Transportation Impact Analysis

Bend La Pine Schools 15th Street Master Plan

Bend, Oregon

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Project No. 21583

March 2018

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Section 1 Executive Summary

EXECUTIVE SUMMARY

Local voters passed a bond measure in May 2017 to fund several new schools and to address existing facility needs in the Bend-La Pine School District (BSD). Today, more than half of the elementary schools and all the high schools in Bend are near or over capacity. During the next ten years, the district is anticipated to experience an increase of approximately 3,000 students. This bond measure will help the district address the existing needs as well as the growing student enrollment.

As part of the bond measure, BSD is master planning 80 acres of land located to the northwest of the SE 15th Street/Knott Road intersection. The master plan includes:

- New High School – 1,600 student capacity
  - Opening in the 2021/2022 school year
- New Middle School – 800 student capacity
  - Opening as soon as the 2027/2028 school year
- Tamarack Facility – 50 student capacity (25 high school, 25 middle school)
  - Opening as soon as the 2027/2028 school year

This Transportation Impact Analysis (TIA) addresses the multimodal improvements needed to serve the new schools, as well as the compliance of the schools' transportation-related impacts with the applicable Bend Development Code (BDD) criteria. The following section summarizes the key findings and recommendations documented herein.

FINDINGS

- The 80-acre site will be developed in phases, with a 1,600 student high school funded and expected to be open for the 2021/2022 school year. The remaining facilities on the site are anticipated for the 2027/2028 school year. The timing of the remaining facilities is dependent on enrollment growth and Bond passage.
- With TDM reductions as identified in the TPDM Plan, the full site is expected to generate 3,088 daily trips, 860 AM peak hour trips, 540 afternoon peak hour trips, and 260 PM peak hour trips. Of these trips, the high school would account for 2,052 daily trips, 516 AM peak hour trips, 348 afternoon peak hour trips, and 156 PM peak hour trips.
- The site is within the SE 15th Street Opportunity Area identified within the recent City of Bend Urban Growth Boundary expansion effort. The site is allowed in the identified zoning on the property.
- None of the study intersections experience a crash rate that exceeds the City's threshold for significance.

- The site fronts 15th Street to the east and Knott Road to the south. Both have a generally rural context today with limited curbs, sidewalks, and other pedestrian facilities. Developments along 15th Street to the north have begun to improve that roadway to a more urban form.
- Five access points are proposed as part of the master plan. Three would be on 15th Street and two would be on Knott Road, as shown in the site plan. One of the access points on 15th Street would provide access to the site via a new collector roadway proposed as part of the Bend Transportation System Plan. This collector is also planned to extend to the east through the "Elbow" UGB expansion area.

IDENTIFIED NEEDS

- Over time, 15th Street and Knott Road will both require cross-section enhancements to comply with City of Bend standards as adjacent properties development. Both streets were constructed originally as Deschutes County roadways and neither has the appropriate right-of-way width, pavement width, or frontage improvements, including pedestrian facilities, near the site.
- No pedestrian facilities exist along the west side of 15th Street between Knott Road and Ferguson Road. On the east side of the street, the only section of sidewalks in this same segment existing along the site frontage of "The Bridges" neighborhood near Golden Gate Place.
- The lack of pedestrian facilities along Knott Road results in the lack of safe, convenient and comfortable access to the proposed schools along Knott Road and to/from the Brosterhous Road and Country Club Road corridors.
- Under 2021 build conditions (with the addition of the high school), the following intersections fail to meet applicable City of Bend intersection performance standards during one or more analysis period:
    - Murphy Road/Brosterhous Road
    - Knott Road/Brosterhous Road
        - Need would be addressed by Brosterhous Road connection
- Under 2027 No Build conditions (with the addition of the high school but not the middle school or Tamarack facility), the following intersections fail to meet applicable City of Bend intersection performance standards during one or more analysis period:
    - Reed Market Road/15th Street
    - Murphy Road/Brosterhous Road
    - Knott Road/Brosterhous Road
    - Knott Road/15th Street

- Under 2027 build conditions (all planned facilities constructed), the same intersections identified in the background condition fail to meet applicable City of Bend intersection performance standards during one or more analysis period. The addition of the schools does not change the identified needs to satisfy City standards at the intersections under year 2027 conditions.
- With the Murphy Road extension completed by 2027, the following intersections are expected to exceed applicable City of Bend intersection performance standards during the PM peak hour under 2027 no build condition:
    - Ferguson Road/15th Street
    - Knott Road/15th Street
- With the Murphy Road extension completed by 2027, the following intersections fail to meet applicable City of Bend intersection performance standards under 2027 build conditions during the PM peak hour:
    - Ferguson Road/15th Street
    - Knott Road/15th Street
    - Knott Road/Brosterhous Road
- Left-turn lanes at site access locations are warranted based the expected access traffic volumes, the school bus needs, and the characteristics of 15th Street and Knott Road.
- Improved pedestrian crossings are warranted on 15th Street and Knott Road with the addition of the planned school facilities.

RECOMMENDATIONS

- As part of construction and occupancy of the schools, BSD should improve the site frontage along 15th Street and Knott Road to conform with applicable City of Bend roadway standards. Per negotiations with the City of Bend, site frontage should be improved as follow:
    - **As part of high school site development:**
        - Improve 15th Street site frontage along both the high school and middle school site (curb only on the east side of the roadway).
        - Construct a 10-foot pedestrian path along Knott Road.
    - **As part of middle school site development:**
        - Complete Knott Road site frontage
- BSD shall provide dedicated inbound left-turn lanes at all site access locations.
- The southern-most access along 15th Street (Access #3) should be limited to right-in-right-out-left-in given its proximity to the 15th Street/Knott Street intersection.

- BSD should work with the City to establish school zone designations along 15th Street and Knott Road along the site frontage in conformance with applicable MUTCD standards.

Offsite Transportation Improvements: High School Mitigation Measures (2021 Build Conditions):

- To mitigate 2021 build conditions (construction of the high school) and per City of Bend development code, BSD may fund and construct the following improvements to address the identified intersection impacts:
    - 15th Street/Knott Street intersection – construct a single lane roundabout
    - Construct extension of new onsite collector road to Brosterhous Road
        - Note: per the analysis in this TIA, the connection at Brosterhous Road does not require turn lanes to be added on Brosterhous Road.
- Both improvements are contingent on the City of Bend's ability to obtain the needed right-of-way for each project, respectively. The roundabout at 15th Street/Knott Road is identified in the City's TSP and included on the current City of Bend Transportation SDC project list. The extension of the onsite collector to Brosterhous Road is identified in the City's TSP.
- A pedestrian crossing of 15th Street should be constructed. Considering the location of existing sidewalks and residential developments, this improvement will likely be part of the BPRD Alpenglow Park development to the north.

Offsite Transportation Improvements: Middle School Mitigation Measures (2027 Build Conditions):

- To mitigate 2027 build conditions (construction of the middle school and Tamarack facility) and per City of Bend development code, BSD may fund and construct the following improvements to address the identified intersection impacts:
    - 15th Street/Brosterhous Road intersection – construct a single lane roundabout
    - 15th Street/Collector intersection – construct a single lane roundabout
        - Note: this improvement would only be required if warranted by BSD site traffic and the improvement hasn't been previously constructed.
- Both improvements are contingent on the City of Bend's ability to obtain the needed right-of-way for each project, respectively. The roundabout at Knott Road/Brosterhous Road is identified in the City's TSP and included on the current City of Bend Transportation SDC project list.
- Given the potential for significant changes to the transportation infrastructure in the vicinity of the BSD site and/or significant land development on nearby parcels, BSD and the City of Bend may choose to reevaluate the offsite impacts associated with 2027 Build Conditions and the improvements identified to mitigate those impacts prior to construction of the middle school and Tamarack facility.

Section 2 Introduction

INTRODUCTION

This report summarizes the transportation analysis prepared to support the master plan for the Bend-La Pine School District's (BSD) proposed high school, middle school, and Tamarack facility campuses. This report summarizes the transportation impacts and multimodal improvement needs associated with the construction of the three schools per the Transportation Facilities Report (TFR) and Transportation Impact Analysis (TIA) requirements in Bend Development Code (BDC) sections 4.7.400 and 4.7.500, respectively, and the City's Institutional Master Plan criteria (BDC 4.5.300), including a TSP amendment to remove one Collector through the site.

The enclosed report addresses the following:

- Transportation infrastructure improvements needed to support planned school facilities within and adjacent to the campus and as at the affected street intersections;
- Primary and secondary access points and traffic control needs;
- Multimodal connectivity needs to, from, and through the site;
- School Zone and pedestrian crossing needs;
- Transportation and Parking Demand Management Measures; and,
- Street frontage improvements associated with the new school construction.

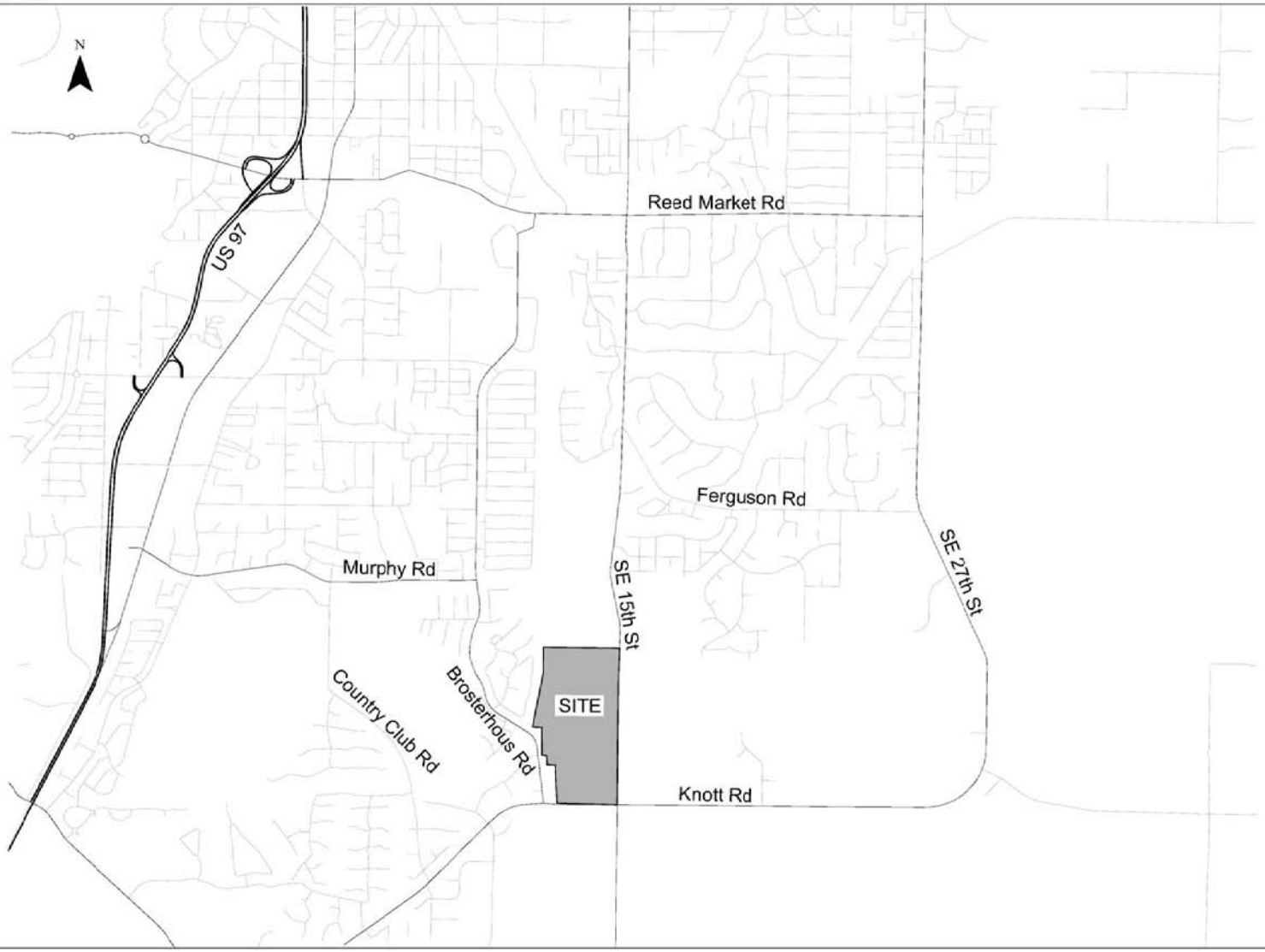
DESCRIPTION OF THE DEVELOPMENT (BDC 4.7.400.C1)

The 80-acre BSD site would provide capacity to serve existing and future high school and middle school student enrollment within the district. The site will include the following facilities:

- New High School – 1,600 student capacity
  - Opening in the 2021/2022 school year
- New Middle School – 800 student capacity
  - Opening as early as the 2027/2028 school year
- Tamarack Facility – 50 student capacity (25 high school, 25 middle school)
  - Opening as early as the 2027/2028 school year

Figure 1 shows the anticipated layout of the site, including the location of each school, proposed internal streets and pathways within the master plan area, and key access points. A site vicinity map is shown in Figure 2.

Figure 1. Master Plan Site Layout



Site Vicinity Map
Bend, Oregon

Figure
2

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The master plan property is in the southeast quadrant of Bend within the City of Bend's "SE 15th Street Opportunity Area." Properties to the east of the property are currently vacant but planned for new mixed use, urban neighborhoods. The Bend Parks and Recreation District (BPRD) is proposing to develop the 37-acre parcel immediately to the north of the site into a natural terrain park.

The campus site is currently served by SE 15th Street and Knott Road, both of which are classified as Minor Arterials within the Bend Transportation System Plan (Bend TSP). In the future, the schools and the surrounding neighborhoods will also be provided with multimodal connectivity options via the extension of Murphy Road from Brosterhous Road to the 15th Street/Golden Gate Place intersection. This improvement is part of the short-term City of Bend Council Goal Strategies on transportation[1].

[1] https://www.bendoregon.gov/home/showdocument?id=31732

Section 3 Existing Conditions

EXISTING CONDITIONS

The existing conditions analysis identifies the existing transportation system and adjacent land uses within the vicinity of the master plan area as well as the current operational and geometric characteristics of the streets and multimodal facilities within the study area. This information is used to help identify priorities related to the current system operations and connectivity.

Site Conditions and Adjacent Land Uses

The BSD site is located on tax lot 1812160000100 in the northwest corner of the Knott Road/15th Street intersection. The overall area is primarily low density and rural in nature. Residential neighborhoods have been developing in the area over the last several years. The Burlington Northern Santa Fe railroad provides a barrier to connectivity to the developing lands in the 15th Street Opportunity Area and more established areas to the west.

Figure 3 identifies the Opportunity Area as well as the lands designed for future Urban Growth Boundary (UGB) expansion.

Today, the properties included within the master plan area have six different zoning designations. Per the City's Zoning Map, and as shown in Figure 4, these include Standard Residential Density (RS) Medium Density Residential (RM), High Density Residential (RH), Mixed Employment (ME), Commercial Convenience (CC), and Commercial Limited (CL). The construction of the three schools is permitted within each of the zoning designations.

Figure 3. City of Bend Opportunity Areas and UGB Expansion Areas

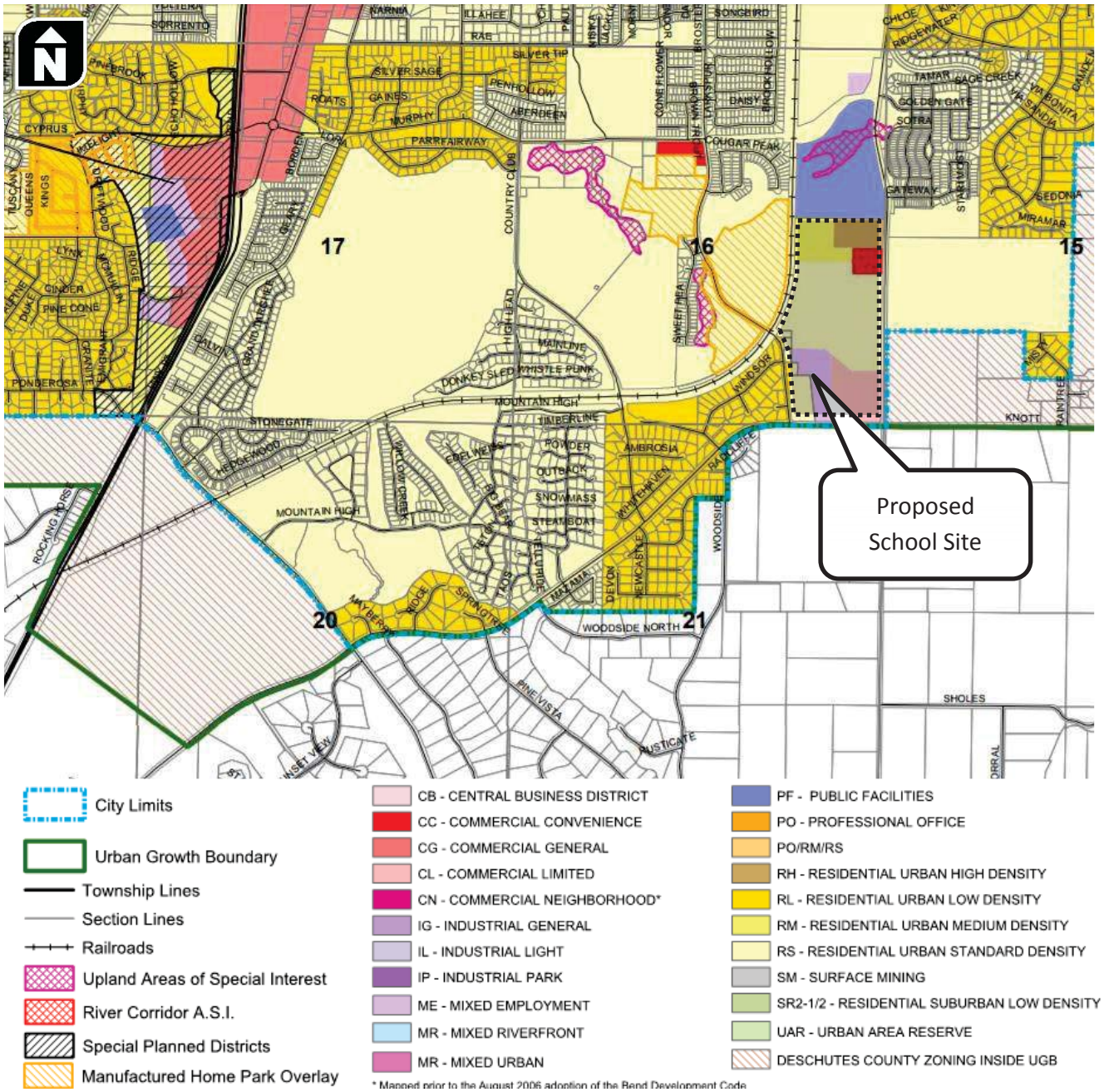


Figure 4. City of Bend Zoning Map

Source: http://www.bendoregon.gov/government/departments/growth-management/urban-growth-boundary-remand (Exhibit N)

Surrounding Transportation Facilities (BDC 4.7.400.C6)

The following sections describe the current conditions of the streets and multimodal facilities near the proposed schools.

Affected Streets

Knott Road and SE 15th Street are classified as *Minor Arterials* within the City's TSP. Per City design standards, both streets are planned to have a minimum 100-foot right-of-way to accommodate a three-lane cross-section, striped bicycle lanes, landscaping strips and sidewalks. As shown in Table 1, both streets are constructed with a two-lane cross-section and a smaller right-of-way than ultimately anticipated.

Brosterhous Road is classified as a Major Collector within the TSP. Per City design standards, it is planned to have a minimum 80-foot right-of-way and 56-foot minimum paved width. As shown in Table 1, Brosterhous Road also reflects more of a rural configuration today.

Table 1. Compliance with City Standard Cross-Sections

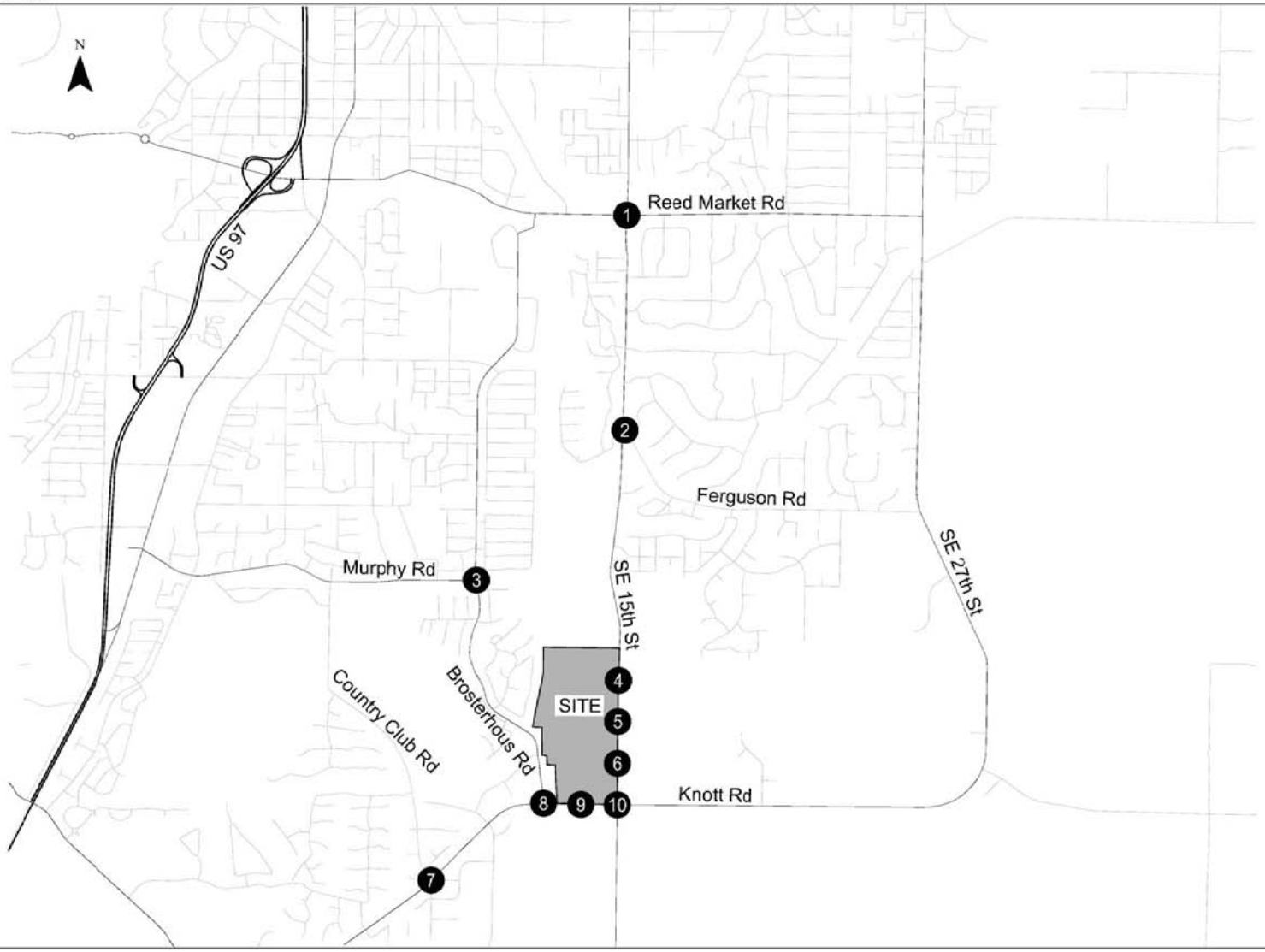
Adjacent Roadways – Minor Arterials							
Roadway	**Travel Lanes**	**100-foot ROW?**	**56' Pavement?**	**Bicycle Lanes?**	**Landscape Strip?**	**Curbs and Sidewalks?**	**Curb Ramps?**
Knott Road	2	**No, 58'**	**No, 40'**	Yes[1]	**No**	**No**	**No**
SE 15th Street	2	**No, 80'**	**No, 34'**	Yes	**No**	**No**	**No**
Adjacent Roadways – Major Collector							
Roadway	**Travel Lanes**	**80-foot ROW?**	**56' Pavement?**	**Bicycle Lanes?**	**Landscape Strip?**	**Curbs and Sidewalks?**	**Curb Ramps?**
Brosterhous Road	2	**No, 60'**	**No, 26'**	**No**	**No**	**No**	**No**
*Bold Cells indicate the standard is not met today, given rural context of roadways [1]Knott Road and SE 15th Street have 4-5 foot paved shoulders without bicycle lane markings							

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Study Area (BDC 4.7.400.C4 and BDC 4.7.500.B1)

Consistent with City Code, the study area consists of all planned school access points, adjacent roadways and intersections, and all off-site intersections impacted by 15 or more peak-hour vehicle trips per lane group[2] within a one-mile driving distance of the site. A map of the study area and affected study intersections is shown in Figure 5. Although the Reed Market Road/15th Street intersection is beyond the one-mile radius, it is included in the analysis as requested by the City Engineer.

[2] A "lane group" is defined by transportation engineers to be a group of lanes on an approach with capacity that is shared by all vehicles



- Study Intersections

Bend La Pine Schools Study Area
Bend, Oregon

Figure 5

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Traffic Counts (BDC 4.7.500.B4)

Traffic counts were collected in June 2017 when school was in-session and no conditions were present that would affect normal travel patterns at the study intersections during the following periods:

- 7:00-9:00 AM (Morning Peak Period)
- 2:00-4:00 PM (Afternoon Peak Period)
- 4:00-6:00 PM (Evening Peak Period)

Appendix A *contains the traffic count data.*

Operational Methodology and Performance Standards (BDC 4.7.500.B6)

All operations analyses described in this report were performed in accordance with the procedures stated in the Highway Capacity Manual, 6th Edition. City of Bend calibration factors were also applied to the roundabout analyses as applicable. Three metrics were included within this analysis to assess the adequacy of the surrounding intersections in accordance with BDC requirements, including volume-to-capacity ratio, intersection level of service (LOS), and 95th percentile queues.

BDC section 4.5.600(6)(d) outlines the operational standards applicable to study intersections based on the intersection control:

- *Two-Way Stop Control. Average control delay for the critical lane group for approaches of an arterial or collector to another arterial or collector with greater than 100 peak hour trips is less than or equal to 50 seconds during the peak hour.*
- *All-Way Stop Control. Average control delay for the collector to collector and higher order intersection as a whole is less than or equal to 80 seconds during the peak hour;*
- *For signalized and roundabout collector to collector and higher order intersections under the jurisdiction of the City, the volume-to-capacity ratio for the intersection as a whole is less than or equal to 1.0 during the peak hour.*

The applicable standard for each study location is summarized in Table 2.

Table 2. Study Intersections and Operational Standards

Intersection ID	Intersection Name	Existing Traffic Control	City of Bend Performance Standard
1	15th Street/Reed Market Road	Multi Lane Roundabout	v/c ratio < 1.0
2	15th Street/Ferguson Road	Two-Way Stop Controlled	Critical Lane group delay <50 seconds
3	Brosterhous Road/Murphy Road	Two-Way Stop Controlled	Critical Lane group delay <50 seconds
4	15th Street/ Site Access #1	Future Intersection	To be determined, depending on the final intersection control device employed
5	15th Street/Site Access #2	Future Intersection	To be determined, depending on the final intersection control device employed
6	15th Street/Site Access #3	Future Intersection	To be determined, depending on the final intersection control device employed
7	Country Club Road/Knott Road	Two-Way Stop Controlled	Critical Lane group delay <50 seconds
8	Brosterhous Road/Knott Road	Two-Way Stop Controlled	Critical Lane group delay <50 seconds
9	Site Access #4/Knott Road	Future Intersection	To be determined, depending on the final intersection control device employed
10	15th Street/Knott Road	Two-Way Stop Controlled	Critical Lane group delay <50 seconds

Study Analysis Years (BDC 4.7.500.B2)

Per the planned opening years for the three schools, this report addresses intersection operations under the following scenarios:

- Existing conditions;
- Year 2021 conditions both with and without occupancy of the new 1,600 student high school;
- Year 2027 conditions both with and without occupancy of the new 800-student middle school and 50-student Tamarack Facility

Study Time Periods (BDC 4.7.500.B3)

Per BDC requirements, the TIA for the master plan includes analyses of the affected intersections during the following peak periods:

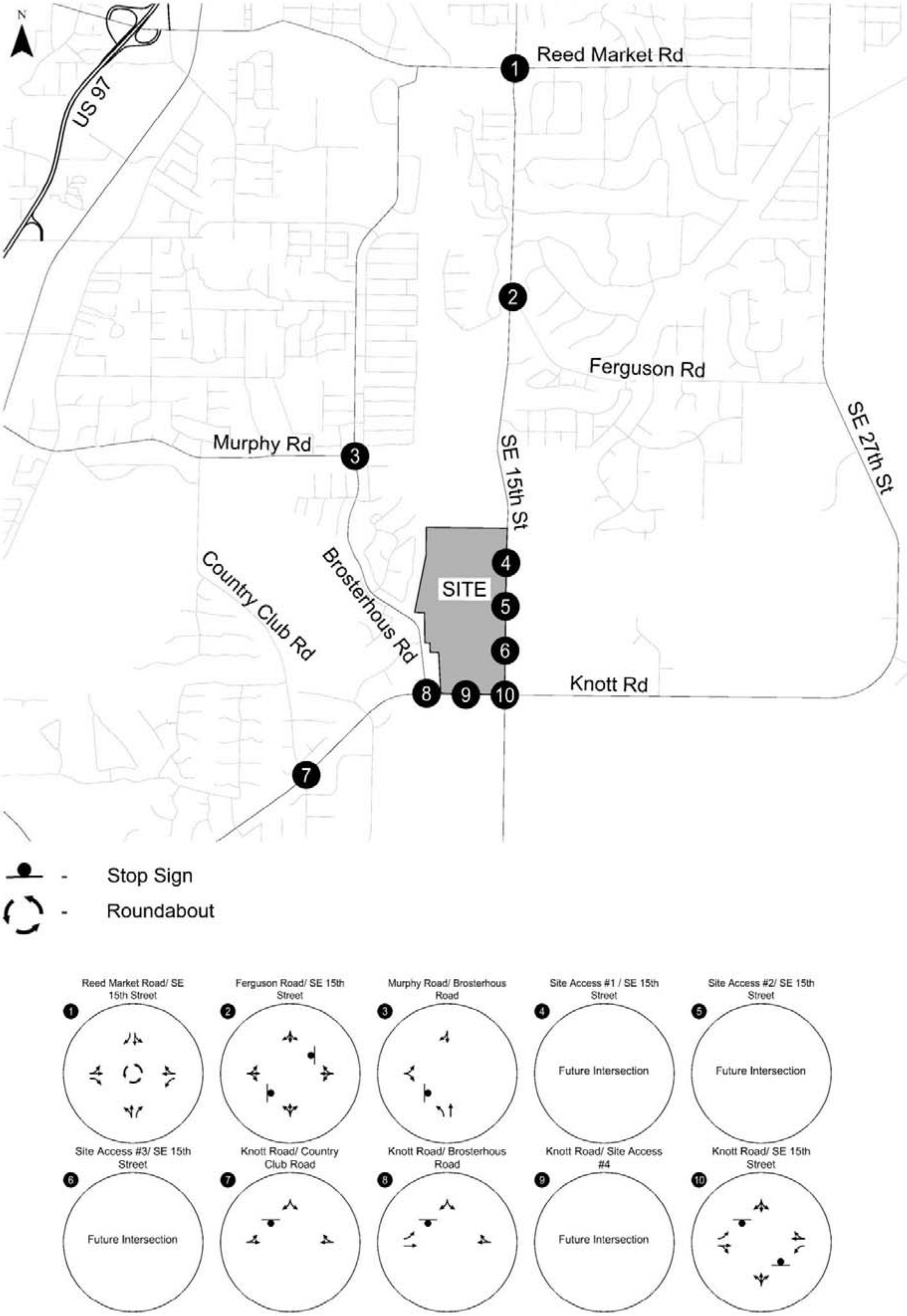
- Weekday AM peak hour (7:30 – 8:30 AM)
- Weekday mid-afternoon peak hour (3:00 – 4:00 PM) corresponding to when the school peak hour
- Weekday commuter PM peak hour (4:55 – 5:55 PM)

Existing Intersection Operations

Figure 6 shows the existing lane configurations at the study intersections. Figures 7 through 9 identify the AM, Afternoon, and PM Peak Hour traffic volumes and operations measured in June 2017, respectively.

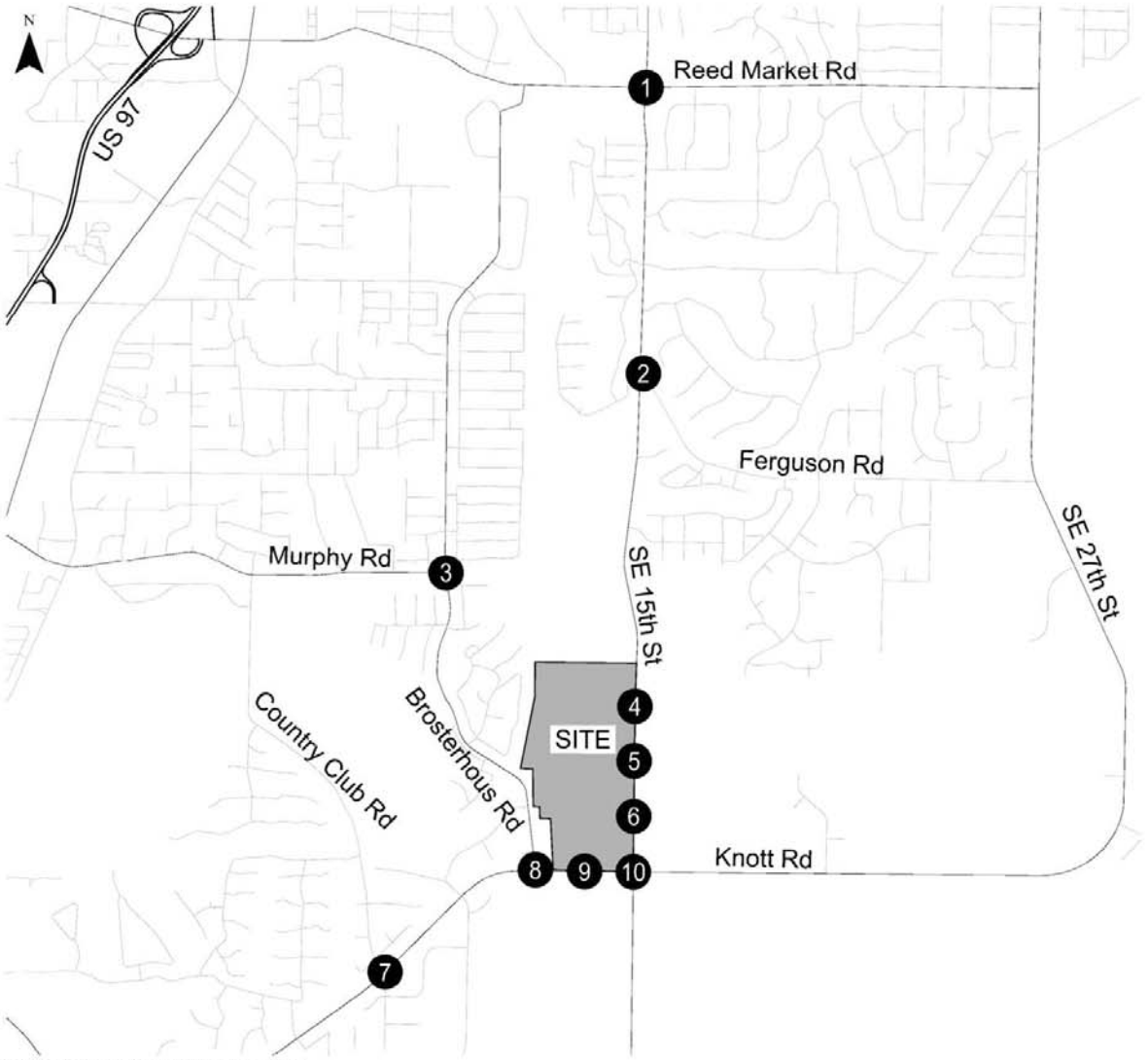
As shown, the intersections all meet applicable performance standards today.

Appendix A includes the measured traffic volumes at the study intersections. Appendix B includes the existing intersection operational results during each of the peak hours.

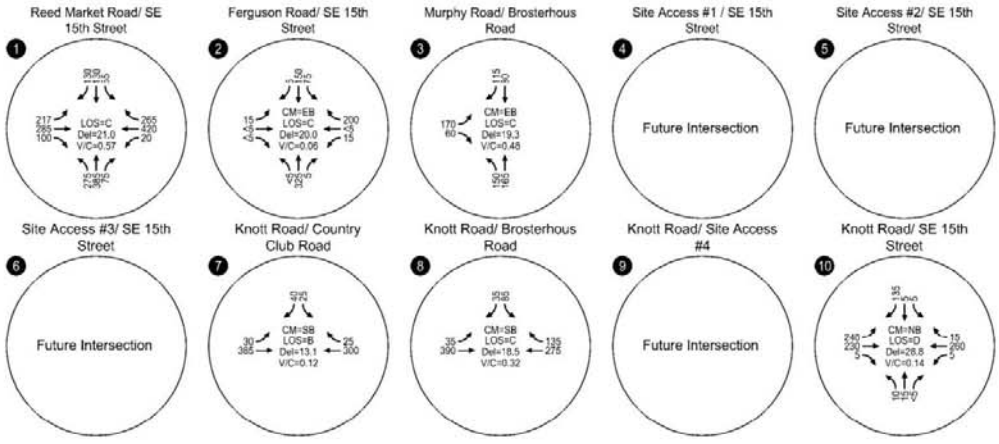


Existing Lane Configurations
Bend, Oregon

Figure 6

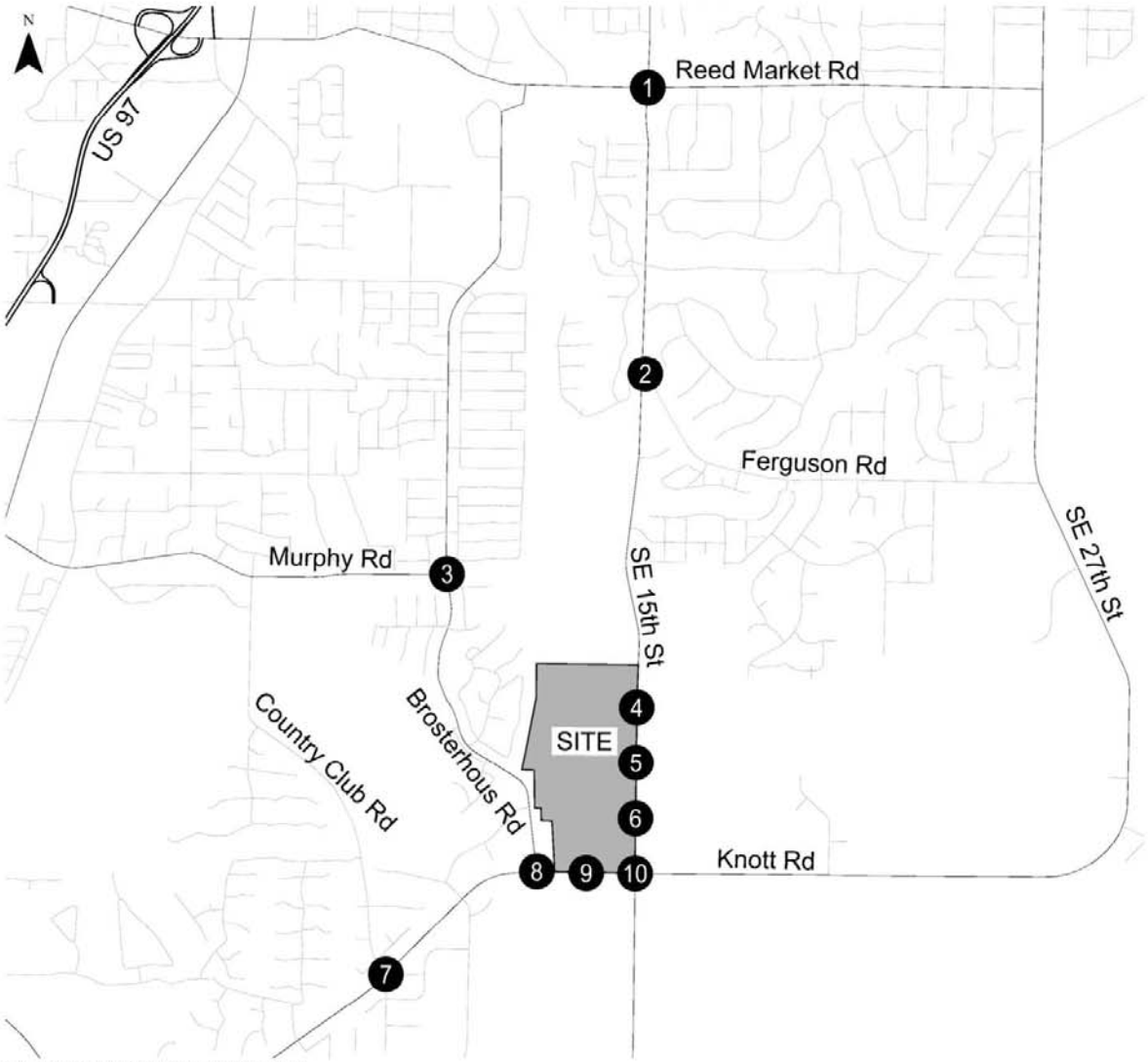


CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO



Existing and In ProcessTraffic Conditions, Weekday AM Peak Hour
Bend, Oregon

Figure 7



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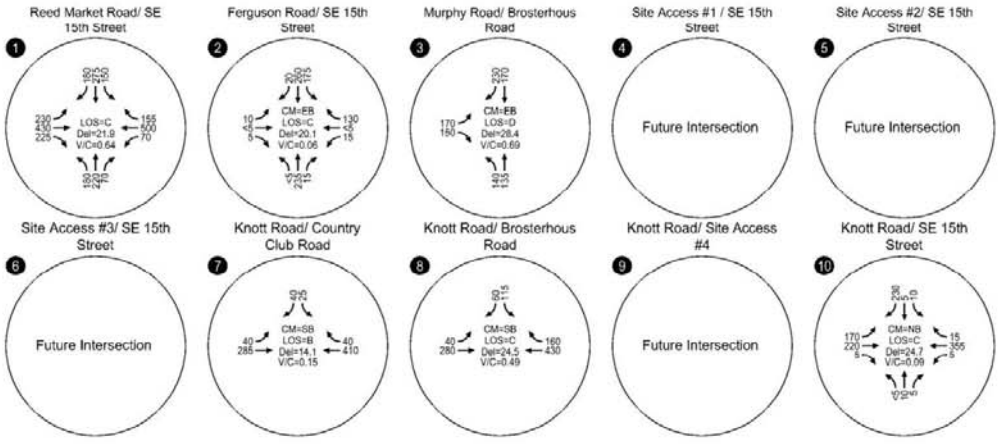
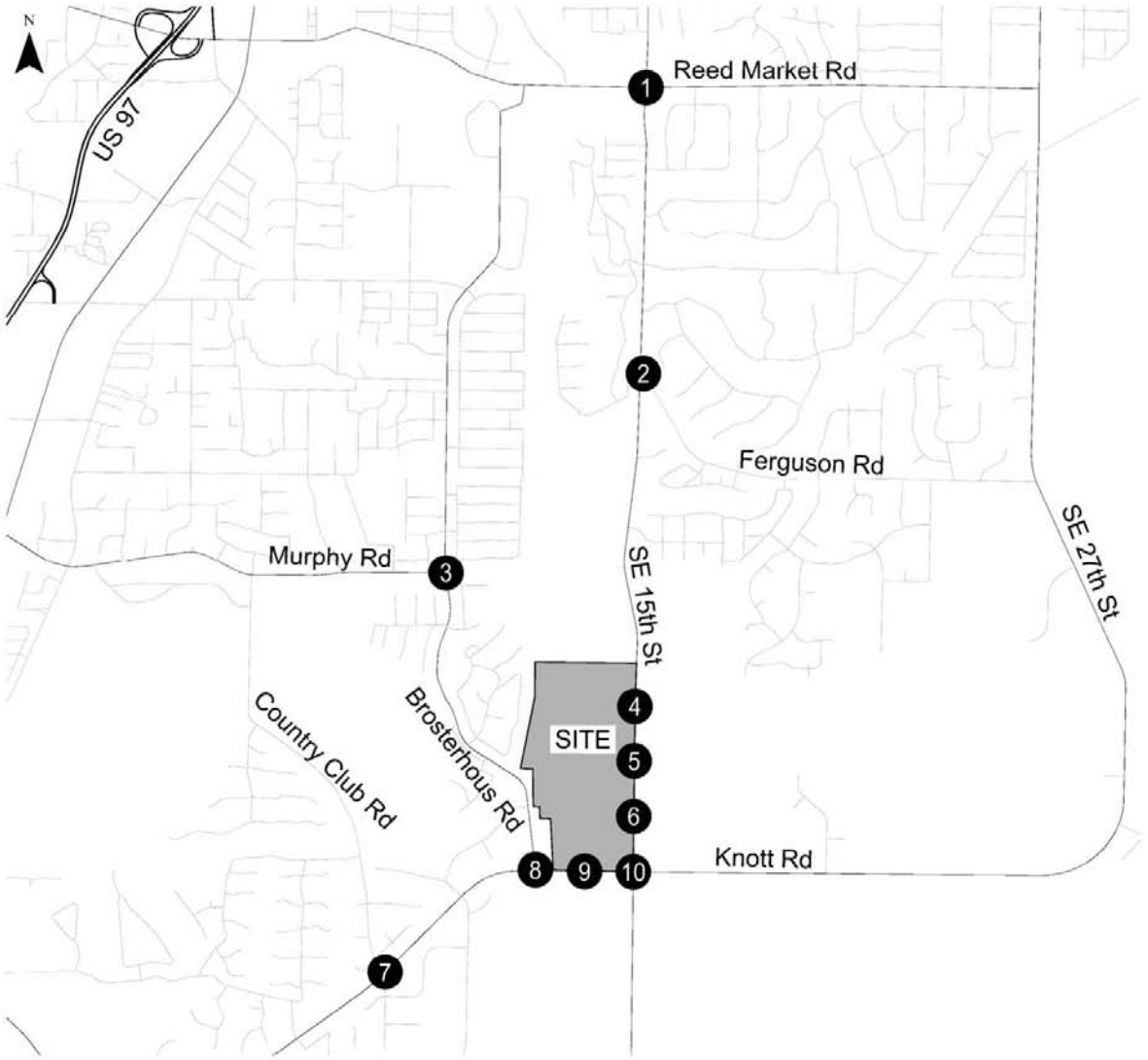


Existing and In ProcessTraffic Conditions, Weekday Afternoon Peak Hour
Bend, Oregon

Figure 8



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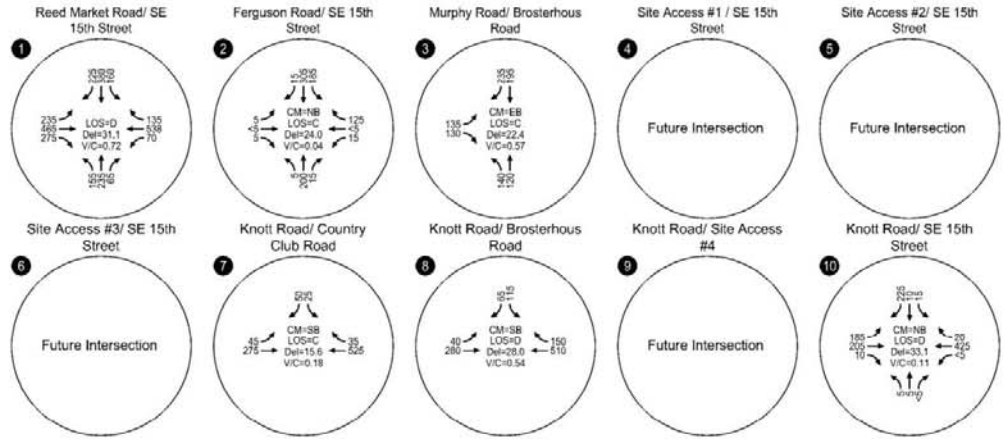
V/C = CRITICAL CRITICAL VOLUME-TO-CAPACITY RATIO



Existing and In Process Traffic Conditions, Weekday PM Peak Hour
Bend, Oregon

Figure 9

Section 4 Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

The following section addresses the Transportation Impact Analysis (TIA) and Master Plan requirements as required in the Bend Development Code. The TIA provides information pertaining to the operations and safety associated with the future build out of the BSD campus.

TRANSPORTATION DEMAND MANAGEMENT (BDC 4.7.4.000.C3)

The proposed Transportation Demand Management strategies and Parking Management techniques that BSD may implement as part of the new schools are provided in a separate document. Given the range of strategies and anticipated benefits, a twenty-five percent reduction in vehicular trip generation for the schools was applied to the analysis; this reduction was based on agreements between BSD and the City of Bend staff.

ANTICIPATED TRIP GENERATION (BDC 4.7.400.C2)

Per BDC requirements, Table 3 provides the estimated trip generation for the three planned schools based on the average ITE trip rates.

Table 3. BSD Site Trip Generation

School	Size (students)	Daily Trips	Weekday AM Peak Hour			Weekday Afternoon Peak Hour			Weekday PM Peak Hour		
			Total	In	Out	Total	In	Out	Total	In	Out
High School	1,600	2,736	688	468	220	464	153	311	208	98	110
TDM Reduction (25%)		684	172	117	55	116	38	78	52	25	27
Total High School		2,052	516	351	165	348	115	233	156	73	83
Middle School	800	1,296	431	238	194	240	108	132	128	63	65
Tamarack High School	25	43	11	7	4	7	2	5	3	1	2
Tamarack Middle School	25	41	14	8	6	8	4	4	4	2	2
TDM Reduction (25%) for Middle School and Tamarack		346	114	63	51	64	29	35	34	17	17
Total Middle School and Tamarack		1,034	342	190	153	191	85	106	101	49	52
Campus Total	***2,450***	***3,086***	***858***	***541***	***318***	***539***	***200***	***339***	***257***	***122***	***135***

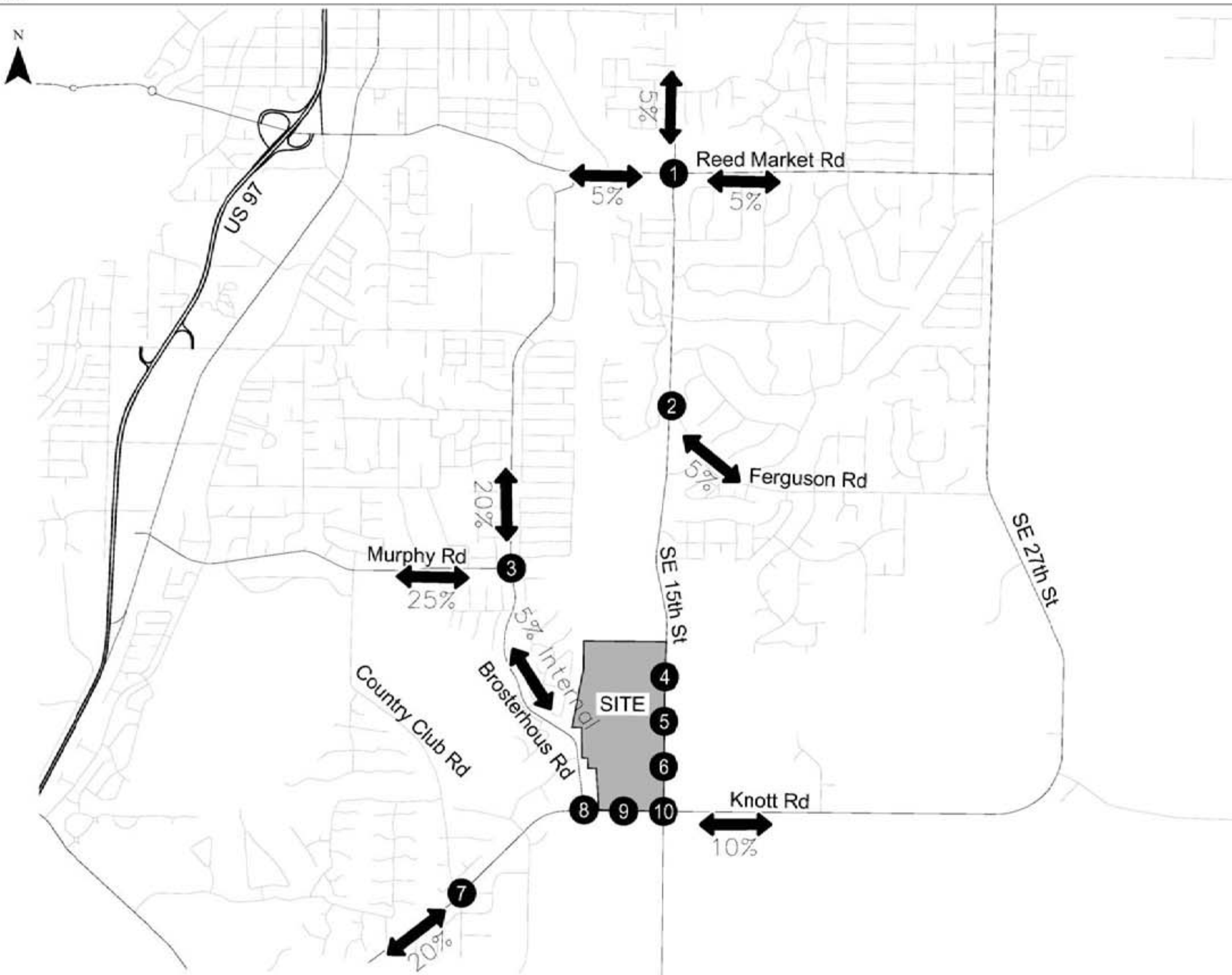
TRIP DISTRIBUTION (BDC 4.7.400.C5)

Future enrollment boundaries have not yet been established by BSD, nor have any modifications to the busing guidelines for 2021 and/or 2027. In lieu of approved modifications by the district, BSD and

Kittelson & Associates, Inc. staff reviewed current and year 2040 forecast traffic volumes, current and planned neighborhood densities and a variety of other factors to estimate the trip distribution patterns for the purposes of the TIA. These are shown in Figure 10 for all three schools. This pattern was applied to the AM, Afternoon, and PM Peak trip generation scenarios.

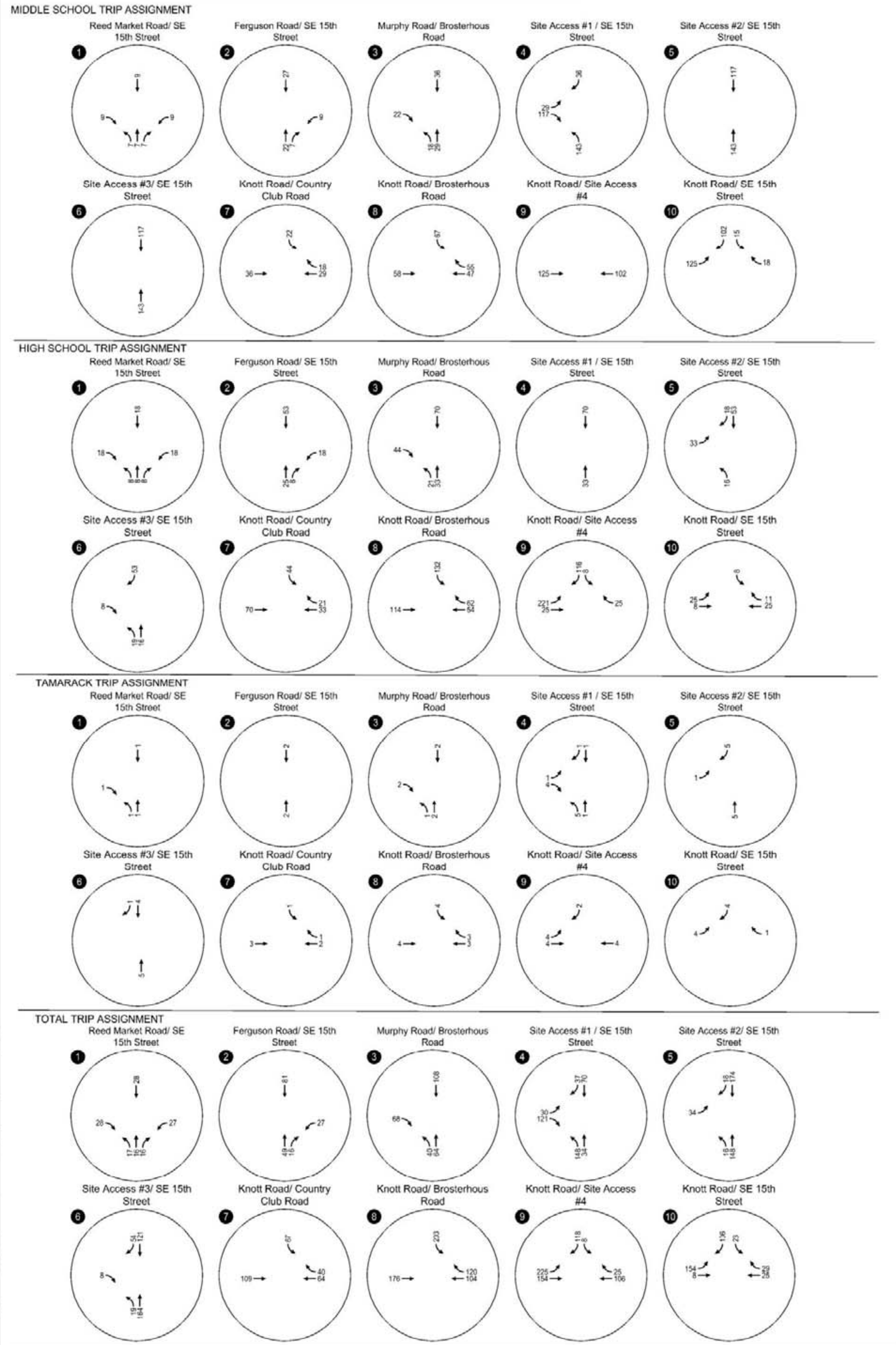
Figures 11 through 13 illustrate the resulting total trip assignment at the study intersections during the AM peak hour, Afternoon peak hour, and PM peak hour, respectively.

Figure 14 identifies the planned lane configurations for the future site access locations and the existing intersections.



Estimated Trip Distribution Pattern
Bend, Oregon

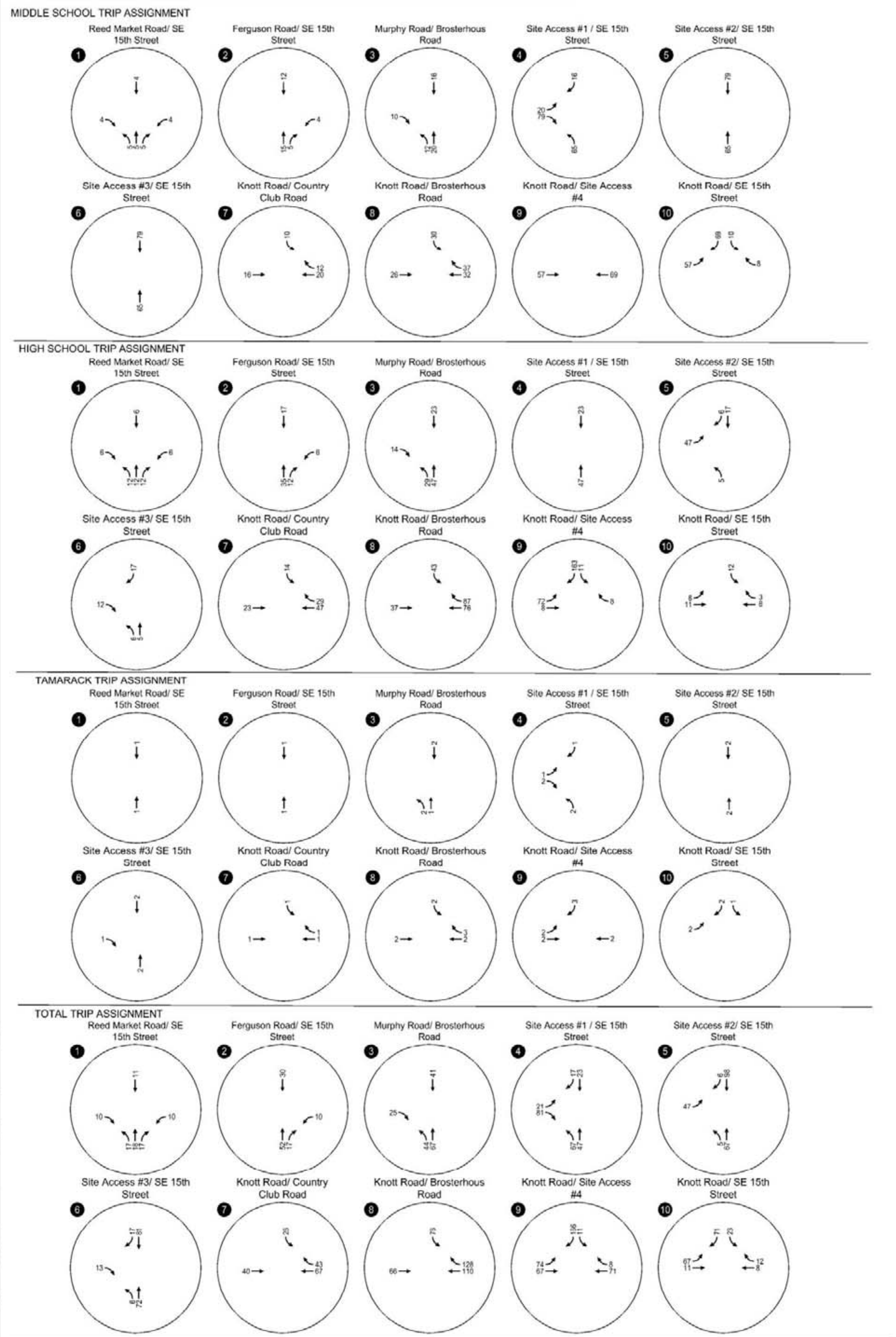
Figure
10



Trip Assignment, Weekday AM Peak Hour
Bend, Oregon

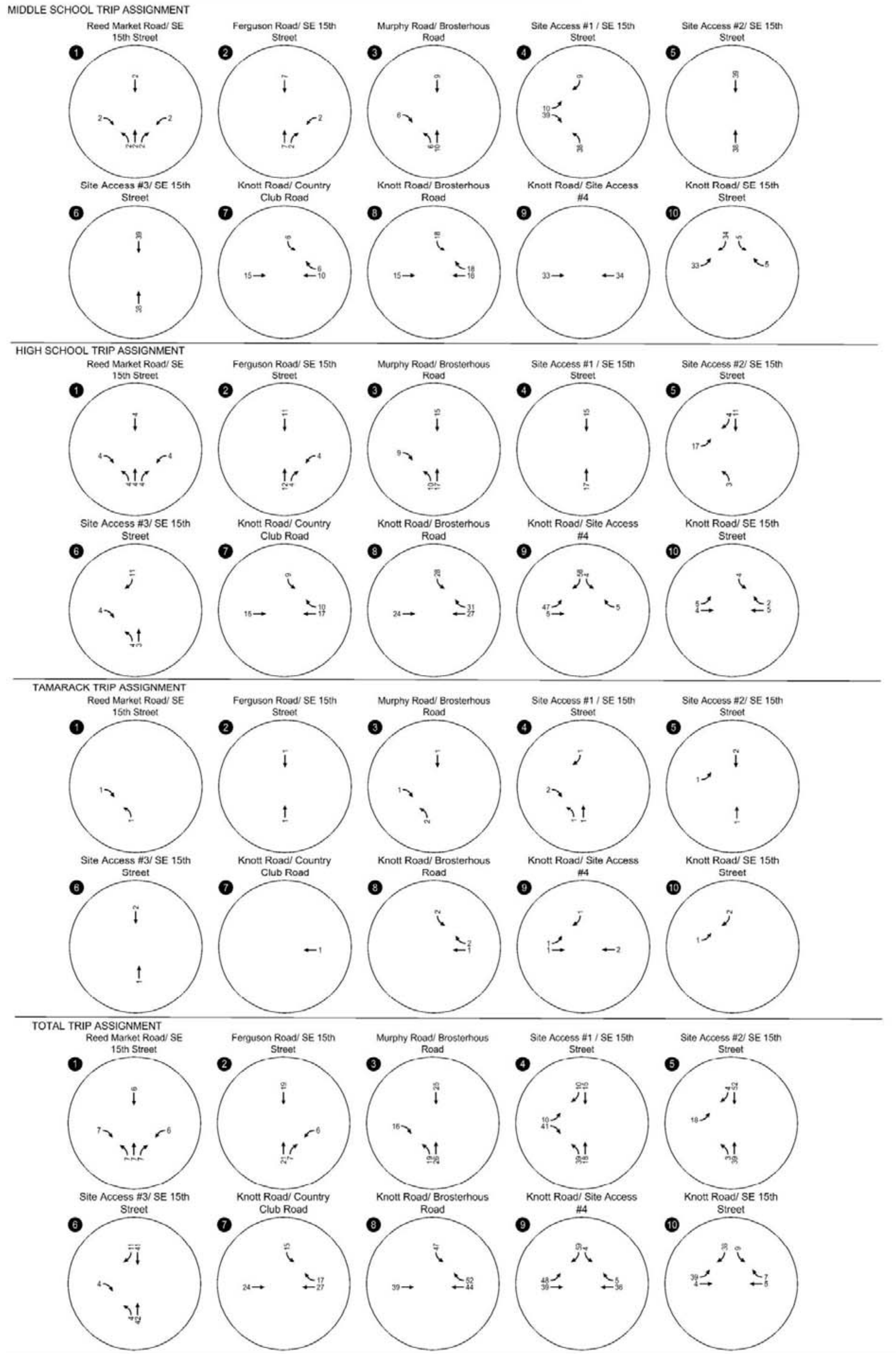
Figure 11

KITTELSON & ASSOCIATES



Trip Assignment, Weekday Afternoon Peak Hour
Bend, Oregon

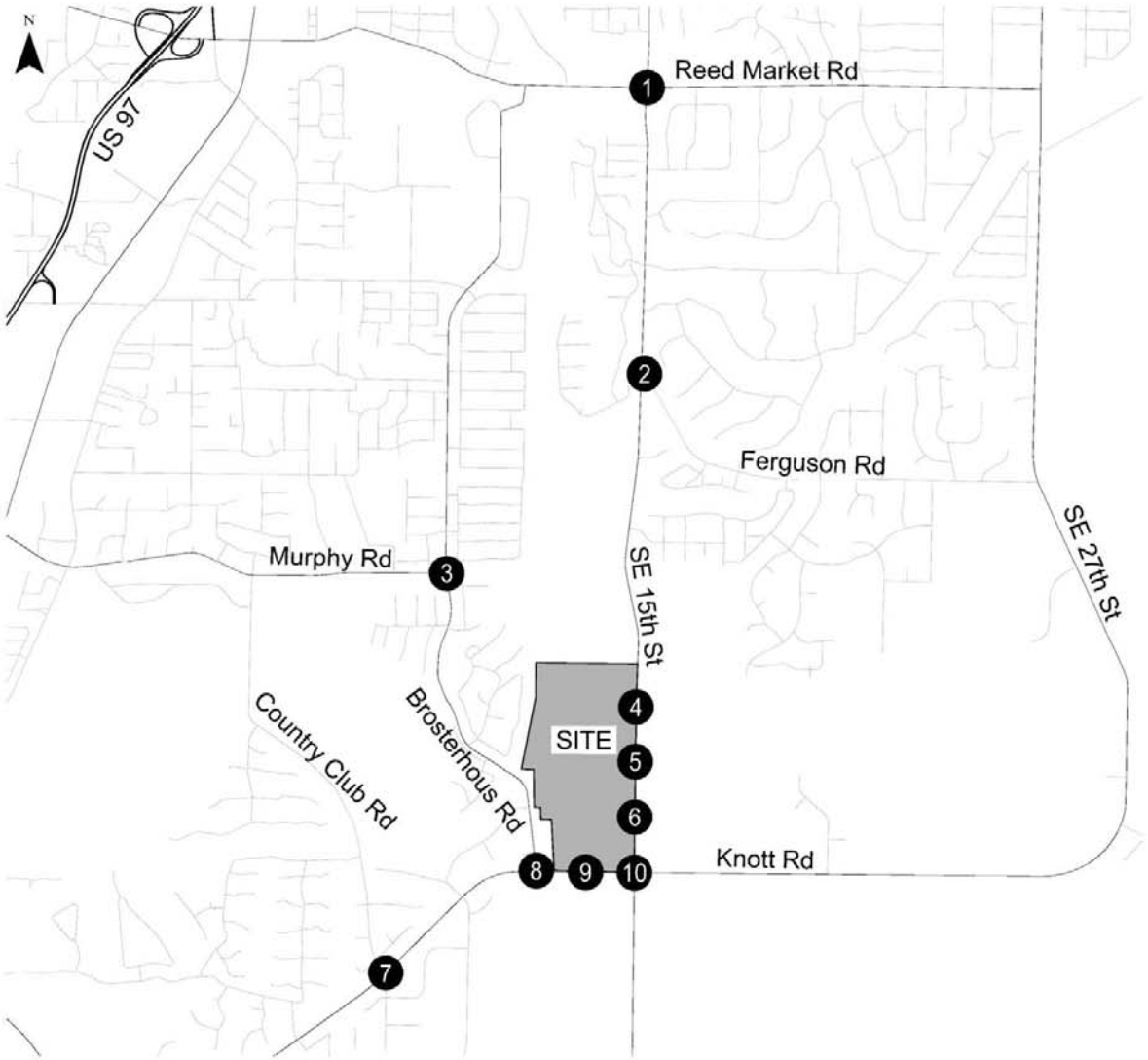
Figure 12



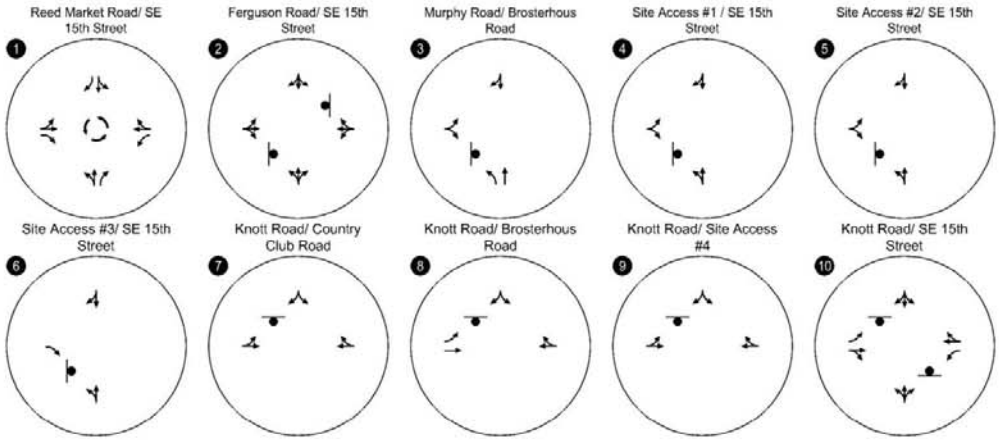
Trip Assignment, Weekday PM Peak Hour
Bend, Oregon

Figure 13

KITTELSON & ASSOCIATES



- Stop Sign
- Roundabout



Build Out Lane Configurations
Bend, Oregon

Figure 14

FUTURE TRAFFIC FORECASTS (BDC 4.7.500.B5)

Background Traffic Development

To assess the impacts associated with the three schools during the years in which each school is anticipated to be first occupied, year 2021 and 2027 background traffic volumes were developed for the three peak periods assuming an increase in traffic equivalent to three percent per year plus the addition of all approved but not yet constructed developments that affect the study intersections. Further, for the year 2021 background conditions, none of the planned schools were assumed to be in operation whereas the year 2027 background conditions included operation of the proposed high school. The anticipated openings are subject to change based on enrollment growth and successful Bond passage.

The City Engineer identified the following in-process developments for inclusion in both 2021 and 2027 forecast year traffic volumes:

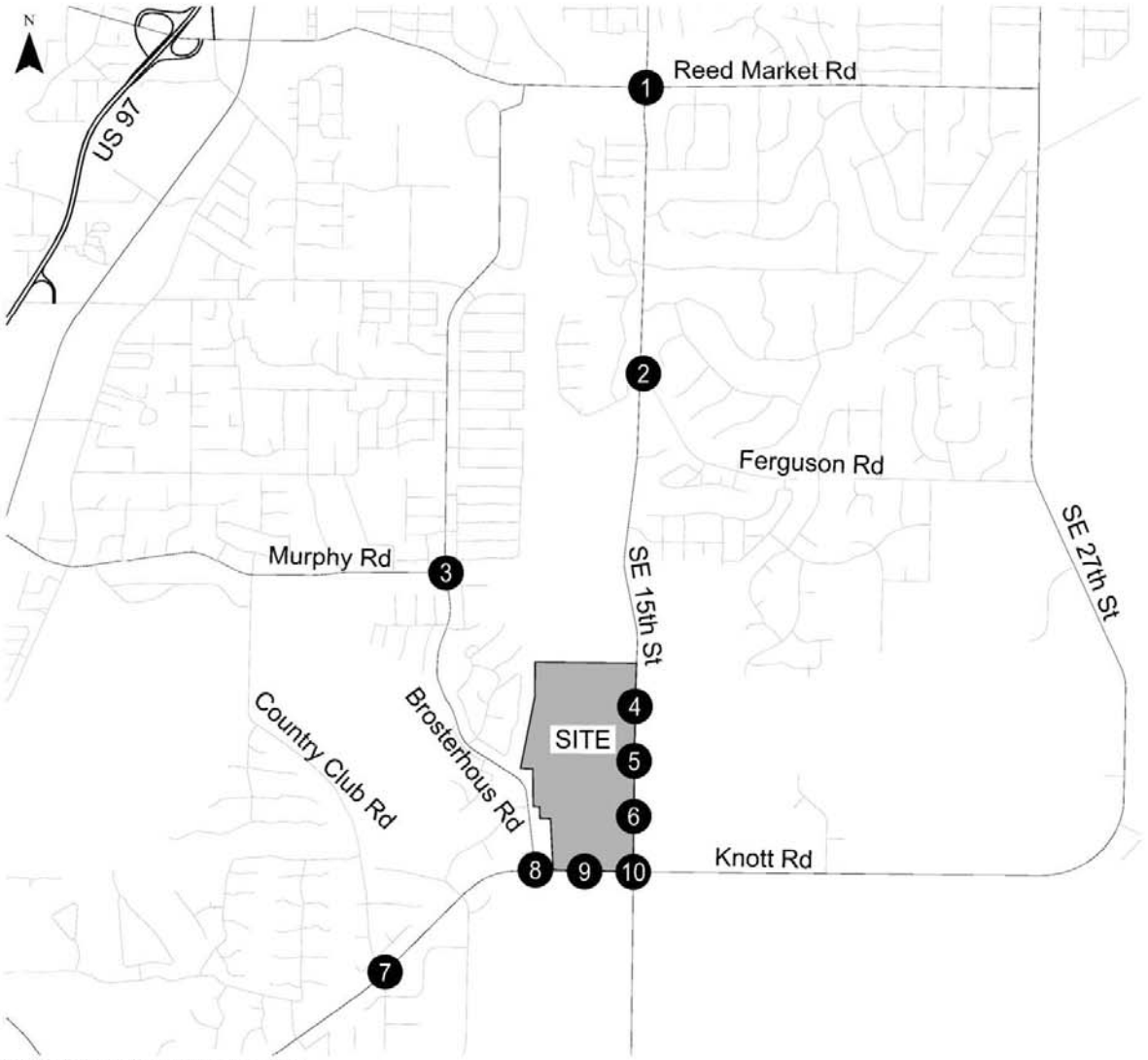
- Phases 3, 4 and 5 of Hidden Hills residential neighborhood
- Shilo Master Plan area (residential development)
- Larkspur (Senior) Center (parks and recreation facility)

Although the Bend TSP identifies several transportation system improvements that could change existing travel patterns near the planned schools over time, none of these improvements have guaranteed funding yet for construction and the effects of these system changes were not included in the analyses.

2021 BACKGROUND (NO-BUILD) TRAFFIC OPERATIONS

Year 2021 Background Conditions are shown in Figures 15 through 17 for the AM, Afternoon, and PM peak hours, respectively.

As shown, all the intersections are expected to operate acceptably per City standards under year 2021 Background Conditions.



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
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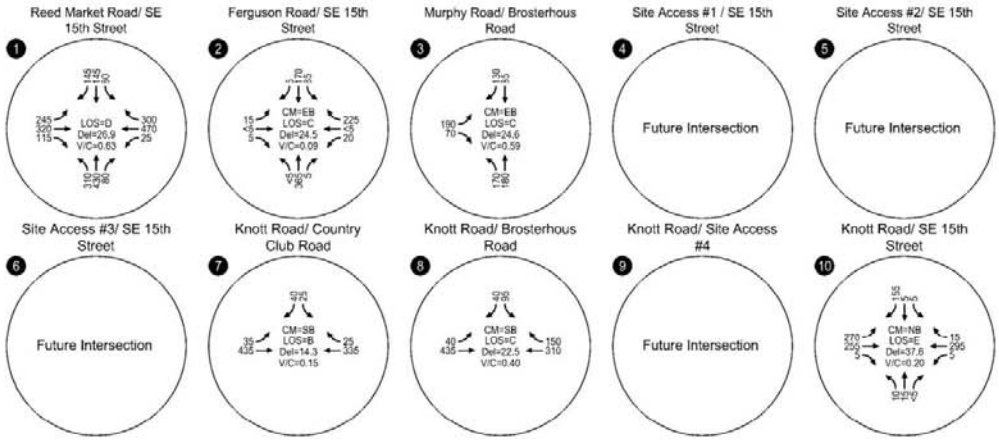
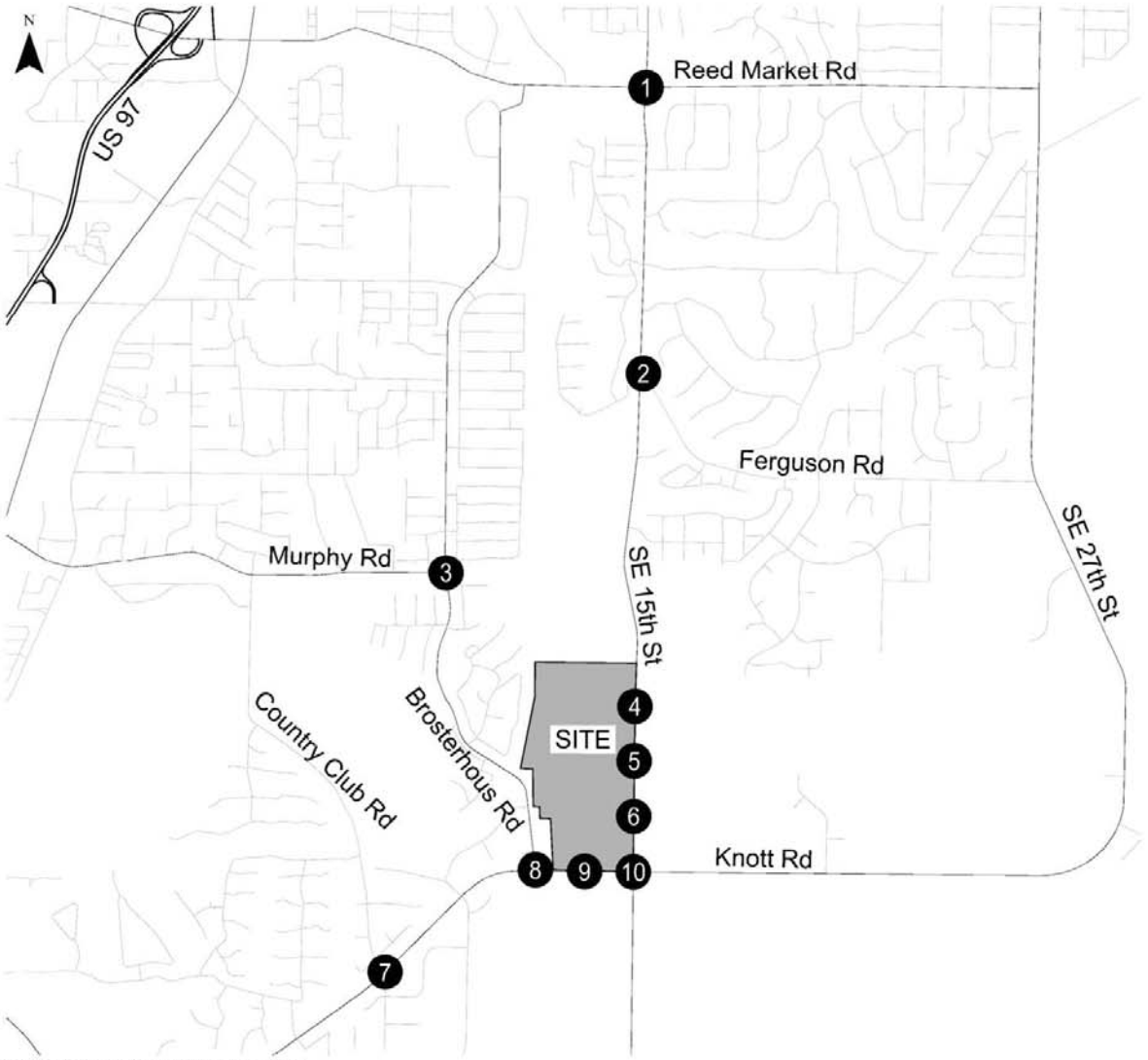


2021 Background Traffic Conditions, Weekday AM Peak Hour
Bend, Oregon

Figure 15



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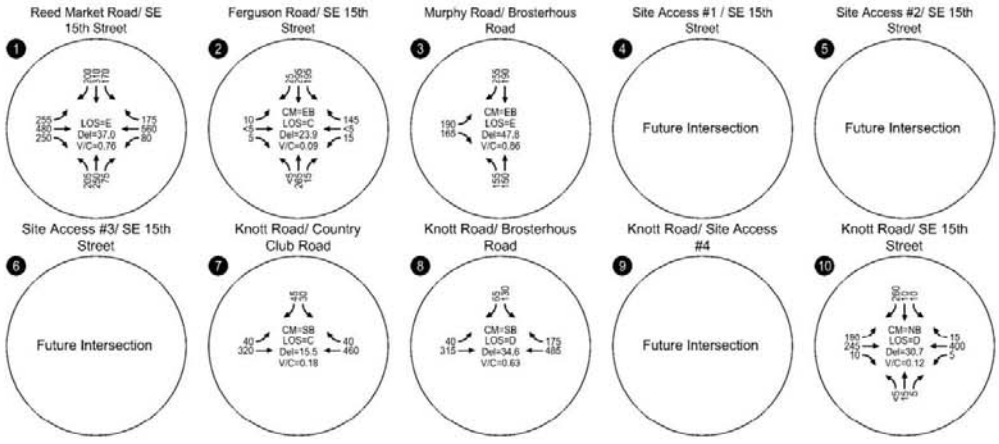
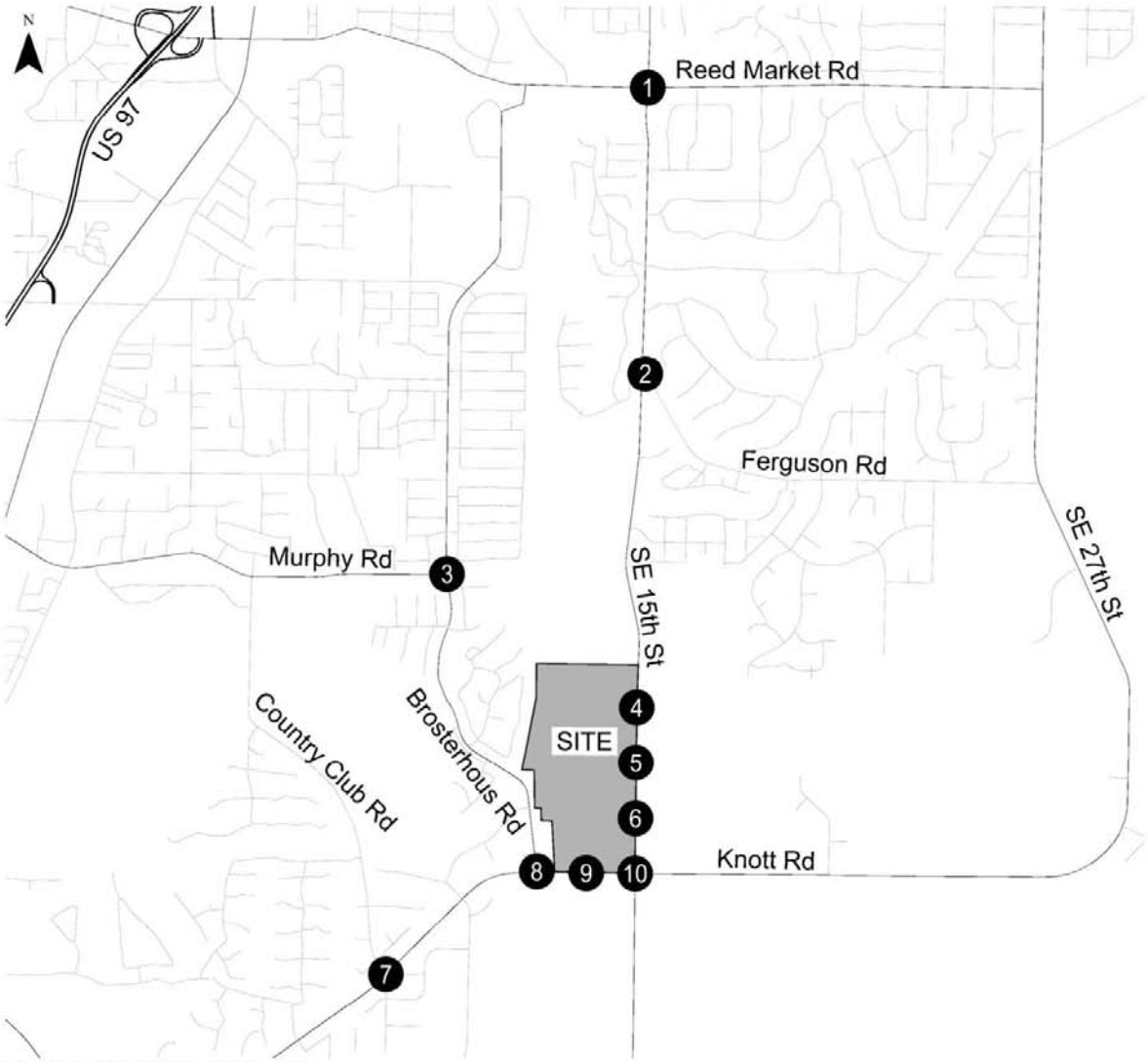


2021 Background Traffic Conditions, Weekday Afternoon Peak Hour
Bend, Oregon

Figure 16



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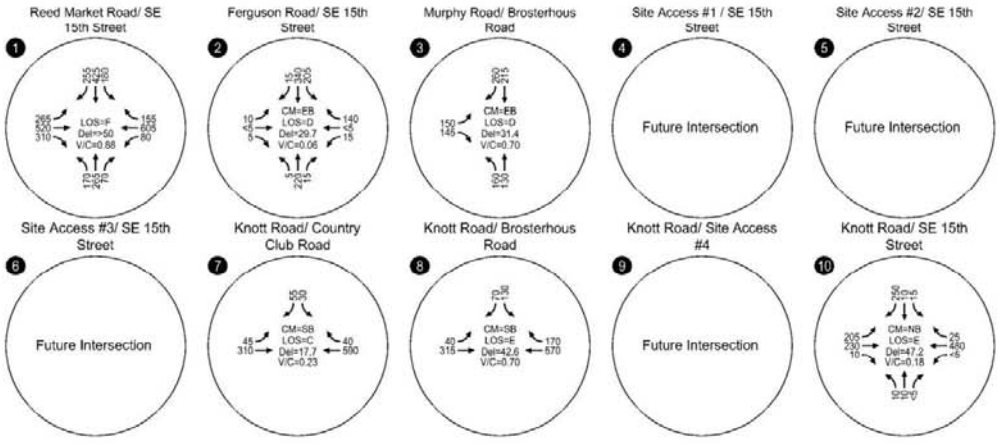


2021 Background Traffic Conditions, Weekday PM Peak Hour
Bend, Oregon

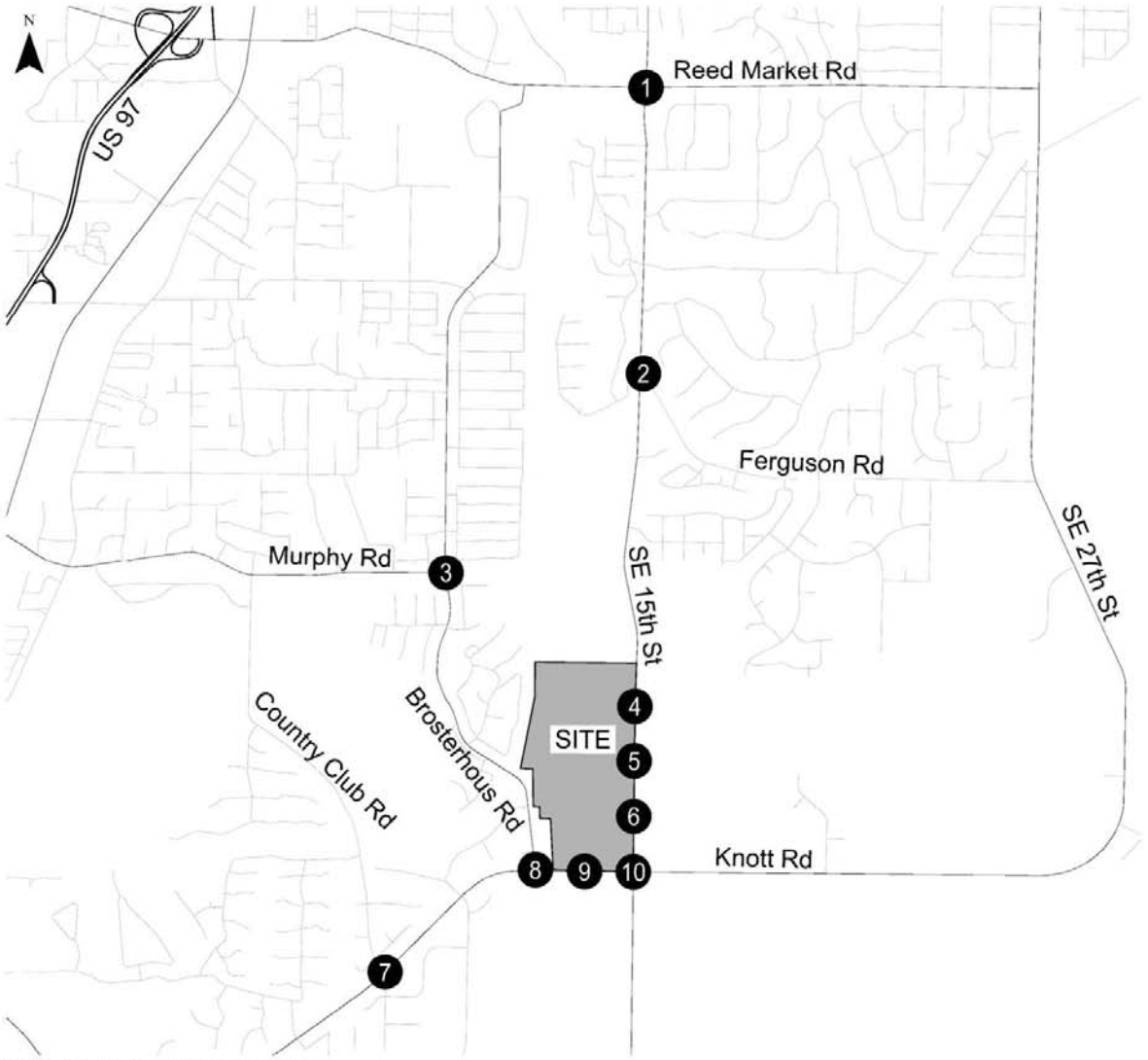
Figure 17

2021 BUILD (WITH HIGH SCHOOL) TRAFFIC CONDITIONS

Year 2021 build conditions indicate how the study intersections are expected to operate with the addition of the planned 1,600 student high school.

Figures 18 through 20 summarizes the year 2021 traffic volumes and operating conditions assuming the high school is open and operational at full capacity. The volumes shown in these figures were calculated by adding the high school trips shown in Figures 11 through 13 to the year 2021 background traffic shown in Figures 15 through 17.

As shown, eastbound, stop-controlled approach at the Murphy Road/Brosterhous Road and the southbound, stop-controlled approach at the Knott Road/Brosterhous Road intersections are anticipated to operate with high delays, in excess of City standards. As mentioned previously, the City is planning for the extension of Murphy Road to 15th Street, which will change the traffic patterns and volumes at both intersections but this improvement in not funded yet. Under year 2021 conditions, neither intersection is anticipated to warrant a traffic signal and the queues are not anticipated to be more than 350 feet during the peak hours analyzed.



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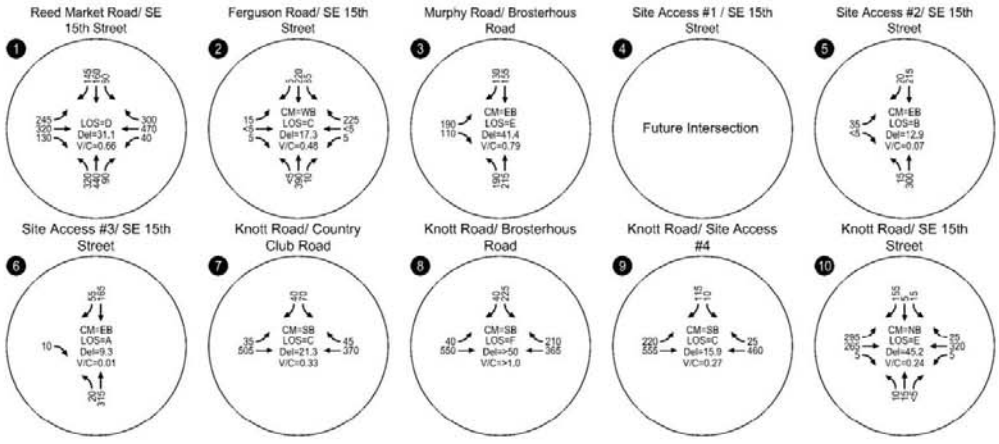
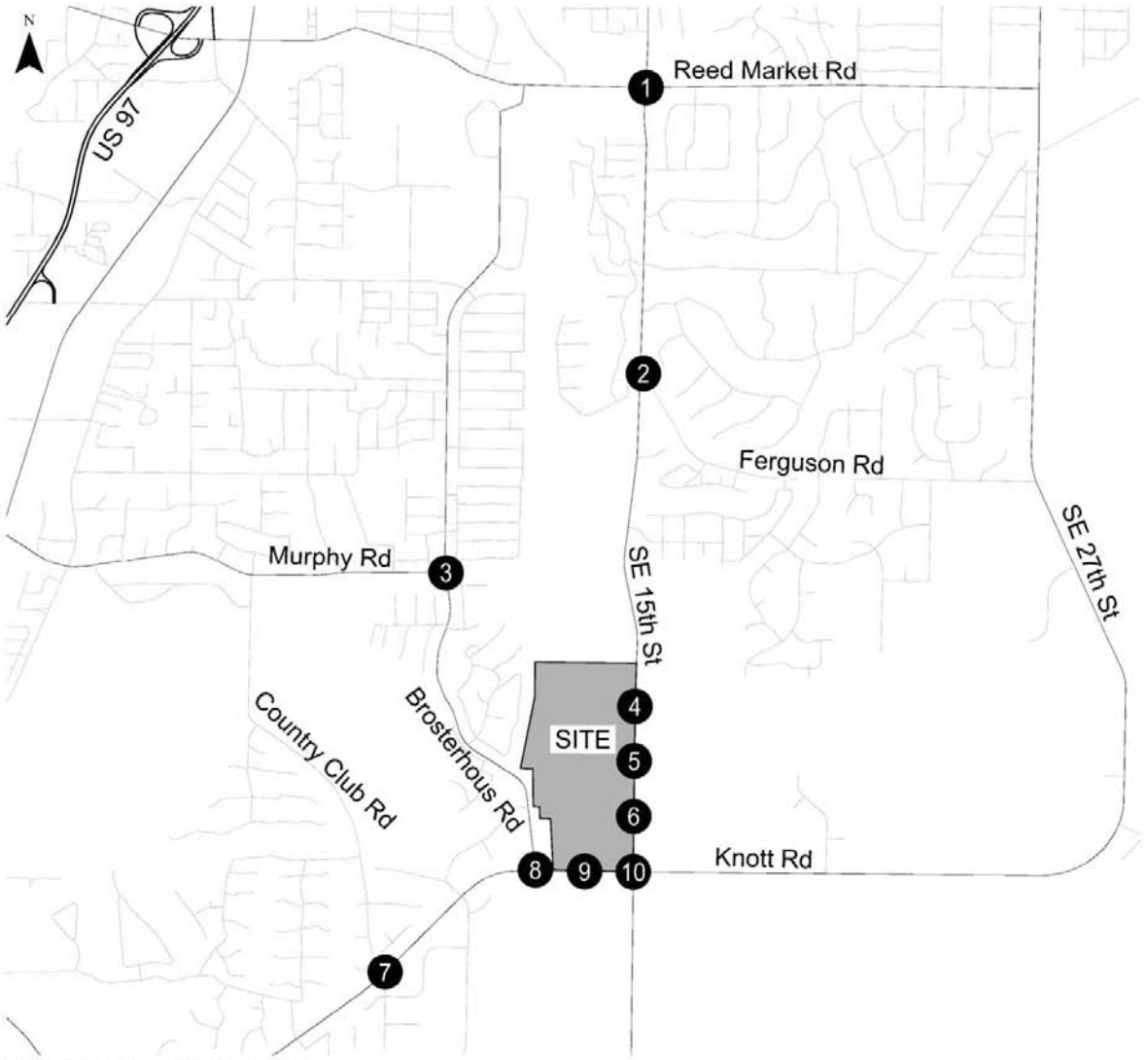


2021Build Out High School Only Traffic Conditions, Weekday AM Peak Hour
Bend, Oregon

Figure 18



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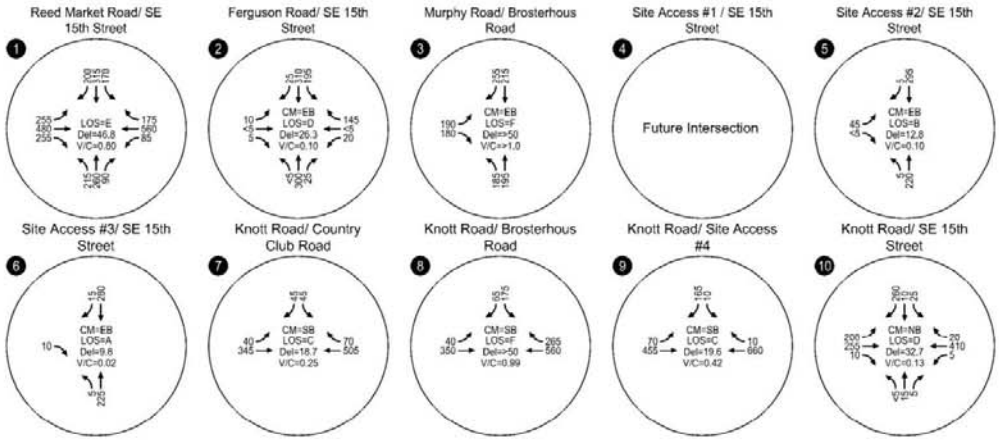
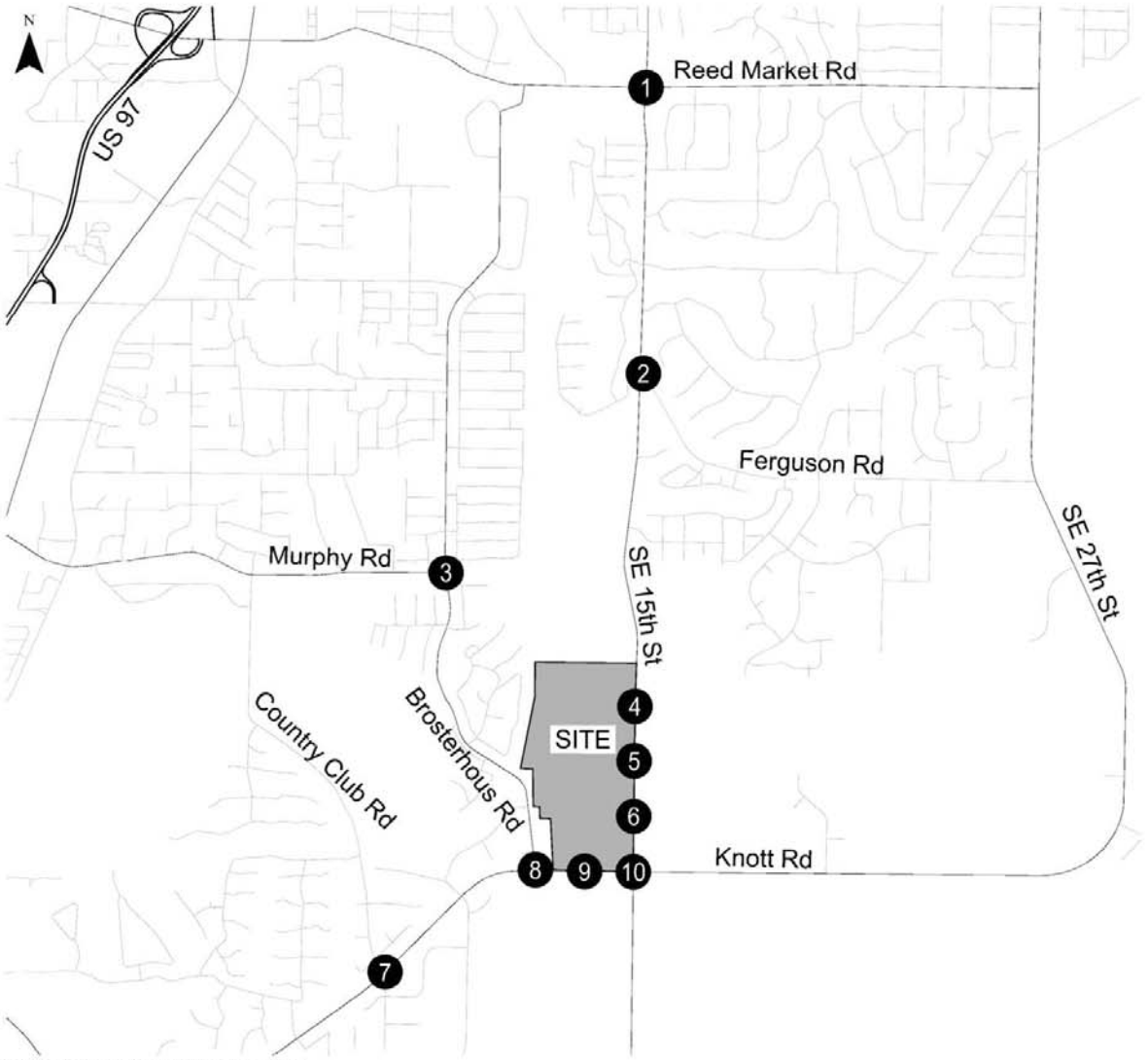


2021 Build High School Only, Weekday Afternoon Peak Hour
Bend, Oregon

Figure 19



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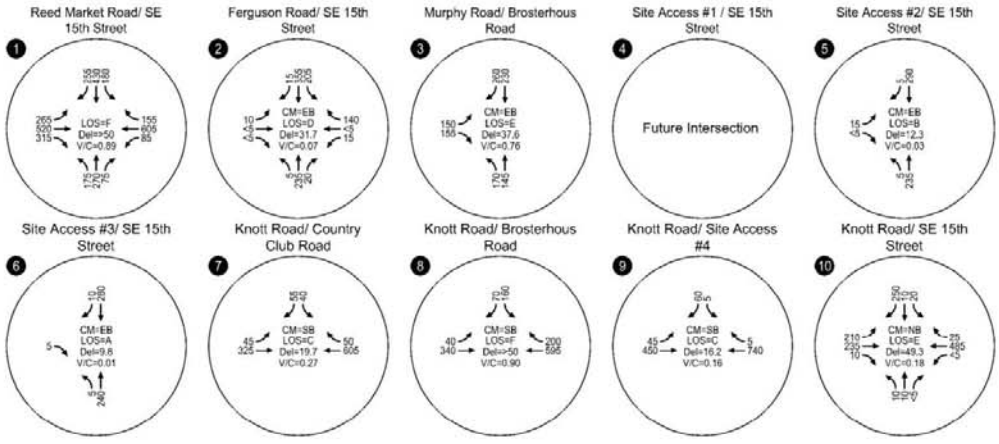


2021 Build High School Only, Weekday PM Peak Hour
Bend, Oregon

Figure 20

Brosterhous Road Connection Analysis

This section documents the operational analysis of a potential connection of the onsite collector roadway to Brosterhous Road. Specifically, we have analyzed sight distance and intersection operations at Brosterhous Road and the new connection. Exhibit 1 illustrates the location of the proposed connection on Brosterhous Road as presented to the City of Bend staff. This connection is planned as part of the Bend Transportation System Plan, though no specific connection point to Brosterhous Road has been clearly identified. Right-of-way acquisition would be necessary to complete the connection as shown.

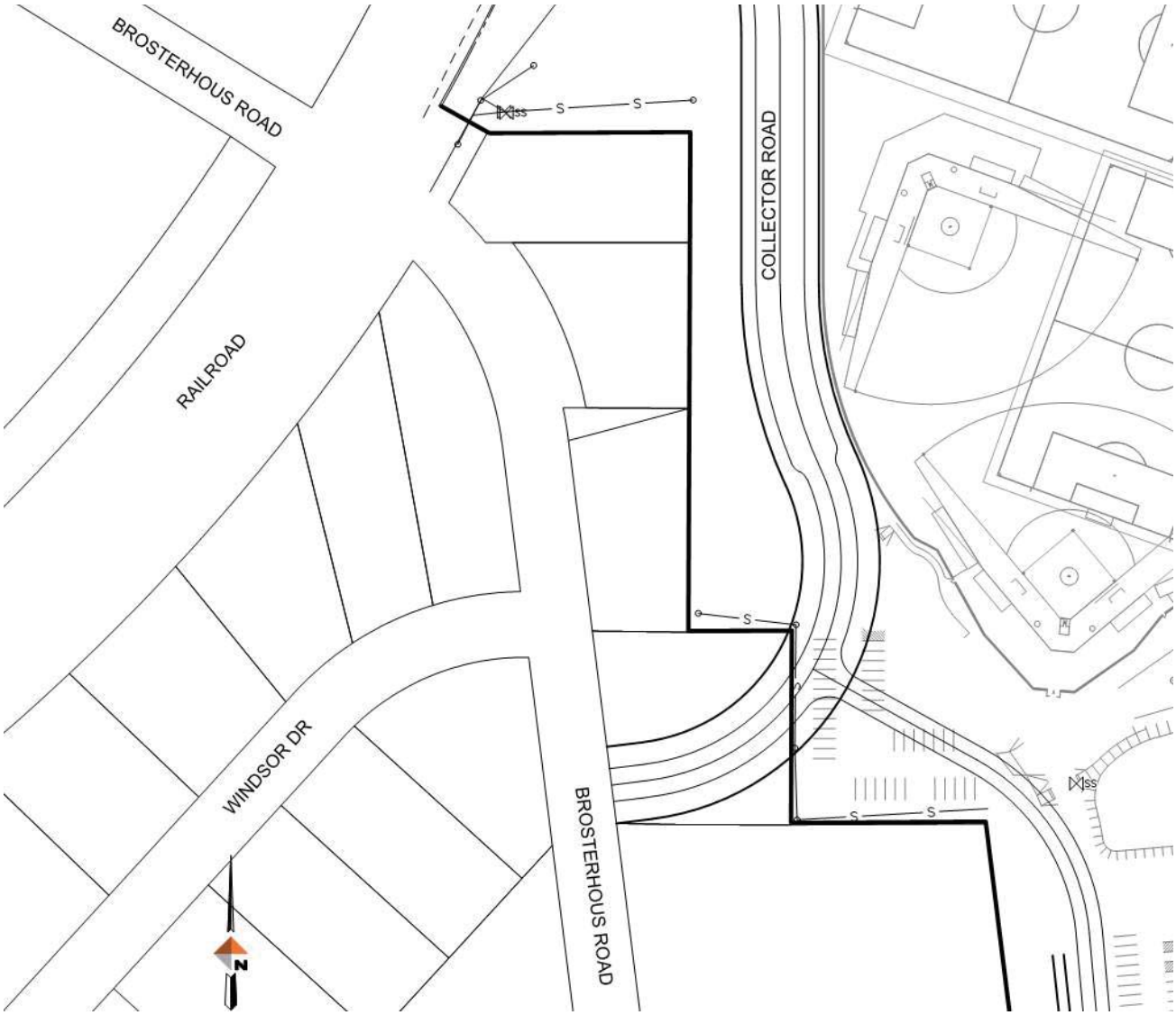


Exhibit 1. Brosterhous Road Access Location *Source: Dowl*

Roadway Connection Considerations

The location of the roadway connection with Brosterhous Road needs to balance right-of-way acquisition needs, offset with Windsor Drive, and sight distance constraints caused by the railroad undercrossing to the north. The location shown was selected to balance those challenges. Specifically:

- Right-of-way acquisition would be limited to one parcel
- The connection location is located south and away from the railroad undercrossing. This increases sight distance for vehicles traveling southbound. Based on initial field measurements, westbound vehicles would have in excess of 250 feet of sight distance to see the back of a potential queue of vehicles waiting to turn left onto the collector road. standard reference *A Policy on Geometric Design of Highways and Streets, 6th Edition,* published by the American Association of State Highway and Transportation Officials (AASHTO) in 2011 (commonly referred to as the Green Book) recommends 250 feet of stopping sight distance for 35 mph roadways, which is the posted speed on Brosterhous Road.
- The offset with Windsor Drive is approximately 150 feet, which is more than the 95th percentile queue length for the planned intersection, as discussed in the next section.

More detailed sight distance measurements should be calculated at the time of design and construction of the intersection.

Intersection Operations Analysis

The purpose of this analysis is to evaluate the potential intersection operational conditions of the collector road connection with Brosterhous Road as well as the potential effect of the connection of the Brosterhous Road/Knott Road intersection. Both analyses were conducted under 2021 Build Conditions assumes the high school has been constructed.

General assumptions for the analysis include:

- 100 percent of school traffic on Brosterhous Road will utilize the access
- 50 percent of school traffic on Country Club Road will divert to Brosterhous Road to use the access
- Through volume on Brosterhous Road was conservatory estimated based on the traffic counts collected at Brosterhous Road/Murphy Road and Brosterhous Road/Knott Road.
- The intersection will operate with a peak hour factor of 0.70[3]

[3] We reviewed the existing traffic counts (2017) at Brosterhous Road/Knott Road and Brosterhous Road/Murphy Road during the AM, Afternoon, and PM peak hours and found the peak hour factor for of these intersections ranged between 0.78-0.93. To account for the peaking characteristics typically

- No turn lanes were assumed on Brosterhous Road.
- There intersection will operate as side-street stop-controlled, with Brosterhous Road having free flow traffic.

Table 4 shows the operational analysis results for the 2021 High School Build Out condition at Brosterhous Road/Collector Road and Brosterhous Road/Knott Road. The operational analysis worksheets are provided in Appendix G.

Table 4. Operational Analysis Results for the 2021 Build Out Condition with Brosterhous Road/Collector Road

Analysis Period	LOS	Delay (s)	V/C Ratio[1]	95th% Queue[2] (ft)	Meets City Standards?
Brosterhous Road/Collector Road					
AM Peak Hour	B	11.8	0.17	<25	Yes
Afternoon Peak Hour	B	12.3	0.24	<25	Yes
PM Peak Hour	B	11.1	0.08	<25	Yes
Brosterhous Road/Knott Road					
AM Peak Hour	D	28.3	0.47	75	Yes
Afternoon Peak Hour	E	45.0	0.71	125	Yes
PM Peak Hour	E	48.5	0.74	125	Yes

[1]Reported as critical movement: Brosterhous Road/Collector Road—Westbound, Brosterhous Road/Knott Road—Southbound
[2]Queue values rounded to the nearest 25 feet

As shown in the analysis results above, the new access on Brosterhous Road is anticipated to meet the City's performance standards. The 95th percentile queues for southbound vehicles on Brosterhous Road turning onto the collector road are expected to be less than one vehicle for each of the analysis periods. Because of the low likelihood of queuing shown in this analysis, no turn-lanes on Brosterhous Road are necessary for adequate intersection operations at the proposed intersection. No turn lanes on Brosterhous Road will also help to limit the potential for conflict with the Windsor Drive intersection to the north.

Also as shown, the reduction of trips at the Brosterhous Road/Knott Road intersection expected due to this connection would result in the intersection meeting operational standards during each of the analysis periods during 2021 Build Conditions. Queues at the intersection would also be decreased.

---

associated with a school, we assumed a peak hour factor of 0.70 at the new intersection, which represents a sharper peak than what is currently observed at the nearby intersections.

Based on this analysis, the construction of the collector road extension to Brosterhous Road would eliminate the identified impact at Brosterhous Road/Knott Road during 2021 Build Conditions.

YEAR 2027 BACKGROUND CONDITIONS

The year 2027 background volumes assume that the high school is operating at full capacity but neither the middle school or Tamarack Facility are constructed. The year 2027 traffic volumes and traffic operations are shown in Figures 21 through 23.

As shown, Reed Market Road/SE 15th Street roundabout will exceed city standards in the afternoon and PM study periods. The stop-controlled approaches at the Murphy Road/Brosterhous Road, Knott Road/Brosterhous Road, and Knott Road/SE 15th Street intersections will operate with high delays, in excess of city standards in each of the study periods.

YEAR 2027 TOTAL TRAFFIC CONDITIONS

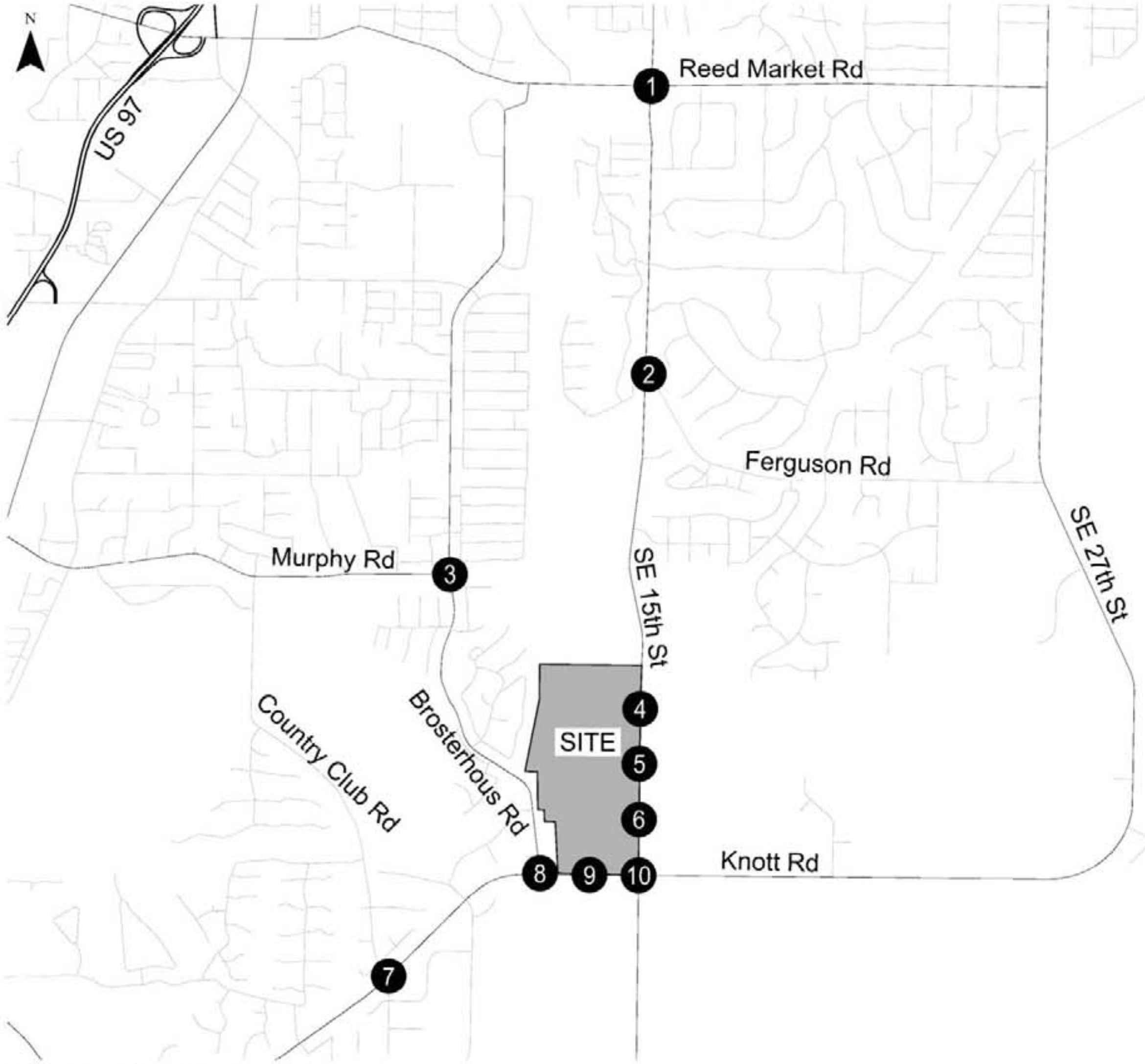
Under year 2027 total traffic, all three school are assumed to be operating at full capacity. This is a very conservative assumption as the timing of the future schools is subject to change. The resultant traffic volumes and operations are shown in Figures 24 through 26.

As shown, no other intersections are expected to exceed city standards with the full build out of the three schools. Table 5 summarizes the operational results of the intersections under each of the traffic conditions.

Table 5. Summary of Operational Analysis Results versus City Standards

	Existing	2021 Background	2021 Build (with High School)	2027 Background	2027 Build	2027 Background with Murphy Extension	2027 Build with Murphy Extension
Reed Market Road/SE 15th Street	Meets	Meets	Meets	Exceeds	Exceeds	Meets	Meets
Ferguson Road/SE 15th Street	Meets	Meets	Meets	Meets	Meets	Exceeds	Exceeds
Murphy Road/Brosterhous Road	Meets	Meets	Exceeds	Exceeds	Exceeds	Meets	Meets
Site Access #1/SE 15th Street	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Site Access #2/SE 15th Street	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Site Access #3/SE 15th Street	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Knott Road/Country Club Road	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Knott Road/Brosterhous Road	Meets	Meets	Exceeds	Exceeds	Exceeds	Meets	Exceeds
Knott Road/Site Access #4	Meets	Meets	Meets	Meets	Meets	Meets	Meets
Knott Road/SE 15th Street	Meets	Meets	Meets	Exceeds	Exceeds	Exceeds	Exceeds

Exceeds=Exceeds one or more study periods
Meets=Meets all study periods



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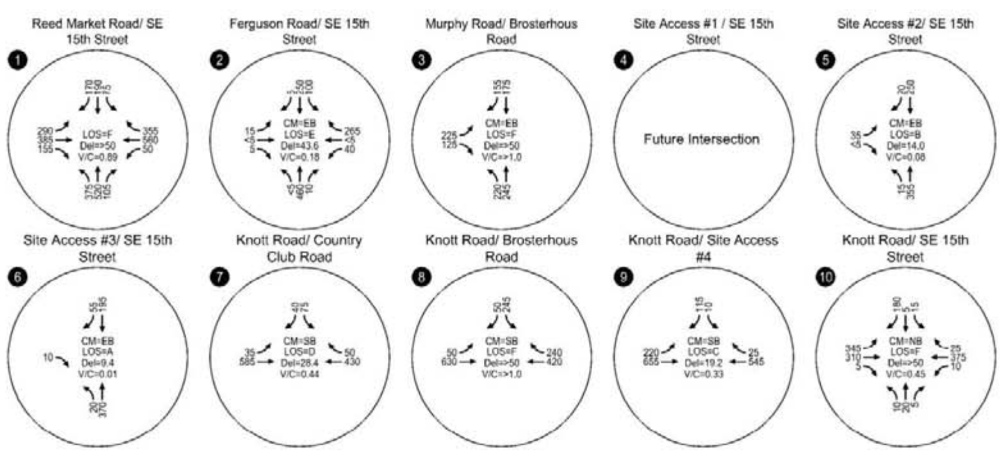
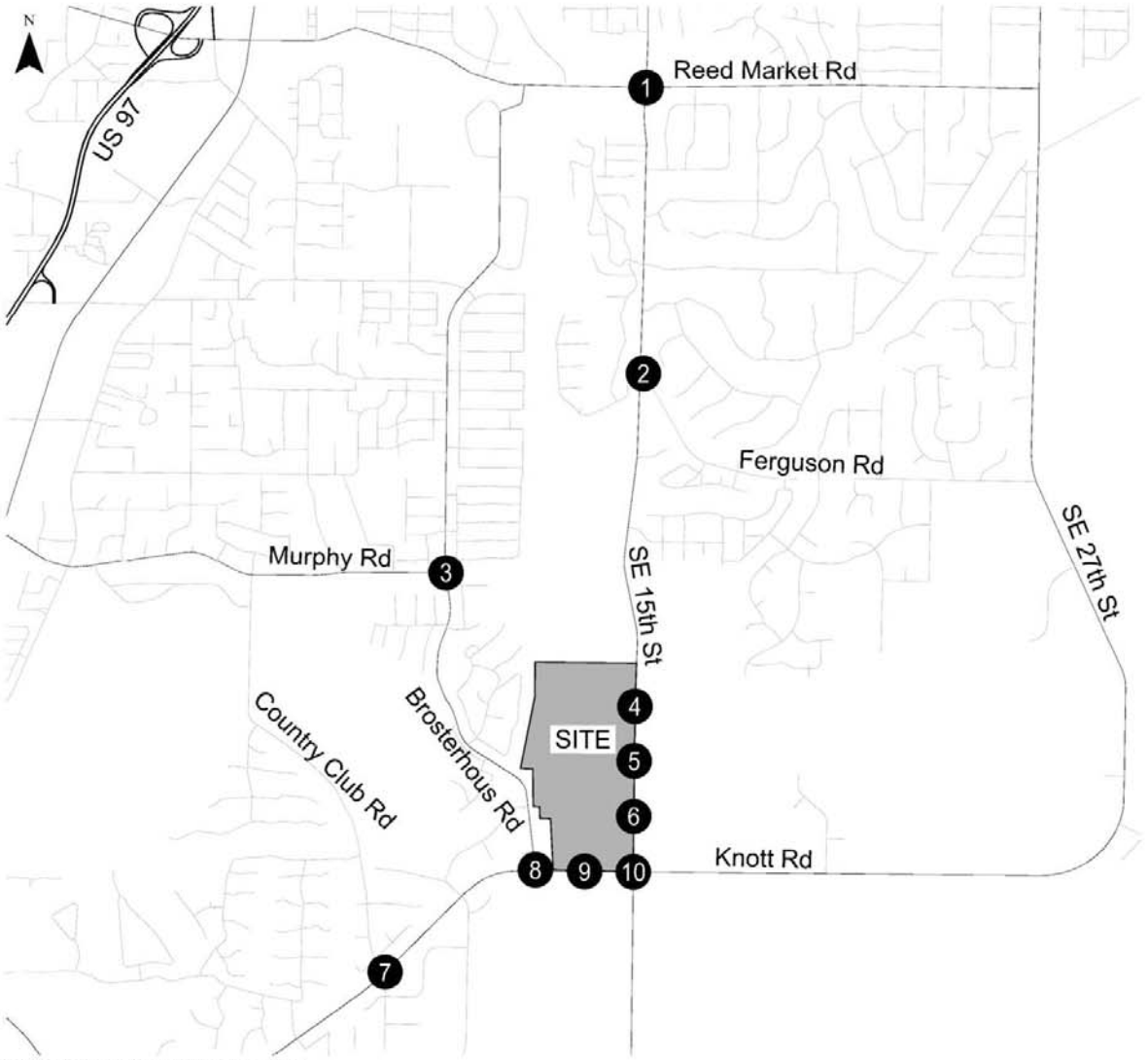


2027 Background with High School Traffic Conditions, Weekday AM Peak Hour
Bend, Oregon

Figure 21



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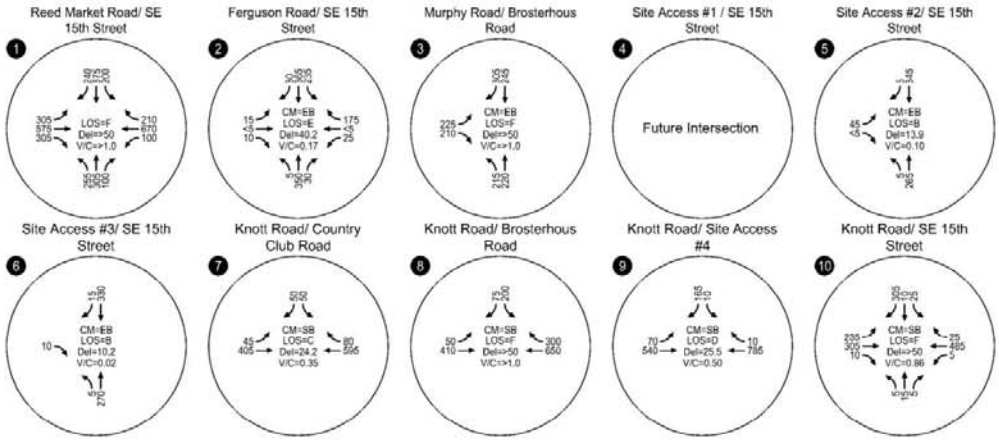
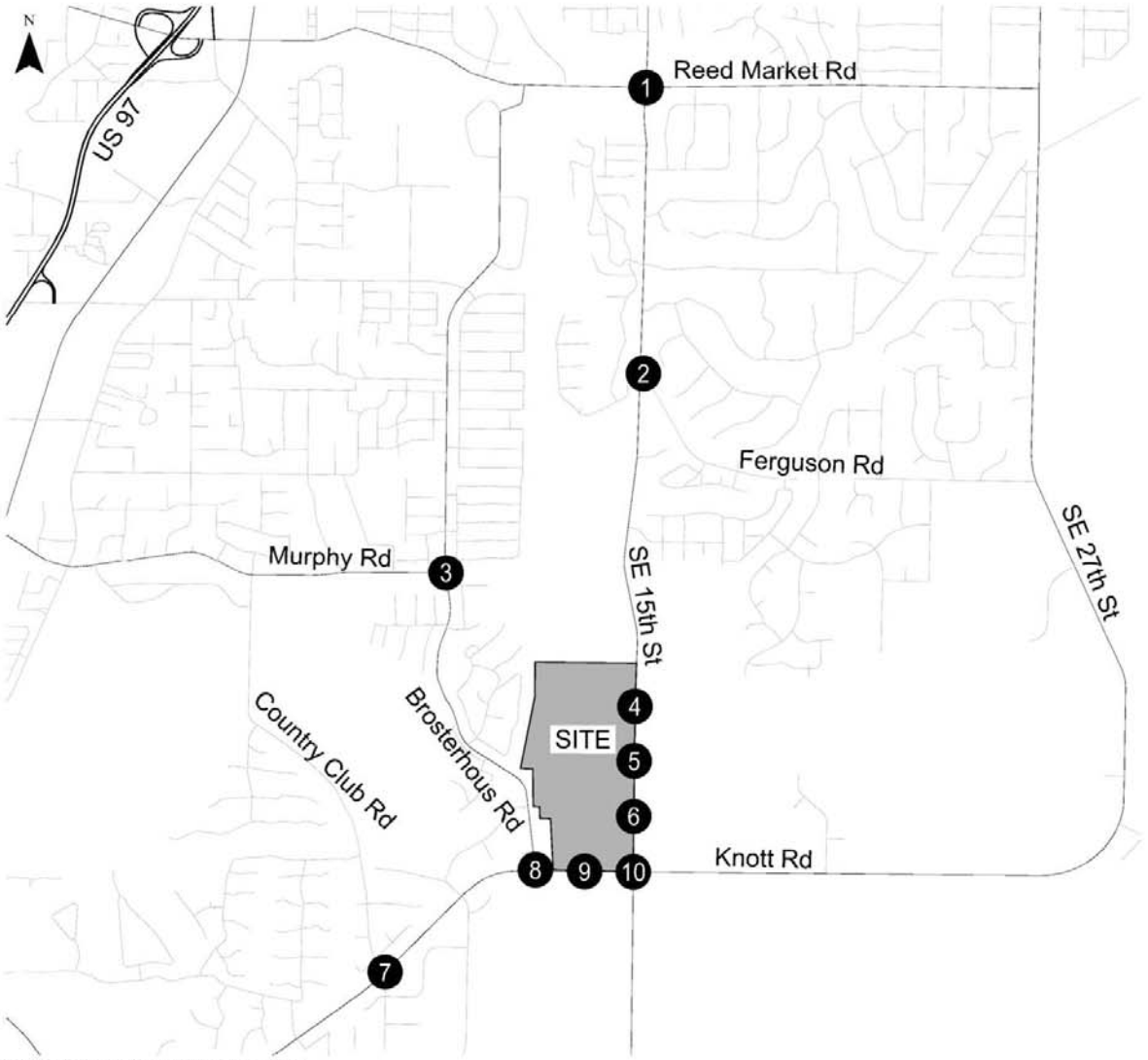


2027 Background with HS Traffic Conditions, Weekday Afternoon Peak Hour
Bend, Oregon

Figure 22



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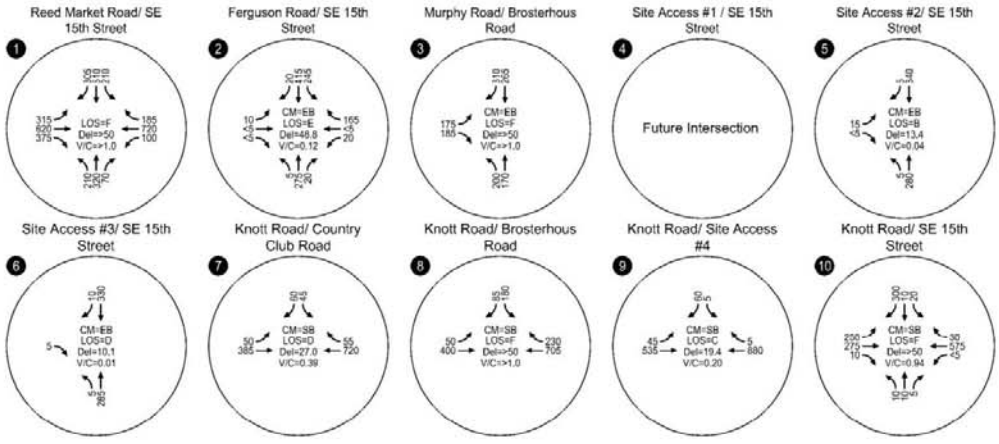
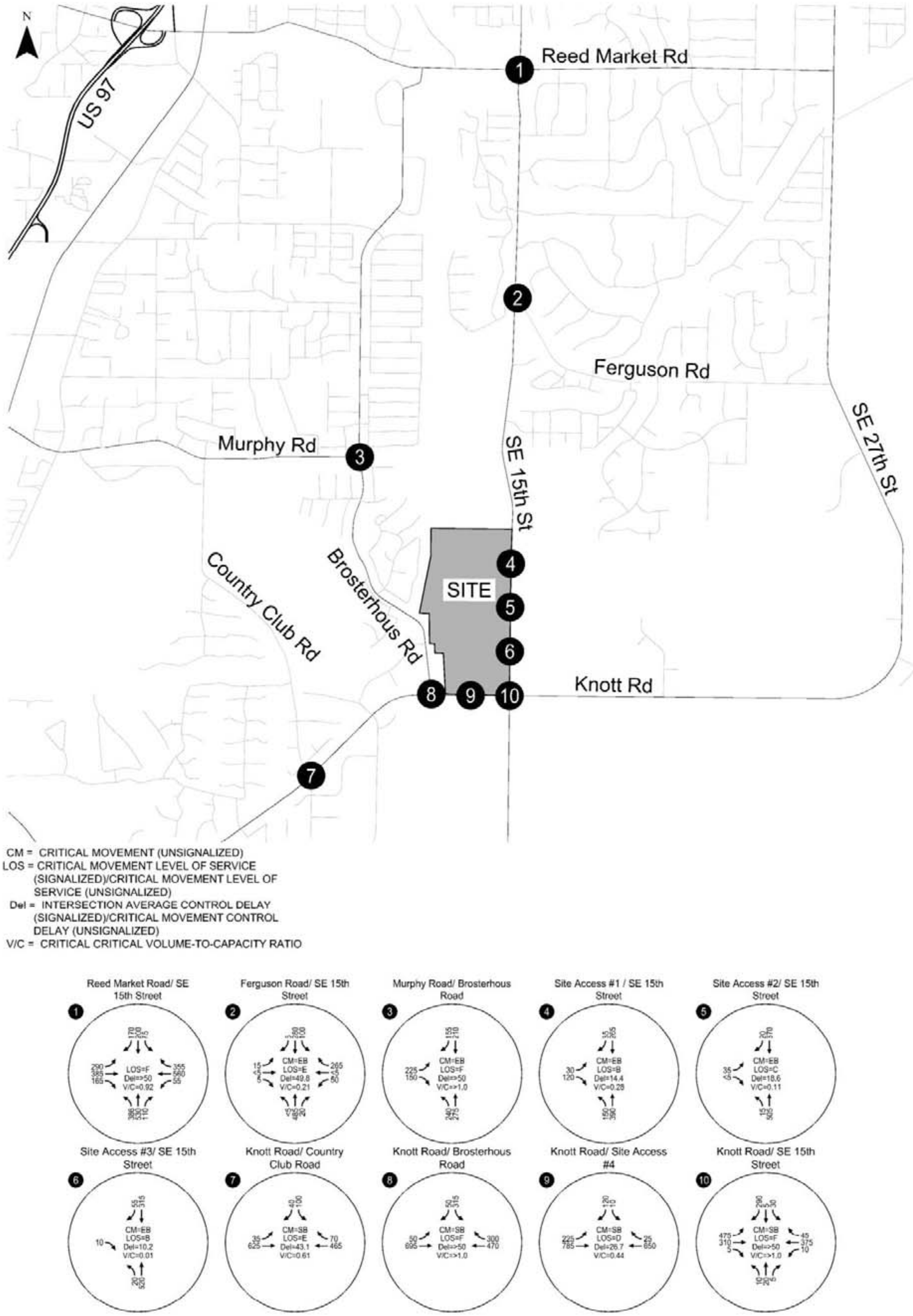


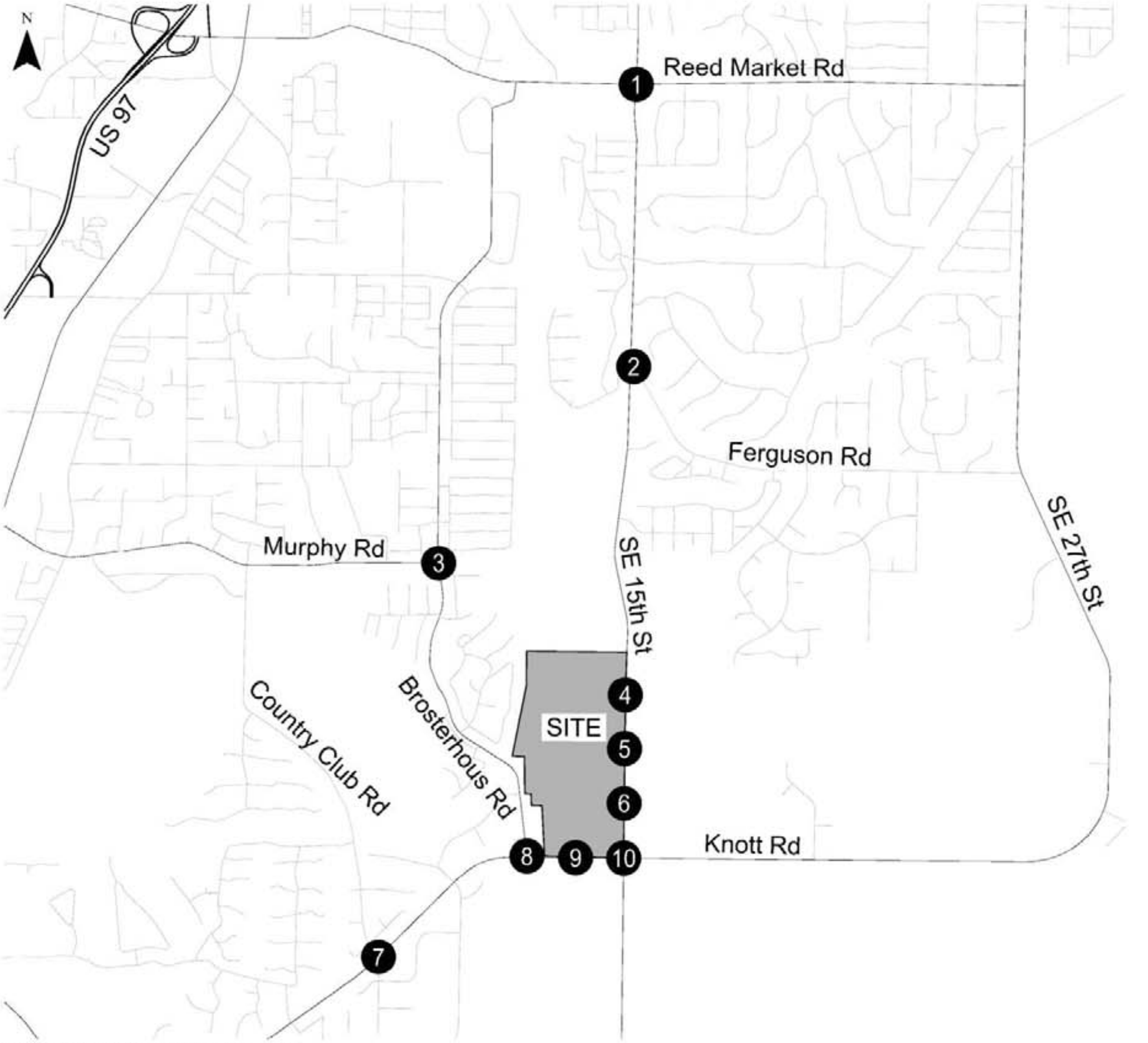
2027 Background with HS Traffic Conditions, Weekday PM Peak Hour
Bend, Oregon

Figure 23



2027 Build Out Traffic Conditions, Weekday AM Peak Hour
Bend, Oregon

Figure 24



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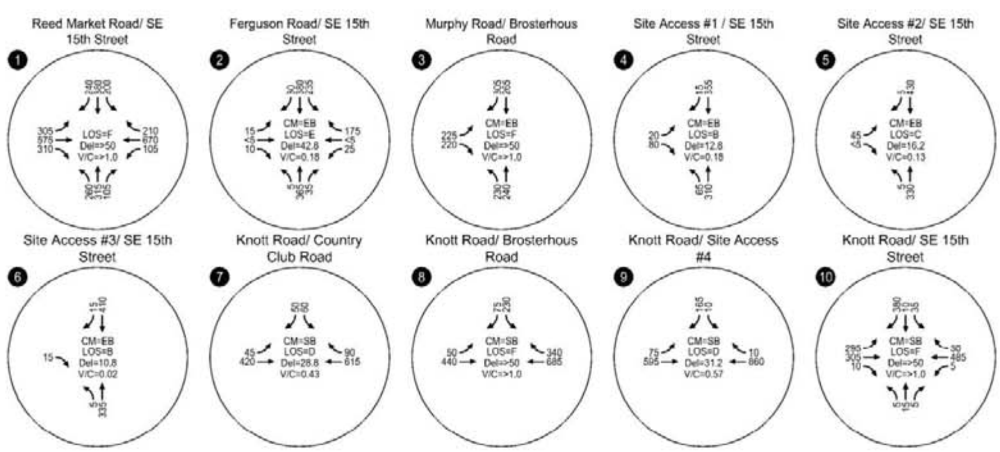
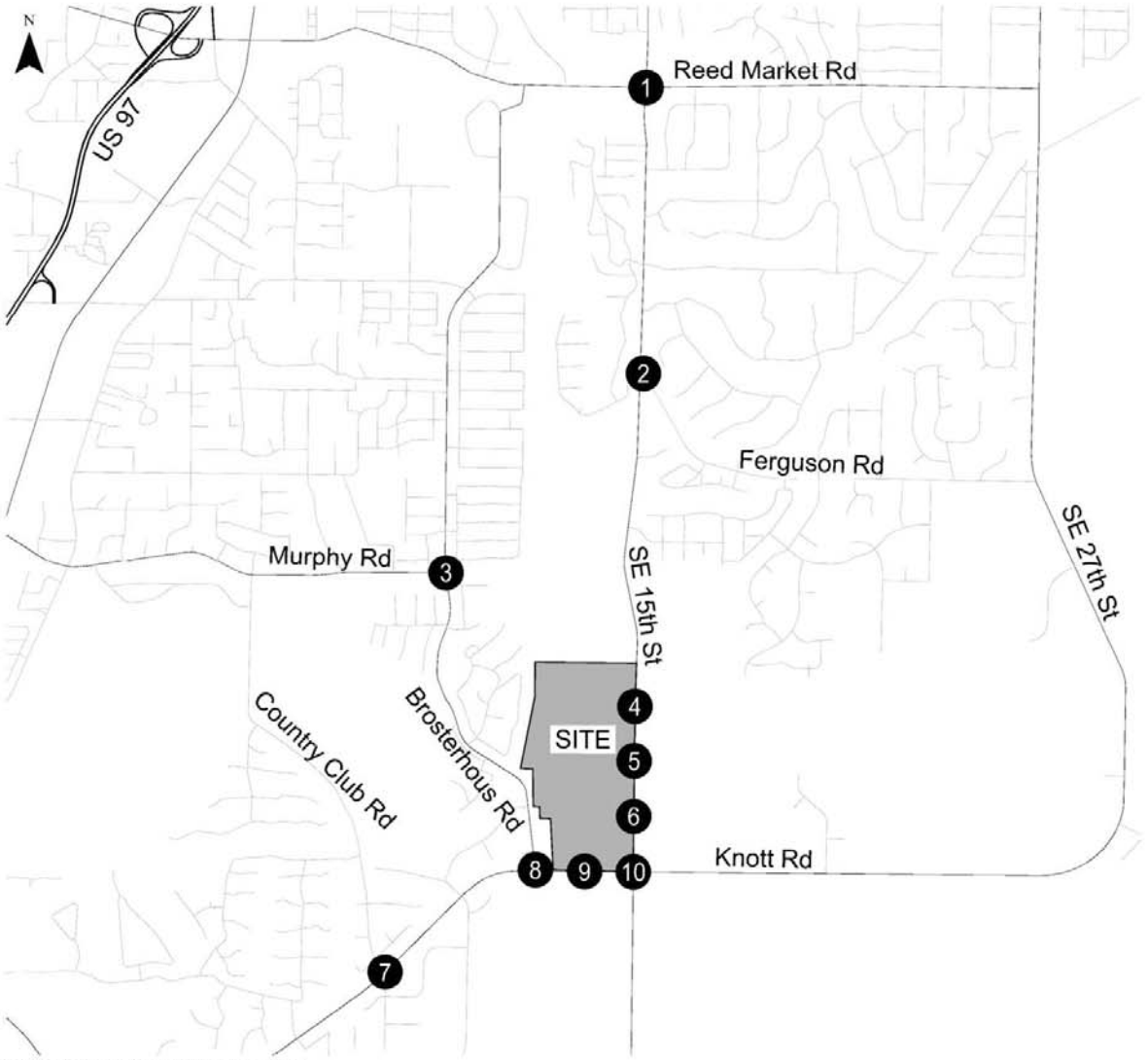


2027 Build Out Traffic Conditions, Weekday Afternoon Peak Hour
Bend, Oregon

Figure 25



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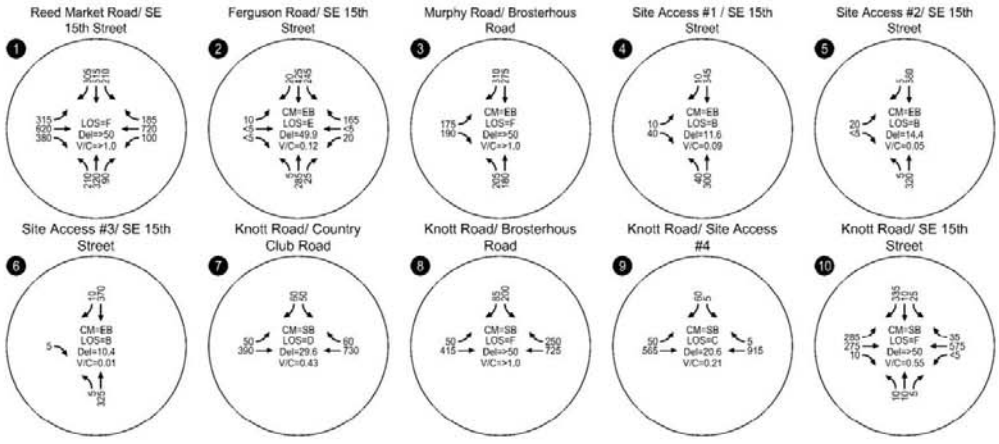

2027 Build Out Traffic Conditions, Weekday PM Peak Hour
Bend, Oregon

Figure 26

QUEUING ANALYSIS

Table 6 shows the queues associated with each turning movement at the study intersections. The red cells indicate movements that exceed the storage length provided under existing conditions, or extend past a driveway, conflicting roadway, or railroad.

Table 6. Queuing Analysis

			Existing + In Process				2021 Background				2021 Background + High School				2027 Background + High School				2027 Build Out			
			NB	EB	WB	SB	NB	EB	WB	SB	NB	EB	WB	SB	NB	EB	WB	SB	NB	EB	WB	SB
1	Reed Market Road/SE 15th Street	AM	125	75	300	50	175	100	350	50	200	100	425	75	425	175	825	125	450	200	875	125
		Afternoon	75	250	225	150	125	400	350	250	150	450	425	300	325	975	900	675	350	1000	925	700
		PM	75	400	225	275	125	700	425	475	150	700	425	500	150	>1000	775	1000	325	>1000	925	>1000
2	Ferguson Road/SE 15th Street	AM	<25	<25	50	<25	<25	<25	50	<25	<25	<25	75	<25	<25	25	100	<25	<25	25	150	<25
		Afternoon	<25	<25	25	25	<25	25	25	<25	<25	<25	25	25	<25	25	50	25	<25	25	75	25
		PM	<25	<25	25	25	<25	25	25	<25	<25	<25	25	25	<25	<25	50	25	<25	<25	50	25
3	Murphy Road/Brosterhous Road	AM	<25	75	-	<25	<25	100	-	>25	25	175	-	<25	25	350	-	<25	25	475	-	<25
		Afternoon	<25	125	-	<25	<25	200	-	>25	25	350	-	<25	25	625	-	<25	25	700	-	<25
		PM	<25	100	-	<25	<25	125	-	>25	25	150	-	<25	25	350	-	<25	25	375	-	<25
4	Site Access #1/SE 15th Street	AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	25	-	<25
		Afternoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	25	-	<25
		PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	<25	-	<25
5	Site Access #2/SE 15th Street	AM	-	-	-	-	-	-	-	-	<25	<25	-	<25	<25	<25	<25	<25	<25	<25	-	<25
		Afternoon	-	-	-	-	-	-	-	-	<25	<25	-	<25	<25	<25	<25	<25	<25	<25	-	<25
		PM	-	-	-	-	-	-	-	-	<25	<25	-	<25	<25	<25	<25	<25	<25	<25	-	<25
6	Site Access #3/SE 15th Street	AM	-	-	-	-	-	-	-	-	<25	<25	-	<25	<25	<25	-	<25	<25	<25	-	<25
		Afternoon	-	-	-	-	-	-	-	-	<25	<25	-	<25	<25	<25	-	<25	<25	<25	-	<25
		PM	-	-	-	-	-	-	-	-	<25	<25	-	<25	<25	<25	-	<25	<25	<25	-	<25
7	Knott Road/Country Club Road	AM	-	<25	<25	<25	<25	<25	<25	25	-	<25	<25	25	-	<25	<25	50	-	<25	<25	100
		Afternoon	-	<25	<25	25	<25	<25	<25	25	-	<25	<25	25	-	<25	<25	50	-	<25	<25	50
		PM	-	<25	<25	25	<25	<25	<25	25	-	<25	<25	25	-	<25	<25	50	-	<25	<25	50
8	Knott Road/Brosterhous Road	AM	-	<25	<25	50	-	<25	<25	50	-	<25	<25	300	-	<25	<25	475	-	<25	<25	775
		Afternoon	-	<25	<25	75	-	<25	<25	100	-	<25	<25	225	-	<25	<25	425	-	<25	<25	575
		PM	-	<25	<25	75	-	<25	<25	125	-	<25	<25	200	-	<25	<25	400	-	<25	<25	475
9	Knott Road/Site Access #4	AM	-	-	-	-	-	-	-	-	-	25	<25	25	-	25	<25	50	-	25	<25	50
		Afternoon	-	-	-	-	-	-	-	-	-	<25	<25	50	-	<25	<25	75	-	<25	<25	75
		PM	-	-	-	-	-	-	-	-	-	<25	<25	25	-	<25	<25	25	-	<25	<25	25
10	Knott Road/SE 15th Street	AM	25	25	<25	25	25	25	<25	25	25	25	<25	50	50	25	<25	100	100	50	<25	525
		Afternoon	<25	25	<25	50	<25	25	<25	75	<25	25	<25	100	25	25	<25	200	50	25	<25	475
		PM	<25	25	<25	75	25	25	<25	100	25	25	<25	100	50	25	<25	250	50	25	<25	375

Rounded to the nearest 25 feet

MURPHY ROAD EXTENSION SENSITIVITY ANALYSIS

The City of Bend is planning the extension of Murphy Road from the Murphy Road/Brosterhous Road intersection to the 15th Street/Golden Gate Place intersection. The timing of this improvement is uncertain due to a lack of allocated funding. However, the project is a high priority for the City of Bend and would have a significant effect on the travel patterns near the BSD site, most notably diverting traffic from the Reed Market Road and Knott Road corridors.

The City of Bend and BSD are interested in the potential effect of the Murphy Road Extension on the 2027 no build and 2027 build analysis results included in this TIA. To assess that potential effect, we have conducted a sensitivity analysis that considers the rerouting of background and site traffic during the 2027 PM peak hour scenario. This sensitivity analysis was developed by observing 2040 traffic patterns within the Bend-Redmond Travel Demand Model both with and without the Murphy Road Extension. This analysis was focused on the PM peak, which the Bend-Redmond travel demand model predicts. Based on those observations, we have developed modified PM peak hour travel patterns for area trips. These modified intersection volumes and resulting intersection operations are included in Appendix F.

The results of this analysis are shown in Table 7 and compared to the "without Murphy" scenario. The following highlights key findings of this comparison:

- Regardless of the Murphy Road extension, an improvement at 15th Street/Knott Road will be needed (this is included as mitigation for the High School site).
- The Murphy Road extension clearly reduces the overall demand at the Knott Road/Brosterhous Road intersection. However, the need for an improvement at the intersection is still needed with the development of the middle school.
- Travel demand along the Reed Market Road corridor is reduced with the addition of the Murphy Road extension. As such, the Reed Market Road/15th Street intersection is expected to meet applicable performance standards in 2027 with the roadway extension under no build and build conditions.
- The 15th Street/Ferguson Road intersection would experience increased demand due to regional trips rerouting to the Murphy Road and 15th Street corridor. The need for an improvement at this location may be accelerated due to the Murphy Road extension, though the BSD site has little impact on the overall intersection operations (~3 second change in critical movement delay with the addition of the high school, middle school site, and Tamarack facility)

Table 7. Summary of Operational Analysis Results of Murphy Road Sensitivity Analysis

	2027 Background without Murphy Road Extension	2027 Build without Murphy Road Extension	2027 Background with Murphy Extension	2027 Build with Murphy Extension
Reed Market Road/SE 15th Street	Exceeds	Exceeds	Meets	Meets
Ferguson Road/SE 15th Street	Meets	Meets	Exceeds	Exceeds
Murphy Road/Brosterhous Road	Exceeds	Exceeds	Meets	Meets
Site Access #1/SE 15th Street	Meets	Meets	Meets	Meets
Site Access #2/SE 15th Street	Meets	Meets	Meets	Meets
Site Access #3/SE 15th Street	Meets	Meets	Meets	Meets
Knott Road/Country Club Road	Meets	Meets	Meets	Meets
Knott Road/Brosterhous Road	Exceeds	Exceeds	Meets	Exceeds
Knott Road/Site Access #4	Meets	Meets	Meets	Meets
Knott Road/SE 15th Street	Exceeds	Exceeds	Exceeds	Exceeds

Exceeds=Exceeds PM peak hour
Meets=Meets PM peak hour

PROPORTIONATE SHARE (BDC 4.5.700.B.10)

2021 Build Conditions

As shown by the 2021 Build conditions analysis, the development of the high school would result in the impacts at the following intersections:

- Brosterhous Road/Murphy Road
- Brosterhous Road/Knott Road

Both intersections are identified on the current City of Bend transportation system development charge list as future single lane roundabouts and 100 percent creditable.

Based on the methodology identified in BDC 4.7.500.B.10, the added traffic from the high school site would result in the following proportionate share at each intersection:

- Brosterhous Road/Murphy Road – 31.9%
- Brosterhous Road/Knott Road – 44.0%

Though no impact is identified in 2021, the proportionate share contribution at 15th Street/Knott Road (which would exceed standards in 2027), is 13.6%

Per City of Bend development code, BSD may fund and construct the improvement of the 15th Street/Knott Street intersection in lieu of providing proportionate share improvements at this intersection as well as the Murphy Road/Brosterhous Road and Knott Road/Brosterhous Road intersections. The total of these impacts is approximately 100% of an intersection improvement. From a system perspective, the impacts of the schools can be proportionately mitigated by constructing a roundabout at the Knott Street/15th Street intersection.

The construction of a single lane roundabout at 15th Street/Knott Road is contingent on the City of Bend's ability to obtain the needed right-of-way to make the improvement. The roundabout is identified in the City's TSP and included on the current City of Bend Transportation SDC project list.

2027 Build Conditions

As shown by the 2027 Build conditions analysis (assuming no Murphy Road extension), the development of the middle school and Tamarack facility would result in the impacts at the following intersections:

- Brosterhous Road/Murphy Road
- Brosterhous Road/Knott Road
- 15th Street/Knott Road
- 15th Street/Reed Market Road

Brosterhous Road/Murphy Road, Brosterhous Road/Knott Road, and 15th Street/Knott Road are identified on the current City of Bend transportation system development charge list as future single lane roundabouts and 100 percent creditable. The 15th Street/Reed Market Road intersection was recently constructed as a multi-lane roundabout.

Based on the methodology identified in BDC 4.7.500.B.10, the added traffic from the middle school and Tamarack facility would result in the following proportionate share at each intersection:

- Brosterhous Road/Murphy Road – 22.4%
- Brosterhous Road/Knott Road – 32.1%
- 15th Street/Knott Road – 21.4%
- 15th Street/Reed Market Road – 3.8%

Per City of Bend development code, BSD may fund and construct the improvement of the Brosterhous Road/Knott Street intersection in lieu of providing proportionate share improvements at this intersection as well as the other impact intersections. The total of these impacts is less than 100% of an intersection improvement. From a system perspective, the impacts of the schools can be proportionately mitigated by constructing a roundabout at the Brosterhous Road/Knott Road intersection.

The construction of a single lane roundabout at Brosterhous Road/Knott Road is contingent on the City of Bend's ability to obtain the needed right-of-way to make the improvement. The roundabout is identified in the City's TSP and included on the current City of Bend Transportation SDC project list.

ARTERIAL AND COLLECTOR LEFT TURN, MEDIAN REFUGE, AND RIGHT TURN LANE ASSESSMENT (BDC 4.7.500.B.7)

BDC 4.7.500.B.7 requires an assessment on arterial and collector streets for median refuge islands, left-turn lanes, and right-turn lanes. The BDC requires the median refuge assessment to be conducted using Table 11 of the Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations Final Report and Recommended Guidelines (FHWA Publication Number HRT-04-100, September 2005). The left and right turn lane criteria are based on the ODOT Analysis Procedures Manual (APM).

Based on forecast traffic volumes, Tables 8 through 10 identify the need for turn lanes at the school access points considering 2021 Build Conditions. Tables 11 through 13 shows the turn lanes needed to accommodate 2027 Build Conditions. As shown, a left-turn lane will be needed at each of the schools' access points when the campus is fully operational. Given the spacing between the access points on 15th Street, we would recommend that BSD and the City consider a two-way left-turn lane along the site frontage in lieu of northbound left-turn lanes at each location. Further, a right-turn lane is only warranted at the northern most access (Site Access #1) on 15th Street.

Analysis worksheets are provided in Appendix C.

Table 8. 2021 AM Peak Hour: Summary of Arterial and Collector Left Turn, Median Refuge, and Right Turn Lane Assessment

Access Location Description	Enhanced Ped Crossing Warranted?	Left Turn Lane Criteria Met?	Right Turn Lane Criteria Met?
15th Street/Site Access #1	n/a	n/a	n/a
15th Street/Site Access #2	Yes	No	No
15th Street/Site Access #3	Yes	Yes	No
Knott Road/Site Access #4	Yes	Yes	No

Table 9. 2021 Afternoon Peak Hour: Summary of Arterial and Collector Left Turn, Median Refuge, and Right Turn Lane Assessment

Access Location Description	Enhanced Ped Crossing Warranted?	Left Turn Lane Criteria Met?	Right Turn Lane Criteria Met?
15th Street/Site Access #1	n/a	n/a	n/a
15th Street/Site Access #2	Yes	No	No
15th Street/Site Access #3	Yes	No	No
Knott Road/Site Access #4	Yes	Yes	No

Table 10. 2021 PM Peak Hour: Summary of Arterial and Collector Left Turn, Median Refuge, and Right Turn Lane Assessment

Access Location Description	Enhanced Ped Crossing Warranted?	Left Turn Lane Criteria Met?	Right Turn Lane Criteria Met?
15th Street/Site Access #1	n/a	n/a	n/a
15th Street/Site Access #2	Yes	No	No
15th Street/Site Access #3	Yes	No	No
Knott Road/Site Access #4	Yes	Yes	No

Table 11. 2027 AM Peak Hour: Summary of Arterial and Collector Left Turn, Median Refuge, and Right Turn Lane Assessment

Access Location Description	Enhanced Ped Crossing Warranted?	Left Turn Lane Criteria Met?	Right Turn Lane Criteria Met?
15th Street/Site Access #1	Yes	Yes	Yes
15th Street/Site Access #2	Yes	Yes	No
15th Street/Site Access #3	Yes	Yes	Yes
Knott Road/Site Access #4	Yes	Yes	Yes

Table 12. 2027 Afternoon Peak Hour: Summary of Arterial and Collector Left Turn, Median Refuge, and Right Turn Lane Assessment

Access Location Description	Enhanced Ped Crossing Warranted?	Left Turn Lane Criteria Met?	Right Turn Lane Criteria Met?
15th Street/Site Access #1	Yes	Yes	No
15th Street/Site Access #2	Yes	Yes	No
15th Street/Site Access #3	Yes	Yes	No
Knott Road/Site Access #4	Yes	Yes	No

Table 13. 2027 PM Peak Hour: Summary of Arterial and Collector Left Turn, Median Refuge, and Right Turn Lane Assessment

Access Location Description	Enhanced Ped Crossing Warranted?	Left Turn Lane Criteria Met?	Right Turn Lane Criteria Met?
15th Street/Site Access #1	Yes	Yes	No
15th Street/Site Access #2	Yes	Yes	No
15th Street/Site Access #3	Yes	Yes	No
Knott Road/Site Access #4	Yes	Yes	No

TRUCK DELIVERY ROUTES

After construction has been completed and the schools are operational, typical deliveries related to small packages, office supplies, and food preparation materials are anticipated to the campus as well as regular refuse and recycling service. At this time, the truck delivery routes have not been established for year 2021 nor year 2027 operating conditions. BSD will provide further details about truck deliveries, if needed by the City, prior to the occupancy of each school.

SAFETY REVIEW (BDC 4.7.500.B8)

Year 2011 through 2015 crash records (the most recent five years of data available at the time of analysis) were obtained from the Oregon Department of Transportation (ODOT) for each of the study area intersections. The crash database contains crashes that are required to be reported (those that involve personal injury or property damage in excess of $1,500) as well as reports provided by local responders. This information was reviewed to identify patterns and trends within the data that could be indicators for operational or geometric improvement needs.

Table 14 summarizes the total crashes, severity of crashes, and crash rate per million entering vehicles (MEV) at the study intersections. If an intersection did not experience any crashes during the study period, it was not listed.

According to BDC 4.7.500.(B)(8)(b), “projects are considered to have a significant impact if there is a crash pattern, one or more fatalities or severe injury crashes, one or more reported crashes per 1,000,000 entering vehicles, or if it is included within a published safety study.” None of the intersections experienced a crash rate above this threshold.

Table 14. Historic Crash Data at Study Intersections (January 2011 to December 2015)

Intersection	Crash Type					Crash Severity			Total	Crash Rate[2]
	Angle	Turning	Rear End	Bike/Ped	Fixed Object/ Other	Non-Injury	Injury[1]	Fatal		
15th Street/Reed Market Road	0	6	31	0	1	25	13	0	38	0.75
15th Street/Ferguson Road	0	2	8	0	0	6	4	0	10	0.67
15th Street/Knott Road	3	3	2	0	0	4	4	0	8	0.47
Brosterhous Road/Murphy Road	0	2	1	0	1	2	2	0	4	0.29
Brosterhous Road/Knott Road	0	4	0	1	1	4	2	0	6	0.35
Country Club Road/Knott Road	2	1	0	0	0	1	2	0	3	0.18
Total	**5**	**18**	**42**	**1**	**3**	**42**	**27**	**0**	**69**	

[1] Includes all levels of injury severity ranging from possible injury to severe.
[2] Intersection crash rate is calculated as the number of crashes per million entering vehicles.

Study Area Crash Trends

Intersection Specific Trends

Safety Priority Index System

The Safety Priority Index (SPIS) is a method created by ODOT to identify statewide transportation safety problems on state highways. The SPIS method looks at crash data from the most recent 3 years and identifies areas with the highest crash frequency, crash rate, and crash severity. SPIS complies with the Federal Highway Safety Improvement Program (HSIP) and has been accepted by the Federal Highway Administration (FHWA). Each year a list of the top 5% of the sites identified are investigated by ODOT region. None of the study intersections were identified in the top 5% of the index.

ODOT All Roads Transportation Safety (ARTS)

The ODOT ARTS program identifies safety needs on all public roads throughout the state with the goal of reducing fatal and serious injury crashes. There are several safety project lists identified for each region in the state. The Region 4 project lists and study intersection involvement is listed below:

- Hotspot: This analysis is based solely on the ODOT collision records and only identifies intersections that have a fatal or Injury A crash. None of the study intersections were identified on this list.
- Oregon Intersection Safety Implementation Plan: This plan identifies intersections with high crash rates and applies a systematic approach to identify safety needs. None of the study intersections were identified on this list.
- Roadway Departure Safety Implementation Plan: This plan identifies roadways in need of improvements to reduce the risk of roadway departure crashes. None of the study intersections were identified on this list.
- Pedestrian and Bicycle Implementation Plan: This plan identifies intersection and roadway segments that are at a high risk for pedestrian and bicycle related crashes. None of the study intersections were identified on this list.

INTERSECTION SIGHT DISTANCE

Intersection sight distance was reviewed to ensure an adequate view of potential conflicts is provided. Recommended sight distance criteria is based on the standard reference *A Policy on Geometric Design of Highways and Streets, 6th Edition,* published by the American Association of State Highway and Transportation Officials (AASHTO) in 2011 (commonly referred to as the Green Book). This reference provides the recommended sight distances as measured from a height of 3.5 feet 14.5 feet from the edge of travel way at each access point serving the site, and varies based on the speed of the roadway.

Sight distance measurements were collected at all proposed external access points, to the extent practical and relevant to current conditions.

Table 15 summarizes the available sight distance at each of the proposed BSD site access points under current conditions. Sight distance at Site Access #1 was not reviewed as a site plan had not been developed for the Middle School at the time of this application. As shown in the table, all locations meet sight distance requirements for the High School site. Figures 27 to 34 show the available sight distance at each location under current conditions. At the time of construction, we recommend that all signage, landscaping and above ground utilities be located and maintained at each of the access points to ensure adequate sight distance remains available.

Table 15. Summary of Sight Distance Measurements

Location	Adjacent Posted Speed	Direction of view	Required Sight Distance (ft)	Available Sight Distance (ft)	Sight Distance Met?
15th Street/Site Access #2	45 mph	Looking north	430	>750	Yes
		Looking south	500	>750	Yes
15th Street/Site Access #3	45 mph	Looking north	430	>750	Yes
		Looking south	500	>750	Yes
Knott Road/Site Access #4	40 mph	Looking west	445	700	Yes
		Looking east	385	>750	Yes

Figure 27. Site Access #2 looking north on 15th Street

Figure 28. Site Access #2 looking south on 15th Street

Figure 29. Site Access #3 looking north on 15th Street

Figure 30. Site Access #3 looking south on 15th Street

Figure 31. Site Access #4 looking north on 15th Street

Figure 32. Site Access #4 looking south on 15th Street

MULTIMODAL DEVELOPMENTS (BDC 4.7.500.B9)

Per BDC requirements, the following section presents "*an analysis of walking, biking and transit facilities along and across arterial and collector roadways*" within a one and a half mile radius of the BSD site. Figure 33 shows existing pedestrian and bicycle facilities within one and a half mile radius of the site.

Pedestrian Network

Within the immediate vicinity of the site, the surrounding land uses are primarily low density and represent an urbanizing area with limited pedestrian facilities provided. Further details on each of the affected streets are provided below.

15th Street

On the west side of SE 15th Street, no sidewalks have been constructed yet between Knott Road and Ferguson Road. On the eastside of the street, the only section of sidewalks in this same segment existing along the site frontage of "The Bridges" neighborhood near Golden Gate Place. As properties in this corridor develop, sidewalk infrastructure will be provided, linking the schools with the surrounding neighborhoods.

As part of construction of the new schools, continuous 10 foot multi-modal paths will be provided along the site frontage. As neighborhoods urbanize to the east along SE 15th Street, the City, Bend Parks and Recreation, and BSD should work together to provide appropriate pedestrian crossings between the planned schools, park, and neighborhoods.

Knott Road

To the east of US 97, there are only a few minor sections of Knott Road with sidewalks today. Like SE 15th Street, as more areas urbanize along this corridor, sidewalks will likely be provided as part of frontage improvements. BSD will be providing a 10 foot multi-modal path along Knott Road as part of school construction. The lands immediately south of the school are outside the existing and planned UGB so future crossing treatments should be prioritized on the northside of Knott Road.

Brosterhous Road

Sidewalks are generally provided to the north of SE Marble Mountain Lane on at least one side of Brosterhous Road as part of frontage improvements and City of Bend improvement projects. Between the BNSF undercrossing and Knott Road, the City plans to provide curb, bike lane, and sidewalk infill improvements per the SDC project list. The timing of this project is uncertain; further, right-of-way acquisition and widening of the undercrossing will likely be required as part of construction.

Summary of Pedestrian Needs

As properties continue to urbanize, sidewalks will be provided linking the planned schools with the surrounding neighborhoods. In the future, BSD will review available sidewalk infrastructure and the location of the enrollment boundaries to determine the appropriate “safe routes to schools” for each of the proposed schools. BSD will also work with the City and BPRD to determine the need for and timing of pedestrian crossings along SE 15th Street.

Bicycle Facilities

Today, bike lanes are provided on Knott Road to the west of SE 15th Street, along SE 15th Street and along Brosterhous to the north of the BNSF undercrossing. These bike lanes will provide connections between the planned schools and existing and future neighborhoods. However, these streets generally have posted speeds higher than 40 mph. As a result, these bicycle facilities are more suitable for riders comfortable with "higher stress" biking environments. No off-street facilities are provided near the site.

As properties continue to urbanize, additional bicycle infrastructure will be provided on area streets. In the future, BSD will review available bicycle infrastructure (including roadway speeds) and the location of the enrollment boundaries to determine the appropriate "safe routes to schools" for each of the proposed schools. BSD will also work with the City and BPRD to determine the need for and timing of bicycle crossings along SE 15th Street.

Planned Bicycle and Pedestrian Improvements

The City of Bend's Transportation System Plan and SDC list as well as the Bend Parks and Recreation District trail plan identify several improvements to the pedestrian and bicycle system that will enhance overall neighborhood connectivity as lands within and adjacent to the SE 15th Opportunity Area develop.

These improvements generally strive to provide:

- More continuous and comfortable pedestrian and bicycle connections along 15th Street
- Crossing opportunities between Brosterhous Road and 15th Street
- Improved connectivity between the 15th Street Opportunity Area and "The Elbow" UGB Expansion Area.

As part of the master plan, BSD is proposing to construct the following pedestrian and bicycle improvements:

- Several east-west pedestrian routes across the campus near the high school and middle school site
- Full frontage improvements along 15th Street, including a multimodal path that would provide access from the northern site boundary to Knott Road.
- A multimodal path along Knott Road
- A multimodal path along the railroad from the northern site boundary to Knott Road.
- An improved pedestrian crossing on 15th Street

These improvements would provide access not just to and through the site for pedestrians and bicycles, but are also being coordinated with BPRD to provide a path through the site to support the regional trails plan shown in Figure 34.

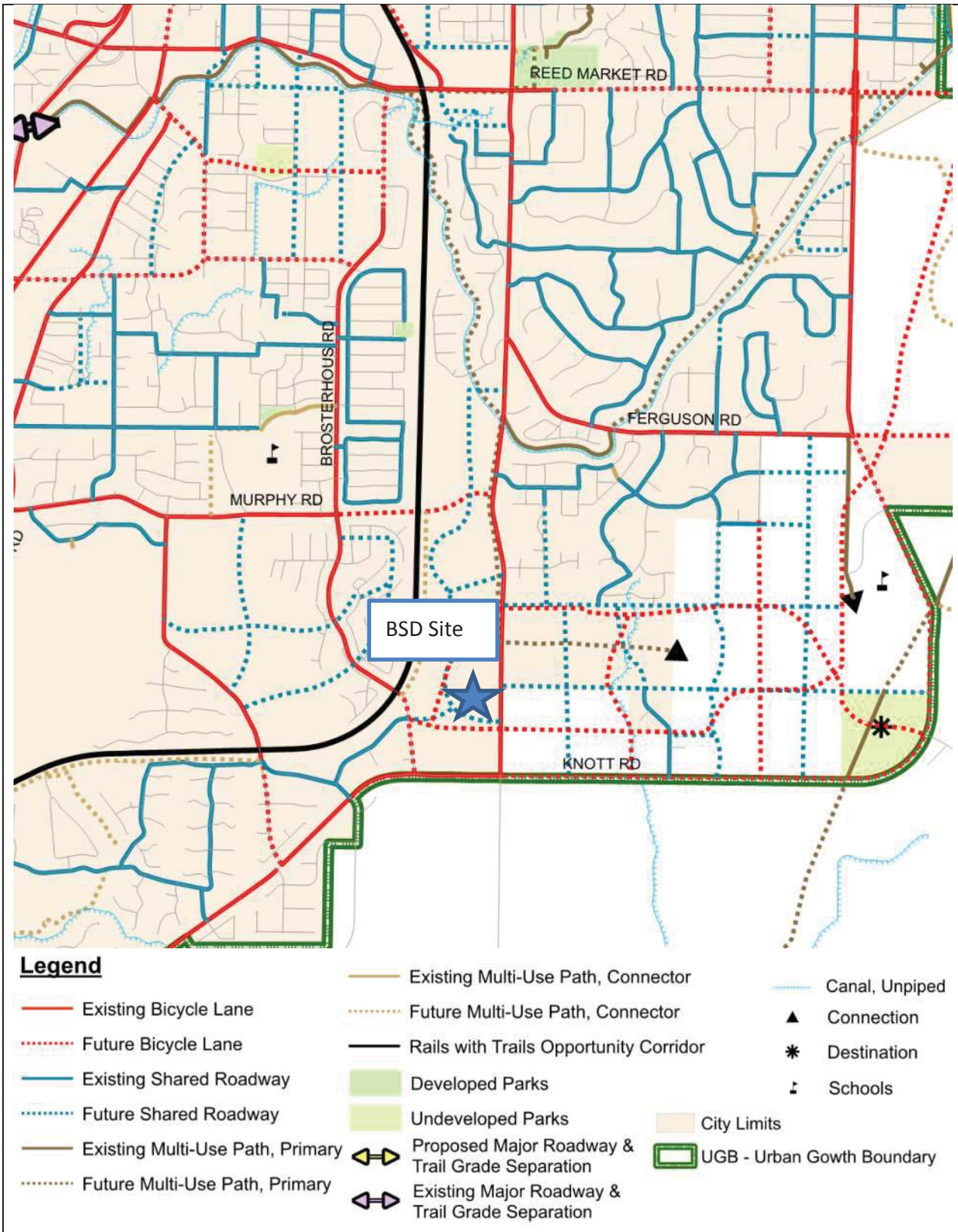

Figure 33 – Existing Pedestrian & Bicycle Facilities

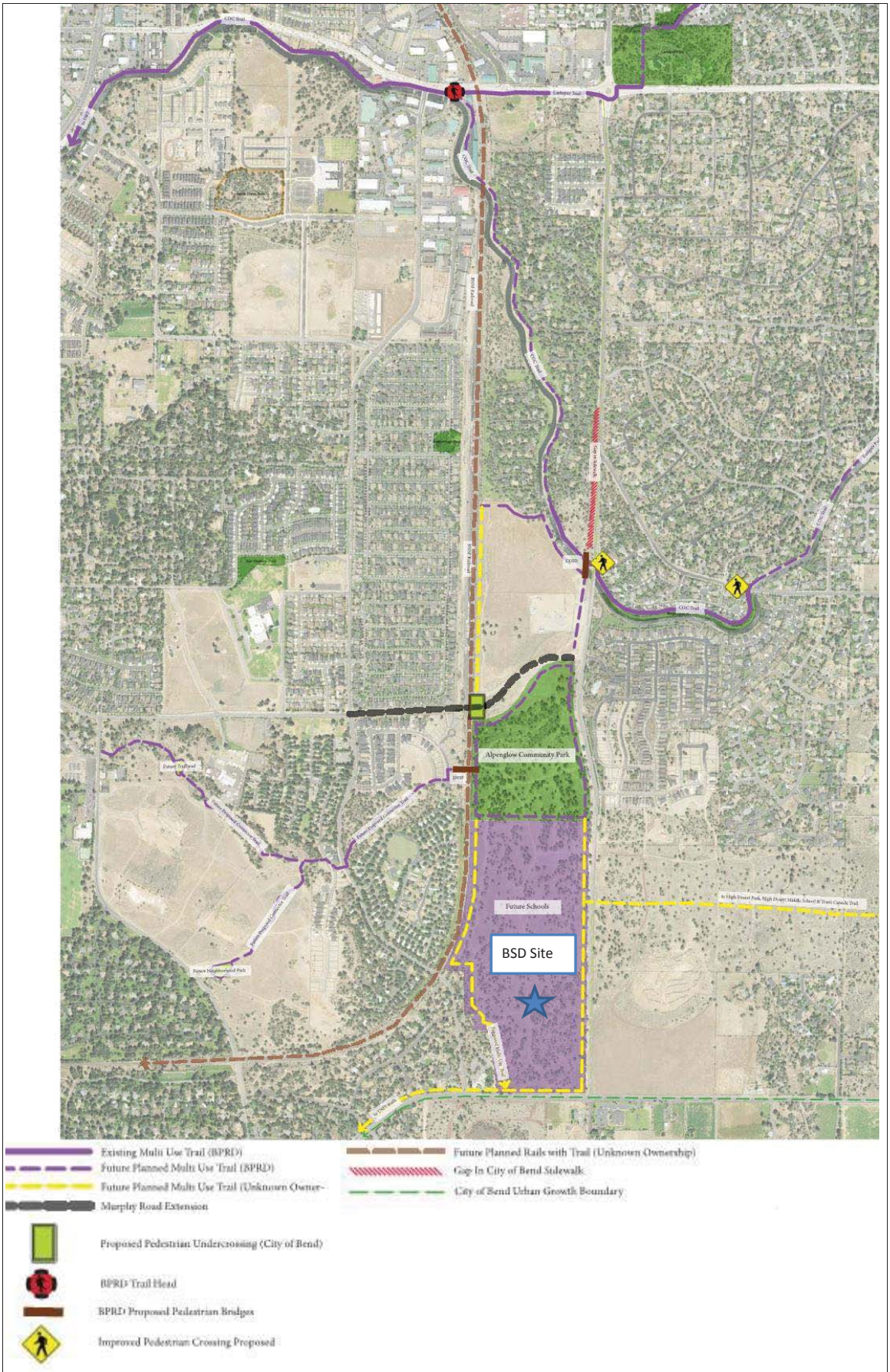

Figure 34 – Planned Pedestrian and Bicycle Improvements

Transit Routes

Cascades East Transit (CET) provides fixed route transit service in Bend. A map of the fixed routes within a mile and a half of the BSD site is provided in Figure 35. Routes 5 and 6 provide service along Reed Market Road between 15th Street and 27th Street. Service is provided Monday through Friday from 6:00 AM to 7:00 PM on 45-minute headways. Saturday service is provided from 7:30 AM to 4:30 PM on one hour headways. There is no Sunday service. The nearest transit stop to the BSD site is at Reed Market Road and Newberry Drive which is approximately 1.5 miles away. However, the BSD site is proposing a future transit stop along the site frontage south of the proposed collector road. This stop will help to facilitate the expansion of transit to the site vicinity and the Elbow UGB expansion area.

Fares are $1.50 each way, and a day pass is $2.50. CET buses include a bicycle rack.

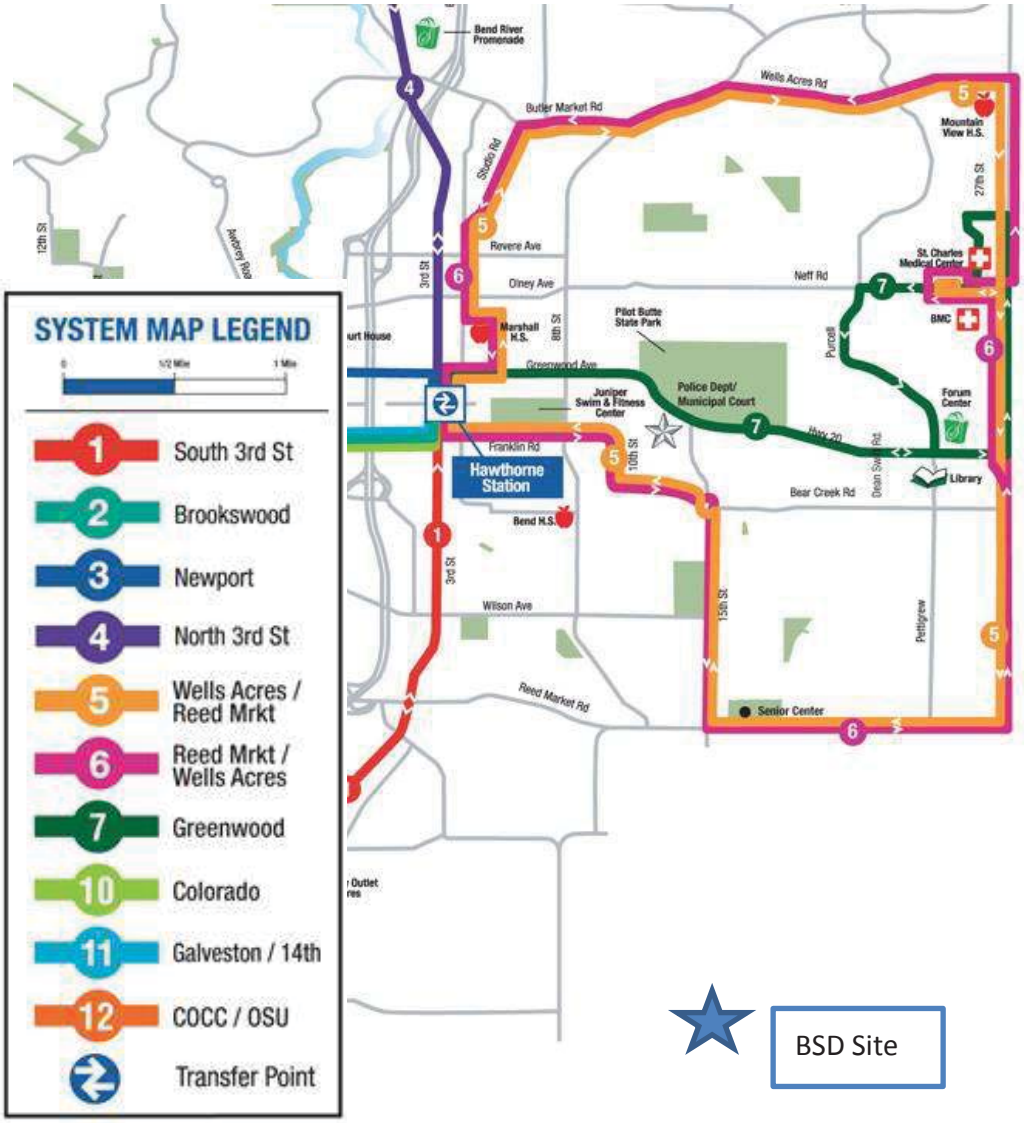

Figure 35. CET Transit Service (*source: www.cascadeseasttransit.com*)

Site Circulation

The proposed site plan was developed to provide separate parent and school bus loading areas with appropriate queuing accommodations for each. Queuing needs were assessed for both drop-off/pick-up activities and school bus loading as discussed below. This discussion is focused on the high school site which is more refined in the current site planning efforts. A preliminary review is provided for the Middle School and Tamarack site. Both may be refined as specific site plans are developed in the future.

Parking Configuration

The site plan shows a clear delineation between parent drop-off/pick-up activities, bus loading, staff parking, student parking, and parent/visitor parking areas. Specific highlights of this design include:

- High school parking areas will be located west, south, and east of the high school site, with the majority of parking provided to the south.
- High school bus loading and unloading will occur north of the high school site. Buses will access and depart from the site via the onsite collector road.
- Parking for the middle school and Tamarack facility is preliminary, but is expect to be west of the middle school site and east of the Tamarack facility.
- Middle school bus access is expected to occur via the northern access on 15th Street.
- Athletic and event buses will access the site via the proposed collector road and, when possible, utilize the onsite bus load and unloading area, which is near the athletics fields.
- Bike parking will be covered and provided within the gated and secured portions of the middle school and high school sites.

Parent Drop-Off & Pick-Up

High school drop-off and pick-up will occur along the south and west side of the high school building. Access to the drop-off and pick-up area is available from either access from Knott Road or the most southern access on 15th Street. The proposed configuration would allow for almost 600 feet of linear curb for drop-off operations, which would provide queuing for up to 27 vehicles. Based on BSD experience at other high schools, this space will allow ample room for the expected drop-off and pick-up operations to occur onsite without spillback onto the public street system.

Middle school and Tamarack drop-off and pick-up will occur within a parking lot west of the middle school and east of Tamarack. Space is provided for up to 26 queued vehicles. Based on BSD experience at other high schools, this space will allow ample room for the expected drop-off and pick-up operations to occur onsite without spillback onto the public street system.

School Bus Loading/Unloading Queuing

High school bus loading and unloading will occur northwest of the high school facility in a designated bus load and unloading zone. Room is provided for us to 12 buses to stage within the area at one time. Based on other high schools within BSD, a 1,600 student school would be served by the bus queuing area provided.

Middle school bus loading and unloading will occur north of the middle school site. Space is provided for up to 8 buses to queue within the designated area. Based on other middle schools within BSD, this is enough space to provide for the expected number of buses onsite.

No specific bus queuing area is provided for the Tamarack facility since the students will share the same bus service as the High School and Middle Schools.

School Zone Designation Considerations

ODOT published a 2009 resource document titled "*A Guide to School Area Safety"* that can be used as an informational basis to determine the placement of school zones on streets near schools. ODOT also provides guidance on the location of signs within a school zone.

For school zone areas adjacent to school grounds (Condition A) such as along 15th Street and Knott Road, ODOT notes that the school speed is in effect when a flashing light indicates when children are coming to or leaving the school or, if there is no flashing light, between the hours of 7 AM and 5 PM on a day when school is in session.

Based on our preliminary review and ODOT guidance, we recommend that school zones should be established along SE 15th Street and Knott Road and appropriate school zone signage installed. The BSD should coordinate with the City of Bend to implement school zones appropriate for high school and middle school when each is constructed. Appendix D contains ODOT standards drawings for the placement of school zone warning signs.

As part of the school zone implementation and, subject to City requirements and the status of future neighborhoods to the east, BSD, BPRD and the City should investigate the potential for a marked school crossing on SE 15th Street.

TRANSPORTATION SYSTEM PLAN AMEDNMENT

Today, the Bend TSP shows two collector roadways through the master plan properties. One of the roadways is located along the northern property of the site whereas the other is shown generally between the proposed high school and the middle school. As part of the master plan application, BSD proposes to amend the Bend TSP to remove the major collector designation within the Master Plan for the southern-most Major Collector shown on the properties. The general location of the two collectors within the master plan area are shown in Figure 36 below.

Bend Development Code 4.6.200 requires the following to support the proposed TSP amendment to remove the southern collector street designation through the master plan properties:

- Confirmation that the request is consistent with the applicable State land use law;
- Confirmation that the request is consistent with the applicable Bend Comprehensive Plan goals and policies;
- Demonstration of a public need or benefit for the proposed amendment.

The sections below summarize transportation-related considerations related to the amendment. Additional details and considerations regarding the request to modify the alignment shown in the TSP are provided under separate cover by BSD staff.

SE Area/15th Street Ward Property Concept Study

As part of the Bend UGB Remand, the City of Bend conducted an evaluation of potential land use and transportation strategies for the 15th Street Opportunity Area and "The Elbow" expansion areas. As identified in the memorandum (included as an attachment), the purpose of the evaluation was to, "Study the Ward properties in the context of the SE Area and Elbow" and to "Offer ideas to inform compliance with City policy and potential zoning."

The City's evaluation for the UGB Remand identified, amongst other improvements, two collector streets through the master plan. At the time these improvements were identified, the construction of the schools was contemplated to occur on properties located further to the west of 15th Street. The northern-most collector was identified adjacent to the property zoned CC whereas the other was shown adjacent to the properties zoned CG. Both were anticipated to provide connectivity between the UGB expansion area and Brosterhous Road corridor, over the railroad tracks. With the development of the schools now planned on the master plan site, the reconsideration of collector alignments through the site is merited. The original designation within the UGB Remand evaluation was based on the following principles:

- **Great Neighborhoods** – promote a sense of community through creating walkable neighborhoods.
- **Balanced transportation** – Create a connected system for all modes: walking, biking, future transit, and vehicles.

- **Housing options and affordability** – Arrange housing so the variety of housing types reinforces the sense of community and complete neighborhoods. Site medium and higher density housing near amenities, local services, and future transit.
- **Connections to recreation and nature** – Integrate neighborhood design with parks, trails, greenbelts, recreational facilities, and scenic views.

Summary of Compliance of Proposed Master Plan with SE Area/15th Street Ward Property Concept Study Principles and Recommendations

Table 16 documents how the transportation system improvements proposed in the master plan comply with the City's recent UGB evaluation principles. In particular, this table documents how BSD's proposal to remove the southern-most collector shown across the master plan properties from the TSP meets the purpose and intent of the principles and objectives outlined in the SE Area/15th Street Ward Property Concept Study.

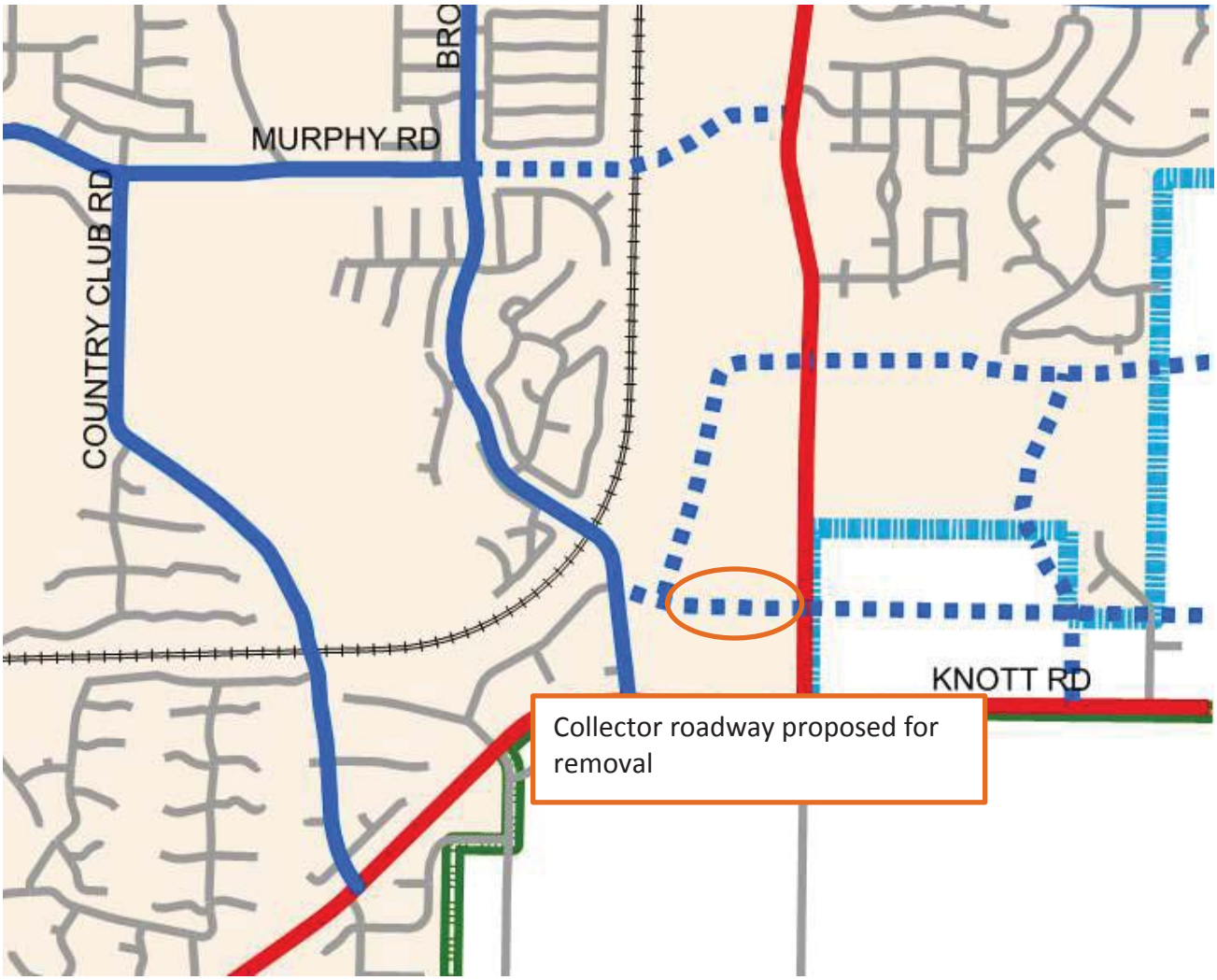

Figure 36. Planned Roadways in Site Vicinity

Table 16. Summary of Compliance with SE Area 15th Street Ward Property Concept Study

Principle/Objective	Intent	Response
Great Neighborhoods	Sense of community through walkable neighborhoods	The BSD site includes an interconnect series of trails that provide access to pedestrian and bicycle trips both within and through the site. These trails have been coordinated with BPRD to ensure the facilities provided interconnect with regional trails BPRD is pursuing. In addition, BSD is pursuing an improved pedestrian crossing of 15th Street to connect the schools and park with existing and planned development on the east side of the road. Further, BSD will be providing open spaces and athletic fields that can be enjoyed for recreation, walking and running by neighborhood residents during non-school hours.
Balanced Transportation	Create a connected system for all modes: walking, biking, future transit, and vehicles	In addition to the trails and pedestrian connections, BSD, in coordination with CET, will also provide a transit stop along the 15th Street site frontage to facilitate the expansion of transit to the vicinity (no transit is provided today). By providing the collector identified through the campus, multimodal connectivity and circulation will be facilitated between the areas to the east of 15th Street and the western property boundary. As properties develop both to the east and west of the campus, this collector can be extended to the east, as shown in the TSP.

Principle/Objective	Intent	Response
Housing options and affordability	Housing supports sense of community and complete neighborhoods. Medium and high density housing near amenities and transit	No housing is proposed on the school campus. However, the schools will support existing and future homes in the area. Further, BSD will provide a transit stop along the site frontage on 15th Street which will assist in expanding transit service to this currently unserved area for all neighborhood residents. The medium and high density residential zones will be moved to properties within the opportunity zone, so these needed housing types will be preserved and will be near amenities.
Connections to recreation and nature	Integrate neighborhood design with parks, trails, greenbelts, recreational facilities, and scenic views.	The trails on the BSD site connect with a regional trail system being actively planned and developed by BPRD and will provide direct access to the park under consideration by BPRD immediately adjacent to the north.
"Walksheds"	Promote walksheds where amenities can be reach in 5-10 minute walk	The SE Area 15th Street Ward Property Concept Study envisioned four ¼ mile walksheds. The BSD site encompasses one of those walksheds and is providing a site that accommodates and promotes pedestrian trips both within the site and to the adjacent walksheds. The mix of amenities within the other walksheds are not disrupted by the development of the BSD site. As such, the site is consistent with the walkshed vision for the area.

Principle/Objective	Intent	Response
Two East-West Collectors	Design collectors that emphasize pedestrian and bicycle safety through the 15th Street site and the "Elbow."	As shown within the SE Area 15th Street Ward Property Concept Study and identified above, the BSD site was originally contemplated to contain a mix of land uses, including varying housing types, retail uses and a park. These collectors were intended to provide multimodal connectivity to and within the uses. With a single use type proposed on-site instead (i.e., the schools), the need for two collectors through the properties warrants new consideration. As proposed, the BSD master plan incorporates the collector that bisects the middle school and high school. As discussed above, this collector can provide multimodal connectivity through the campus for the overall neighborhood as properties both to the east and west develop, thereby meeting the purpose and intent of the principles. In addition to the proposed collector, BSD is providing a circulation of vehicular ways, pedestrian and trail connections both within the campus as well as along the site frontages that provide connectivity to the planned transportation system improvements identified in the TSP near the campus.
Open space near railroad	Create open space buffer near the railroad	The BSD site includes a continuous multiuse trail along the railroad that will be open to and used by the public. In addition, the majority of the site frontage with the railroad consists of fields and other open landscape areas that can be enjoyed by the neighborhoods during non-school hours.

Principle/Objective	Intent	Response
Integrated transportation and open space network	Create an integrated transportation/open space network using the street network as an opportunity	The BSD site provides for continuous pedestrian and bicycle connections along 15th Street and Knott Road and is planning an improved pedestrian crossing of 15th Street. These amenities will help provide a complete, connected transportation system for all users in the vicinity.
Transition of uses	Use open space as a buffer / transition between existing and new uses	The majority of the site frontage includes fields and other open spaces features.
Expand trail system	Expand the urban trail system to activity centers, public spaces and institutions	The BSD site includes continuous trails along 15th Street, the railroad, and Knott Road. These trails extend to a regional trail system, as shown in Figure 34.
Create trail connects into and out of the area	Connect open space, urban trails and other features at key gateways and linked into/out of the area.	The BSD site includes continuous trails along 15th Street, the railroad, and Knott Road. These trails extend to a regional trail system as shown in Figure 28.
Create development focused on public spaces	Consider public spaces as a hierarchy similar to development intensities, with the large community park and elementary school as the centerpiece public spaces.	The school facilities planned onsite are educational and public amenities that will serve the whole community.

Summary of Bend Area General Plan Compliance

City of Bend Development Code section 4.6.200 requires this amendment be consistent with applicable Bend Area General Plan goals and policies. This section documents the applicable transportation goals and policies and summarizes how the proposed amendment is consistent with these goals and policies.

Bend Area General Plan Goals

Mobility and Balance

Develop a transportation system that serves all modes of travel and reduces the reliance on the automobile.

Provide a variety of practical and convenient means to move people and goods within the urban area.

Response: The BSD site is planning an onsite transportation system that is accessible to all users of the transportation system. The removal of the southern collector roadway from the site does not diminish that access to, from, or within the site by:

- Retaining the single continuous collector roadway through the site that was contemplated within the Bend TSP.
- Providing a robust network of trails within and through the site that connect to regional trail facilities, including an improved pedestrian crossing of 15th Street.
- Providing a transit stop along the site frontage to facilitate expansion of the transit system to the vicinity.

Efficiency

Address traffic congestion and problem areas by evaluating the broadest range of transportation solutions.

Coordinate and design transportation improvements to assure the expenditure of resources in the most cost-effective manner.

Encourage the development of land use patterns that provide efficient, compact use of land, and facilitate a reduced number and length of trips.

Response: This TIA evaluates the proportionate impact and contribution of the BSD site on the transportation system. The site has considered and allowed for the regional transportation facilities the TSP identifies to serve the further urbanization of this area, including the Elbow to the east.

As noted in the previous response, the need for two collector roadways as premised on the assumption that a variety of land use types would be developed on-site. With the single use contemplated, two

collectors are not needed. Instead, the middle alignment can adequately serve the campus as well as the multimodal connectivity needs of the overall neighborhood as properties both to the east and west develop.

Accessibility and Equity

Provide people of all income levels with the widest range of travel and access options within the Bend urban area.

Provide all transportation modes access to all parts of the community.

Response: Removal of the second collector road onsite will not limit access or equity. Rather, the robust network of multimodal amenities planned onsite, including trails within and through the site and a transit stop along the site frontage, will enhance transportation access for all users.

Environmental

Recognize and respect the natural features over which transportation improvements pass to minimize adverse impacts.

Design transportation improvements to preserve air and water quality, minimize noise impacts, and encourage energy conservation.

Response: the collector shown in the middle alignment will be designed as part of the campus to integrate and minimize impacts to natural features, air and water quality, and noise. The removal of the southern collector from the list of planned roadways does not result in an impact to the environment.

Economic

Implement transportation improvements to foster economic development and business vitality.

Response: The removal of the second collector road onsite will not have an adverse impact on economic vitality.

Livability

Design and locate transportation facilities to be sensitive to protecting the livability of the community.

Response: The BSD site is planning a robust multimodal transportation system for pedestrian, bicycle, transit, and vehicular users which will enhance the livability of the community. The second onsite collector is not necessary to achieve this vision.

Safety

Design and construct the transportation system to enhance travel safety for all modes.

Response: Removal of the second collector onsite ensures that the transportation system near the core of the school facilities is focused on pedestrians and bicycles with limited conflicts from vehicles.

Summary of Transportation Planning Rule Compliance

The Transportation Planning Rule (TPR) outlines the required transportation elements of a community's Comprehensive Plan. The relevant review criteria for TSP amendments are located within Division 12 of the Oregon Administrative Rules (OAR 660-12). As described within the *Purpose* section, the TPR is intended to provide and encourage a safe, convenient, and economic transportation system. This section summarizes the relevant regulatory requirements of the proposed TSP amendment to remove the southern onsite collector road and that action is consistent with these policies.

660-012-0000 – Purpose

Section -0000 of the Transportation Planning Rule (TPR) identifies the overall purpose of Statewide Goal 12 is to encourage a safe, convenient, and economic transportation system. The TPR also seeks to provide modal choices, improve accessibility, encourage coordination among transportation providers, protect facilities and corridors for their identified function, and facilitate the movement of freight.

The proposed removal of the second onsite collector road complies with the overall purpose of the TPR for the following reasons:

- *The onsite transportation network provides the multimodal transportation capacity contemplated by the TSP by providing:*
  - *A single continuous collector roadway from Brosterhous Road to 15th Street*
  - *Multimodal access to all uses onsite, including a proposed transit stop along the site frontage*
  - *A robust network of trails that provide pedestrian and bicycle access within and through the site*

660-012-0010 – Transportation Planning

This section differentiates transportation system planning and transportation project development, with the latter implementing the system planning. This section also allows plans (or referenced portions) to be incorporated through reference to avoid duplicative efforts.

This section acknowledges the removal of the southern onsite collector road is part of system planning.

660-012-0015 – Preparation and Coordination of Transportation System Plans

Section -0015 requires agencies to prepare and coordinate Transportation System Plans for lands within their jurisdiction.

This section is relevant to the southern onsite collector road as it identifies that the amendment must be adopted within the Bend Urban Area Transportation System Plan.

660-012-0016 – Coordination with Federally-Required Regional Transportation Plans in Metropolitan Areas

Section -0016 requires local governments to coordinate with regional transportation plans (RTPs) prepared by MPOs.

The Bend Metropolitan Transportation Plan (Bend MTP) does not include the southern onsite collector in the committed scenario; the removal of the second onsite collector from the TSP is consistent with the Bend MTP.

660-012-0020 – Elements of Transportation System Plans

Section -0020 describes the required elements of an agency's Transportation System Plan. This section describes the functional classification of roadways as a required element, and the layout of the roadways to be consistent with access management categories and facilitate pedestrian and bicycle travel.

The removal of the southern onsite collector from the TSP would modify the functional classification plan, which is a required element of the TSP. The site plan is consistent with the pedestrian and bicycle elements of the TSP.

660-012-0025 – Complying with the Goals in Preparing Transportation System Plans; Refinement Plans

This section of the TPR describes a TSP as a land use decision, identifies that compliance with applicable statewide goals, policies, and regulations is required, and identifies when decisions related to function, general locations, or mode are deferred.

As described in the previous section, the removal of the southern onsite collector is consistent with the goals, policies, and principles that developed the contemplated transportation network in the vicinity of the BSD site.

660-012-0030 – Determination of Transportation Needs

Section -0030 describes how system needs are identified, and how State, MPO, and County needs should be included within supported agency plans.

The removal of the southern onsite collector is consistent with this section by identifying the onsite transportation needs based on the specific land use mix proposed for the site. The BSD site continues to provide regional capacity with a more focused and multimodal plan for onsite local access, which is consistent with Section 0030.

660-012-0035 – Evaluation and Selection of Transportation System Alternatives

Section -0035 describes how alternative improvement options should be identified. This section describes that system needs should be based on a no-build alternative, consider management/modal options, and improvements to existing facilities.

The removal of the second onsite collector road is consistent with the section by developing an onsite layout that provides for the most efficient way to provide access for multimodal users. This minimizes unnecessary road construction and limits pedestrian and bicycle conflict with vehicles.

660-012-0040 – Transportation Financing Program

This section describes the need to prepare preliminary project cost estimates and information on the timing of improvements so that agencies can plan for adequate transportation facilities. Timing and finance decisions are not considered land use decisions.

The removal of the southern collector on-site can be incorporated into the City's list of needed funding, as appropriate.

660-012-0045 – Implementation of the Transportation System Plan

Section -0045 describes the governments' obligation to amend its land use regulations to implement the TSP, activities that are exempt from land use process, and protective measures to ensure facilities can perform their intended function and serve pedestrian, bicycle, and connectivity needs.

This analysis documented that the transportation network will continue to provide safe and convenient pedestrian, bicycle, transit, and vehicular circulation consistent with the function of affected streets if the southern onsite collector is not constructed. A single continuous collector road from Brosterhous Road to 15th Street can still be provided while multimodal access to the BSD site is achieved. The removal of the northern collector onsite does not restrict the ability for two collectors to be extended through the Elbow.

660-012-0050 – Transportation Project Development

Transportation projects are to occur in coordination with local governments/providers and include a public outreach process. This section also states that projects identified within a TSP are not subject to further justification regarding function, general location, mode, or need.

A public outreach process will be conducted as part of the BSD master planning process.

660-012-0055 – Timing of Adoption and Update of Transportation System Plans; Exemptions

This section describes the needed adoption of TSPs, exemptions, and amendments.

The City of Bend complies with this section through its adopted TSPs and is provided opportunities to amend the TSP.

660-012-0060 – Plan and Land Use Regulation Amendments

Section -0060 describes the process for amending a TSP once it has been adopted to include changes in zoning or facility function.

This section is relevant as the proposed amendment will remove the proposed southern onsite collector, a proposed Major Collector. As the existing transportation network can accommodate the projected travel demands and continue to serve within the roadway's intended function, the section of the planned collector onsite is not needed to serve vehicular traffic. The removal of the onsite collector complies with the provisions and goals of this section.

660-012-0065 and 660-012-0070

660-012-0065 (Transportation Improvements on Rural Lands) and 660-012-0070 (Exceptions for Transportation Improvements on Rural Land) apply to rural lands and are not relevant to this amendment.

SUMMARY OF KEY FINDINGS AND IDENTIFIED DEFICIENCIES (4.7.600)

FINDINGS

- The 80-acre site will be developed in phases, with a 1,600 student high school funded and expected to be open for the 2021/2022 school year. The remaining facilities on the site are anticipated for the 2027/2028 school year. The timing of the remaining facilities is dependent on enrollment growth and Bond passage.
- With TDM reductions as identified in the TPDM Plan, the full site is expected to generate 3,088 daily trips, 860 AM peak hour trips, 540 afternoon peak hour trips, and 260 PM peak hour trips. Of these trips, the high school would account for 2,052 daily trips, 516 AM peak hour trips, 348 afternoon peak hour trips, and 156 PM peak hour trips.
- The site is within the SE 15th Street Opportunity Area identified within the recent City of Bend Urban Growth Boundary expansion effort. The site is allowed in the identified zoning on the property.
- None of the study intersections experience a crash rate that exceeds the City's threshold for significance.
- The site fronts 15th Street to the east and Knott Road to the south. Both have a generally rural context today with limited curbs, sidewalks, and other pedestrian facilities.

Developments along 15th Street to the north have begun to improve that roadway to a more urban form.

- Five access points are proposed as part of the master plan. Three would be on 15th Street and two would be on Knott Road, as shown in the site plan. One of the access points on 15th Street would provide access to the site via a new collector roadway proposed as part of the Bend Transportation System Plan. This collector is also planned to extend to the east through the "Elbow" UGB expansion area.

IDENTIFIED NEEDS

- Over time, 15th Street and Knott Road will both require cross-section enhancements to comply with City of Bend standards as adjacent properties development. Both streets were constructed originally as Deschutes County roadways and neither has the appropriate right-of-way width, pavement width, or frontage improvements, including pedestrian facilities, near the site.
- No pedestrian facilities exist along the west side of 15th Street between Knott Road and Ferguson Road. On the east side of the street, the only section of sidewalks in this same segment existing along the site frontage of "The Bridges" neighborhood near Golden Gate Place.
- The lack of pedestrian facilities along Knott Road results in the lack of safe, convenient and comfortable access to the proposed schools along Knott Road and to/from the Brosterhous Road and Country Club Road corridors.
- Under 2021 build conditions (with the addition of the high school), the following intersections fail to meet applicable City of Bend intersection performance standards during one or more analysis period:
    - Murphy Road/Brosterhous Road
    - Knott Road/Brosterhous Road
        - Need would be addressed by Brosterhous Road connection
- Under 2027 No Build conditions (with the addition of the high school but not the middle school or Tamarack facility), the following intersections fail to meet applicable City of Bend intersection performance standards during one or more analysis period:
    - Reed Market Road/15th Street
    - Murphy Road/Brosterhous Road
    - Knott Road/Brosterhous Road
    - Knott Road/15th Street
- Under 2027 build conditions (all planned facilities constructed), the same intersections identified in the background condition fail to meet applicable City of Bend intersection

performance standards during one or more analysis period. The addition of the schools does not change the identified needs to satisfy City standards at the intersections under year 2027 conditions.

- With the Murphy Road extension completed by 2027, the following intersections are expected to exceed applicable City of Bend intersection performance standards during the PM peak hour under 2027 no build condition:
  - Ferguson Road/15th Street
  - Knott Road/15th Street
- With the Murphy Road extension completed by 2027, the following intersections fail to meet applicable City of Bend intersection performance standards under 2027 build conditions during the PM peak hour:
  - Ferguson Road/15th Street
  - Knott Road/15th Street
  - Knott Road/Brosterhous Road
- Left-turn lanes at site access locations are warranted based the expected access traffic volumes, the school bus needs, and the characteristics of 15th Street and Knott Road.
- Improved pedestrian crossings are warranted on 15th Street and Knott Road with the addition of the planned school facilities.

RECOMMENDATIONS

- As part of construction and occupancy of the schools, BSD should improve the site frontage along 15th Street and Knott Road to conform with applicable City of Bend roadway standards. Per negotiations with the City of Bend, site frontage should be improved as follow:
  - **As part of high school site development:**
    - Improve 15th Street site frontage along both the high school and middle school site (curb only on the east side of the roadway).
    - Construct a 10-foot pedestrian path along Knott Road.
  - **As part of middle school site development:**
    - Complete Knott Road site frontage
- BSD shall provide dedicated inbound left-turn lanes at all site access locations.
- The southern-most access along 15th Street (Access #3) should be limited to right-in-right-out-left-in given its proximity to the 15th Street/Knott Street intersection.

- BSD should work with the City to establish school zone designations along 15th Street and Knott Road along the site frontage in conformance with applicable MUTCD standards.

Offsite Transportation Improvements: High School Mitigation Measures (2021 Build Conditions):

- To mitigate 2021 build conditions (construction of the high school) and per City of Bend development code, BSD may fund and construct the following improvements to address the identified intersection impacts:
    - 15th Street/Knott Street intersection – construct a single lane roundabout
    - Construct extension of new onsite collector road to Brosterhous Road
        - Note: per the analysis in this TIA, the connection at Brosterhous Road does not require turn lanes to be added on Brosterhous Road.
- Both improvements are contingent on the City of Bend's ability to obtain the needed right-of-way for each project, respectively. The roundabout at 15th Street/Knott Road is identified in the City's TSP and included on the current City of Bend Transportation SDC project list. The extension of the onsite collector to Brosterhous Road is identified in the City's TSP.
- A pedestrian crossing of 15th Street should be constructed. Considering the location of existing sidewalks and residential developments, this improvement will likely be part of the BPRD Alpenglow Park development to the north.

Offsite Transportation Improvements: Middle School Mitigation Measures (2027 Build Conditions):

- To mitigate 2027 build conditions (construction of the middle school and Tamarack facility) and per City of Bend development code, BSD may fund and construct the following improvements to address the identified intersection impacts:
    - 15th Street/Brosterhous Road intersection – construct a single lane roundabout
    - 15th Street/Collector intersection – construct a single lane roundabout
        - Note: this improvement would only be required if warranted by BSD site traffic and the improvement hasn't been previously constructed.
- Both improvements are contingent on the City of Bend's ability to obtain the needed right-of-way for each project, respectively. The roundabout at Knott Road/Brosterhous Road is identified in the City's TSP and included on the current City of Bend Transportation SDC project list.
- Given the potential for significant changes to the transportation infrastructure in the vicinity of the BSD site and/or significant land development on nearby parcels, BSD and the City of Bend may choose to reevaluate the offsite impacts associated with 2027 Build Conditions and the improvements identified to mitigate those impacts prior to construction of the middle school and Tamarack facility.

Section 5 Technical Appendices

Appendix A – Traffic Counts

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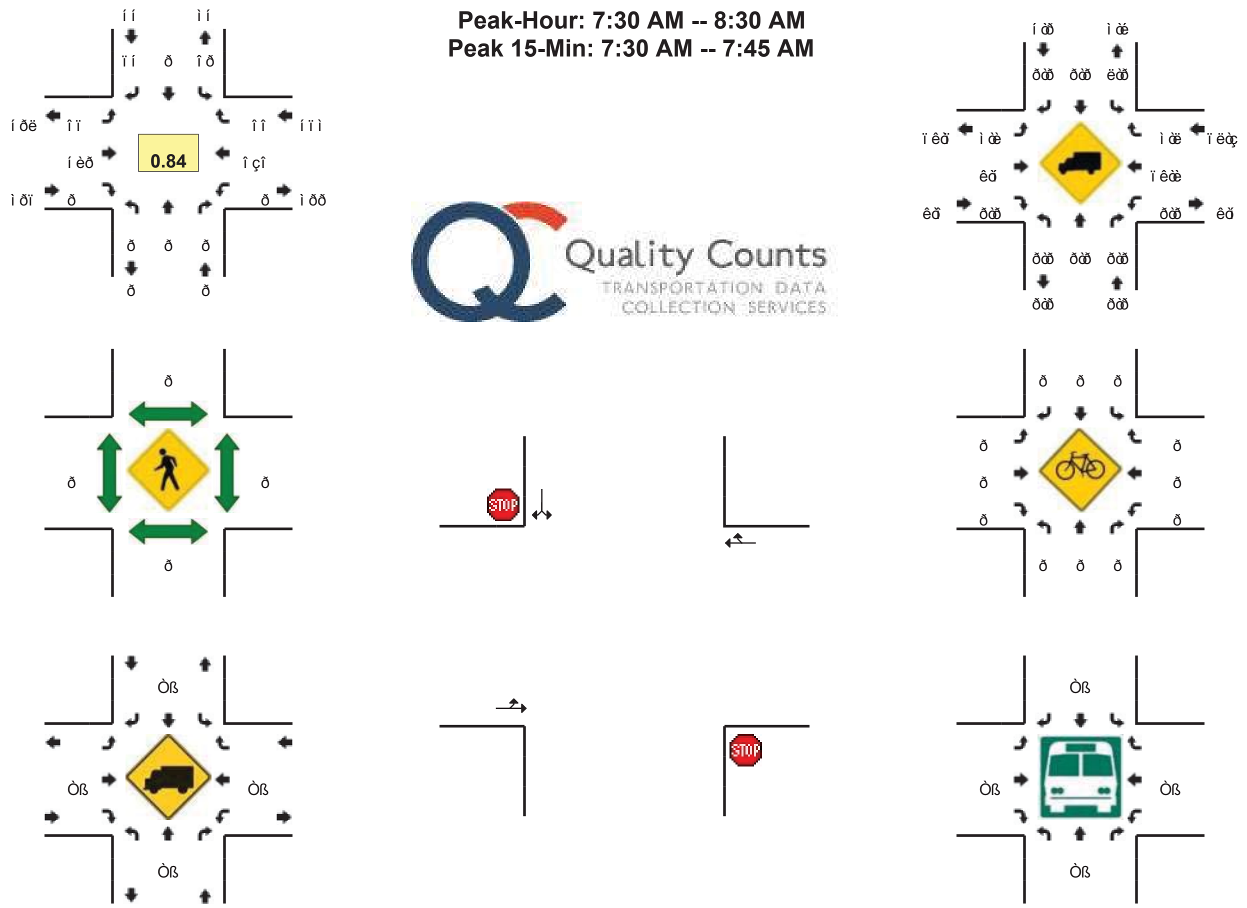

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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
ß´Ê»¸·½»	ð	ð	ð	ð	ïê	ð	ì	ð	ì	ëîè	ð	ð	ð	íðè	îè	ð	èèè
Ø»¿ª§Ì®«½µ	ð	ð	ð		ð	ð	ð		ð	è	ð		ð	ìð	ð		ìè
Ð»¼»¬®¿²		ð				ð				ð				ð			ð
Þ·½§½´»	ð	ð	ð		ð	ð	ð		ð	ð	ð		ð	ð	ð		ð
Î ¿·´®±¿¼																	
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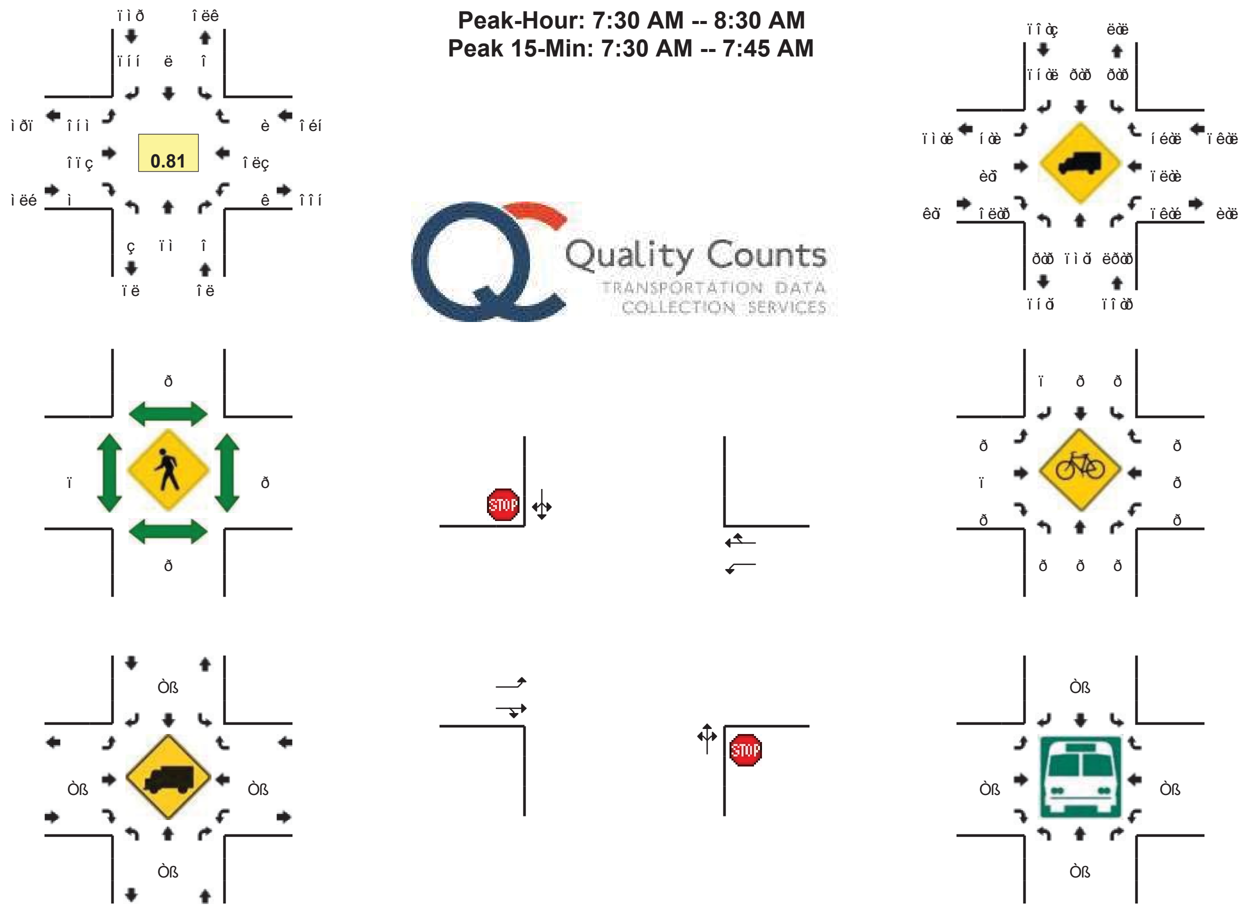
Comments:

LOCATION: ïë¬ Í ®»¬óóÕ²±¬¬ Î ±¿¼ **QC JOB #:** ïììììîçðë
CITY/STATE: Þ»²¼ôÑÎ **DATE:** Ì«»ôÓ¿² ðê î ðï é

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



5-Min Count Period Beginning At	15th Street (Northbound)				15th Street (Southbound)				Knott Road (Eastbound)				Knott Road (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
éæðð ßÓ	î	ï	ð	ð	ð	ð	è	ð	ïï	ïï	ð	ð	ð	ë	ï	ð	íç	
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éæïë ßÓ	ð	ð	ð	ð	ð	ð	ê	ð	ïè	íì	ï	ð	ï	îï	î	ð	èí	
éæîð ßÓ	ð	ï	ð	ð	ð	ð	í	ð	îí	íï	ï	ð	ð	îí	ð	ð	èî	
éæîë ßÓ	ï	î	ï	ð	ï	î	è	ð	îï	îî	ð	ð	ð	îê	î	ð	èê	
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éæíë ßÓ	î	ð	ð	ð	ð	ï	ïî	ð	íí	îð	ï	ð	ð	îè	ï	ð	çè	
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
ß´´ Ê»¸·½»»	îì	ïî	ð	ð	ì	ì	ïðð	ð	îçê	íðð	ì	ð	ð	íìè	ïî	ð	ïïðì
Ø»¿ª§ Ì ®«½µ	ð	ð	ð		ð	ð	ïî		ì	è	ð		ð	ëî	ì		èð
Ð»¼» ¬®¿²		ð				ð				ð				ð			ð
Þ·½§½»	ð	ð	ð		ð	ð	ð		ð	ï	ð		ð	ð	ð		ï
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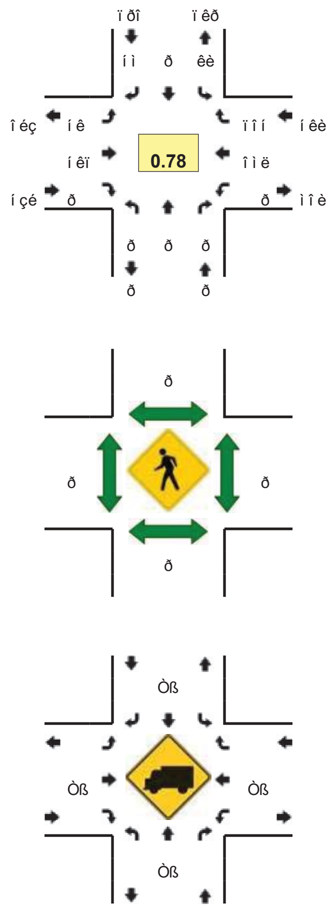
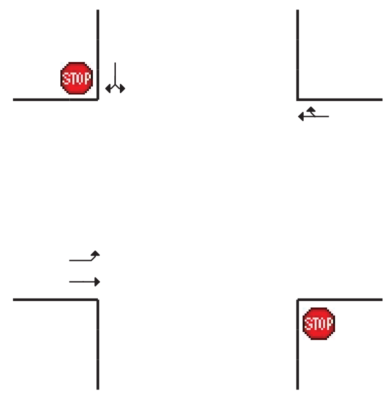
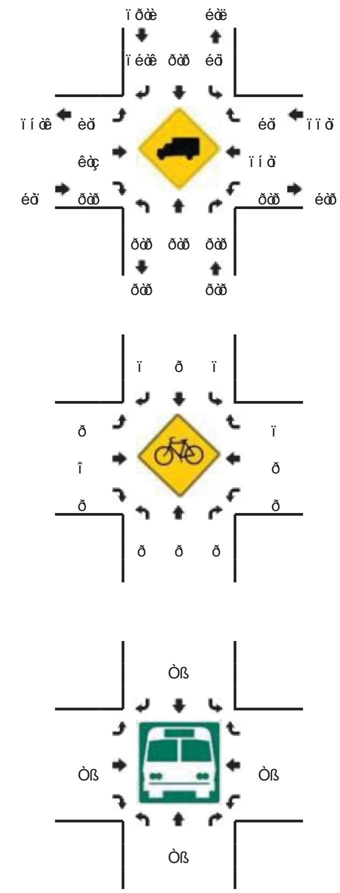
Comments:

LOCATION: Þ®± ¬»®±« Î ¼óÕ ±¬¬Î ¼ **QC JOB #:** ïìììéî ðì
CITY/STATE: Þ»²¼ñÑÎ **DATE:** Ì «»ôÖ«² ïí îðïé



Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:30 AM -- 7:45 AM





5-Min Count Period Beginning At	Brosterhous Rd (Northbound)				Brosterhous Rd (Southbound)				Knott Rd (Eastbound)				Knott Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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éæïð ßÓ	ð	ð	ð	ð	ïð	ð	î	ð	ì	íê	ð	ð	ð	ïï	é	ð	éð	
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èæðð ßÓ	ð	ð	ð	ð	ï	ð	î	ð	ì	íè	ð	ð	ð	ïî	í	ð	êð	çíë
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
ß´Ê»¸·½»	ð	ð	ð	ð	çî	ð	ìè	ð	íê	ìëî	ð	ð	ð	îèì	ïçê	ð	ïïðè
Ø»¿ª§Ì®«½µ	ð	ð	ð		ì	ð	ì		ì	îè	ð		ð	ìð	ïê		çê
Ð»¼»¬®·¿²		ð				ð				ð				ð			ð
Þ·½§½»»	ð	ð	ð		ð	ð	ï		ð	î	ð		ð	ð	ð		í
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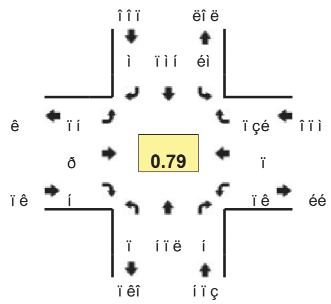
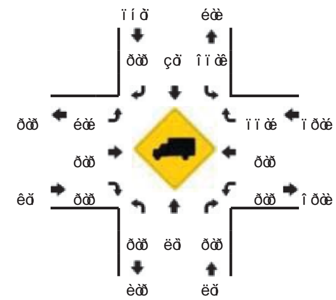
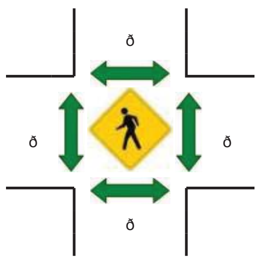
Comments:

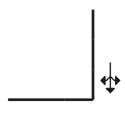
LOCATION: Í Ûï ë¬ Í ¬óóÚ»®« ±² Î ¼ **QC JOB #:** ïìììéîðé
CITY/STATE: Þ»²¼ô ÑÎ **DATE:** Ì«»ôÖ«² ïí îðïé

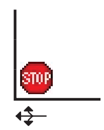
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

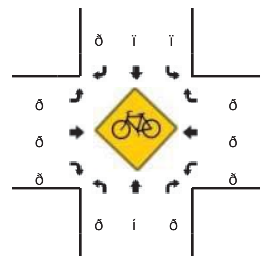


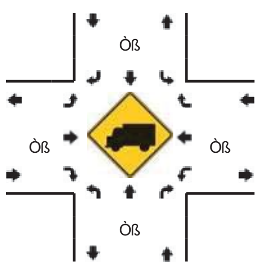


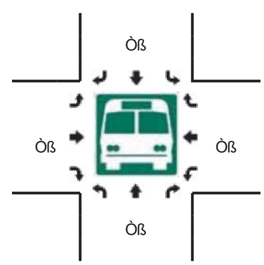












5-Min Count Period Beginning At	SE 15th St (Northbound) Left	Thru	Right	U	SE 15th St (Southbound) Left	Thru	Right	U	Ferguson Rd (Eastbound) Left	Thru	Right	U	Ferguson Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
éæðð ßÓ	ð	îð	ï	ð	ïï	é	ð	ð	ð	ð	ð	ð	ð	ð	ïî	ð	ëï	
éæðë ßÓ	ð	ïë	ï	ð	ë	è	ð	ð	î	ð	ð	ð	ð	ð	ïç	ð	ëð	
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éæïë ßÓ	ð	îí	ï	ð	è	ïë	ð	ð	ð	ð	ð	ð	ï	ð	îî	ð	éð	
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éæëð ßÓ	ð	îê	ð	ð	ê	ïî	ð	ð	ð	ð	ð	ð	ï	ð	ïí	ð	ëè	
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èæïð ßÓ	ð	îí	ð	ð	í	ïí	ð	ð	ð	ð	ð	ð	î	ð	ïî	ð	éí	èðç
èæïë ßÓ	ð	îð	ð	ð	í	ïð	ï	ð	í	ð	ð	ð	ð	ð	ïð	ð	ìé	éèè
èæîð ßÓ	ð	îï	ð	ð	ê	ïï	ð	ð	ì	ð	ï	ð	ð	ð	ïè	ð	êï	ééë
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èæìð ßÓ	ð	îì	ð	ð	ç	ïï	ð	ð	ï	ð	ð	ð	ð	ð	îë	ð	éð	êçë
èæìë ßÓ	ð	îí	ð	ð	ë	ïï	ð	ð	ð	ð	ð	ð	ï	ð	îï	ð	êï	êéë
èæëð ßÓ	ð	îí	í	ð	ë	ïí	ð	ð	î	ð	ï	ð	î	ð	îï	ð	éð	êèé
èæëë ßÓ	ð	îï	ð	ð	ê	ïð	ð	ð	î	ð	ð	ð	ð	ð	ïï	ð	ëð	êéç

Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
ß´´ Ê»¸·½´»	ð	íèè	ð	ð	ïðð	ïêè	ì	ð	îð	ð	ì	ð	îì	ì	îêè	ð	çèð
Ø»¿ª§ Ì®«½µ	ð	ïê	ð		ïê	ïê	ð		ð	ð	ð		ð	ð	îì		éî
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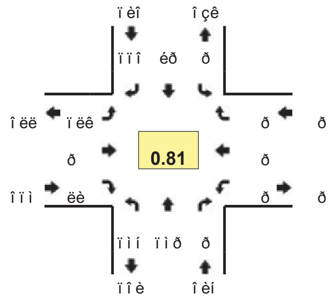
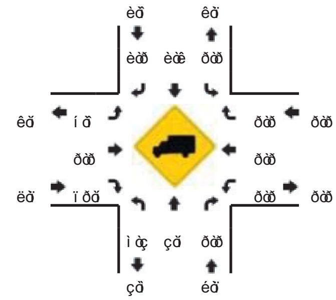
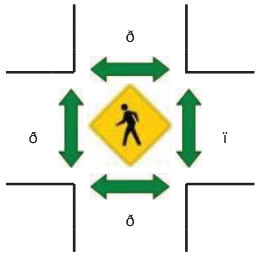
Comments:

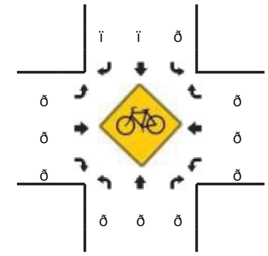
LOCATION: Þ®± ¬»®±« Î ¼ óó Ó«®¸§ Î ¼ **QC JOB #:** ï ì ì ì é î î î
CITY/STATE: Ü» ½ «¬» ôÑÎ **DATE:** Ì «»ôÖ«² ï í î ðï é

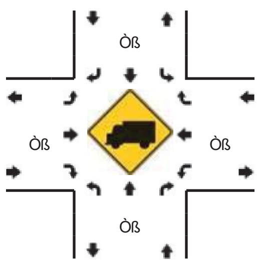
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

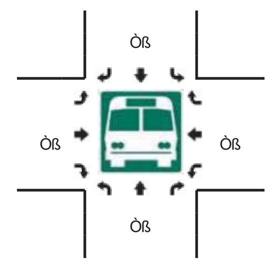












5-Min Count Period Beginning At	Brosterhous Rd (Northbound)				Brosterhous Rd (Southbound)				Murphy Rd (Eastbound)				Murphy Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
éæðð ßÓ	ì	ïð	ð	ð	ð	è	é	ð	ïî	ð	ê	ð	ð	ð	ð	ð	ìé	
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
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Ð»¼» ¬®¿²		ð				ð				ð				ì			ì
Þ·½§½´»	ð	ð	ð		ð	ð	ð		ð	ð	ð		ð	ð	ð		ð
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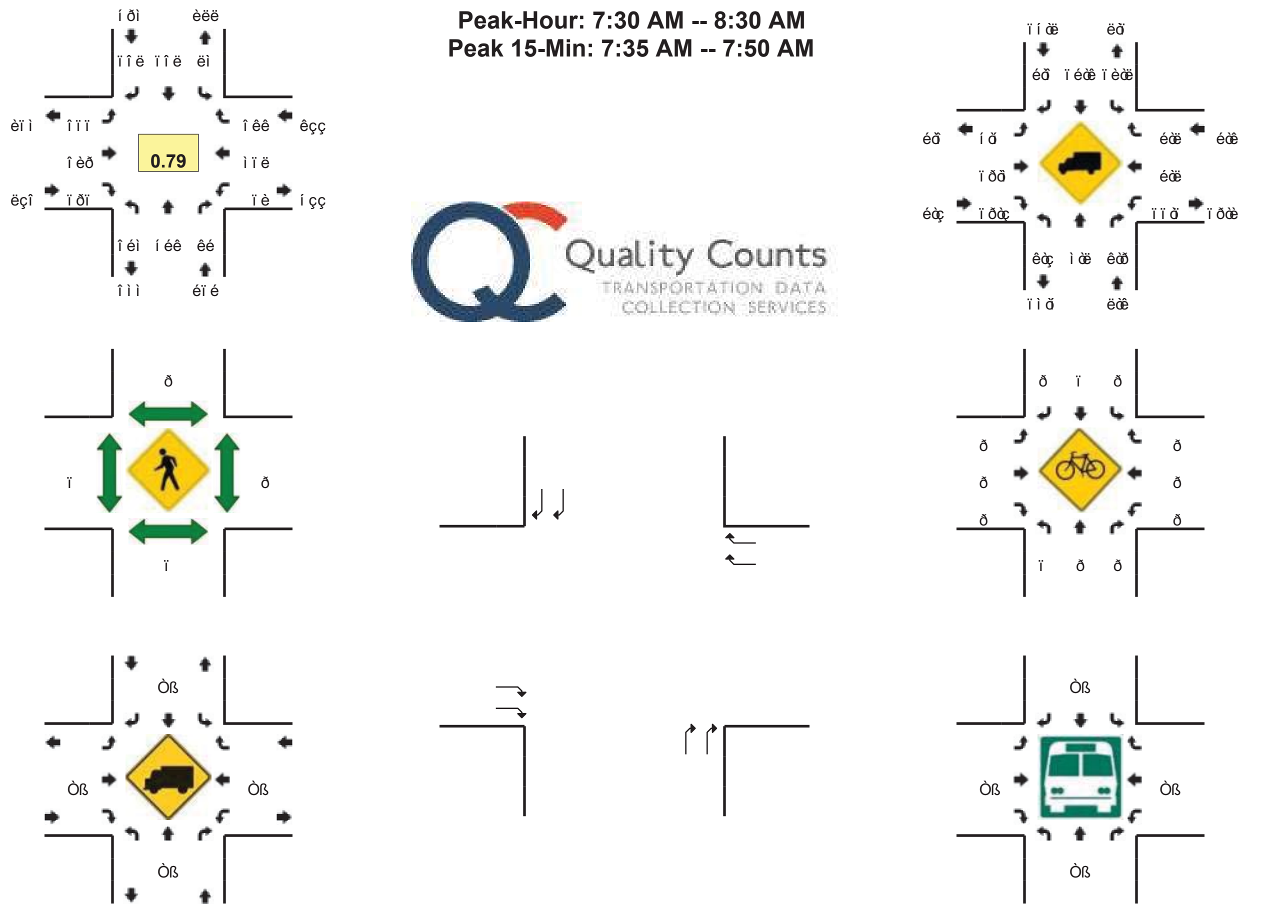
Comments:

LOCATION: Í Û ï ë¬ Í ¬óóÍ Û Î »»¼Ó¿®µ»¬Î ¼ **QC JOB #:** ï ì ì ì éî ì ð
CITY/STATE: Ü» ½¸«¬» ôÑÎ **DATE:** Ì «»ôÖ«² ïí î ðï é

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:35 AM -- 7:50 AM



5-Min Count Period Beginning At	SE 15th St (Northbound)				SE 15th St (Southbound)				SE Reed Market Rd (Eastbound)				SE Reed Market Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
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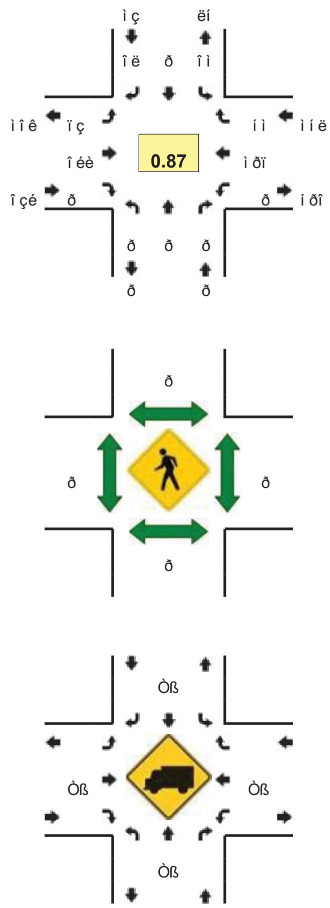
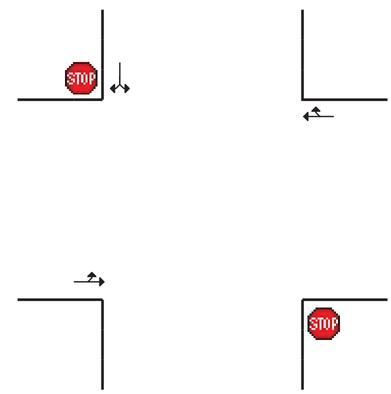
Comments:

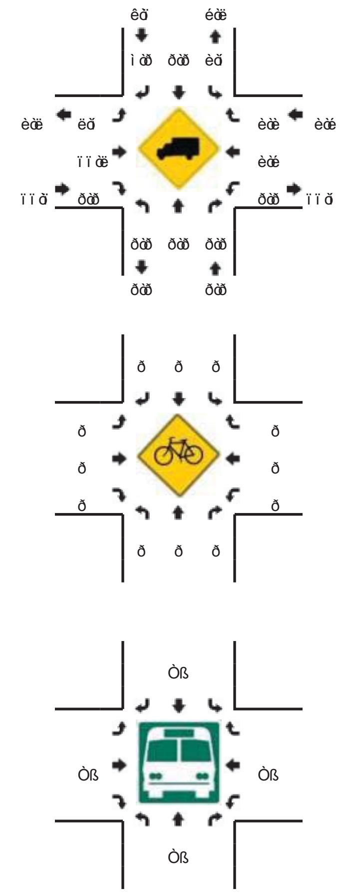
LOCATION: Ý±«² ¬®§ Ý´«¾Ü®·» ó Õ²±¬¬ Î ±¿¼
CITY/STATE: Þ»² ¼ô ÑÎ

QC JOB #: ïììì î çðé
DATE: Ì «»ô Ö«² ðê î ðï é



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:10 PM -- 3:25 PM





5-Min Count Period Beginning At	Country Club Drive (Northbound)				Country Club Drive (Southbound)				Knott Road (Eastbound)				Knott Road (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
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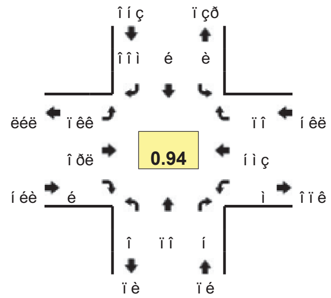
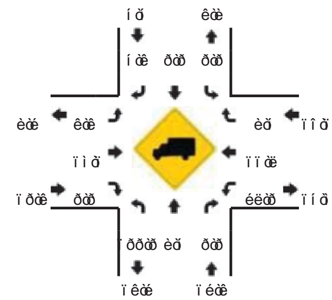
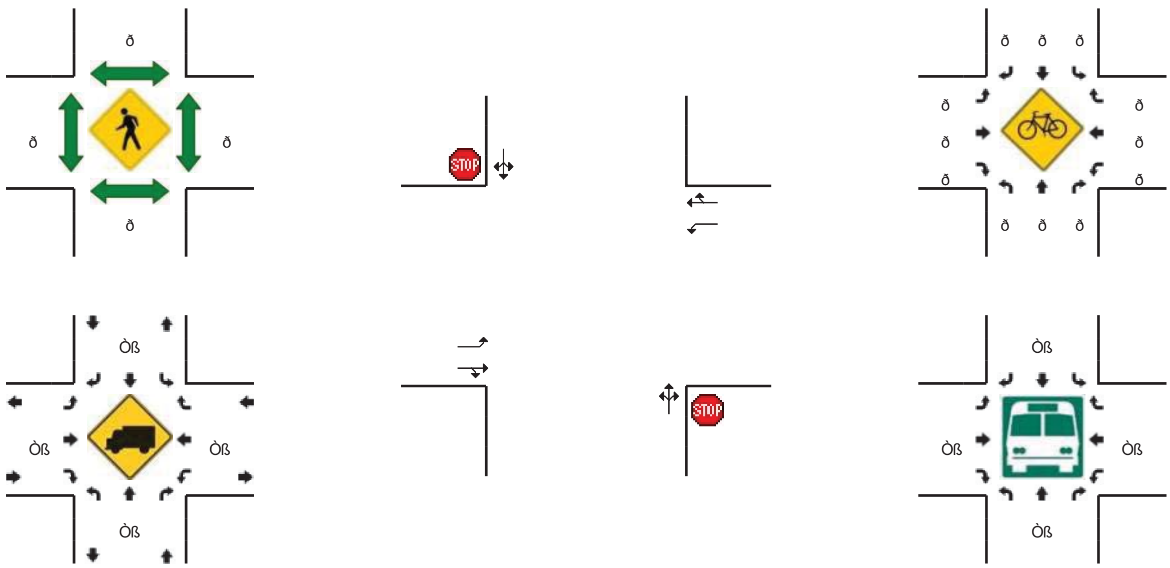
Comments:

LOCATION: ï ë¬¸ Í¬®»»¬óóÕ²±¬¬Î±¿¼ **QC JOB #:** ï ì ì ì î çðç
CITY/STATE: Þ»²¼ôÑÎ **DATE:** Ì «»ôÖ«² ðê î ðï é

Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:10 PM -- 3:25 PM







5-Min Count Period Beginning At	15th Street (Northbound)				15th Street (Southbound)				Knott Road (Eastbound)				Knott Road (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
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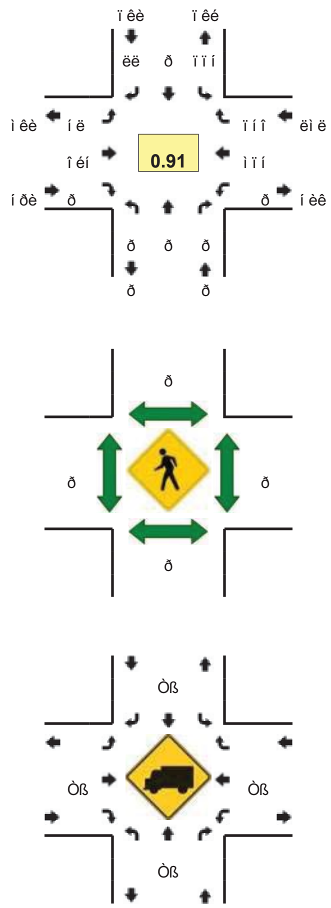
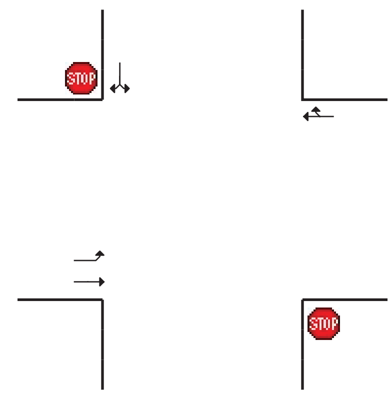
Comments:

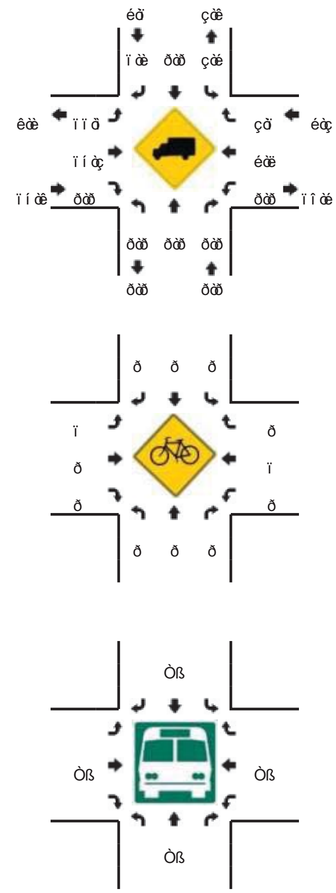
LOCATION: Þ®±¬»®±« Î ¼ó Õ²±¬¬ Î ¼
CITY/STATE: Þ»²¼ô ÑÎ

QC JOB #: ïìììì éî ðë
DATE: Ì «»ô Ö«² ïí îðïé



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:35 PM -- 3:50 PM





5-Min Count Period Beginning At	Brosterhous Rd (Northbound)				Brosterhous Rd (Southbound)				Knott Rd (Eastbound)				Knott Rd (Westbound)				Total	Hourly Totals
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
ß´´ Ê»¸·½´»	ð	ð	ð	ð	ïèð	ð	çî	ð	ïî	îéî	ð	ð	ð	ììì	ïîè	ð	ïïîè
Ø»¿ª§ Ì ®«½µ	ð	ð	ð		è	ð	ð		ð	ìð	ð		ð	îð	îð		èè
Ð»¼»·®¿²		ð				ð				ð				ð			ð
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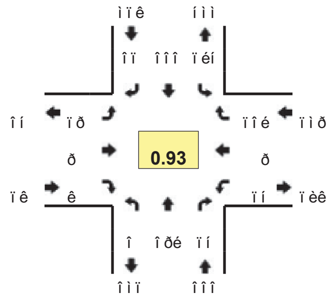
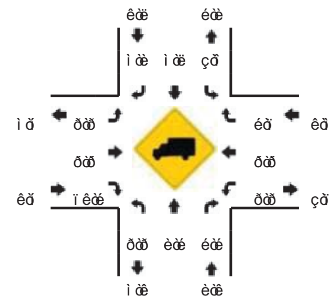
Comments:

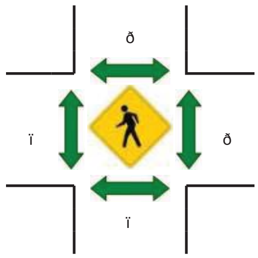
LOCATION: Í Û ï ë¬¸ Í ¬ó Ú»®¹«±² Î ¼
CITY/STATE: Þ»²¼ô ÑÎ

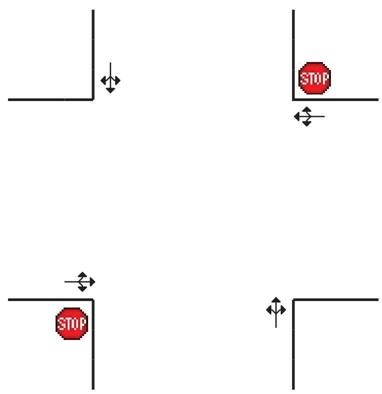
QC JOB #: ïìììéî ðè
DATE: Ì «»ô Ó¿§ ïí îðïé

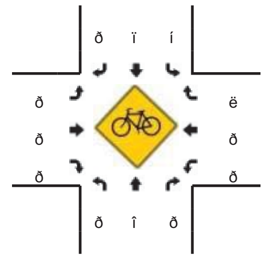
Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:00 PM -- 3:15 PM

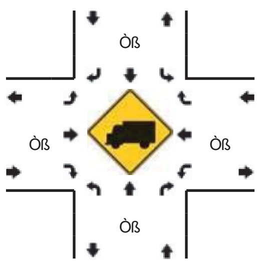


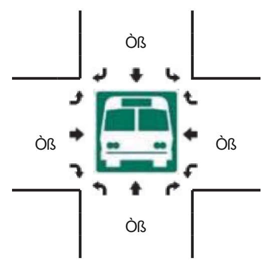












5-Min Count Period Beginning At	SE 15th St (Northbound) Left	Thru	Right	U	SE 15th St (Southbound) Left	Thru	Right	U	Ferguson Rd (Eastbound) Left	Thru	Right	U	Ferguson Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
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Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
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Comments:

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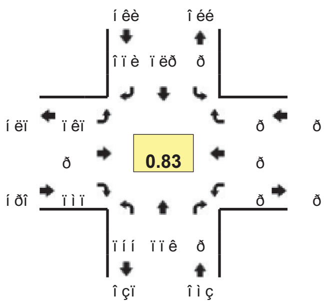
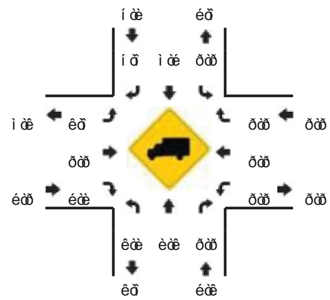
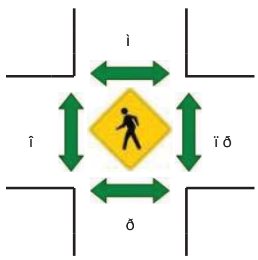
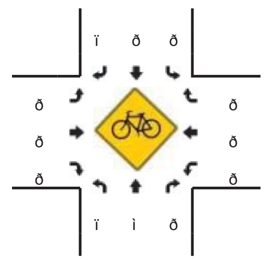
CITY/STATE: Ü» ½ «®¬ ôÑÎ | **DATE:** Ì «»ôÖ«² ï í î ðï é

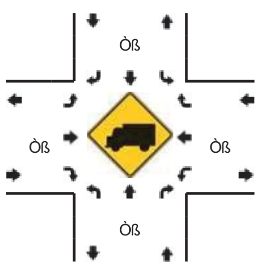


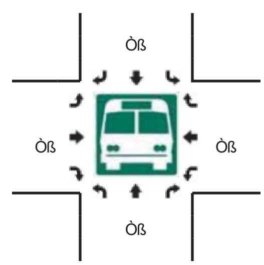
Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:30 PM -- 3:45 PM











5-Min Count Period Beginning At	Brosterhous Rd (Northbound)				Brosterhous Rd (Southbound)				Murphy Rd (Eastbound)				Murphy Rd (Westbound)				Total	Hourly Totals
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
ß˝Ë»¸·½»	èð	ï ì ì	ð	ð	ð	î î ð	î î ì	ð	î ï ê	ð	î î ð	ð	ð	ð	ð	ð	ï ï ðì
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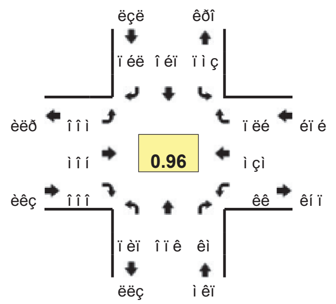
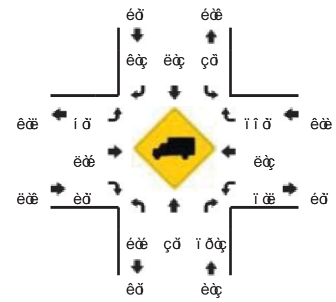
Comments:

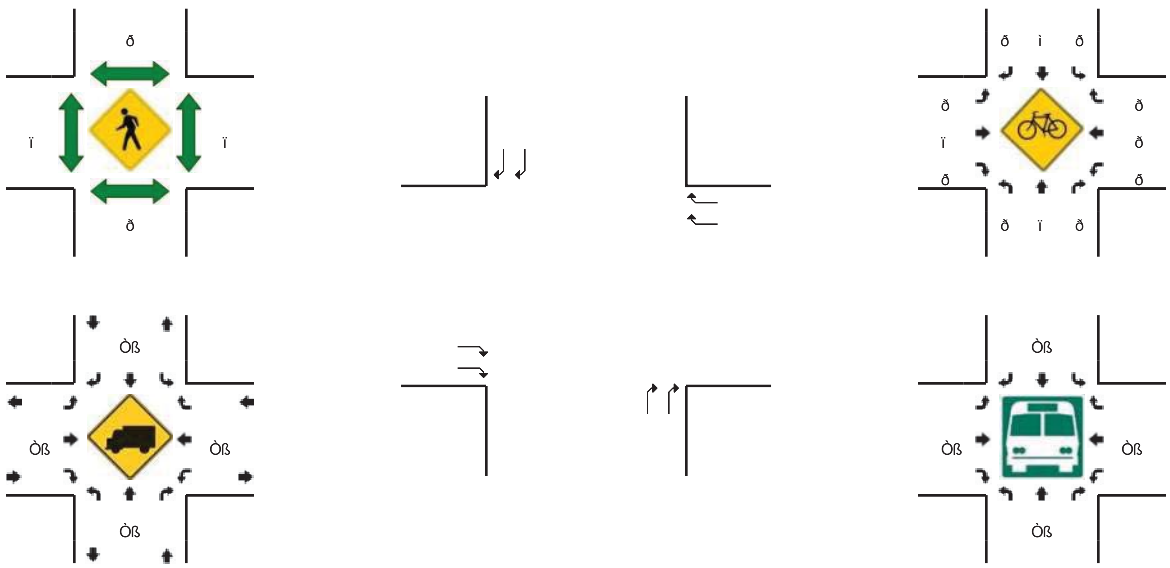
LOCATION: Í Û ï ë¬ Í ¬óóÍ Û Î »»¼Ó¿®µ»¬Î ¼ **QC JOB #:** ï ï ì ì éî ì ï

CITY/STATE: Ü» ½«¬» ôÑÎ **DATE:** Ì «»ôÖ«² ï í î ðï é



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:35 PM -- 3:50 PM





5-Min Count Period Beginning At	SE 15th St (Northbound)				SE 15th St (Southbound)				SE Reed Market Rd (Eastbound)				SE Reed Market Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
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Ð»¼» ¬®¿²		ð				ð				ì				ì			è
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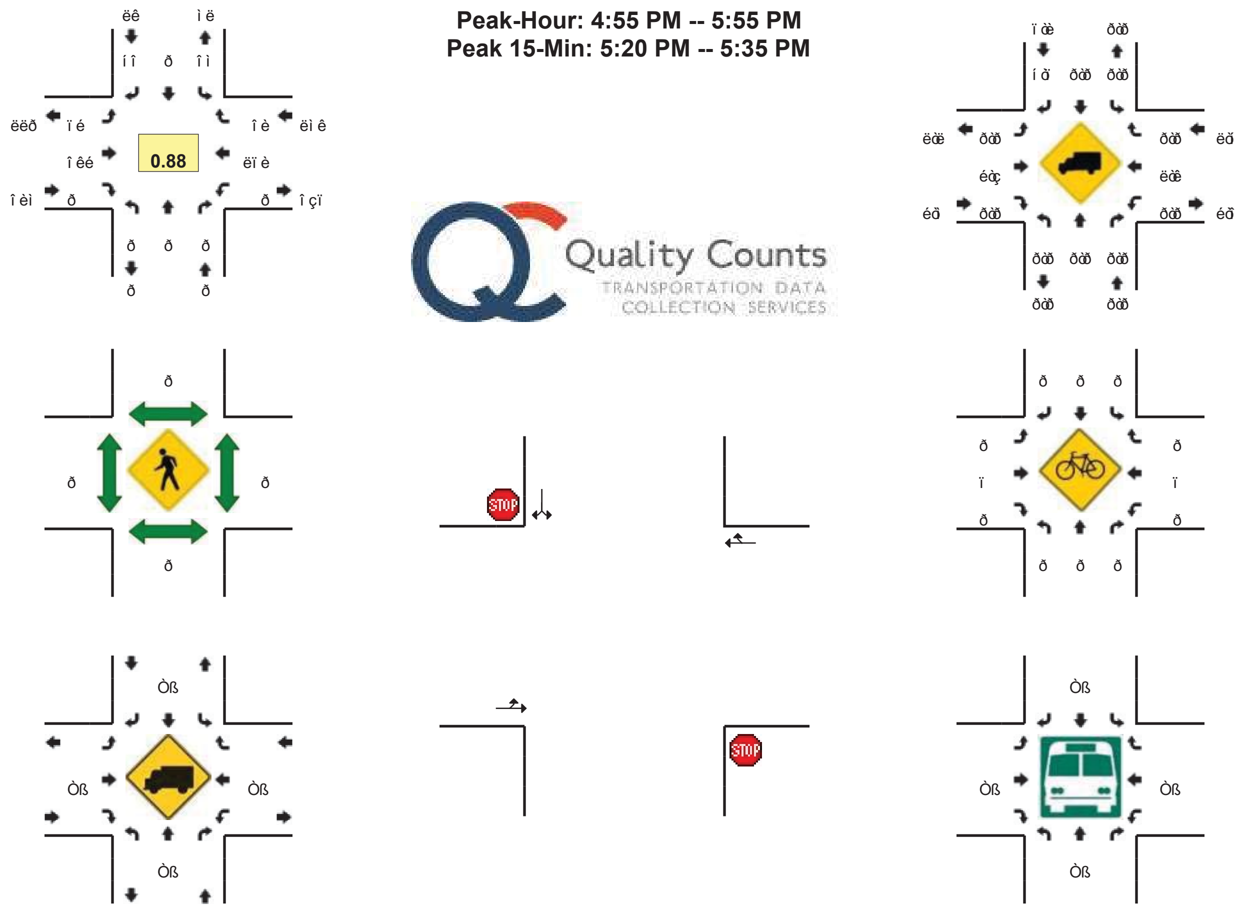
Comments:

LOCATION: Ý±«² ¬®§ Ý´«¾Ü®·ª» óóÕ² ±¬¬Î ±¿¼ **QC JOB #:** ï ì ì ì î çðè
CITY/STATE: Þ»² ¼ôÑÎ **DATE:** Ì «»ôÖ«² ðê î ðï é

Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:20 PM -- 5:35 PM



5-Min Count Period Beginning At	Country Club Drive (Northbound)				Country Club Drive (Southbound)				Knott Road (Eastbound)				Knott Road (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
ß´´ Ê»¸·½´»	ð	ð	ð	ð	î ð	ð	í ê	ð	ì ì	î êè	ð	ð	ð	êðð	ì ð	ð	ï ððè
Ø»¿ª§ Ì®«½µ	ð	ð	ð		ð	ð	ð		ð	î ì	ð		ð	î è	ð		ëî
Ð»¼»¬®·¿²		ð				ð				ð				ð			ð
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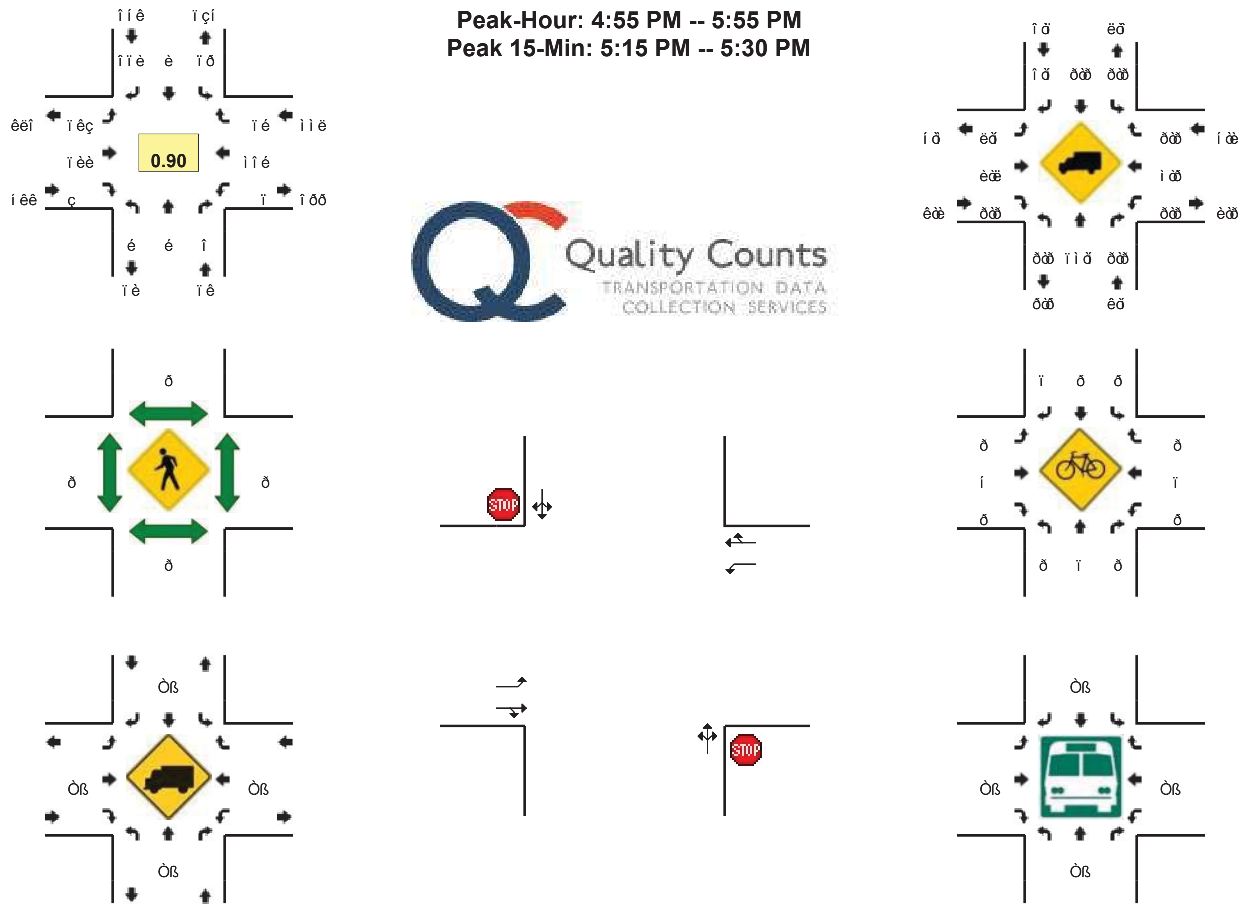
Comments:

LOCATION: ï ë¬¸ Í ¬®»»¬óó Õ²±¬¬ Î ±¿¼   **QC JOB #:** ï ì ì ì î çï ð
CITY/STATE: Þ»²¼ôÑÎ   **DATE:** Ì «»ôÖ«² ðê î ðï é

Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



5-Min Count Period Beginning At	15th Street (Northbound)				15th Street (Southbound)				Knott Road (Eastbound)				Knott Road (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
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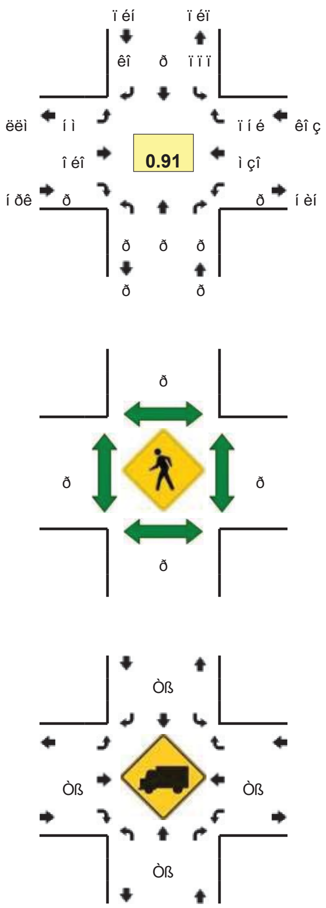
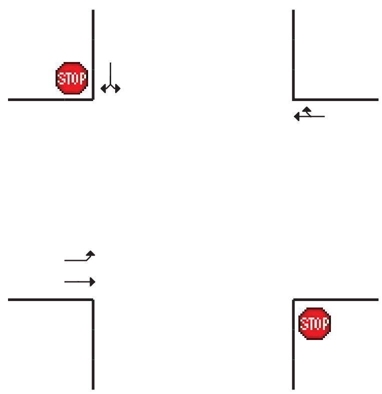
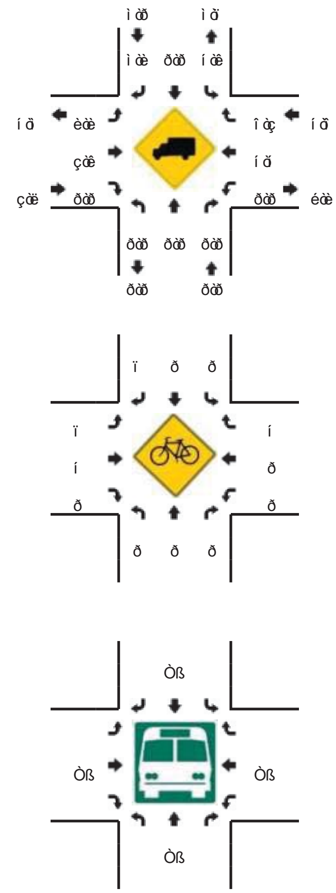
Comments:

LOCATION: Þ®±¬»®±«« Î ¼ó Õ²±¬ Î ¼ **QC JOB #:** ïìììéîðê
CITY/STATE: Þ»²¼ô ÑÎ **DATE:** Ì «»ôÖ«² ïí îðïé



Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:15 PM -- 5:30 PM





5-Min Count Period Beginning At	Brosterhous Rd (Northbound)				Brosterhous Rd (Southbound)				Knott Rd (Eastbound)				Knott Rd (Westbound)				Total	Hourly Totals
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
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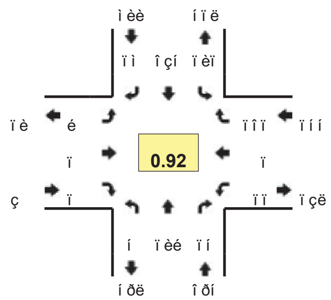
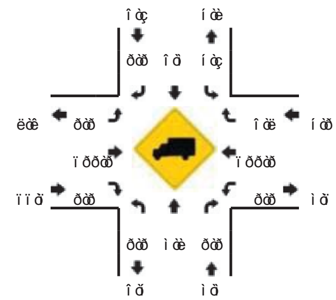
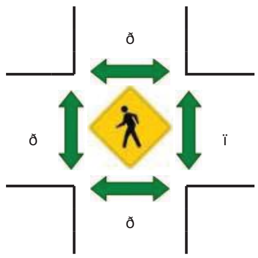
Comments:

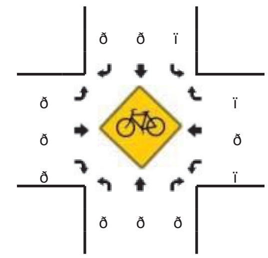
LOCATION: Í Û ï ë¬ Í ¬óóÚ»®« ±² Î ¼ **QC JOB #:** ï ì ì ì éî ðç
CITY/STATE: Þ»²½ôÑÎ **DATE:** Ì «»ôÖ«² ïí îðï é

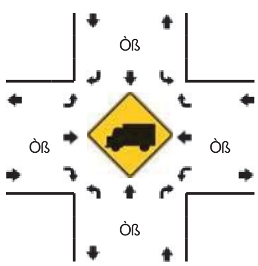


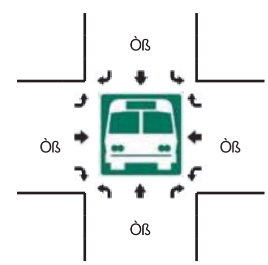
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:25 PM -- 5:40 PM











5-Min Count Period Beginning At	SE 15th St (Northbound) Left	Thru	Right	U	SE 15th St (Southbound) Left	Thru	Right	U	Ferguson Rd (Eastbound) Left	Thru	Right	U	Ferguson Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
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Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
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Comments:

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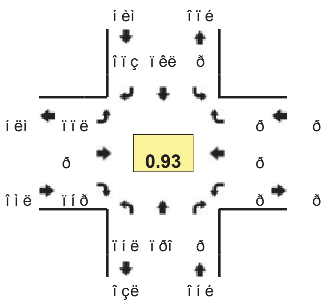
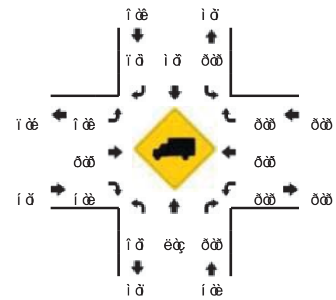
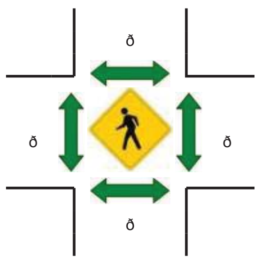
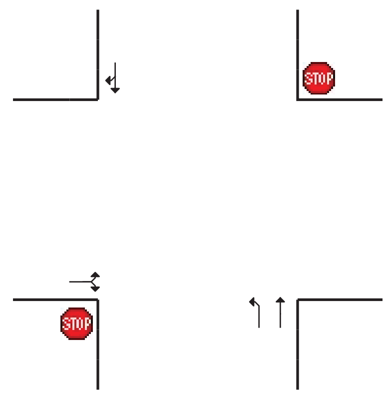
CITY/STATE: Ü» ½ «¬» ôÑÎ **DATE:** Ì «»ôÖ«² ïí îðïé

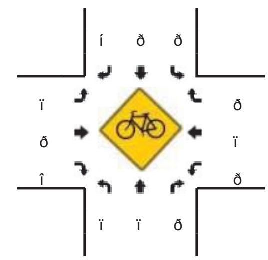


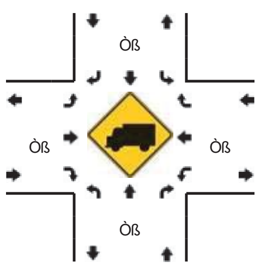
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

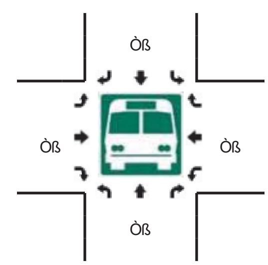












5-Min Count Period Beginning At	Brosterhous Rd (Northbound)				Brosterhous Rd (Southbound)				Murphy Rd (Eastbound)				Murphy Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
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Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
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Comments:

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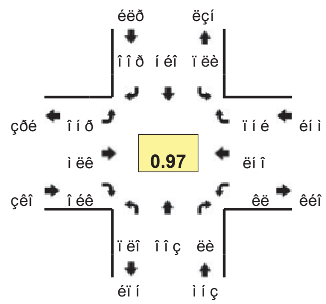
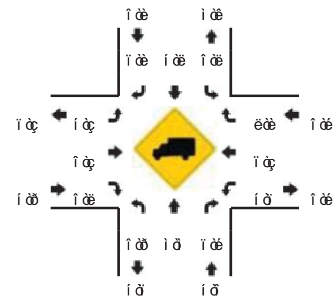
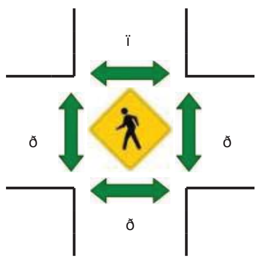
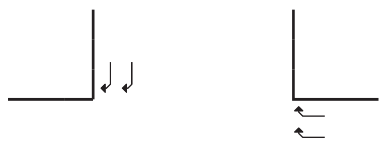
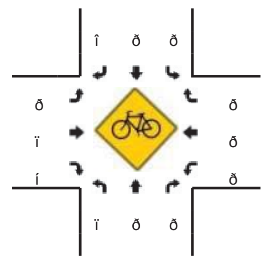
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:20 PM -- 5:35 PM

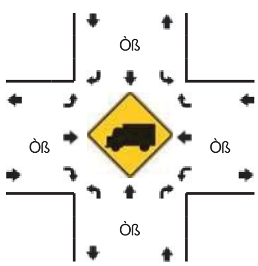


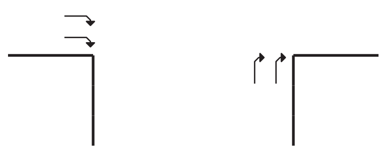


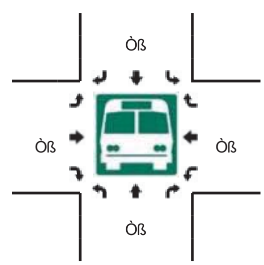












5-Min Count Period Beginning At	SE 15th St (Northbound) Left	Thru	Right	U	SE 15th St (Southbound) Left	Thru	Right	U	SE Reed Market Rd (Eastbound) Left	Thru	Right	U	SE Reed Market Rd (Westbound) Left	Thru	Right	U	Total	Hourly Totals
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Peak 15-Min Flowrates	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	Total
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Comments:

Appendix B – Operational Analysis Worksheets

Existing Operations

Existing - AM

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))			Case: None				Case: None				Case: None				Case: None	
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		234	274	96		24	444	321		282	431	56		57	130	127
% HV		3	9	16		20	8	6		9	3	2		14	16	6
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	508	104	N/A		469	313	N/A		291	475	N/A		187	117	N/A	
Entry lane capacity (veh/h)	1012	1012	N/A		499	563	N/A		707	707	N/A		520	520	N/A	
x (v/c ratio)	0.50	0.10	N/A		0.94	0.56	N/A		0.41	0.67	N/A		0.36	0.23	N/A	
Lane control delay (s/veh)	9.6	4.5	N/A		55.1	16.9	N/A		10.7	18.3	N/A		12.6	10.0	N/A	
Lane LOS	A	A	N/A		F	C	N/A		B	C	N/A		B	B	N/A	
Approach control delay (s/veh)	8.7				39.8				15.4				11.6			
Approach LOS	A				E				C				B			
Intersection control delay (s/veh)	21.0															
Intersection LOS	C															
95th percentile queue (veh)	2.9	0.3	N/A		11.5	3.4	N/A		2.0	5.2	N/A		1.6	0.9	N/A	
	overall v/c	0.57														

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	13	0	1	327	3	76	150	4	1	199
Future Vol, veh/h	13	0	1	327	3	76	150	4	1	199
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	0	0	5	0	23	10	0	2	2
Mvmt Flow	13	0	1	327	3	76	150	4	1	199

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	735	152	154	0	0	330	0	0	637	329
Stage 1	304	-	-	-	-	-	-	-	331	-
Stage 2	431	-	-	-	-	-	-	-	306	-
Critical Hdwy	7.21	6.22	4.1	-	-	4.33	-	-	7.12	6.22
Critical Hdwy Stg 1	6.21	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.21	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.599	3.318	2.2	-	-	2.407	-	-	3.518	3.318
Pot Cap-1 Maneuver	324	894	1439	-	-	1121	-	-	390	712
Stage 1	687	-	-	-	-	-	-	-	682	-
Stage 2	585	-	-	-	-	-	-	-	704	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	220	894	1439	-	-	1121	-	-	366	712
Mov Cap-2 Maneuver	220	-	-	-	-	-	-	-	366	-
Stage 1	686	-	-	-	-	-	-	-	681	-
Stage 2	420	-	-	-	-	-	-	-	650	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	20	0	2.8	13
HCM LOS	C			B

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1439	-	-	663	256	1121	-	-
HCM Lane V/C Ratio	0.001	-	-	0.326	0.063	0.068	-	-
HCM Control Delay (s)	7.5	0	-	13	20	8.4	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.4	0.2	0.2	-	-

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	61	152	165	79	116
Future Vol, veh/h	169	61	152	165	79	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	9	5	10	10	5
Mvmt Flow	169	61	152	165	79	116

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	606	137	195	0	-	0
Stage 1	137	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Critical Hdwy	6.42	6.29	4.15	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.381	2.245	-	-	-
Pot Cap-1 Maneuver	460	893	1360	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	409	893	1360	-	-	-
Mov Cap-2 Maneuver	409	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.3	3.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1360	-	478	-	-
HCM Lane V/C Ratio	0.112	-	0.481	-	-
HCM Control Delay (s)	8	-	19.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	2.6	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	386	298	24	24	38
Future Vol, veh/h	30	386	298	24	24	38
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	3	13	0	13	0
Mvmt Flow	30	386	298	24	24	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	326	0	-	0	760	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	446	-
Critical Hdwy	4.16	-	-	-	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.3
Pot Cap-1 Maneuver	1211	-	-	-	359	731
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	622	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	345	728
Mov Cap-2 Maneuver	-	-	-	-	345	-
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1211	-	-	-	509
HCM Lane V/C Ratio	0.025	-	-	-	0.122
HCM Control Delay (s)	8	0	-	-	13.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	388	275	133	86	37
Future Vol, veh/h	37	388	275	133	86	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	7	13	7	12	16
Mvmt Flow	37	388	275	133	86	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	408	0	-	0	804	342
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	462	-
Critical Hdwy	4.23	-	-	-	6.52	6.36
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	5.52	-
Follow-up Hdwy	2.317	-	-	-	3.608	3.444
Pot Cap-1 Maneuver	1094	-	-	-	339	670
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	614	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1094	-	-	-	328	670
Mov Cap-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	593	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1094	-	-	-	388
HCM Lane V/C Ratio	0.034	-	-	-	0.317
HCM Control Delay (s)	8.4	-	-	-	18.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	241	229	4	6	262	13	9	14	2	5	5	137
Future Vol, veh/h	241	229	4	6	262	13	9	14	2	5	5	137
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	6	33	0	11	18	0	10	67	33	25	11
Mvmt Flow	241	229	4	6	262	13	9	14	2	5	5	137

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	275	0	0	233	0	0	1066	1000	231	1002	996	270
Stage 1	-	-	-	-	-	-	713	713	-	281	281	-
Stage 2	-	-	-	-	-	-	353	287	-	721	715	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.6	6.87	7.43	6.75	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.09	3.903	3.797	4.225	3.399
Pot Cap-1 Maneuver	1288	-	-	1346	-	-	202	235	671	194	223	747
Stage 1	-	-	-	-	-	-	426	424	-	663	639	-
Stage 2	-	-	-	-	-	-	668	660	-	374	402	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1287	-	-	1346	-	-	138	190	671	156	180	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	190	-	156	180	-
Stage 1	-	-	-	-	-	-	346	345	-	539	636	-
Stage 2	-	-	-	-	-	-	538	657	-	291	327	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	0.2	28.8	12.9
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	1287	-	-	1346	-	-	604
HCM Lane V/C Ratio	0.142	0.187	-	-	0.004	-	-	0.243
HCM Control Delay (s)	28.8	8.4	-	-	7.7	-	-	12.9
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.7	-	-	0	-	-	0.9

Existing - AFTN

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: Non			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		228	428	222		71	498	157		181	221	68		149	275	180
% HV		3	6	8		2	6	12		8	9	11		9	6	7
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	0				1				1				0			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	656	229	N/A		569	167	N/A		180	291	N/A		424	180	N/A	
Entry lane capacity (veh/h)	769	769	N/A		690	761	N/A		533	533	N/A		573	573	N/A	
x (v/c ratio)	0.85	0.30	N/A		0.82	0.22	N/A		0.34	0.55	N/A		0.74	0.31	N/A	
Lane control delay (s/veh)	29.7	8.1	N/A		29.0	7.2	N/A		11.8	17.3	N/A		25.8	10.7	N/A	
Lane LOS	D	A	N/A		D	A	N/A		B	C	N/A		D	B	N/A	
Approach control delay (s/veh)	24.2				24.0				15.2				21.3			
Approach LOS	C				C				C				C			
Intersection control delay (s/veh)	21.9															
Intersection LOS	C															
95th percentile queue (veh)	10.2	1.2	N/A		8.9	0.8	N/A		1.5	3.3	N/A		6.4	1.3	N/A	
	overall v/c	0.64														

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	10	0	2	235	13	175	261	21	0	129
Future Vol, veh/h	10	0	2	235	13	175	261	21	0	129
Conflicting Peds, #/hr	0	1	1	0	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	17	0	9	8	9	5	5	2	2
Mvmt Flow	10	0	2	235	13	175	261	21	0	129

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	933	273	283	0	0	248	0	0	871	242
Stage 1	623	-	-	-	-	-	-	-	246	-
Stage 2	310	-	-	-	-	-	-	-	625	-
Critical Hdwy	7.1	6.22	4.1	-	-	4.19	-	-	7.12	6.22
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.5	3.318	2.2	-	-	2.281	-	-	3.518	3.318
Pot Cap-1 Maneuver	248	766	1291	-	-	1278	-	-	271	797
Stage 1	477	-	-	-	-	-	-	-	758	-
Stage 2	705	-	-	-	-	-	-	-	473	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	181	765	1291	-	-	1278	-	-	235	797
Mov Cap-2 Maneuver	181	-	-	-	-	-	-	-	235	-
Stage 1	476	-	-	-	-	-	-	-	756	-
Stage 2	590	-	-	-	-	-	-	-	393	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	20.1	0.1	3.2	12
HCM LOS	C			B

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1291	-	-	654	254	1278	-	-
HCM Lane V/C Ratio	0.002	-	-	0.217	0.063	0.137	-	-
HCM Control Delay (s)	7.8	0	-	12	20.1	8.3	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.2	0.5	-	-

Intersection	
Int Delay, s/veh	10.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	149	139	133	172	229
Future Vol, veh/h	169	149	139	133	172	229
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	8	7	9	5	3
Mvmt Flow	169	149	139	133	172	229

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	704	289	403	0	-	0
Stage 1	289	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Critical Hdwy	6.46	6.28	4.17	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	397	736	1129	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	347	735	1129	-	-	-
Mov Cap-2 Maneuver	347	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	576	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.4	4.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1129	-	461	-	-
HCM Lane V/C Ratio	0.123	-	0.69	-	-
HCM Control Delay (s)	8.6	-	28.4	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.4	-	5.2	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	285	408	38	27	41
Future Vol, veh/h	40	285	408	38	27	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	9	9	8	4
Mvmt Flow	40	285	408	38	27	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	446	0	-	0	792	427
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	365	-
Critical Hdwy	4.15	-	-	-	6.48	6.24
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.245	-	-	-	3.572	3.336
Pot Cap-1 Maneuver	1098	-	-	-	350	623
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1098	-	-	-	335	623
Mov Cap-2 Maneuver	-	-	-	-	335	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	659	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1098	-	-	-	464
HCM Lane V/C Ratio	0.036	-	-	-	0.147
HCM Control Delay (s)	8.4	0	-	-	14.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	280	431	158	117	58
Future Vol, veh/h	38	280	431	158	117	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	11	14	8	9	10	2
Mvmt Flow	38	280	431	158	117	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	589	0	-	0	866	510
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	356	-
Critical Hdwy	4.21	-	-	-	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.299	-	-	-	3.59	3.318
Pot Cap-1 Maneuver	943	-	-	-	314	563
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	943	-	-	-	301	563
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	943	-	-	-	356
HCM Lane V/C Ratio	0.04	-	-	-	0.492
HCM Control Delay (s)	9	-	-	-	24.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	2.6

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	171	219	7	4	357	15	2	12	3	11	7	230
Future Vol, veh/h	171	219	7	4	357	15	2	12	3	11	7	230
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	7	14	0	75	11	8	100	8	0	0	0	4
Mvmt Flow	171	219	7	4	357	15	2	12	3	11	7	230

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	372	0	0	226	0	0	1056	945	223	945	941	365
Stage 1	-	-	-	-	-	-	565	565	-	373	373	-
Stage 2	-	-	-	-	-	-	491	380	-	572	568	-
Critical Hdwy	4.17	-	-	4.85	-	-	8.1	6.58	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Follow-up Hdwy	2.263	-	-	2.875	-	-	4.4	4.072	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	1159	-	-	1009	-	-	135	256	822	244	265	676
Stage 1	-	-	-	-	-	-	372	498	-	652	622	-
Stage 2	-	-	-	-	-	-	413	604	-	509	510	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1159	-	-	1009	-	-	77	217	822	206	225	676
Mov Cap-2 Maneuver	-	-	-	-	-	-	77	217	-	206	225	-
Stage 1	-	-	-	-	-	-	317	425	-	556	620	-
Stage 2	-	-	-	-	-	-	268	602	-	420	435	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.7	0.1	24.7	15.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	200	1159	-	-	1009	-	-	584
HCM Lane V/C Ratio	0.085	0.148	-	-	0.004	-	-	0.425
HCM Control Delay (s)	24.7	8.6	-	-	8.6	-	-	15.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	2.1

Existing - PM

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R 2				Case: LT, R 2				Case: L, TR 3				Case: LT, R 2			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: 1 None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		236	463	277		72	538	137		153	235	64		158	379	227
% HV		4	3	3		3	2	6		2	4	2		3	3	2
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	699	276	N/A		610	142	N/A		151	299	N/A		537	225	N/A	
Entry lane capacity (veh/h)	704	704	N/A		731	804	N/A		543	543	N/A		605	605	N/A	
x (v/c ratio)	0.99	0.39	N/A		0.84	0.18	N/A		0.28	0.55	N/A		0.89	0.37	N/A	
Lane control delay (s/veh)	56.0	10.3	N/A		28.8	6.3	N/A		10.6	17.3	N/A		40.1	11.3	N/A	
Lane LOS	F	B	N/A		D	A	N/A		B	C	N/A		E	B	N/A	
Approach control delay (s/veh)	43.1				24.6				15.0				31.6			
Approach LOS	E				C				C				D			
Intersection control delay (s/veh)	31.1															
Intersection LOS	D															
95th percentile queue (veh)	15.8	1.9	N/A		9.4	0.6	N/A		1.1	3.3	N/A		10.6	1.7	N/A	
	Overall v/c	0.72														

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	7	1	3	198	13	184	305	14	1	123
Future Vol, veh/h	7	1	3	198	13	184	305	14	1	123
Conflicting Peds, #/hr	0	0	0	0	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	5	0	4	2	0	2	2
Mvmt Flow	7	1	3	198	13	184	305	14	1	123

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	953	312	319	0	0	212	0	0	893	206
Stage 1	680	-	-	-	-	-	-	-	212	-
Stage 2	273	-	-	-	-	-	-	-	681	-
Critical Hdwy	7.1	6.22	4.1	-	-	4.14	-	-	7.12	6.22
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.5	3.318	2.2	-	-	2.236	-	-	3.518	3.318
Pot Cap-1 Maneuver	241	728	1252	-	-	1347	-	-	262	835
Stage 1	444	-	-	-	-	-	-	-	790	-
Stage 2	737	-	-	-	-	-	-	-	440	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	178	728	1252	-	-	1347	-	-	227	834
Mov Cap-2 Maneuver	178	-	-	-	-	-	-	-	227	-
Stage 1	443	-	-	-	-	-	-	-	787	-
Stage 2	626	-	-	-	-	-	-	-	365	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	24	0.1	3	11.7
HCM LOS	C			B

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1252	-	-	674	197	1347	-	-
HCM Lane V/C Ratio	0.002	-	-	0.2	0.041	0.137	-	-
HCM Control Delay (s)	7.9	0	-	11.7	24	8.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0.5	-	-

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	136	130	141	118	193	234
Future Vol, veh/h	136	130	141	118	193	234
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	4	2	6	4	1
Mvmt Flow	136	130	141	118	193	234

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	710	310	427	0	-	0
Stage 1	310	-	-	-	-	-
Stage 2	400	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	399	725	1132	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	349	725	1132	-	-	-
Mov Cap-2 Maneuver	349	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	591	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.4	4.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1132	-	467	-	-
HCM Lane V/C Ratio	0.125	-	0.57	-	-
HCM Control Delay (s)	8.6	-	22.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	3.5	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	45	276	525	34	27	49
Future Vol, veh/h	45	276	525	34	27	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	8	6	0	0	3
Mvmt Flow	45	276	525	34	27	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	559	0	-	0	908	542
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	366	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	1022	-	-	-	308	538
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	706	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1022	-	-	-	292	538
Mov Cap-2 Maneuver	-	-	-	-	292	-
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1022	-	-	-	414
HCM Lane V/C Ratio	0.044	-	-	-	0.184
HCM Control Delay (s)	8.7	0	-	-	15.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	280	508	150	116	64
Future Vol, veh/h	38	280	508	150	116	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	38	280	508	150	116	64

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	658	0	-	0	939	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	356	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	897	-	-	-	291	507
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	704	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	897	-	-	-	279	507
Mov Cap-2 Maneuver	-	-	-	-	279	-
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	674	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	28
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	897	-	-	-	332
HCM Lane V/C Ratio	0.042	-	-	-	0.542
HCM Control Delay (s)	9.2	-	-	-	28
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	3.1

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	183	204	9	1	426	22	7	7	2	15	8	225
Future Vol, veh/h	183	204	9	1	426	22	7	7	2	15	8	225
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	9	0	0	4	0	0	14	0	0	0	2
Mvmt Flow	183	204	9	1	426	22	7	7	2	15	8	225

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	448	0	0	213	0	0	1131	1025	209	1018	1018	437
Stage 1	-	-	-	-	-	-	575	575	-	439	439	-
Stage 2	-	-	-	-	-	-	556	450	-	579	579	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.1	6.64	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.5	4.126	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	1097	-	-	1369	-	-	182	224	836	218	239	620
Stage 1	-	-	-	-	-	-	507	484	-	601	582	-
Stage 2	-	-	-	-	-	-	519	552	-	504	504	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1097	-	-	1369	-	-	98	186	836	184	199	620
Mov Cap-2 Maneuver	-	-	-	-	-	-	98	186	-	184	199	-
Stage 1	-	-	-	-	-	-	422	403	-	501	582	-
Stage 2	-	-	-	-	-	-	326	552	-	412	420	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.1	0	33.1	18.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	144	1097	-	-	1369	-	-	512
HCM Lane V/C Ratio	0.111	0.167	-	-	0.001	-	-	0.484
HCM Control Delay (s)	33.1	8.9	-	-	7.6	-	-	18.5
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.6	-	-	0	-	-	2.6

2021 Background Operations

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		243	322	115		24	470	299		309	430	81		61	145	144
% HV		3	9	16		20	8	6		9	3	2		14	16	6
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	565	125	N/A		495	292	N/A		319	499	N/A		206	133	N/A	
Entry lane capacity (veh/h)	987	987	N/A		482	545	N/A		660	660	N/A		490	490	N/A	
x (v/c ratio)	0.57	0.13	N/A		1.03	0.54	N/A		0.48	0.76	N/A		0.42	0.27	N/A	
Lane control delay (s/veh)	11.3	4.8	N/A		77.6	16.6	N/A		12.9	24.1	N/A		14.7	11.4	N/A	
Lane LOS	B	A	N/A		F	C	N/A		B	C	N/A		B	B	N/A	
Approach control delay (s/veh)	10.1				55.0				19.7				13.4			
Approach LOS	B				F				C				B			
Intersection control delay (s/veh)	26.9															
Intersection LOS	D															
95th percentile queue (veh)	3.7	0.4	N/A		14.4	3.1	N/A		2.7	6.9	N/A		2.1	1.1	N/A	
	overall v/c	0.63														

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	15	0	1	367	3	85	168	5	1	224
Future Vol, veh/h	15	0	1	367	3	85	168	5	1	224
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	0	0	5	0	23	10	0	2	2
Mvmt Flow	15	0	1	367	3	85	168	5	1	224

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	824	171	173	0	0	370	0	0	713	369
Stage 1	341	-	-	-	-	-	-	-	371	-
Stage 2	483	-	-	-	-	-	-	-	342	-
Critical Hdwy	7.21	6.22	4.1	-	-	4.33	-	-	7.12	6.22
Critical Hdwy Stg 1	6.21	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.21	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.599	3.318	2.2	-	-	2.407	-	-	3.518	3.318
Pot Cap-1 Maneuver	282	873	1416	-	-	1082	-	-	347	677
Stage 1	656	-	-	-	-	-	-	-	649	-
Stage 2	548	-	-	-	-	-	-	-	673	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	176	873	1416	-	-	1082	-	-	323	677
Mov Cap-2 Maneuver	176	-	-	-	-	-	-	-	323	-
Stage 1	655	-	-	-	-	-	-	-	648	-
Stage 2	366	-	-	-	-	-	-	-	612	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	24.5	0	2.8	14.4
HCM LOS	C			B

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1416	-	-	624	203	1082	-	-
HCM Lane V/C Ratio	0.001	-	-	0.389	0.089	0.079	-	-
HCM Control Delay (s)	7.5	0	-	14.4	24.5	8.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.8	0.3	0.3	-	-

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	189	69	170	182	87	130
Future Vol, veh/h	189	69	170	182	87	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	9	5	10	10	5
Mvmt Flow	189	69	170	182	87	130

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	674	152	217	0	-	0
Stage 1	152	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.42	6.29	4.15	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.381	2.245	-	-	-
Pot Cap-1 Maneuver	420	876	1335	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	367	876	1335	-	-	-
Mov Cap-2 Maneuver	367	-	-	-	-	-
Stage 1	876	-	-	-	-	-
Stage 2	519	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.6	3.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1335	-	435	-	-
HCM Lane V/C Ratio	0.127	-	0.593	-	-
HCM Control Delay (s)	8.1	-	24.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	3.7	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	434	335	27	27	40
Future Vol, veh/h	33	434	335	27	27	40
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	3	13	0	13	0
Mvmt Flow	33	434	335	27	27	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	366	0	-	0	853	353
Stage 1	-	-	-	-	353	-
Stage 2	-	-	-	-	500	-
Critical Hdwy	4.16	-	-	-	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.3
Pot Cap-1 Maneuver	1171	-	-	-	315	695
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1171	-	-	-	301	692
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1171	-	-	-	454
HCM Lane V/C Ratio	0.028	-	-	-	0.148
HCM Control Delay (s)	8.2	0	-	-	14.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	436	309	149	95	41
Future Vol, veh/h	42	436	309	149	95	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	7	13	7	12	16
Mvmt Flow	42	436	309	149	95	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	458	0	-	0	904	384
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	4.23	-	-	-	6.52	6.36
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	5.52	-
Follow-up Hdwy	2.317	-	-	-	3.608	3.444
Pot Cap-1 Maneuver	1047	-	-	-	295	634
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1047	-	-	-	283	634
Mov Cap-2 Maneuver	-	-	-	-	283	-
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	22.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1047	-	-	-	340
HCM Lane V/C Ratio	0.04	-	-	-	0.4
HCM Control Delay (s)	8.6	-	-	-	22.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.9

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	270	256	5	7	295	14	10	16	2	5	6	153
Future Vol, veh/h	270	256	5	7	295	14	10	16	2	5	6	153
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	6	33	0	11	18	0	10	67	33	25	11
Mvmt Flow	270	256	5	7	295	14	10	16	2	5	6	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	309	0	0	261	0	0	1196	1122	259	1124	1117	303
Stage 1	-	-	-	-	-	-	799	799	-	316	316	-
Stage 2	-	-	-	-	-	-	397	323	-	808	801	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.6	6.87	7.43	6.75	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.09	3.903	3.797	4.225	3.399
Pot Cap-1 Maneuver	1252	-	-	1315	-	-	164	199	645	159	188	716
Stage 1	-	-	-	-	-	-	382	386	-	634	616	-
Stage 2	-	-	-	-	-	-	633	636	-	333	366	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1251	-	-	1315	-	-	104	155	645	122	147	715
Mov Cap-2 Maneuver	-	-	-	-	-	-	104	155	-	122	147	-
Stage 1	-	-	-	-	-	-	300	303	-	497	613	-
Stage 2	-	-	-	-	-	-	490	633	-	247	287	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.4	0.2	37.6	14.2
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	138	1251	-	-	1315	-	-	554
HCM Lane V/C Ratio	0.203	0.216	-	-	0.005	-	-	0.296
HCM Control Delay (s)	37.6	8.7	-	-	7.8	-	-	14.2
HCM Lane LOS	E	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.8	-	-	0	-	-	1.2

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))			Case: None				Case: None				Case: None				Case: None	
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		256	481	251		49	560	177		205	248	76		168	310	202
% HV		3	6	8		2	6	12		8	9	11		9	6	7
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	0				1				1				0			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	737	258	N/A		609	187	N/A		204	326	N/A		478	202	N/A	
Entry lane capacity (veh/h)	741	741	N/A		638	707	N/A		479	479	N/A		533	533	N/A	
x (v/c ratio)	0.99	0.35	N/A		0.96	0.27	N/A		0.43	0.68	N/A		0.90	0.38	N/A	
Lane control delay (s/veh)	55.3	9.2	N/A		50.7	8.2	N/A		15.1	25.5	N/A		45.1	12.7	N/A	
Lane LOS	F	A	N/A		F	A	N/A		C	D	N/A		E	B	N/A	
Approach control delay (s/veh)	43.4				40.8				21.5				35.5			
Approach LOS	E				E				C				E			
Intersection control delay (s/veh)	37.0															
Intersection LOS	E															
95th percentile queue (veh)	16.4	1.6	N/A		13.5	1.1	N/A		2.1	5.1	N/A		10.4	1.8	N/A	
	overall v/c	0.76														

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	11	0	2	263	15	197	293	24	0	145
Future Vol, veh/h	11	0	2	263	15	197	293	24	0	145
Conflicting Peds, #/hr	0	1	1	0	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	17	0	9	8	9	5	5	2	2
Mvmt Flow	11	0	2	263	15	197	293	24	0	145

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	1047	306	318	0	0	278	0	0	978	271
Stage 1	700	-	-	-	-	-	-	-	275	-
Stage 2	347	-	-	-	-	-	-	-	703	-
Critical Hdwy	7.1	6.22	4.1	-	-	4.19	-	-	7.12	6.22
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.5	3.318	2.2	-	-	2.281	-	-	3.518	3.318
Pot Cap-1 Maneuver	208	734	1253	-	-	1246	-	-	230	768
Stage 1	433	-	-	-	-	-	-	-	731	-
Stage 2	673	-	-	-	-	-	-	-	428	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	143	733	1253	-	-	1246	-	-	194	768
Mov Cap-2 Maneuver	143	-	-	-	-	-	-	-	194	-
Stage 1	432	-	-	-	-	-	-	-	730	-
Stage 2	545	-	-	-	-	-	-	-	342	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	23.9	0.1	3.2	13.1
HCM LOS	C			B

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	601	208	1246	-	-
HCM Lane V/C Ratio	0.002	-	-	0.266	0.087	0.158	-	-
HCM Control Delay (s)	7.9	0	-	13.1	23.9	8.4	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.3	0.6	-	-

Intersection	
Int Delay, s/veh	16.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	189	167	156	148	191	256
Future Vol, veh/h	189	167	156	148	191	256
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	8	7	9	5	3
Mvmt Flow	189	167	156	148	191	256

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	785	321	449	0	-	0
Stage 1	321	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Critical Hdwy	6.46	6.28	4.17	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	356	706	1085	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	705	1085	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	47.8	4.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1085	-	415	-	-
HCM Lane V/C Ratio	0.144	-	0.858	-	-
HCM Control Delay (s)	8.9	-	47.8	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.5	-	8.4	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	320	458	42	30	44
Future Vol, veh/h	42	320	458	42	30	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	9	9	8	4
Mvmt Flow	42	320	458	42	30	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	500	0	-	0	883	479
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	404	-
Critical Hdwy	4.15	-	-	-	6.48	6.24
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.245	-	-	-	3.572	3.336
Pot Cap-1 Maneuver	1049	-	-	-	309	583
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1049	-	-	-	294	583
Mov Cap-2 Maneuver	-	-	-	-	294	-
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	629	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1049	-	-	-	417
HCM Lane V/C Ratio	0.04	-	-	-	0.177
HCM Control Delay (s)	8.6	0	-	-	15.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	314	484	177	131	65
Future Vol, veh/h	42	314	484	177	131	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	11	14	8	9	10	2
Mvmt Flow	42	314	484	177	131	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	661	0	-	0	971	573
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	4.21	-	-	-	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.299	-	-	-	3.59	3.318
Pot Cap-1 Maneuver	886	-	-	-	271	519
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	886	-	-	-	258	519
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	630	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	34.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	886	-	-	-	310
HCM Lane V/C Ratio	0.047	-	-	-	0.632
HCM Control Delay (s)	9.3	-	-	-	34.6
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	4

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	192	246	8	5	401	17	2	14	3	12	8	258
Future Vol, veh/h	192	246	8	5	401	17	2	14	3	12	8	258
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	7	14	0	75	11	8	100	8	0	0	0	4
Mvmt Flow	192	246	8	5	401	17	2	14	3	12	8	258

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	418	0	0	254	0	0	1187	1062	250	1063	1058	410
Stage 1	-	-	-	-	-	-	634	634	-	420	420	-
Stage 2	-	-	-	-	-	-	553	428	-	643	638	-
Critical Hdwy	4.17	-	-	4.85	-	-	8.1	6.58	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Follow-up Hdwy	2.263	-	-	2.875	-	-	4.4	4.072	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	1115	-	-	983	-	-	107	218	794	203	227	637
Stage 1	-	-	-	-	-	-	337	464	-	615	593	-
Stage 2	-	-	-	-	-	-	378	574	-	465	474	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1115	-	-	983	-	-	53	180	794	165	187	637
Mov Cap-2 Maneuver	-	-	-	-	-	-	53	180	-	165	187	-
Stage 1	-	-	-	-	-	-	279	384	-	509	590	-
Stage 2	-	-	-	-	-	-	221	571	-	369	392	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.8	0.1	30.7	18.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	159	1115	-	-	983	-	-	534
HCM Lane V/C Ratio	0.119	0.172	-	-	0.005	-	-	0.521
HCM Control Delay (s)	30.7	8.9	-	-	8.7	-	-	18.8
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.6	-	-	0	-	-	3

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		265	520	312		80	605	154		172	264	71		178	426	255
% HV		4	3	3		3	2	6		2	4	2		3	3	2
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	786	311	N/A		685	160	N/A		170	336	N/A		604	252	N/A	
Entry lane capacity (veh/h)	651	651	N/A		678	750	N/A		484	484	N/A		549	549	N/A	
x (v/c ratio)	1.21	0.48	N/A		1.01	0.21	N/A		0.35	0.69	N/A		1.10	0.46	N/A	
Lane control delay (s/veh)	128.9	12.9	N/A		61.8	7.2	N/A		13.1	26.1	N/A		95.0	14.3	N/A	
Lane LOS	F	B	N/A		F	A	N/A		B	D	N/A		F	B	N/A	
Approach control delay (s/veh)	96.0				51.5				21.7				71.2			
Approach LOS	F				F				C				F			
Intersection control delay (s/veh)	66.8															
Intersection LOS	F															
95th percentile queue (veh)	27.5	2.6	N/A		16.5	0.8	N/A		1.6	5.3	N/A		18.8	2.4	N/A	
	overall v/c	0.88														

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	8	1	3	221	15	207	342	16	1	138
Future Vol, veh/h	8	1	3	221	15	207	342	16	1	138
Conflicting Peds, #/hr	0	0	0	0	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	5	0	4	2	0	2	2
Mvmt Flow	8	1	3	221	15	207	342	16	1	138

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	1068	350	358	0	0	237	0	0	1001	230
Stage 1	764	-	-	-	-	-	-	-	236	-
Stage 2	304	-	-	-	-	-	-	-	765	-
Critical Hdwy	7.1	6.22	4.1	-	-	4.14	-	-	7.12	6.22
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.5	3.318	2.2	-	-	2.236	-	-	3.518	3.318
Pot Cap-1 Maneuver	201	693	1212	-	-	1318	-	-	222	809
Stage 1	399	-	-	-	-	-	-	-	767	-
Stage 2	710	-	-	-	-	-	-	-	396	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	141	693	1212	-	-	1318	-	-	187	808
Mov Cap-2 Maneuver	141	-	-	-	-	-	-	-	187	-
Stage 1	398	-	-	-	-	-	-	-	764	-
Stage 2	586	-	-	-	-	-	-	-	317	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	29.7	0.1	3	12.5
HCM LOS	D			B

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1212	-	-	629	155	1318	-	-
HCM Lane V/C Ratio	0.002	-	-	0.24	0.058	0.157	-	-
HCM Control Delay (s)	8	0	-	12.5	29.7	8.2	0	-
HCM Lane LOS	A	A	-	B	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.2	0.6	-	-

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	150	146	158	131	214	261
Future Vol, veh/h	150	146	158	131	214	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	4	2	6	4	1
Mvmt Flow	150	146	158	131	214	261

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	792	345	475	0	-	0
Stage 1	345	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	357	693	1087	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	305	693	1087	-	-	-
Mov Cap-2 Maneuver	305	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.4	4.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1087	-	421	-	-
HCM Lane V/C Ratio	0.145	-	0.703	-	-
HCM Control Delay (s)	8.9	-	31.4	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.5	-	5.3	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	310	590	38	30	53
Future Vol, veh/h	47	310	590	38	30	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	8	6	0	0	3
Mvmt Flow	47	310	590	38	30	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	628	0	-	0	1013	609
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	404	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	964	-	-	-	267	493
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	964	-	-	-	251	493
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	639	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	17.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	964	-	-	-	366
HCM Lane V/C Ratio	0.049	-	-	-	0.227
HCM Control Delay (s)	8.9	0	-	-	17.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	314	570	168	130	72
Future Vol, veh/h	42	314	570	168	130	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	42	314	570	168	130	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	738	0	-	0	1052	654
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	837	-	-	-	249	461
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	674	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	837	-	-	-	237	461
Mov Cap-2 Maneuver	-	-	-	-	237	-
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	42.6
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	837	-	-	-	287
HCM Lane V/C Ratio	0.05	-	-	-	0.704
HCM Control Delay (s)	9.5	-	-	-	42.6
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	4.9

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	205	229	10	1	478	24	8	8	2	16	9	252
Future Vol, veh/h	205	229	10	1	478	24	8	8	2	16	9	252
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	9	0	0	4	0	0	14	0	0	0	2
Mvmt Flow	205	229	10	1	478	24	8	8	2	16	9	252

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	502	0	0	239	0	0	1267	1148	234	1141	1141	490
Stage 1	-	-	-	-	-	-	644	644	-	492	492	-
Stage 2	-	-	-	-	-	-	623	504	-	649	649	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.1	6.64	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.5	4.126	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	1047	-	-	1340	-	-	147	189	810	179	202	578
Stage 1	-	-	-	-	-	-	465	450	-	562	551	-
Stage 2	-	-	-	-	-	-	477	522	-	462	469	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1047	-	-	1340	-	-	67	152	810	146	162	578
Mov Cap-2 Maneuver	-	-	-	-	-	-	67	152	-	146	162	-
Stage 1	-	-	-	-	-	-	374	362	-	452	551	-
Stage 2	-	-	-	-	-	-	264	522	-	362	377	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	0	47.2	23.9
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	103	1047	-	-	1340	-	-	461
HCM Lane V/C Ratio	0.175	0.196	-	-	0.001	-	-	0.601
HCM Control Delay (s)	47.2	9.3	-	-	7.7	-	-	23.9
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0.7	-	-	0	-	-	3.9

2021 Build with High School Only Operations

2021 Build Out with High School Only - AM

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))			Case: None				Case: None				Case: None				Case: Non	
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		243	322	132		42	470	299		318	438	90		61	162	144
% HV		3	9	16		20	8	6		9	3	2		14	16	6
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	565	144	N/A		512	291	N/A		329	515	N/A		223	133	N/A	
Entry lane capacity (veh/h)	947	947	N/A		473	535	N/A		660	660	N/A		475	475	N/A	
x (v/c ratio)	0.60	0.15	N/A		1.08	0.54	N/A		0.50	0.78	N/A		0.47	0.28	N/A	
Lane control delay (s/veh)	12.2	5.2	N/A		95.2	17.2	N/A		13.3	25.9	N/A		16.5	11.9	N/A	
Lane LOS	B	A	N/A		F	C	N/A		B	D	N/A		C	B	N/A	
Approach control delay (s/veh)	10.8				66.9				21.0				14.8			
Approach LOS	B				F				C				B			
Intersection control delay (s/veh)	31.1															
Intersection LOS	D															
95th percentile queue (veh)	4.1	0.5	N/A		16.5	3.2	N/A		2.8	7.5	N/A		2.5	1.1	N/A	
	overall v/c	0.66														

Intersection	
Int Delay, s/veh	5.5

Movement	EBU	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Vol, veh/h	15	0	3	1	391	12	85	221	5	1	224
Future Vol, veh/h	15	0	3	1	391	12	85	221	5	1	224
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	-	None	-	-	None	-	None
Storage Length	-	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	11	0	0	5	0	23	10	0	2	2
Mvmt Flow	15	0	3	1	391	12	85	221	5	1	224

Major/Minor	Minor2			Major1			Major2			Minor1	
Conflicting Flow All	0	906	224	226	0	0	403	0	0	794	397
Stage 1	0	394	-	-	-	-	-	-	-	399	-
Stage 2	0	512	-	-	-	-	-	-	-	395	-
Critical Hdwy	-	7.21	6.2	4.1	-	-	4.33	-	-	7.12	6.22
Critical Hdwy Stg 1	-	6.21	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	6.21	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	-	3.599	3.3	2.2	-	-	2.407	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	248	820	1354	-	-	1051	-	-	306	652
Stage 1	0	613	-	-	-	-	-	-	-	627	-
Stage 2	0	528	-	-	-	-	-	-	-	630	-
Platoon blocked, %	-				-	-		-	-		
Mov Cap-1 Maneuver	0	151	820	1354	-	-	1051	-	-	283	652
Mov Cap-2 Maneuver	0	151	-	-	-	-	-	-	-	283	-
Stage 1	0	612	-	-	-	-	-	-	-	626	-
Stage 2	0	346	-	-	-	-	-	-	-	569	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	9.4	0	2.4	17.3
HCM LOS	A			C

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1354	-	-	550	820	1051	-	-
HCM Lane V/C Ratio	0.001	-	-	0.475	0.004	0.081	-	-
HCM Control Delay (s)	7.7	0	-	17.3	9.4	8.7	0	-
HCM Lane LOS	A	A	-	C	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2.5	0	0.3	-	-

Intersection	
Int Delay, s/veh	14.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	189	112	191	215	157	130
Future Vol, veh/h	189	112	191	215	157	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	9	5	10	10	5
Mvmt Flow	189	112	191	215	157	130

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	819	222	287	0	-	0
Stage 1	222	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Critical Hdwy	6.42	6.29	4.15	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.381	2.245	-	-	-
Pot Cap-1 Maneuver	345	800	1258	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	293	800	1258	-	-	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	466	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	41.4	3.9	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1258	-	383	-	-
HCM Lane V/C Ratio	0.152	-	0.786	-	-
HCM Control Delay (s)	8.4	-	41.4	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.5	-	6.7	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	0	16	300	217	18
Future Vol, veh/h	33	0	16	300	217	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	33	0	16	300	217	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	558	226	235	0	-	0
Stage 1	226	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	494	818	1344	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	487	818	1344	-	-	-
Mov Cap-2 Maneuver	487	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1344	-	487	-	-
HCM Lane V/C Ratio	0.012	-	0.068	-	-
HCM Control Delay (s)	7.7	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	19	316	165	53
Future Vol, veh/h	0	8	19	316	165	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	8	19	316	165	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	192	218	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	855	1364	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	855	1364	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1364	-	855	-	-
HCM Lane V/C Ratio	0.014	-	0.009	-	-
HCM Control Delay (s)	7.7	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	504	368	47	70	40
Future Vol, veh/h	33	504	368	47	70	40
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	3	13	0	13	0
Mvmt Flow	33	504	368	47	70	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	419	0	-	0	966	396
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	570	-
Critical Hdwy	4.16	-	-	-	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.3
Pot Cap-1 Maneuver	1119	-	-	-	270	658
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	545	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1119	-	-	-	257	655
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1119	-	-	-	330
HCM Lane V/C Ratio	0.029	-	-	-	0.333
HCM Control Delay (s)	8.3	0	-	-	21.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.4

Intersection	
Int Delay, s/veh	26.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	550	363	211	227	41
Future Vol, veh/h	42	550	363	211	227	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	7	13	7	12	16
Mvmt Flow	42	550	363	211	227	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	574	0	-	0	1103	469
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	634	-
Critical Hdwy	4.23	-	-	-	6.52	6.36
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	5.52	-
Follow-up Hdwy	2.317	-	-	-	3.608	3.444
Pot Cap-1 Maneuver	947	-	-	-	~ 224	566
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	510	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	947	-	-	-	~ 214	566
Mov Cap-2 Maneuver	-	-	-	-	~ 214	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	487	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	142.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	947	-	-	-	237
HCM Lane V/C Ratio	0.044	-	-	-	1.131
HCM Control Delay (s)	9	-	-	-	142.3
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	12.1

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

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	221	555	458	25	8	116
Future Vol, veh/h	221	555	458	25	8	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	221	555	458	25	8	116

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	483	0	-	0	1468	471
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	997	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1090	-	-	-	142	597
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	360	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1090	-	-	-	100	597
Mov Cap-2 Maneuver	-	-	-	-	100	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	255	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1090	-	-	-	452
HCM Lane V/C Ratio	0.203	-	-	-	0.274
HCM Control Delay (s)	9.1	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	1.1

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	295	264	5	7	319	25	10	16	2	14	6	153
Future Vol, veh/h	295	264	5	7	319	25	10	16	2	14	6	153
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	6	33	0	11	18	0	10	67	33	25	11
Mvmt Flow	295	264	5	7	319	25	10	16	2	14	6	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	344	0	0	269	0	0	1283	1215	267	1212	1205	333
Stage 1	-	-	-	-	-	-	857	857	-	346	346	-
Stage 2	-	-	-	-	-	-	426	358	-	866	859	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.6	6.87	7.43	6.75	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.09	3.903	3.797	4.225	3.399
Pot Cap-1 Maneuver	1215	-	-	1306	-	-	143	175	638	138	166	689
Stage 1	-	-	-	-	-	-	355	363	-	610	597	-
Stage 2	-	-	-	-	-	-	610	614	-	308	343	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1214	-	-	1306	-	-	87	132	638	101	125	688
Mov Cap-2 Maneuver	-	-	-	-	-	-	87	132	-	101	125	-
Stage 1	-	-	-	-	-	-	269	275	-	462	594	-
Stage 2	-	-	-	-	-	-	467	611	-	219	260	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.7	0.2	45.2	19.3
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	117	1214	-	-	1306	-	-	423
HCM Lane V/C Ratio	0.239	0.243	-	-	0.005	-	-	0.409
HCM Control Delay (s)	45.2	8.9	-	-	7.8	-	-	19.3
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.9	1	-	-	0	-	-	2

2021 Build Out with High School Only - AFTN

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))			Case: None				Case: None				Case: None				Case: None	
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		256	481	257		85	560	177		216	260	88		168	316	202
% HV		3	6	8		2	6	12		8	9	11		9	6	7
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	0				1				1				0			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	737	265	N/A		646	188	N/A		215	351	N/A		484	202	N/A	
Entry lane capacity (veh/h)	710	710	N/A		625	694	N/A		479	479	N/A		507	507	N/A	
x (v/c ratio)	1.04	0.37	N/A		1.03	0.27	N/A		0.45	0.73	N/A		0.95	0.40	N/A	
Lane control delay (s/veh)	68.3	9.9	N/A		70.7	8.5	N/A		15.7	29.1	N/A		57.7	13.7	N/A	
Lane LOS	F	A	N/A		F	A	N/A		C	D	N/A		F	B	N/A	
Approach control delay (s/veh)	52.9				56.6				24.0				44.7			
Approach LOS	F				F				C				E			
Intersection control delay (s/veh)	46.8															
Intersection LOS	E															
95th percentile queue (veh)	18.4	1.7	N/A		16.9	1.1	N/A		2.3	6.0	N/A		12.1	1.9	N/A	
	overall v/c	0.80														

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	0	7	20	0	145	2	298	26	197	310	24
Future Vol, veh/h	11	0	7	20	0	145	2	298	26	197	310	24
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	7	0	9	8	9	5	5
Mvmt Flow	11	0	7	20	0	145	2	298	26	197	310	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1105	1045	324	1036	1044	311	335	0	0	324	0	0
Stage 1	717	717	-	315	315	-	-	-	-	-	-	-
Stage 2	388	328	-	721	729	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.27	4.1	-	-	4.19	-	-
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	3.453	3.5	4	3.363	2.2	-	-	2.281	-	-
Pot Cap-1 Maneuver	190	231	684	212	231	718	1236	-	-	1197	-	-
Stage 1	424	437	-	700	659	-	-	-	-	-	-	-
Stage 2	640	651	-	422	431	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	128	184	683	177	184	718	1235	-	-	1197	-	-
Mov Cap-2 Maneuver	128	184	-	177	184	-	-	-	-	-	-	-
Stage 1	423	348	-	699	658	-	-	-	-	-	-	-
Stage 2	510	650	-	333	343	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.3	15	0	3.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1235	-	-	187	524	1197	-	-
HCM Lane V/C Ratio	0.002	-	-	0.096	0.315	0.165	-	-
HCM Control Delay (s)	7.9	0	-	26.3	15	8.6	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1.3	0.6	-	-

Intersection	
Int Delay, s/veh	29.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	189	181	185	194	214	256
Future Vol, veh/h	189	181	185	194	214	256
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	8	7	9	5	3
Mvmt Flow	189	181	185	194	214	256

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	912	344	472	0	-	0
Stage 1	344	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Critical Hdwy	6.46	6.28	4.17	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	299	685	1064	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	684	1064	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	461	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	91.4	4.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1064	-	358	-	-
HCM Lane V/C Ratio	0.174	-	1.034	-	-
HCM Control Delay (s)	9.1	-	91.4	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.6	-	12.6	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	0	5	222	295	6
Future Vol, veh/h	47	0	5	222	295	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	0	5	222	295	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	530	298	301	0	-	0
Stage 1	298	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	513	746	1272	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	811	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	511	746	1272	-	-	-
Mov Cap-2 Maneuver	511	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1272	-	511	-	-
HCM Lane V/C Ratio	0.004	-	0.092	-	-
HCM Control Delay (s)	7.8	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	6	227	278	17
Future Vol, veh/h	0	12	6	227	278	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	12	6	227	278	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	287	295	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	757	1278	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	757	1278	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1278	-	757	-	-
HCM Lane V/C Ratio	0.005	-	0.016	-	-
HCM Control Delay (s)	7.8	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	343	505	71	44	44
Future Vol, veh/h	42	343	505	71	44	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	9	9	8	4
Mvmt Flow	42	343	505	71	44	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	576	0	-	0	968	541
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	427	-
Critical Hdwy	4.15	-	-	-	6.48	6.24
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.245	-	-	-	3.572	3.336
Pot Cap-1 Maneuver	983	-	-	-	275	537
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	645	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	983	-	-	-	260	537
Mov Cap-2 Maneuver	-	-	-	-	260	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	611	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	983	-	-	-	350
HCM Lane V/C Ratio	0.043	-	-	-	0.251
HCM Control Delay (s)	8.8	0	-	-	18.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Intersection	
Int Delay, s/veh	16.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	352	560	264	174	65
Future Vol, veh/h	42	352	560	264	174	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	11	14	8	9	10	2
Mvmt Flow	42	352	560	264	174	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	824	0	-	0	1128	692
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	4.21	-	-	-	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.299	-	-	-	3.59	3.318
Pot Cap-1 Maneuver	768	-	-	-	218	444
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	635	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	768	-	-	-	206	444
Mov Cap-2 Maneuver	-	-	-	-	206	-
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	99.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	768	-	-	-	241
HCM Lane V/C Ratio	0.055	-	-	-	0.992
HCM Control Delay (s)	10	-	-	-	99.7
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	9.3

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	72	453	661	8	11	163
Future Vol, veh/h	72	453	661	8	11	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	72	453	661	8	11	163

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	669	0	-	0	1262	665
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	597	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	931	-	-	-	189	464
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	931	-	-	-	170	464
Mov Cap-2 Maneuver	-	-	-	-	170	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	19.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	931	-	-	-	418
HCM Lane V/C Ratio	0.077	-	-	-	0.416
HCM Control Delay (s)	9.2	0	-	-	19.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	2

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	200	257	8	5	409	20	2	14	3	24	8	258
Future Vol, veh/h	200	257	8	5	409	20	2	14	3	24	8	258
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	7	14	0	75	11	8	100	8	0	0	0	4
Mvmt Flow	200	257	8	5	409	20	2	14	3	24	8	258

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	429	0	0	265	0	0	1223	1100	261	1099	1094	419
Stage 1	-	-	-	-	-	-	661	661	-	429	429	-
Stage 2	-	-	-	-	-	-	562	439	-	670	665	-
Critical Hdwy	4.17	-	-	4.85	-	-	8.1	6.58	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Follow-up Hdwy	2.263	-	-	2.875	-	-	4.4	4.072	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	1104	-	-	972	-	-	101	207	783	192	216	630
Stage 1	-	-	-	-	-	-	324	451	-	608	587	-
Stage 2	-	-	-	-	-	-	373	568	-	450	461	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1104	-	-	972	-	-	49	169	783	154	176	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	49	169	-	154	176	-
Stage 1	-	-	-	-	-	-	265	369	-	498	584	-
Stage 2	-	-	-	-	-	-	216	565	-	353	377	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.9	0.1	32.7	23.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	149	1104	-	-	972	-	-	475
HCM Lane V/C Ratio	0.128	0.181	-	-	0.005	-	-	0.611
HCM Control Delay (s)	32.7	9	-	-	8.7	-	-	23.7
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.7	-	-	0	-	-	4

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Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		265	520	315		84	605	154		176	268	75		178	429	255
% HV		4	3	3		3	2	6		2	4	2		3	3	2
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	786	314	N/A		689	160	N/A		174	345	N/A		607	252	N/A	
Entry lane capacity (veh/h)	646	646	N/A		673	744	N/A		484	484	N/A		544	544	N/A	
x (v/c ratio)	1.22	0.49	N/A		1.02	0.21	N/A		0.36	0.71	N/A		1.12	0.46	N/A	
Lane control delay (s/veh)	132.6	13.1	N/A		65.9	7.2	N/A		13.4	27.3	N/A		101.0	14.6	N/A	
Lane LOS	F	B	N/A		F	A	N/A		B	D	N/A		F	B	N/A	
Approach control delay (s/veh)	98.5				54.9				22.6				75.6			
Approach LOS	F				F				C				F			
Intersection control delay (s/veh)	69.6															
Intersection LOS	F															
95th percentile queue (veh)	28.0	2.7	N/A		17.2	0.8	N/A		1.6	5.6	N/A		19.5	2.4	N/A	
	overall v/c	0.89														

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	1	1	16	1	138	3	234	19	207	353	16
Future Vol, veh/h	8	1	1	16	1	138	3	234	19	207	353	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	100	0	0	100	2	0	5	0	4	2	0
Mvmt Flow	8	1	1	16	1	138	3	234	19	207	353	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1094	1035	361	1027	1034	245	369	0	0	254	0	0
Stage 1	775	775	-	251	251	-	-	-	-	-	-	-
Stage 2	319	260	-	776	783	-	-	-	-	-	-	-
Critical Hdwy	7.1	7.5	6.2	7.1	7.5	6.22	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	6.5	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6.5	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.9	3.3	3.5	4.9	3.318	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	193	159	688	215	159	794	1201	-	-	1300	-	-
Stage 1	394	293	-	758	551	-	-	-	-	-	-	-
Stage 2	697	546	-	393	291	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	134	127	688	180	127	793	1201	-	-	1300	-	-
Mov Cap-2 Maneuver	134	127	-	180	127	-	-	-	-	-	-	-
Stage 1	393	234	-	755	549	-	-	-	-	-	-	-
Stage 2	573	544	-	312	233	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.7	13.6	0.1	3
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1201	-	-	145	572	1300	-	-
HCM Lane V/C Ratio	0.002	-	-	0.069	0.271	0.159	-	-
HCM Control Delay (s)	8	0	-	31.7	13.6	8.3	0	-
HCM Lane LOS	A	A	-	D	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.1	0.6	-	-

Intersection	
Int Delay, s/veh	11.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	150	156	168	147	229	261
Future Vol, veh/h	150	156	168	147	229	261
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	4	2	6	4	1
Mvmt Flow	150	156	168	147	229	261

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	843	360	490	0	-	0
Stage 1	360	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	333	680	1073	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	281	680	1073	-	-	-
Mov Cap-2 Maneuver	281	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	37.6	4.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1073	-	401	-	-
HCM Lane V/C Ratio	0.157	-	0.763	-	-
HCM Control Delay (s)	9	-	37.6	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.6	-	6.3	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	0	3	237	289	4
Future Vol, veh/h	17	0	3	237	289	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	0	3	237	289	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	534	291	293	0	-	0
Stage 1	291	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	510	753	1280	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	508	753	1280	-	-	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	800	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1280	-	508	-	-
HCM Lane V/C Ratio	0.002	-	0.033	-	-
HCM Control Delay (s)	7.8	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	4	241	278	11
Future Vol, veh/h	0	4	4	241	278	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	4	4	241	278	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	284	289	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	760	1284	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	760	1284	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1284	-	760	-	-
HCM Lane V/C Ratio	0.003	-	0.005	-	-
HCM Control Delay (s)	7.8	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	324	607	48	39	53
Future Vol, veh/h	47	324	607	48	39	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	8	6	0	0	3
Mvmt Flow	47	324	607	48	39	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	655	0	-	0	1049	631
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	418	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	942	-	-	-	254	479
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	942	-	-	-	239	479
Mov Cap-2 Maneuver	-	-	-	-	239	-
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	628	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	19.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	942	-	-	-	336
HCM Lane V/C Ratio	0.05	-	-	-	0.274
HCM Control Delay (s)	9	0	-	-	19.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1

Intersection	
Int Delay, s/veh	12.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	338	597	199	158	72
Future Vol, veh/h	42	338	597	199	158	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	42	338	597	199	158	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	796	0	-	0	1119	697
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	422	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	796	-	-	-	227	436
Stage 1	-	-	-	-	490	-
Stage 2	-	-	-	-	657	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	796	-	-	-	215	436
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	490	-
Stage 2	-	-	-	-	622	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	75
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	796	-	-	-	256
HCM Lane V/C Ratio	0.053	-	-	-	0.898
HCM Control Delay (s)	9.8	-	-	-	75
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	7.8

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	449	738	5	4	58
Future Vol, veh/h	47	449	738	5	4	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	449	738	5	4	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	743	0	-	0	1284	741
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	873	-	-	-	184	420
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	586	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	873	-	-	-	171	420
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	544	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	873	-	-	-	384
HCM Lane V/C Ratio	0.054	-	-	-	0.161
HCM Control Delay (s)	9.4	0	-	-	16.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	210	233	10	1	483	26	8	8	2	20	9	252
Future Vol, veh/h	210	233	10	1	483	26	8	8	2	20	9	252
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	9	0	0	4	0	0	14	0	0	0	2
Mvmt Flow	210	233	10	1	483	26	8	8	2	20	9	252

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	509	0	0	243	0	0	1287	1169	238	1161	1161	496
Stage 1	-	-	-	-	-	-	658	658	-	498	498	-
Stage 2	-	-	-	-	-	-	629	511	-	663	663	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.1	6.64	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.5	4.126	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	1041	-	-	1335	-	-	142	183	806	174	197	574
Stage 1	-	-	-	-	-	-	457	443	-	558	548	-
Stage 2	-	-	-	-	-	-	474	518	-	454	462	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1041	-	-	1335	-	-	64	146	806	141	157	574
Mov Cap-2 Maneuver	-	-	-	-	-	-	64	146	-	141	157	-
Stage 1	-	-	-	-	-	-	365	354	-	445	548	-
Stage 2	-	-	-	-	-	-	261	518	-	353	369	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	0	49.3	26.5
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	99	1041	-	-	1335	-	-	440
HCM Lane V/C Ratio	0.182	0.202	-	-	0.001	-	-	0.639
HCM Control Delay (s)	49.3	9.3	-	-	7.7	-	-	26.5
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.6	0.8	-	-	0	-	-	4.4

2027 Background with
High School Operations

2027 Background with High School Only - AM

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: Non			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		290	383	154		46	561	357		377	521	104		73	190	171
% HV		3	9	16		20	8	6		9	3	2		14	16	6
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	673	168	N/A		607	347	N/A		390	609	N/A		262	157	N/A	
Entry lane capacity (veh/h)	900	900	N/A		394	452	N/A		579	579	N/A		400	400	N/A	
x (v/c ratio)	0.75	0.19	N/A		1.54	0.77	N/A		0.67	1.05	N/A		0.66	0.39	N/A	
Lane control delay (s/veh)	18.5	5.9	N/A		281.2	33.7	N/A		21.4	78.5	N/A		27.9	16.6	N/A	
Lane LOS	C	A	N/A		F	D	N/A		C	F	N/A		D	C	N/A	
Approach control delay (s/veh)	16.0				191.2				56.3				23.7			
Approach LOS	C				F				F				C			
Intersection control delay (s/veh)	81.5															
Intersection LOS	F															
95th percentile queue (veh)	7.1	0.7	N/A		33.4	6.6	N/A		5.1	17.1	N/A		4.5	1.8	N/A	
	overall v/c	0.89														

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	0	4	39	1	267	1	460	12	101	252	5
Future Vol, veh/h	17	0	4	39	1	267	1	460	12	101	252	5
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	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	0	0	0	0	9	0	5	0	23	10	0
Mvmt Flow	17	0	4	39	1	267	1	460	12	101	252	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1059	-	255	927	927	466	257	0	0	472	0	0
Stage 1	457	-	-	468	468	-	-	-	-	-	-	-
Stage 2	602	-	-	459	459	-	-	-	-	-	-	-
Critical Hdwy	7.21	-	6.2	7.1	6.5	6.29	4.1	-	-	4.33	-	-
Critical Hdwy Stg 1	6.21	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	-	3.3	3.5	4	3.381	2.2	-	-	2.407	-	-
Pot Cap-1 Maneuver	194	0	789	251	270	582	1320	-	-	989	-	-
Stage 1	566	0	-	579	565	-	-	-	-	-	-	-
Stage 2	471	0	-	586	570	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	95	-	789	227	238	582	1320	-	-	989	-	-
Mov Cap-2 Maneuver	95	-	-	227	238	-	-	-	-	-	-	-
Stage 1	565	-	-	578	564	-	-	-	-	-	-	-
Stage 2	254	-	-	514	502	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	43.6	24.5	0	2.6
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1320	-	-	114	484	989	-	-
HCM Lane V/C Ratio	0.001	-	-	0.184	0.634	0.102	-	-
HCM Control Delay (s)	7.7	0	-	43.6	24.5	9.1	0	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	4.3	0.3	-	-

Intersection	
Int Delay, s/veh	36.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	223	125	222	246	173	155
Future Vol, veh/h	223	125	222	246	173	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	9	5	10	10	5
Mvmt Flow	223	125	222	246	173	155

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	941	251	328	0	-	0
Stage 1	251	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Critical Hdwy	6.42	6.29	4.15	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.381	2.245	-	-	-
Pot Cap-1 Maneuver	292	771	1215	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	239	771	1215	-	-	-
Mov Cap-2 Maneuver	239	-	-	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	407	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	115.2	4.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1215	-	318	-	-
HCM Lane V/C Ratio	0.183	-	1.094	-	-
HCM Control Delay (s)	8.6	-	115.2	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.7	-	13.5	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	0	16	356	248	18
Future Vol, veh/h	33	0	16	356	248	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	33	0	16	356	248	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	645	257	266	0	-	0
Stage 1	257	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	440	787	1310	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	433	787	1310	-	-	-
Mov Cap-2 Maneuver	433	-	-	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	680	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1310	-	433	-	-
HCM Lane V/C Ratio	0.012	-	0.076	-	-
HCM Control Delay (s)	7.8	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	19	372	195	53
Future Vol, veh/h	0	8	19	372	195	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	8	19	372	195	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	222	248	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	823	1330	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	823	1330	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1330	-	823	-	-
HCM Lane V/C Ratio	0.014	-	0.01	-	-
HCM Control Delay (s)	7.7	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	587	431	52	75	42
Future Vol, veh/h	37	587	431	52	75	42
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	3	13	0	13	0
Mvmt Flow	37	587	431	52	75	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	487	0	-	0	1122	461
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	661	-
Critical Hdwy	4.16	-	-	-	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.3
Pot Cap-1 Maneuver	1056	-	-	-	217	605
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	493	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1056	-	-	-	204	603
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	466	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	28.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1056	-	-	-	268
HCM Lane V/C Ratio	0.035	-	-	-	0.437
HCM Control Delay (s)	8.5	0	-	-	28.4
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	2.1

Intersection	
Int Delay, s/veh	57.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	632	421	240	244	48
Future Vol, veh/h	50	632	421	240	244	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	7	13	7	12	16
Mvmt Flow	50	632	421	240	244	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	661	0	-	0	1273	541
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	732	-
Critical Hdwy	4.23	-	-	-	6.52	6.36
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	5.52	-
Follow-up Hdwy	2.317	-	-	-	3.608	3.444
Pot Cap-1 Maneuver	877	-	-	-	~ 176	515
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	458	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	877	-	-	-	~ 166	515
Mov Cap-2 Maneuver	-	-	-	-	~ 166	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	432	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	$ 322.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	877	-	-	-	187
HCM Lane V/C Ratio	0.057	-	-	-	1.561
HCM Control Delay (s)	9.4	-	-	-	$ 322.3
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	18.9

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

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	221	655	546	25	8	116
Future Vol, veh/h	221	655	546	25	8	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	221	655	546	25	8	116

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	571	0	-	0	1656	559
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	1097	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1012	-	-	-	109	532
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	323	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1012	-	-	-	72	532
Mov Cap-2 Maneuver	-	-	-	-	72	-
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	212	-

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	19.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1012	-	-	-	377
HCM Lane V/C Ratio	0.218	-	-	-	0.329
HCM Control Delay (s)	9.5	0	-	-	19.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	1.4

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	346	312	5	8	376	26	12	19	3	14	7	182
Future Vol, veh/h	346	312	5	8	376	26	12	19	3	14	7	182
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	6	33	0	11	18	0	10	67	33	25	11
Mvmt Flow	346	312	5	8	376	26	12	19	3	14	7	182

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	402	0	0	317	0	0	1508	1425	315	1423	1414	390
Stage 1	-	-	-	-	-	-	1007	1007	-	405	405	-
Stage 2	-	-	-	-	-	-	501	418	-	1018	1009	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.6	6.87	7.43	6.75	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.09	3.903	3.797	4.225	3.399
Pot Cap-1 Maneuver	1157	-	-	1255	-	-	100	130	597	97	123	639
Stage 1	-	-	-	-	-	-	293	309	-	565	561	-
Stage 2	-	-	-	-	-	-	556	577	-	251	290	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1156	-	-	1255	-	-	51	91	597	63	86	638
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	91	-	63	86	-
Stage 1	-	-	-	-	-	-	205	217	-	396	557	-
Stage 2	-	-	-	-	-	-	390	573	-	160	203	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.9	0.2	86.1	29.3
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	76	1156	-	-	1255	-	-	345
HCM Lane V/C Ratio	0.447	0.299	-	-	0.006	-	-	0.588
HCM Control Delay (s)	86.1	9.4	-	-	7.9	-	-	29.3
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.8	1.3	-	-	0	-	-	3.6

2027 Background with High School Only - AFTN

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: Non			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		305	573	305		99	668	211		256	307	102		200	375	240
% HV		3	6	8		2	6	12		8	9	11		9	6	7
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	0				1				1				0			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	877	313	N/A		767	224	N/A		254	413	N/A		575	240	N/A	
Entry lane capacity (veh/h)	633	633	N/A		546	613	N/A		398	398	N/A		426	426	N/A	
x (v/c ratio)	1.39	0.50	N/A		1.40	0.36	N/A		0.64	1.04	N/A		1.35	0.56	N/A	
Lane control delay (s/veh)	203.3	13.6	N/A		214.2	11.0	N/A		26.9	87.9	N/A		199.0	21.6	N/A	
Lane LOS	F	B	N/A		F	B	N/A		D	F	N/A		F	C	N/A	
Approach control delay (s/veh)	153.4				168.3				64.6				146.8			
Approach LOS	F				F				F				F			
Intersection control delay (s/veh)	139.8															
Intersection LOS	F															
95th percentile queue (veh)	39.0	2.8	N/A		35.7	1.7	N/A		4.3	13.4	N/A		26.8	3.4	N/A	
	overall v/c	1.10														

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	8	23	0	173	3	348	29	234	365	28
Future Vol, veh/h	13	0	8	23	0	173	3	348	29	234	365	28
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	7	0	9	8	9	5	5
Mvmt Flow	13	0	8	23	0	173	3	348	29	234	365	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1303	1231	381	1221	1231	363	394	0	0	377	0	0
Stage 1	848	848	-	369	369	-	-	-	-	-	-	-
Stage 2	455	383	-	852	862	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.27	4.1	-	-	4.19	-	-
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	3.453	3.5	4	3.363	2.2	-	-	2.281	-	-
Pot Cap-1 Maneuver	139	179	634	158	179	671	1176	-	-	1144	-	-
Stage 1	359	380	-	655	624	-	-	-	-	-	-	-
Stage 2	589	616	-	357	375	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	82	131	633	124	131	671	1175	-	-	1144	-	-
Mov Cap-2 Maneuver	82	131	-	124	131	-	-	-	-	-	-	-
Stage 1	358	280	-	653	622	-	-	-	-	-	-	-
Stage 2	436	614	-	260	276	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	40.2	19.5	0.1	3.3
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1175	-	-	123	442	1144	-	-
HCM Lane V/C Ratio	0.003	-	-	0.171	0.443	0.205	-	-
HCM Control Delay (s)	8.1	0	-	40.2	19.5	9	0	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	2.2	0.8	-	-

Intersection	
Int Delay, s/veh	84.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	224	212	214	219	247	304
Future Vol, veh/h	224	212	214	219	247	304
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	8	7	9	5	3
Mvmt Flow	224	212	214	219	247	304

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1052	401	553	0	-	0
Stage 1	401	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Critical Hdwy	6.46	6.28	4.17	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	247	636	992	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 193	635	992	-	-	-
Mov Cap-2 Maneuver	~ 193	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	401	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	271.8	4.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	992	-	292	-	-
HCM Lane V/C Ratio	0.216	-	1.493	-	-
HCM Control Delay (s)	9.6	-	271.8	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.8	-	24.6	-	-

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	0	5	263	347	6
Future Vol, veh/h	47	0	5	263	347	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	0	5	263	347	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	623	350	353	0	-	0
Stage 1	350	-	-	-	-	-
Stage 2	273	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	453	698	1217	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	451	698	1217	-	-	-
Mov Cap-2 Maneuver	451	-	-	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1217	-	451	-	-
HCM Lane V/C Ratio	0.004	-	0.104	-	-
HCM Control Delay (s)	8	0	13.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	12	6	269	330	17
Future Vol, veh/h	0	12	6	269	330	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	12	6	269	330	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	339	347	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	708	1223	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	708	1223	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1223	-	708	-	-
HCM Lane V/C Ratio	0.005	-	0.017	-	-
HCM Control Delay (s)	8	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	404	593	79	50	50
Future Vol, veh/h	47	404	593	79	50	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	9	9	8	4
Mvmt Flow	47	404	593	79	50	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	672	0	-	0	1131	633
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	498	-
Critical Hdwy	4.15	-	-	-	6.48	6.24
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.245	-	-	-	3.572	3.336
Pot Cap-1 Maneuver	905	-	-	-	219	476
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	204	476
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	558	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	24.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	286
HCM Lane V/C Ratio	0.052	-	-	-	0.35
HCM Control Delay (s)	9.2	0	-	-	24.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.5

Intersection	
Int Delay, s/veh	47.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	411	652	298	199	77
Future Vol, veh/h	50	411	652	298	199	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	11	14	8	9	10	2
Mvmt Flow	50	411	652	298	199	77

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	950	0	-	0	1312	801
Stage 1	-	-	-	-	801	-
Stage 2	-	-	-	-	511	-
Critical Hdwy	4.21	-	-	-	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.299	-	-	-	3.59	3.318
Pot Cap-1 Maneuver	688	-	-	-	~ 168	384
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	586	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	688	-	-	-	~ 156	384
Mov Cap-2 Maneuver	-	-	-	-	~ 156	-
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	287.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	688	-	-	-	187
HCM Lane V/C Ratio	0.073	-	-	-	1.476
HCM Control Delay (s)	10.6	-	-	-	287.1
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	17.2

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

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	72	538	787	8	11	163
Future Vol, veh/h	72	538	787	8	11	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	72	538	787	8	11	163

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	795	0	-	0	1473	791
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	682	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	835	-	-	-	141	393
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	835	-	-	-	124	393
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	444	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	25.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	835	-	-	-	346
HCM Lane V/C Ratio	0.086	-	-	-	0.503
HCM Control Delay (s)	9.7	0	-	-	25.5
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.3	-	-	-	2.7

Intersection	
Int Delay, s/veh	14.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	236	303	9	5	485	23	3	16	4	26	9	307
Future Vol, veh/h	236	303	9	5	485	23	3	16	4	26	9	307
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	7	14	0	75	11	8	100	8	0	0	0	4
Mvmt Flow	236	303	9	5	485	23	3	16	4	26	9	307

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	508	0	0	312	0	0	1445	1298	308	1297	1291	497
Stage 1	-	-	-	-	-	-	780	780	-	507	507	-
Stage 2	-	-	-	-	-	-	665	518	-	790	784	-
Critical Hdwy	4.17	-	-	4.85	-	-	8.1	6.58	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Follow-up Hdwy	2.263	-	-	2.875	-	-	4.4	4.072	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	1032	-	-	929	-	-	68	157	737	140	165	569
Stage 1	-	-	-	-	-	-	273	397	-	552	543	-
Stage 2	-	-	-	-	-	-	322	523	-	386	407	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1032	-	-	929	-	-	24	120	737	103	127	569
Mov Cap-2 Maneuver	-	-	-	-	-	-	24	120	-	103	127	-
Stage 1	-	-	-	-	-	-	211	306	-	426	540	-
Stage 2	-	-	-	-	-	-	145	520	-	281	314	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.1	0.1	60.6	50.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	87	1032	-	-	929	-	-	396
HCM Lane V/C Ratio	0.264	0.229	-	-	0.005	-	-	0.864
HCM Control Delay (s)	60.6	9.5	-	-	8.9	-	-	50.3
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1	0.9	-	-	0	-	-	8.4

2027 Background with High School Only - PM

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		315	620	376		98	721	184		209	218	88		212	511	303
% HV		4	3	3		3	2	6		2	4	2		3	3	2
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	936	375	N/A		819	191	N/A		207	308	N/A		722	300	N/A	
Entry lane capacity (veh/h)	564	564	N/A		652	724	N/A		400	400	N/A		459	459	N/A	
x (v/c ratio)	1.66	0.66	N/A		1.26	0.26	N/A		0.52	0.77	N/A		1.57	0.65	N/A	
Lane control delay (s/veh)	323.2	21.4	N/A		148.1	8.1	N/A		20.8	37.2	N/A		290.6	24.7	N/A	
Lane LOS	F	C	N/A		F	A	N/A		C	E	N/A		F	C	N/A	
Approach control delay (s/veh)	236.9				121.6				30.6				212.6			
Approach LOS	F				F				D				F			
Intersection control delay (s/veh)	172.8															
Intersection LOS	F															
95th percentile queue (veh)	53.1	4.9	N/A		30.8	1.1	N/A		2.9	6.4	N/A		39.7	4.6	N/A	
	overall v/c	1.18														

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	1	1	18	1	165	4	275	22	246	417	19
Future Vol, veh/h	9	1	1	18	1	165	4	275	22	246	417	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	100	0	0	100	2	0	5	0	4	2	0
Mvmt Flow	9	1	1	18	1	165	4	275	22	246	417	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1296	1225	427	1215	1223	287	436	0	0	298	0	0
Stage 1	919	919	-	295	295	-	-	-	-	-	-	-
Stage 2	377	306	-	920	928	-	-	-	-	-	-	-
Critical Hdwy	7.1	7.5	6.2	7.1	7.5	6.22	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	6.5	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6.5	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.9	3.3	3.5	4.9	3.318	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	140	118	632	160	118	752	1134	-	-	1252	-	-
Stage 1	328	245	-	718	524	-	-	-	-	-	-	-
Stage 2	649	517	-	327	242	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	86	87	632	126	87	751	1134	-	-	1252	-	-
Mov Cap-2 Maneuver	86	87	-	126	87	-	-	-	-	-	-	-
Stage 1	327	181	-	714	521	-	-	-	-	-	-	-
Stage 2	503	514	-	240	179	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.8	16.6	0.1	3.1
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1134	-	-	93	492	1252	-	-
HCM Lane V/C Ratio	0.004	-	-	0.118	0.374	0.196	-	-
HCM Control Delay (s)	8.2	0	-	48.8	16.6	8.6	0	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.7	0.7	-	-

Intersection	
Int Delay, s/veh	32.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	176	184	198	170	265	309
Future Vol, veh/h	176	184	198	170	265	309
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	4	2	6	4	1
Mvmt Flow	176	184	198	170	265	309

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	986	420	574	0	-	0
Stage 1	420	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	274	629	999	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	220	629	999	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	454	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	112.3	5.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	999	-	330	-	-
HCM Lane V/C Ratio	0.198	-	1.091	-	-
HCM Control Delay (s)	9.5	-	112.3	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.7	-	13.6	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	0	3	281	340	4
Future Vol, veh/h	17	0	3	281	340	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	0	3	281	340	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	629	342	344	0	-	0
Stage 1	342	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	449	705	1226	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	448	705	1226	-	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1226	-	448	-	-
HCM Lane V/C Ratio	0.002	-	0.038	-	-
HCM Control Delay (s)	7.9	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	4	284	329	11
Future Vol, veh/h	0	4	4	284	329	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	4	4	284	329	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	335	340	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	712	1230	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	712	1230	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1230	-	712	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	7.9	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	383	720	54	45	60
Future Vol, veh/h	51	383	720	54	45	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	8	6	0	0	3
Mvmt Flow	51	383	720	54	45	60

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	774	0	-	0	1232	747
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	485	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	851	-	-	-	197	411
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	851	-	-	-	182	411
Mov Cap-2 Maneuver	-	-	-	-	182	-
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	576	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	27
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	851	-	-	-	267
HCM Lane V/C Ratio	0.06	-	-	-	0.393
HCM Control Delay (s)	9.5	0	-	-	27
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	1.8

Intersection	
Int Delay, s/veh	39.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	398	706	230	182	85
Future Vol, veh/h	50	398	706	230	182	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	50	398	706	230	182	85

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	936	0	-	0	1319	821
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	498	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	704	-	-	-	~ 172	370
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	704	-	-	-	~ 160	370
Mov Cap-2 Maneuver	-	-	-	-	~ 160	-
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	564	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	241.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	704	-	-	-	195
HCM Lane V/C Ratio	0.071	-	-	-	1.369
HCM Control Delay (s)	10.5	-	-	-	241.7
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	15.5

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

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	533	878	5	4	58
Future Vol, veh/h	47	533	878	5	4	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	533	878	5	4	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	883	0	-	0	1508	881
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	627	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	775	-	-	-	134	349
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	536	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	775	-	-	-	122	349
Mov Cap-2 Maneuver	-	-	-	-	122	-
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	775	-	-	-	312
HCM Lane V/C Ratio	0.061	-	-	-	0.199
HCM Control Delay (s)	9.9	0	-	-	19.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.7

Intersection	
Int Delay, s/veh	18.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	249	276	12	1	574	30	9	9	3	22	11	300
Future Vol, veh/h	249	276	12	1	574	30	9	9	3	22	11	300
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	9	0	0	4	0	0	14	0	0	0	2
Mvmt Flow	249	276	12	1	574	30	9	9	3	22	11	300

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	604	0	0	288	0	0	1527	1386	282	1377	1377	589
Stage 1	-	-	-	-	-	-	780	780	-	591	591	-
Stage 2	-	-	-	-	-	-	747	606	-	786	786	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.1	6.64	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.5	4.126	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	959	-	-	1286	-	-	97	135	762	123	146	508
Stage 1	-	-	-	-	-	-	391	389	-	497	498	-
Stage 2	-	-	-	-	-	-	408	468	-	388	406	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	959	-	-	1286	-	-	29	100	762	91	108	508
Mov Cap-2 Maneuver	-	-	-	-	-	-	29	100	-	91	108	-
Stage 1	-	-	-	-	-	-	289	288	-	368	498	-
Stage 2	-	-	-	-	-	-	163	468	-	277	301	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.7	0	114.9	67.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	52	959	-	-	1286	-	-	356
HCM Lane V/C Ratio	0.404	0.26	-	-	0.001	-	-	0.935
HCM Control Delay (s)	114.9	10.1	-	-	7.8	-	-	67.4
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.5	1	-	-	0	-	-	9.8

2027 Total Build Out
Operations

2027 Build Out - AM

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		290	383	164		55	561	357		386	528	112		73	199	171
% HV		3	9	16		20	8	6		9	3	2		14	16	6
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	673	179	N/A		616	347	N/A		399	623	N/A		272	157	N/A	
Entry lane capacity (veh/h)	880	880	N/A		387	445	N/A		579	579	N/A		392	392	N/A	
x (v/c ratio)	0.76	0.20	N/A		1.59	0.78	N/A		0.69	1.08	N/A		0.69	0.40	N/A	
Lane control delay (s/veh)	19.8	6.1	N/A		303.9	35.2	N/A		22.3	86.1	N/A		30.9	17.1	N/A	
Lane LOS	C	A	N/A		F	E	N/A		C	F	N/A		D	C	N/A	
Approach control delay (s/veh)	17.0				207.2				61.2				25.9			
Approach LOS	C				F				F				D			
Intersection control delay (s/veh)	88.1															
Intersection LOS	F															
95th percentile queue (veh)	7.5	0.8	N/A		35.2	6.8	N/A		5.4	18.3	N/A		5.1	1.9	N/A	
	overall v/c	0.92														

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	0	4	48	1	267	1	484	20	101	280	5
Future Vol, veh/h	17	0	4	48	1	267	1	484	20	101	280	5
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	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	0	0	0	0	9	0	5	0	23	10	0
Mvmt Flow	17	0	4	48	1	267	1	484	20	101	280	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1115	-	283	983	983	494	285	0	0	504	0	0
Stage 1	485	-	-	496	496	-	-	-	-	-	-	-
Stage 2	630	-	-	487	487	-	-	-	-	-	-	-
Critical Hdwy	7.21	-	6.2	7.1	6.5	6.29	4.1	-	-	4.33	-	-
Critical Hdwy Stg 1	6.21	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	-	3.3	3.5	4	3.381	2.2	-	-	2.407	-	-
Pot Cap-1 Maneuver	178	0	761	230	251	561	1289	-	-	961	-	-
Stage 1	547	0	-	559	549	-	-	-	-	-	-	-
Stage 2	455	0	-	566	554	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	84	-	761	207	219	561	1289	-	-	961	-	-
Mov Cap-2 Maneuver	84	-	-	207	219	-	-	-	-	-	-	-
Stage 1	546	-	-	558	548	-	-	-	-	-	-	-
Stage 2	238	-	-	493	485	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	49.8	30.7	0	2.4
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1289	-	-	101	444	961	-	-
HCM Lane V/C Ratio	0.001	-	-	0.208	0.712	0.105	-	-
HCM Control Delay (s)	7.8	0	-	49.8	30.7	9.2	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	5.5	0.4	-	-

Intersection	
Int Delay, s/veh	61.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	223	149	241	277	211	155
Future Vol, veh/h	223	149	241	277	211	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	9	5	10	10	5
Mvmt Flow	223	149	241	277	211	155

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1048	289	366	0	-	0
Stage 1	289	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Critical Hdwy	6.42	6.29	4.15	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.381	2.245	-	-	-
Pot Cap-1 Maneuver	252	734	1176	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 200	734	1176	-	-	-
Mov Cap-2 Maneuver	~ 200	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	367	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	202.4	4.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1176	-	282	-	-
HCM Lane V/C Ratio	0.205	-	1.319	-	-
HCM Control Delay (s)	8.8	-	202.4	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.8	-	18.7	-	-

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

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	121	148	390	265	37
Future Vol, veh/h	30	121	148	390	265	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	30	121	148	390	265	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	970	284	302	0	-	0
Stage 1	284	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	283	760	1270	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	504	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	241	760	1270	-	-	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	769	-	-	-	-	-
Stage 2	429	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1270	-	532	-	-
HCM Lane V/C Ratio	0.117	-	0.284	-	-
HCM Control Delay (s)	8.2	0	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.2	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	0	16	504	370	18
Future Vol, veh/h	34	0	16	504	370	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	34	0	16	504	370	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	915	379	388	0	-	0
Stage 1	379	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	305	672	1182	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	299	672	1182	-	-	-
Mov Cap-2 Maneuver	299	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1182	-	299	-	-	-
HCM Lane V/C Ratio	0.014	-	0.114	-	-	-
HCM Control Delay (s)	8.1	0	18.6	0	-	-
HCM Lane LOS	A	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	19	520	316	54
Future Vol, veh/h	0	8	19	520	316	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	8	19	520	316	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	343	370	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	704	1200	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	704	1200	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1200	-	704	-	-
HCM Lane V/C Ratio	0.016	-	0.011	-	-
HCM Control Delay (s)	8	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	626	463	71	98	42
Future Vol, veh/h	37	626	463	71	98	42
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	3	13	0	13	0
Mvmt Flow	37	626	463	71	98	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	538	0	-	0	1203	503
Stage 1	-	-	-	-	503	-
Stage 2	-	-	-	-	700	-
Critical Hdwy	4.16	-	-	-	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.3
Pot Cap-1 Maneuver	1010	-	-	-	193	573
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	473	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1010	-	-	-	181	571
Mov Cap-2 Maneuver	-	-	-	-	181	-
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	445	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	43.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1010	-	-	-	228
HCM Lane V/C Ratio	0.037	-	-	-	0.614
HCM Control Delay (s)	8.7	0	-	-	43.1
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	3.6

Intersection	
Int Delay, s/veh	138.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	695	472	298	315	48
Future Vol, veh/h	50	695	472	298	315	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	7	13	7	12	16
Mvmt Flow	50	695	472	298	315	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	770	0	-	0	1416	621
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	795	-
Critical Hdwy	4.23	-	-	-	6.52	6.36
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	5.52	-
Follow-up Hdwy	2.317	-	-	-	3.608	3.444
Pot Cap-1 Maneuver	797	-	-	-	~ 144	463
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	428	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	797	-	-	-	~ 135	463
Mov Cap-2 Maneuver	-	-	-	-	~ 135	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	401	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	$ 714.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	797	-	-	-	149
HCM Lane V/C Ratio	0.063	-	-	-	2.436
HCM Control Delay (s)	9.8	-	-	-	-$ 714.1
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	31.1

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

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	225	785	652	25	8	118
Future Vol, veh/h	225	785	652	25	8	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	225	785	652	25	8	118

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	677	0	-	0	1900	665
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	1235	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	924	-	-	-	77	464
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	277	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	924	-	-	-	44	464
Mov Cap-2 Maneuver	-	-	-	-	44	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	157	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	26.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	924	-	-	-	289
HCM Lane V/C Ratio	0.244	-	-	-	0.436
HCM Control Delay (s)	10.1	0	-	-	26.7
HCM Lane LOS	B	A	-	-	D
HCM 95th %tile Q(veh)	1	-	-	-	2.1

Intersection	
Int Delay, s/veh	75.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	475	312	5	8	376	45	12	19	3	29	7	289
Future Vol, veh/h	475	312	5	8	376	45	12	19	3	29	7	289
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	6	33	0	11	18	0	10	67	33	25	11
Mvmt Flow	475	312	5	8	376	45	12	19	3	29	7	289

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	421	0	0	317	0	0	1829	1702	315	1691	1682	400
Stage 1	-	-	-	-	-	-	1265	1265	-	415	415	-
Stage 2	-	-	-	-	-	-	564	437	-	1276	1267	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.6	6.87	7.43	6.75	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.6	-	6.43	5.75	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.09	3.903	3.797	4.225	3.399
Pot Cap-1 Maneuver	1138	-	-	1255	-	-	60	88	597	62	83	631
Stage 1	-	-	-	-	-	-	210	232	-	558	555	-
Stage 2	-	-	-	-	-	-	514	566	-	177	216	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1137	-	-	1255	-	-	20	51	597	30	48	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	20	51	-	30	48	-
Stage 1	-	-	-	-	-	-	122	135	-	325	551	-
Stage 2	-	-	-	-	-	-	273	562	-	88	126	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.2	0.1	$ 313.6	$ 320.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	35	1137	-	-	1255	-	-	207
HCM Lane V/C Ratio	0.971	0.418	-	-	0.006	-	-	1.57
HCM Control Delay (s)	$ 313.6	10.4	-	-	7.9	-	-	$ 320.2
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.5	2.1	-	-	0	-	-	20.7

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

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: Non			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		305	573	309		103	668	211		261	313	107		200	380	240
% HV		3	6	8		2	6	12		8	9	11		9	6	7
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	0				1				1				0			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	877	318	N/A		771	224	N/A		260	424	N/A		580	240	N/A	
Entry lane capacity (veh/h)	627	627	N/A		540	607	N/A		398	398	N/A		422	422	N/A	
x (v/c ratio)	1.40	0.51	N/A		1.43	0.37	N/A		0.65	1.06	N/A		1.37	0.57	N/A	
Lane control delay (s/veh)	208.9	14.0	N/A		223.7	11.2	N/A		27.8	96.1	N/A		208.8	22.0	N/A	
Lane LOS	F	B	N/A		F	B	N/A		D	F	N/A		F	C	N/A	
Approach control delay (s/veh)	157.0				175.9				70.1				154.1			
Approach LOS	F				F				F				F			
Intersection control delay (s/veh)	145.4															
Intersection LOS	F															
95th percentile queue (veh)	39.6	2.9	N/A		36.7	1.7	N/A		4.5	14.3	N/A		27.6	3.4	N/A	
	overall v/c	1.12														

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	8	27	0	173	3	365	34	234	378	28
Future Vol, veh/h	13	0	8	27	0	173	3	365	34	234	378	28
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	7	0	9	8	9	5	5
Mvmt Flow	13	0	8	27	0	173	3	365	34	234	378	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1336	1266	394	1253	1263	382	407	0	0	399	0	0
Stage 1	861	861	-	388	388	-	-	-	-	-	-	-
Stage 2	475	405	-	865	875	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.27	4.1	-	-	4.19	-	-
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	3.453	3.5	4	3.363	2.2	-	-	2.281	-	-
Pot Cap-1 Maneuver	132	171	623	150	171	654	1163	-	-	1123	-	-
Stage 1	353	375	-	640	612	-	-	-	-	-	-	-
Stage 2	574	602	-	351	370	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	124	622	117	124	654	1162	-	-	1123	-	-
Mov Cap-2 Maneuver	77	124	-	117	124	-	-	-	-	-	-	-
Stage 1	352	273	-	638	610	-	-	-	-	-	-	-
Stage 2	421	600	-	253	270	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	42.8	22.3	0.1	3.3
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	116	404	1123	-	-
HCM Lane V/C Ratio	0.003	-	-	0.181	0.495	0.208	-	-
HCM Control Delay (s)	8.1	0	-	42.8	22.3	9	0	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	2.7	0.8	-	-

Intersection	
Int Delay, s/veh	105.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	224	222	228	240	265	304
Future Vol, veh/h	224	222	228	240	265	304
Conflicting Peds, #/hr	4	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	6	8	7	9	5	3
Mvmt Flow	224	222	228	240	265	304

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1119	419	571	0	-	0
Stage 1	419	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Critical Hdwy	6.46	6.28	4.17	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	225	621	977	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 172	620	977	-	-	-
Mov Cap-2 Maneuver	~ 172	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	371	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 345	4.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	977	-	269	-	-
HCM Lane V/C Ratio	0.233	-	1.658	-	-
HCM Control Delay (s)	9.8	-	$ 345	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.9	-	28.1	-	-

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

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	81	67	310	353	17
Future Vol, veh/h	21	81	67	310	353	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	21	81	67	310	353	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	806	362	370	0	-	0
Stage 1	362	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	354	687	1200	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	330	687	1200	-	-	-
Mov Cap-2 Maneuver	330	-	-	-	-	-
Stage 1	709	-	-	-	-	-
Stage 2	607	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1200	-	562	-	-
HCM Lane V/C Ratio	0.056	-	0.181	-	-
HCM Control Delay (s)	8.2	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	0	5	330	429	6
Future Vol, veh/h	47	0	5	330	429	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	0	5	330	429	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	772	432	435	0	-	0
Stage 1	432	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	371	628	1135	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	369	628	1135	-	-	-
Mov Cap-2 Maneuver	369	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1135	-	369	-	-
HCM Lane V/C Ratio	0.004	-	0.127	-	-
HCM Control Delay (s)	8.2	0	16.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	6	335	411	17
Future Vol, veh/h	0	13	6	335	411	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	13	6	335	411	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	420	428	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	638	1142	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	638	1142	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1142	-	638	-	-
HCM Lane V/C Ratio	0.005	-	0.02	-	-
HCM Control Delay (s)	8.2	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	421	613	92	61	50
Future Vol, veh/h	47	421	613	92	61	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	9	9	8	4
Mvmt Flow	47	421	613	92	61	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	705	0	-	0	1174	659
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	515	-
Critical Hdwy	4.15	-	-	-	6.48	6.24
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.245	-	-	-	3.572	3.336
Pot Cap-1 Maneuver	879	-	-	-	206	460
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	588	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	879	-	-	-	192	460
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	547	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	28.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	879	-	-	-	260
HCM Lane V/C Ratio	0.053	-	-	-	0.427
HCM Control Delay (s)	9.3	0	-	-	28.8
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2

Intersection	
Int Delay, s/veh	79.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	440	686	338	231	77
Future Vol, veh/h	50	440	686	338	231	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	11	14	8	9	10	2
Mvmt Flow	50	440	686	338	231	77

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1024	0	-	0	1395	855
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	540	-
Critical Hdwy	4.21	-	-	-	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.299	-	-	-	3.59	3.318
Pot Cap-1 Maneuver	644	-	-	-	~ 150	358
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	568	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	644	-	-	-	~ 138	358
Mov Cap-2 Maneuver	-	-	-	-	~ 138	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	$ 469.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	644	-	-	-	163
HCM Lane V/C Ratio	0.078	-	-	-	1.89
HCM Control Delay (s)	11.1	-	-	-	$ 469.8
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	23.1

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

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	74	597	858	8	11	166
Future Vol, veh/h	74	597	858	8	11	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	74	597	858	8	11	166

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	866	0	-	0	1607	862
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	745	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	786	-	-	-	117	358
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	473	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	786	-	-	-	101	358
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	406	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	31.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	786	-	-	-	309
HCM Lane V/C Ratio	0.094	-	-	-	0.573
HCM Control Delay (s)	10.1	0	-	-	31.2
HCM Lane LOS	B	A	-	-	D
HCM 95th %tile Q(veh)	0.3	-	-	-	3.3

Intersection	
Int Delay, s/veh	46.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	295	303	9	5	485	31	3	16	4	37	9	378
Future Vol, veh/h	295	303	9	5	485	31	3	16	4	37	9	378
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	7	14	0	75	11	8	100	8	0	0	0	4
Mvmt Flow	295	303	9	5	485	31	3	16	4	37	9	378

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	516	0	0	312	0	0	1602	1424	308	1419	1413	501
Stage 1	-	-	-	-	-	-	898	898	-	511	511	-
Stage 2	-	-	-	-	-	-	704	526	-	908	902	-
Critical Hdwy	4.17	-	-	4.85	-	-	8.1	6.58	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.58	-	6.1	5.5	-
Follow-up Hdwy	2.263	-	-	2.875	-	-	4.4	4.072	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	1025	-	-	929	-	-	51	132	737	115	139	566
Stage 1	-	-	-	-	-	-	229	350	-	549	540	-
Stage 2	-	-	-	-	-	-	304	519	-	332	359	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1025	-	-	929	-	-	12	94	737	78	98	566
Mov Cap-2 Maneuver	-	-	-	-	-	-	12	94	-	78	98	-
Stage 1	-	-	-	-	-	-	163	249	-	391	537	-
Stage 2	-	-	-	-	-	-	99	516	-	220	256	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.8	0.1	114.1	160.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	54	1025	-	-	929	-	-	344
HCM Lane V/C Ratio	0.426	0.288	-	-	0.005	-	-	1.233
HCM Control Delay (s)	114.1	9.9	-	-	8.9	-	-	160.2
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.6	1.2	-	-	0	-	-	18.6

2027 Build Out - PM

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: Non			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		315	620	379		100	721	184		212	320	91		212	513	303
% HV		4	3	3		3	2	6		2	4	2		3	3	2
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	936	377	N/A		821	191	N/A		209	413	N/A		724	300	N/A	
Entry lane capacity (veh/h)	561	561	N/A		589	660	N/A		399	399	N/A		457	457	N/A	
x (v/c ratio)	1.67	0.67	N/A		1.39	0.29	N/A		0.52	1.03	N/A		1.58	0.66	N/A	
Lane control delay (s/veh)	327.0	21.9	N/A		207.0	9.1	N/A		21.2	86.9	N/A		295.5	24.9	N/A	
Lane LOS	F	C	N/A		F	A	N/A		C	F	N/A		F	C	N/A	
Approach control delay (s/veh)	239.3				169.7				64.8				216.2			
Approach LOS	F				F				F				F			
Intersection control delay (s/veh)	188.3															
Intersection LOS	F															
95th percentile queue (veh)	53.4	5.1	N/A		37.2	1.2	N/A		2.9	13.3	N/A		40.1	4.6	N/A	
	overall v/c	1.23														

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	1	1	21	1	165	4	283	24	246	425	19
Future Vol, veh/h	9	1	1	21	1	165	4	283	24	246	425	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	100	0	0	100	2	0	5	0	4	2	0
Mvmt Flow	9	1	1	21	1	165	4	283	24	246	425	19

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1313	1243	435	1232	1240	296	444	0	0	308	0	0
Stage 1	927	927	-	304	304	-	-	-	-	-	-	-
Stage 2	386	316	-	928	936	-	-	-	-	-	-	-
Critical Hdwy	7.1	7.5	6.2	7.1	7.5	6.22	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	6.5	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	6.5	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.9	3.3	3.5	4.9	3.318	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	137	114	625	155	115	743	1127	-	-	1241	-	-
Stage 1	324	243	-	710	518	-	-	-	-	-	-	-
Stage 2	641	511	-	324	240	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	84	83	625	122	84	742	1127	-	-	1241	-	-
Mov Cap-2 Maneuver	84	83	-	122	84	-	-	-	-	-	-	-
Stage 1	323	179	-	706	515	-	-	-	-	-	-	-
Stage 2	496	508	-	237	177	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	49.9	18.1	0.1	3.1
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1127	-	-	91	460	1241	-	-
HCM Lane V/C Ratio	0.004	-	-	0.121	0.407	0.198	-	-
HCM Control Delay (s)	8.2	0	-	49.9	18.1	8.6	0	-
HCM Lane LOS	A	A	-	E	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.9	0.7	-	-

Intersection	
Int Delay, s/veh	39

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	176	191	206	179	275	309
Future Vol, veh/h	176	191	206	179	275	309
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	105	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	4	2	6	4	1
Mvmt Flow	176	191	206	179	275	309

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1021	430	584	0	-	0
Stage 1	430	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Critical Hdwy	6.43	6.24	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	261	621	991	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	207	621	991	-	-	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	436	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	136.6	5.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	991	-	317	-	-
HCM Lane V/C Ratio	0.208	-	1.158	-	-
HCM Control Delay (s)	9.6	-	136.6	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.8	-	15.3	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	41	39	299	344	10
Future Vol, veh/h	10	41	39	299	344	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	10	41	39	299	344	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	726	349	354	0	-	0
Stage 1	349	-	-	-	-	-
Stage 2	377	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	394	699	1216	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	379	699	1216	-	-	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1216	-	600	-	-
HCM Lane V/C Ratio	0.032	-	0.085	-	-
HCM Control Delay (s)	8.1	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	0	3	320	381	4
Future Vol, veh/h	18	0	3	320	381	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	18	0	3	320	381	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	709	383	385	0	-	0
Stage 1	383	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	404	669	1185	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	403	669	1185	-	-	-
Mov Cap-2 Maneuver	403	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1185	-	403	-	-
HCM Lane V/C Ratio	0.003	-	0.045	-	-
HCM Control Delay (s)	8	0	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	4	323	370	11
Future Vol, veh/h	0	4	4	323	370	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	4	4	323	370	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	376	381	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	675	1189	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	675	1189	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	675	-	-
HCM Lane V/C Ratio	0.003	-	0.006	-	-
HCM Control Delay (s)	8	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	392	731	60	50	60
Future Vol, veh/h	51	392	731	60	50	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	8	6	0	0	3
Mvmt Flow	51	392	731	60	50	60

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	791	0	-	0	1255	761
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	494	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	838	-	-	-	191	404
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	838	-	-	-	176	404
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	29.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	838	-	-	-	254
HCM Lane V/C Ratio	0.061	-	-	-	0.433
HCM Control Delay (s)	9.6	0	-	-	29.6
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	2.1

Intersection	
Int Delay, s/veh	56

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	50	413	723	250	202	85
Future Vol, veh/h	50	413	723	250	202	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	50	413	723	250	202	85

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	973	0	-	0	1361	848
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	513	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	681	-	-	-	~ 162	357
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	681	-	-	-	~ 150	357
Mov Cap-2 Maneuver	-	-	-	-	~ 150	-
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	553	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	$ 334.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	681	-	-	-	181
HCM Lane V/C Ratio	0.073	-	-	-	1.586
HCM Control Delay (s)	10.7	-	-	-	$ 334.3
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	18.9

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

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	48	567	914	5	4	59
Future Vol, veh/h	48	567	914	5	4	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	48	567	914	5	4	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	919	0	-	0	1580	917
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	663	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	751	-	-	-	121	332
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	516	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	751	-	-	-	110	332
Mov Cap-2 Maneuver	-	-	-	-	110	-
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	751	-	-	-	294
HCM Lane V/C Ratio	0.064	-	-	-	0.214
HCM Control Delay (s)	10.1	0	-	-	20.6
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Intersection	
Int Delay, s/veh	33.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	283	276	12	1	574	35	9	9	3	27	11	336
Future Vol, veh/h	283	276	12	1	574	35	9	9	3	27	11	336
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	9	0	0	4	0	0	14	0	0	0	2
Mvmt Flow	283	276	12	1	574	35	9	9	3	27	11	336

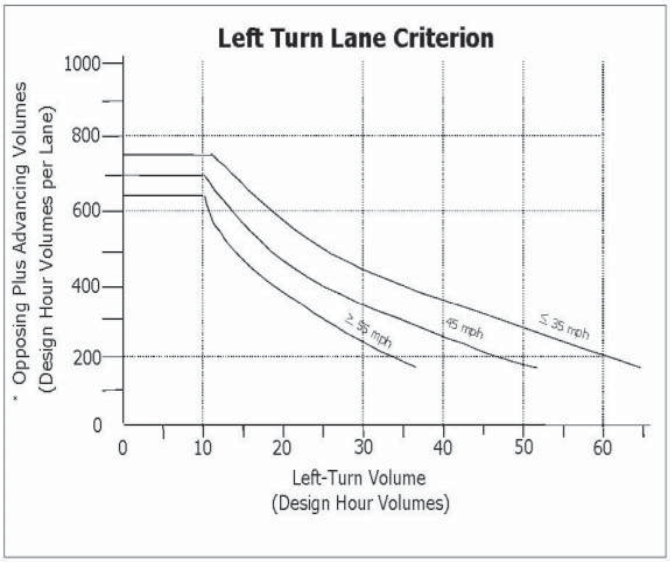
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	609	0	0	288	0	0	1615	1459	282	1448	1448	592
Stage 1	-	-	-	-	-	-	848	848	-	594	594	-
Stage 2	-	-	-	-	-	-	767	611	-	854	854	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.1	6.64	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.5	4.126	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	955	-	-	1286	-	-	84	122	762	110	133	506
Stage 1	-	-	-	-	-	-	359	361	-	495	496	-
Stage 2	-	-	-	-	-	-	398	466	-	356	378	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	955	-	-	1286	-	-	20	86	762	78	94	506
Mov Cap-2 Maneuver	-	-	-	-	-	-	20	86	-	78	94	-
Stage 1	-	-	-	-	-	-	253	254	-	348	496	-
Stage 2	-	-	-	-	-	-	131	466	-	241	266	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.1	0	182.6	123.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	38	955	-	-	1286	-	-	332
HCM Lane V/C Ratio	0.553	0.296	-	-	0.001	-	-	1.127
HCM Control Delay (s)	182.6	10.3	-	-	7.8	-	-	123.7
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.9	1.2	-	-	0	-	-	14.8

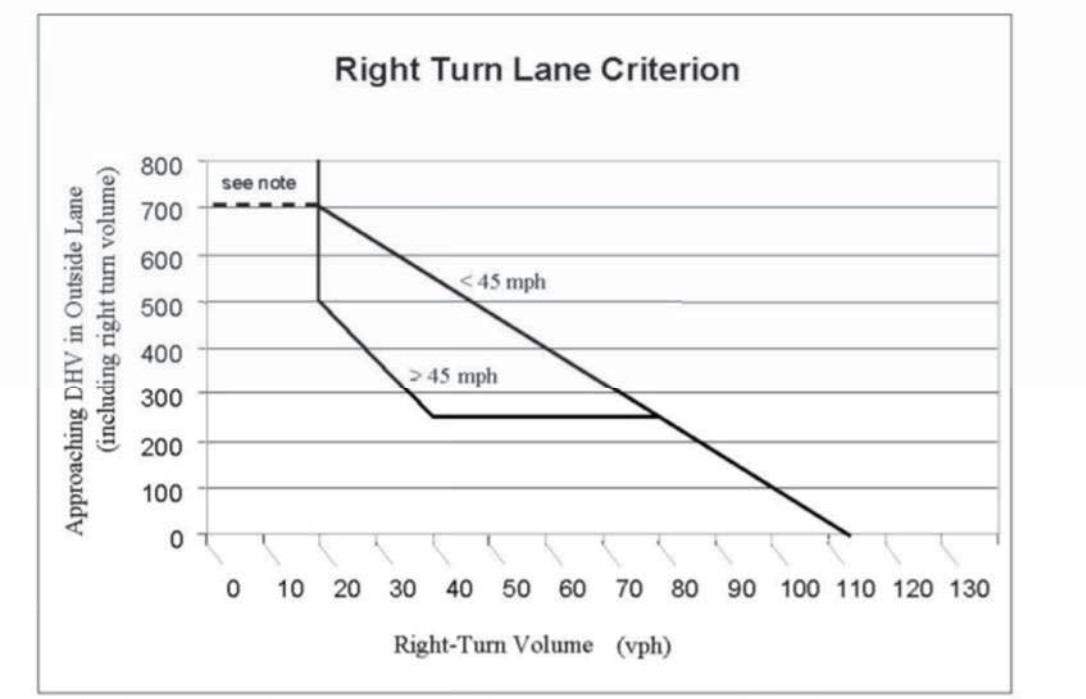
Appendix C – Left and Right Turn Warrant Analysis and Pedestrian Refuge Island Worksheets

ODOT APM Exhibit 7-1 Left Turn Lane Criterion (TTI)



		2021 Build						2027 Build					
		AM		AFT		PM		AM		AFT		PM	
	Criterion	Volume	Meet?	Volume	Meet?	Volume	Meet?	Volume	Meet?	Volume	Meet?	Volume	Meet?
Site Access #1	Opposing+Advancing	-	-	-	-	-	-	840	Yes	747	Yes	692	Yes
	Left Turn	-	-	-	-	-	-	148		67		39	
Site Access #2	Opposing+Advancing	551	No	528	No	553	No	907	Yes	770	Yes	708	Yes
	Left Turn	16		5		3		16		5		3	
Site Access #3	Opposing+Advancing	552	Yes	529	No	533	No	909	Yes	770	Yes	709	Yes
	Left Turn	19		6		4		19		6		4	
Site Access #4	Opposing+Advancing	1259	Yes	1195	Yes	1239	Yes	1686	Yes	1537	Yes	1534	Yes
	Left Turn	221		72		47		225		74		48	

7.2.2 Right Turn Lane Criteria – Unsignalized Intersections



Note: If there is no right turn lane, a shoulder needs to be provided. If this intersection is in a rural area and is a connection to a public street, a right turn lane is needed.

		2021 Build						2027 Build					
		AM		AFT		PM		AM		AFT		PM	
	Criterion	Volume	Meet?	Volume	Meet?	Volume	Meet?	Volume	Meet?	Volume	Meet?	Volume	Meet?
Site Access #1	Advancing	-	-	-	-	-	-	302	Yes**	370	No	354	No
	Right Turn	-	-	-	-	-	-	37		17		10	
Site Access #2	Advancing	235	No	301	No	292	No	387	No	434	No	385	No
	Right Turn	18		6		4		18		6		4	
Site Access #3	Advancing	217	No	295	No	289	No	370	Yes	429	No	381	No
	Right Turn	53		17		11		54		17		11	
Site Access #4	Advancing	483	No	669	No	743	No*	677	Yes	866	No*	919	No*
	Right Turn	25		8		5		25		8		5	

*shoulder must be provided

**If speed is reduced below 45mph, turn lane not warranted

results based on table 11 from here: https://www.fhwa.dot.gov/publications/research/safety/04100/04100.pd

Median Refuge Analysis													
	Posted	2021 Build Out						2027 Build					
	Speed	AM		AFTN		PM		AM		AFT		PM	
Roadway	Limit	ADT	Results	ADT	Results	ADT	Results	ADT	Results	ADT	Results	ADT	Results
Site Access #1 (15th)	50	5,680	N	5,690	N	5,460	N	9,910	N	8,490	N	7,590	N
Site Access #2 (15th)	50	5,840	N	5,750	N	5,500	N	9,410	N	8,160	N	7,590	N
Site Access #3 (15th)	50	5,610	N	5,410	N	5,370	N	9,170	N	7,830	N	7,350	N
Site Access #4 (Knott)	40	13,830	N	13,690	N	13,010	N	18,120	N	17,140	N	16,450	N

*C = Candidate site for marked crosswalks. P = Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements. N = Marked crosswalks alone are insufficient, since pedestrian crash risk may be increased by providing marked crosswalks alone.

NOTE: Footnotes of Table 11 state "do not apply to school crossing"

Table 11. Recommendations for installing marked crosswalks and other needed pedestrian improvements at uncontrolled locations.*

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT ≤ 9,000			Vehicle ADT >9,000 to 12,000			Vehicle ADT >12,000–15,000			Vehicle ADT > 15,000		
	Speed Limit**											
	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)
Two lanes	C	C	P	C	C	P	C	C	N	C	P	N
Three lanes	C	C	P	C	P	P	P	P	N	P	N	N
Multilane (four or more lanes) with raised median***	C	C	P	C	P	N	P	P	N	N	N	N
Multilane (four or more lanes) without raised median	C	P	N	P	P	N	N	N	N	N	N	N

* These guidelines include intersection and midblock locations with no traffic signals or stop signs on the approach to the crossing. They do not apply to school crossings. A two-way center turn lane is not considered a median. Crosswalks should not be installed at locations that could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make crossings safer, nor will they necessarily result in more vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed, to improve the safety of the crossing. These are general recommendations; good engineering judgment should be used in individual cases for deciding where to install crosswalks.

** Where the speed limit exceeds 64.4 km/h (40 mi/h), marked crosswalks alone should not be used at unsignalized locations.

*** The raised median or crossing island must be at least 1.2 m (4 ft) wide and 1.8 m (6 ft) long to serve adequately as a refuge area for pedestrians, in accordance with MUTCD and American Association of State Highway and Transportation Officials (AASHTO) guidelines.

C = Candidate sites for marked crosswalks. Marked crosswalks must be installed carefully and selectively. Before installing new marked crosswalks, an engineering study is needed to determine whether the location is suitable for a marked crosswalk. For an engineering study, a site review may be sufficient at some locations, while a more indepth study of pedestrian volume, vehicle speed, sight distance, vehicle mix, and other factors may be needed at other sites. It is recommended that a minimum utilization of 20 pedestrian crossings per peak hour (or 15 or more elderly and/or child pedestrians) be confirmed at a location before placing a high priority on the installation of a marked crosswalk alone.

P = Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements. These locations should be closely monitored and enhanced with other pedestrian crossing improvements, if necessary, before adding a marked crosswalk.

N = Marked crosswalks alone are insufficient, since pedestrian crash risk may be increased by providing marked crosswalks alone. Consider using other treatments, such as traffic-calming treatments, traffic signals with pedestrian signals where warranted, or other substantial crossing improvement to improve crossing safety for pedestrians.

Appendix D - -ODOT School Crossing Signing and Striping

7B.07 Sign Color for School Warning Signs

All new school-related warning signs shall be fluorescent yellow-green sheeting.

ODOT policy is to reserve the use of fluorescent yellow-green sign sheeting for school zone signing on state highways including the "SCHOOL" portion of the School Speed Limit (S5-1) sign and any supplemental plaques used in association with these warning signs. Pedestrian and/or Bicycle warning signs should use the standard yellow color. Fluorescent yellow sign sheeting may be used for pedestrian and/or bicycle crossing signs if there is a need to call extra attention to a particular crossing.

The Region Traffic Engineer may allow the use of fluorescent yellow-green for pedestrian/bicycle warning signs on a state highway if the requesting jurisdiction can demonstrate an existing systematic approach to pedestrian signing which includes the fluorescent yellow-green sign background. However, other treatments must be considered before choosing fluorescent yellow-green sign sheeting (e.g. curb extensions, pedestrian refuge islands, Rapid Flash Beacons, etc.). The mixing of standard yellow and fluorescent yellow-green backgrounds for pedestrian/bicycle signs within a selected site area should be avoided.

7B.09 School Zone Sign (S1-1) and Plaques (S4-3P, S4-7P) and End School Zone Sign (S5-2)

At each location that a jurisdiction wishes to establish a school zone a School Zone sign (S1-1) shall be installed. A school zone can be established with or without a reduced school speed limit. The following is the Oregon Revised Statute defining school zones:

801.462 "School zone."
(1) "School zone" means both of the following:
- (a) A specific segment of highway that is adjacent to school grounds and that is marked by signs described in subsection (2) of this section.
- (b) A crosswalk that is not adjacent to school grounds and that is marked by signs described in subsection (2) of this section.

(2) Signs marking a school zone may include any words, symbols or combination of words and symbols that gives notice of the presence of the school zone. [2003 c.397 §2]

7B.10 Higher Fines Zone Signs

A BEGIN HIGHER FINES ZONE (R2-10) sign or a FINES HIGHER (R2-6P) plaque may be posted in school zones where WHEN FLASHING or WHEN CHILDREN ARE PRESENT supplemental plaques are also used. Requests and funding for sign installations shall be through the school district.

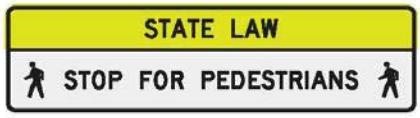
Where a BEGIN HIGHER FINES ZONE (R2-10) sign or a FINES HIGHER (R2-6P) plaque is posted an END SCHOOL ZONE sign shall be installed on the downstream end of the zone to notify users of the termination of the increased fines zone.

7B.11 School Advance Crossing Assembly

The School Advance Crossing Assembly signs may be omitted in advance of a school crossing.

7B.12 School Crossing Assembly

An Overhead Pedestrian Crossing Sign (R1-9a) may be used to remind road users of the state law to stop for pedestrians. The sign may be modified to replace the standard pedestrian symbol with the standard schoolchildren symbol and may be used at unsignalized school crossings.



If the overhead signs are mounted in combination with flashing beacons, the flashing beacons shall not be continuously flashing (24 hr/day) in a school zone with flashing beacons operated periodically during the day to indicate when children are scheduled to arrive or leave school.

7B.15 School Speed Limit Assembly (S4-1,S4-2,S4-3,S4-4,S4-6,S5-1)

When a 20-mph school speed zone is established in accordance with ORS 811.111, the School Speed Limit Assembly shall be used. **Oregon Revised Statutes specify two conditions under which different supplemental plaques may be used on the School Speed Limit Assembly as shown on the following page.**

A 36” School Speed Limit assembly shall be used on all 4-lane highways and rural highways. A 24” assembly may be used on urban 2-lane streets.

The beginning point of the reduced school speed limit should be at least 200 feet in advance of school grounds or a school crossing unless otherwise determined by engineering study.

7B.16 Reduced Speed School Zone Ahead Sign (S4-5,S4-5a)

In areas where the posted speed is 35 mph or higher, a REDUCED SPEED SCHOOL ZONE AHEAD (S4-5) sign may be used. If used, this sign should be placed 150 to 250 feet prior to the School Zone (S1-1) sign.

General Information

For recommendations and guidance on the appropriate use and locations of signs in school zones, use the ODOT Traffic-Roadway Section publication “A Guide to School Area Safety” with the layouts provided on sheets 7-4 through 7-16.

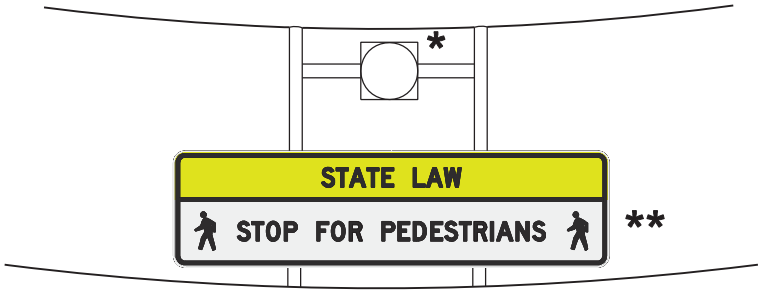
CONDITION "A"

Adjacent to
School Grounds

CONDITION "B"

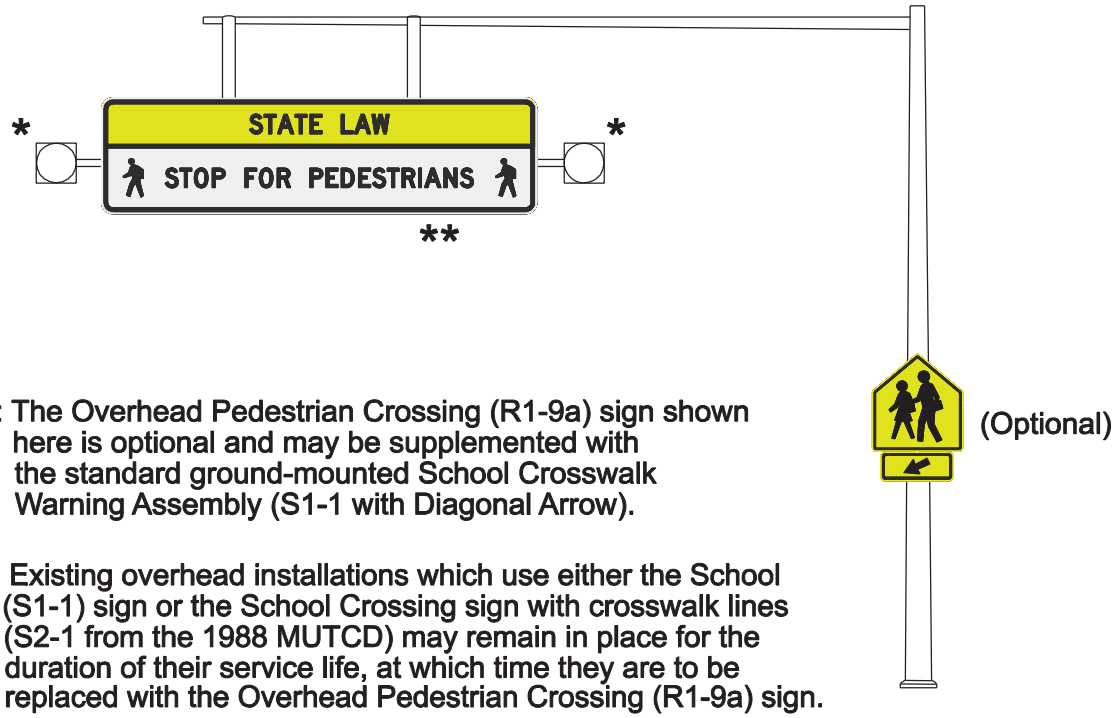
Crosswalk
Non-adjacent to
School Grounds

SCHOOL SIGNING
OVERHEAD SCHOOL CROSSING SIGN (Optional)



* Continuously flashing (24 hrs/day) overhead beacons, as shown here, shall not be used in school zones with WHEN FLASHING sign assemblies.

** The Overhead Ped Crossing sign may be modified to replace the standard Pedestrian symbol with the standard School Children symbol (from S1-1).



Note: The Overhead Pedestrian Crossing (R1-9a) sign shown here is optional and may be supplemented with the standard ground-mounted School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow).

Note: Existing overhead installations which use either the School (S1-1) sign or the School Crossing sign with crosswalk lines (S2-1 from the 1988 MUTCD) may remain in place for the duration of their service life, at which time they are to be replaced with the Overhead Pedestrian Crossing (R1-9a) sign.

SIGNSTDP.F15

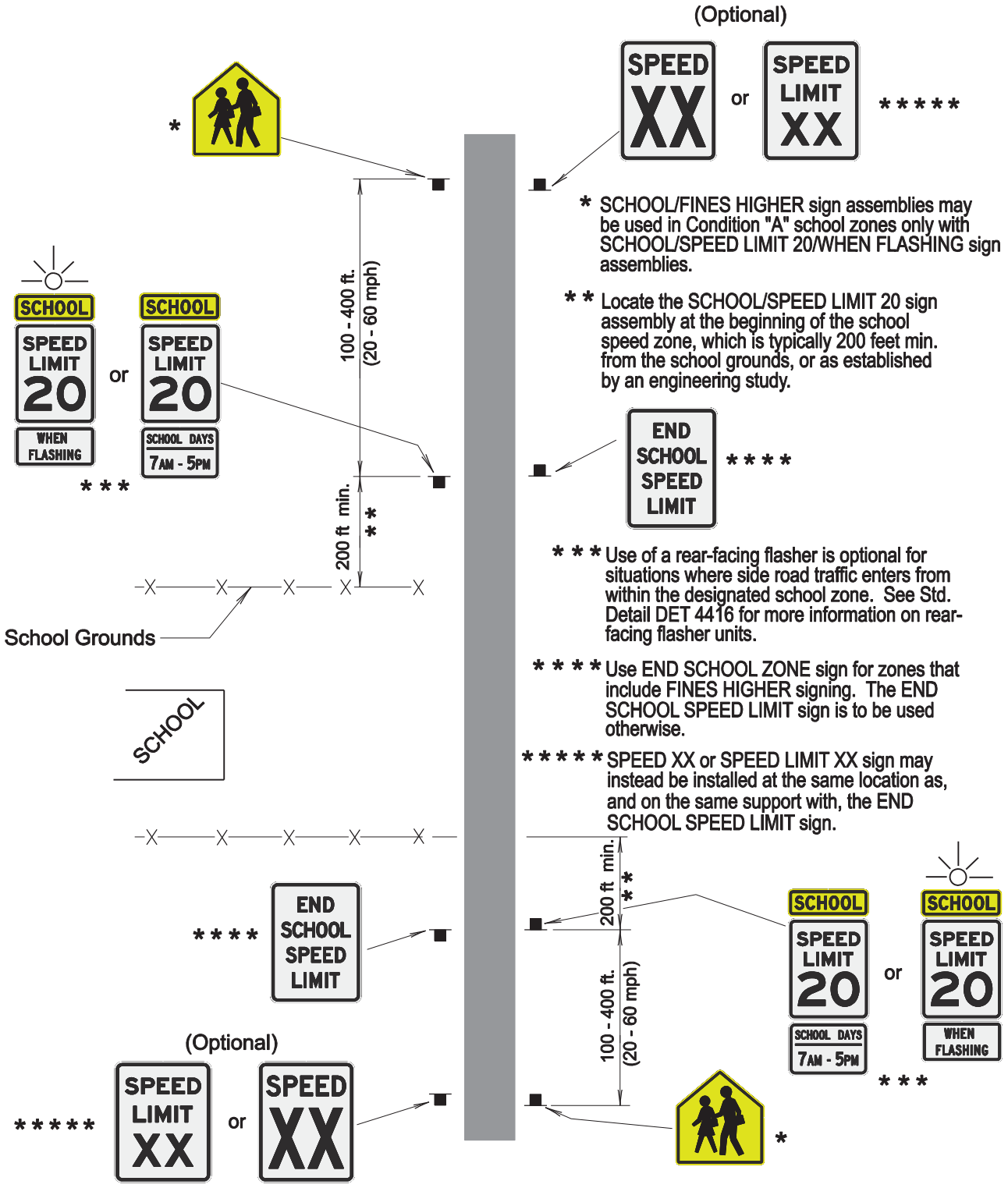
OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 5/04	Publication Date: 5/12

SCHOOL SIGNING

Condition "A" without School Crosswalk

• Adjacent to School Grounds



* SCHOOL/FINES HIGHER sign assemblies may be used in Condition "A" school zones only with SCHOOL/SPEED LIMIT 20/WHEN FLASHING sign assemblies.

** Locate the SCHOOL/SPEED LIMIT 20 sign assembly at the beginning of the school speed zone, which is typically 200 feet min. from the school grounds, or as established by an engineering study.

*** Use of a rear-facing flasher is optional for situations where side road traffic enters from within the designated school zone. See Std. Detail DET 4416 for more information on rear-facing flasher units.

**** Use END SCHOOL ZONE sign for zones that include FINES HIGHER signing. The END SCHOOL SPEED LIMIT sign is to be used otherwise.

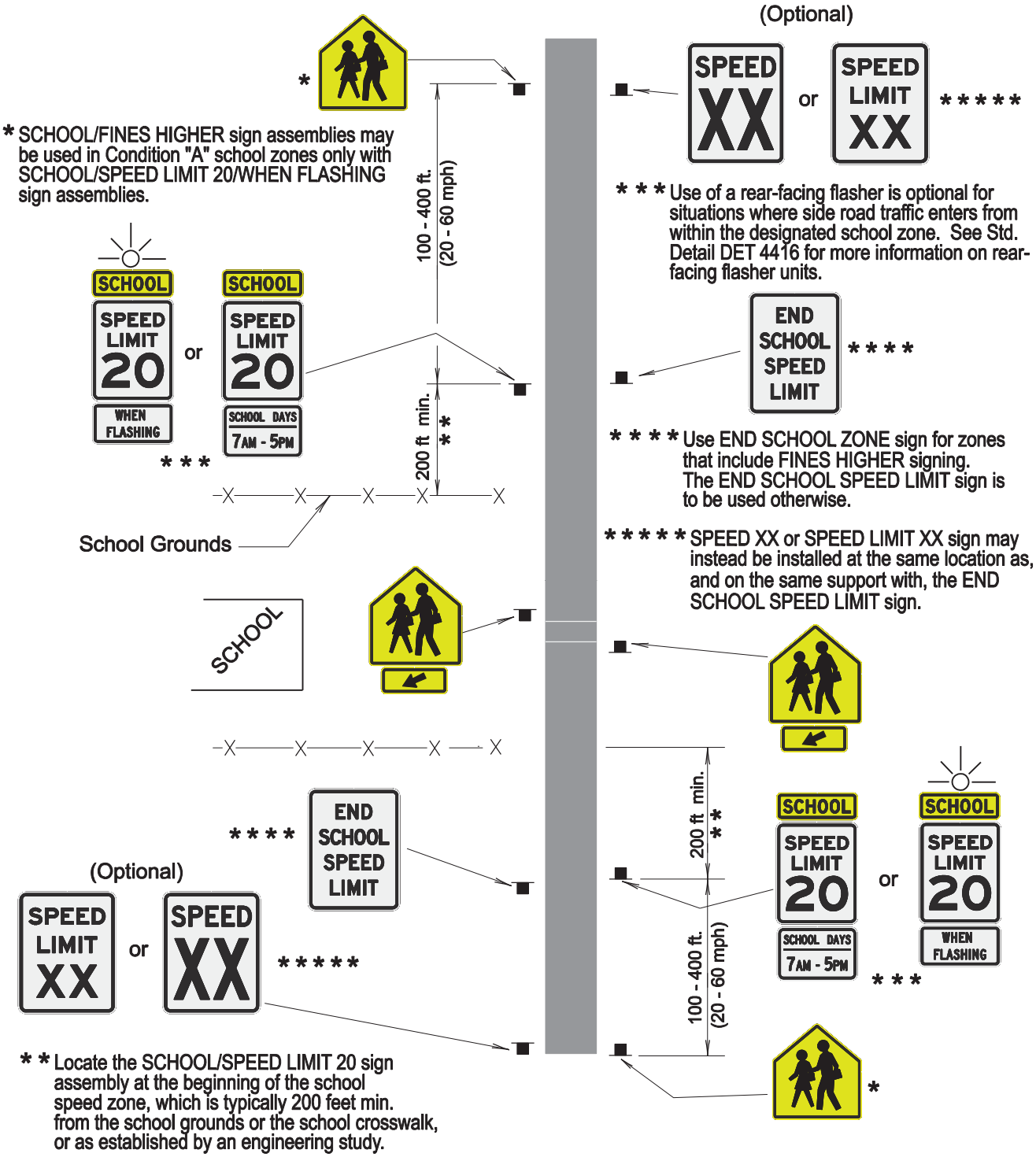
***** SPEED XX or SPEED LIMIT XX sign may instead be installed at the same location as, and on the same support with, the END SCHOOL SPEED LIMIT sign.

SIGNSTDP.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 5/04	Publication Date: 5/12

SCHOOL SIGNING
Condition "A" with School Crosswalk
• Adjacent to School Grounds

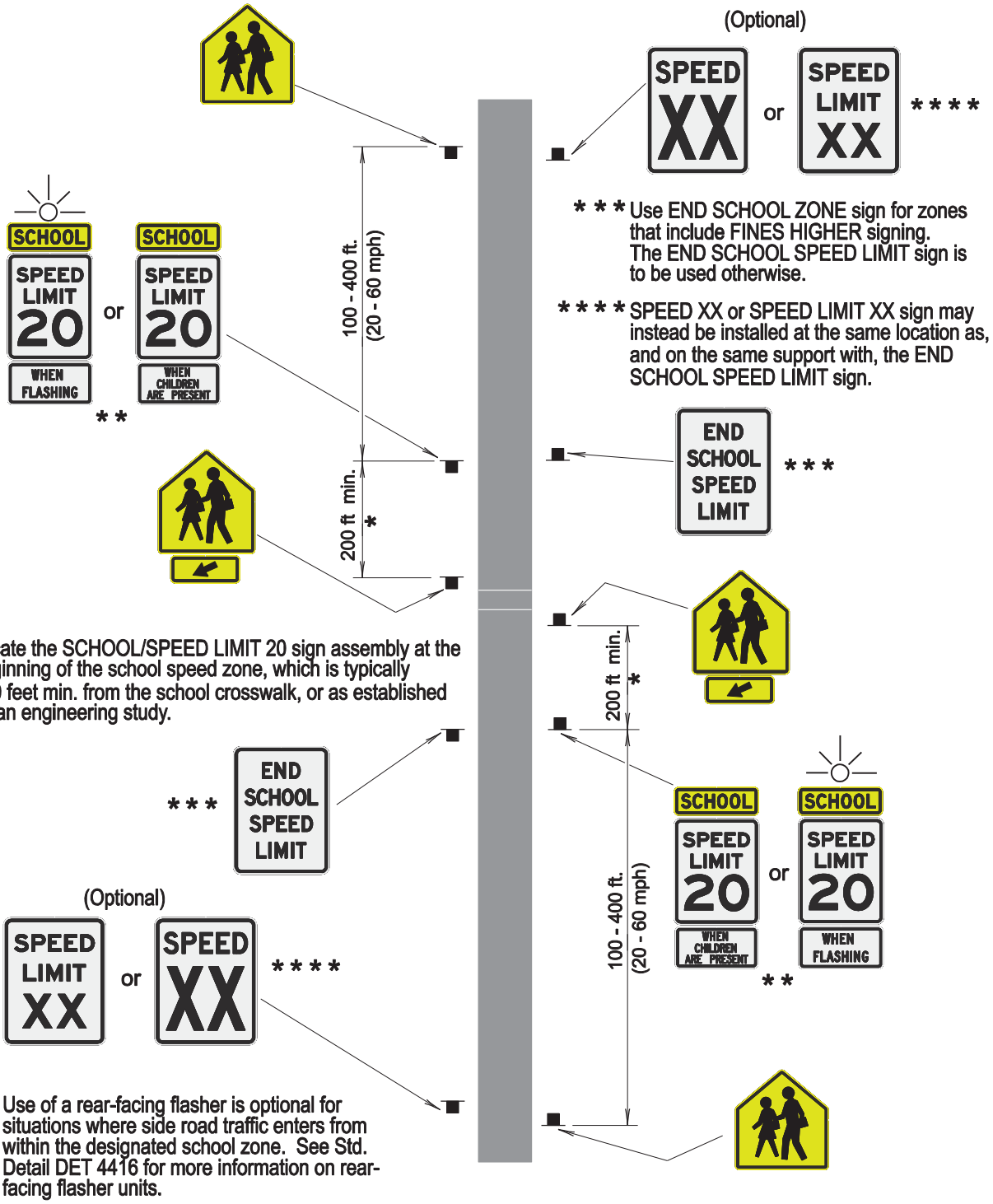


SIGNSTDP.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 5/04	Publication Date: 5/12

SCHOOL SIGNING
Condition "B"
School Crosswalk Not Adjacent To School Grounds

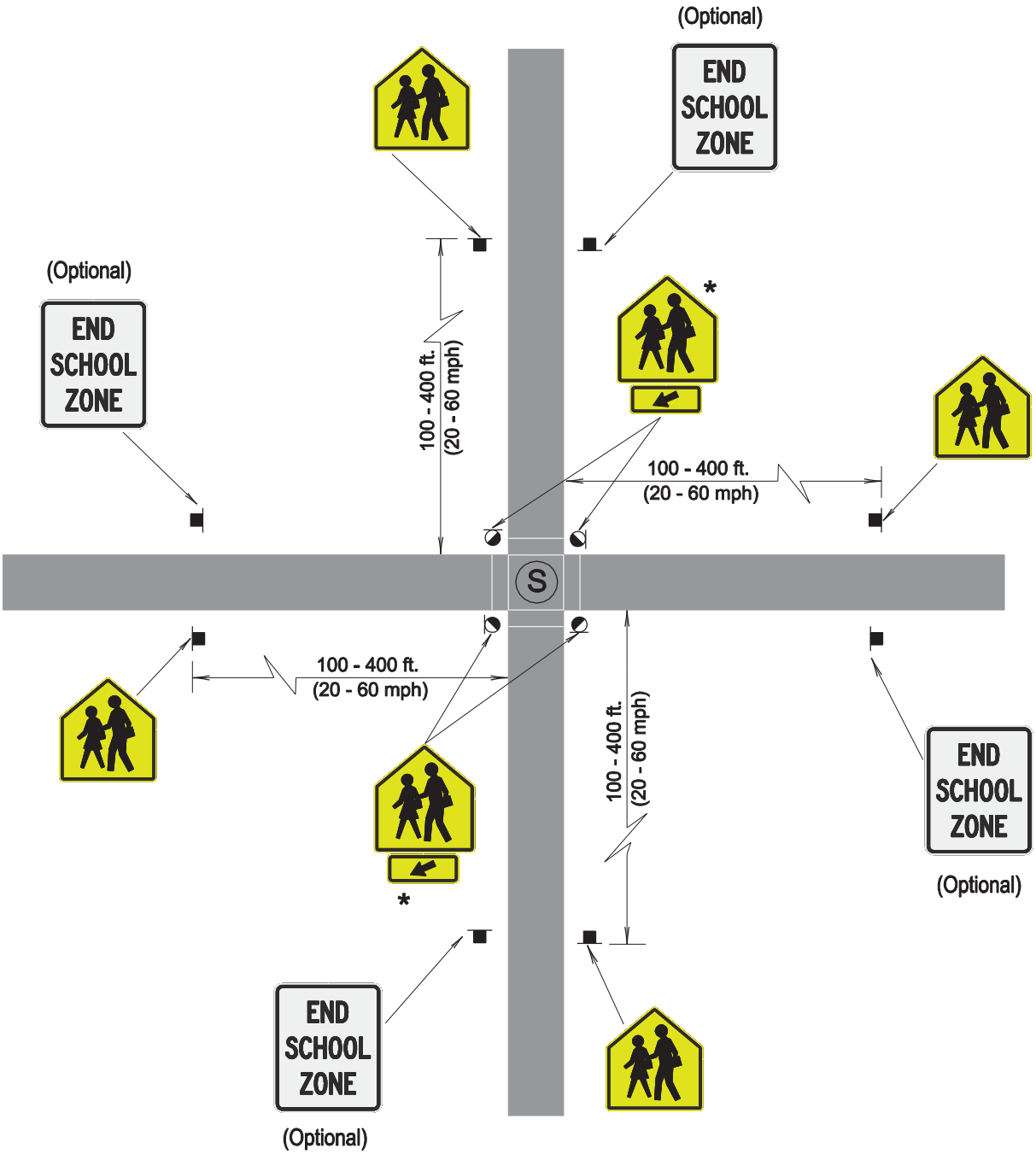


SIGNSTDP.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 5/04	Publication Date: 5/12

SCHOOL SIGNING
SCHOOL CROSSWALK AWAY FROM SCHOOL AT SIGNALIZED INTERSECTION



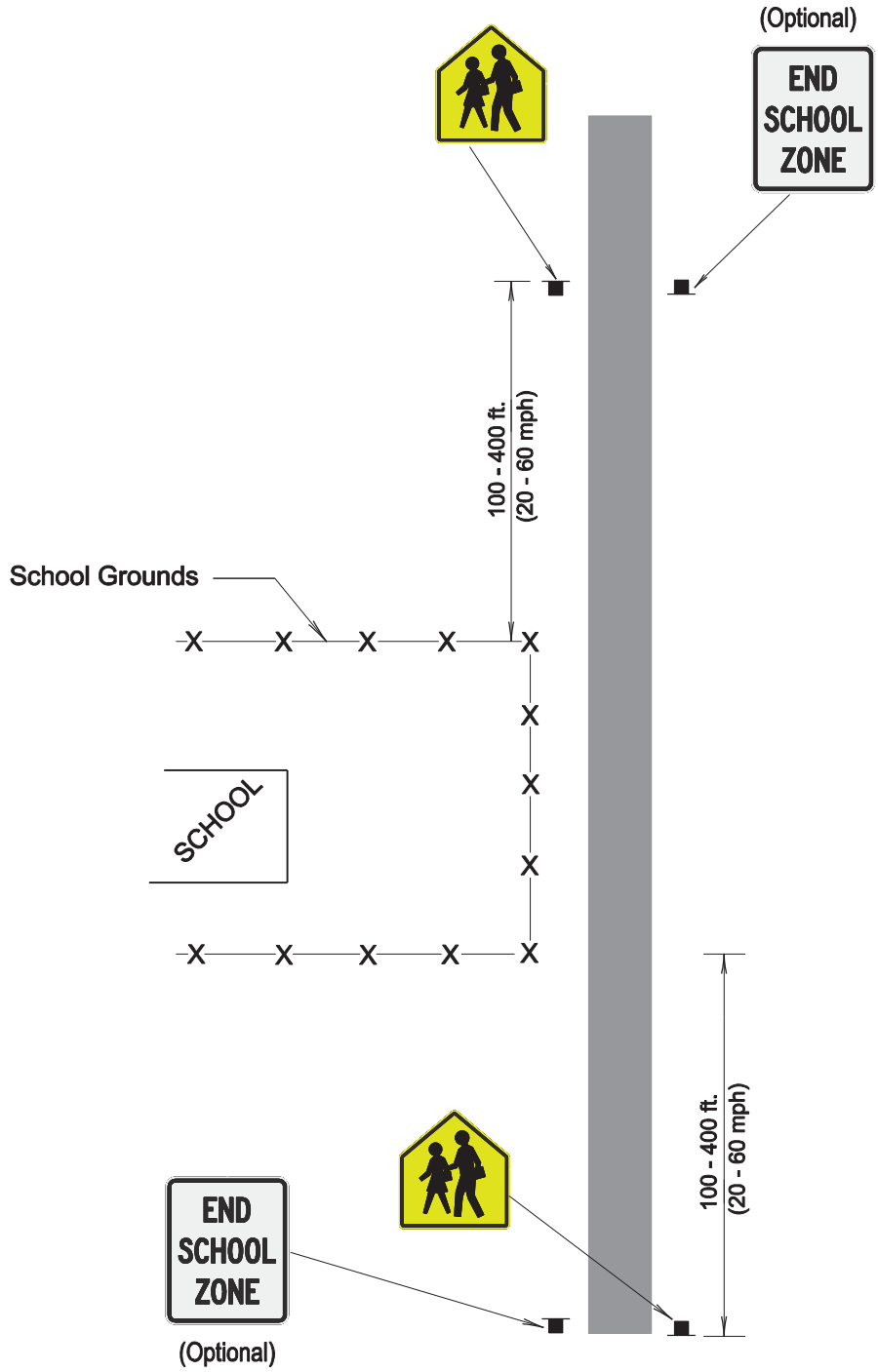
* Use only at established School Crossings, if Engineering Study determines need for signs.

SIGNSTDPG.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 7/99	Publication Date: 5/12

SCHOOL SIGNING
SCHOOL BUILDING AWAY FROM HIGHWAY OR SCHOOL GROUNDS FENCED (Optional)

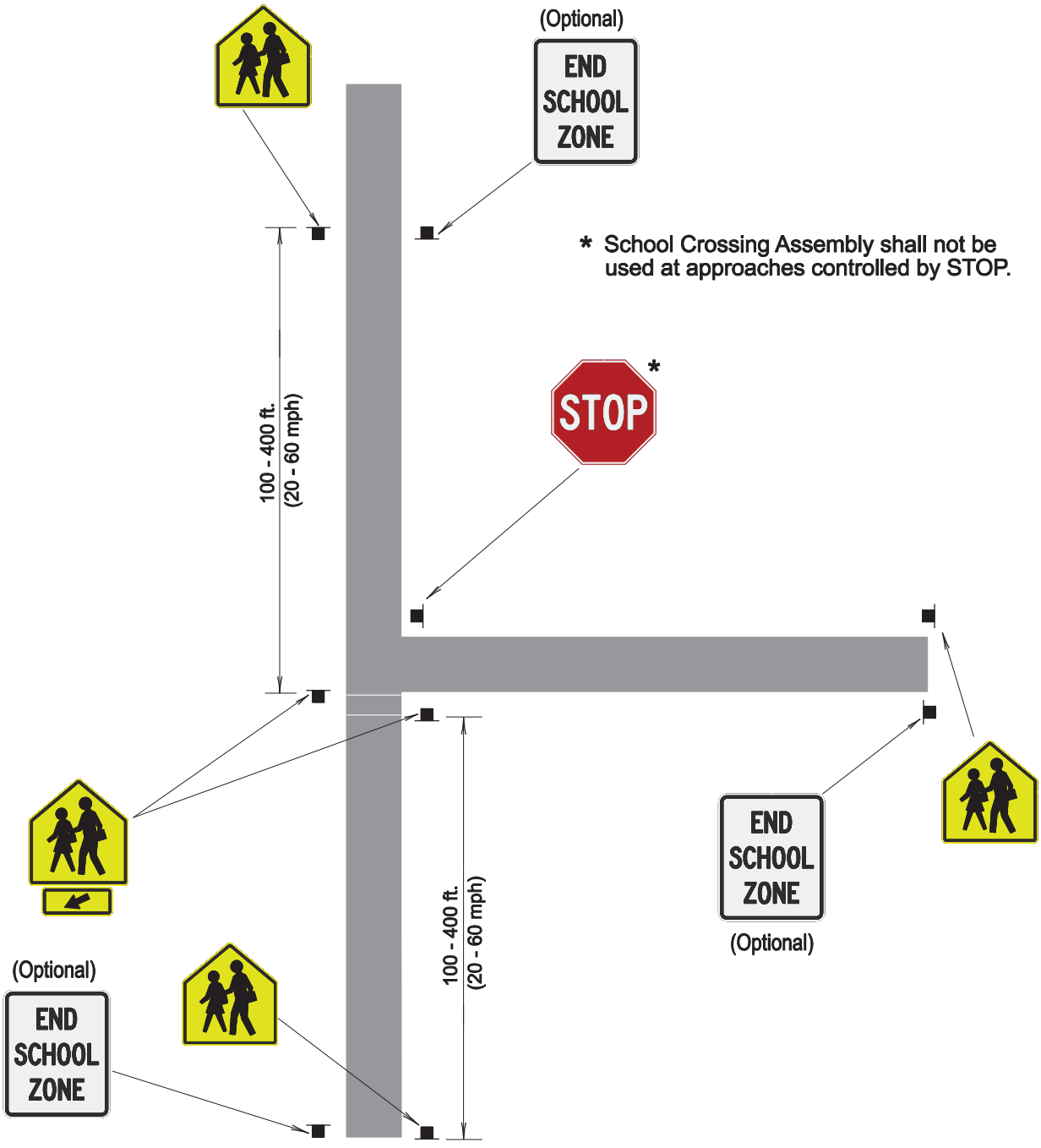


SIGNSTDP.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 5/04	Publication Date: 5/12

SCHOOL SIGNING
SCHOOL CROSSWALK AWAY FROM SCHOOL (Optional)



** For further guidance and recommendations on the location and use of School Advance Warning Assemblies and School Speed Limit Assemblies, consult ODOT Traffic Engineering publication "A Guide to School Area Safety".

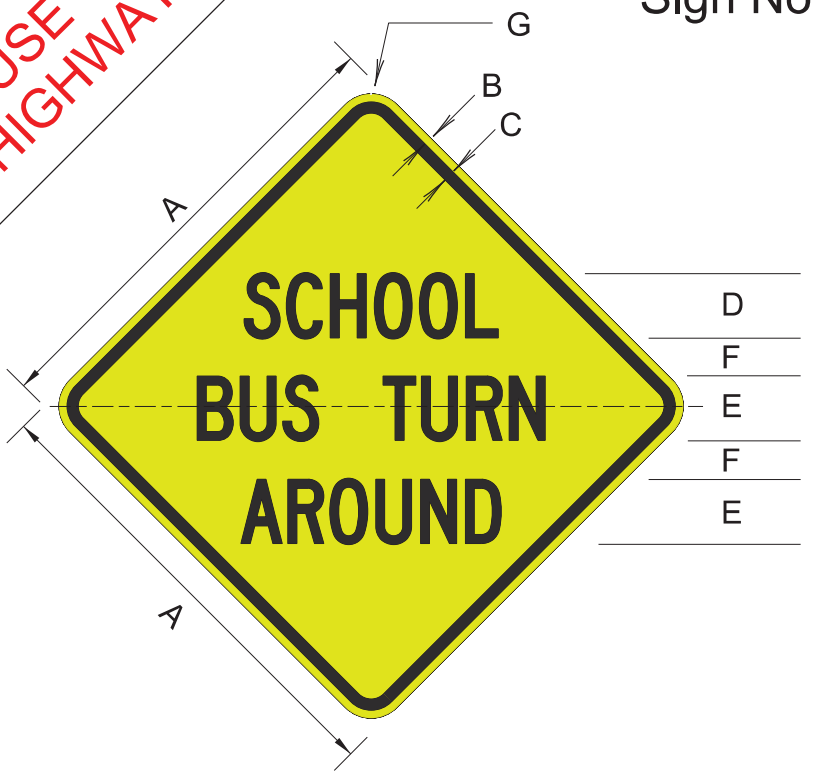
SIGNSTDP.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 3/06	Publication Date: 5/12

NOT FOR USE ON STATE HIGHWAY

Sign No. OS3-2



Sign Background: Fluorescent Yellow-Green Retroreflective sheeting

Sign Legend: Black, Non-reflective

SIGN	DIMENSIONS (INCHES)						
	A	B	C	D	E	F	G
MIN.	30	½	¾	4C	4C	2½	1⅞
STD.	36	⅝	⅞	5C	5C	3	2¼
SPEC.	48	¾	1¼	7C	7C	4	3

The SCHOOL BUS TURN AROUND sign may be used to warn motorists that school buses may be turning around and re-entering the roadway.

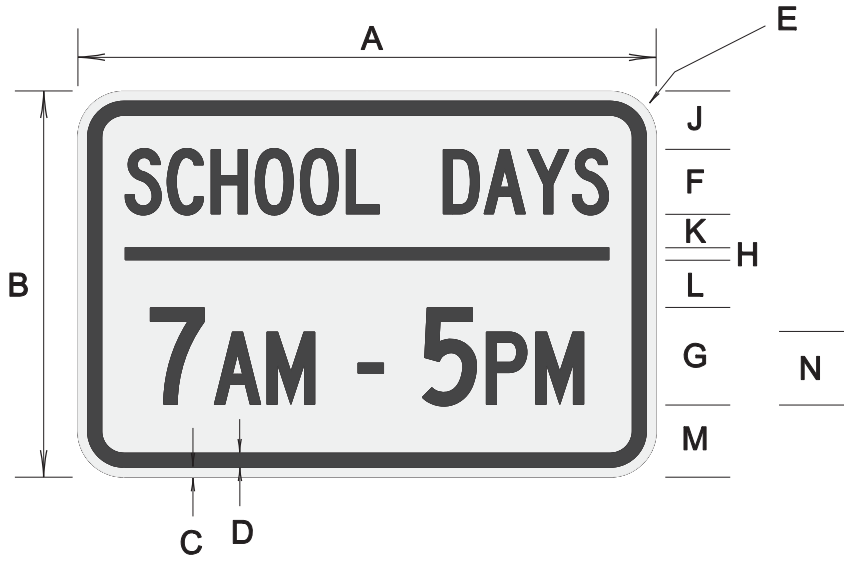
For state highways use MUTCD sign S3-2.

SIGNSTDPG.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.	Date: 1/00	Publication Date: 2/16

Sign No. OS4-8



Sign Background: White, Retroreflective sheeting

Sign Legend: Black, Non-reflective

SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
MIN.	24	18	3/8	5/8	1½	2½C	4C	½	3	2	2½	3½	3C
STD.	36	24	5/8	7/8	2¼	4C	6C	¾	3⅝	2⅛	3	4½	4½C
SPEC.	48	30	¾	1¼	3	5C	8C	1	4½	2½	3½	5½	6C

The SCHOOL DAYS with Time of Day sign may be posted as part of a School Speed Assembly (with SCHOOL + SPEED [LIMIT] 20 signs) in specific school zones in accordance with ORS 811.111. The use of the SCHOOL DAYS with Time of Day sign is limited to school zones on highways adjacent to school grounds (see Condition "A" on page 7-2).

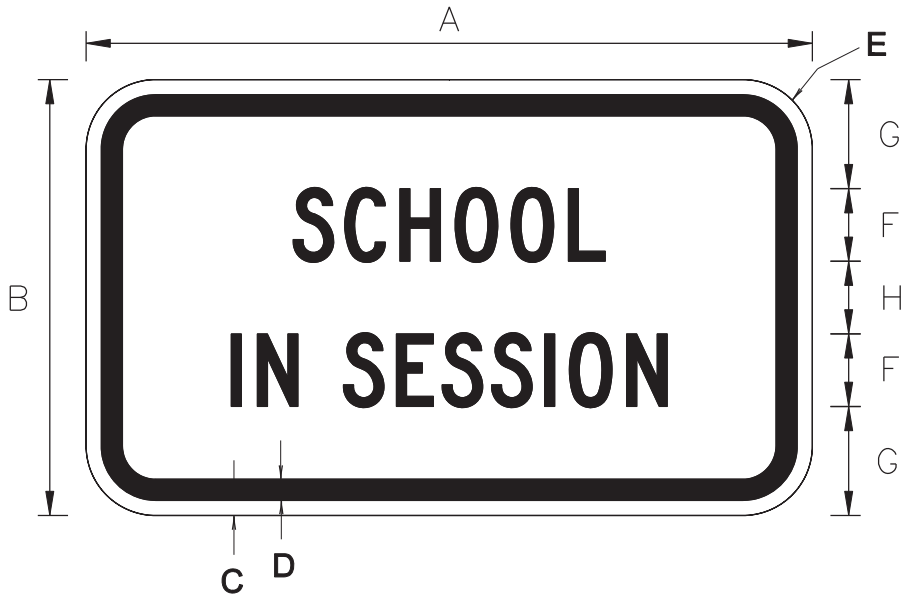
The School Speed Assembly shall be located at the beginning of the designated school speed zone, based on an engineering investigation and according to the layouts shown on pages 7-9 through 7-11.

The Special size sign shall be used only with Region Traffic Manager approval.

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E. Date: 5/04 | Publication Date: 4/06

Sign No. OS4-9



Sign Background: White, Retroreflective sheeting

Sign Legend: Black, Non-reflective

SIGN	DIMENSIONS (INCHES)								
	A	B	C	D	E	F	G	H	J
MIN.	30	18	5/8	7/8	2 1/4	3C	4 1/2	3	
STD.	36	24	3/4	1 1/4	3	4C	6	4	

The SCHOOL IN SESSION sign (OS4-9) shall only be used in a school zone not marked by flashing beacons according to ORS 810.438.

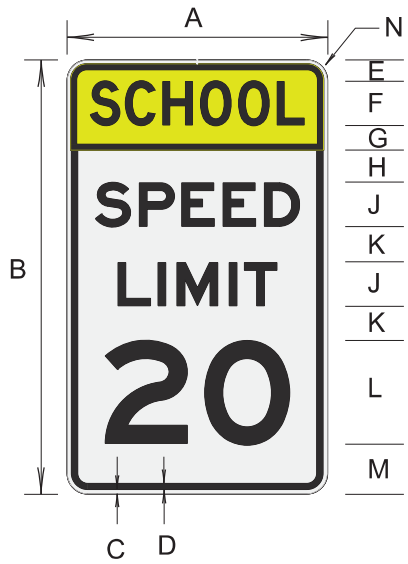
The SCHOOL IN SESSION sign (OS4-9) shall be installed as a supplemental sign below the TRAFFIC LAWS PHOTO ENFORCED sign (R10-18).

The SCHOOL IN SESSION supplemental sign (OS4-9) shall be a minimum of 2 feet above the ground.

SIGNSTDP.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E. Date: 4/10 | Publication Date: 4/10



Sign No. OS5-5

Note: This sign must be accompanied by one of the following riders as appropriate: WHEN FLASHING, WHEN CHILDREN ARE PRESENT, or SCHOOL DAYS/7 AM - 5PM.

Sign Background: White, Retroreflective sheeting
Fluorescent Yellow-Green
Retroreflective sheeting (school panel)

Sign Legend: Black, Non-reflective

SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
MIN.	24	36	3/8	5/8	2	4D	1	3	4E	2	10E	4	1½
STD.	36	60	5/8	7/8	4	6D	2½	5½	6E	5	14E	6	2¼
SPEC.	48	72	¾	1¼	4½	8D	3	5½	8E	6	16E	7	3

Note: In lieu of 3 separate signs or an all-in-one School Speed Assembly, this SCHOOL/SPEED 20 combination sign may be used with a supplemental plaque to inform motorists of the speed limit in a designated school speed zone. This sign MUST be accompanied by the appropriate plaque for the school speed zone in which it is placed, in accordance with ORS 811.111 (Refer to page 7-2).

The SCHOOL/SPEED LIMIT 20 sign with supplemental plaque shall be located at the beginning of the designated school speed zone, based on an engineering investigation and according to the layouts shown on pages 7-9 through 7-16.

The Special size sign shall be used only with Region Traffic Manager approval.

SIGNSTDP.F15

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E. Date: 5/04 | Publication Date: 2/16

Appendix E - -SIDRA Mitigation Output Worksheets

MOVEMENT SUMMARY

Site: 101 [10 15th/Knott 2027 AM - TDM]

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: 15th St											
3	L2	13	0.0	0.076	8.4	LOS A	0.3	7.0	0.64	0.64	32.6
8	T1	21	10.0	0.076	8.4	LOS A	0.3	7.0	0.64	0.64	32.3
18	R2	3	67.0	0.076	8.4	LOS A	0.3	7.0	0.64	0.64	30.3
Approach		37	11.5	0.076	8.4	LOS A	0.3	7.0	0.64	0.64	32.2
East: Knott Rd											
1	L2	9	0.0	0.669	18.3	LOS C	4.7	129.4	0.79	0.92	29.3
6	T1	409	11.0	0.669	18.3	LOS C	4.7	129.4	0.79	0.92	29.1
16	R2	49	18.0	0.669	18.3	LOS C	4.7	129.4	0.79	0.92	28.2
Approach		466	11.5	0.669	18.3	LOS C	4.7	129.4	0.79	0.92	29.0
North: 15th St											
7	L2	32	11.0	0.544	14.7	LOS B	2.6	80.3	0.66	0.71	30.1
4	T1	8	25.0	0.544	14.7	LOS B	2.6	80.3	0.66	0.71	29.9
14	R2	314	33.0	0.544	14.7	LOS B	2.6	80.3	0.66	0.71	28.9
Approach		353	30.9	0.544	14.7	LOS B	2.6	80.3	0.66	0.71	29.0
West: Knott Rd											
5	L2	516	2.0	0.683	12.2	LOS B	7.3	187.8	0.41	0.18	30.4
2	T1	339	6.0	0.683	12.2	LOS B	7.3	187.8	0.41	0.18	30.3
12	R2	5	33.0	0.683	12.2	LOS B	7.3	187.8	0.41	0.18	29.0
Approach		861	3.8	0.683	12.2	LOS B	7.3	187.8	0.41	0.18	30.3
All Vehicles		1717	11.6	0.683	14.3	LOS B	7.3	187.8	0.57	0.50	29.7

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 [10 15th/Knott 2027 AFT - TDM]

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: 15th St											
3	L2	3	50.0	0.044	6.9	LOS A	0.1	4.1	0.60	0.54	32.6
8	T1	17	8.0	0.044	6.9	LOS A	0.1	4.1	0.60	0.54	33.9
18	R2	4	0.0	0.044	6.9	LOS A	0.1	4.1	0.60	0.54	33.1
Approach		25	12.1	0.044	6.9	LOS A	0.1	4.1	0.60	0.54	33.6
East: Knott Rd											
1	L2	5	75.0	0.665	15.5	LOS C	5.2	142.1	0.74	0.76	28.5
6	T1	527	11.0	0.665	15.5	LOS C	5.2	142.1	0.74	0.76	30.2
16	R2	34	8.0	0.665	15.5	LOS C	5.2	142.1	0.74	0.76	29.4
Approach		566	11.4	0.665	15.5	LOS C	5.2	142.1	0.74	0.76	30.1
North: 15th St											
7	L2	40	0.0	0.638	16.5	LOS C	4.7	119.7	0.81	0.92	29.7
4	T1	10	0.0	0.638	16.5	LOS C	4.7	119.7	0.81	0.92	29.6
14	R2	411	4.0	0.638	16.5	LOS C	4.7	119.7	0.81	0.92	28.8
Approach		461	3.6	0.638	16.5	LOS C	4.7	119.7	0.81	0.92	28.9
West: Knott Rd											
5	L2	321	7.0	0.561	9.7	LOS A	4.1	109.7	0.31	0.14	31.5
2	T1	329	14.0	0.561	9.7	LOS A	4.1	109.7	0.31	0.14	31.4
12	R2	10	0.0	0.561	9.7	LOS A	4.1	109.7	0.31	0.14	30.8
Approach		660	10.4	0.561	9.7	LOS A	4.1	109.7	0.31	0.14	31.5
All Vehicles		1712	8.9	0.665	13.4	LOS B	5.2	142.1	0.59	0.56	30.3

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

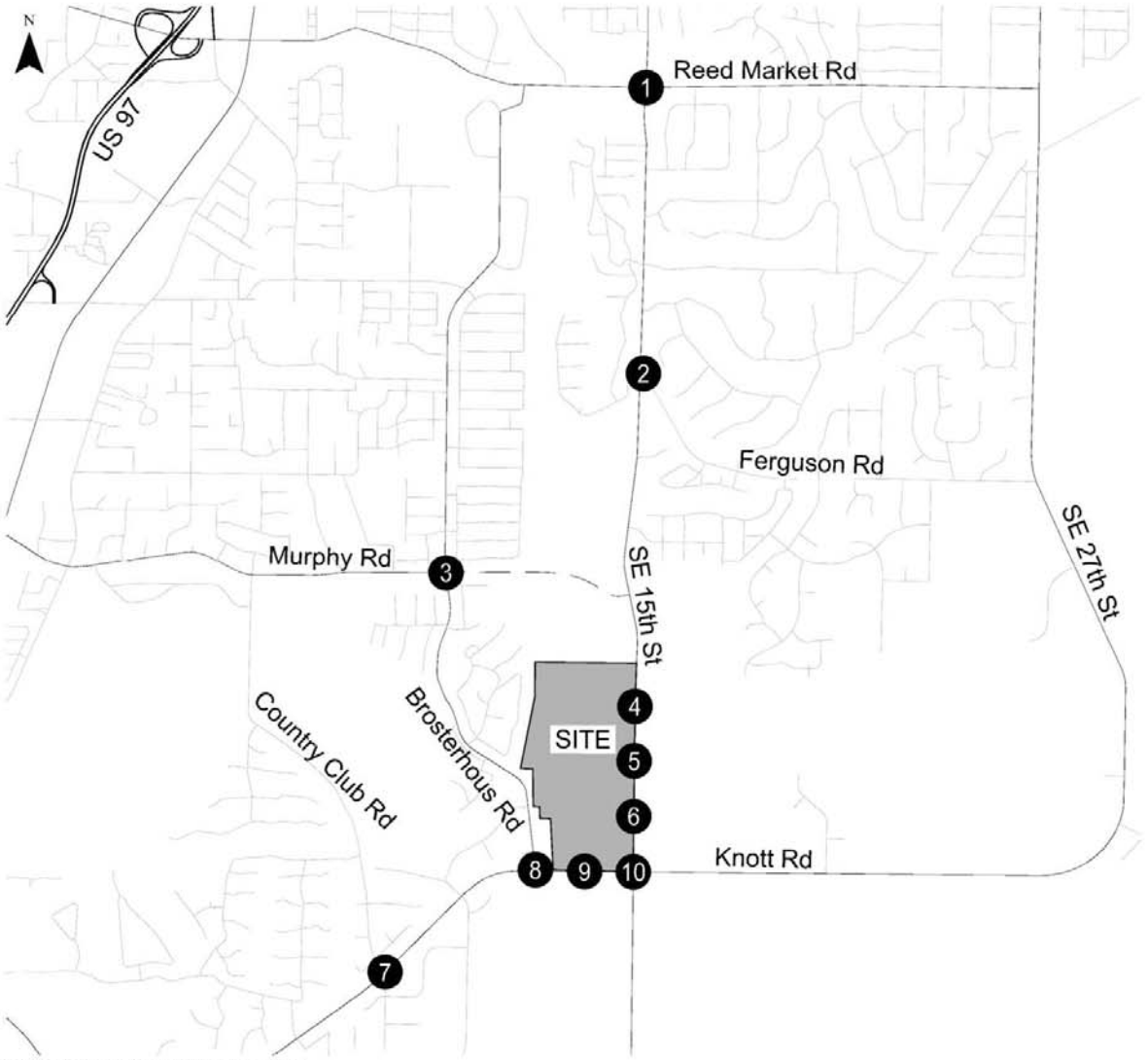
Site: 101 [10 15th/Knott 2027 PM - TDM]

New Site
Roundabout

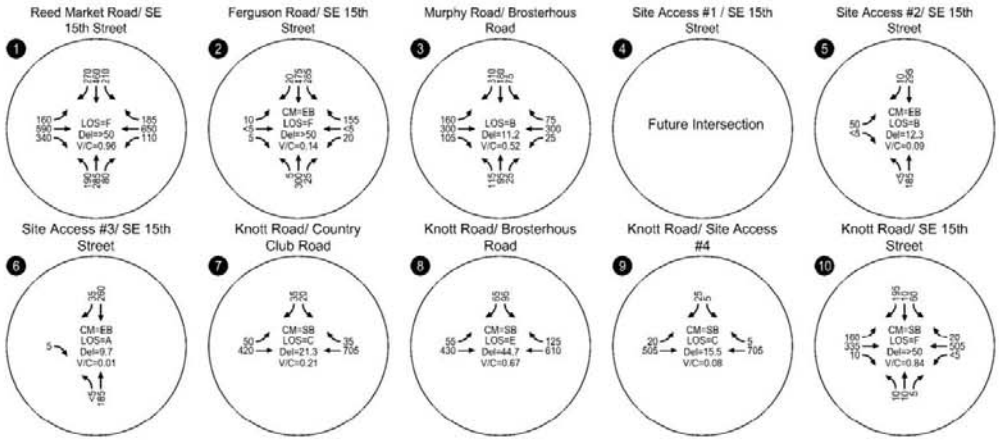
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: 15th St											
3	L2	10	0.0	0.035	5.9	LOS A	0.1	3.3	0.57	0.49	33.6
8	T1	10	14.0	0.035	5.9	LOS A	0.1	3.3	0.57	0.49	33.3
18	R2	3	0.0	0.035	5.9	LOS A	0.1	3.3	0.57	0.49	32.6
Approach		23	6.0	0.035	5.9	LOS A	0.1	3.3	0.57	0.49	33.3
East: Knott Rd											
1	L2	1	0.0	0.708	16.1	LOS C	7.0	180.8	0.81	0.83	30.2
6	T1	624	4.0	0.708	16.1	LOS C	7.0	180.8	0.81	0.83	30.0
16	R2	38	0.0	0.708	16.1	LOS C	7.0	180.8	0.81	0.83	29.3
Approach		663	3.8	0.708	16.1	LOS C	7.0	180.8	0.81	0.83	30.0
North: 15th St											
7	L2	29	0.0	0.588	15.3	LOS C	3.9	99.1	0.79	0.89	30.2
4	T1	12	0.0	0.588	15.3	LOS C	3.9	99.1	0.79	0.89	30.1
14	R2	365	2.0	0.588	15.3	LOS C	3.9	99.1	0.79	0.89	29.3
Approach		407	1.8	0.588	15.3	LOS C	3.9	99.1	0.79	0.89	29.4
West: Knott Rd											
5	L2	308	5.0	0.502	8.3	LOS A	3.6	93.9	0.24	0.10	32.2
2	T1	300	9.0	0.502	8.3	LOS A	3.6	93.9	0.24	0.10	32.1
12	R2	13	0.0	0.502	8.3	LOS A	3.6	93.9	0.24	0.10	31.4
Approach		621	6.8	0.502	8.3	LOS A	3.6	93.9	0.24	0.10	32.1
All Vehicles		1713	4.4	0.708	13.0	LOS B	7.0	180.8	0.60	0.57	30.6

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.

Appendix F - Figures and Operation Worksheets with Murphy Extension



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



2027 Background Traffic Conditions with Murphy Extension, Weekday PM Peak Hour
Bend, Oregon

Figure
F-1

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		158	589	338		108	649	184		188	287	79		212	460	272
% HV		4	3	3		3	2	6		2	4	2		3	3	2
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	747	337	N/A		757	191	N/A		186	367	N/A		672	269	N/A	
Entry lane capacity (veh/h)	589	589	N/A		724	797	N/A		487	487	N/A		501	501	N/A	
x (v/c ratio)	1.27	0.57	N/A		1.04	0.24	N/A		0.38	0.75	N/A		1.34	0.54	N/A	
Lane control delay (s/veh)	155.9	16.8	N/A		69.4	7.1	N/A		13.8	30.4	N/A		190.1	17.9	N/A	
Lane LOS	F	C	N/A		F	A	N/A		B	D	N/A		F	C	N/A	
Approach control delay (s/veh)	112.7				56.8				24.8				140.8			
Approach LOS	F				F				C				F			
Intersection control delay (s/veh)	91.4															
Intersection LOS	F															
95th percentile queue (veh)	29.3	3.6	N/A		19.0	0.9	N/A		1.8	6.4	N/A		29.8	3.1	N/A	
	overall v/c	0.96														

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	9	1	4	298	23	284	476	19	1	156
Future Vol, veh/h	9	1	4	298	23	284	476	19	1	156
Conflicting Peds, #/hr	0	0	0	0	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	5	0	4	2	0	2	2
Mvmt Flow	9	1	4	298	23	284	476	19	1	156

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	1450	486	495	0	0	322	0	0	1374	311
Stage 1	1054	-	-	-	-	-	-	-	319	-
Stage 2	396	-	-	-	-	-	-	-	1055	-
Critical Hdwy	7.1	6.22	4.1	-	-	4.14	-	-	7.12	6.22
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.5	3.318	2.2	-	-	2.236	-	-	3.518	3.318
Pot Cap-1 Maneuver	110	581	1079	-	-	1227	-	-	123	729
Stage 1	276	-	-	-	-	-	-	-	693	-
Stage 2	633	-	-	-	-	-	-	-	273	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	64	581	1079	-	-	1227	-	-	91	728
Mov Cap-2 Maneuver	64	-	-	-	-	-	-	-	91	-
Stage 1	275	-	-	-	-	-	-	-	689	-
Stage 2	494	-	-	-	-	-	-	-	184	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	64.8	0.1	3.2	21.1
HCM LOS	F			C

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1079	-	-	398	70	1227	-	-
HCM Lane V/C Ratio	0.004	-	-	0.445	0.143	0.231	-	-
HCM Control Delay (s)	8.3	0	-	21.1	64.8	8.8	0	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2.2	0.5	0.9	-	-

Parameter	Approach															
	EB (West Leg): Murphy Rd				WB (East Leg): Murphy Rd				NB (South Leg): Brosterhous Rd				SB (North Leg): Brosterhous Rd			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LTR				Case: LTR				Case: LTR				Case: LTR			
RT bypass configuration (Note: This is in addition to the entry lane(s))			Case: None				Case: None				Case: None				Case: Non	
Number of conflicting circ lanes		1				1				1				1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		158	300	106		25	300	75		114	94	25		75	178	309
% HV		3	0	4		0	0	0		2	6	0		0	4	1
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	0				0				0				0			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1130	1130			1130	1130			1130	1130			1130	1130		
B (coefficient)	0.00075	0.0007			0.00075	0.0007			0.00075	0.0007			0.00075	0.0007		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1333.33				1333.33				1333.33				1333.33			
B (coefficient)	0.0007639				0.0007639				0.0007639				0.0007639			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1130				1130				1130				1130			
B (coefficient)	0.0007				0.0007				0.0007				0.0007			
SUMMARY																
Entry lane volume (veh/h)	N/A	567	N/A		N/A	400	N/A		N/A	232	N/A		N/A	556	N/A	
Entry lane capacity (veh/h)	N/A	1021	N/A		N/A	938	N/A		N/A	768	N/A		N/A	856	N/A	
x (v/c ratio)	N/A	0.56	N/A		N/A	0.43	N/A		N/A	0.30	N/A		N/A	0.65	N/A	
Lane control delay (s/veh)	N/A	10.6	N/A		N/A	8.8	N/A		N/A	8.2	N/A		N/A	14.9	N/A	
Lane LOS	N/A	B	N/A		N/A	A	N/A		N/A	A	N/A		N/A	B	N/A	
Approach control delay (s/veh)	10.6				8.8				8.2				14.9			
Approach LOS	B				A				A				B			
Intersection control delay (s/veh)	11.2															
Intersection LOS	B															
95th percentile queue (veh)	N/A	3.5	N/A		N/A	2.2	N/A		N/A	1.3	N/A		N/A	4.9	N/A	
	overall v/c	0.52														

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	0	2	185	294	11
Future Vol, veh/h	48	0	2	185	294	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	48	0	2	185	294	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	489	300	305	0	-	0
Stage 1	300	-	-	-	-	-
Stage 2	189	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	542	744	1267	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	541	744	1267	-	-	-
Mov Cap-2 Maneuver	541	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1267	-	541	-	-
HCM Lane V/C Ratio	0.002	-	0.089	-	-
HCM Control Delay (s)	7.8	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	2	187	261	33
Future Vol, veh/h	0	4	2	187	261	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	4	2	187	261	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	278	294	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	766	1279	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	766	1279	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1279	-	766	-	-
HCM Lane V/C Ratio	0.002	-	0.005	-	-
HCM Control Delay (s)	7.8	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	420	706	37	22	36
Future Vol, veh/h	51	420	706	37	22	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	8	6	0	0	3
Mvmt Flow	51	420	706	37	22	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	743	0	-	0	1247	725
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	522	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	873	-	-	-	193	423
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	873	-	-	-	178	423
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	553	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	873	-	-	-	278
HCM Lane V/C Ratio	0.058	-	-	-	0.209
HCM Control Delay (s)	9.4	0	-	-	21.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	55	428	608	124	97	66
Future Vol, veh/h	55	428	608	124	97	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	55	428	608	124	97	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	732	0	-	0	1208	670
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	538	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	841	-	-	-	200	452
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	581	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	841	-	-	-	187	452
Mov Cap-2 Maneuver	-	-	-	-	187	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	44.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	841	-	-	-	245
HCM Lane V/C Ratio	0.065	-	-	-	0.665
HCM Control Delay (s)	9.6	-	-	-	44.7
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	4.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	504	705	4	4	27
Future Vol, veh/h	22	504	705	4	4	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	504	705	4	4	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	709	0	-	0	1255	707
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	548	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	899	-	-	-	191	439
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	899	-	-	-	185	439
Mov Cap-2 Maneuver	-	-	-	-	185	-
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	899	-	-	-	373
HCM Lane V/C Ratio	0.024	-	-	-	0.083
HCM Control Delay (s)	9.1	0	-	-	15.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

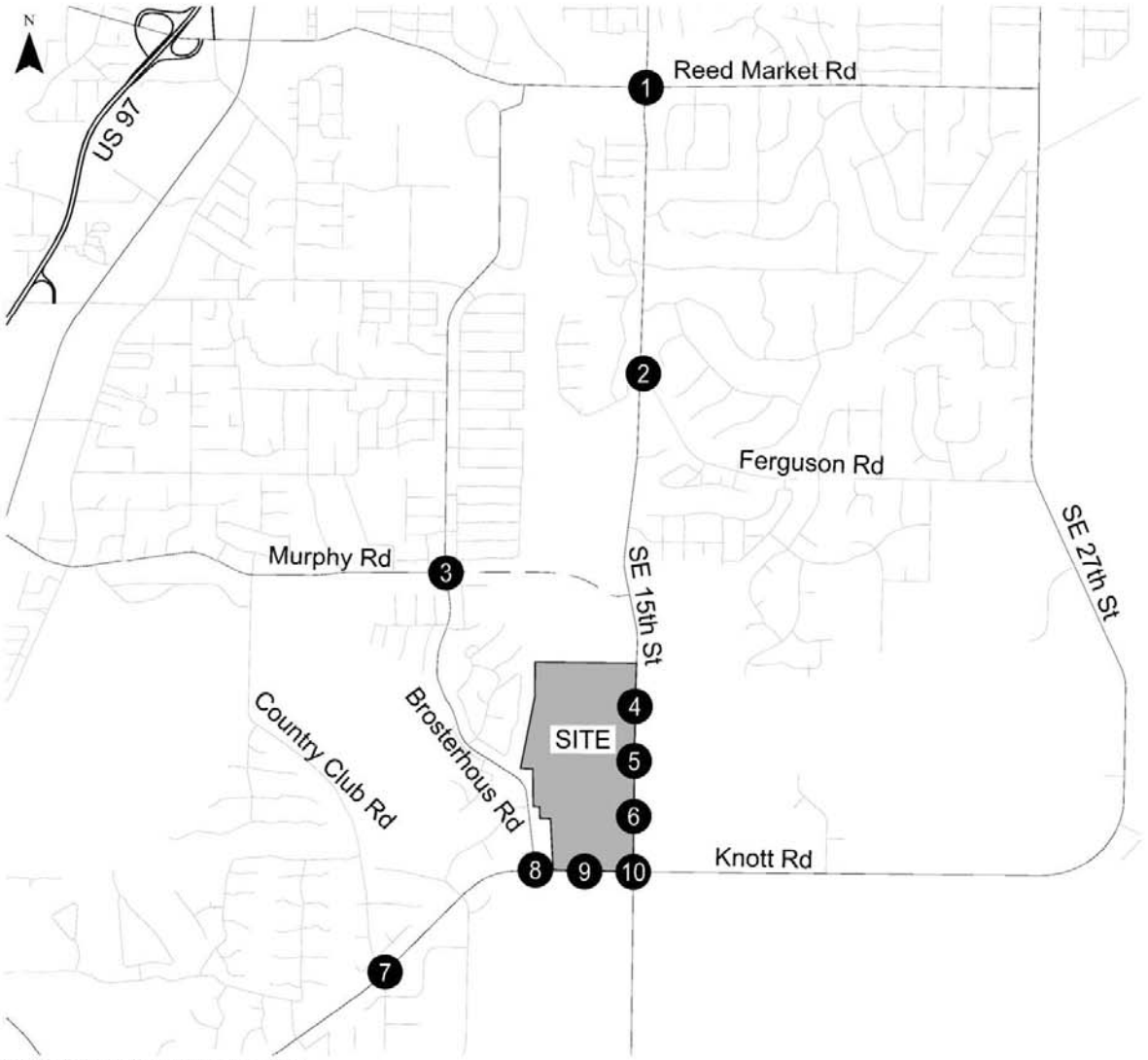
Intersection	
Int Delay, s/veh	13

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	160	336	12	1	504	19	9	9	3	60	11	195
Future Vol, veh/h	160	336	12	1	504	19	9	9	3	60	11	195
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	9	0	0	4	0	0	14	0	0	0	2
Mvmt Flow	160	336	12	1	504	19	9	9	3	60	11	195

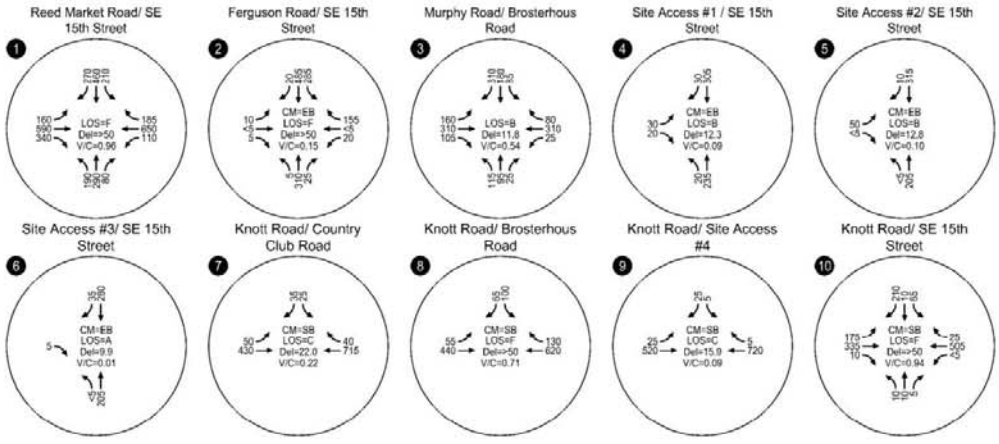
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	523	0	0	348	0	0	1281	1187	342	1184	1184	514
Stage 1	-	-	-	-	-	-	662	662	-	516	516	-
Stage 2	-	-	-	-	-	-	619	525	-	668	668	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.1	6.64	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.5	4.126	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	1028	-	-	1222	-	-	144	179	705	168	191	560
Stage 1	-	-	-	-	-	-	454	441	-	546	538	-
Stage 2	-	-	-	-	-	-	480	510	-	451	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1028	-	-	1222	-	-	78	151	705	141	161	560
Mov Cap-2 Maneuver	-	-	-	-	-	-	78	151	-	141	161	-
Stage 1	-	-	-	-	-	-	383	372	-	461	538	-
Stage 2	-	-	-	-	-	-	306	510	-	370	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.9	0	42.4	55.5
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	117	1028	-	-	1222	-	-	316
HCM Lane V/C Ratio	0.179	0.156	-	-	0.001	-	-	0.842
HCM Control Delay (s)	42.4	9.1	-	-	7.9	-	-	55.5
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.6	0.6	-	-	0	-	-	7.3



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



2027 Build Traffic Conditions with Murphy Extension, Weekday PM Peak Hour
Bend, Oregon

Figure
F-2

Parameter	Approach															
	EB (West Leg): SE Reed Market Rd				WB (East Leg): SE Reed Market Rd				NB (South Leg): SE 15th St				SB (North Leg): SE 15th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LT, R				Case: LT, R				Case: L, TR				Case: LT, R			
RT bypass configuration (Note: This is in addition to the entry lane(s))	Case: None				Case: None				Case: None				Case: None			
Number of conflicting circ lanes	1	1			2	2			1	1			1	1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		158	589	342		111	649	184		192	290	82		212	462	272
% HV		4	3	3		3	2	6		2	4	2		3	3	2
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	1				0				0				1			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1350	1420			1350	1420			1350	1420			1350	1420		
B (coefficient)	0.00092	0.00085			0.00092	0.00085			0.00092	0.00085			0.00092	0.00085		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1380				1380				1380				1380			
B (coefficient)	0.00102				0.00102				0.00102				0.00102			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1420				1420				1420				1420			
B (coefficient)	0.00085				0.00085				0.00085				0.00085			
SUMMARY																
Entry lane volume (veh/h)	747	341	N/A		760	191	N/A		190	374	N/A		674	269	N/A	
Entry lane capacity (veh/h)	586	586	N/A		719	792	N/A		487	487	N/A		497	497	N/A	
x (v/c ratio)	1.27	0.58	N/A		1.06	0.24	N/A		0.39	0.77	N/A		1.36	0.54	N/A	
Lane control delay (s/veh)	158.6	17.2	N/A		73.4	7.2	N/A		14.0	31.6	N/A		196.2	18.2	N/A	
Lane LOS	F	C	N/A		F	A	N/A		B	D	N/A		F	C	N/A	
Approach control delay (s/veh)	114.3				60.1				25.7				145.4			
Approach LOS	F				F				D				F			
Intersection control delay (s/veh)	93.9															
Intersection LOS	F															
95th percentile queue (veh)	29.6	3.7	N/A		19.6	0.9	N/A		1.8	6.7	N/A		30.4	3.2	N/A	
	overall v/c	0.96														

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	9	1	4	308	25	284	485	19	1	156
Future Vol, veh/h	9	1	4	308	25	284	485	19	1	156
Conflicting Peds, #/hr	0	0	0	0	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	-	-	None	-	-	None	-	None
Storage Length	0	-	-	-	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	-	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	5	0	4	2	0	2	2
Mvmt Flow	9	1	4	308	25	284	485	19	1	156

Major/Minor	Minor2		Major1			Major2			Minor1	
Conflicting Flow All	1470	495	504	0	0	334	0	0	1394	322
Stage 1	1063	-	-	-	-	-	-	-	330	-
Stage 2	407	-	-	-	-	-	-	-	1064	-
Critical Hdwy	7.1	6.22	4.1	-	-	4.14	-	-	7.12	6.22
Critical Hdwy Stg 1	6.1	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	3.5	3.318	2.2	-	-	2.236	-	-	3.518	3.318
Pot Cap-1 Maneuver	106	575	1071	-	-	1214	-	-	119	719
Stage 1	272	-	-	-	-	-	-	-	683	-
Stage 2	625	-	-	-	-	-	-	-	270	-
Platoon blocked, %				-	-		-	-		
Mov Cap-1 Maneuver	61	575	1071	-	-	1214	-	-	88	718
Mov Cap-2 Maneuver	61	-	-	-	-	-	-	-	88	-
Stage 1	271	-	-	-	-	-	-	-	679	-
Stage 2	486	-	-	-	-	-	-	-	181	-

Approach	EB	NB	SB	NW
HCM Control Delay, s	67.9	0.1	3.2	23.1
HCM LOS	F			C

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	1071	-	-	375	67	1214	-	-
HCM Lane V/C Ratio	0.004	-	-	0.477	0.149	0.234	-	-
HCM Control Delay (s)	8.4	0	-	23.1	67.9	8.9	0	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2.5	0.5	0.9	-	-

Parameter	Approach															
	EB (West Leg): Murphy Rd				WB (East Leg): Murphy Rd				NB (South Leg): Brosterhous Rd				SB (North Leg): Brosterhous Rd			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration (Note: This assumes 4 legs.)	Case: LTR				Case: LTR				Case: LTR				Case: LTR			
RT bypass configuration (Note: This is in addition to the entry lane(s))			Case: None				Case: None				Case: None				Case: None	
Number of conflicting circ lanes		1				1				1				1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		158	310	107		26	312	82		115	96	26		83	180	309
% HV		3	0	4		0	0	0		2	6	0		0	4	1
PHF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Volumes (crossing leg)																
n_p	0				0				0				0			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1380	1380			1380	1380			1380	1380			1380	1380		
B (coefficient)	0.00102	0.00102			0.00102	0.00102			0.00102	0.00102			0.00102	0.00102		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1130	1130			1130	1130			1130	1130			1130	1130		
B (coefficient)	0.00075	0.0007			0.00075	0.0007			0.00075	0.0007			0.00075	0.0007		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1333.33				1333.33				1333.33				1333.33			
B (coefficient)	0.0007639				0.0007639				0.0007639				0.0007639			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1130				1130				1130				1130			
B (coefficient)	0.0007				0.0007				0.0007				0.0007			
SUMMARY																
Entry lane volume (veh/h)	N/A	578	N/A		N/A	420	N/A		N/A	236	N/A		N/A	566	N/A	
Entry lane capacity (veh/h)	N/A	1010	N/A		N/A	935	N/A		N/A	754	N/A		N/A	845	N/A	
x (v/c ratio)	N/A	0.57	N/A		N/A	0.45	N/A		N/A	0.31	N/A		N/A	0.67	N/A	
Lane control delay (s/veh)	N/A	11.1	N/A		N/A	9.2	N/A		N/A	8.5	N/A		N/A	15.8	N/A	
Lane LOS	N/A	B	N/A		N/A	A	N/A		N/A	A	N/A		N/A	C	N/A	
Approach control delay (s/veh)	11.1				9.2				8.5				15.8			
Approach LOS	B				A				A				C			
Intersection control delay (s/veh)	11.8															
Intersection LOS	B															
95th percentile queue (veh)	N/A	3.8	N/A		N/A	2.4	N/A		N/A	1.3	N/A		N/A	5.3	N/A	
	overall v/c	0.54														

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	21	19	235	305	30
Future Vol, veh/h	30	21	19	235	305	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	30	21	19	235	305	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	593	320	335	0	-	0
Stage 1	320	-	-	-	-	-
Stage 2	273	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	472	725	1236	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	464	725	1236	-	-	-
Mov Cap-2 Maneuver	464	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1236	-	545	-	-
HCM Lane V/C Ratio	0.015	-	0.094	-	-
HCM Control Delay (s)	8	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	0	2	204	315	11
Future Vol, veh/h	50	0	2	204	315	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	50	0	2	204	315	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	529	321	326	0	-	0
Stage 1	321	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	514	724	1245	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	513	724	1245	-	-	-
Mov Cap-2 Maneuver	513	-	-	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	830	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1245	-	513	-	-
HCM Lane V/C Ratio	0.002	-	0.097	-	-
HCM Control Delay (s)	7.9	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	2	206	282	33
Future Vol, veh/h	0	4	2	206	282	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	4	2	206	282	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	299	315	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.1	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	0	745	1257	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	745	1257	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1257	-	745	-	-
HCM Lane V/C Ratio	0.002	-	0.005	-	-
HCM Control Delay (s)	7.9	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	51	430	717	38	23	36
Future Vol, veh/h	51	430	717	38	23	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	8	6	0	0	3
Mvmt Flow	51	430	717	38	23	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	755	0	-	0	1268	736
Stage 1	-	-	-	-	736	-
Stage 2	-	-	-	-	532	-
Critical Hdwy	4.1	-	-	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.327
Pot Cap-1 Maneuver	865	-	-	-	188	417
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	593	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	865	-	-	-	174	417
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	547	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	22
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	865	-	-	-	270
HCM Lane V/C Ratio	0.059	-	-	-	0.219
HCM Control Delay (s)	9.4	0	-	-	22
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	55	439	620	128	101	66
Future Vol, veh/h	55	439	620	128	101	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	55	439	620	128	101	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	748	0	-	0	1233	684
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	549	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	830	-	-	-	193	444
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	830	-	-	-	180	444
Mov Cap-2 Maneuver	-	-	-	-	180	-
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	537	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	50.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	830	-	-	-	235
HCM Lane V/C Ratio	0.066	-	-	-	0.711
HCM Control Delay (s)	9.6	-	-	-	50.8
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	4.7

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	518	721	4	4	27
Future Vol, veh/h	23	518	721	4	4	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	518	721	4	4	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	725	0	-	0	1287	723
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	564	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	887	-	-	-	183	430
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	573	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	887	-	-	-	176	430
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	552	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	887	-	-	-	362
HCM Lane V/C Ratio	0.026	-	-	-	0.086
HCM Control Delay (s)	9.2	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	17.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	175	336	12	1	504	24	9	9	3	64	11	211
Future Vol, veh/h	175	336	12	1	504	24	9	9	3	64	11	211
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	60	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	5	9	0	0	4	0	0	14	0	0	0	2
Mvmt Flow	175	336	12	1	504	24	9	9	3	64	11	211

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	528	0	0	348	0	0	1321	1222	342	1216	1216	516
Stage 1	-	-	-	-	-	-	692	692	-	518	518	-
Stage 2	-	-	-	-	-	-	629	530	-	698	698	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.1	6.64	6.2	7.1	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.64	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.5	4.126	3.3	3.5	4	3.318
Pot Cap-1 Maneuver	1024	-	-	1222	-	-	135	170	705	159	183	559
Stage 1	-	-	-	-	-	-	437	427	-	544	536	-
Stage 2	-	-	-	-	-	-	474	507	-	434	445	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1024	-	-	1222	-	-	69	141	705	131	152	559
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	141	-	131	152	-
Stage 1	-	-	-	-	-	-	362	354	-	451	536	-
Stage 2	-	-	-	-	-	-	289	507	-	349	369	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0	47.2	74.7
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	106	1024	-	-	1222	-	-	305
HCM Lane V/C Ratio	0.198	0.171	-	-	0.001	-	-	0.938
HCM Control Delay (s)	47.2	9.2	-	-	7.9	-	-	74.7
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.7	0.6	-	-	0	-	-	9.2

Appendix G - Brosterhous Road Connection Analysis

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	528	353	149	95	41
Future Vol, veh/h	42	528	353	149	95	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	7	13	7	12	16
Mvmt Flow	42	528	353	149	95	41

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	502	0	-	0	1040	428
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	612	-
Critical Hdwy	4.23	-	-	-	6.52	6.36
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	5.52	-
Follow-up Hdwy	2.317	-	-	-	3.608	3.444
Pot Cap-1 Maneuver	1008	-	-	-	244	598
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	522	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1008	-	-	-	234	598
Mov Cap-2 Maneuver	-	-	-	-	234	-
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	500	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	28.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1008	-	-	-	287
HCM Lane V/C Ratio	0.042	-	-	-	0.474
HCM Control Delay (s)	8.7	-	-	-	28.3
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	2.4

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	72	225	8	154	150
Future Vol, veh/h	4	72	225	8	154	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	103	321	11	220	214

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	981	327	0	0	333	0
Stage 1	327	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	277	714	-	-	1226	-
Stage 1	731	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	220	714	-	-	1226	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	412	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	4.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	639	1226	-
HCM Lane V/C Ratio	-	-	0.17	0.179	-
HCM Control Delay (s)	-	-	11.8	8.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.7	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	344	545	177	131	65
Future Vol, veh/h	42	344	545	177	131	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	11	14	8	9	10	2
Mvmt Flow	42	344	545	177	131	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	722	0	-	0	1062	634
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	428	-
Critical Hdwy	4.21	-	-	-	6.5	6.22
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.299	-	-	-	3.59	3.318
Pot Cap-1 Maneuver	840	-	-	-	239	479
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	840	-	-	-	227	479
Mov Cap-2 Maneuver	-	-	-	-	227	-
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	609	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	45
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	840	-	-	-	275
HCM Lane V/C Ratio	0.05	-	-	-	0.713
HCM Control Delay (s)	9.5	-	-	-	45
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	5

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	102	250	3	50	275
Future Vol, veh/h	5	102	250	3	50	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	146	357	4	71	393

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	895	359	0	0	361	0
Stage 1	359	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	311	685	-	-	1198	-
Stage 1	707	-	-	-	-	-
Stage 2	587	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	287	685	-	-	1198	-
Mov Cap-2 Maneuver	287	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	643	1198	-
HCM Lane V/C Ratio	-	-	0.238	0.06	-
HCM Control Delay (s)	-	-	12.3	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	-

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	333	592	168	130	72
Future Vol, veh/h	42	333	592	168	130	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	10	3	3	4	5
Mvmt Flow	42	333	592	168	130	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	760	0	-	0	1093	676
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	417	-
Critical Hdwy	4.19	-	-	-	6.44	6.25
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.281	-	-	-	3.536	3.345
Pot Cap-1 Maneuver	821	-	-	-	235	448
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	821	-	-	-	223	448
Mov Cap-2 Maneuver	-	-	-	-	223	-
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	48.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	821	-	-	-	272
HCM Lane V/C Ratio	0.051	-	-	-	0.743
HCM Control Delay (s)	9.6	-	-	-	48.5
HCM Lane LOS	A	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	5.4

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	36	250	2	33	275
Future Vol, veh/h	2	36	250	2	33	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	51	357	3	47	393

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	846	359	0	0	360	0
Stage 1	359	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	333	685	-	-	1199	-
Stage 1	707	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	316	685	-	-	1199	-
Mov Cap-2 Maneuver	316	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	587	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	645	1199	-
HCM Lane V/C Ratio	-	-	0.084	0.039	-
HCM Control Delay (s)	-	-	11.1	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-