95th (ft)	72	42	148
Internal Link Dist (ft)	187	470	1008
Turn Bay Length (ft)			
Base Capacity (vph)	635	814	2800
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.18	0.09	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	4	7	12	3	8	6	146	2	4	230	24
Future Volume (vph)	23	4	7	12	3	8	6	146	2	4	230	24
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	4.5		4.0	4.5	
Lane Util. Factor		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	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.95		1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1604			1495		1108	1680		1108	1600	
Flt Permitted		1.00			1.00		0.58	1.00		0.65	1.00	
Satd. Flow (perm)		1657			1535		681	1680		759	1600	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	26	5	8	14	3	9	7	166	2	5	261	27
RTOR Reduction (vph)	0	8	0	0	9	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	31	0	0	17	0	7	168	0	5	284	0
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	4%	0%	0%	0%	0%	25%	50%	4%	0%	50%	8%	4%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		1.2			1.2		23.8	22.9		23.8	22.9	
Effective Green, g (s)		1.2			1.2		23.8	22.9		23.8	22.9	
Actuated g/C Ratio		0.03			0.03		0.63	0.61		0.63	0.61	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		53			49		442	1025		490	977	
v/s Ratio Prot							c0.00	0.10		0.00	c0.18	
v/s Ratio Perm		c0.02			0.01		0.01			0.01		
v/c Ratio		0.59			0.35		0.02	0.16		0.01	0.29	
Uniform Delay, d1		17.9			17.8		2.5	3.2		2.5	3.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.7			4.3		0.0	0.1		0.0	0.2	
Delay (s)		33.6			22.1		2.5	3.2		2.5	3.6	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		33.6			22.1			3.2			3.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	37.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	26	7	168	5	288
v/c Ratio	0.11	0.08	0.01	0.11	0.01	0.21
Control Delay	10.2	9.9	2.2	4.0	2.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	9.9	2.2	4.0	2.0	4.2
Queue Length 50th (ft)	4	2	0	0	0	0
Queue Length 95th (ft)	24	18	3	56	3	95
Internal Link Dist (ft)	792	663		2596		2579
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	1243	1153	677	1680	716	1600
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.02	0.01	0.10	0.01	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	72	15	96	61	0	0	0	0	152	967	30
Future Volume (vph)	0	72	15	96	61	0	0	0	0	152	967	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0						5.0	
Lane Util. Factor		1.00			1.00						0.95	
Frpb, ped/bikes		0.99			1.00						1.00	
Flpb, ped/bikes		1.00			0.99						0.99	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.97						0.99	
Satd. Flow (prot)		1672			1680						3234	
Flt Permitted		1.00			0.76						0.99	
Satd. Flow (perm)		1672			1311						3234	
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)	0	80	17	107	68	0	0	0	0	169	1074	33
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	84	0	0	175	0	0	0	0	0	1274	0
Confl. Peds. (#/hr)	21		19	19		21	16		26	26		16
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	1%	1%	3%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)		12.6			12.6						30.4	
Effective Green, g (s)		12.6			12.6						30.4	
Actuated g/C Ratio		0.24			0.24						0.57	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		397			311						1854	
v/s Ratio Prot		0.05										
v/s Ratio Perm					c0.13						0.39	
v/c Ratio		0.21			0.56						0.69	
Uniform Delay, d1		16.2			17.8						8.0	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		0.3			2.3						1.1	
Delay (s)		16.5			20.1						9.0	
Level of Service		B			C						A	
Approach Delay (s)		16.5			20.1			0.0			9.0	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	53.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	97	175	1276
v/c Ratio	0.24	0.57	0.69
Control Delay	16.6	27.2	11.1
Queue Delay	0.0	0.0	0.0
Total Delay	16.6	27.2	11.1
Queue Length 50th (ft)	23	55	127
Queue Length 95th (ft)	54	107	249
Internal Link Dist (ft)	369	175	1004
Turn Bay Length (ft)			
Base Capacity (vph)	822	636	2203
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.12	0.28	0.58

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	174	0	0	130	375	27	571	34	0	0	0
Future Volume (vph)	41	174	0	0	130	375	27	571	34	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0			5.0			5.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			0.99			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		1.00			0.90			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1709			1516			3287				
Flt Permitted		0.77			1.00			1.00				
Satd. Flow (perm)		1334			1516			3287				
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)	46	193	0	0	144	417	30	634	38	0	0	0
RTOR Reduction (vph)	0	0	0	0	84	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	239	0	0	477	0	0	696	0	0	0	0
Confl. Peds. (#/hr)	2		3	3		2	1		1	1		1
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	3%	1%	0%	0%	2%	3%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		20.7			20.7			18.3				
Effective Green, g (s)		20.7			20.7			18.3				
Actuated g/C Ratio		0.42			0.42			0.37				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		563			640			1227				
v/s Ratio Prot					c0.31							
v/s Ratio Perm		0.18						0.21				
v/c Ratio		0.42			0.75			0.57				
Uniform Delay, d1		10.0			11.9			12.2				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		0.5			4.7			0.6				
Delay (s)		10.5			16.7			12.8				
Level of Service		B			B			B				
Approach Delay (s)		10.5			16.7			12.8			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	49.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	239	561	702
v/c Ratio	0.43	0.79	0.58
Control Delay	13.8	18.9	15.4
Queue Delay	0.1	0.0	0.0
Total Delay	13.9	18.9	15.4
Queue Length 50th (ft)	44	89	79
Queue Length 95th (ft)	118	260	160
Internal Link Dist (ft)	175	838	646
Turn Bay Length (ft)			
Base Capacity (vph)	898	1068	2080
Starvation Cap Reductn	83	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.53	0.34

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	138	96	366	291	159	290	1510	299	140	1227	33
Future Volume (vph)	68	138	96	366	291	159	290	1510	299	140	1227	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	5.0		4.5	5.0		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	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		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	1.00
Frt	1.00	0.94		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1630	1617		1614	1602		1630	3107	1417	1646	3107	1488
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1630	1617		1614	1602		1630	3107	1417	1646	3107	1488
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)	72	145	101	385	306	167	305	1589	315	147	1292	35
RTOR Reduction (vph)	0	17	0	0	14	0	0	0	187	0	0	24
Lane Group Flow (vph)	72	229	0	385	459	0	305	1589	128	147	1292	11
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	2%	1%	1%	3%	1%	8%	2%	7%	5%	1%	7%	0%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Prot	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6	6	5	2	
Permitted Phases												2
Actuated Green, G (s)	9.1	29.1		24.6	44.6		22.6	57.3	57.3	10.5	45.2	45.2
Effective Green, g (s)	9.1	29.1		24.6	44.6		22.6	57.3	57.3	10.5	45.2	45.2
Actuated g/C Ratio	0.06	0.21		0.17	0.32		0.16	0.40	0.40	0.07	0.32	0.32
Clearance Time (s)	4.5	5.0		4.5	5.0		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
Lane Grp Cap (vph)	104	332		280	504		260	1258	573	122	992	475
v/s Ratio Prot	0.04	0.14		c0.24	c0.29		c0.19	c0.51	0.09	0.09	0.42	
v/s Ratio Perm												0.01
v/c Ratio	0.69	0.69		1.38	0.91		1.17	1.26	0.22	1.20	1.30	0.02
Uniform Delay, d1	64.8	52.0		58.4	46.5		59.5	42.1	27.5	65.5	48.1	33.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.1	5.8		189.7	20.7		110.9	124.9	0.2	146.7	143.5	0.0
Delay (s)	82.9	57.8		248.2	67.2		170.3	167.0	27.7	212.2	191.6	33.0
Level of Service	F	E		F	E		F	F	C	F	F	C
Approach Delay (s)		63.5			148.4			147.6			189.9	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	155.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	141.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	72	246	385	473	305	1589	315	147	1292	35
v/c Ratio	0.69	0.70	1.38	0.91	1.17	1.27	0.41	1.20	1.30	0.06
Control Delay	98.4	58.3	232.4	67.6	161.7	161.8	4.8	199.3	182.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.4	58.3	232.4	67.6	161.7	161.8	4.8	199.3	182.4	0.2
Queue Length 50th (ft)	67	193	~479	405	~343	~990	0	~168	~820	0
Queue Length 95th (ft)	#151	290	#725	#565	#565	#1205	64	#331	#1022	0
Internal Link Dist (ft)		838		3278		1074			1019	
Turn Bay Length (ft)	150		450		275		575	350		100
Base Capacity (vph)	109	451	280	614	260	1256	760	122	992	573
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.55	1.38	0.77	1.17	1.27	0.41	1.20	1.30	0.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	63	1505	0	0	0	0	0	32	24
Future Volume (vph)	0	0	0	63	1505	0	0	0	0	0	32	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.95	
Frpb, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.94	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					3256						3091	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					3256						3091	
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)	0	0	0	68	1636	0	0	0	0	0	35	26
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	24	0
Lane Group Flow (vph)	0	0	0	0	1701	0	0	0	0	0	37	0
Confl. Peds. (#/hr)	3		1	1		3	3		2	2		3
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					59.8						5.1	
Effective Green, g (s)					59.8						5.1	
Actuated g/C Ratio					0.81						0.07	
Clearance Time (s)					4.5						4.5	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					2634						213	
v/s Ratio Prot											c0.01	
v/s Ratio Perm					0.52							
v/c Ratio					0.65						0.17	
Uniform Delay, d1					2.8						32.4	
Progression Factor					1.00						1.00	
Incremental Delay, d2					0.6						0.4	
Delay (s)					3.4						32.8	
Level of Service					A						C	
Approach Delay (s)		0.0			3.4			0.0			32.8	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	SBT
Lane Group Flow (vph)	1704	61
v/c Ratio	0.62	0.19
Control Delay	4.1	25.6
Queue Delay	0.2	0.0
Total Delay	4.3	25.6
Queue Length 50th (ft)	121	8
Queue Length 95th (ft)	187	30
Internal Link Dist (ft)	472	448
Turn Bay Length (ft)		
Base Capacity (vph)	3014	860
Starvation Cap Reductn	444	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.66	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1096	20	409	143	0	0	0	0
Future Volume (vph)	0	0	0	0	1096	20	409	143	0	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				
Lane Util. Factor					0.95		0.91	0.91				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					1.00		1.00	1.00				
Flt Protected					1.00		0.95	0.97				
Satd. Flow (prot)					3251		1482	3056				
Flt Permitted					1.00		0.95	0.97				
Satd. Flow (perm)					3251		1482	3056				
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)	0	0	0	0	1191	22	445	155	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	51	51	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1212	0	171	327	0	0	0	0
Confl. Peds. (#/hr)	3					3	1					1
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Actuated Green, G (s)					32.1		14.5	14.5				
Effective Green, g (s)					32.1		14.5	14.5				
Actuated g/C Ratio					0.58		0.26	0.26				
Clearance Time (s)					4.5		4.5	4.5				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1876		386	796				
v/s Ratio Prot					c0.37							
v/s Ratio Perm							c0.12	0.11				
v/c Ratio					0.65		0.44	0.41				
Uniform Delay, d1					7.9		17.2	17.0				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					0.8		0.8	0.3				
Delay (s)					8.7		18.0	17.4				
Level of Service					A		B	B				
Approach Delay (s)		0.0			8.7			17.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	9.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1213	222	378
v/c Ratio	0.66	0.51	0.45
Control Delay	10.7	18.7	17.3
Queue Delay	0.0	0.0	0.0
Total Delay	10.7	18.7	17.3
Queue Length 50th (ft)	119	43	43
Queue Length 95th (ft)	264	141	110
Internal Link Dist (ft)	765		275
Turn Bay Length (ft)			
Base Capacity (vph)	2980	983	2002
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.23	0.19

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	121	653	0	0	0	0	0	660	361
Future Volume (vph)	0	0	0	121	653	0	0	0	0	0	660	361
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.95	
Frpb, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.95	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3217						3112	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3217						3112	
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	0	0	130	702	0	0	0	0	0	710	388
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	41	0
Lane Group Flow (vph)	0	0	0	0	817	0	0	0	0	0	1057	0
Confl. Peds. (#/hr)			2	2			2		2	2		2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	1%	0%
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					26.2						36.7	
Effective Green, g (s)					26.2						36.7	
Actuated g/C Ratio					0.36						0.51	
Clearance Time (s)					4.5						4.5	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					1172						1588	
v/s Ratio Prot											c0.34	
v/s Ratio Perm					0.25							
v/c Ratio					0.70						0.67	
Uniform Delay, d1					19.5						13.0	
Progression Factor					1.00						1.00	
Incremental Delay, d2					1.8						1.1	
Delay (s)					21.3						14.1	
Level of Service					C						B	
Approach Delay (s)		0.0			21.3			0.0			14.1	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	SBT
Lane Group Flow (vph)	832	1098
v/c Ratio	0.71	0.68
Control Delay	24.3	15.1
Queue Delay	0.3	0.0
Total Delay	24.7	15.1
Queue Length 50th (ft)	155	165
Queue Length 95th (ft)	298	291
Internal Link Dist (ft)	179	644
Turn Bay Length (ft)		
Base Capacity (vph)	1745	2423
Starvation Cap Reductn	386	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.61	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	650	192	108	645	0	0	0	0
Future Volume (vph)	0	0	0	0	650	192	108	645	0	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				
Lane Util. Factor					0.95	1.00	0.91	0.91				
Frpb, ped/bikes					1.00	0.99	1.00	1.00				
Flpb, ped/bikes					1.00	1.00	1.00	1.00				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					3228	1440	1513	3182				
Flt Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					3228	1440	1513	3182				
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)	0	0	0	0	707	209	117	701	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	100	47	9	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	707	109	58	704	0	0	0	0
Confl. Peds. (#/hr)	1					1			1	1		
Heavy Vehicles (%)	0%	0%	0%	0%	3%	2%	0%	0%	0%	0%	0%	0%
Turn Type					NA	Perm	Perm	NA				
Protected Phases					4			6				
Permitted Phases						4	6					
Actuated Green, G (s)					20.5	20.5	20.4	20.4				
Effective Green, g (s)					20.5	20.5	20.4	20.4				
Actuated g/C Ratio					0.41	0.41	0.41	0.41				
Clearance Time (s)					4.5	4.5	4.5	4.5				
Vehicle Extension (s)					3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)					1326	591	618	1300				
v/s Ratio Prot					c0.22							
v/s Ratio Perm						0.08	0.04	0.22				
v/c Ratio					0.53	0.19	0.09	0.54				
Uniform Delay, d1					11.1	9.4	9.1	11.2				
Progression Factor					1.00	1.00	1.00	1.00				
Incremental Delay, d2					0.4	0.2	0.1	0.5				
Delay (s)					11.5	9.5	9.1	11.7				
Level of Service					B	A	A	B				
Approach Delay (s)		0.0			11.1			11.3			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	707	209	105	713
v/c Ratio	0.54	0.31	0.16	0.55
Control Delay	13.8	4.9	5.3	13.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.8	4.9	5.3	13.7
Queue Length 50th (ft)	73	6	4	75
Queue Length 95th (ft)	164	47	35	169
Internal Link Dist (ft)	478			255
Turn Bay Length (ft)		125	75	
Base Capacity (vph)	2685	1225	1379	2885
Starvation Cap Reductn	0	0	0	99
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.17	0.08	0.26

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	SEL	SER
Lane Configurations									
Traffic Volume (vph)	542	166	374	1556	1253	436	0	0	0
Future Volume (vph)	542	166	374	1556	1253	436	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	5.5	5.5				
Lane Util. Factor	0.97	1.00	0.97	0.95	0.95				
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99				
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00				
Frt	1.00	0.85	1.00	1.00	0.96				
Flt Protected	0.95	1.00	0.95	1.00	1.00				
Satd. Flow (prot)	3131	1473	3162	3167	3021				
Flt Permitted	0.95	1.00	0.95	1.00	1.00				
Satd. Flow (perm)	3131	1473	3162	3167	3021				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	571	175	394	1638	1319	459	0	0	0
RTOR Reduction (vph)	0	133	0	0	0	0	0	0	0
Lane Group Flow (vph)	571	42	394	1638	1778	0	0	0	0
Confl. Bikes (#/hr)						1			
Heavy Vehicles (%)	3%	1%	2%	5%	6%	3%	2%	2%	2%
Turn Type	Prot	Perm	Prot	NA	NA		Perm		
Protected Phases	8		1	6	2				
Permitted Phases		3					2		
Actuated Green, G (s)	28.8	28.8	21.8	93.2	66.9				
Effective Green, g (s)	28.8	28.8	21.8	93.2	66.9				
Actuated g/C Ratio	0.22	0.22	0.17	0.71	0.51				
Clearance Time (s)	4.5	4.5	4.5	5.5	5.5				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	683	321	522	2236	1531				
v/s Ratio Prot	c0.18		0.12	c0.52	c0.59				
v/s Ratio Perm		0.03							
v/c Ratio	0.84	0.13	0.75	0.73	1.16				
Uniform Delay, d1	49.3	41.5	52.6	11.8	32.5				
Progression Factor	1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	8.7	0.2	6.1	1.3	80.3				
Delay (s)	58.1	41.7	58.7	13.1	112.8				
Level of Service	E	D	E	B	F				
Approach Delay (s)	54.2			21.9	112.8			0.0	
Approach LOS	D			C	F			A	

Intersection Summary			
HCM 2000 Control Delay	62.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	132.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	571	175	394	1638	1778
v/c Ratio	0.84	0.39	0.76	0.73	1.16
Control Delay	61.5	9.2	62.9	15.0	112.1
Queue Delay	0.1	0.0	0.0	0.0	0.0
Total Delay	61.5	9.2	62.9	15.0	112.1
Queue Length 50th (ft)	242	3	168	410	~951
Queue Length 95th (ft)	328	66	237	595	#1276
Internal Link Dist (ft)	383			2738	1074
Turn Bay Length (ft)		200	325		
Base Capacity (vph)	870	532	783	2497	1529
Starvation Cap Reductn	11	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.33	0.50	0.66	1.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

MOVEMENT SUMMARY

Site: [21 - SW Helmholtz @ OR 126]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Helmholtz Way											
3	L2	36	0.0	0.550	15.1	LOS C	2.9	73.3	0.75	0.84	30.5
8	T1	315	0.0	0.550	15.1	LOS C	2.9	73.3	0.75	0.84	30.4
18	R2	128	1.0	0.228	9.4	LOS A	0.8	21.0	0.65	0.65	31.9
Approach		479	0.3	0.550	13.6	LOS B	2.9	73.3	0.73	0.79	30.8
East: OR 126											
1	L2	173	3.0	0.917	34.8	LOS D	14.8	379.2	1.00	1.37	24.0
6	T1	645	3.0	0.917	34.8	LOS D	14.8	379.2	1.00	1.37	23.9
16	R2	103	0.0	0.123	5.5	LOS A	0.5	11.7	0.50	0.44	33.8
Approach		921	2.7	0.917	31.5	LOS D	14.8	379.2	0.94	1.27	24.7
North: SW Helmholtz Way											
7	L2	38	0.0	0.226	8.4	LOS A	0.8	20.6	0.62	0.62	33.0
4	T1	105	8.0	0.226	8.4	LOS A	0.8	20.6	0.62	0.62	32.7
14	R2	96	0.0	0.159	7.9	LOS A	0.6	14.4	0.62	0.62	32.6
Approach		239	3.5	0.226	8.2	LOS A	0.8	20.6	0.62	0.62	32.7
West: OR 126											
5	L2	162	0.0	0.841	23.0	LOS C	11.4	294.1	0.92	0.99	27.4
2	T1	705	5.0	0.841	23.0	LOS C	11.4	294.1	0.92	0.99	27.3
12	R2	68	5.0	0.072	4.4	LOS A	0.3	6.7	0.40	0.28	34.2
Approach		936	4.1	0.841	21.6	LOS C	11.4	294.1	0.88	0.94	27.7
All Vehicles		2575	2.8	0.917	22.4	LOS C	14.8	379.2	0.85	1.00	27.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	732	48	236	869	233	70	328	132	214	285	70
Future Volume (vph)	162	732	48	236	869	233	70	328	132	214	285	70
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.7	5.0		4.7	5.0		4.7	5.0		4.7	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	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	0.99		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
Frt	1.00	0.99		1.00	0.97		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)	1662	1671		1662	1647		1583	1636		1630	1733	1410
Flt Permitted	0.10	1.00		0.09	1.00		0.36	1.00		0.16	1.00	1.00
Satd. Flow (perm)	179	1671		160	1647		606	1636		272	1733	1410
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)	171	771	51	248	915	245	74	345	139	225	300	74
RTOR Reduction (vph)	0	2	0	0	10	0	0	14	0	0	0	56
Lane Group Flow (vph)	171	820	0	248	1150	0	74	470	0	225	300	18
Confl. Peds. (#/hr)	1					1	1		1	1		1
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	0%	4%	0%	0%	3%	0%	5%	2%	1%	2%	1%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	45.4	39.1		56.0	45.0		28.9	23.9		31.5	25.2	25.2
Effective Green, g (s)	45.4	39.1		56.0	45.0		28.9	23.9		31.5	25.2	25.2
Actuated g/C Ratio	0.45	0.39		0.56	0.45		0.29	0.24		0.31	0.25	0.25
Clearance Time (s)	4.7	5.0		4.7	5.0		4.7	5.0		4.7	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	173	647		270	734		221	387		169	432	352
v/s Ratio Prot	0.06	0.49		c0.11	c0.70		0.02	0.29		c0.08	0.17	
v/s Ratio Perm	0.38			0.40			0.08			c0.33		0.01
v/c Ratio	0.99	1.27		0.92	1.57		0.33	1.21		1.33	0.69	0.05
Uniform Delay, d1	24.0	30.9		29.0	28.0		27.4	38.5		32.6	34.4	28.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	64.4	132.0		33.6	261.7		0.9	117.5		183.8	4.8	0.1
Delay (s)	88.4	162.9		62.6	289.6		28.3	156.0		216.4	39.2	28.8
Level of Service	F	F		E	F		C	F		F	D	C
Approach Delay (s)		150.1			249.6			139.1			104.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	180.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.9	Sum of lost time (s)	19.4
Intersection Capacity Utilization	131.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	171	822	248	1160	74	484	225	300	74
v/c Ratio	0.98	1.25	0.91	1.54	0.31	1.24	1.33	0.69	0.15
Control Delay	88.0	156.0	60.7	276.6	26.5	162.0	212.5	44.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.0	156.0	60.7	276.6	26.5	162.0	212.5	44.5	0.7
Queue Length 50th (ft)	60	~663	108	~1051	32	~377	~144	179	0
Queue Length 95th (ft)	#198	#898	#255	#1304	65	#577	#298	#300	0
Internal Link Dist (ft)		5185		1541		2675		2548	
Turn Bay Length (ft)	225		275		125		150		150
Base Capacity (vph)	174	655	274	751	240	390	169	436	486
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	1.25	0.91	1.54	0.31	1.24	1.33	0.69	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	848	9	294	1133	386	21	219	196	258	180	107
Future Volume (vph)	146	848	9	294	1133	386	21	219	196	258	180	107
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	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.99	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		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	3223		1662	3292	1414	1662	1733	1468	1662	1733	1467
Flt Permitted	0.13	1.00		0.12	1.00	1.00	0.64	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	224	3223		212	3292	1414	1115	1733	1468	635	1733	1467
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)	155	902	10	313	1205	411	22	233	209	274	191	114
RTOR Reduction (vph)	0	1	0	0	0	188	0	0	162	0	0	83
Lane Group Flow (vph)	155	911	0	313	1205	223	22	233	47	274	191	31
Confl. Peds. (#/hr)	3		2	2		3	1		1	1		1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	5%	3%	0%	0%	1%	3%	0%	1%	0%	0%	1%	0%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	36.2	29.7		47.8	36.8	43.3	22.0	19.6	19.6	30.2	23.7	23.7
Effective Green, g (s)	36.2	29.7		47.8	36.8	43.3	22.0	19.6	19.6	30.2	23.7	23.7
Actuated g/C Ratio	0.41	0.34		0.55	0.42	0.50	0.25	0.22	0.22	0.35	0.27	0.27
Clearance Time (s)	4.5	4.5		4.5	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	3.0	3.0	3.0
Lane Grp Cap (vph)	193	1095		341	1386	773	295	388	329	295	469	397
v/s Ratio Prot	0.06	0.28		c0.14	0.37	0.02	0.00	0.13		c0.07	0.11	
v/s Ratio Perm	0.27			c0.36		0.14	0.02		0.03	c0.25		0.02
v/c Ratio	0.80	0.83		0.92	0.87	0.29	0.07	0.60	0.14	0.93	0.41	0.08
Uniform Delay, d1	18.8	26.6		22.3	23.1	13.0	24.8	30.4	27.2	27.2	26.1	23.7
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	20.9	5.5		28.5	6.1	0.2	0.1	2.6	0.2	33.8	0.6	0.1
Delay (s)	39.7	32.1		50.9	29.2	13.2	24.9	33.0	27.4	61.0	26.7	23.8
Level of Service	D	C		D	C	B	C	C	C	E	C	C
Approach Delay (s)		33.2			29.3			30.1			42.4	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	155	912	313	1205	411	22	233	209	274	191	114
v/c Ratio	0.78	0.81	0.89	0.84	0.46	0.06	0.68	0.46	1.00	0.39	0.22
Control Delay	43.4	32.6	49.1	29.3	3.7	19.2	41.7	7.6	82.9	28.9	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	32.6	49.1	29.3	3.7	19.2	41.7	7.6	82.9	28.9	2.5
Queue Length 50th (ft)	36	224	111	287	8	8	116	0	116	76	0
Queue Length 95th (ft)	#155	#372	#302	#482	57	23	190	53	#274	156	17
Internal Link Dist (ft)		394		1820			1014			2700	
Turn Bay Length (ft)	225		200		200	200		175	250		250
Base Capacity (vph)	200	1146	351	1444	903	349	657	686	275	657	658
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.80	0.89	0.83	0.46	0.06	0.35	0.30	1.00	0.29	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	1065	59	47	1384	48	278	86	82	37	36	90
Future Volume (vph)	48	1065	59	47	1384	48	278	86	82	37	36	90
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	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	0.99		1.00	0.99			0.98			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1662	3204		1662	3243			1625			1559	
Flt Permitted	0.08	1.00		0.12	1.00			0.69			0.86	
Satd. Flow (perm)	143	3204		208	3243			1161			1353	
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)	52	1158	64	51	1504	52	302	93	89	40	39	98
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	9	0
Lane Group Flow (vph)	52	1222	0	51	1553	0	0	484	0	0	168	0
Confl. Peds. (#/hr)	1		8	8		1	6		1	1		6
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	1%	3%	0%	0%	0%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	49.0	49.0		49.0	49.0			41.8			41.8	
Effective Green, g (s)	49.0	49.0		49.0	49.0			41.8			41.8	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.42			0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	70	1589		103	1608			491			572	
v/s Ratio Prot		0.38			c0.48							
v/s Ratio Perm	0.36			0.25				c0.42			0.12	
v/c Ratio	0.74	0.77		0.50	0.97			0.99			0.29	
Uniform Delay, d1	19.9	20.3		16.6	24.1			28.2			18.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	34.2	2.3		3.7	15.0			36.6			0.3	
Delay (s)	54.1	22.6		20.3	39.1			64.8			19.1	
Level of Service	D	C		C	D			E			B	
Approach Delay (s)		23.9			38.5			64.8			19.1	
Approach LOS		C			D			E			B	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	98.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	52	1222	51	1556	484	177
v/c Ratio	0.73	0.77	0.50	0.97	0.99	0.30
Control Delay	78.5	24.7	38.1	41.0	67.1	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	24.7	38.1	41.0	67.1	18.7
Queue Length 50th (ft)	25	325	21	490	294	65
Queue Length 95th (ft)	#101	414	#77	#672	#509	116
Internal Link Dist (ft)		1820		1191	423	675
Turn Bay Length (ft)	125		125			
Base Capacity (vph)	71	1588	102	1610	505	597
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.77	0.50	0.97	0.96	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	855	384	0	0	0	0	0	0	14	86	0
Future Volume (vph)	0	855	384	0	0	0	0	0	0	14	86	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5									4.0	
Lane Util. Factor		0.95									0.95	
Frpb, ped/bikes		1.00									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									0.99	
Satd. Flow (prot)		3096									3302	
Flt Permitted		1.00									0.99	
Satd. Flow (perm)		3096									3302	
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)	0	929	417	0	0	0	0	0	0	15	93	0
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	1300	0	0	0	0	0	0	0	0	94	0
Confl. Peds. (#/hr)							3					3
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type		NA								Perm	NA	
Protected Phases		2									4	
Permitted Phases										4		
Actuated Green, G (s)		37.7									5.6	
Effective Green, g (s)		37.7									5.6	
Actuated g/C Ratio		0.73									0.11	
Clearance Time (s)		4.5									4.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		2253									356	
v/s Ratio Prot		c0.42										
v/s Ratio Perm											0.03	
v/c Ratio		0.58									0.26	
Uniform Delay, d1		3.3									21.2	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.4									0.4	
Delay (s)		3.7									21.6	
Level of Service		A									C	
Approach Delay (s)		3.7			0.0			0.0			21.6	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	5.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	8.5
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	SBT
Lane Group Flow (vph)	1346	108
v/c Ratio	0.56	0.22
Control Delay	4.3	20.1
Queue Delay	0.0	0.0
Total Delay	4.3	20.1
Queue Length 50th (ft)	66	13
Queue Length 95th (ft)	123	36
Internal Link Dist (ft)	1097	269
Turn Bay Length (ft)		
Base Capacity (vph)	3098	1491
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	866	0	0	0	0	0	508	144	0	0	0
Future Volume (vph)	38	866	0	0	0	0	0	508	144	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			
Lane Util. Factor		0.95						0.95	1.00			
Frpb, ped/bikes		1.00						1.00	1.00			
Flpb, ped/bikes		1.00						1.00	1.00			
Frt		1.00						1.00	0.85			
Flt Protected		1.00						1.00	1.00			
Satd. Flow (prot)		3250						3260	1488			
Flt Permitted		1.00						1.00	1.00			
Satd. Flow (perm)		3250						3260	1488			
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)	41	931	0	0	0	0	0	546	155	0	0	0
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	70	0	0	0
Lane Group Flow (vph)	0	964	0	0	0	0	0	546	85	0	0	0
Confl. Peds. (#/hr)							2					2
Heavy Vehicles (%)	4%	2%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Turn Type	Perm	NA						NA	Perm			
Protected Phases		2						8				
Permitted Phases	2								8			
Actuated Green, G (s)		24.6						16.3	16.3			
Effective Green, g (s)		24.6						16.3	16.3			
Actuated g/C Ratio		0.49						0.33	0.33			
Clearance Time (s)		4.5						4.5	4.5			
Vehicle Extension (s)		3.0						3.0	3.0			
Lane Grp Cap (vph)		1602						1064	486			
v/s Ratio Prot								c0.17				
v/s Ratio Perm		0.30							0.06			
v/c Ratio		0.60						0.51	0.17			
Uniform Delay, d1		9.1						13.6	12.0			
Progression Factor		1.00						1.00	1.00			
Incremental Delay, d2		0.6						0.4	0.2			
Delay (s)		9.8						14.0	12.2			
Level of Service		A						B	B			
Approach Delay (s)		9.8			0.0			13.6			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	NBT	NBR
Lane Group Flow (vph)	972	546	155
v/c Ratio	0.61	0.52	0.28
Control Delay	11.5	16.7	7.8
Queue Delay	0.0	0.0	0.0
Total Delay	11.5	16.7	7.8
Queue Length 50th (ft)	94	64	10
Queue Length 95th (ft)	194	141	53
Internal Link Dist (ft)	460	568	
Turn Bay Length (ft)			175
Base Capacity (vph)	3043	2567	1193
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.21	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱							↰	↑↑	
Traffic Volume (vph)	0	884	69	0	0	0	0	0	0	168	589	0
Future Volume (vph)	0	884	69	0	0	0	0	0	0	168	589	0
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	
Lane Util. Factor		0.95	1.00							1.00	0.95	
Frpb, ped/bikes		1.00	0.99							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3260	1469							1657	3292	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3260	1469							1657	3292	
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)	0	931	73	0	0	0	0	0	0	177	620	0
RTOR Reduction (vph)	0	0	30	0	0	0	0	0	0	67	0	0
Lane Group Flow (vph)	0	931	43	0	0	0	0	0	0	110	620	0
Confl. Peds. (#/hr)									4	4		
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		2									4	
Permitted Phases			2							4		
Actuated Green, G (s)		25.7	25.7							19.9	19.9	
Effective Green, g (s)		25.7	25.7							19.9	19.9	
Actuated g/C Ratio		0.48	0.48							0.37	0.37	
Clearance Time (s)		4.0	4.0							4.0	4.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		1563	704							615	1222	
v/s Ratio Prot		c0.29									c0.19	
v/s Ratio Perm			0.03							0.07		
v/c Ratio		0.60	0.06							0.18	0.51	
Uniform Delay, d1		10.2	7.5							11.3	13.1	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.6	0.0							0.1	0.3	
Delay (s)		10.8	7.5							11.5	13.4	
Level of Service		B	A							B	B	
Approach Delay (s)		10.5			0.0			0.0			13.0	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	931	73	177	620
v/c Ratio	0.60	0.10	0.26	0.51
Control Delay	13.0	4.4	7.6	16.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.0	4.4	7.6	16.0
Queue Length 50th (ft)	99	2	13	73
Queue Length 95th (ft)	217	24	62	166
Internal Link Dist (ft)	782			261
Turn Bay Length (ft)		100	150	
Base Capacity (vph)	2939	1330	1269	2474
Starvation Cap Reductn	0	0	0	102
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.05	0.14	0.26

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	407	658	0	0	0	0	0	324	51	0	0	0
Future Volume (vph)	407	658	0	0	0	0	0	324	51	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				
Lane Util. Factor	0.91	0.91						0.95				
Frt	1.00	1.00						0.98				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1513	3114						3257				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1513	3114						3257				
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)	438	708	0	0	0	0	0	348	55	0	0	0
RTOR Reduction (vph)	153	8	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	219	766	0	0	0	0	0	388	0	0	0	0
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA						NA				
Protected Phases		8						6				
Permitted Phases	8											
Actuated Green, G (s)	21.7	21.7						11.5				
Effective Green, g (s)	21.7	21.7						11.5				
Actuated g/C Ratio	0.51	0.51						0.27				
Clearance Time (s)	4.5	4.5						4.5				
Vehicle Extension (s)	3.0	3.0						3.0				
Lane Grp Cap (vph)	778	1601						887				
v/s Ratio Prot								c0.12				
v/s Ratio Perm	0.15	0.25										
v/c Ratio	0.28	0.48						0.44				
Uniform Delay, d1	5.8	6.6						12.7				
Progression Factor	1.00	1.00						1.00				
Incremental Delay, d2	0.2	0.2						0.3				
Delay (s)	6.0	6.8						13.0				
Level of Service	A	A						B				
Approach Delay (s)		6.6			0.0			13.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	372	774	403
v/c Ratio	0.40	0.49	0.45
Control Delay	2.9	7.9	15.3
Queue Delay	0.1	0.0	0.0
Total Delay	3.0	7.9	15.3
Queue Length 50th (ft)	6	52	37
Queue Length 95th (ft)	43	114	94
Internal Link Dist (ft)		156	664
Turn Bay Length (ft)	75		
Base Capacity (vph)	1480	3030	2867
Starvation Cap Reductn	225	495	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.30	0.31	0.14

Intersection Summary

MOVEMENT SUMMARY

Site: [29 - SE 9th St @ OR 126]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SE 9th St											
3	L2	36	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	32.6
8	T1	33	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	32.5
18	R2	43	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	31.6
Approach		112	1.0	0.191	8.6	LOS A	0.8	19.1	0.66	0.66	32.2
East: OR 126											
1	L2	30	1.0	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	32.9
6	T1	415	4.0	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	32.8
16	R2	160	6.0	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	31.8
Approach		605	4.4	0.535	9.5	LOS A	3.7	96.9	0.49	0.32	32.5
North: SE 9th St											
7	L2	180	6.0	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	31.2
4	T1	24	1.0	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	31.3
14	R2	138	4.0	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	30.4
Approach		342	4.8	0.433	10.1	LOS B	2.3	59.3	0.66	0.68	30.9
West: OR 126											
5	L2	82	2.0	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	31.5
2	T1	540	3.0	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	31.5
12	R2	27	1.0	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	30.7
Approach		649	2.8	0.621	12.0	LOS B	5.2	131.8	0.67	0.56	31.5
All Vehicles		1709	3.6	0.621	10.5	LOS B	5.2	131.8	0.61	0.51	31.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	31	57	22	30	1	117	396	18	4	248	80
Future Volume (vph)	35	31	57	22	30	1	117	396	18	4	248	80
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			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	
Frt		0.94			1.00		1.00	0.99		1.00	0.96	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1559			1709		1614	1722		1662	1665	
Flt Permitted		0.90			0.85		0.38	1.00		0.50	1.00	
Satd. Flow (perm)		1419			1479		650	1722		872	1665	
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)	39	34	63	24	33	1	130	440	20	4	276	89
RTOR Reduction (vph)	0	39	0	0	1	0	0	2	0	0	15	0
Lane Group Flow (vph)	0	97	0	0	57	0	130	458	0	4	350	0
Confl. Peds. (#/hr)	1		1	1		1						
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	3%	0%	4%	0%	0%	0%	3%	1%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		8.9			8.9		28.1	22.9		19.3	18.5	
Effective Green, g (s)		8.9			8.9		28.1	22.9		19.3	18.5	
Actuated g/C Ratio		0.20			0.20		0.62	0.50		0.42	0.41	
Clearance Time (s)		4.0			4.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		276			288		510	864		382	675	
v/s Ratio Prot							c0.03	c0.27		0.00	0.21	
v/s Ratio Perm		c0.07			0.04		0.13			0.00		
v/c Ratio		0.35			0.20		0.25	0.53		0.01	0.52	
Uniform Delay, d1		15.9			15.4		4.2	7.7		7.6	10.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8			0.3		0.3	0.6		0.0	0.7	
Delay (s)		16.6			15.7		4.5	8.3		7.6	10.9	
Level of Service		B			B		A	A		A	B	
Approach Delay (s)		16.6			15.7			7.5			10.8	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	45.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	58	130	460	4	365
v/c Ratio	0.41	0.19	0.24	0.50	0.01	0.58
Control Delay	16.4	18.4	5.3	9.4	4.2	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	18.4	5.3	9.4	4.2	15.2
Queue Length 50th (ft)	18	12	11	46	0	66
Queue Length 95th (ft)	70	44	33	197	3	152
Internal Link Dist (ft)	1098	1419		1239		2675
Turn Bay Length (ft)			75		125	
Base Capacity (vph)	946	969	552	1604	555	1540
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.06	0.24	0.29	0.01	0.24

Intersection Summary

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	2	18	0	2	13	11	370	11	14	257	47
Future Vol, veh/h	41	2	18	0	2	13	11	370	11	14	257	47
Conflicting Peds, #/hr	4	0	0	0	0	4	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	44	2	19	0	2	14	12	394	12	15	273	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	765	759	300	762	778	403	325	0	0	405	0	0
Stage 1	330	330	-	423	423	-	-	-	-	-	-	-
Stage 2	435	429	-	339	355	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	323	338	744	324	330	652	1246	-	-	1165	-	-
Stage 1	687	649	-	613	591	-	-	-	-	-	-	-
Stage 2	604	587	-	680	633	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	306	328	743	307	320	650	1246	-	-	1161	-	-
Mov Cap-2 Maneuver	306	328	-	307	320	-	-	-	-	-	-	-
Stage 1	677	637	-	606	584	-	-	-	-	-	-	-
Stage 2	580	580	-	650	622	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	11.5	0.2	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	371	571	1161	-	-
HCM Lane V/C Ratio	0.009	-	-	0.175	0.028	0.013	-	-
HCM Control Delay (s)	7.9	0	-	16.7	11.5	8.1	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	219	129	139	385	212	131	268	89	185	356	10
Future Volume (vph)	9	219	129	139	385	212	131	268	89	185	356	10
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	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	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	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1661	1699	1473	1646	3228	1438	1646	1733	1444	3193	1726	
Flt Permitted	0.52	1.00	1.00	0.40	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	902	1699	1473	699	3228	1438	1646	1733	1444	3193	1726	
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)	9	228	134	145	401	221	136	279	93	193	371	10
RTOR Reduction (vph)	0	0	80	0	0	146	0	0	55	0	1	0
Lane Group Flow (vph)	9	228	54	145	401	75	136	279	38	193	380	0
Confl. Peds. (#/hr)	3					3	3		1	1		3
Heavy Vehicles (%)	0%	3%	1%	1%	3%	1%	1%	1%	2%	1%	1%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2	3	1	6		3	8	1	7	4	
Permitted Phases	2		2	6		6			8			
Actuated Green, G (s)	20.2	19.2	30.3	30.4	25.4	25.4	11.1	23.4	30.6	8.7	21.0	
Effective Green, g (s)	20.2	19.2	30.3	30.4	25.4	25.4	11.1	23.4	30.6	8.7	21.0	
Actuated g/C Ratio	0.27	0.26	0.41	0.41	0.34	0.34	0.15	0.31	0.41	0.12	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	254	437	678	376	1100	490	245	544	670	372	486	
v/s Ratio Prot	0.00	c0.13	0.01	c0.04	0.12		c0.08	0.16	0.01	0.06	c0.22	
v/s Ratio Perm	0.01		0.03	0.12		0.05			0.02			
v/c Ratio	0.04	0.52	0.08	0.39	0.36	0.15	0.56	0.51	0.06	0.52	0.78	
Uniform Delay, d1	19.9	23.7	13.6	14.8	18.5	17.1	29.4	20.9	13.2	30.9	24.6	
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	1.1	0.1	0.7	0.2	0.1	2.7	0.8	0.0	1.2	8.0	
Delay (s)	20.0	24.8	13.6	15.5	18.7	17.2	32.1	21.7	13.3	32.2	32.7	
Level of Service	B	C	B	B	B	B	C	C	B	C	C	
Approach Delay (s)		20.7			17.7			23.0			32.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	9	228	134	145	401	221	136	279	93	193	381
v/c Ratio	0.03	0.61	0.19	0.41	0.35	0.34	0.54	0.49	0.14	0.50	0.75
Control Delay	17.4	34.7	3.6	21.8	20.8	5.4	39.7	22.7	3.2	37.9	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	34.7	3.6	21.8	20.8	5.4	39.7	22.7	3.2	37.9	33.9
Queue Length 50th (ft)	2	91	0	43	64	0	55	96	0	41	149
Queue Length 95th (ft)	13	189	31	102	150	54	135	182	23	92	284
Internal Link Dist (ft)		693			446			553			1860
Turn Bay Length (ft)	125		200	175		150	225		125	250	
Base Capacity (vph)	366	765	778	354	1455	768	334	932	670	417	803
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.30	0.17	0.41	0.28	0.29	0.41	0.30	0.14	0.46	0.47

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	108	319	287	307	147	379	1676	134	59	1313	51
Future Volume (vph)	65	108	319	287	307	147	379	1676	134	59	1313	51
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	5.0		4.5	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1661	1683	1464	1583	3072		1646	3059		1599	3068	
Flt Permitted	0.25	1.00	1.00	0.50	1.00		0.06	1.00		0.06	1.00	
Satd. Flow (perm)	434	1683	1464	837	3072		102	3059		106	3068	
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)	70	116	343	309	330	158	408	1802	144	63	1412	55
RTOR Reduction (vph)	0	0	31	0	41	0	0	3	0	0	2	0
Lane Group Flow (vph)	70	116	312	309	447	0	408	1943	0	63	1465	0
Confl. Peds. (#/hr)	7					7			2	2		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	0%	4%	1%	5%	2%	3%	1%	7%	12%	4%	8%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	27.5	22.4	47.0	34.3	25.8		92.5	78.6		72.8	63.4	
Effective Green, g (s)	27.5	22.4	47.0	34.3	25.8		92.5	78.6		72.8	63.4	
Actuated g/C Ratio	0.20	0.16	0.34	0.25	0.19		0.67	0.57		0.53	0.46	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	132	274	548	255	576		345	1749		158	1415	
v/s Ratio Prot	0.02	0.07	0.10	c0.07	0.15		c0.21	0.64		0.03	0.48	
v/s Ratio Perm	0.09		0.11	c0.23			c0.58			0.18		
v/c Ratio	0.53	0.42	0.57	1.21	0.78		1.18	1.11		0.40	1.04	
Uniform Delay, d1	46.3	51.7	36.9	51.3	53.0		47.1	29.4		28.5	37.0	
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	1.1	1.4	125.9	6.5		107.9	58.6		1.7	33.6	
Delay (s)	50.4	52.8	38.3	177.2	59.5		155.0	88.0		30.2	70.6	
Level of Service	D	D	D	F	E		F	F		C	E	
Approach Delay (s)		43.1			105.1			99.6			69.0	
Approach LOS		D			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	85.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	137.4	Sum of lost time (s)	18.5
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	70	116	343	309	488	408	1946	63	1467
v/c Ratio	0.47	0.44	0.65	1.25	0.78	1.17	1.10	0.33	1.04
Control Delay	49.7	55.9	35.6	181.9	56.1	141.0	81.6	22.1	70.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	55.9	35.6	181.9	56.1	141.0	81.6	22.1	70.4
Queue Length 50th (ft)	48	93	208	~317	199	~387	~1074	18	~743
Queue Length 95th (ft)	89	155	310	#520	263	#652	#1332	60	#977
Internal Link Dist (ft)		446			2921		4483		2738
Turn Bay Length (ft)	175			150		150		175	
Base Capacity (vph)	148	452	528	247	907	349	1777	197	1414
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.26	0.65	1.25	0.54	1.17	1.10	0.32	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

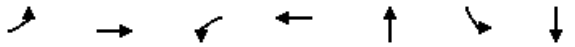
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	119	149	92	246	64
Future Vol, veh/h	32	119	149	92	246	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	9	5	9	4	4
Mvmt Flow	35	129	162	100	267	70
Number of Lanes	1	1	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.1	11.7	12.7
HCM LOS	A	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	79%	0%	0%	62%
Vol Thru, %	0%	100%	0%	38%
Vol Right, %	21%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	310	32	119	241
LT Vol	246	0	0	149
Through Vol	0	32	0	92
RT Vol	64	0	119	0
Lane Flow Rate	337	35	129	262
Geometry Grp	2	7	7	5
Degree of Util (X)	0.474	0.055	0.184	0.386
Departure Headway (Hd)	5.059	5.734	5.128	5.302
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	708	618	691	671
Service Time	3.134	3.533	2.927	3.39
HCM Lane V/C Ratio	0.476	0.057	0.187	0.39
HCM Control Delay	12.7	8.9	9.1	11.7
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	2.6	0.2	0.7	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	586	3	267	349	37	0	5	92	119	10	37
Future Volume (vph)	13	586	3	267	349	37	0	5	92	119	10	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1630	1695		1630	1647			1457		1630	1514	
Flt Permitted	0.52	1.00		0.12	1.00			1.00		0.43	1.00	
Satd. Flow (perm)	891	1695		204	1647			1457		736	1514	
Peak-hour factor, PHF	0.92	0.93	0.93	0.93	0.93	0.92	0.93	0.92	0.93	0.92	0.92	0.92
Adj. Flow (vph)	14	630	3	287	375	40	0	5	99	129	11	40
RTOR Reduction (vph)	0	0	0	0	2	0	0	90	0	0	31	0
Lane Group Flow (vph)	14	633	0	287	413	0	0	14	0	129	20	0
Heavy Vehicles (%)	2%	3%	40%	2%	5%	2%	0%	2%	3%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	29.8	28.7		49.9	43.8			7.0		15.9	15.9	
Effective Green, g (s)	29.8	28.7		49.9	43.8			7.0		15.9	15.9	
Actuated g/C Ratio	0.40	0.38		0.67	0.59			0.09		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	365	650		444	964			136		215	321	
v/s Ratio Prot	0.00	c0.37		c0.14	0.25			0.01		c0.04	0.01	
v/s Ratio Perm	0.01			0.29						c0.09		
v/c Ratio	0.04	0.97		0.65	0.43			0.10		0.60	0.06	
Uniform Delay, d1	13.7	22.7		15.3	8.6			31.0		25.4	23.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	28.6		3.2	0.3			0.3		4.5	0.1	
Delay (s)	13.7	51.3		18.5	8.9			31.4		29.9	23.6	
Level of Service	B	D		B	A			C		C	C	
Approach Delay (s)		50.5			12.8			31.4			28.1	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	14	633	287	415	104	129	51
v/c Ratio	0.03	1.07	0.62	0.40	0.44	0.53	0.14
Control Delay	8.0	84.2	18.7	9.8	15.1	32.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	84.2	18.7	9.8	15.1	32.6	11.4
Queue Length 50th (ft)	2	~318	67	73	2	47	4
Queue Length 95th (ft)	9	#615	156	213	46	101	31
Internal Link Dist (ft)		2626		631	1973		4566
Turn Bay Length (ft)	150		150			100	
Base Capacity (vph)	814	593	611	1034	564	243	545
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	1.07	0.47	0.40	0.18	0.53	0.09

Intersection Summary

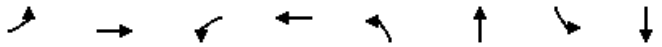
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	59	30	90	126	89	62	430	74	38	270	5
Future Volume (vph)	15	59	30	90	126	89	62	430	74	38	270	5
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		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1660	1650		1645	1596		1662	1697		1662	1711	
Flt Permitted	0.61	1.00		0.54	1.00		0.49	1.00		0.23	1.00	
Satd. Flow (perm)	1061	1650		930	1596		853	1697		399	1711	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	17	67	34	102	143	101	70	489	84	43	307	6
RTOR Reduction (vph)	0	22	0	0	28	0	0	7	0	0	1	0
Lane Group Flow (vph)	17	79	0	102	216	0	70	566	0	43	312	0
Confl. Peds. (#/hr)	3		1	1		3						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	3%	0%	1%	0%	0%	2%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	14.7	13.9		22.7	17.9		29.3	26.4		28.3	25.9	
Effective Green, g (s)	14.7	13.9		22.7	17.9		29.3	26.4		28.3	25.9	
Actuated g/C Ratio	0.22	0.21		0.35	0.27		0.45	0.40		0.43	0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	350		374	436		417	683		218	676	
v/s Ratio Prot	0.00	0.05		c0.02	c0.14		c0.01	c0.33		0.01	0.18	
v/s Ratio Perm	0.01			0.07			0.07			0.08		
v/c Ratio	0.07	0.23		0.27	0.49		0.17	0.83		0.20	0.46	
Uniform Delay, d1	19.9	21.3		15.0	20.0		10.6	17.5		12.2	14.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.4	0.9		0.2	8.2		0.4	0.5	
Delay (s)	20.0	21.7		15.4	20.9		10.8	25.7		12.6	15.1	
Level of Service	C	C		B	C		B	C		B	B	
Approach Delay (s)		21.4			19.3			24.1			14.8	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	17	101	102	244	70	573	43	313
v/c Ratio	0.05	0.31	0.27	0.49	0.14	0.77	0.14	0.43
Control Delay	19.2	23.3	20.8	22.7	9.0	25.3	9.4	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	23.3	20.8	22.7	9.0	25.3	9.4	16.8
Queue Length 50th (ft)	5	27	31	67	11	188	7	88
Queue Length 95th (ft)	19	71	71	168	38	#417	26	194
Internal Link Dist (ft)		602		599		2595		1305
Turn Bay Length (ft)	100		100		75		75	
Base Capacity (vph)	335	771	374	820	503	1120	307	1104
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.13	0.27	0.30	0.14	0.51	0.14	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	216	0	543	0	339	166	316	340	0
Future Volume (vph)	0	0	0	216	0	543	0	339	166	316	340	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					5.0	5.0		5.0	5.0	5.0	5.0	
Lane Util. Factor					1.00	1.00		1.00	1.00	1.00	1.00	
Frpb, ped/bikes					1.00	0.98		1.00	1.00	1.00	1.00	
Flpb, ped/bikes					0.99	1.00		1.00	1.00	1.00	1.00	
Frt					1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected					0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)					1641	1436		1733	1473	1662	1733	
Flt Permitted					0.76	1.00		1.00	1.00	0.31	1.00	
Satd. Flow (perm)					1308	1436		1733	1473	549	1733	
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)	0	0	0	225	0	566	0	353	173	329	354	0
RTOR Reduction (vph)	0	0	0	0	0	327	0	0	120	0	0	0
Lane Group Flow (vph)	0	0	0	0	225	239	0	353	53	329	354	0
Confl. Peds. (#/hr)	4		10	10		4	3					3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	1%	1%	0%	1%	0%
Turn Type				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)					14.9	14.9		17.0	17.0	30.8	30.8	
Effective Green, g (s)					14.9	14.9		17.0	17.0	30.8	30.8	
Actuated g/C Ratio					0.27	0.27		0.31	0.31	0.55	0.55	
Clearance Time (s)					5.0	5.0		5.0	5.0	5.0	5.0	
Vehicle Extension (s)					2.0	2.0		3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)					349	384		528	449	479	958	
v/s Ratio Prot								0.20		c0.11	0.20	
v/s Ratio Perm					c0.17	0.17			0.04	c0.27		
v/c Ratio					0.64	0.62		0.67	0.12	0.69	0.37	
Uniform Delay, d1					18.1	17.9		16.9	13.9	8.2	7.0	
Progression Factor					1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2					3.0	2.2		3.2	0.1	3.3	0.2	
Delay (s)					21.1	20.2		20.1	14.1	11.4	7.2	
Level of Service					C	C		C	B	B	A	
Approach Delay (s)		0.0			20.4			18.1			9.2	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	225	566	353	173	329	354
v/c Ratio	0.65	0.80	0.68	0.31	0.69	0.37
Control Delay	29.0	14.9	25.5	4.8	18.2	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	14.9	25.5	4.8	18.2	9.3
Queue Length 50th (ft)	67	32	101	0	54	58
Queue Length 95th (ft)	146	#162	206	37	#152	134
Internal Link Dist (ft)	931		2881			465
Turn Bay Length (ft)				100	100	
Base Capacity (vph)	533	850	773	752	487	996
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.67	0.46	0.23	0.68	0.36

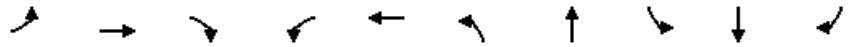
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	21	218	15	33	21	409	1903	16	13	1491	319
Future Volume (vph)	282	21	218	15	33	21	409	1903	16	13	1491	319
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	5.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1563	1579	1436	1661	1594		1646	3194		1662	3107	1426
Flt Permitted	0.52	0.52	1.00	0.65	1.00		0.06	1.00		0.06	1.00	1.00
Satd. Flow (perm)	853	848	1436	1135	1594		96	3194		104	3107	1426
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)	300	22	232	16	35	22	435	2024	17	14	1586	339
RTOR Reduction (vph)	0	0	59	0	17	0	0	0	0	0	0	100
Lane Group Flow (vph)	159	163	173	16	40	0	435	2041	0	14	1586	239
Confl. Peds. (#/hr)	1		1	1		1	2		1	1		2
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	1%	0%	3%	0%	0%	7%	1%	4%	0%	0%	7%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	3	8	1	7	4		1	6		5	2	3
Permitted Phases	8		8	4			6			2		2
Actuated Green, G (s)	27.3	27.3	46.1	15.2	12.9		98.4	90.4		70.3	67.3	76.7
Effective Green, g (s)	27.3	27.3	46.1	15.2	12.9		98.4	90.4		70.3	67.3	76.7
Actuated g/C Ratio	0.20	0.20	0.34	0.11	0.09		0.72	0.66		0.51	0.49	0.56
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	219	219	536	135	150		365	2112		87	1529	800
v/s Ratio Prot	0.05	c0.05	0.06	0.00	0.02		c0.23	0.64		0.00	0.51	0.02
v/s Ratio Perm	0.09	c0.10	0.06	0.01			c0.63			0.08		0.15
v/c Ratio	0.73	0.74	0.32	0.12	0.27		1.19	0.97		0.16	1.04	0.30
Uniform Delay, d1	50.1	51.4	33.7	54.5	57.5		47.2	21.7		22.3	34.7	15.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.3	12.8	0.4	0.4	1.0		110.3	12.5		0.9	33.3	0.2
Delay (s)	61.4	64.2	34.0	54.9	58.4		157.5	34.2		23.2	68.0	16.0
Level of Service	E	E	C	D	E		F	C		C	E	B
Approach Delay (s)		50.8			57.7			55.9			58.6	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	56.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	136.7	Sum of lost time (s)	21.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	159	163	232	16	57	435	2041	14	1586	339
v/c Ratio	0.79	0.81	0.41	0.09	0.35	1.14	0.92	0.09	1.04	0.37
Control Delay	76.3	78.5	19.9	43.3	44.5	130.0	27.8	10.1	66.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	78.5	19.9	43.3	44.5	130.0	27.8	10.1	66.5	6.0
Queue Length 50th (ft)	129	132	77	11	31	~385	603	3	~758	39
Queue Length 95th (ft)	#207	#215	162	31	74	#670	#1259	12	#1026	110
Internal Link Dist (ft)		931			261		4040		4483	
Turn Bay Length (ft)	150		125	150		100		150		275
Base Capacity (vph)	201	287	564	170	394	380	2213	153	1529	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.57	0.41	0.09	0.14	1.14	0.92	0.09	1.04	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	13	1	46	10	66	6	380	94	72	194	8
Future Volume (vph)	4	13	1	46	10	66	6	380	94	72	194	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		3.5			3.5		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.93		1.00	0.97		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1718			1592		1662	1698		1662	1660	
Flt Permitted		0.94			0.88		0.63	1.00		0.33	1.00	
Satd. Flow (perm)		1632			1435		1098	1698		573	1660	
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)	4	13	1	47	10	68	6	392	97	74	200	8
RTOR Reduction (vph)	0	1	0	0	55	0	0	11	0	0	1	0
Lane Group Flow (vph)	0	17	0	0	70	0	6	478	0	74	207	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		8.5			8.5		21.3	20.5		27.3	23.5	
Effective Green, g (s)		8.5			8.5		21.3	20.5		27.3	23.5	
Actuated g/C Ratio		0.18			0.18		0.46	0.44		0.59	0.51	
Clearance Time (s)		3.5			3.5		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		299			263		514	751		427	842	
v/s Ratio Prot							0.00	c0.28		c0.01	c0.12	
v/s Ratio Perm		0.01			c0.05		0.01			0.09		
v/c Ratio		0.06			0.27		0.01	0.64		0.17	0.25	
Uniform Delay, d1		15.6			16.2		6.8	10.0		4.8	6.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.5		0.0	1.8		0.2	0.2	
Delay (s)		15.7			16.8		6.8	11.8		5.0	6.6	
Level of Service		B			B		A	B		A	A	
Approach Delay (s)		15.7			16.8			11.7			6.1	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	125	6	489	74	208
v/c Ratio	0.06	0.37	0.01	0.65	0.14	0.23
Control Delay	19.4	14.7	3.7	15.6	4.1	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	14.7	3.7	15.6	4.1	6.4
Queue Length 50th (ft)	4	14	1	102	5	16
Queue Length 95th (ft)	20	61	3	219	19	79
Internal Link Dist (ft)	831	737		9408		839
Turn Bay Length (ft)			250		250	
Base Capacity (vph)	1083	975	641	1504	557	1506
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.13	0.01	0.33	0.13	0.14

Intersection Summary

MOVEMENT SUMMARY

Site: [40 - SW 27th @ SW Wickiup]

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW 27th											
3	L2	195	2.0	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	31.1
8	T1	586	1.0	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	31.1
18	R2	12	0.0	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	30.3
Approach		792	1.2	0.671	12.4	LOS B	6.4	161.6	0.62	0.41	31.1
East: SW Wickiup											
1	L2	9	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.9
6	T1	141	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.9
16	R2	8	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.0
Approach		158	0.0	0.265	9.5	LOS A	1.1	27.6	0.68	0.68	32.8
North: SW 27th											
7	L2	4	0.0	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	34.2
4	T1	271	1.0	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	34.1
14	R2	34	3.0	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	33.1
Approach		309	1.2	0.323	7.2	LOS A	1.6	41.3	0.55	0.46	34.0
West: SW Wickiup											
5	L2	34	3.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	34.6
2	T1	101	1.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	34.6
12	R2	60	0.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	33.6
Approach		195	1.0	0.191	5.3	LOS A	0.9	22.3	0.45	0.34	34.3
All Vehicles		1453	1.1	0.671	10.0	LOS B	6.4	161.6	0.59	0.44	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [41 - SW 27th @ SW Canal Blvd]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW Canal Dr											
3	L2	191	5.0	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	30.7
8	T1	221	1.0	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	30.7
18	R2	127	3.0	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	29.9
Approach		538	2.9	0.594	12.6	LOS B	4.5	115.5	0.73	0.73	30.5
East: SW Yew Ave											
1	L2	110	0.0	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	21.3
6	T1	602	1.0	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	21.3
16	R2	141	0.0	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	20.9
Approach		853	0.7	0.976	46.6	LOS E	25.2	633.0	1.00	1.63	21.2
North: SW Canal Blvd											
7	L2	101	0.0	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	26.3
4	T1	210	1.0	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	26.2
14	R2	77	0.0	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	25.7
Approach		388	0.5	0.722	25.8	LOS D	5.3	132.4	0.87	1.06	26.1
West: SW 27th St											
5	L2	17	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	33.4
2	T1	266	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	33.3
12	R2	66	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	32.4
Approach		350	0.0	0.391	8.5	LOS A	2.1	51.5	0.62	0.57	33.1
All Vehicles		2130	1.1	0.976	28.0	LOS D	25.2	633.0	0.85	1.13	25.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	256	232	352	741	0	0	0	0	109	0	183
Future Volume (vph)	0	256	232	352	741	0	0	0	0	109	0	183
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1667	1423	1567	1733						1662	1458
Flt Permitted		1.00	1.00	0.47	1.00						0.95	1.00
Satd. Flow (perm)		1667	1423	776	1733						1662	1458
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)	0	278	252	383	805	0	0	0	0	118	0	199
RTOR Reduction (vph)	0	0	144	0	0	0	0	0	0	0	0	91
Lane Group Flow (vph)	0	278	108	383	805	0	0	0	0	0	118	108
Confl. Peds. (#/hr)			4	4								
Heavy Vehicles (%)	0%	5%	2%	6%	1%	0%	0%	0%	0%	0%	0%	2%
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)		23.0	23.0	34.0	34.0						9.7	9.7
Effective Green, g (s)		23.0	23.0	34.0	34.0						9.7	9.7
Actuated g/C Ratio		0.43	0.43	0.63	0.63						0.18	0.18
Clearance Time (s)		5.0	5.0	5.0	5.0						5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		713	609	579	1097						300	263
v/s Ratio Prot		0.17		0.07	c0.46							
v/s Ratio Perm			0.08	0.34							0.07	c0.07
v/c Ratio		0.39	0.18	0.66	0.73						0.39	0.41
Uniform Delay, d1		10.5	9.5	5.5	6.7						19.4	19.5
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.4	0.1	2.8	2.6						0.9	1.0
Delay (s)		10.9	9.6	8.3	9.3						20.3	20.5
Level of Service		B	A	A	A						C	C
Approach Delay (s)		10.3			9.0			0.0			20.4	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	53.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	278	252	383	805	118	199
v/c Ratio	0.39	0.34	0.66	0.73	0.39	0.56
Control Delay	13.4	3.3	13.6	13.4	23.6	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	3.3	13.6	13.4	23.6	16.5
Queue Length 50th (ft)	56	0	46	137	35	25
Queue Length 95th (ft)	127	37	#141	#429	72	75
Internal Link Dist (ft)	1380			488	462	
Turn Bay Length (ft)		75	150			200
Base Capacity (vph)	750	777	579	1137	935	868
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.32	0.66	0.71	0.13	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	250	0	0	662	188	430	1	247	0	0	0
Future Volume (vph)	115	250	0	0	662	188	430	1	247	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0			5.0	5.0	5.0	5.0				
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00				
Frpb, ped/bikes	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				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	1599	1667			1683	1395	1630	1431				
Flt Permitted	0.12	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	205	1667			1683	1395	1630	1431				
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)	125	272	0	0	720	204	467	1	268	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	60	0	173	0	0	0	0
Lane Group Flow (vph)	125	272	0	0	720	144	467	96	0	0	0	0
Confl. Peds. (#/hr)	3		1	1		3						
Heavy Vehicles (%)	4%	5%	0%	0%	4%	4%	2%	0%	4%	0%	0%	0%
Turn Type	pm+pt	NA			NA	Perm	Perm	NA				
Protected Phases	5	2			6			8				
Permitted Phases	2					6	8					
Actuated Green, G (s)	37.3	37.3			27.8	27.8	25.8	25.8				
Effective Green, g (s)	37.3	37.3			27.8	27.8	25.8	25.8				
Actuated g/C Ratio	0.51	0.51			0.38	0.38	0.35	0.35				
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	190	850			640	530	575	505				
v/s Ratio Prot	c0.04	0.16			c0.43			0.07				
v/s Ratio Perm	0.29					0.10	c0.29					
v/c Ratio	0.66	0.32			1.12	0.27	0.81	0.19				
Uniform Delay, d1	15.6	10.5			22.6	15.7	21.5	16.4				
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00				
Incremental Delay, d2	8.0	0.2			75.2	0.3	8.6	0.2				
Delay (s)	23.6	10.7			97.8	15.9	30.0	16.6				
Level of Service	C	B			F	B	C	B				
Approach Delay (s)		14.8			79.8			25.1			0.0	
Approach LOS		B			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	125	272	720	204	467	269
v/c Ratio	0.66	0.32	1.13	0.35	0.81	0.40
Control Delay	31.9	13.4	103.8	11.9	33.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	13.4	103.8	11.9	33.3	4.1
Queue Length 50th (ft)	30	71	~399	33	186	0
Queue Length 95th (ft)	#94	139	#660	91	296	43
Internal Link Dist (ft)		488	979			520
Turn Bay Length (ft)	150			100		
Base Capacity (vph)	190	849	637	588	740	796
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.32	1.13	0.35	0.63	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

MOVEMENT SUMMARY

Site: [44 - SW 19th @ SE Airport Way]

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: SW 19th St											
3	L2	267	0.0	0.329	7.8	LOS A	1.6	40.7	0.60	0.55	31.5
18	R2	21	8.0	0.329	7.8	LOS A	1.6	40.7	0.60	0.55	30.5
Approach		288	0.6	0.329	7.8	LOS A	1.6	40.7	0.60	0.55	31.4
East: SE Airport Way											
1	L2	10	0.0	0.536	10.4	LOS B	3.5	90.7	0.61	0.50	32.7
6	T1	527	5.0	0.536	10.4	LOS B	3.5	90.7	0.61	0.50	32.5
Approach		537	4.9	0.536	10.4	LOS B	3.5	90.7	0.61	0.50	32.5
West: SE Airport Way											
2	T1	428	3.0	0.427	7.0	LOS A	2.8	73.7	0.09	0.02	34.2
12	R2	123	16.0	0.427	7.0	LOS A	2.8	73.7	0.09	0.02	32.9
Approach		551	5.9	0.427	7.0	LOS A	2.8	73.7	0.09	0.02	33.9
All Vehicles		1376	4.4	0.536	8.5	LOS A	3.5	90.7	0.40	0.32	32.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [45 - SW Helmholtz @ SW Canal]

Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
NorthEast: SW Canal											
6x	T1	198	1.0	0.240	6.9	LOS A	1.1	27.3	0.58	0.53	34.3
16x	R2	2	0.0	0.240	6.9	LOS A	1.1	27.3	0.58	0.53	33.4
Approach		200	1.0	0.240	6.9	LOS A	1.1	27.3	0.58	0.53	34.3
NorthWest: SW Helmholtz											
7x	L2	7	0.0	0.221	5.4	LOS A	1.0	27.0	0.39	0.26	34.9
14x	R2	233	4.0	0.221	5.4	LOS A	1.0	27.0	0.39	0.26	33.7
Approach		239	3.9	0.221	5.4	LOS A	1.0	27.0	0.39	0.26	33.8
SouthWest: SW Canal											
5x	L2	479	1.0	0.636	10.3	LOS B	7.1	179.4	0.12	0.02	31.3
2x	T1	388	0.0	0.636	10.3	LOS B	7.1	179.4	0.12	0.02	31.3
Approach		867	0.6	0.636	10.3	LOS B	7.1	179.4	0.12	0.02	31.3
All Vehicles		1307	1.2	0.636	8.9	LOS A	7.1	179.4	0.24	0.14	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.