TRANSPORTATION TECHNICAL REPORT

for the

Bonney Lake High School Classroom Addition Project

PREPARED FOR:

Sumner-Bonney Lake School District

PREPARED BY:

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April 9, 2026

TABLE OF CONTENTS

1. INTRODUCTION 1
1.1. Report Certification 1
1.2. Project Description 1
2. BACKGROUND CONDITIONS 6
2.1. Extent of Study Area 6
2.2. Impacts to Other Jurisdictions 6
2.3. Roadway Network 6
2.4. Traffic Volumes 8
2.5. Traffic Operations 16
2.6. Traffic Safety 18
2.7. Parking 19
2.8. On-Site Load/Unload Operations 20
2.9. Transit Facilities and Service 20
2.10. Active (Non-Motorized) Transportation Facilities 20
3. PROJECT IMPACTS 22
3.1. Roadway Network 22
3.2. Traffic Volumes 22
3.3. Trip Distribution and Assignment 24
3.4. Traffic Operations 29
3.5. Traffic Safety 31
3.6. Parking 32
3.7. On-Site Load/Unload Operations 33
3.8. Transit Facilities and Service 33
3.9. Active (Non-Motorized) Transportation Facilities 33
4. FINDINGS AND RECOMMENDATIONS 34
4.1. Findings 34
4.2. Mitigation 35

Appendix A – Traffic Analysis Scoping Documents and Traffic Count Data Sheets

Appendix B – Level of Service Definitions

Appendix C – Level of Service Calculations

Appendix D – Queuing Simulation Reports

Appendix E – Bonney Lake High School – Revised Access Review Analysis

LIST OF FIGURES

Figure 1. Site Location and Vicinity 2
Figure 2. Bonney Lake High School Enrollment Boundary 3
Figure 3. Proposed Site Plan 5
Figure 4. Existing Site Access Traffic Volumes – Morning and Afternoon Peak Hours 10
Figure 5. Existing Study Area Traffic Volumes – PM Peak Hour 11
Figure 6. 2030 Pipeline Development Traffic Volumes – Morning, Afternoon, and PM Peak Hours 13
Figure 7. Forecast 2030-Without-Project Traffic Volumes – Morning and Afternoon Peak Hours 14
Figure 8. Forecast 2030-Without-Project Traffic Volumes – PM Peak Hour 15
Figure 9. Near Site Active (Non-Motorized) Transportation Network 21
Figure 10. Project Trip Distribution and Assignment – Morning and Afternoon Peak Hours 25
Figure 11. Project Trip Distribution and Assignment – PM Peak Hour 26
Figure 12. Forecast 2030-With-Project Traffic Volumes – Morning and Afternoon Peak Hours 27
Figure 13. Forecast 2030-With-Project Traffic Volumes – PM Peak Hour 28

LIST OF TABLES

Table 1. Level of Service Summary – Existing and Forecast-2030-Without-Project Conditions 17
Table 2. Intersection Queue Simulation Results – Existing and 2030-Without-Project Conditions 18
Table 3. Collision Summary 19
Table 4. Trip Generation Rates – Bonney Lake High School 22
Table 5. Trip Generation Estimates – Bonney Lake High School With Project 23
Table 6. Level of Service Summary – Forecast-2030-Without- and With-Project Conditions 30
Table 7. Intersection Queue Estimates – Forecast 2030 Conditions 31

1. INTRODUCTION

This report presents the transportation impact analysis for the Sumner-Bonney Lake School District's (District) proposed Bonney Lake High School Classroom Addition project. The scope of analysis was outlined by the City of Bonney Lake (City) through multiple communications including *TIA Scoping Memo Review Comments for the City of Bonney Lake*,[1] a meeting with City staff,[2] and email communications,[3] which were all provided in response to the previously-submitted *Transportation Analysis Scoping*[4] technical memorandum. This report was prepared to support the State Environmental Policy Act (SEPA) process requirements in conjunction with site development permitting. It documents existing conditions in the site vicinity, presents estimates of project-related changes to traffic, and evaluates the project's impacts to traffic operations, safety, parking, site circulation and queuing, and other elements of the transportation system.

1.1. Report Certification

The District retained Heffron Transportation, Inc. to prepare the required traffic and transportation analyses for the project. Heffron Transportation, Inc. is a traffic and transportation engineering consulting firm located and incorporated in the State of Washington. The analysis and report documentation were prepared by:

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Mr. McBryan is a Principal Transportation Engineer and Professional Civil Engineer licensed in the State of Washington with over 34 years of experience preparing traffic impact analyses. He is also a member of the Institute of Transportation Engineers (ITE) and the Transportation Research Board (TRB).

1.2. Project Description

1.2.1. Existing School

The District is planning a classroom addition to Bonney Lake High School. The school is located at 10920 – 199th Avenue Court E in Bonney Lake, Washington. The capacity of the existing school is 1,445 students (originally constructed in 2004 and opened in 2005 with capacity of 1,200 and expanded by 245 in 2009); however, population growth has resulted in overcrowding, and the school's 2025-26 enrollment is 1,788 students.[5] In 2026, regular school hours are 7:25 A.M. to 2:00 P.M. with late start at 8:30 A.M. on Mondays. The adjacent Mountain View Middle School has the same hours.

Figure 1 shows the site location and vicinity. Figure 2 shows the overall enrollment area for the school.

1 City of Bonney lake and its transportation consultant Fehr & Peers, December 2, 2025.
2 City of Bonney Lake Transportation Impact Analysis Scoping Meeting, January 9, 2026.
3 Email communications, L. Balisky, City of Bonney Lake – Development Services Manager, Jan. 16, Feb. 5, 6, and 10, 2026.
4 Heffron Transportation, Inc., October 10, 2025.
5 Washington Office of Superintendent of Public Instruction (OSPI), Report Card, 2026.

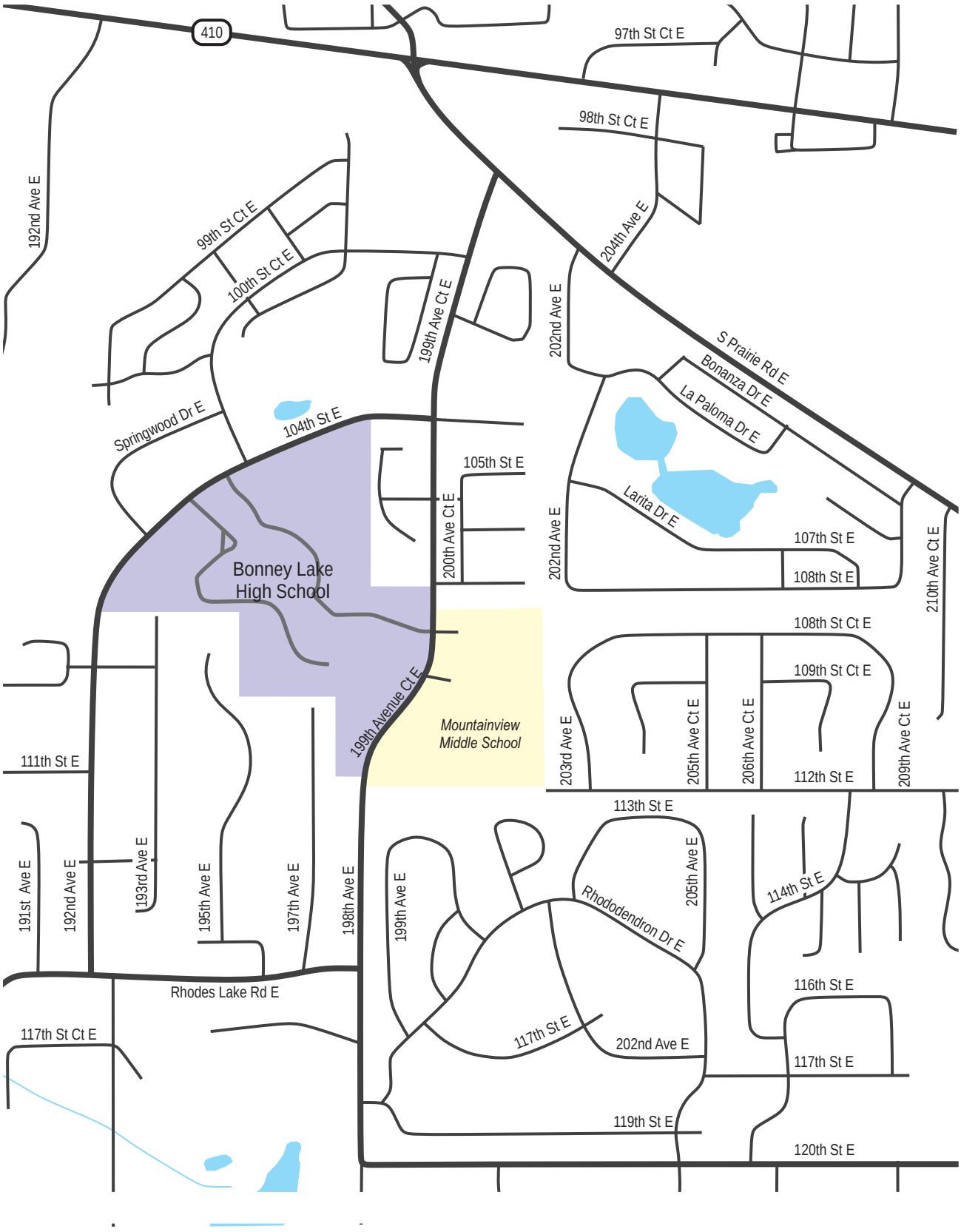

Figure 1

Site Location and Vicinity

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BONNEY LAKE HIGH SCHOOL EXPANSION

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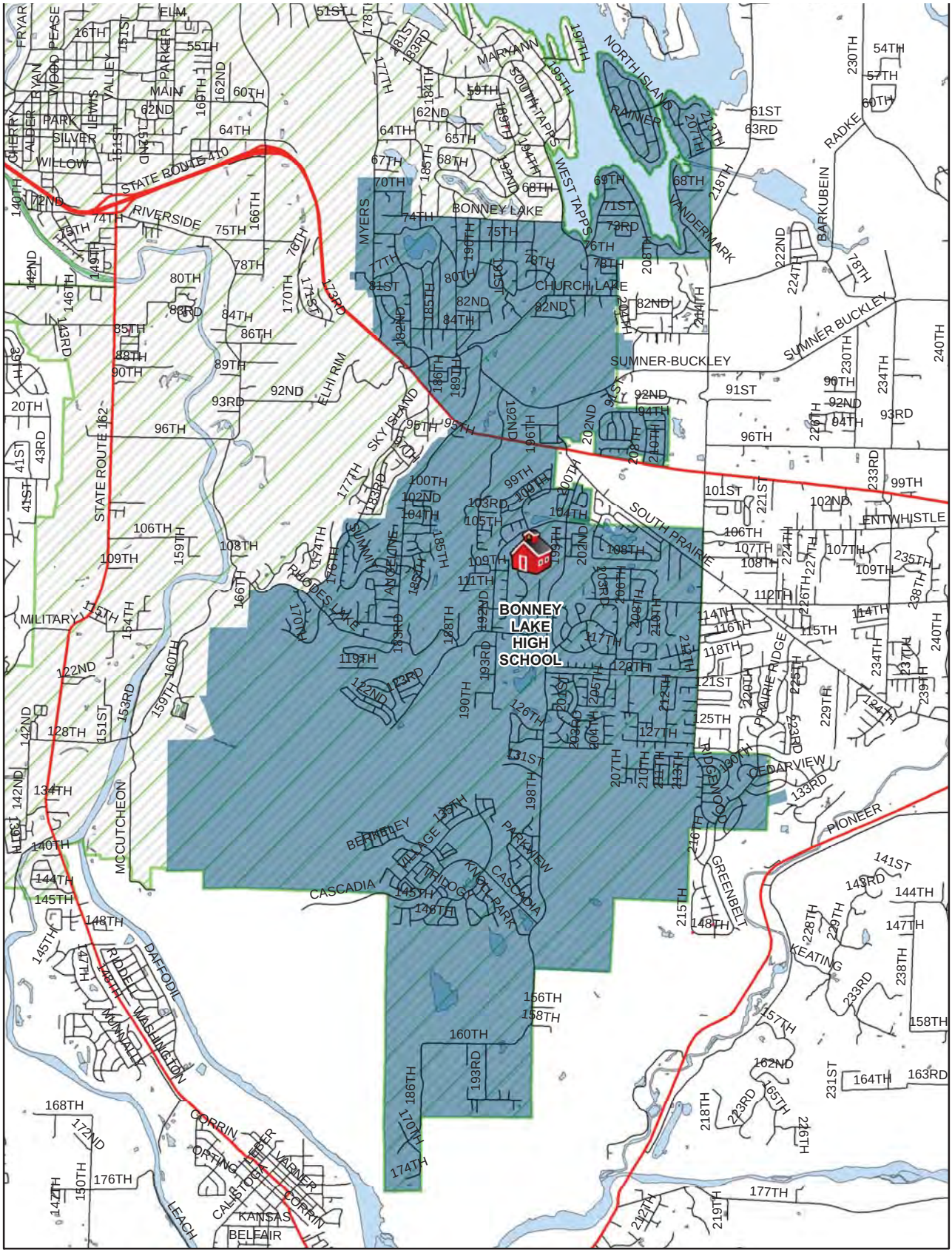

Figure 2
Bonney Lake High School
Enrollment Boundary

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BONNEY LAKE HIGH SCHOOL EXPANSION

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1.2.2. Proposed Site Changes

The District is working to address overcrowding and to provide additional capacity for expected future growth. A classroom addition with modifications to existing buildings is proposed to increase school capacity to 1,985 students—an increase of 540 students compared to the previously-permitted permanent capacity. The classroom addition is planned to be located in the area now used as the entry plaza, automobile load/unload loop, and visitor parking area at the south side of the building west of the existing fast-pitch practice fields. The project would also reconfigure the access and automobile load/unload area near the addition, add on-site automobile queuing capacity, and improve the existing athletic facilities with turf fields. In addition, the main site access intersection on 199th Avenue Court E, which also serves Mountain View Middle School, would be reconstructed as a two-lane roundabout. When the new building addition and interior modifications are complete, the portables that are currently located in the north parking lot would be removed and vehicle parking would be restored.

Figure 3 shows the site plan with the proposed addition, changes to internal site circulation and parking, and the new roundabout at the main access on 199th Avenue Court E.

The project is planned to begin construction in 2026 with completion and occupancy by fall 2028; students and staff would remain on campus during the construction effort.

Source: BCRA, March 26, 2026.

Figure 3

Proposed Site Plan

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2. BACKGROUND CONDITIONS

This section presents the existing and forecast future conditions without the proposed project. For the purposes of this analysis and as coordinated with the City and its Transportation review consultant, year 2030 was selected for analysis of future conditions without and with the proposed project. The forecast-2030-background conditions include traffic from several planned development projects (called "pipeline projects"), including Phase 2 of the Tehaleh Employment Based Planned Community (EBPC) in Pierce County to the south. The background without-project conditions assume that Bonney Lake High School would operate at its previously-permitted capacity of 1,445, which reflects a reduction in traffic compared to the current enrollment levels. That adjustment in school traffic allows the analysis to account for the transportation impacts of the net increase to the proposed school capacity, which is presented later in Section 3. The following sections describe the existing roadway network, traffic volumes and operations, safety, transit, non-motorized facilities, and parking.

2.1. Extent of Study Area

The study area for this analysis was determined through coordination with the City based its *Traffic Impact Analysis Guidelines*[6] as well as project trip generation estimates and the net trip assignments prepared and submitted as part of the previously referenced analysis scoping process. The City requires PM peak hour analysis of all intersections that are forecast to carry net increases of 10 or more total entering PM peak hour trips generated by a development project. Based on the project trip assignments presented in the scoping documentation (and included later in this report in Section 3.3), the City required PM peak hour analysis at the following six locations:

1. State Route (SR) 410 / South Prairie Road E / 198th Avenue E;
2. South Prairie Road E / 200th Avenue Court E;
3. 104th Street E / 199th Avenue E-200th Avenue Court E;
4. 199th Avenue Court E / Bonney Lake High School / Mountain View Middle School Access;
5. 104th Street E / Bonney Lake High School West Access; and
6. 104th Street E / Bonney Lake High School East Access.

In addition to the PM peak hour analysis, the City requested analysis of the Bonney Lake High School access intersections and the 104th Street E / 199th Avenue E-200th Avenue Court E intersection (#3, #4, #5, and #6) for the school's morning-arrival and afternoon-dismissal peak hours.

2.2. Impacts to Other Jurisdictions

Consistent with the City's *Traffic Impact Analysis Guidelines*, City development review staff requested scoping feedback from Pierce County Traffic Section staff.[7] The City received no response from Pierce County; therefore, the study area only includes intersections in the City of Bonney Lake.

2.3. Roadway Network

2.3.1. Existing Facilities

The following describes key roadways in the site vicinity. Roadway classifications are based on the City's functional classification map (Exhibit 1) from the *Community Mobility Element* of the City's *2024 Comprehensive Plan*[8] and Pierce County's *Arterial Classification List*.[9]

6 City of Bonney Lake, *2018 Development Policies and Public Works Design Standards*, March 2018.
7 Email communication, L. Balisky, City of Bonney Lake – Development Services Manager, to Pierce County Traffic Section staff at PCTRAFFIC@piercecountywa.gov. Feb. 6, 2026.
8 City of Bonney Lake, *2024 Comprehensive Plan: Envision Bonney Lake*, Dec. 2025; effective Jan 1, 2026 (Ord. No. 1744).
9 Pierce County, last updated 2017.

199th Avenue Court E / 200th Avenue Court E is a two-lane north-south Principal Arterial that provides access between South Prairie Road E to the north and the City limit at about 112th Street E to the south. The roadway widens with additional lanes at its signalized intersections with South Prairie Road E, 104th Street E, and the Bonney Lake High School / Mountain View Middle School Access intersections. The segment between the 104th Street E and Bonney Lake High School is located within and controlled by Pierce County. The roadway has intermittent segments with vertical concrete curb and sidewalk in some areas and rolled asphalt curb with gravel shoulders and a paved asphalt path on one side in other segments. The posted speed limit is 25 miles per hour (mph); near the school, there is a 20-mph school zone enforced when beacons are flashing.

104th Street E is a two/three lane east-west Collector Arterial that provides access from 199th-200th Avenue Court E on the east to Bonney Lake High School and residential neighborhoods on the west. 104th Street E has a center, two-way left-turn-lane that extends from Bonney Lake High School to just east of the District's Support Services Center. The roadway has a posted speed limit of 25 miles per hour (mph); however, there is a 20-mph school zone near Bonney Lake High School that is in effect from 6:00 A.M. to 6:00 P.M. Monday thru Friday. Its intersection with 199th-200th Avenue Court E is signalized. The roadway has intermittent sections of concrete curb, gutter, and sidewalk and rolled asphalt curb with gravel shoulders/walkways. Sidewalk exists adjacent to Bonney Lake High School, the Sumner School District Support Services Center, and along frontage of some residential developments on the north side of the street. There are marked and signed crosswalks at Springwood and Brookside Drives E (across the west legs); the crossing at Brookside Drive E has a pedestrian-actuated Rectangular Rapid Flashing Beacon (RRFB).

West of the high school, the roadway becomes **192nd Avenue E** as it bends to the south at approximately 108th Street E and ends at a "T" intersection with Rhodes Lake Road E. 192nd Avenue E has curb, gutter, and sidewalk on the east side and rolled asphalt curbs with a paved walkway on the west side. 192nd Avenue E has a posted speed limit of 25 miles per hour (mph); however, there is a 20-mph school zone near Bonney Lake High School that is in effect from 6:00 A.M. to 6:00 P.M. Monday thru Friday. The 192nd Avenue E approach to Rhodes Lake Road is controlled by a stop sign.

SR-410 is an east-west state highway that connects SR-167 in Sumner to SR-164 in Enumclaw. SR-410 continues to the east through Mount Rainier National Park and then on to Yakima. Within the study area, SR-410 is a five-lane roadway (generally two lanes in each direction with segments of turn lanes or an additional through lane); some segments have raised center landscape medians. Within the study area, SR-410 has a posted speed limit of 40 mph. There are a variety of edge conditions including, segments with vertical curb, gutter, landscape strip, and sidewalk on one or both sides, segments with rolled asphalt curb and walkway, and segments with asphalt or grass shoulder and no walkway. Its intersection with South Prairie Road E / 198th Avenue E is signalized.

South Prairie Road E provides access from SR-410 in Bonney Lake southeast to Pioneer Way in South Prairie. South of SR-410, the roadway has five/six lanes with turn lanes at signalized intersections. The roadway transitions to a two/three-lane configuration (one lane in each direction with a center left-turn lane) south of 200th Avenue Ct E to 204th Avenue E. In the analysis area, the roadway has vertical curb, gutters, and sidewalks on both sides. This section of South Prairie Road E has a posted speed limit of 25 mph; it increases to 35 mph south of 200th Avenue Ct E where it becomes a Pierce County roadway. Its intersections with SR-410 and 200th Avenue Ct E are controlled by traffic signals.

198th Avenue E is a north-south Pierce County Secondary Arterial that begins at the south City limit where 199th Avenue Court E ends at about 112th Street E. It extends south for about 2.5 miles into the Tehaleh EBPC. It has two lanes (one in each direction) south of the City of Bonney Lake, but widens to

four lanes as it approaches Rhodes Lake Road E. It has a posted speed limit of 35 mph and its intersection at Rhodes Lake Road E is signalized.

2.3.2. Planned Future Improvements

During the analysis scoping process, the City of Bonney Lake requested that planned near-term transportation improvement projects be accounted for in the analysis. The City provided its *Six Year Transportation Improvement Program (2026-2031)* for review of possible projects. One project is listed in the study area at *South Prairie Road / 200th Avenue E* (Priority Number 3). However, that project would only complete an intersection control evaluation to determine appropriate channelization and/or control improvements. Although it notes that an assumed improvement could add a southbound through lane and widen approaches as needed, there is no funding or specific project that would change the intersection's current channelization or operations by 2030. No other improvements are identified at study area roadways or intersections; therefore, no changes to the existing network were assumed for the future conditions analyses without the proposed project.

Although not part of the analysis study area, it is noted that longer-term capacity improvements are planned by Pierce County for the 198th Avenue E corridor and the Rhodes Lake Road E intersection to the south. The **198th Avenue E – 120th Street E to Rhodes Lake Road E project (County Road Project [CRP] 5674)** will improve 1,500 feet of 198th Avenue E between 120th Street E and Rhodes Lake Road E to be built in stages as the Tehaleh development occurs, which depending on traffic growth, will widen the roadway to four to five lanes between 120th Street E and Rhodes Lake Road E. The exact timing of the improvements is currently unknown; however, a five-lane cross section published by the County is anticipated by 2030[10] and is consistent with the channelization assumed for year 2030 analysis of the intersection in the *Transportation Discipline Report – Tehaleh Employment-Based Planned Community Phase 2 Draft SEIS*.[11]

In addition, Pierce County Council passed Ordinance No. 2008-28s establishing a new arterial corridor called "New Rhodes Lake Road East," which would include a new road between SR 162 and the Tehaleh development for extension within Tehaleh to connect with Falling Water Boulevard East. It is intended to provide motorists with an alternative to Rhodes Lake Road E. The Falling Water Boulevard Extension Segment (CRP 5841) of the project was completed in 2024.[12] The analysis of 2030 conditions with traffic from Tehaleh Phase 2 in the defined study area assumes completion of this connection.

2.4. Traffic Volumes

2.4.1. Existing Traffic Volumes

Morning (6:30 to 8:30 A.M.), afternoon (1:00 to 4:00 P.M.), and commuter PM peak period (4:00 to 6:00 P.M.) turning movement traffic counts were performed at the school's three site access intersections—the signalized access on 199th Avenue Court E and the two driveways on 104th Street E—and at the 104th Street E / 199th Avenue Court E intersection on Thursday, November 7, 2024. The count effort was coordinated with District and school administration staff to ensure that data were collected on a representative normal school day. The City's *Traffic Impact Analysis Guidelines* allow use of these counts because they are less than two-years old. Subsequent to those counts and based on guidance from the City in its scoping communications, new PM peak period counts were performed at the two other study-area intersections—SR-410 / South Prairie Road E / 198th Avenue E and South Prairie Road E / 200th Avenue Court E—on Thursday, February 19, 2026.

10 https://www.piercecountywa.gov/ArchiveCenter/ViewFile/Item/2256
11 Transpo Group, December 2017.
12 Pierce County Engineering Projects website, https://www.piercecountywa.gov/4375/Rhodes-Lake-Rd-E-SR162-to-Falling-Water-, accessed April 2026.

The counts at the site access driveways determined that the school's morning peak hour occurred from 6:30 to 7:30 A.M. and the afternoon peak hour of the school occurred from 2:15 to 3:15 P.M. During the traditional commuter PM peak period, the school generated its highest volume between 4:00 and 5:00 P.M., which was selected for evaluation as the PM peak hour for site access intersections and the 104th Street E / 199th Avenue Court E intersection. The observed individual PM peak hours for the other two off-site intersections were selected for analyses at those locations. Note that enrollment at the time of the site access counts was 1,640 students[13] and regular school hours were 7:25 A.M. to 2:20 P.M.[14] Figure 4 shows the existing site access traffic volumes for the morning and afternoon peak hours; Figure 5 shows the existing commuter PM peak hour traffic volumes at all analysis intersections. The count data sheets are provided in Appendix A.

2.4.2. Future Without-Project Traffic Volumes

Background Growth and Pipeline Development Traffic

As directed by the City, traffic forecasts for year 2030 were developed using a combination of a background traffic growth rate and specific pipeline development traffic. A 0.5% compound annual growth rate was applied to the existing non-school traffic. In addition, the City requested that the future forecasts account for traffic generated by the following 13 pipeline development projects:

- Bonney Lake Fire Station #111;
- Mountain View Middle School Addition;
- 410 Apartments;
- Store-It Here;
- Peak Fore Ten;
- Peak Fore Ten (addendum);
- WSU Bonney Lake Residential;
- 9601 Retail;
- Church Lake West;
- Sunset Storage;
- Hillside Apartments;
- Sasquatch Car Wash; and
- Wilco Bonney Lake.

Excerpted PM peak hour traffic assignments for each of the above projects were provided by the City as part of the referenced scoping communications. After review, it was determined that two of the projects—Church Lake West and Hillside Apartments—did not have PM peak hour trips assigned to the study area roadways or intersections and are not expected to add traffic to those locations during the morning or afternoon peak hours. The studies for the remaining eleven projects did assign PM trips to roadways or intersections within the analysis study area.

The PM peak hour trips from each project were added as assigned or extrapolated based on the information available. Some of the pipeline-project traffic studies included estimates of morning peak hour trips, but only the Mountain View Middle School analyses included morning and afternoon peak hour trip assignments. Therefore, pipeline trips for those peak hours were estimated based on relationship factors derived from rates and data published in ITE's *Trip Generation Manual*.[15] For example, published time-of-day percentages for residential trips during the school's afternoon dismissal peak hour (2:00 to 3:00 P.M.) are 5.5% of the total daily traffic generated.[16]

[13] Email communication, M. Tanay, Sumner-Bonney Lake School District, November 11, 2024.
[14] Regular school hours occur on Monday, Tuesday, Thursday and Friday. The school operates with a late start (9:05 A.M.) on Wednesdays.
[15] ITE, 12th Edition, August 2025, *Time-of-Day Appendices Workbook.*
[16] ITE data show that residential trips during the PM peak hour represent 8.9% of the daily trips while trips during the 2:15 P.M. hour represent 6.6% of the daily trips.

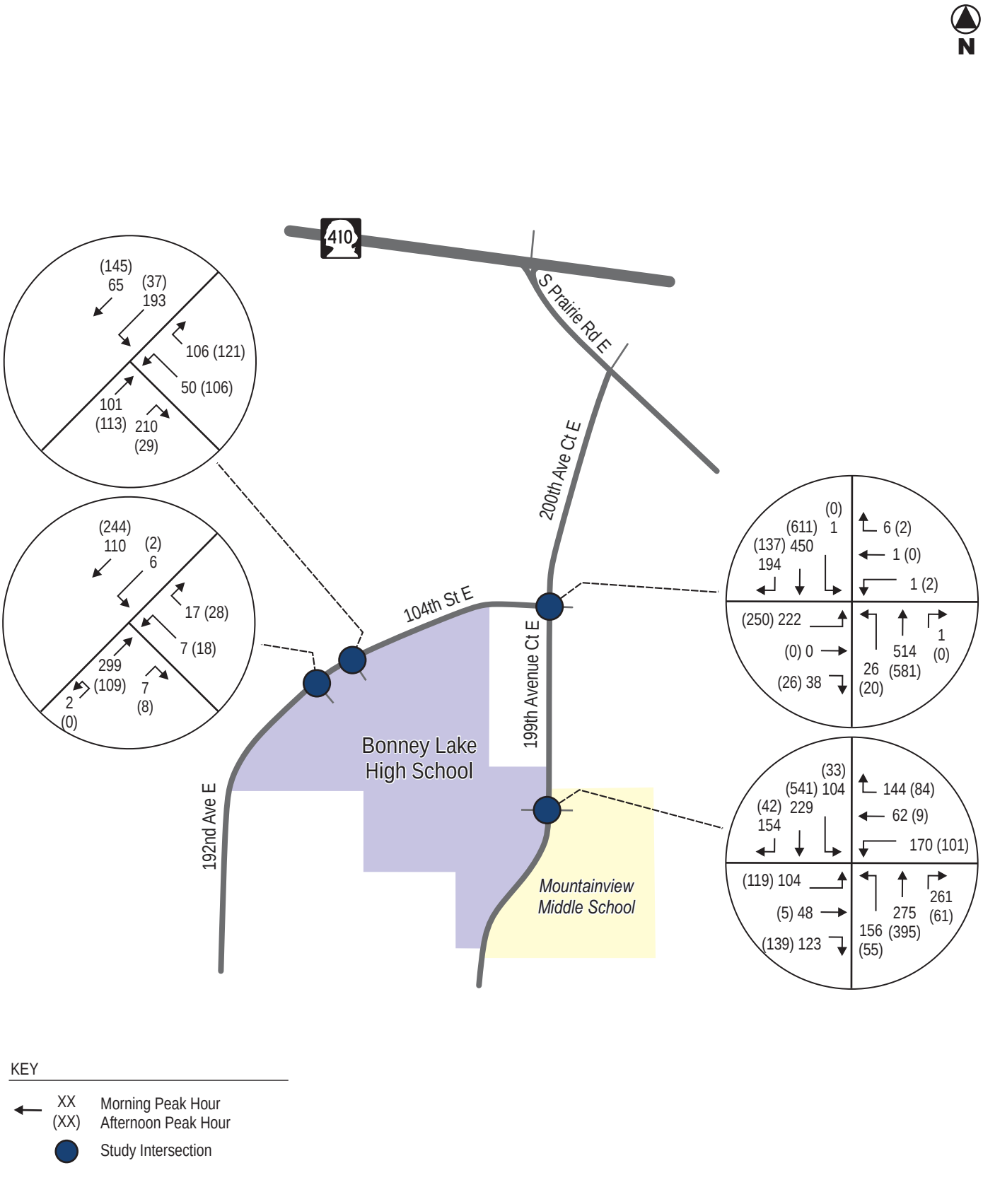

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Figure 4
Existing Site Access Traffic Volumes
Morning and Afternoon Peak Hours

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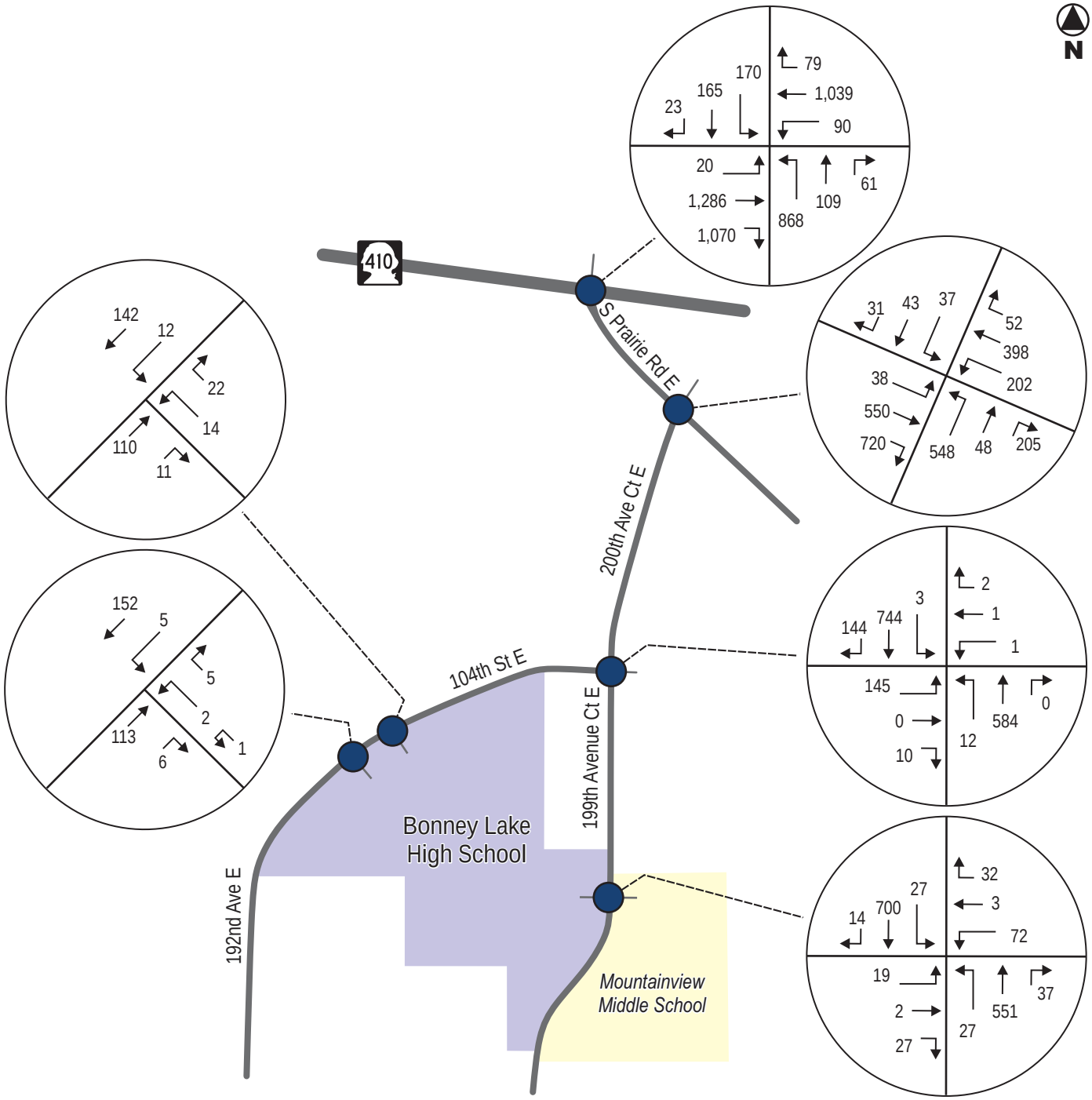

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Figure 5
Existing Study Area Traffic Volumes
PM Peak Hour

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Pipeline traffic volumes for Tehaleh Phase 2 were adjusted based on several factors to account for the portion of Tehaleh already constructed and occupied at the time of the 2024/2026 traffic data collection. The approved Phase 1 and 2 Preferred Alternative program was estimated to generate 8,091 external PM peak hour trips.[17] As of October 2024, just prior to when site access counts were taken, Tehaleh reported 3,391 occupied units generating an estimated 3,188 PM peak hour trips (about 39.4% of all forecast Tehaleh traffic). Therefore, to account for traffic already being generated by Tehaleh, the assignment from the *Tehaleh EBPC SEIS Transportation Discipline Report* (Figure 4-9) was adjusted to reflect 39% of Tehaleh traffic already in the counts. Similar adjustments were made to the AM peak hour trip estimates using figures derived from *Appendix L* of the *Transportation Discipline Report* (level of service calculations sheets). Tehaleh trips still to be added during the school's afternoon peak hour were estimated assuming they would be about 76% of PM peak hour trips (per the ITE's *Trip Generation Manual* Time-of-Day Distribution percentages). Figure 6 shows the resulting 2030 pipeline trip assignments applied for all three analysis hours.

Adjusted Bonney Lake High School Traffic

Enrollment at Bonney Lake High School in 2024, when the site-access traffic counts were performed, was above its design capacity. This analysis for the proposed expansion accounts for the increase in capacity compared to its previously-permitted level of 1,445 students (a net increase of up to 540 students). Since the traffic counts at the site access driveways and the 104th Street E / 199th-200th Avenue Court E intersection reflect conditions with the school enrolled above capacity, the forecast-without-project traffic volumes were adjusted downward to reflect conditions with the school at its permitted capacity. This is the basis for comparison against future conditions with the classroom addition and the school's proposed capacity of up to 1,985 students. (Table 4 and Table 5 in Section 3.2 – *Project Impacts* detail the trips associated with the existing enrollment as well as the future capacity scenario evaluated.) Figure 7 shows the forecast-2030-without-project peak hour volumes for morning and afternoon peak hours; Figure 8 shows the forecast 2030-without-project PM peak hour volumes.

[17] Transpo Group, *Transportation Discipline Report – Tehaleh Employment-Based Planned Community Phase 2 Draft SEIS*, December 2017, Table 4-1 Summary of Estimated Trip Generation by Alternative.

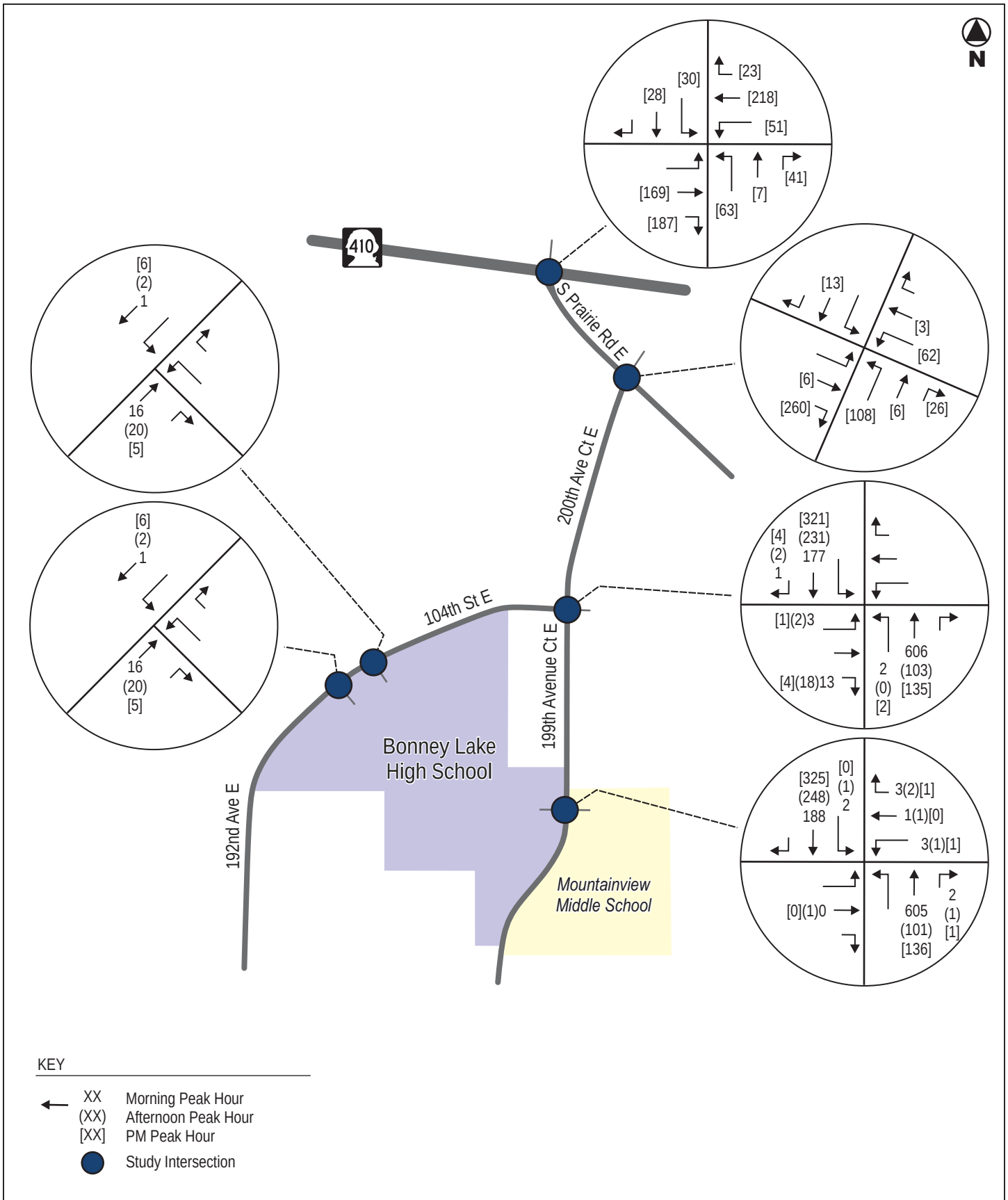

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Figure 6
2030 Pipeline Development Traffic Volumes
Morning, Afternoon, and PM Peak Hours

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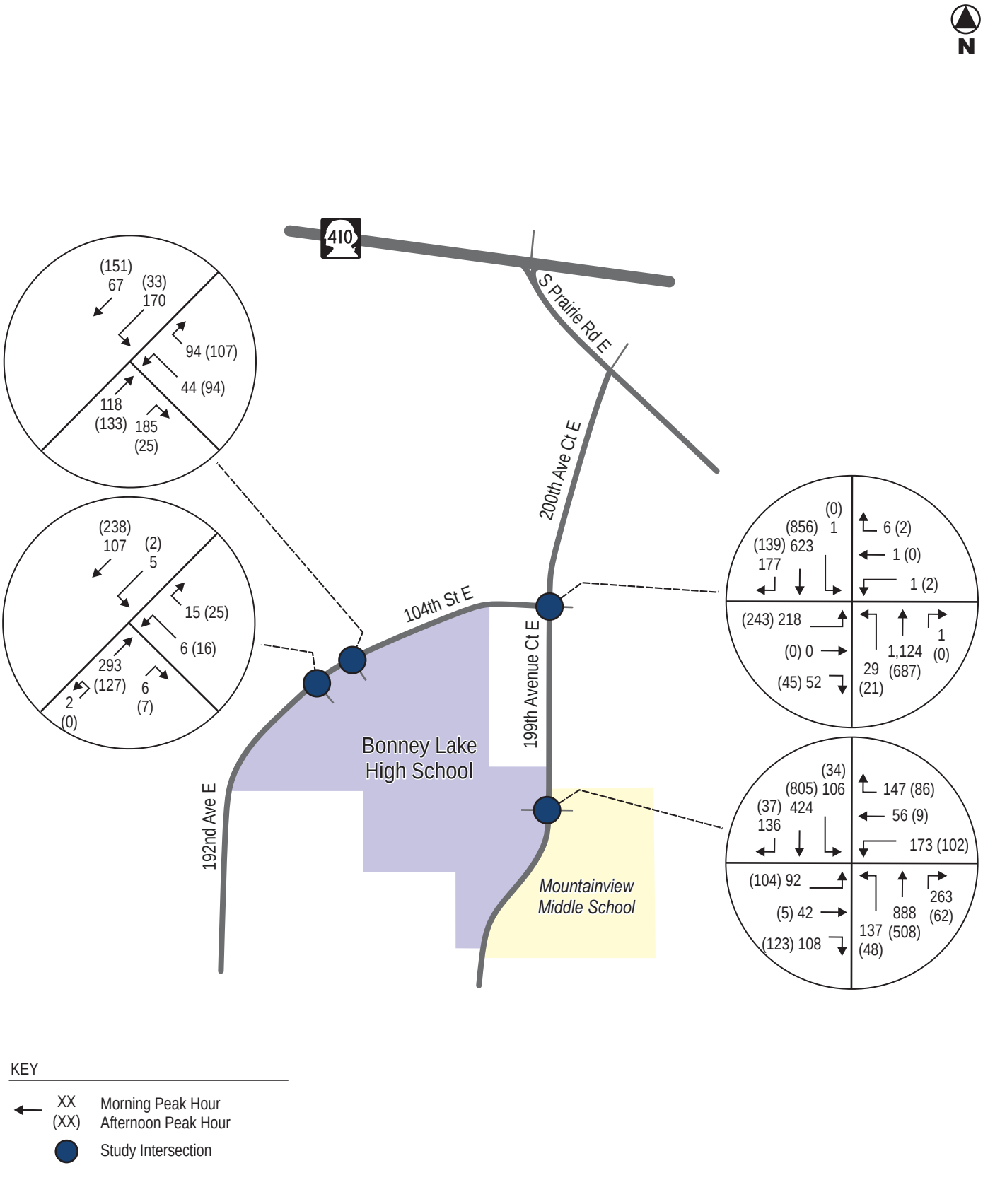

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Figure 7
Forecast-2030-Without-Project Traffic Volumes
Morning and Afternoon Peak Hours

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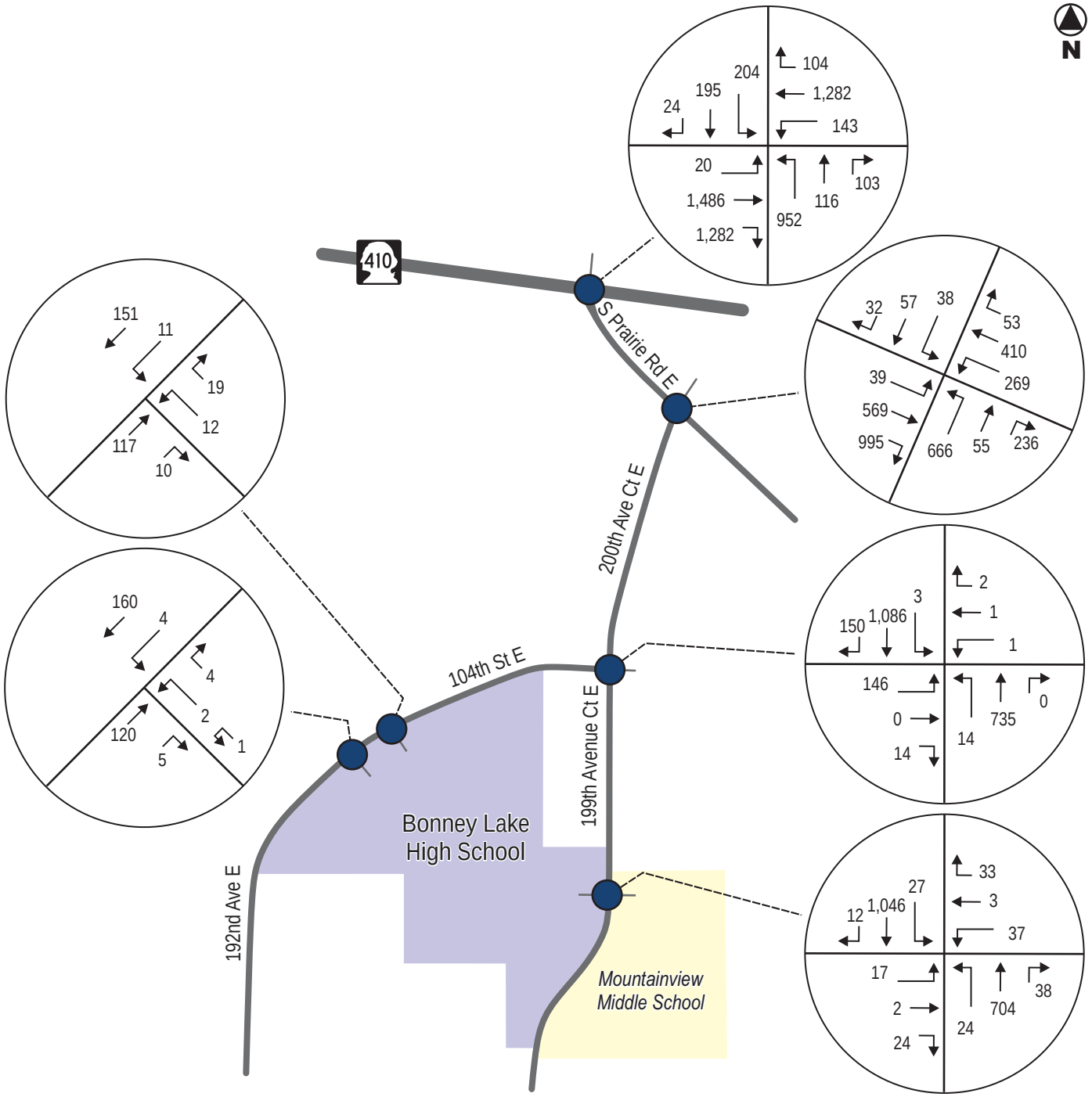

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Figure 8
Forecast-2030-Without-Project Traffic Volumes
PM Peak Hour

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2.5. Traffic Operations

2.5.1. Intersection Levels of Service

Traffic operations analyses were performed for the study-area intersections. Traffic operations are evaluated using levels of service (LOS) with six letter designations, "A" through "F." LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays. The level of service definitions and thresholds are provided in Appendix B. As outlined in the *Community Mobility Element* of the City's *2024 Comprehensive Plan*, all City intersections except along SR-410, have an adopted standard of LOS D with a minimum volume-to-capacity (V/C) ratio of 0.90 or less for all legs of the intersection. For intersections along SR-410, only the intersection LOS D standard applies; the V/C ratio standard does not apply.

Levels of service for the study area intersections were determined using the methodology in the *Highway Capacity Manual, 7th Edition*.[18] Delay calculations rely on complex equations that consider a number of variables. For example, delay at signalized intersections is determined based on a combination of variables including: traffic volume by intersection movement, lane configuration, signal phasing and timing, and number of pedestrian crossings. Delay at unsignalized intersections is determined for vehicles that must stop or yield for oncoming traffic. That delay is related to the availability of gaps in the main street's traffic flow and the ability of a driver to enter or pass through those gaps.

The signal timing card for the 199th Avenue Court E intersections at 104th Street E and at the Bonney Lake High School Access intersection were previously obtained from the City; additional background information about the signal timings were obtained from the design engineer who assisted with their design and implementation.[19] As directed by City staff,[20] the signal timing assumptions for the two South Prairie Road E intersections at SR-410 and 200th Avenue Court E were obtained from the City's *2024 Comprehensive Plan*.[21] Signal timing parameters were adjusted based on field observations (e.g., pedestrian crossing times and observed cycle lengths). Since the signals are actuated, the phase splits for each were optimized. In the future, cycle changes were assumed to account for the large changes in volumes expected from pipeline traffic (especially the Tehaleh EBPC) and other background growth. The operations analyses at the school access driveways also account for the peaking characteristics of school traffic (school drop-off and pick-up primarily occurs during about 20 to 30 minutes in the peak hours) using observed peak hour factors, the effect of school-bus traffic using heavy vehicle percentages, and pedestrian crossing activity. Level-of-service calculations were performed using the *Synchro 12* traffic operations analysis software and reported using the *HCM7* module for all intersections.

Table 1 summarizes existing and forecast-2030-without-project levels of service for morning, afternoon, and PM peak hour conditions. As shown, the signalized intersections currently operate at LOS D or better during all analysis hours. By 2030, the 199th Avenue Ct E / Bonney Lake High School Main Access intersection is forecast to operate at LOS F overall in the morning peak hour and the westbound approach (exiting the Mountain View Middle School site) would have a V/C ratio over 1.0. The other signalized intersections are forecast to continue operating at LOS D or better during the analysis hours with all legs having V/C ratios below the City's 1.0 threshold. The Bonney Lake High School east driveway on 104th Street E currently operates at LOS B during the morning and afternoon peak hours; the northbound turns operate at LOS E in the morning. The 2030-without-project operations at this driveway are better because that condition assumes the school returns to its previously approved capacity level of 1,445 students. The level-of-service calculation sheets are included in Appendix C.

18 Transportation Research Board 2022.
19 Personal communications, Mark Madden, PE, formerly of Concord Engineering, May 2020.
20 Email communication, L. Balisky, City of Bonney Lake – Development Services Manager, Feb. 6, 2026.
21 SCJ Alliance, *Appendix E: 2023 Existing Intersection Level of Service (ILOS) Worksheets*, June 2025.

Table 1. Level of Service Summary – Existing and Forecast-2030-Without-Project Conditions

Intersection / Peak Hour / Control Type	Existing			2030 w/o project [e]		
	LOS [a]	Delay [a]	V/C [a]	LOS	Delay	V/C
Morning (6:30 – 7:30 A.M.)						
Signalized [c]						
199th Ave Ct E / BLHS-MVMS Access [b]	C	23.4	0.73	F	83.6	1.09
104th St E / 199th Ave Ct E	A	7.3	0.47	B	16.3	0.75
Unsignalized						
104th St E / BLHS East Dwy (overall)	B	12.6		A	7.6	
Northbound Movements	*E*	*44.0*	*0.78*	*C*	*24.5*	*0.57*
Westbound Left Turn	*A*	*9.9*	*0.30*	*A*	*9.6*	*0.26*
104th St E / BLHS West Dwy (overall)	A	0.8		A	0.7	
Northbound Movements	*B*	*14.0*	*0.08*	*B*	*13.7*	*0.07*
Westbound Left Turn	*A*	*9.4*	*0.01*	*A*	*9.3*	*0.01*
Afternoon (2:15 – 3:15 P.M.)						
Signalized [c]						
199th Ave Ct E / BLHS-MVMS Access	C	25.4	0.87	C	29.1	0.91
104th St E / 199th Ave Ct E	A	7.7	0.54	A	9.2	0.60
Unsignalized						
104th St E / BLHS East Dwy (overall)	B	10.6		A	9.0	
Northbound Movements	*C*	*19.7*	*0.63*	*C*	*18.2*	*0.57*
Westbound Left Turn	*A*	*7.9*	*0.03*	*A*	*7.9*	*0.03*
104th St E / BLHS West Dwy (overall)	A	1.5		A	1.4	
Northbound Movements	*B*	*10.7*	*0.11*	*B*	*10.7*	*0.10*
Westbound Left Turn	*A*	*8.1*	*0.00*	*A*	*8.1*	*0.00*
Commuter PM Peak (4:00 – 5:00 P.M.)						
Signalized [c]						
199th Ave Ct E / BLHS-MVMS Access	B	12.0	0.61	C	28.7	0.77
104th St E / 199th Ave Ct E	A	6.8	0.51	A	7.9	0.56
S Prairie Rd-198th Ave E / SR-410	D	42.7	0.82	D	51.9	0.90
S Prairie Rd / 200th Ave Ct E	D	43.7	0.82	D	49.3	0.84
Unsignalized						
104th St E / BLHS East Dwy (overall)	A	1.7		A	1.5	
Northbound Movements	*A*	*9.7*	*0.07*	*A*	*9.7*	*0.06*
Westbound Left Turn	*A*	*7.5*	*0.01*	*A*	*7.5*	*0.01*
104th St E / BLHS West Dwy (overall)	A	0.6		A	0.5	
Northbound Movements	*A*	*9.2*	*0.02*	*A*	*9.3*	*0.01*
Westbound Left Turn	*A*	*7.5*	*0.00*	*A*	*7.5*	*0.00*

Source: Heffron Transportation, Inc., March 2026.

a. LOS = Level of service; Delay = Average seconds of delay per vehicle; V/C for signalized intersections is the highest calculated volume-to-capacity ratio among all intersection legs.

b. BLHS = Bonney Lake High School; MVMS = Mountain View Middle School.

2.5.2. Intersection Queuing

Queuing simulation analyses were performed for the 199th Avenue Court E / Bonney Lake High School Main Access intersection. These simulations were performed for the peak morning arrival and afternoon dismissal periods using the *SimTraffic 12* micro-simulation software companion to the *Synchro 12* traffic operations software. Similar to the LOS analysis, the simulations rely on the anticipated roadway lane configurations and signal operating parameters previously described. The simulations also account for added school-bus volumes and travel patterns using the heavy-vehicle factors. Five 60-minute simulation runs were performed for each analysis hour; Table 2 presents the average results for each movement. The simulations indicate that the 95th-percentile queues for northbound left-turns to Bonney Lake High School (at 176 feet) currently spill to the northbound through lane during the morning peak hour; queues slightly exceed the storage in the afternoon. The 95th-percentile queues in the eastbound, westbound, and northbound left-turn lanes are forecast to exceed storage in 2030 without the project, even with enrollment reduced to 1,445 students. The simulation model queuing results are provided in Appendix D.

Table 2. Intersection Queue Simulation Results – Existing and 2030-Without-Project Conditions

	Morning Peak Hour				Afternoon Peak Hour			
	Existing		2030 w/o Project		Existing		2030 w/o Project	
Intersection / Movement (storage)	Avg Q [1]	95th %ile Q [2]	Avg Q	95th %ile Q	Avg Q	95th %ile Q	Avg Q	95th %ile Q
199th Ave Ct E / BLHS-MVMS Access [3]								
Eastbound Left (170 ft)	59	106	107	214	64	117	70	128
Eastbound Through-Right	71	126	135	344	56	98	65	114
Westbound Left (200 ft)	98	170	174	253	61	105	79	131
Westbound Through-Right	87	169	172	261	40	73	42	75
Northbound Left (110 ft)	94	176	102	202	44	117	43	119
Northbound Through Right	175	278	268	274	152	257	182	274
Southbound Left (220 ft)	53	114	70	151	33	122	45	153
Southbound Through Right	147	255	180	311	213	361	308	502

Source: Heffron Transportation, Inc., March 2026. Queue lengths calculated using SimTraffic average of five, 60-minute model runs.

1. *Avg Q = Estimated average queue (measured in feet) over duration of peak hour*
2. *95th-%ile Q = 95th percentile queue (measured in feet), that which would be exceeded 5% of the hour or less.*
3. *BLHS = Bonney Lake High School; MVMS = Mountain View Middle School.*

Simulated queue exceeds existing storage length.

It is noted that queues at Mountain View Middle School were observed spilling out of the site onto 199th Avenue Court E during the afternoon dismissal peak hour. The excess vehicle queuing occurred in the bike lane of the roadway, which allowed northbound through traffic to continue partially obstructed. Based on these observations, the District and Mountain View Middle School will implement management options to better accommodate queued vehicles on-site.

2.6. Traffic Safety

Collision data for the study area intersections and roadway segments nearest the site were obtained from the Washington State Department of Transportation (WSDOT). These data, reflecting the period between February 1, 2021, and February 1, 2026 (5.0 years), were examined to determine if there are any unusual traffic safety conditions that could impact or be impacted by the proposed project. Table 3 summarizes the collision data.

Table 3. Collision Summary

Intersection [a]	Rear-End	Side-Swipe	Right Turn	Left Turn	Angled	Peds/ Cycle	Other [b]	Total for 5 Years	Average/ Year
198th Ave E-S Prairie Rd E / SR-410	22	19	0	3	4	0	8	56	11.2
S Prairie Rd E / 200th Ave Ct E	7	3	1	2	3	0	4	20	4.0
104th St E / 199th Ave Ct E	6	0	0	2	0	0	2	10	2.0
199th Ave Ct E / BLHS-MVMS Access	2	1	0	1	0	0	1	5	1.0
104th St E / BLHS East Driveway	0	0	0	0	1	0	0	1	0.2
104th St E / BLHS West Driveway	0	0	1	0	0	0	0	1	0.2
Roadway Segments									
104th St E / 192nd Ave E from 199th Ave Ct E to 109th St E	1	0	0	1	0	0	0	2	0.4
199th Ave Ct E from 104th St E to 112th St E	2	0	0	0	0	0	2	4	0.8

Source: WSDOT, as of February 26, 2026. Collision data reflect the 5-year period between February 1, 2021, and February 1, 2026.

a. Intersections are two-way stop controlled, unless otherwise noted.

b. "Other" collisions include: ten where a vehicle struck an object in or adjacent to the roadway, and seven with insufficient information to determine type.

Disclaimer: Under Section 409 of Title 23 of the United States Code, crash data is prohibited from use in any litigation against the state, tribal, or local government that involves location(s) mentioned in the crash data.

The highest number of collisions (56) was reported at the 198th Avenue E-S Prairie Road E / SR-410 intersection, which amounts to about 11 collisions per year. Of the 56 collisions, 22 were rear-end collisions and 19 were side-swipe collisions. Two of these collisions resulted in severe injuries. The highest number of collisions on the two roadway segments (six) occurred along 199th Avenue Ct E between 104th Street E and 112th Street E, one of which involved a severe injury. Overall, there were zero fatal collisions and three serious injury collisions. These data are consistent with the data included and summarized in Section 4.2 Crashes of the *Envision Bonney Lake: Community Mobility Element*.

2.7. Parking

Bonney Lake High School currently has 568 striped parking stalls that can be used on typical school days by employees, students, and visitors within six areas on the campus including:

- 186 stalls in the large north lot (172 originally striped, less 28 made unavailable due to portables, plus 42 added at northeast corner from Transportation Center previously gated);
- 315 stalls in the large south lot;
- 20 stalls in the visitor parking lot near the main office;
- 12 stalls adjacent to the child care building;
- 17 stalls adjacent to the fast-pitch field; and
- 18 stalls south of the gymnasium and service/delivery area.

There are also 9 stalls along the west side of the gymnasium and 33 stalls located in the school-bus load / unload area (although striping has faded) that can be used outside of school hours. Some parking also occurs within the school's central loading dock area (up to 16 vehicles). In total, the existing site has 610 stalls[22] (excluding any supply in the loading dock area) that can be used for weekend or evening events. The school's parking supply currently meets the City's minimum code-requirement.

[22] Observations conducted by Heffron Transportation in February 2026.

On-site parking demand counts were conducted by Heffron Transportation on February 26, 2026. Morning counts were performed at 9:00 A.M.; afternoon counts were performed at 12:30 P.M. The demand counts captured all vehicles parked on site, including those located in passenger load/unload and service/delivery areas of the site. The mid-morning count found a total of 424 parked vehicles; the early afternoon count found a total of 415 parked vehicles. Based on the enrollment at the time of the counts (1,788 students[23]), the observed peak parking demand rate was 0.24-vehicles-per-student, which is nearly identical to the average rate of 0.26-vehicles-per-student and the range of rates (0.16- to 0.32-vehicles-per-student) published by the ITE for High Schools (Land Use 525) in its *Parking Generation Manual*.[24]

2.8. On-Site Load/Unload Operations

The existing school site has an on-site automobile load/unload zone that is about 205 feet long (room for 9 vehicles) plus about 1,050 feet (room for 47 additional vehicles) of driveway to the southeast before reaching the signalized 199th Avenue Court E intersection. Based on in-person observations of the access intersection conducted in February 2026 on the same day as parking data were collected, the maximum queue of 28 vehicles occurred at 1:59 P.M. just prior to dismissal. The queue did not extend to 199th Avenue Court E or interfere with access into the site during the afternoon peak period.

2.9. Transit Facilities and Service

There are no public transit services or facilities in the vicinity of Bonney Lake High School. However, the District provides yellow bus service to eligible students. Eligibility for District-provided transportation depends on several factors, but is generally provided to students whose legal place of residence is greater than two miles from their regular school of attendance.[25] Note that exceptions are defined for individuals based on health requirements, educational program needs, or certain geographical considerations.

2.10. Active (Non-Motorized) Transportation Facilities

Intermittent pedestrian walkways are provided on one or both sides of 199th Avenue Court E and 104th Street E near the project site. Bike lanes are provided on both sides of 199th Avenue Court E beginning just north of the school access intersection and extending south to the City limit (about 1,500 feet). Figure 9 shows the near site non-motorized transportation facilities.

As described in *Section 3.2 Performance Measures* of the *Envision Bonney Lake: Community Mobility Element*, the City has established a Multimodal Level of Service (MMLOS) process to evaluate active (human-powered) modes of transportation.

> *"The City's MMLOS methodology uses a systematic, context-based evaluation of roadway characteristics and applies a ranking of green, yellow, or red to individual pedestrian segments or bikeways. This analysis process is used to identify the need for potential improvements for the active transportation system, refine the type of improvement that should be developed and prioritize recommendations.*

As presented in Exhibit 23 of the *Community Mobility Element*, the segments of 104th Street E and 199th Avenue Court E within the City and adjacent to the school site have MMLOS ratings of 80 or greater, which is the highest desirable rating. These indicate that the roadways have continuous sidewalk on both sides of the road or trail/shared use path; sidewalk widths of five (5) feet or greater or shared use path 12 feet wide or greater; buffer widths greater than five (5) feet, traffic speeds less than or equal to 25 mph, no ADA Compliance issues, and traffic signals with crosswalks or all-way stops with crosswalks or every 300 feet where no intersection.

The segment of 199th Avenue Court E between Bonney Lake High School and 104th Street E is located in unincorporated Pierce County. That segment has only a curb- or grass-strip-separated paved walkway on the east side.

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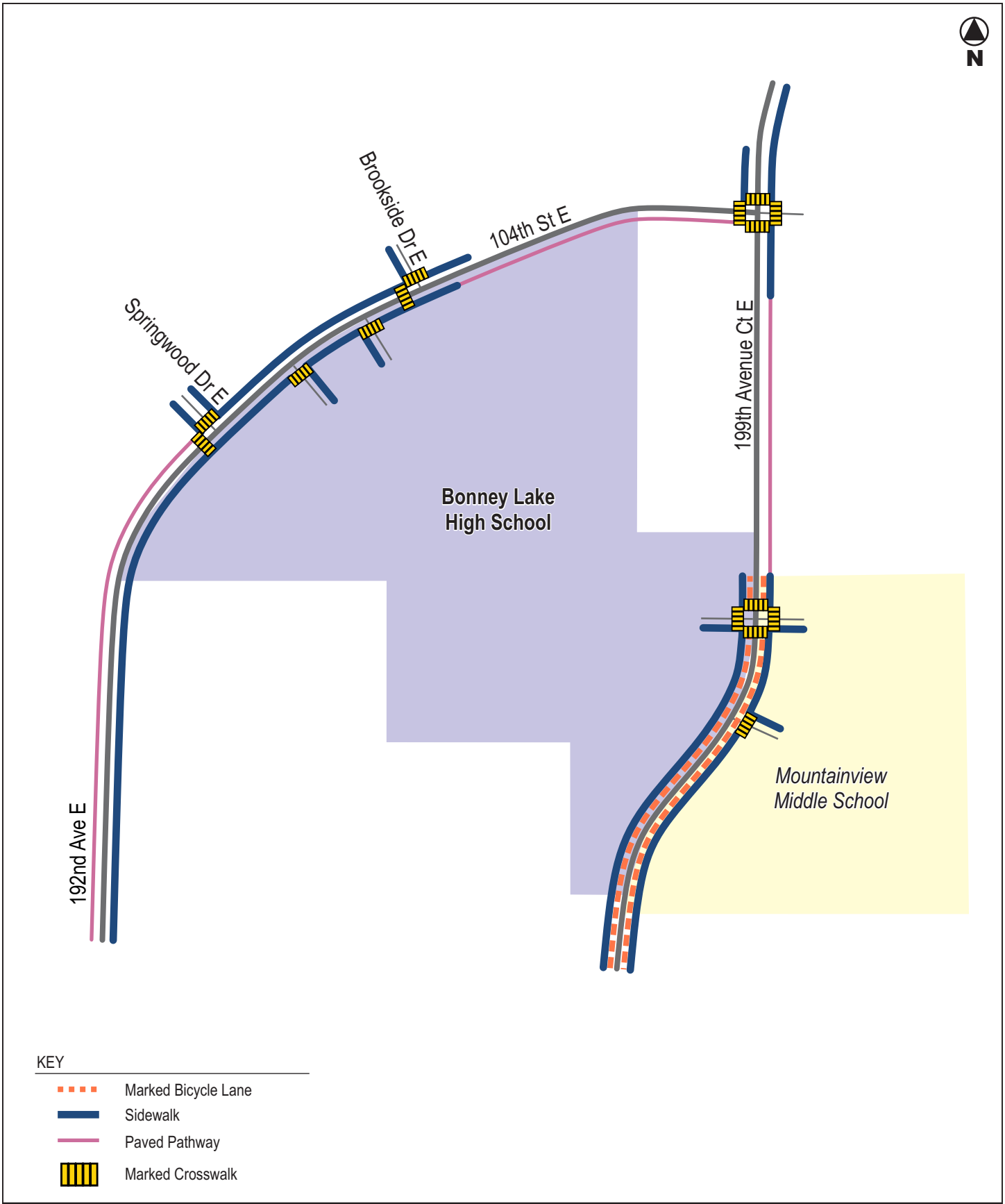
23 OSPI, 2026.
24 ITE, 6th Edition, October 2023.
25 Sumner School District, *Regulations and Procedures No. 6600P*, revised August 2011.



SUMNER-BONNEY LAKE SCHOOL DISTRICT
BONNEY LAKE HIGH SCHOOL EXPANSION

Figure 9
Near Site Active (Non-Motorized) Transportation Network

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3. PROJECT IMPACTS

This section describes conditions with the Bonney Lake High School Addition project. It assumes the school would operate at its proposed expanded enrollment capacity of 1,985 students. The impacts of the project are based on the comparison to conditions with the school at is previously-permitted capacity of 1,445 students.

3.1. Roadway Network

As part of the early planning effort for the proposed project, the District requested operational assessments of a range of mitigation options. Those included improvements that could retain the existing signalized intersection, but add right-turn lanes for both northbound and southbound traffic turning into the school sites from 199th Avenue Court E. In addition, and in consultation with City staff,[26] the District requested operational analyses of single- and double-lane roundabout configurations for the intersection. Seven intersection configurations were evaluated for operational level of service, delay, and queuing. The results were documented in the *Sumner-Bonney Lake District's Bonney Lake High School – Revised Access Review Analysis*,[27] which is provided in Appendix E.

Based on the analyses prepared, it was recommended that the signalized intersection be replaced with a double-lane roundabout with single lanes approaching from north and south on 199th Avenue Court E. It would provide left-turn channelization on all approaches and a two-lane northbound exit that merges back to one lane north of the intersection. Based on continued coordination with the City and County, the roundabout has been incorporated into the proposed classroom addition project. It will include new curbs, sidewalks, and pedestrian crossings and refuge areas as required by the City and County.

3.2. Traffic Volumes

3.2.1. Trip Generation Rates

Peak hour trip generation rates were derived from the counts conducted at the school's site access intersections described previously in Section 2.4.1. Table 4 summarizes the results of the trip generation rates derived from the counts and selected for use in this scoping analysis; rates and equations published ITE's *Trip Generation Manual*[28] for High School (Land Use Code 525) are shown for comparison.

Table 4. Trip Generation Rates – Bonney Lake High School

Vehicle Trip Counts / School Enrollment	Morning Peak Hour (6:30 – 7:30 A.M.)			Afternoon Peak Hour (2:15 – 3:15 P.M.)			PM Peak Hour (4:00 – 5:00 P.M.)		
	In	Out	Total	In	Out	Total	In	Out	Total
Bonney Lake High School (2024)	788	455	1,243	182	536	718	78	91	169
Observed Rates (1,640 students)	*63%*	*37%*	*0.76*	*25%*	*75%*	*0.44*	*46%*	*54%*	*0.10*
ITE Equations and Rates (vehicle trips per student) [1]	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Rate
High School (LU 525)	*68%*	*32%*	*0.53*	*33%*	*67%*	*0.31*	*48%*	*52%*	*0.15*
	Ln(T) = 0.71Ln(X) + 1.37			*n/a* [2]			*n/a*		

Source: Heffron Transportation, Inc., September 2025, using data collected by Idax Data Solutions, Nov. 2024.

1. *ITE, Trip Generation Manual, 12th Ed., Sept. 2025.*
2. *n/a = Not applicable, equation not given.*

[26] Meeting with J. Woodcock, May 16, 2022.
[27] Heffron Transportation, Inc., June 30, 2022.
[28] ITE, 12th Edition, 2025.

The trip generation rates observed at Bonney Lake High School are higher than the average published ITE rates (and equations where provided) during morning and afternoon peak hours, but lower during the PM peak hour; however, they are well within the ranges of the ITE data[29] and are reasonable for application in this analysis. It is noted that these rates reflect all trips generated by the school, including student pick-up/drop-off, school bus trips, parent trips, teacher/staff trips, visitors, and any extracurricular or after-hours use of the school facilities and playfields.

3.2.2. Trip Generation Estimates for School with Addition

Table 5 summarizes the forecast trip generation for Bonney Lake High School if enrolled to its permitted capacity and with the planned addition, based on the rates derived for the site and described previously. Because the school enrollment in 2024 was above its design capacity, the analysis for the expansion accounts for the increase in capacity compared to its previously permitted level of 1,445 students (a net increase of 540 students). However, as described in the next section, new enrollment above the 2024 level is expected to more heavily originate from the south due to residential growth within the Tehaleh EBPC. As a result, estimates of school trip generation are presented for two portions of the added capacity from the addition project. The first portion reflects trips generated by existing enrollment that is above the previously permitted capacity—the 'Over-Capacity Portion.' The second portion reflects trips generated by added capacity above the 2024 enrollment level—the 'New Capacity Portion.'

As shown, the project is forecast to result in net increases of 409 morning peak hour trips, 236 afternoon peak hour trips, and 56 PM peak hour trips.

Table 5. Trip Generation Estimates – Bonney Lake High School With Project

Site Condition	Capacity (Students)	AM Peak Hour (6:30 to 7:30 A.M.) In	AM Peak Hour (6:30 to 7:30 A.M.) Out	AM Peak Hour (6:30 to 7:30 A.M.) Total	Afternoon Peak Hour (2:15 to 3:15 P.M.) In	Afternoon Peak Hour (2:15 to 3:15 P.M.) Out	Afternoon Peak Hour (2:15 to 3:15 P.M.) Total	PM Peak Hour (4:00 to 5:00 P.M.) In	PM Peak Hour (4:00 to 5:00 P.M.) Out	PM Peak Hour (4:00 to 5:00 P.M.) Total
A. Trips Associated with Growth Above School's Existing Design Capacity										
2024 Enrollment	1,640	788	455	1,243	182	536	718	78	91	169
Previously Permitted [1]	1,445	694	401	1,095	160	473	633	69	80	149
Over-Capacity Portion	*195*	*94*	*54*	*148*	*22*	*63*	*85*	*9*	*11*	*20*
B. Trips Associated with New Capacity										
With New Addition [2]	1,985	953	551	1,504	220	649	869	95	110	205
2024 Enrollment	1,640	788	455	1,243	182	536	718	78	91	169
New-Capacity Portion	*345*	*165*	*96*	*261*	*38*	*113*	*151*	*17*	*19*	*36*
Net Change in Trips from Existing Capacity to Proposed Capacity										
A + B	540	259	150	409	60	176	236	26	30	56

Source: Heffron Transportation, Inc., September 2025 using rates developed for Bonney Lake High School from counts in November 2024.

1. *Permitted capacity of Bonney Lake High School.*
2. *Proposed future capacity of Bonney Lake High School.*

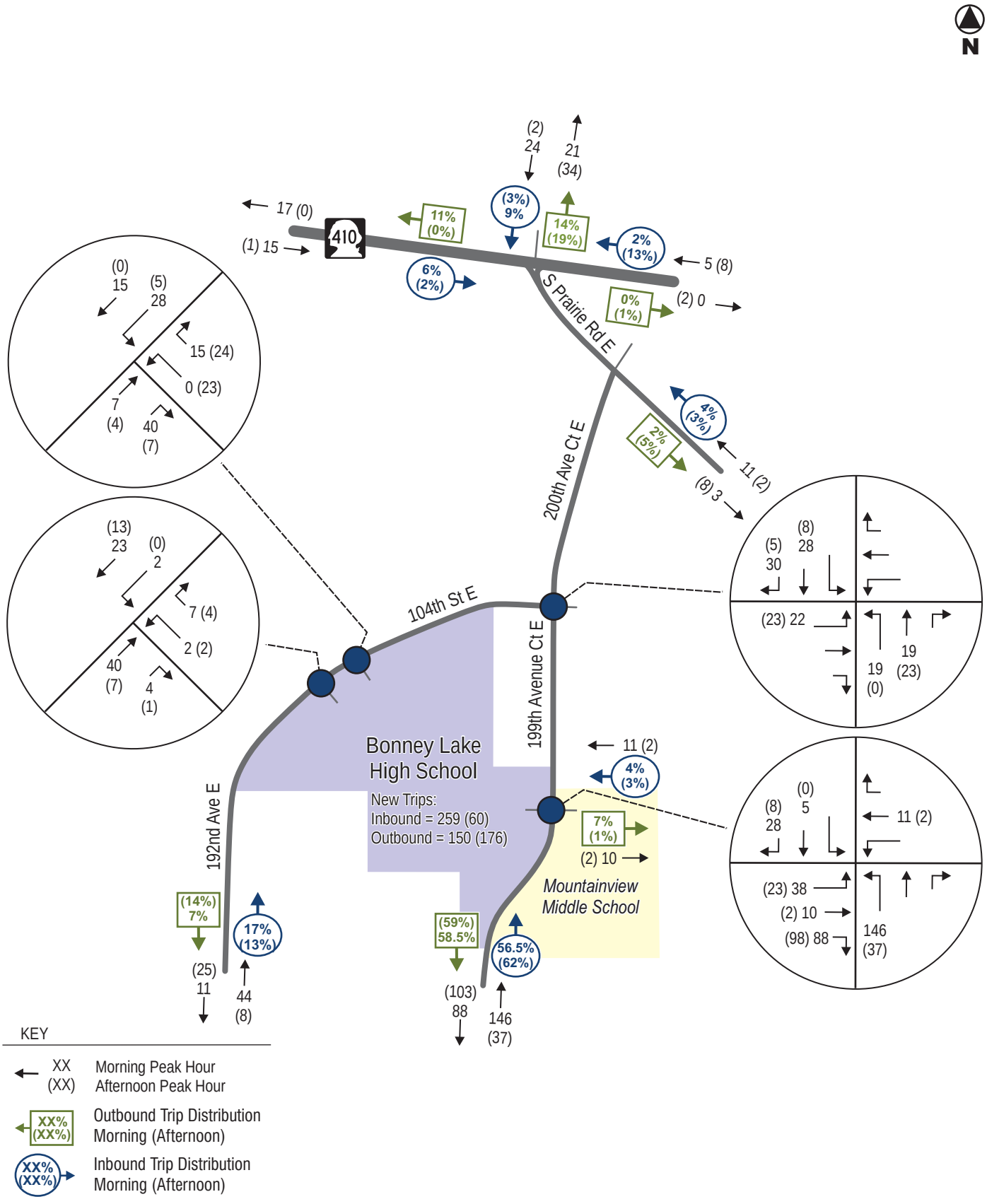
[29] ITE's average morning peak hour rate and equation are based on data reflecting rates of 0.17 to 1.04 trips per student; the average afternoon peak hour rate is based on data reflecting rates of 0.09 to 0.74 trips per student; and the average commuter PM peak hour rate is based on data reflecting rates of 0.04 to 0.31 trips per student

3.3. Trip Distribution and Assignment

Trip distribution patterns for the school addition project were developed from a combination of resources including: 1) the overall anticipated residential density within the Bonney Lake High School enrollment area; 2) local access patterns derived from the driveway intersection counts described previously; 3) the site access, parking, and bus load/unload configuration; and 4) anticipated shift in school trip distribution due to large amounts of residential growth planned within the Tehaleh EBPC in Pierce County to the south.

The enrollment area extends north to Bonney Lake Boulevard and the southern portion of Lake Tapps, west to approximately 160th Avenue E, south to approximately 174th Street E, and east to approximately 221st Avenue Court E. Existing traffic counts show that the largest portions of trips currently approach the site from the north (42% in the morning, 41% in the afternoon and 38% in the PM peak) and depart the site to the north (46% in the morning, 47% in the afternoon, and 48% in the PM peak). The 'Over-Capacity Portion' of project trips were assigned using these current trip patterns.

The 'New-Capacity Portion' of trips was assigned using distribution patterns that are more concentrated south of the site due to continued new housing construction within the Tehaleh EBPC. It was assumed that 75% of the 'New-Capacity Portion' of trips would be destined to and from the south of the site. Separate project trip distribution patterns and assignments were developed for the morning, afternoon, and PM peak hours to reflect typical patterns of some family drivers linking trips with work trips. The total new trips were combined and Figure 10 shows trip distribution patterns and net project trip assignments for the morning and afternoon peak hours, Figure 11 shows the distribution and assignment for the PM peak hour. The estimated net increases in school trips were combined with the forecast without-project traffic volumes to represent future conditions with the project. Figure 12 shows the forecast 2030-with-project morning and afternoon peak hour volumes; Figure 13 shows the forecast 2030-with-project PM peak hour traffic volumes.



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BONNEY LAKE HIGH SCHOOL EXPANSION

Figure 10
Project Trip Distribution and Assignment
Morning and Afternoon Peak Hours

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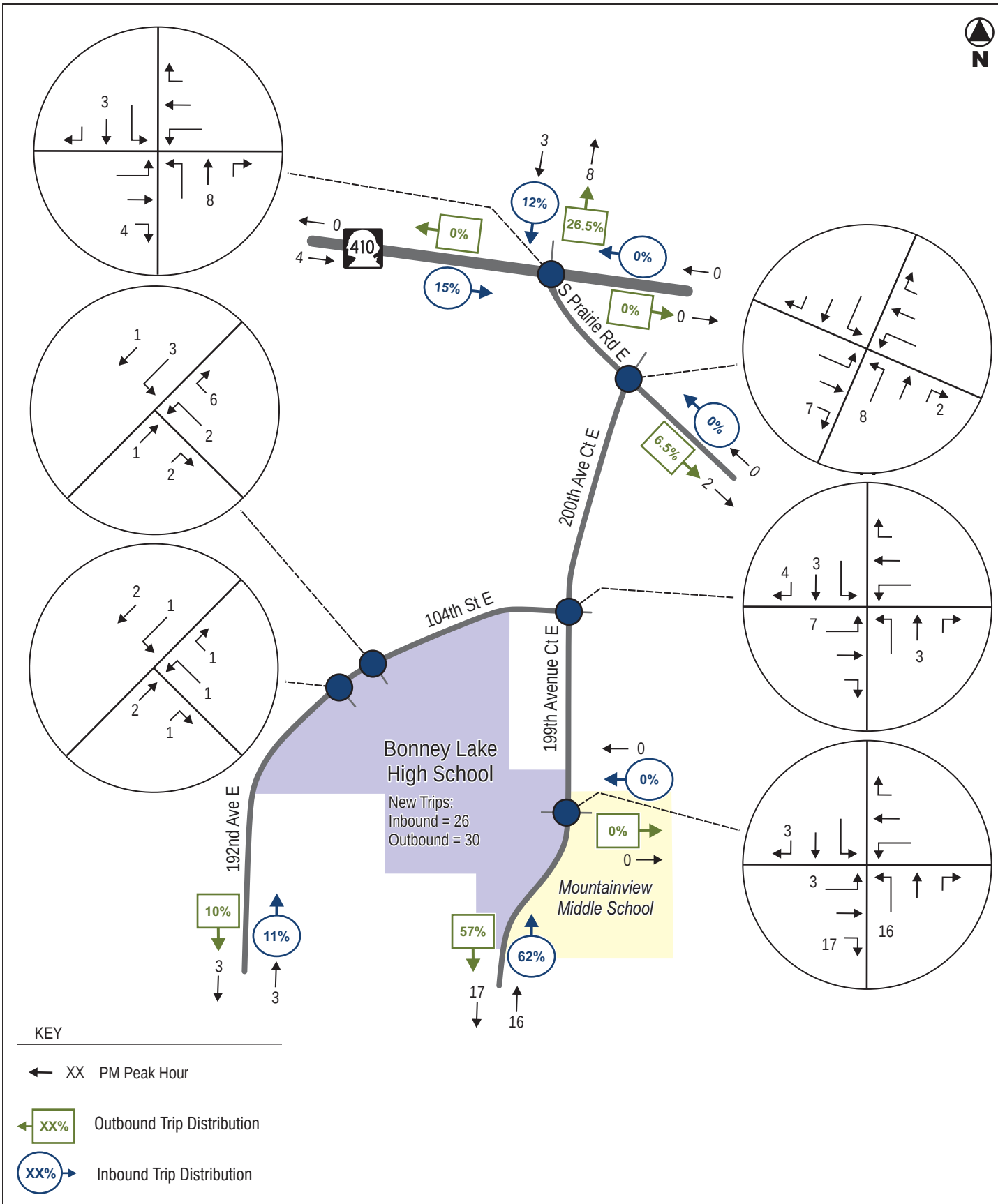

SUMNER-BONNEY LAKE SCHOOL DISTRICT
BONNEY LAKE HIGH SCHOOL EXPANSION

Figure 11
Project Trip Distribution and Assignment
PM Peak Hour

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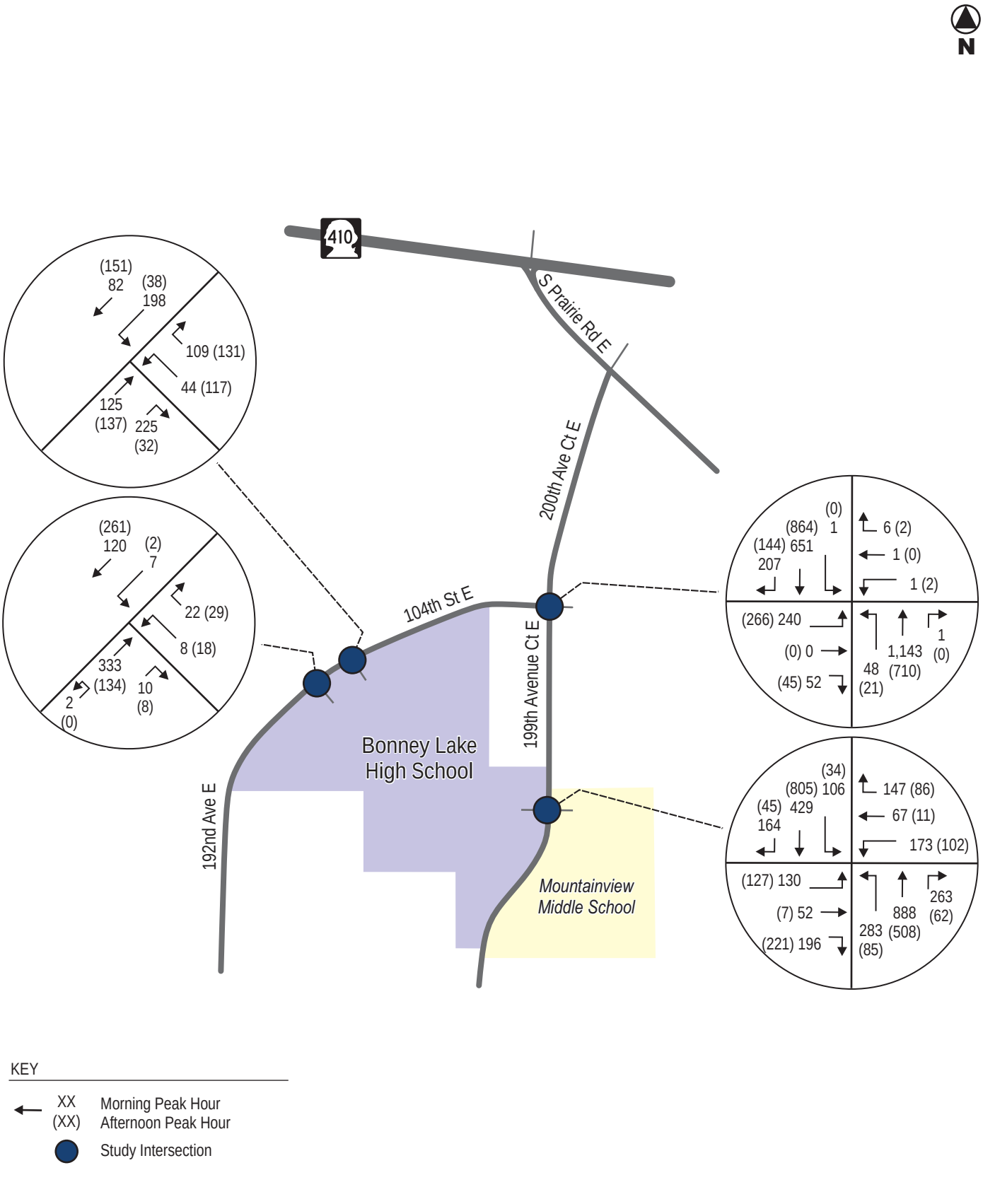

SUMNER-BONNEY LAKE SCHOOL DISTRICT
BONNEY LAKE HIGH SCHOOL EXPANSION

Figure 12
Forecast-2030-With-Project Traffic Volumes
Morning and Afternoon Peak Hours

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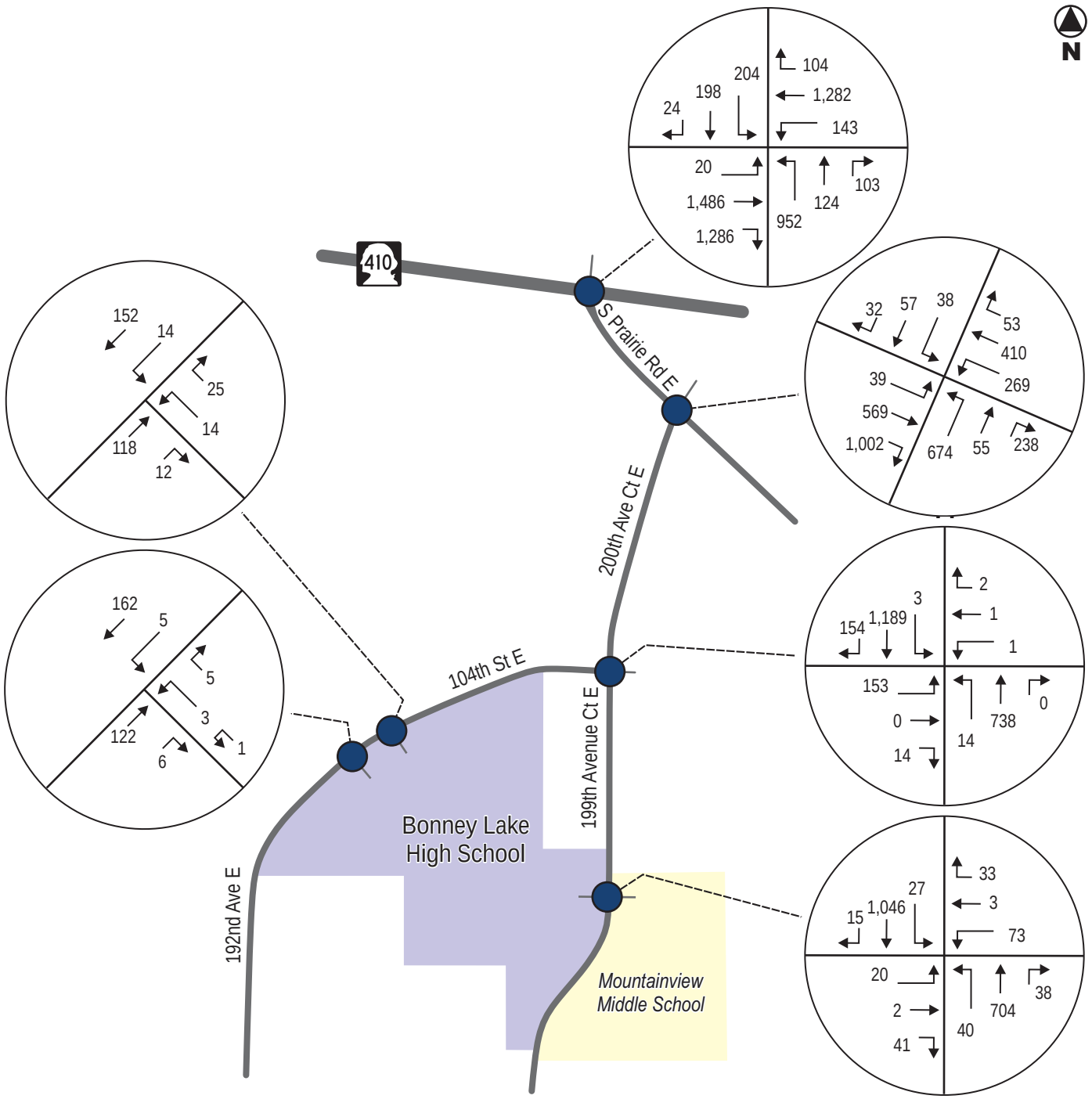

SUMNER-BONNEY LAKE SCHOOL DISTRICT
BONNEY LAKE HIGH SCHOOL EXPANSION

Figure 13
Forecast-2030-With-Project Traffic Volumes
PM Peak Hour

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3.4. Traffic Operations

3.4.1. Intersection Levels of Service

For all but the Bonney lake High School Main Access intersection on 199th Avenue Court E, levels of service for the with-project conditions were determined using the same methodology described previously. The proposed roundabout at the Bonney Lake High School Main Access intersection was evaluated using the *Sidra 10* analysis software and reporting methodology. Assumed lane geometry and model coding parameters established in the *WSDOT Sidra Policy Settings*[30] were applied. The level of service definitions and thresholds for roundabouts are provided in Appendix B.

Table 6 shows the analysis results; without-project analysis results are shown for comparison. The proposed roundabout is forecast to improve operations and reduce delays during all three peak hours. It is forecast to operate at LOS C during the morning peak hour with average delays reduced by 58 seconds per vehicle; all approaches are forecast to operate at LOS D or better. However, the northbound approach is forecast to have a V/C ratio of 1.09. The roundabout is forecast to operate at LOS A overall in the afternoon and PM peak hours with maximum approach V/C ratios of 0.76 and 0.83, respectively.

The primary reason that the northbound V/C ratio is forecast to remain high during the morning peak hour is the anticipated large increase in northbound traffic associated with the Tehaleh EBPC. Without that traffic, the roundabout would operate at LOS A in the morning peak hour (with all approaches at LOS A) and a maximum approach V/C ratio of 0.64.

The other signalized off-site study-area intersections are forecast to remain operating at without-project levels (LOS D or better) during the analysis hours; project traffic is forecast to add between 0.2 and 4.0 seconds of average delay per vehicle. All approaches at those intersections are forecast to have V/C ratios of 0.84 or lower.

The project-related traffic associated with the school expansion is forecast to degrade operations at the school's east driveway on 104th Street E. During the morning peak hour, it is forecast to degrade from LOS A overall to LOS B overall with northbound (exiting) movements degrading from LOS C to LOS E (reflecting an increase in delay of 25.4 seconds per vehicle)—similar to existing conditions. During the afternoon and PM peak hours, both driveways on 104th Street E are forecast to operate at LOS B overall with all movements operating at LOS C or better. The level-of-service calculation sheets are included in Appendix C.

[30] WSDOT, https://wsdot.wa.gov/sites/default/files/2021-03/TrafficOps-WSDOTSidraPolicyAndSettings.pdf, accessed 2026.

Table 6. Level of Service Summary – Forecast-2030-Without- and With-Project Conditions

Intersection / Peak Hour / Control Type	2030 Without Project			2030 With Project		
	LOS [a]	Delay [a]	V/C [a]	LOS	Delay	V/C
Morning (6:30 – 7:30 A.M.)						
Signalized						
199th Ave Ct E / BLHS-MVMS Access [b]	F	83.6	1.09		n/a [c]	
104th St E / 199th Ave Ct E	B	16.3	0.75	B	18.7	0.78
Unsignalized						
199th Ave Ct E / BLHS-MVMS Access [b]		n/a [c]		C	25.6	1.08
104th St E / BLHS East Dwy (overall)	A	7.6		B	12.9	
Northbound Movements	*C*	*24.5*	*0.57*	*E*	*49.9*	*0.81*
Westbound Left Turn	*A*	*9.6*	*0.26*	*B*	*10.4*	*0.32*
104th St E / BLHS West Dwy (overall)	A	0.7		A	1.0	
Northbound Movements	*B*	*13.7*	*0.07*	*C*	*15.1*	*0.11*
Westbound Left Turn	*A*	*9.3*	*0.01*	*A*	*9.6*	*0.01*
Afternoon (2:15 – 3:15 P.M.)						
Signalized						
199th Ave Ct E / BLHS-MVMS Access	C	29.1	0.91		n/a [c]	
104th St E / 199th Ave Ct E	A	9.2	0.60	A	10.0	0.63
Unsignalized						
199th Ave Ct E / BLHS-MVMS Access [b]		n/a [c]		A	5.0	0.76
104th St E / BLHS East Dwy (overall)	A	9.0		B	13.2	
Northbound Movements	*C*	*18.2*	*0.57*	*C*	*25.0*	*0.73*
Westbound Left Turn	*A*	*7.9*	*0.03*	*A*	*7.9*	*0.03*
104th St E / BLHS West Dwy (overall)	A	1.4		A	1.5	
Northbound Movements	*B*	*10.7*	*0.10*	*B*	*10.9*	*0.11*
Westbound Left Turn	*A*	*8.1*	*0.00*	*A*	*8.1*	*0.00*
Commuter PM Peak (4:00 – 5:00 P.M.)						
Signalized						
199th Ave Ct E / BLHS-MVMS Access	C	28.7	0.77		n/a [c]	
104th St E / 199th Ave Ct E	A	7.9	0.56	A	8.3	0.56
S Prairie Rd-198th Ave E / SR-410	D	51.9	0.90	D	52.1	0.90
S Prairie Rd / 200th Ave Ct E	D	49.3	0.84	D	49.5	0.84
Unsignalized						
199th Ave Ct E / BLHS-MVMS Access [b]		n/a [c]		A	3.2	0.83
104th St E / BLHS East Dwy (overall)	A	1.5		A	1.8	
Northbound Movements	*A*	*9.7*	*0.06*	*A*	*9.8*	*0.08*
Westbound Left Turn	*A*	*7.5*	*0.01*	*A*	*7.5*	*0.01*
104th St E / BLHS West Dwy (overall)	A	0.5		A	0.6	
Northbound Movements	*A*	*9.3*	*0.01*	*A*	*9.4*	*0.01*
Westbound Left Turn	*A*	*7.5*	*0.00*	*A*	*7.5*	*0.00*

Source: Heffron Transportation, Inc., March 2026.

a. LOS = Level of service; Delay = Average seconds of delay per vehicle; V/C for signalized and roundabout-controlled intersections is the highest calculated volume-to-capacity ratio among all intersection legs.

b. BLHS = Bonney Lake High School; MVMS = Mountain View Middle School.

c. n/a = Not applicable, intersection would remain signalized without the project, but would be converted to a roundabout with the project.

3.4.2. Intersection Queuing

Vehicle queues at the 199th Avenue Court E / Bonney Lake High School Main Access intersection would be affected by the increase in school-related traffic and conversion of this intersection to roundabout control. Table 7 presents *Sidra's* average (50th-percentile) and 95th-percentile queue estimates for each roundabout approach. Queuing estimates for 2030 conditions without the project (signalized operations) are listed for comparison. As shown, with the project, the 95th-percentile queues are expected to exceed storage for the westbound left-turn storage (at the Mountain View Middle School egress) during the morning peak hour. This queue would extend into the school site and be similar to existing conditions; however, delays for the egress would be reduced. The large increases in traffic on 199th Avenue Court E, primarily from the Tehaleh EBPC, are expected to continue to result in lengthy northbound queues during the morning peak hour. The intersection simulation model queuing results and Sidra queue estimates are provided in Appendix D.

Table 7. Intersection Queue Estimates – Forecast 2030 Conditions

	Morning Peak Hour				Afternoon Peak Hour			
	Without Project (Signalized)		With Project (Roundabout)		Without Project (Signalized)		With Project (Roundabout)	
Intersection / Movement (storage)	Avg Q [1]	95th %ile Q [2]	Avg Q	95th %ile Q	Avg Q	95th %ile Q	Avg Q	95th %ile Q
199th Ave Ct E / BLHS-MVMS Access [3]								
Eastbound Left (170 feet)	107	214	13	32	70	128	31	77
Eastbound Through-Right	135	344	23	57	65	114	65	161
Westbound Left (200 feet)	174	253	100	247	79	131	9	23
Westbound Through-Right	172	261	113	280	42	75	10	24
Northbound Left (110 feet)	102	202	475	1,180	43	119	37	91
Northbound Through Right	268	274	475	1,180	182	274	37	91
Southbound Left (220 feet)	70	151	7	17	45	153	2	4
Southbound Through Right	180	311	51	126	308	502	77	191

Source: Heffron Transportation, Inc., March 2026. Queue lengths calculated using SimTraffic average of five, 60-minute model runs.

1. *Avg Q = Estimated average queue (measured in feet) over duration of peak hour*
2. *95th-%ile Q = 95th percentile queue (measured in feet), that which would be exceeded 5% of the hour or less.*
3. *MVMS = Mountain View Middle School; BLHS = Bonney Lake High School.*

Simulated queue exceeds storage length.

3.5. Traffic Safety

The collision data provided for the study area did not indicate any unusual collision patterns that would impact or be impacted by the proposed project. The project could increase traffic at the study-area intersections and statistically, the number of collisions could increase as traffic increases. However, the proposal would convert the school's signalized main access intersection to a roundabout, which is expected to result in safety benefits. These roundabout benefits are documented by WSDOT[31] and the Federal Highway Administration (FHWA).[32]

As described by WSDOT, "*Roundabouts are designed to make intersections safer and more efficient for drivers, pedestrians, and cyclists,*" and "*studies have shown that roundabouts are safer than traditional stop-sign or traffic-signal controlled intersections.*" Roundabout have been shown to reduce injury crashes at locations where stop signs or traffic signals were previously used by 75%. They have been

31 WSDOT, https://wsdot.wa.gov/travel/traffic-safety-methods/roundabouts, accessed April 2023.
32 FHWA, https://highways.dot.gov/safety/intersection-safety/intersection-types/roundabouts, accessed April 2023.

shown to reduce overall collisions by 37%, fatality collisions by 90%, and pedestrian collisions by 40%. Roundabouts help reduce the likelihood and severity of collisions for several reasons including, lower travel speeds (speeds in a roundabout are typically 15 to 20 miles per hour), one-way travel (eliminates "T-bone" and head-on collisions), and continuous flow (no need to beat a light or accelerate through yellow or red phases).

The FHWA describes roundabouts as a "*proven safety countermeasure because they can substantially reduce crashes that result in serious injury or death.*" The FHWA resources describe how roundabouts have fewer conflict points than a comparable signal-controlled intersection and conflicts between bicycles and vehicles are also reduced. Pedestrian crossings at roundabouts are typically shorter in length and cross one direction of traffic at a time (since entering and exiting vehicle flows are separated). The location of crosswalks at a roundabout, pulled away from the turning movements, allows drivers to better focus on pedestrians instead of searching for gaps in vehicular traffic while waiting to make right- and left-turn movements. These turn movements are often the biggest threat to pedestrians.

3.6. Parking

3.6.1. Proposed Supply and Code Requirements

The proposed classroom addition would displace about 18 parking stalls, but the parking lot reconfiguration and addition is expected to recover 14 stalls. In addition, when the portables are removed from the north parking lot, 28 stalls would be returned to parking use. Therefore, at project completion, the school would have 592 parking stalls that would be available for all-day use. In addition, the new passenger-vehicle queuing area (21 stalls) and school-bus load unload areas (57 stalls) could be used for parking at times they are not used for load/unload activities, such as during weekend or evening events.

The project site is zoned PF (Public Facilities) and the City of Bonney Lake Municipal Code §18.34.060 outlines the minimum parking requirements for uses with PF zoning designations. For all schools, the City requires a minimum of 1 parking space per 5 students. Based on the proposed school capacity of up to 1,985 students, the City would require a minimum of 397 parking stalls. The proposed all-day parking supply of 592 striped stalls plus 78 additional stalls within the queuing and bus load/unload areas (670 total stalls) would exceed the City's minimum parking code requirement.

Parking demand estimates for Bonney Lake High School at its proposed capacity were developed using the rates (0.26-vehicles-per-student) derived specifically for this site and presented previously in *Section 2.6*. When applied to the proposed enrollment capacity of 1,985 students, it results in an estimated typical school-day parking demand of about 471 vehicles. Based on these values, the proposed on-site supply of about 592 stalls would accommodate typical school day demand.

3.6.2. Evening and Weekend Event Parking

Bonney Lake High School regularly hosts activities and evening events throughout the school year such as athletic events and/or performances in the recently added performing arts center. The addition project and increase in student enrollment is not expected to change the type or frequency of the existing events since the event venues and number of participants would not be expected to change for most. Parking demand for high school athletic events is more closely related to team performance and opponents (such as rivals) rather than school population. A small number of events (such as a school-wide open houses or curriculum nights) could experience increased in attendance with the larger school capacity. However, those tend to occur infrequently (once or twice per year) and as noted, the new queuing and bus load/unload areas could be used for expanded event parking. These areas would provide room for about 78 additional vehicles to park on site (21 in the auto load/queue area, 57 in the school-bus load areas). When combined with the 592 standard stalls and the existing, the site would have event parking supply of

about 670 stalls—an increase of 60 stalls compared to current conditions. These added stalls are expected to accommodate the occasional increases in demand from events influenced by total school population.

3.7. On-Site Load/Unload Operations

As described previously, observations of the access conducted in February 2026 found no queuing on the high school site that extended to 199th Avenue Court E or interfered with access into the site during the peak afternoon dismissal period. The physical changes proposed as part of the addition project would increase the on-site queuing/waiting capacity with 21 stalls for vehicles plus a by-pass travel lane that would further reduce the potential for queuing impacts. Overall, the project is expected to improve on-site circulation and accommodations for vehicle queues.

3.8. Transit Facilities and Service

Since there are no transit services or facilities in the vicinity, no impacts to transit are anticipated. Yellow school bus service would continue.

3.9. Active (Non-Motorized) Transportation Facilities

With the added enrollment capacity made possible by the Bonney Lake High School Classroom Addition project, the number of pedestrian and non-motorized trips to and from the site could also increase proportionally. The off-site pedestrian facilities are expected adequately accommodate those increases and the proposed mitigation to convert the main access intersection on 199th Avenue Court E to a roundabout would include new sidewalk, pedestrian crosswalks and refuge areas, and other non-motorized safety elements.

4. FINDINGS AND RECOMMENDATIONS

4.1. Findings

The following sections summarize the findings of the analysis.

- With the classroom addition, Bonney Lake High School is expected to accommodate a student capacity of up to 1,985 students, an increase of 540 students compared to its previously-permitted capacity of 1,445 students and an increase of 197 students compared to existing (2025-26) enrollment of 1,788.
- Growth in enrollment from the previously-approved capacity of 1,445 students to the proposed capacity of 1,985 students with the classroom addition is projected to generate a net increase of 409 trips during the morning peak hour, 236 trips during the afternoon peak hour, and 56 trips during the PM peak hour.
- The 199th Avenue Court E / Bonney Lake High School Main Access intersection is currently signalized, and forecast to operate at LOS F during the morning peak hour in 2030 without the proposed classroom addition project. These operations are anticipated due to substantial traffic increases forecast to be generated by the Tehaleh EBPC.
- The project would reconstruct the 199th Avenue Court E / Bonney Lake High School Main Access intersection as a two-lane roundabout. Operations of the intersection with this change and the added school traffic are forecast at LOS C or better during the morning, afternoon, and PM peak hours.
- The other signalized study-area intersections are forecast to remain operating at without-project levels—all are forecasts to operate at LOS D or better during the analysis periods. The two site access driveway intersections on 104th Street E would operate at LOS B or better overall and all movements would operate at LOS E or better during all analysis hours.
- The expanded on-site passenger vehicle queuing area is expected to better accommodate demand generated by the school.
- Parking demand counts conducted at the existing school indicate a peak demand of 424 vehicles occurred in the mid-morning. Parking demand estimates were developed using the rates derived specifically for this site. At the proposed enrollment capacity of 1,985 students, the school could generate school-day parking demand of about 471 vehicles.
- The school would retain about 592 striped parking stalls for school-day use, which would exceed the code-required minimum supply of 397 stalls and would accommodate typical school-day demand estimated at about 471 vehicles.
- The classroom project and increase in student enrollment is not expected to change the type or frequency of existing school events. A small number of events (such as a school-wide open houses or curriculum nights) could experience increased in attendance with the larger school capacity. The new queuing and bus load/unload areas could be used for expanded event parking. When combined with the 592 standard stalls, the site would have event parking supply of about 670 stalls—an increase of 60 stalls compared to current conditions. These added stalls are expected to accommodate the occasional increases in demand from events that are influenced by total school population.

4.2. Mitigation

The following sections describe the transportation mitigation that will be incorporated into the project.

4.2.1. Short-Term Conditions – Construction

The District will require the selected contractor to develop a Construction Management Plan (CMP) that addresses on-site (and off-site, as necessary) traffic and pedestrian control during school construction. The CMP will include measures to keep adjacent streets clean on a daily basis at the truck exit points (such as street sweeping or on-site truck wheel cleaning) to reduce tracking dirt offsite. The CMP will identify parking locations for the construction staff; construction employee parking should be contained on-site or at an off-site location within walking distance or with transportation to the site via shuttle.

4.2.2. Long-Term Conditions – Operations

With the improvements incorporated in the proposal as described in the prior *Findings* section, including the new roundabout at the 199th Avenue Court E / Bonney Lake High School / Mountain View Middle School access intersection, the project does not result in any adverse significant impacts to traffic operations. Since the District is proposing to reconstruct the main access intersection on 199th Avenue Court E as a two-lane roundabout, the project would result in substantial improvements to delay and queues through this intersection, which will benefit both schools as well as the City's transportation corridor. No other improvements or mitigation would be required.

4.2.3. Transportation Impact Fees

The City of Bonney Lake collects transportation impact fees "…*for joint public and private financing of transportation improvements necessitated in whole or in part by development in the city.*" and to "*ensure adequate levels of transportation and traffic service within the city consistent with the comprehensive plan.*" The currently adopted fee rate (for years 2024-26) is $3,995 per net new PM peak hour trip or $559 per new student for High School uses. As described previously and listed in Table 5, the project is forecast to add capacity for 540 students (compared to the previously permitted level of 1,445) and generate a net increase of 59 new PM peak hour trips. Based on these two figures, a fee ranging from of **$223,720** (if based on the rates derived specifically for Bonney Lake High School) to **$301,860** (if based on the per-student ITE rates listed in the City's rate schedule) could apply. It is acknowledged that fees are typically collected according to rates in place at the time of building permit issuance.

However, the proposed roundabout improvement at the 199th Avenue Court E / Bonney Lake High School Main Access intersection would result in substantial improvements to delay and queues through this City intersection. When the City adopted its new Comprehensive Plan *Mobility Element*, the roundabout improvement was included as Project I4. The City estimated the cost at $3,500,000 (in 2025 dollars) and determined that the traffic impact fee eligible component of the roundabout was 67%. Therefore, according to City staff,[33] at a minimum an impact fee credit of up to $2,345,000 could be allowed. According to District design team estimates, the cost of the roundabout improvement is likely to be about $4,300,000, so the full credit amount would apply and would fully off-set any traffic impact fee for the school addition project under the City's Transportation Impact Fee schedule. No additional fee or mitigation is required.

[33] Email communication, John P. Vodopich, AICP, City Administrator, City of Bonney Lake, April 1, 2026.

APPENDIX A
Traffic Analysis Scoping Documents
&
Traffic Count Data Sheets

TECHNICAL MEMORANDUM

Project: Sumner-Bonney Lake School District's
Bonney Lake High School Expansion Project

Subject: Transportation Analysis Scoping

Date: October 10, 2025

Author: Tod S. McBryan, P.E.

This memorandum updates the trip generation, distribution, and assignments for the Sumner-Bonney Lake School District's proposed expansion of Bonney Lake High School. This analysis is intended for use confirming the City of Bonney Lake's required scope and study area for an updated traffic analysis of the school expansion project—a prior scoping submittal and transportation technical analysis were prepared in 2023/2024 for a smaller planned expansion. Please contact Tod McBryan (206) 527-8410 with any questions regarding this memorandum.

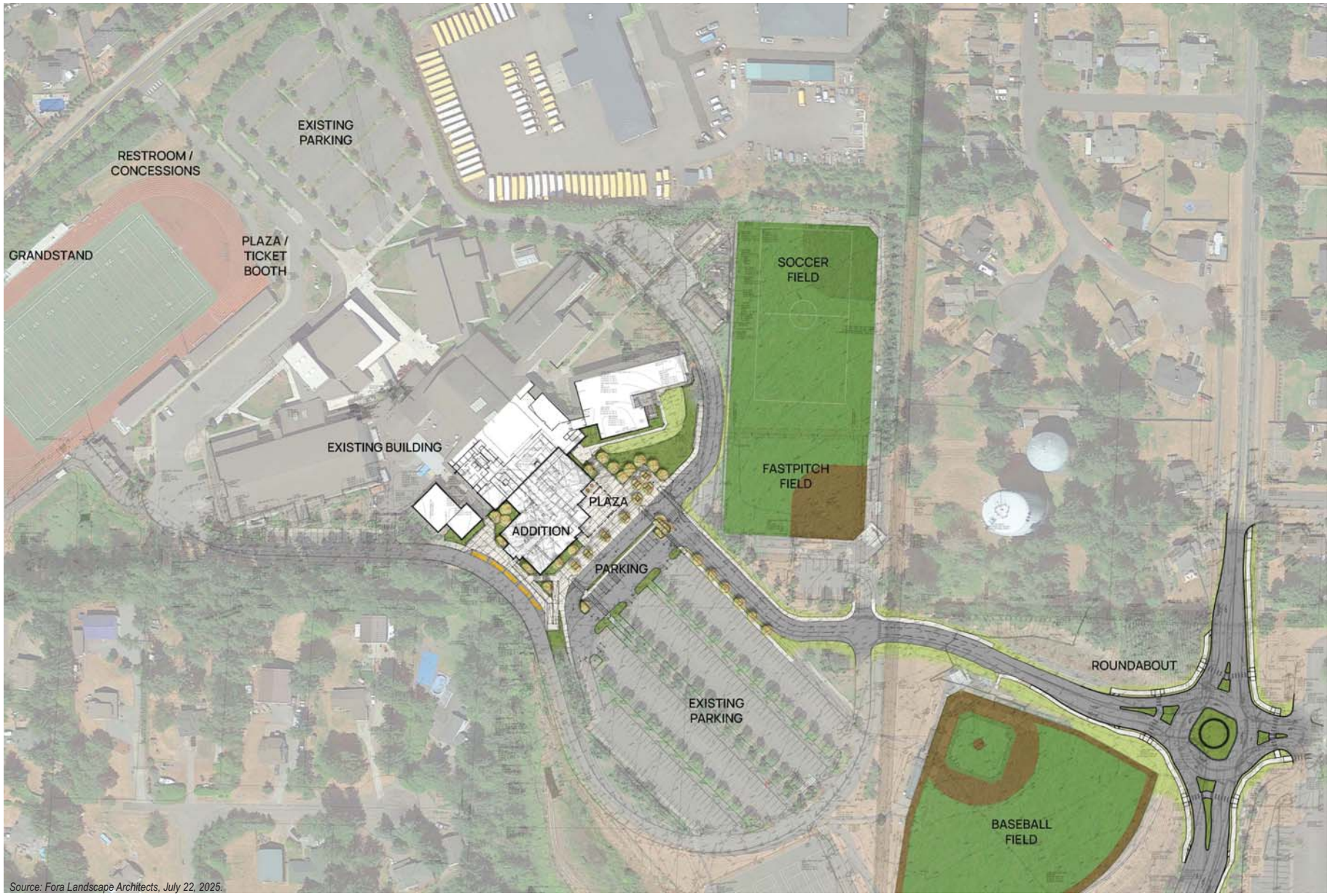
1. Project Description

The Sumner-Bonney Lake School District is planning a classroom addition to Bonney Lake High School. The school is located at 10920 – 199th Avenue Court E in Bonney Lake, Washington. The capacity of the existing school is 1,445 students (originally opened in 2002 with capacity of 1,200 and expanded by 245 in 2009); however, population growth has resulted in overcrowding, and the school's 2024-25 enrollment is 1,774 students.[1] The District is working to address the overcrowding and to provide additional capacity for expected future growth. At this time, it is estimated that an expansion with capacity for 540 additional students would be constructed on the campus, resulting in total school capacity of 1,985 students.

The classroom addition is planned to be located in the area now used as the automobile load/unload loop and visitor parking area at the south side of the building west of the existing fast-pitch practice fields. The project would also reconfigure the access and automobile load/unload near the addition, add on-site automobile queuing capacity, and improve the existing athletic facilities with turf fields. In addition, the main site access intersection on 199th Avenue Court E, which also serves Mountain View Middle School, would be reconstructed as a two-lane roundabout. Figure 1 shows the proposed site plan with the intersection improvements.

The project is planned for completion and occupancy by 2028; students and staff would remain on campus during the construction effort. Figure 2 shows the overall enrollment area for the school.

[1] Washington Office of Superintendent of Public Instruction (OSPI), Report Card, 2025.

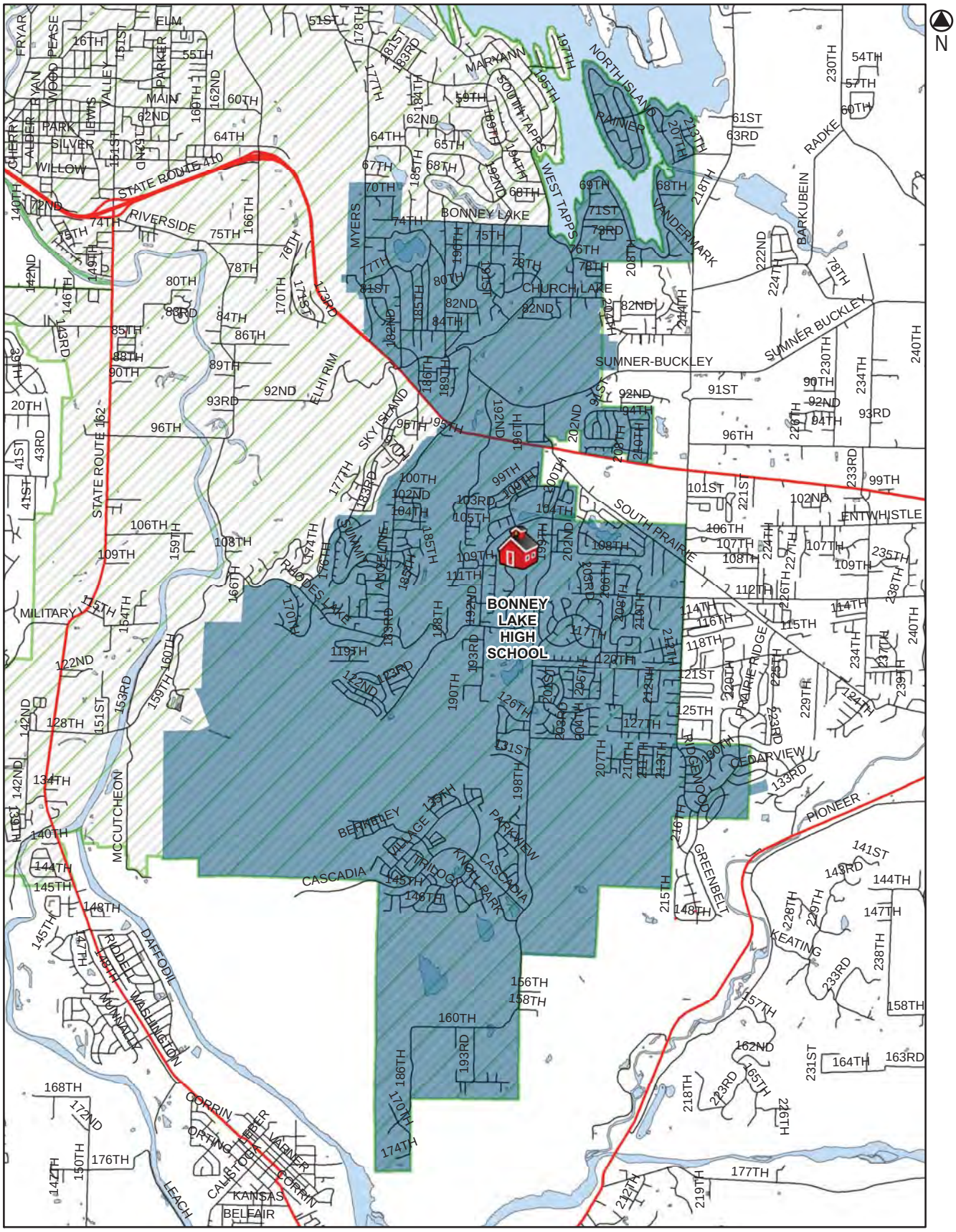


Sumner-Bonney Lake School District
Bonney Lake High School Expansion

Figure 1

Proposed Site Plan

heffron transportation inc



Sumner-Bonney Lake School District
Bonney Lake High School Expansion

Figure 2
Bonney Lake High School
Enrollment Boundary

heffron transportation inc

2. Project Trip Generation

Peak hour trip generation rates were derived from counts conducted at the school's site access intersections on Thursday, November 7, 2024 from 6:30 to 8:30 A.M. and from 1:00 to 6:00 P.M. The counts were conducted at the signalized school access on 199th Avenue Court E as well as the two driveways on 104th Street E. The count effort was coordinated with District and school administration staff to ensure that data were collected on a representative (normal) school day. The count data sheets are attached (Attachment A). Note that enrollment at the time of those counts was 1,640 students[2] and regular school hours were 7:25 A.M. to 2:20 P.M.[3]

2.1. Trip Generation Rates

Table 1 summarizes the results of the trip generation rates derived from the counts and selected for use in this scoping analysis; rates and equations published in the Institute of Transportation Engineers' [ITE] *Trip Generation Manual*[4] for High School (Land Use Code 525) are shown for comparison.

Table 1. Trip Generation Rates – Bonney Lake High School

Vehicle Trip Counts / School Enrollment	Morning Peak Hour (6:30 – 7:30 A.M.)			Afternoon Peak Hour (2:15 – 3:15 P.M.)			PM Peak Hour (4:00 – 5:00 P.M.)		
	In	Out	Total	In	Out	Total	In	Out	Total
Bonney Lake High School (2024)	788	455	1,243	182	536	718	78	91	169
Observed Rates (1,640 students)	*63%*	*37%*	*0.76*	*25%*	*75%*	*0.44*	*46%*	*54%*	*0.10*
ITE Equations and Rates (vehicle trips per student) [1]	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Rate
High School (LU 525)	*68%*	*32%*	*0.53*	*33%*	*67%*	*0.31*	*48%*	*52%*	*0.15*
	Ln(T) = 0.71Ln(X) + 1.37			*n/a* [2]			*n/a*		

Source: Heffron Transportation, Inc., September 2025, using data collected by Idax Data Solutions, Nov. 2024.

1. *ITE, Trip Generation Manual, 12th Ed., Sept. 2025.*
2. *n/a = Not applicable, equation not given.*

The trip generation rates observed at Bonney Lake High School are higher than the average published ITE rates (and equations where provided) during morning and afternoon peak hours, but lower during the PM peak hour; however, they are well within the ranges of the ITE data[5] and are reasonable for application in this access review analysis. It is noted that these rates reflect all trips generated by the school, including student pick-up/drop-off, school bus trips, parent trips, teacher/staff trips, visitors, and any extracurricular or after-hours use of the school facilities and playfields.

2 Email communication, M. Tanay, Sumner-Bonney Lake School District, November 11, 2024.
3 Regular school hours occur on Monday, Tuesday, Thursday and Friday. The school operates with a late start (9:05 A.M.) on Wednesdays.
4 ITE, 12th Edition, 2025.
5 ITE's average morning peak hour rate and equation are based on data reflecting rates of 0.17 to 1.04 trips per student; the average afternoon peak hour rate is based on data reflecting rates of 0.09 to 0.74 trips per student; and the average commuter PM peak hour rate is based on data reflecting rates of 0.04 to 0.31 trips per student

2.2. Trip Generation Estimates for School with Addition

The existing school's enrollment in 2024 (when the referenced trip generation counts were performed) was above its design capacity; therefore, the analysis for the expansion will account for the full increase in capacity compared to its previously permitted level of 1,445 students (a total net increase of 540 students). However, as described in the next section, new enrollment above the 2024 level is expected to more heavily originate from the south due to residential growth within the Tehaleh Employment Based Planned Community (EBPC). As a result, estimates of school trip generation are presented for two portions of the added capacity from the addition project. The first portion reflects trips generated by existing enrollment that is above the previously permitted capacity—the 'Over-Capacity Portion.' The second portion reflects trips generated by added capacity above the 2024 enrollment level—the 'New Capacity Portion.' Table 2 summarizes the forecast trip generation for Bonney Lake High School.

As shown, compared to the school with enrollment at its previously permitted capacity, the project is forecast to result in total net increases of 409 morning peak hour trips, 236 afternoon peak hour trips, and 56 PM peak hour trips.

Table 2. Trip Generation Estimates – Bonney Lake High School With Project

Site Condition	Capacity (Students)	AM Peak Hour (6:30 to 7:30 A.M.) In	AM Peak Hour (6:30 to 7:30 A.M.) Out	AM Peak Hour (6:30 to 7:30 A.M.) Total	Afternoon Peak Hour (2:15 to 3:15 P.M.) In	Afternoon Peak Hour (2:15 to 3:15 P.M.) Out	Afternoon Peak Hour (2:15 to 3:15 P.M.) Total	PM Peak Hour (4:00 to 5:00 P.M.) In	PM Peak Hour (4:00 to 5:00 P.M.) Out	PM Peak Hour (4:00 to 5:00 P.M.) Total
A. Trips Associated with Growth Above School's Existing Design Capacity										
2024 Enrollment	1,640	788	455	1,243	182	536	718	78	91	169
Previously Permitted [1]	1,445	694	401	1,095	160	473	633	69	80	149
Over-Capacity Portion	*195*	*94*	*54*	*148*	*22*	*63*	*85*	*9*	*11*	*20*
B. Trips Associated with New Capacity										
With New Addition [2]	1,985	953	551	1,504	220	649	869	95	110	205
2024 Enrollment	1,640	788	455	1,243	182	536	718	78	91	169
New-Capacity Portion	*345*	*165*	*96*	*261*	*38*	*113*	*151*	*17*	*19*	*36*
Net Change in Trips from Existing Capacity to Proposed Capacity										
A + B	540	259	150	409	60	176	236	26	30	56

Source: Heffron Transportation, Inc., September 2025 using rates developed for Bonney Lake High School from counts in November 2024.

1. *Permitted capacity of Bonney Lake High School.*
2. *Proposed future capacity of Bonney Lake High School.*

3. Trip Distribution and Assignment

Trip distribution patterns for the school addition project were developed from a combination of resources including: 1) the overall anticipated residential density within the Bonney Lake High School enrollment area; 2) local access patterns derived from the driveway intersection counts described previously; 3) the site access, parking, and bus load/unload configuration; and 4) anticipated shift in school trip distribution due to large amounts of residential growth planned within the Tehaleh EBPC in Pierce County to the south. The enrollment area extends north to Bonney Lake Boulevard and the southern portion of Lake Tapps, west to approximately 160th Avenue E, south to approximately 174th Street E, and east to approximately 221st Avenue Court E. Existing traffic counts show that the largest portions of trips currently approach the

site from the north (42% in the morning, 41% in the afternoon and 38% in the PM peak) and depart the site to the north (46% in the morning, 47% in the afternoon, and 48% in the PM peak). The 'Over-Capacity Portion' of project trips were assigned using these current trip patterns. The 'New-Capacity Portion' of trips was assigned using distribution patterns that are more concentrated south of the site due to continued new housing construction within the Tehaleh EBPC. It was assumed that 75% of the 'New-Capacity Portion' of trips would be destined to and from the south of the site. Separate project trip distribution patterns and assignments were developed for the morning, afternoon, and PM peak hours to reflect typical patterns of some family drivers linking trips with work trips. The total new trips were combined and Figure 3, Figure 4, and Figure 5 show the total combined project trip distribution patterns and new trip assignments for the AM, afternoon, and PM peak hours, respectively.

4. Scope for Full Traffic Impact Analysis

We understand the City's transportation consultant will review the analyses presented herein, along with the assignments of new trips, to determine the required off-site study-area intersections to be included in the full transportation impact analysis. In addition, based on the previous analysis scope, the following elements are also anticipated to be required as part of the full transportation impact analysis.

- **199th Avenue Court E Access intersection operations and queues** – We will review and analyze traffic operations and vehicle queuing at the site access on 199th Avenue Court E during the peak periods. The District has been coordinating with City of Bonney Lake[6] and Pierce County staff on a future conversion of that intersection from signal to roundabout control. The analysis will address the operational conditions with the roundabout and the school expansion.

- **Parking supply and demand** – We will prepare analysis of existing and estimated future parking conditions. Projected future analysis will reflect the observed parking patterns and account for both the increase in school capacity as well as any changes to on-site parking supply.

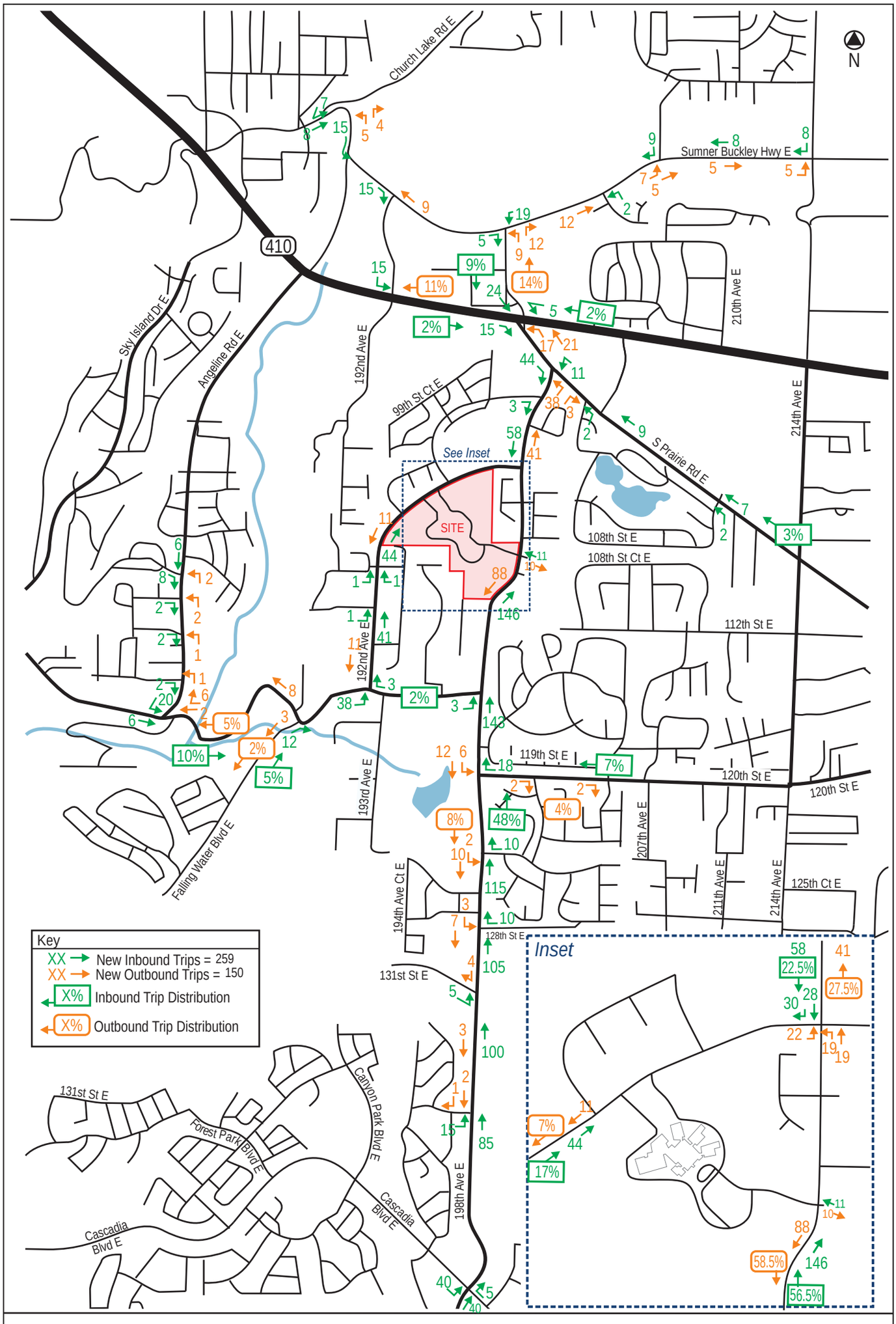
Once the study area for the full traffic impact analysis is defined, we will coordinate with the City's transportation review consultant to confirm the approach and methodology for developing background traffic forecasts and completing the analysis. These discussions are expected to address background traffic growth rates, pipeline-development-project traffic, planned roadway improvements that could affect analysis intersections, and other elements of the required scope.

Attachment A: Traffic Count Data Sheets – November 2024

TSM/tsm

SBLSD - BLHS 2025 Expansion Scoping Memo - DRAFT

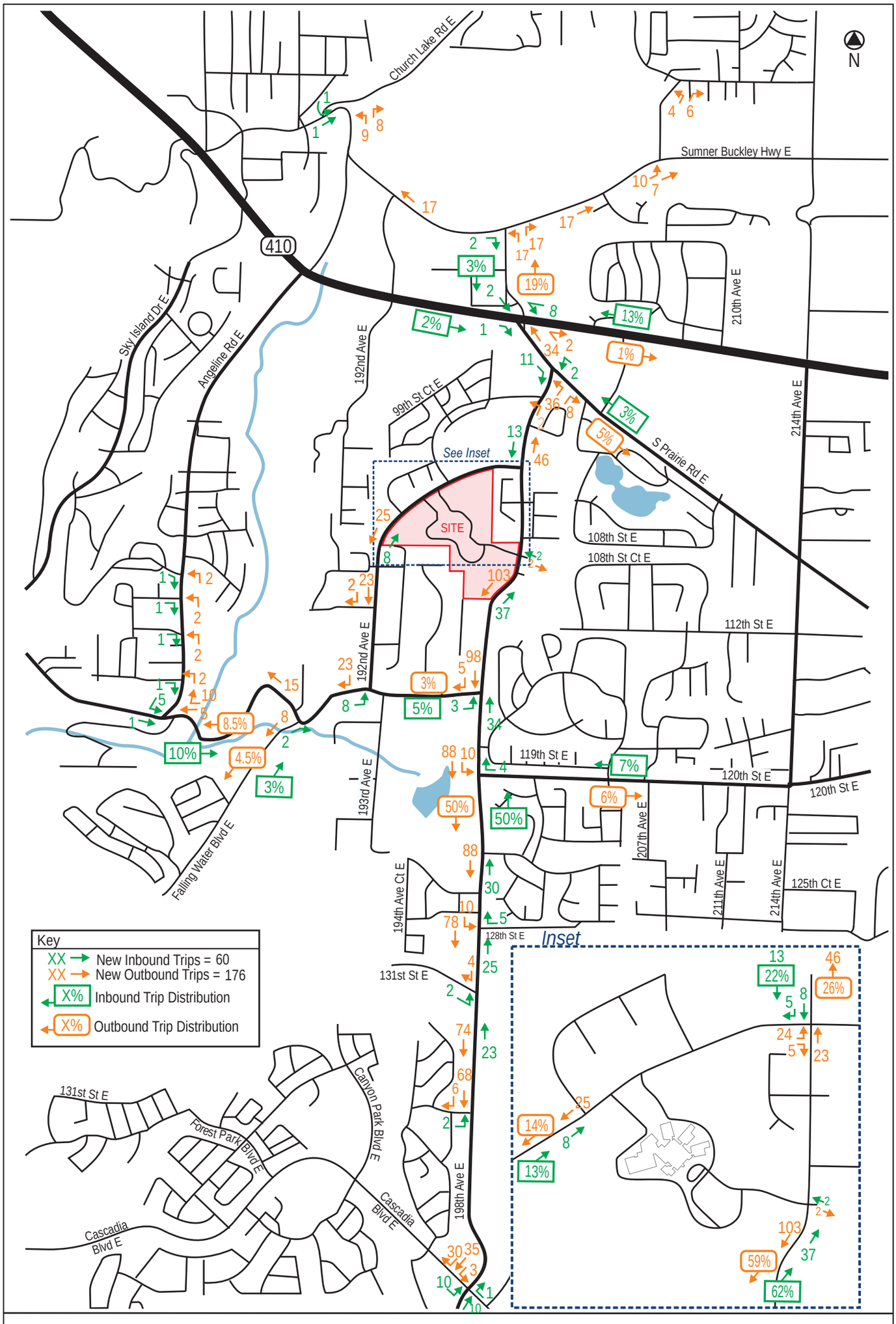
[6] Meeting with City of Bonney Lake, July 31, 2025.



Sumner-Bonney Lake School District
Bonney Lake High School Expansion

Figure 3
Net Increase in Project Trips
Morning Peak Hour

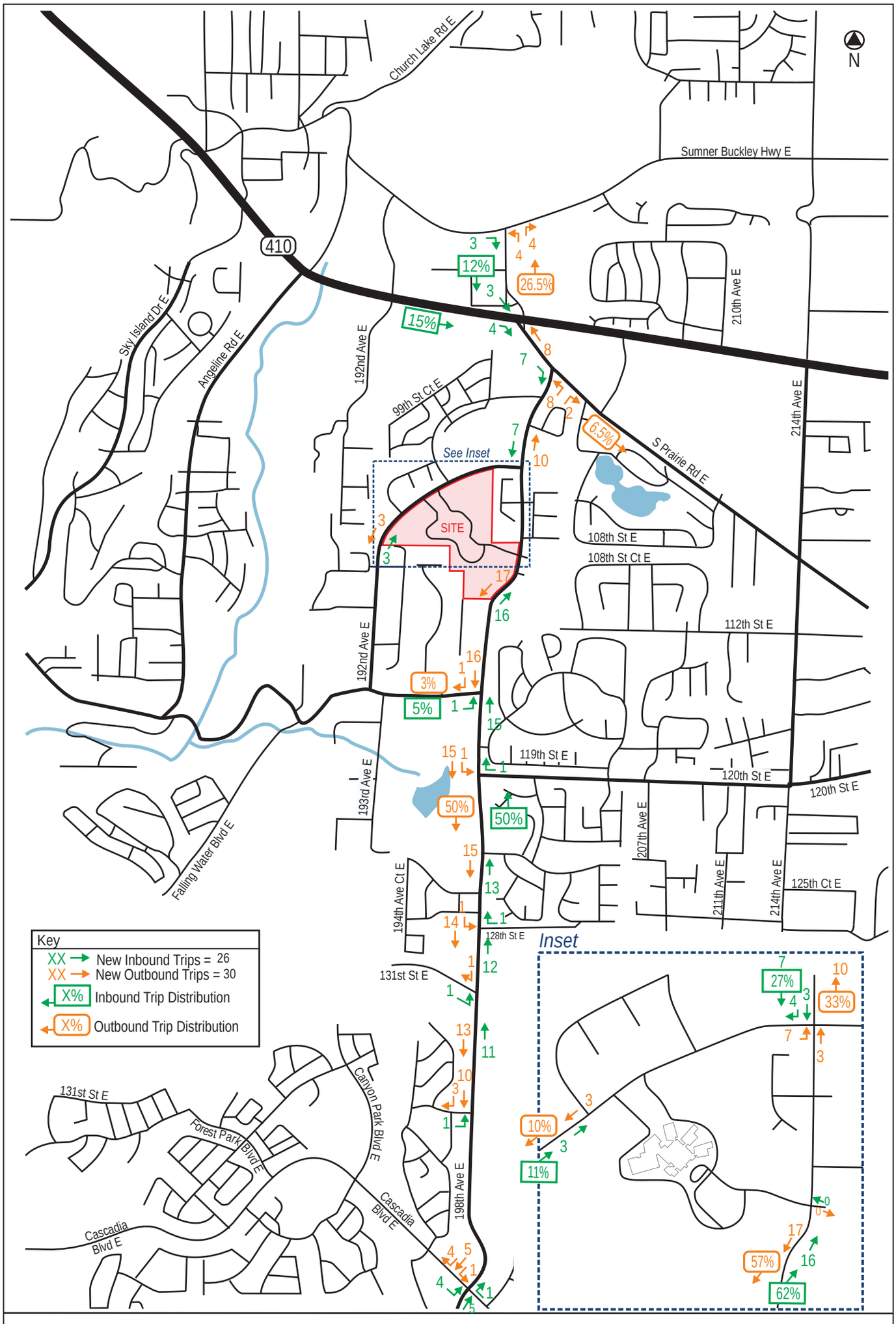
heffron transportation inc



Sumner-Bonney Lake School District
Bonney Lake High School Expansion

Figure 4
Net Increase in Project Trips
Afternoon Peak Hour

heffron transportation inc



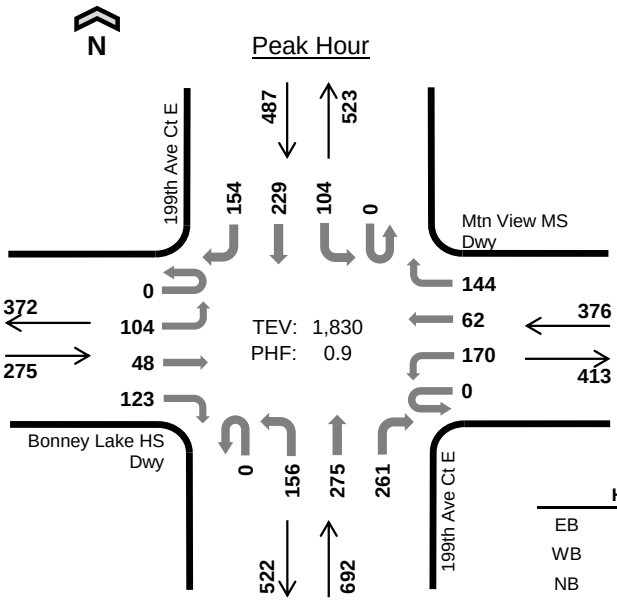
Sumner-Bonney Lake School District
Bonney Lake High School Expansion

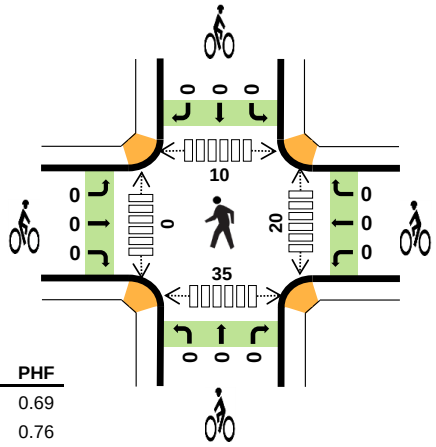
Figure 5
Net Increase in Project Trips
PM Peak Hour

heffron transportation inc

199th Ave Ct E
Bonney Lake HS Dwy

Date: 11/07/2024
Count Period: 6:00 AM to 9:00 AM
Peak Hour: 6:30 AM to 7:30 AM





	HV %:	PHF
EB	0.4%	0.69
WB	0.0%	0.76
NB	2.0%	0.84
SB	6.2%	0.90
TOTAL	2.5%	0.90

Three-Hour Count Summaries

Interval Start		Bonney Lake HS Dwy (Eastbound)				Mtn View MS Dwy (Westbound)				199th Ave Ct E (Northbound)				199th Ave Ct E (Southbound)				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM		0	17	4	12	0	14	5	12	0	24	140	43	0	10	55	24	360	0
6:45 AM		0	21	11	20	0	47	25	28	0	41	49	82	0	30	55	48	457	0
7:00 AM		0	27	22	42	0	50	20	52	0	69	17	78	0	36	43	50	506	0
7:15 AM		0	39	11	49	0	59	12	52	0	22	69	58	0	28	76	32	507	1,830
Peak Hour	All	0	104	48	123	0	170	62	144	0	156	275	261	0	104	229	154	1,830	0
	HV	0	0	0	1	0	0	0	0	0	11	3	0	0	1	29	0	45	0
	HV%	-	0%	0%	1%	-	0%	0%	0%	-	7%	1%	0%	-	1%	13%	0%	2%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:30 AM	0	0	2	5	*7*	0	0	0	0	*0*	4	0	0	1	*5*
6:45 AM	0	0	0	3	*3*	0	0	0	0	*0*	5	0	1	5	*11*
7:00 AM	1	0	11	8	*20*	0	0	0	0	*0*	4	0	1	20	*25*
7:15 AM	0	0	1	14	*15*	0	0	0	0	*0*	7	0	8	9	*24*
Peak Hour	1	0	14	30	*45*	0	0	0	0	*0*	20	0	10	35	*65*

Three-Hour Count Summaries

Interval Start	Bonney Lake HS Dwy (Eastbound)				Mtn View MS Dwy (Westbound)				199th Ave Ct E (Northbound)				199th Ave Ct E (Southbound)				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:00 AM	0	0	0	3	0	4	0	1	0	4	130	11	0	3	25	0	181	0
6:15 AM	0	4	2	1	0	17	1	4	0	21	153	18	0	5	41	14	281	0
6:30 AM	**0**	**17**	**4**	**12**	**0**	**14**	**5**	**12**	**0**	**24**	**140**	**43**	**0**	**10**	**55**	**24**	**360**	0
6:45 AM	**0**	**21**	**11**	**20**	**0**	**47**	**25**	**28**	**0**	**41**	**49**	**82**	**0**	**30**	**55**	**48**	**457**	1,279
7:00 AM	**0**	**27**	**22**	**42**	**0**	**50**	**20**	**52**	**0**	**69**	**17**	**78**	**0**	**36**	**43**	**50**	**506**	1,604
7:15 AM	**0**	**39**	**11**	**49**	**0**	**59**	**12**	**52**	**0**	**22**	**69**	**58**	**0**	**28**	**76**	**32**	**507**	**1,830**
7:30 AM	0	11	0	6	0	4	2	4	0	10	100	5	0	3	80	7	232	1,702
7:45 AM	0	4	0	8	0	4	1	1	0	10	136	4	0	1	84	5	258	1,503
8:00 AM	0	4	0	2	0	0	0	2	0	6	131	1	0	1	94	7	248	1,245
8:15 AM	0	2	0	6	0	1	1	2	0	7	163	2	0	4	77	5	270	1,008
8:30 AM	0	11	0	9	0	2	2	3	0	3	151	3	0	5	79	7	275	1,051
8:45 AM	0	6	0	4	0	2	1	6	0	4	162	4	0	5	77	4	275	1,068
Count Total	0	146	50	162	0	204	70	167	0	221	1,401	309	0	131	786	203	3,850	0
Peak Hour All	**0**	**104**	**48**	**123**	**0**	**170**	**62**	**144**	**0**	**156**	**275**	**261**	**0**	**104**	**229**	**154**	**1,830**	**0**
Peak Hour HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**11**	**3**	**0**	**0**	**1**	**29**	**0**	**45**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**1%**	**-**	**0%**	**0%**	**0%**	**-**	**7%**	**1%**	**0%**	**-**	**1%**	**13%**	**0%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:00 AM	1	0	0	5	*6*	0	0	0	0	*0*	0	0	0	1	*1*
6:15 AM	0	1	6	7	*14*	0	0	0	0	*0*	1	0	0	0	*1*
6:30 AM	**0**	**0**	**2**	**5**	***7***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**1**	*5*
6:45 AM	**0**	**0**	**0**	**3**	***3***	**0**	**0**	**0**	**0**	***0***	**5**	**0**	**1**	**5**	*11*
7:00 AM	**1**	**0**	**11**	**8**	***20***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**1**	**20**	*25*
7:15 AM	**0**	**0**	**1**	**14**	***15***	**0**	**0**	**0**	**0**	***0***	**7**	**0**	**8**	**9**	***24***
7:30 AM	0	0	1	10	*11*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	0	1	1	6	*8*	0	0	0	0	*0*	1	0	0	3	*4*
8:00 AM	0	0	4	10	*14*	0	0	0	0	*0*	0	1	1	1	*3*
8:15 AM	0	0	2	9	*11*	0	0	1	0	*1*	0	0	0	1	*1*
8:30 AM	0	0	2	7	*9*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	1	0	2	3	*6*	0	0	1	0	*1*	0	0	0	0	*0*
Count Total	3	2	32	87	*124*	0	0	2	0	*2*	23	1	11	41	*76*
Peak Hour	**1**	**0**	**14**	**30**	***45***	**0**	**0**	**0**	**0**	***0***	**20**	**0**	**10**	**35**	***65***

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Bonney Lake HS Dwy				Mtn View MS Dwy				199th Ave Ct E				199th Ave Ct E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4	0	6	0
6:15 AM	0	0	0	0	0	1	0	0	0	5	1	0	0	0	7	0	14	0
6:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**5**	**0**	**7**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	30
7:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**10**	**1**	**0**	**0**	**1**	**7**	**0**	**20**	44
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**14**	**0**	**15**	**45**
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	10	0	11	49
7:45 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	6	0	8	54
8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	10	0	14	48
8:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	9	0	11	44
8:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	9	42
8:45 AM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	3	0	6	40
Count Total	0	1	0	2	0	1	1	0	0	16	16	0	0	2	85	0	124	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**11**	**3**	**0**	**0**	**1**	**29**	**0**	**45**	**0**

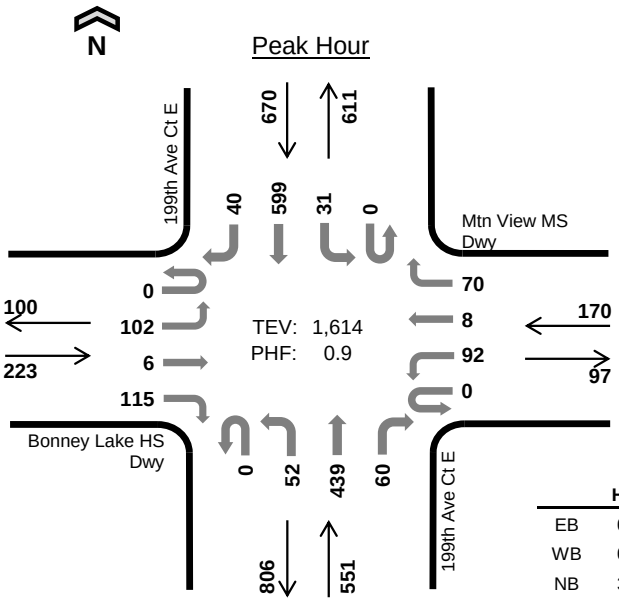
Three-Hour Count Summaries - Bikes

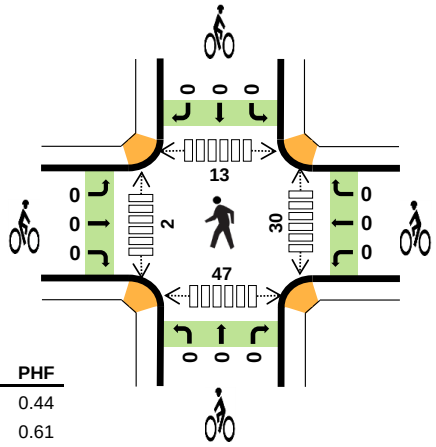
Interval Start	Bonney Lake HS Dwy			Mtn View MS Dwy			199th Ave Ct E			199th Ave Ct E			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	2
Count Total	0	0	0	0	0	0	0	2	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

199th Ave Ct E
Bonney Lake HS Dwy

Date: 11/07/2024
Count Period: 1:00 PM to 6:00 PM
Peak Hour: 2:30 PM to 3:30 PM





	HV %:	PHF
EB	0.9%	0.44
WB	0.0%	0.61
NB	3.6%	0.85
SB	2.5%	0.93
TOTAL	2.4%	0.90

Five-Hour Count Summaries

Interval Start		Bonney Lake HS Dwy (Eastbound)				Mtn View MS Dwy (Westbound)				199th Ave Ct E (Northbound)				199th Ave Ct E (Southbound)				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM		0	53	2	73	0	42	1	27	0	13	74	9	0	16	126	11	447	0
2:45 PM		0	18	2	12	0	17	1	18	0	13	112	11	0	6	150	8	368	0
3:00 PM		0	22	1	17	0	14	4	11	0	19	122	22	0	2	157	13	404	0
3:15 PM		0	9	1	13	0	19	2	14	0	7	131	18	0	7	166	8	395	1,614
Peak Hour	All	0	102	6	115	0	92	8	70	0	52	439	60	0	31	599	40	1,614	0
	HV	0	0	0	2	0	0	0	0	0	5	15	0	0	0	15	2	39	0
	HV%	-	0%	0%	2%	-	0%	0%	0%	-	10%	3%	0%	-	0%	3%	5%	2%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	1	0	4	3	*8*	0	0	0	0	*0*	28	0	8	33	*69*
2:45 PM	0	0	5	3	*8*	0	0	0	0	*0*	2	0	3	5	*10*
3:00 PM	0	0	8	7	*15*	0	0	0	0	*0*	0	2	0	8	*10*
3:15 PM	1	0	3	4	*8*	0	0	0	0	*0*	0	0	2	1	*3*
Peak Hour	2	0	20	17	*39*	0	0	0	0	*0*	30	2	13	47	*92*

Five-Hour Count Summaries

Interval Start	Bonney Lake HS Dwy				Mtn View MS Dwy				199th Ave Ct E				199th Ave Ct E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	4	0	2	0	0	0	3	0	7	127	3	0	0	113	11	270	0
1:15 PM	0	11	2	3	0	2	0	3	0	9	107	5	0	6	130	10	288	0
1:30 PM	0	4	0	1	0	7	0	0	0	6	109	11	0	3	142	4	287	0
1:45 PM	0	4	1	3	0	1	0	1	0	9	101	18	0	13	124	12	287	1,132
2:00 PM	1	3	1	3	0	2	1	3	0	10	112	30	0	18	131	18	333	1,195
2:15 PM	0	26	0	37	0	28	3	28	0	10	87	19	0	9	108	10	365	1,272
2:30 PM	**0**	**53**	**2**	**73**	**0**	**42**	**1**	**27**	**0**	**13**	**74**	**9**	**0**	**16**	**126**	**11**	**447**	1,432
2:45 PM	**0**	**18**	**2**	**12**	**0**	**17**	**1**	**18**	**0**	**13**	**112**	**11**	**0**	**6**	**150**	**8**	**368**	1,513
3:00 PM	**0**	**22**	**1**	**17**	**0**	**14**	**4**	**11**	**0**	**19**	**122**	**22**	**0**	**2**	**157**	**13**	**404**	1,584
3:15 PM	**0**	**9**	**1**	**13**	**0**	**19**	**2**	**14**	**0**	**7**	**131**	**18**	**0**	**7**	**166**	**8**	**395**	**1,614**
3:30 PM	0	15	1	19	0	14	2	6	0	4	159	8	0	9	145	9	391	1,558
3:45 PM	0	11	0	5	0	3	0	6	0	5	148	14	0	8	174	6	380	1,570
4:00 PM	0	7	0	8	0	6	1	11	0	4	143	12	0	6	176	5	379	1,545
4:15 PM	0	5	2	7	0	15	1	6	0	11	134	12	0	4	169	2	368	1,518
4:30 PM	0	4	0	7	0	44	1	14	0	2	135	13	0	12	154	5	391	1,518
4:45 PM	0	3	0	5	0	7	0	1	0	10	139	0	0	5	201	2	373	1,511
5:00 PM	0	10	0	7	0	1	0	1	0	4	132	0	0	2	176	2	335	1,467
5:15 PM	0	9	0	1	0	1	1	2	0	1	145	0	0	3	209	1	373	1,472
5:30 PM	0	6	1	3	0	1	1	1	0	1	115	5	0	1	181	2	318	1,399
5:45 PM	0	2	0	3	0	2	0	4	0	6	128	16	0	11	187	2	361	1,387
Count Total	1	226	14	229	0	226	19	160	0	151	2,460	226	0	141	3,119	141	7,113	0
Peak Hour All	**0**	**102**	**6**	**115**	**0**	**92**	**8**	**70**	**0**	**52**	**439**	**60**	**0**	**31**	**599**	**40**	**1,614**	**0**
Peak Hour HV	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**15**	**0**	**0**	**0**	**15**	**2**	**39**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**2%**	**-**	**0%**	**0%**	**0%**	**-**	**10%**	**3%**	**0%**	**-**	**0%**	**3%**	**5%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
1:00 PM	1	1	5	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	0	1	3	1	*5*	0	0	0	0	*0*	0	0	0	1	*1*
1:30 PM	0	0	4	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	0	0	5	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	1	0	4	8	*13*	0	0	0	0	*0*	0	0	0	1	*1*
2:15 PM	2	0	3	1	*6*	0	0	0	0	*0*	24	1	9	74	*108*
2:30 PM	**1**	**0**	**4**	**3**	***8***	**0**	**0**	**0**	**0**	***0***	**28**	**0**	**8**	**33**	*69*
2:45 PM	**0**	**0**	**5**	**3**	***8***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**3**	**5**	*10*
3:00 PM	**0**	**0**	**8**	**7**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**8**	*10*
3:15 PM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**1**	***3***
3:30 PM	0	0	8	3	*11*	0	0	0	0	*0*	4	0	0	7	*11*
3:45 PM	0	0	5	2	*7*	0	0	0	0	*0*	0	0	0	3	*3*
4:00 PM	0	0	2	1	*3*	0	0	0	0	*0*	0	1	0	0	*1*
4:15 PM	0	0	7	2	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	4	1	*5*	0	0	0	0	*0*	1	0	2	1	*4*
4:45 PM	0	0	6	1	*7*	0	0	0	0	*0*	0	1	1	1	*3*
5:00 PM	0	0	2	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	0	0	1	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	3	*3*	0	0	0	0	*0*	0	0	1	0	*1*
Count Total	6	2	78	46	*132*	0	0	0	0	*0*	59	5	26	135	*225*
Peak Hour	**2**	**0**	**20**	**17**	***39***	**0**	**0**	**0**	**0**	***0***	**30**	**2**	**13**	**47**	***92***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	Bonney Lake HS Dwy				Mtn View MS Dwy				199th Ave Ct E				199th Ave Ct E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	1	0	0	0	1	0	0	5	0	0	0	1	0	8	0
1:15 PM	0	0	0	0	0	0	0	1	0	0	3	0	0	0	1	0	5	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	5	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	7	25
2:00 PM	0	0	0	1	0	0	0	0	0	0	4	0	0	0	8	0	13	30
2:15 PM	0	0	0	2	0	0	0	0	0	0	3	0	0	0	1	0	6	31
2:30 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**8**	34
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**3**	**0**	**8**	35
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**4**	**0**	**0**	**0**	**6**	**1**	**15**	37
3:15 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**3**	**1**	**8**	**39**
3:30 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	3	0	11	42
3:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	7	41
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	29
4:15 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	30
4:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	5	24
4:45 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	7	24
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	24
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	16
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	7
Count Total	0	0	0	6	0	0	0	2	0	5	73	0	0	0	44	2	132	0
Peak Hour	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**15**	**0**	**0**	**0**	**15**	**2**	**39**	**0**

Five-Hour Count Summaries - Bikes

Interval Start	Bonney Lake HS Dwy			Mtn View MS Dwy			199th Ave Ct E			199th Ave Ct E			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

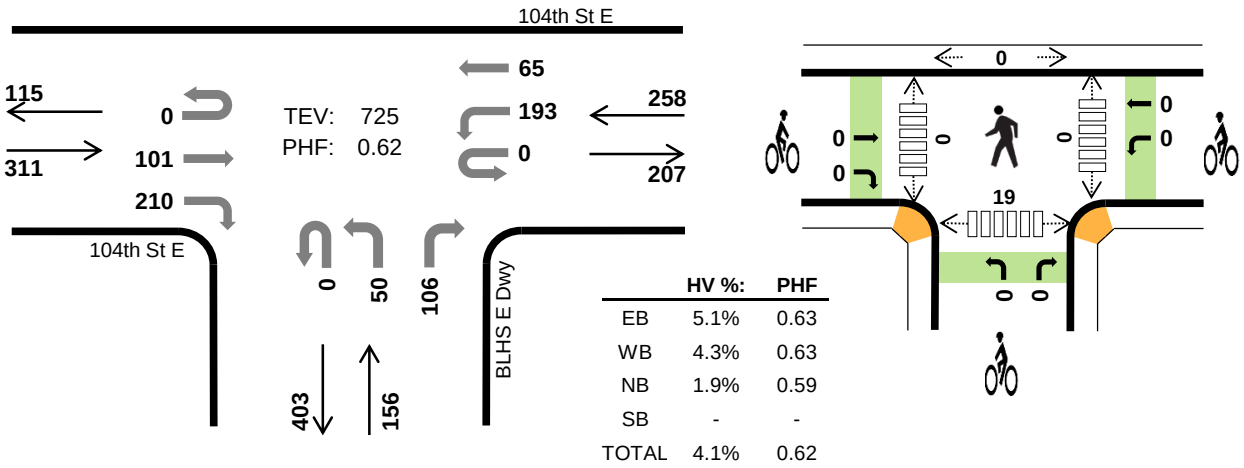
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

BLHS E Dwy
104th St E

N

Peak Hour

Date: 11/07/2024
Count Period: 6:00 AM to 9:00 AM
Peak Hour: 6:30 AM to 7:30 AM



	HV %:	PHF
EB	5.1%	0.63
WB	4.3%	0.63
NB	1.9%	0.59
SB	-	-
TOTAL	4.1%	0.62

Three-Hour Count Summaries

Interval Start		104th St E Eastbound				104th St E Westbound				BLHS E Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM		0	0	23	17	0	7	10	0	0	5	0	4	0	0	0	0	66	0
6:45 AM		0	0	20	50	0	48	11	0	0	10	0	27	0	0	0	0	166	0
7:00 AM		0	0	22	101	0	88	15	0	0	23	0	43	0	0	0	0	292	0
7:15 AM		0	0	36	42	0	50	29	0	0	12	0	32	0	0	0	0	201	725
Peak Hour	All	0	0	101	210	0	193	65	0	0	50	0	106	0	0	0	0	725	0
	HV	0	0	16	0	0	1	10	0	0	0	0	3	0	0	0	0	30	0
	HV%	-	-	16%	0%	-	1%	15%	-	-	0%	-	3%	-	-	-	-	4%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:30 AM	4	3	0	0	*7*	0	0	0	0	*0*	0	0	0	1	*1*
6:45 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	3	*3*
7:00 AM	6	3	1	0	*10*	0	0	0	0	*0*	0	0	0	8	*8*
7:15 AM	6	4	2	0	*12*	0	0	0	0	*0*	0	0	0	7	*7*
Peak Hour	16	11	3	0	*30*	0	0	0	0	*0*	0	0	0	19	*19*

Three-Hour Count Summaries

Interval Start	104th St E Eastbound				104th St E Westbound				BLHS E Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:00 AM	0	0	12	2	0	1	8	0	0	0	0	0	0	0	0	0	23	0
6:15 AM	0	0	22	11	0	7	10	0	0	1	0	2	0	0	0	0	53	0
6:30 AM	**0**	**0**	**23**	**17**	**0**	**7**	**10**	**0**	**0**	**5**	**0**	**4**	**0**	**0**	**0**	**0**	**66**	0
6:45 AM	**0**	**0**	**20**	**50**	**0**	**48**	**11**	**0**	**0**	**10**	**0**	**27**	**0**	**0**	**0**	**0**	**166**	308
7:00 AM	**0**	**0**	**22**	**101**	**0**	**88**	**15**	**0**	**0**	**23**	**0**	**43**	**0**	**0**	**0**	**0**	**292**	577
7:15 AM	**0**	**0**	**36**	**42**	**0**	**50**	**29**	**0**	**0**	**12**	**0**	**32**	**0**	**0**	**0**	**0**	**201**	**725**
7:30 AM	0	0	15	0	0	4	20	0	0	0	0	5	0	0	0	0	44	703
7:45 AM	0	0	16	2	0	7	19	0	0	0	0	1	0	0	0	0	45	582
8:00 AM	0	0	19	2	0	4	20	0	0	0	0	6	0	0	0	0	51	341
8:15 AM	0	0	26	7	0	4	13	0	0	1	0	1	0	0	0	0	52	192
8:30 AM	0	0	20	2	0	2	12	0	0	1	0	3	0	0	0	0	40	188
8:45 AM	0	0	10	0	0	1	14	0	0	1	0	1	0	0	0	0	27	170
Count Total	0	0	241	236	0	223	181	0	0	54	0	125	0	0	0	0	1,060	0
Peak Hour All	**0**	**0**	**101**	**210**	**0**	**193**	**65**	**0**	**0**	**50**	**0**	**106**	**0**	**0**	**0**	**0**	**725**	**0**
Peak Hour HV	**0**	**0**	**16**	**0**	**0**	**1**	**10**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**30**	**0**
Peak Hour HV%	**-**	**-**	**16%**	**0%**	**-**	**1%**	**15%**	**-**	**-**	**0%**	**-**	**3%**	**-**	**-**	**-**	**-**	**4%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:00 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
6:15 AM	1	5	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
6:30 AM	**4**	**3**	**0**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
6:45 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	*3*
7:00 AM	**6**	**3**	**1**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**8**	*8*
7:15 AM	**6**	**4**	**2**	**0**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**7**	***7***
7:30 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	1	*1*
8:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	1	2	0	0	*3*	1	0	0	0	*1*	0	0	0	0	*0*
8:45 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	20	25	3	0	*48*	1	0	0	0	*1*	0	0	0	20	*20*
Peak Hr	**16**	**11**	**3**	**0**	***30***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**19**	***19***

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St E				104th St E				BLHS E Dwy				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:00 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
6:15 AM	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	6	0
6:30 AM	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	16
7:00 AM	**0**	**0**	**6**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	24
7:15 AM	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**30**
7:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	25
7:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	26
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	18
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
8:30 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	7
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	0	20	0	0	1	24	0	0	0	0	3	0	0	0	0	48	0
Peak Hour	**0**	**0**	**16**	**0**	**0**	**1**	**10**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**30**	**0**

Three-Hour Count Summaries - Bikes

Interval Start	104th St E			104th St E			BLHS E Dwy			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

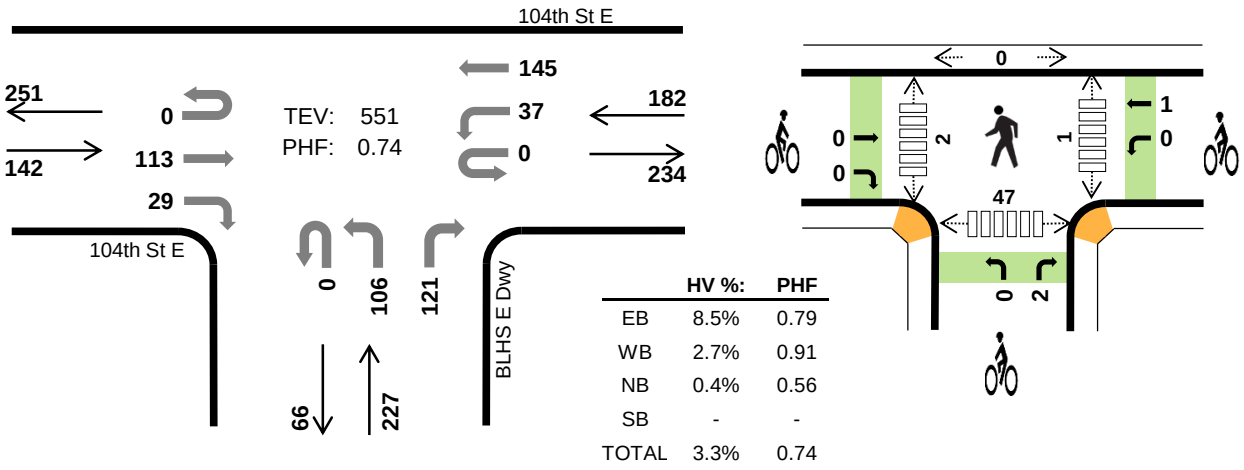
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

BLHS E Dwy
104th St E

N

Peak Hour

Date: 11/07/2024
Count Period: 1:00 PM to 6:00 PM
Peak Hour: 2:15 PM to 3:15 PM



	HV %:	PHF
EB	8.5%	0.79
WB	2.7%	0.91
NB	0.4%	0.56
SB	-	-
TOTAL	3.3%	0.74

Five-Hour Count Summaries

Interval Start		104th St E Eastbound				104th St E Westbound				BLHS E Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:15 PM		0	0	34	11	0	11	37	0	0	28	0	35	0	0	0	0	156	0
2:30 PM		0	0	23	12	0	9	41	0	0	50	0	52	0	0	0	0	187	0
2:45 PM		0	0	30	3	0	12	31	0	0	17	0	17	0	0	0	0	110	0
3:00 PM		0	0	26	3	0	5	36	0	0	11	0	17	0	0	0	0	98	551
Peak Hour	All	0	0	113	29	0	37	145	0	0	106	0	121	0	0	0	0	551	0
	HV	0	0	12	0	0	0	5	0	0	0	0	1	0	0	0	0	18	0
	HV%	-	-	11%	0%	-	0%	3%	-	-	0%	-	1%	-	-	-	-	3%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:15 PM	4	2	1	0	*7*	0	0	0	0	*0*	1	0	0	19	*20*
2:30 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	1	0	17	*18*
2:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	9	*9*
3:00 PM	4	1	0	0	*5*	0	1	2	0	*3*	0	1	0	2	*3*
Peak Hour	12	5	1	0	*18*	0	1	2	0	*3*	1	2	0	47	*50*

Five-Hour Count Summaries

Interval Start		104th St E Eastbound				104th St E Westbound				BLHS E Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM		0	0	18	2	0	1	34	0	0	2	0	3	0	0	0	0	60	0
1:15 PM		0	0	21	2	0	3	32	0	0	1	0	3	0	0	0	0	62	0
1:30 PM		0	0	20	3	0	6	20	0	0	0	0	0	0	0	0	0	49	0
1:45 PM		0	0	23	3	0	13	14	0	0	0	0	1	0	0	0	0	54	225
2:00 PM		0	0	22	10	0	16	26	0	0	3	0	3	0	0	0	0	80	245
2:15 PM		**0**	**0**	**34**	**11**	**0**	**11**	**37**	**0**	**0**	**28**	**0**	**35**	**0**	**0**	**0**	**0**	**156**	339
2:30 PM		**0**	**0**	**23**	**12**	**0**	**9**	**41**	**0**	**0**	**50**	**0**	**52**	**0**	**0**	**0**	**0**	**187**	477
2:45 PM		**0**	**0**	**30**	**3**	**0**	**12**	**31**	**0**	**0**	**17**	**0**	**17**	**0**	**0**	**0**	**0**	**110**	533
3:00 PM		**0**	**0**	**26**	**3**	**0**	**5**	**36**	**0**	**0**	**11**	**0**	**17**	**0**	**0**	**0**	**0**	**98**	**551**
3:15 PM		0	0	46	4	0	3	30	0	0	8	0	16	0	0	0	0	107	502
3:30 PM		0	0	27	5	0	4	26	0	0	6	0	6	0	0	0	0	74	389
3:45 PM		0	0	18	3	0	4	19	0	0	4	0	10	0	0	0	0	58	337
4:00 PM		0	0	29	2	0	3	28	0	0	7	0	5	0	0	0	0	74	313
4:15 PM		0	0	21	2	0	2	36	0	0	2	0	3	0	0	0	0	66	272
4:30 PM		0	0	30	3	0	3	36	0	0	4	0	10	0	0	0	0	86	284
4:45 PM		0	0	30	4	0	4	42	0	0	1	0	4	0	0	0	0	85	311
5:00 PM		0	0	41	0	0	1	48	0	0	1	0	4	0	0	0	0	95	332
5:15 PM		0	0	17	0	0	1	28	0	0	0	0	7	0	0	0	0	53	319
5:30 PM		0	0	27	1	0	1	33	0	0	1	0	1	0	0	0	0	64	297
5:45 PM		0	0	39	1	0	4	43	0	0	0	0	0	0	0	0	0	87	299
Count Total		0	0	542	74	0	106	640	0	0	146	0	197	0	0	0	0	1,705	0
Peak Hour	**All**	**0**	**0**	**113**	**29**	**0**	**37**	**145**	**0**	**0**	**106**	**0**	**121**	**0**	**0**	**0**	**0**	**551**	**0**
	HV	**0**	**0**	**12**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**18**	**0**
	HV%	**-**	**-**	**11%**	**0%**	**-**	**0%**	**3%**	**-**	**-**	**0%**	**-**	**1%**	**-**	**-**	**-**	**-**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
1:00 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
1:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	2	*2*
1:45 PM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	0	4	0	0	*4*	0	0	0	0	*0*	1	0	0	0	*1*
2:15 PM	**4**	**2**	**1**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**19**	*20*
2:30 PM	**3**	**1**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**17**	*18*
2:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**9**	*9*
3:00 PM	**4**	**1**	**0**	**0**	***5***	**0**	**1**	**2**	**0**	***3***	**0**	**1**	**0**	**2**	***3***
3:15 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	2	*2*
3:30 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
3:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	3	*3*
4:00 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	1	*1*
4:30 PM	7	2	0	0	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	4	0	0	0	*4*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	5	1	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	39	21	1	0	*61*	0	1	2	0	*3*	2	2	0	59	*63*
Peak Hr	**12**	**5**	**1**	**0**	***18***	**0**	**1**	**2**	**0**	***3***	**1**	**2**	**0**	**47**	***50***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St E				104th St E				BLHS E Dwy				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
1:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
1:45 PM	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	4	8
2:00 PM	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	4	10
2:15 PM	**0**	**0**	**4**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**7**	16
2:30 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	19
2:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	17
3:00 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**18**
3:15 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	14
3:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	11
3:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10
4:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
4:15 PM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	8
4:30 PM	0	0	7	0	0	0	2	0	0	0	0	0	0	0	0	0	9	16
4:45 PM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	19
5:00 PM	0	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	6	23
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Count Total	0	0	39	0	0	4	17	0	0	0	0	1	0	0	0	0	61	0
Peak Hour	**0**	**0**	**12**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**18**	**0**

Five-Hour Count Summaries - Bikes

Interval Start	104th St E			104th St E			BLHS E Dwy			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:00 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**3**
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	0	0	0	2	0	0	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**

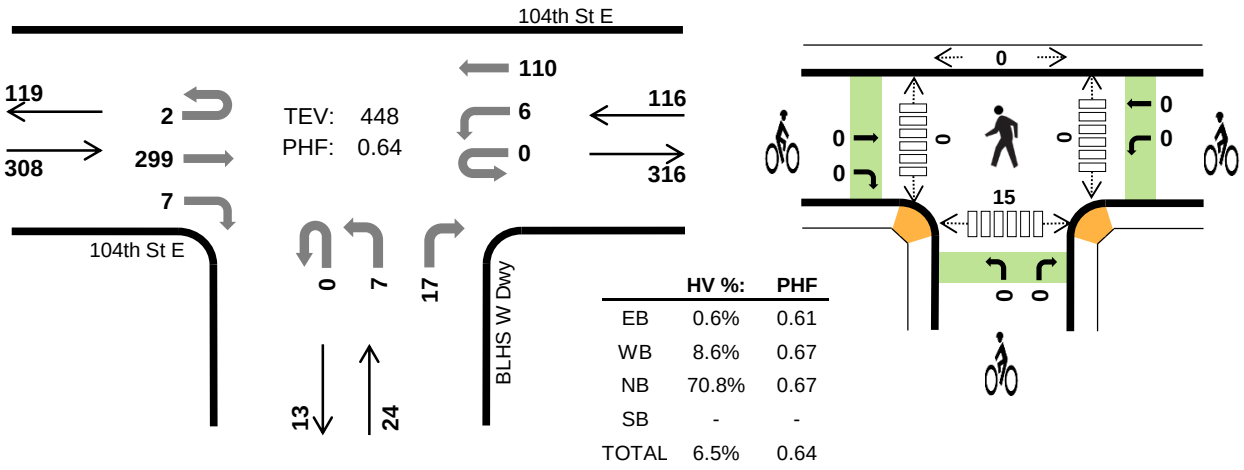
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

BLHS W Dwy
104th St E

N

Peak Hour

Date: 11/07/2024
Count Period: 6:00 AM to 9:00 AM
Peak Hour: 6:30 AM to 7:30 AM



Three-Hour Count Summaries

Interval Start		104th St E Eastbound				104th St E Westbound				BLHS W Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM		0	0	33	0	0	2	13	0	0	2	0	5	0	0	0	0	55	0
6:45 AM		0	0	78	1	0	1	18	0	0	1	0	0	0	0	0	0	99	0
7:00 AM		1	0	123	2	0	2	37	0	0	2	0	7	0	0	0	0	174	0
7:15 AM		1	0	65	4	0	1	42	0	0	2	0	5	0	0	0	0	120	448
Peak Hour	All	2	0	299	7	0	6	110	0	0	7	0	17	0	0	0	0	448	0
	HV	0	0	2	0	0	3	7	0	0	2	0	15	0	0	0	0	29	0
	HV%	0%	-	1%	0%	-	50%	6%	-	-	29%	-	88%	-	-	-	-	6%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:30 AM	0	3	5	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
6:45 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
7:00 AM	1	2	7	0	*10*	0	0	0	0	*0*	0	0	0	12	*12*
7:15 AM	1	4	5	0	*10*	0	0	0	0	*0*	0	0	0	2	*2*
Peak Hour	2	10	17	0	*29*	0	0	0	0	*0*	0	0	0	15	*15*

Three-Hour Count Summaries

Interval Start	104th St E Eastbound				104th St E Westbound				BLHS W Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:00 AM	0	0	15	1	0	3	5	0	0	1	0	0	0	0	0	0	25	0
6:15 AM	0	0	31	4	0	1	10	0	0	3	0	3	0	0	0	0	52	0
6:30 AM	**0**	**0**	**33**	**0**	**0**	**2**	**13**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**0**	**0**	**55**	0
6:45 AM	**0**	**0**	**78**	**1**	**0**	**1**	**18**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**99**	231
7:00 AM	**1**	**0**	**123**	**2**	**0**	**2**	**37**	**0**	**0**	**2**	**0**	**7**	**0**	**0**	**0**	**0**	**174**	380
7:15 AM	**1**	**0**	**65**	**4**	**0**	**1**	**42**	**0**	**0**	**2**	**0**	**5**	**0**	**0**	**0**	**0**	**120**	**448**
7:30 AM	0	0	16	0	0	2	19	0	0	0	0	0	0	0	0	0	37	430
7:45 AM	0	0	18	0	0	0	18	0	0	0	0	0	0	0	0	0	36	367
8:00 AM	0	0	22	0	0	1	18	0	0	1	0	0	0	0	0	0	42	235
8:15 AM	0	0	28	1	0	0	15	0	0	1	0	0	0	0	0	0	45	160
8:30 AM	0	0	21	1	0	1	11	0	0	0	0	1	0	0	0	0	35	158
8:45 AM	0	0	8	0	0	1	14	0	0	0	0	0	0	0	0	0	23	145
Count Total	2	0	458	14	0	15	220	0	0	13	0	21	0	0	0	0	743	0
Peak Hour All	**2**	**0**	**299**	**7**	**0**	**6**	**110**	**0**	**0**	**7**	**0**	**17**	**0**	**0**	**0**	**0**	**448**	**0**
Peak Hour HV	**0**	**0**	**2**	**0**	**0**	**3**	**7**	**0**	**0**	**2**	**0**	**15**	**0**	**0**	**0**	**0**	**29**	**0**
Peak Hour HV%	**0%**	**-**	**1%**	**0%**	**-**	**50%**	**6%**	**-**	**-**	**29%**	**-**	**88%**	**-**	**-**	**-**	**-**	**6%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:00 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
6:15 AM	0	5	2	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
6:30 AM	**0**	**3**	**5**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
6:45 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
7:00 AM	**1**	**2**	**7**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**12**	*12*
7:15 AM	**1**	**4**	**5**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	***2***
7:30 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	1	*1*
8:15 AM	0	0	0	0	*0*	1	0	0	0	*1*	0	0	0	0	*0*
8:30 AM	0	1	1	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	24	20	0	*48*	1	0	0	0	*1*	0	0	0	16	*16*
Peak Hr	**2**	**10**	**17**	**0**	***29***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**15**	***15***

Three-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St E				104th St E				BLHS W Dwy				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:00 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
6:15 AM	0	0	0	0	0	1	4	0	0	1	0	1	0	0	0	0	7	0
6:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**8**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	18
7:00 AM	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**10**	26
7:15 AM	**0**	**0**	**1**	**0**	**0**	**1**	**3**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**10**	**29**
7:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	23
7:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	24
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	16
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2	6
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	6
Count Total	0	0	4	0	0	5	19	0	0	3	0	17	0	0	0	0	48	0
Peak Hour	**0**	**0**	**2**	**0**	**0**	**3**	**7**	**0**	**0**	**2**	**0**	**15**	**0**	**0**	**0**	**0**	**29**	**0**

Three-Hour Count Summaries - Bikes

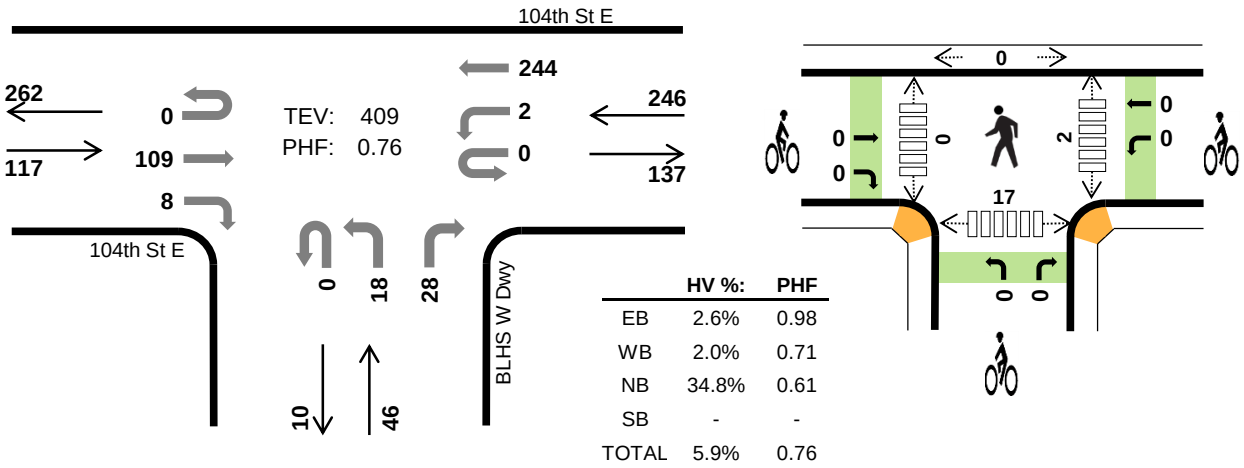
Interval Start	104th St E			104th St E			BLHS W Dwy			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

BLHS W Dwy
104th St E

Peak Hour

Date: 11/07/2024
Count Period: 1:00 PM to 6:00 PM
Peak Hour: 2:15 PM to 3:15 PM



Five-Hour Count Summaries

Interval Start		104th St E Eastbound				104th St E Westbound				BLHS W Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:15 PM		0	0	30	0	0	1	63	0	0	4	0	15	0	0	0	0	113	0
2:30 PM		0	0	25	5	0	0	87	0	0	12	0	5	0	0	0	0	134	0
2:45 PM		0	0	28	2	0	0	48	0	0	0	0	4	0	0	0	0	82	0
3:00 PM		0	0	26	1	0	1	46	0	0	2	0	4	0	0	0	0	80	409
Peak Hour	All	0	0	109	8	0	2	244	0	0	18	0	28	0	0	0	0	409	0
	HV	0	0	3	0	0	1	4	0	0	7	0	9	0	0	0	0	24	0
	HV%	-	-	3%	0%	-	50%	2%	-	-	39%	-	32%	-	-	-	-	6%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:15 PM	0	2	4	0	*6*	0	0	0	0	*0*	2	0	0	7	*9*
2:30 PM	1	1	7	0	*9*	0	0	0	0	*0*	0	0	0	8	*8*
2:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	2	*2*
3:00 PM	1	1	5	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	3	5	16	0	*24*	0	0	0	0	*0*	2	0	0	17	*19*

Five-Hour Count Summaries

Interval Start	104th St E Eastbound				104th St E Westbound				BLHS W Dwy Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	19	0	0	1	35	0	0	0	0	0	0	0	0	0	55	0
1:15 PM	0	0	19	0	0	0	33	0	0	0	0	3	0	0	0	0	55	0
1:30 PM	0	0	24	0	0	0	21	0	0	0	0	0	0	0	0	0	45	0
1:45 PM	0	0	28	0	0	0	14	0	0	0	0	1	0	0	0	0	43	198
2:00 PM	0	0	32	0	0	4	25	0	0	0	0	0	0	0	0	0	61	204
2:15 PM	**0**	**0**	**30**	**0**	**0**	**1**	**63**	**0**	**0**	**4**	**0**	**15**	**0**	**0**	**0**	**0**	**113**	262
2:30 PM	**0**	**0**	**25**	**5**	**0**	**0**	**87**	**0**	**0**	**12**	**0**	**5**	**0**	**0**	**0**	**0**	**134**	351
2:45 PM	**0**	**0**	**28**	**2**	**0**	**0**	**48**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**82**	390
3:00 PM	**0**	**0**	**26**	**1**	**0**	**1**	**46**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**80**	**409**
3:15 PM	0	0	46	0	0	0	38	0	0	2	0	5	0	0	0	0	91	387
3:30 PM	0	0	31	0	0	0	32	0	0	0	0	1	0	0	0	0	64	317
3:45 PM	0	0	19	0	0	1	22	0	0	0	0	2	0	0	0	0	44	279
4:00 PM	0	0	28	2	0	0	35	0	0	2	0	2	0	0	0	0	69	268
4:15 PM	0	0	23	1	0	0	38	0	0	0	0	0	0	0	0	0	62	239
4:30 PM	0	0	30	1	0	2	39	0	1	0	0	1	0	0	0	0	74	249
4:45 PM	0	0	32	2	0	3	40	0	0	0	0	2	0	0	0	0	79	284
5:00 PM	0	0	38	6	0	7	42	0	0	2	0	4	0	0	0	0	99	314
5:15 PM	0	0	16	3	0	3	27	0	0	6	0	3	0	0	0	0	58	310
5:30 PM	0	0	29	2	0	2	33	0	0	1	0	2	0	0	0	0	69	305
5:45 PM	0	0	27	8	0	12	31	0	0	2	0	11	0	0	0	0	91	317
Count Total	0	0	550	33	0	37	749	0	1	33	0	65	0	0	0	0	1,468	0
Peak Hour All	**0**	**0**	**109**	**8**	**0**	**2**	**244**	**0**	**0**	**18**	**0**	**28**	**0**	**0**	**0**	**0**	**409**	**0**
Peak Hour HV	**0**	**0**	**3**	**0**	**0**	**1**	**4**	**0**	**0**	**7**	**0**	**9**	**0**	**0**	**0**	**0**	**24**	**0**
Peak Hour HV%	**-**	**-**	**3%**	**0%**	**-**	**50%**	**2%**	**-**	**-**	**39%**	**-**	**32%**	**-**	**-**	**-**	**-**	**6%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
1:00 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
1:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	2	*2*
1:45 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
2:15 PM	**0**	**2**	**4**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**7**	*9*
2:30 PM	**1**	**1**	**7**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**8**	*8*
2:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
3:00 PM	**1**	**1**	**5**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:15 PM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
3:30 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	2	*2*
4:00 PM	4	0	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	3	1	0	0	*4*	0	0	0	0	*0*	1	0	0	4	*5*
4:30 PM	7	2	0	0	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	4	0	0	0	*4*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	1	*1*
5:15 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	28	17	18	0	*63*	0	0	0	0	*0*	3	0	0	30	*33*
Peak Hr	**3**	**5**	**16**	**0**	***24***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**17**	***19***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St E				104th St E				BLHS W Dwy				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
1:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
1:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
2:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	6
2:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**6**	11
2:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**0**	**0**	**9**	19
2:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	20
3:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**3**	**0**	**0**	**0**	**0**	**7**	**24**
3:15 PM	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3	21
3:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13
3:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	12
4:00 PM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	9
4:15 PM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	10
4:30 PM	0	0	7	0	0	0	2	0	0	0	0	0	0	0	0	0	9	18
4:45 PM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	21
5:00 PM	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	4	21
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	18
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Count Total	0	0	28	0	0	5	12	0	0	7	0	11	0	0	0	0	63	0
Peak Hour	**0**	**0**	**3**	**0**	**0**	**1**	**4**	**0**	**0**	**7**	**0**	**9**	**0**	**0**	**0**	**0**	**24**	**0**

Five-Hour Count Summaries - Bikes

Interval Start	104th St E			104th St E			BLHS W Dwy			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

Public Services Department
21719 96th St E
Buckley, WA 98321
Phone: 253-447-4356
Fax: 253-862-1116

December 9, 2025

Marina Tanay
Sumner- Bonney Lake School Dist.
1202 Wood Ave
Bonney Lake, WA 98390

Re: BLHS Intersection Improvements - Civil TIA - CIV-2022-00496

Greetings:

The City of Bonney Lake Development Review Department is reviewing the application submitted for the above referenced permit application. At this time the city is unable to complete the plan review until revised plans are submitted with the revisions requested on the attached mark-up summary.

If you have any questions, please contact the City Engineer, Ken Gill – gillk@bonneylake.gov

Resubmittal Process: The City no longer accepts paper submittals or resubmittals. The electronic documents must be oriented so that the top of the sheet is the top of the screen. The files must be labeled with the file number associated with that resubmittal and then uploaded using the Civil Permit Resubmittal Application. For questions regarding the resubmittal process please contact the Permit Center.

Further plan review may be required for revisions.

Best regards,

Korina Scott
Permit Coordinator
scottk@cobl.us

Fehr & Peers
950 Pacific Avenue, Suite 1220
Tacoma, WA 98402

Bonney Lake High School Expansion TIA Scoping Memo
Review Comments for the City of Bonney Lake
12/2/25

Reviewer Contact Info:
Daniel Dye, PE
d.dye@fehrandpeers.com
Steven Goodsell, EIT
s.goodsell@fehrandpeers.com

	Location	Comment
1.	Overall	The TIA Scoping Memo appropriately outlines the existing permitted capacity of Bonney Lake High School (BLHS) and appears to collect and accurately calculate expected trip generation for the existing enrollment beyond the permitted capacity as well as the additional capacity planned with the expansion. However, the expansion is only expected to increase capacity by 211 to 345 students above the current enrollment levels (1,774 per page 1, as opposed to 1,640 per page 4). Is the school district confident that enrollment at BLHS will not exceed the new capacity of 1,985 students? If not, a sensitivity analysis or additional scenario could help identify if additional transportation mitigation would be needed if enrollment once again exceeds capacity.
2.	Pg. 6	Study intersections should be selected based on City of Bonney Lake TIA guidelines. All site access intersections and major roadway intersections with ten or more development trips added should be studied. Major intersections are defined as intersections of a collector roadway and above. Additionally, any signalized or roundabout controlled intersections should be studied. The applicant will need to coordinate the scope of this TIA and particularly the study intersection selection with Pierce County given the location of the high school at the edge of City Limits.
3.	Overall	Background growth should be calculated based on nearby pipeline development (to be provided by the City and County) plus a reasonable annual growth rate based on daily vehicle volume forecasts from the City's current comprehensive plan or as otherwise provided by the City.
4.	Overall	Applicant should ensure that near term transportation improvement projects (City and County) are accounted for in the full TIA. Coordination with each agency should be documented.
5.	Overall	A thorough inventory and analysis of multimodal facilities and safety should be included in the full TIA.

Tod McBryan

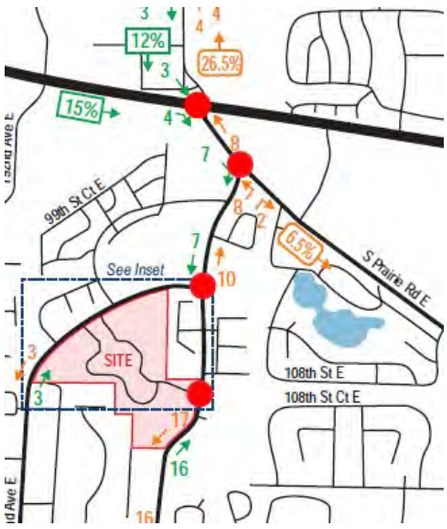
From: Lauren Balisky <BaliskyL@bonneylake.gov>
Sent: Tuesday, February 10, 2026 2:03 PM
To: Tod McBryan; Matt G.
Cc: Permit; Mary Urback (murback@urbackpllc.com); Marina Tanay; Ken Gill; Mettie Brasel
Subject: RE: BLHS Intersection Improvements - Civil TIA - CIV-2022-00496

Hi Tod,

Thank you for the additional information. Piecing this together without the benefit of being at that meeting has been challenging!

If no segments meet the 100-trip threshold, you are correct that a screenline analysis will not be required. If a segment meets that threshold, my understanding of how Fehr & Peers would approach completing that is below.

I clarified with my Director and apologize for misunderstanding the ask. Please go ahead and proceed with the four intersections shown on your Study Area Markup of Figure 5:



Sincerely,

Lauren Balisky, AICP, MPA | Development Services Manager

City of Bonney Lake | Public Services Center

21719 96th Street E | Floor 2 | Buckley, WA 98321

Direct: (253) 447-4347 | BaliskyL@bonneylake.gov

Permit Center | (253) 447-4356 | Inspections: (253) 447-4357

Hours: M – Th, 9 AM – 4 PM | F, By Appointment Only | Closed Holidays

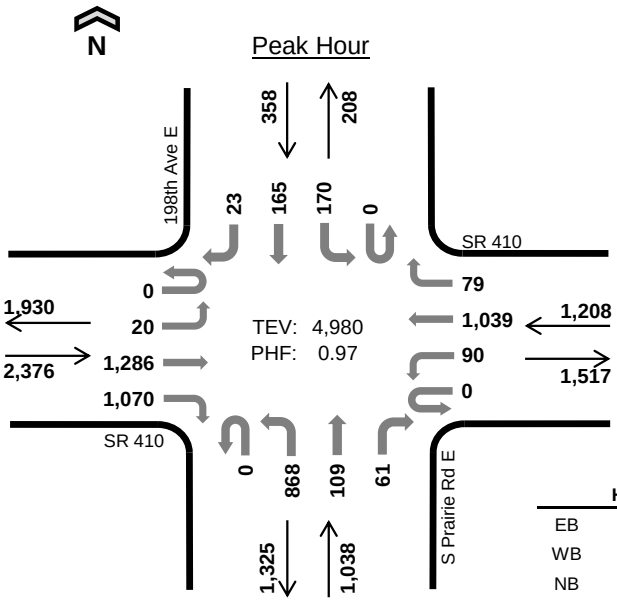
Disclaimer: The Development Services Division tries to provide timely and informative responses to all email inquiries, but our responses should not be considered comprehensive or applicable to all situations. Information provided by our staff does not constitute a formal statement of restrictions, legal advice, or a binding determination of development potential. Nothing in this communication shall be deemed to create any liability on the part of the City.

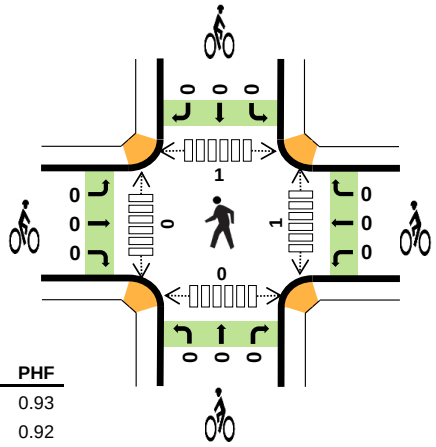
Property owners seeking definitive land use information pursuant to RCW 35A.21.280 should submit a written request to planning@bonneylake.gov. Property owners wanting a more detailed review of a potential project can also request a Pre-Application Meeting ($300).

All email, including attachments, sent to or from the City of Bonney Lake are public records and may be subject to disclosure pursuant to the Washington State Public Records Act (RCW 42.56).

198th Ave E
SR 410

Date: 02/19/2026
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	1.6%	0.93
WB	3.1%	0.92
NB	2.5%	0.95
SB	3.6%	0.89
TOTAL	2.3%	0.97

Two-Hour Count Summaries

Interval Start		SR 410 Eastbound				SR 410 Westbound				S Prairie Rd E Northbound				198th Ave E Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		**0**	**4**	**287**	**255**	**0**	**18**	**259**	**17**	**0**	**213**	**23**	**16**	**0**	**49**	**47**	**5**	**1,193**	0
4:15 PM		**0**	**5**	**346**	**285**	**0**	**29**	**279**	**22**	**0**	**201**	**24**	**16**	**0**	**36**	**35**	**5**	**1,283**	0
4:30 PM		**0**	**7**	**314**	**279**	**0**	**22**	**254**	**11**	**0**	**229**	**28**	**16**	**0**	**46**	**43**	**7**	**1,256**	0
4:45 PM		**0**	**4**	**339**	**251**	**0**	**21**	**247**	**29**	**0**	**225**	**34**	**13**	**0**	**39**	**40**	**6**	**1,248**	**4,980**
5:00 PM		0	3	300	274	0	26	216	15	0	187	21	15	0	56	37	8	1,158	4,945
5:15 PM		0	5	300	277	0	22	269	13	0	214	25	14	0	36	28	6	1,209	4,871
5:30 PM		0	8	298	305	0	32	232	18	0	193	23	18	0	32	37	6	1,202	4,817
5:45 PM		0	4	279	277	0	26	198	9	0	238	27	13	0	27	42	10	1,150	4,719
Count Total		0	40	2,463	2,203	0	196	1,954	134	0	1,700	205	121	0	321	309	53	9,699	0
Peak Hour	**All**	**0**	**20**	**1,286**	**1,070**	**0**	**90**	**1,039**	**79**	**0**	**868**	**109**	**61**	**0**	**170**	**165**	**23**	**4,980**	**0**
	HV	**0**	**1**	**20**	**17**	**0**	**1**	**34**	**3**	**0**	**22**	**3**	**1**	**0**	**2**	**9**	**2**	**115**	**0**
	HV%	**-**	**5%**	**2%**	**2%**	**-**	**1%**	**3%**	**4%**	**-**	**3%**	**3%**	**2%**	**-**	**1%**	**5%**	**9%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**10**	**13**	**9**	**4**	***36***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	*2*
4:15 PM	**10**	**8**	**6**	**0**	***24***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**12**	**12**	**5**	**5**	***34***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**6**	**5**	**6**	**4**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	5	7	0	0	*12*	0	0	0	0	*0*	0	0	0	1	*1*
5:15 PM	5	2	2	0	*9*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	8	2	2	0	*12*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	9	2	4	0	*15*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	65	51	34	13	*163*	0	0	0	0	*0*	2	0	1	1	*4*
Peak Hour	**38**	**38**	**26**	**13**	***115***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	SR 410 Eastbound				SR 410 Westbound				S Prairie Rd E Northbound				198th Ave E Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**5**	**5**	**0**	**0**	**12**	**1**	**0**	**8**	**1**	**0**	**0**	**2**	**2**	**0**	**36**	0
4:15 PM	**0**	**1**	**7**	**2**	**0**	**1**	**6**	**1**	**0**	**5**	**0**	**1**	**0**	**0**	**0**	**0**	**24**	0
4:30 PM	**0**	**0**	**4**	**8**	**0**	**0**	**11**	**1**	**0**	**3**	**2**	**0**	**0**	**0**	**4**	**1**	**34**	0
4:45 PM	**0**	**0**	**4**	**2**	**0**	**0**	**5**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**3**	**1**	**21**	**115**
5:00 PM	0	0	2	3	0	0	7	0	0	0	0	0	0	0	0	0	12	91
5:15 PM	0	0	4	1	0	0	2	0	0	2	0	0	0	0	0	0	9	76
5:30 PM	0	0	6	2	0	0	2	0	0	2	0	0	0	0	0	0	12	54
5:45 PM	0	0	6	3	0	0	2	0	0	4	0	0	0	0	0	0	15	48
Count Total	0	1	38	26	0	1	47	3	0	30	3	1	0	2	9	2	163	0
Peak Hour	**0**	**1**	**20**	**17**	**0**	**1**	**34**	**3**	**0**	**22**	**3**	**1**	**0**	**2**	**9**	**2**	**115**	**0**

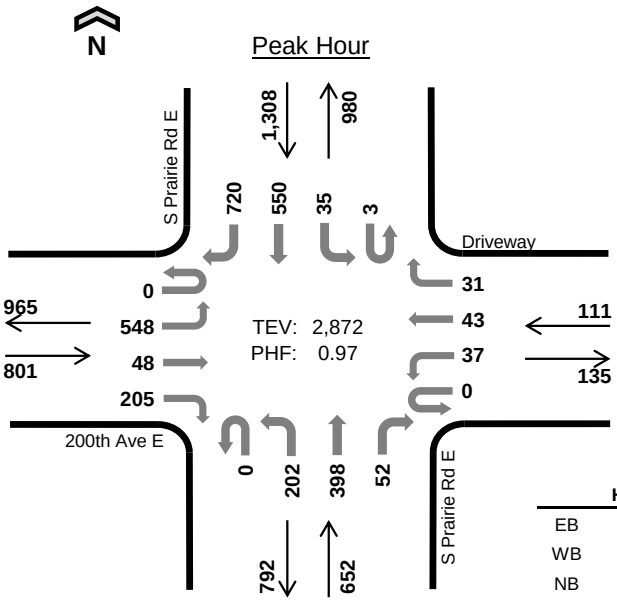
Two-Hour Count Summaries - Bikes

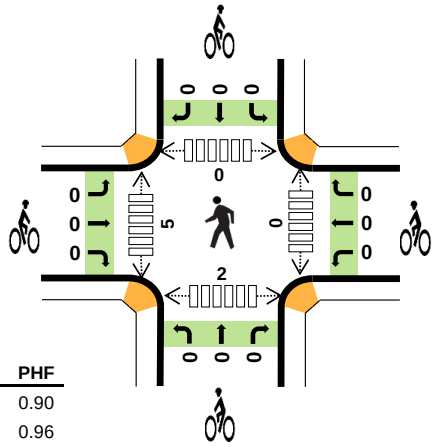
Interval Start	SR 410 Eastbound			SR 410 Westbound			S Prairie Rd E Northbound			198th Ave E Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

S Prairie Rd E
200th Ave E

Date: 02/19/2026
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	1.4%	0.90
WB	3.6%	0.96
NB	0.9%	0.90
SB	2.1%	0.91
TOTAL	1.7%	0.97

Two-Hour Count Summaries

Interval Start		200th Ave E Eastbound				Driveway Westbound				S Prairie Rd E Northbound				S Prairie Rd E Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	101	9	50	0	5	12	12	0	56	115	10	0	9	165	151	695	0
4:15 PM		**0**	**138**	**9**	**55**	**0**	**11**	**12**	**6**	**0**	**53**	**88**	**7**	**1**	**10**	**135**	**179**	**704**	0
4:30 PM		**0**	**126**	**4**	**43**	**0**	**8**	**12**	**9**	**0**	**52**	**113**	**17**	**0**	**12**	**151**	**196**	**743**	0
4:45 PM		**0**	**152**	**12**	**58**	**0**	**10**	**4**	**10**	**0**	**39**	**97**	**15**	**1**	**4**	**120**	**174**	**696**	2,838
5:00 PM		**0**	**132**	**23**	**49**	**0**	**8**	**15**	**6**	**0**	**58**	**100**	**13**	**1**	**9**	**144**	**171**	**729**	**2,872**
5:15 PM		0	95	8	45	0	7	11	13	0	75	102	12	1	6	150	162	687	2,855
5:30 PM		0	131	12	38	0	9	8	11	0	44	116	4	0	12	133	213	731	2,843
5:45 PM		0	107	9	52	0	11	12	17	0	55	90	10	0	10	131	216	720	2,867
Count Total		0	982	86	390	0	69	86	84	0	432	821	88	4	72	1,129	1,462	5,705	0
Peak Hour	**All**	**0**	**548**	**48**	**205**	**0**	**37**	**43**	**31**	**0**	**202**	**398**	**52**	**3**	**35**	**550**	**720**	**2,872**	**0**
	HV	**0**	**10**	**1**	**0**	**0**	**0**	**3**	**1**	**0**	**2**	**3**	**1**	**0**	**1**	**14**	**13**	**49**	**0**
	HV%	**-**	**2%**	**2%**	**0%**	**-**	**0%**	**7%**	**3%**	**-**	**1%**	**1%**	**2%**	**0%**	**3%**	**3%**	**2%**	**2%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	2	6	6	*16*	0	0	0	0	*0*	1	0	0	3	*4*
4:15 PM	**6**	**3**	**2**	**6**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**1**	**1**	**3**	**14**	***19***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
4:45 PM	**3**	**0**	**1**	**6**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
5:00 PM	**1**	**0**	**0**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**2**	***3***
5:15 PM	3	0	1	2	*6*	0	0	0	0	*0*	0	1	0	0	*1*
5:30 PM	1	0	2	1	*4*	0	0	0	0	*0*	0	2	0	0	*2*
5:45 PM	1	0	2	3	*6*	0	0	0	0	*0*	0	1	0	0	*1*
Count Total	18	6	17	40	*81*	0	0	0	0	*0*	1	9	0	5	*15*
Peak Hour	**11**	**4**	**6**	**28**	***49***	**0**	**0**	**0**	**0**	***0***	**0**	**5**	**0**	**2**	***7***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	200th Ave E				Driveway				S Prairie Rd E				S Prairie Rd E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	0	0	0	0	1	1	0	1	3	2	0	0	2	4	16	0
4:15 PM	**0**	**5**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**4**	**1**	**17**	0
4:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**0**	**5**	**9**	**19**	0
4:45 PM	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**3**	**10**	62
5:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	**49**
5:15 PM	0	2	0	1	0	0	0	0	0	0	1	0	0	0	2	0	6	38
5:30 PM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	1	4	23
5:45 PM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	1	2	6	19
Count Total	0	16	1	1	0	0	4	2	0	3	11	3	0	1	19	20	81	0
Peak Hour	**0**	**10**	**1**	**0**	**0**	**0**	**3**	**1**	**0**	**2**	**3**	**1**	**0**	**1**	**14**	**13**	**49**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	200th Ave E			Driveway			S Prairie Rd E			S Prairie Rd E			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

APPENDIX B
Level of Service Definitions

Levels of service (LOS) are qualitative descriptions of traffic operating conditions. These levels of service are designated with letters ranging from LOS A, which is indicative of good operating conditions with little or no delay, to LOS F, which is indicative of stop-and-go conditions with frequent and lengthy delays. Levels of service for this analysis were developed using procedures presented in the *Highway Capacity Manual, 7th Edition* (Transportation Research Board, 2022).

Signalized Intersections

Level of service for signalized intersections is defined in terms of average delay for all vehicles that travel through the intersection. Delay can be a cause of driver discomfort, frustration, inefficient fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average delay per vehicle in seconds. Delay is a complex measure and is dependent on a number of variables including: number and type of vehicles by movement, intersection lane geometry, signal phasing, the amount of green time allocated to each phase, transit stops and parking maneuvers. Table B-1 shows the level of service criteria for signalized intersections from the *Highway Capacity Manual, 7th Edition.*

Table B-1. Level of Service for Signalized Intersections

Level of Service	Average Control Delay Per Vehicle
A	≤ 10 seconds
B	> 10 – 20 seconds
C	> 20 – 35 seconds
D	> 35 – 55 seconds
E	> 55 – 80 seconds
F	> 80 seconds

Source: Transportation Research Board, Highway Capacity Manual 7th Edition, 2022, Exhibit 19-8.

Stop-Controlled (Unsignalized) Intersections

For intersections controlled by stops signs on one or two approaches, level of service is based on the average delay per vehicle for each turning movement, which is related to the availability of gaps in the main street's traffic flow, and the ability of a driver to enter or pass through those gaps. For intersections controlled by an all-way stop, level of service is based upon the average delay for all vehicles that travel through the intersection. Table B-2 shows the level of service criteria for unsignalized intersections from the *Highway Capacity Manual, 7th Edition*.

Table B-2. Level of Service Criteria for Stop-Controlled (Unsignalized) Intersections

Level of Service	Average Control Delay per Vehicle
A	0 – 10 seconds
B	> 10 – 15 seconds
C	> 15 – 25 seconds
D	> 25 – 35 seconds
E	> 35 – 50 seconds
F	> 50 seconds

Source: Transportation Research Board, Highway Capacity Manual 7th Edition, Exhibit 20.2, 2022.

Roundabout-Controlled Intersections Using SIDRA Method

The Washington State Department of Transportation (WSDOT) *Sidra Policy Settings*[34] recommends reporting roundabout operations using the SIDRA *Site LOS Method.* This method bases the LOS on both delay and degree of saturation (volume-to-capacity [V/C] ratio). The LOS criteria and thresholds are provided in Table B-3. The delay and V/C (HCM) method could be considered a simplified version of this method as it reports LOS F for oversaturated conditions (V/C > 1.0), but the *SIDRA* method applies V/C ratios that can result in LOS D or E for degrees of saturation close to 1.0. The results presented in this report reflect the *SIDRA Site LOS Method*, but consider the HCM guidance as follows:

- the v/c ratio (degree of saturation) is taken into account together with the average delay value in determining LOS for *lanes* and *movements*, but
- only the average delay value is considered in determining LOS for *approaches* and the *intersection*.

Table B-3. Delay & Degree of Saturation (SIDRA) for Roundabout Intersection

Level of Service	Average Control Delay Per Vehicle	Degree of saturation (V/C ratio of movements)
A	0 – 10 seconds	≤ 0.85
B	> 10 – 20 seconds	≤ 0.85
C	> 20 – 35 seconds	≤ 0.85
D	> 35 – 55 seconds > 0 – 55 seconds	≤ 0.85 > 0.85 – ≤ 0.95
E	> 55 – 80 seconds > 0 – 80 seconds	≤ 0.95 > 0.95 – ≤ 1.00
F	> 80 seconds	> 1.00

Source: SIDRA Solutions, SIDRA 10.0 Analysis Method (based on a proposal by Berry, 1987). Only the average delay value is considered in determining LOS for approaches and the intersection.

[34] WSDOT, https://wsdot.wa.gov/sites/default/files/2021-03/TrafficOps-WSDOTSidraPolicyAndSettings.pdf, accessed Mar. 2026.

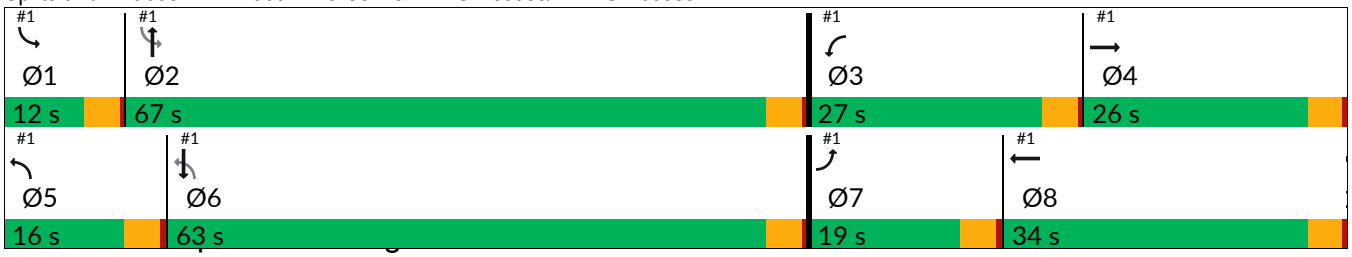
APPENDIX C
Level of Service Calculations

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	48	123	170	62	144	156	275	261	104	229	154
Future Volume (vph)	104	48	123	170	62	144	156	275	261	104	229	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	110		0	220		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		582			228			319			1559	
Travel Time (s)		15.9			6.2			8.7			42.5	
Confl. Peds. (#/hr)	10		35	35		10			20	20		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	7%	1%	0%	1%	13%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	19.0	26.0		27.0	34.0		16.0	67.0		12.0	63.0	
Total Split (%)	14.4%	19.7%		20.5%	25.8%		12.1%	50.8%		9.1%	47.7%	
Maximum Green (s)	15.0	22.0		23.0	30.0		12.0	63.0		8.0	59.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Don't Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		35			10			20			0	

Intersection Summary

Area Type: Other
Cycle Length: 132
Actuated Cycle Length: 88.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: 199th Ave Ct E & BLHS Access/MVMS Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	48	123	170	62	144	156	275	261	104	229	154
Future Volume (veh/h)	104	48	123	170	62	144	156	275	261	104	229	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.93	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1900	1796	1885	1900	1885	1707	1900
Adj Flow Rate, veh/h	116	53	137	189	69	160	173	306	290	116	254	171
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	1	0	0	0	7	1	0	1	13	0
Cap, veh/h	150	84	217	234	115	266	376	348	330	272	349	235
Arrive On Green	0.08	0.19	0.19	0.13	0.24	0.24	0.09	0.40	0.40	0.06	0.37	0.37
Sat Flow, veh/h	1810	436	1127	1810	481	1115	1711	878	832	1795	940	633
Grp Volume(v), veh/h	116	0	190	189	0	229	173	0	596	116	0	425
Grp Sat Flow(s),veh/h/ln	1810	0	1564	1810	0	1595	1711	0	1710	1795	0	1573
Q Serve(g_s), s	4.6	0.0	8.1	7.4	0.0	9.3	4.4	0.0	23.5	2.7	0.0	16.9
Cycle Q Clear(g_c), s	4.6	0.0	8.1	7.4	0.0	9.3	4.4	0.0	23.5	2.7	0.0	16.9
Prop In Lane	1.00		0.72	1.00		0.70	1.00		0.49	1.00		0.40
Lane Grp Cap(c), veh/h	150	0	300	234	0	381	376	0	678	272	0	584
V/C Ratio(X)	0.77	0.00	0.63	0.81	0.00	0.60	0.46	0.00	0.88	0.43	0.00	0.73
Avail Cap(c_a), veh/h	374	0	474	573	0	659	510	0	1483	358	0	1277
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.7	0.0	27.0	30.8	0.0	24.6	14.3	0.0	20.3	15.8	0.0	19.7
Incr Delay (d2), s/veh	3.2	0.0	0.8	2.5	0.0	0.6	0.3	0.0	1.5	0.4	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	3.0	3.3	0.0	3.5	1.6	0.0	9.0	1.1	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.9	0.0	27.8	33.3	0.0	25.2	14.6	0.0	21.8	16.2	0.0	20.3
LnGrp LOS	D		C	C		C	B		C	B		C
Approach Vol, veh/h		306			418			769			541	
Approach Delay, s/veh		30.9			28.8			20.2			19.4	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	32.8	13.4	18.0	10.3	31.0	10.0	21.3				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	8.0	63.0	23.0	22.0	12.0	59.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	4.7	25.5	9.4	10.1	6.4	18.9	6.6	11.3				
Green Ext Time (p_c), s	0.0	3.3	0.2	0.6	0.1	2.2	0.1	1.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	23.4
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	12.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	101	210	193	65	50	106
Future Vol, veh/h	101	210	193	65	50	106
Conflicting Peds, #/hr	0	19	19	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	63	63	59	59
Heavy Vehicles, %	16	0	1	15	0	3
Mvmt Flow	160	333	306	103	85	180

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	513	0	1062	346
Stage 1	-	-	-	-	346	-
Stage 2	-	-	-	-	716	-
Critical Hdwy	-	-	4.11	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.327
Pot Cap-1 Maneuver	-	-	1058	-	250	695
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	488	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1039	-	173	682
Mov Cap-2 Maneuver	-	-	-	-	165	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	488	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	7.41	44.02
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	341	-	-	1039	-
HCM Lane V/C Ratio	0.776	-	-	0.295	-
HCM Ctrl Dly (s/v)	44	-	-	9.9	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	6.3	-	-	1.2	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	2	299	7	6	110	7	17
Future Vol, veh/h	2	299	7	6	110	7	17
Conflicting Peds, #/hr	0	0	15	15	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	75	-	0	-
Veh in Median Storage, #	-	0	-	-	0	2	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	61	61	61	67	67	67	67
Heavy Vehicles, %	0	1	0	50	6	29	88
Mvmt Flow	3	490	11	9	164	10	25

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	-	0	0	517	0	693	511
Stage 1	-	-	-	-	-	511	-
Stage 2	-	-	-	-	-	182	-
Critical Hdwy	-	-	-	4.6	-	6.69	7.08
Critical Hdwy Stg 1	-	-	-	-	-	5.69	-
Critical Hdwy Stg 2	-	-	-	-	-	5.69	-
Follow-up Hdwy	-	-	-	2.65	-	3.761	4.092
Pot Cap-1 Maneuver	-	-	-	844	-	371	425
Stage 1	-	-	-	-	-	551	-
Stage 2	-	-	-	-	-	788	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	-	-	-	832	-	362	419
Mov Cap-2 Maneuver	-	-	-	-	-	491	-
Stage 1	-	-	-	-	-	537	-
Stage 2	-	-	-	-	-	788	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v		0.48	13.96
HCM LOS			B

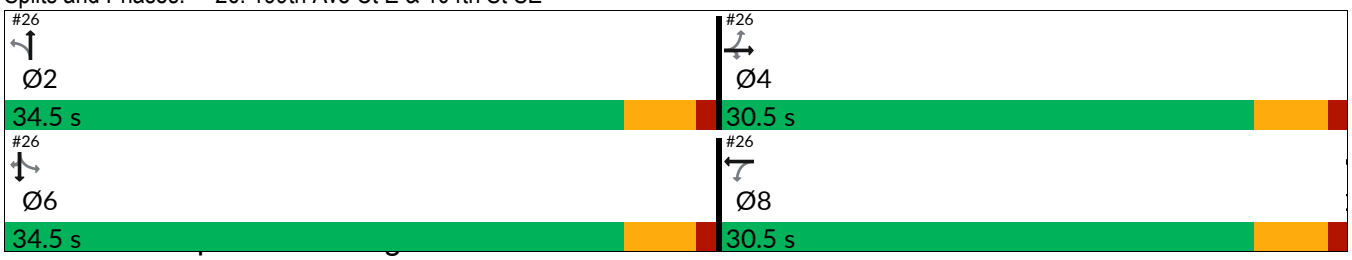
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	-	-	832	-
HCM Lane V/C Ratio	0.082	-	-	0.011	-
HCM Ctrl Dly (s/v)	14	-	-	9.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	0	38	1	1	6	26	514	1	1	450	194
Future Volume (vph)	222	0	38	1	1	6	26	514	1	1	450	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			769	
Travel Time (s)		43.3			8.3			42.5			21.0	
Confl. Peds. (#/hr)			6	6					12	12		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	13%	0%	0%	0%	0%	1%	0%	0%	5%	5%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		34.5	34.5		34.5	34.5	34.5
Total Split (%)	46.9%	46.9%	46.9%	46.9%	46.9%		53.1%	53.1%		53.1%	53.1%	53.1%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		30.0	30.0		30.0	30.0	30.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	6	6	6	0	0		12	12		0	0	0

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 37.6
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	0	38	1	1	6	26	514	1	1	450	194
Future Volume (veh/h)	222	0	38	1	1	6	26	514	1	1	450	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1900	1707	1900	1900	1900	1900	1885	1900	1900	1826	1826
Adj Flow Rate, veh/h	241	0	41	1	1	7	28	559	1	1	489	211
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	0	13	0	0	0	0	1	0	0	5	5
Cap, veh/h	641	0	377	163	81	335	406	758	1	396	735	614
Arrive On Green	0.26	0.00	0.26	0.26	0.26	0.26	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1419	0	1430	57	306	1272	755	1881	3	859	1826	1524
Grp Volume(v), veh/h	241	0	41	9	0	0	28	0	560	1	489	211
Grp Sat Flow(s),veh/h/ln	1419	0	1430	1635	0	0	755	0	1885	859	1826	1524
Q Serve(g_s), s	3.9	0.0	0.6	0.0	0.0	0.0	0.8	0.0	6.8	0.0	5.9	2.6
Cycle Q Clear(g_c), s	4.0	0.0	0.6	0.1	0.0	0.0	6.7	0.0	6.8	6.8	5.9	2.6
Prop In Lane	1.00		1.00	0.11		0.78	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	641	0	377	579	0	0	406	0	759	396	735	614
V/C Ratio(X)	0.38	0.00	0.11	0.02	0.00	0.00	0.07	0.00	0.74	0.00	0.67	0.34
Avail Cap(c_a), veh/h	1633	0	1380	1702	0	0	943	0	2098	1007	2033	1697
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.8	0.0	7.5	7.4	0.0	0.0	9.3	0.0	6.8	9.7	6.6	5.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.1	0.0	0.0	0.0	0.1	0.0	1.5	0.0	1.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.9	0.0	7.6	7.4	0.0	0.0	9.3	0.0	7.4	9.7	7.0	5.7
LnGrp LOS	A		A	A			A		A		A	A
Approach Vol, veh/h		282			9			588			701	
Approach Delay, s/veh		8.7			7.4			7.5			6.6	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.3		11.6		15.3		11.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		26.0		30.0		26.0				
Max Q Clear Time (g_c+I1), s		8.8		6.0		8.8		2.1				
Green Ext Time (p_c), s		0.7		0.3		0.6		0.0				

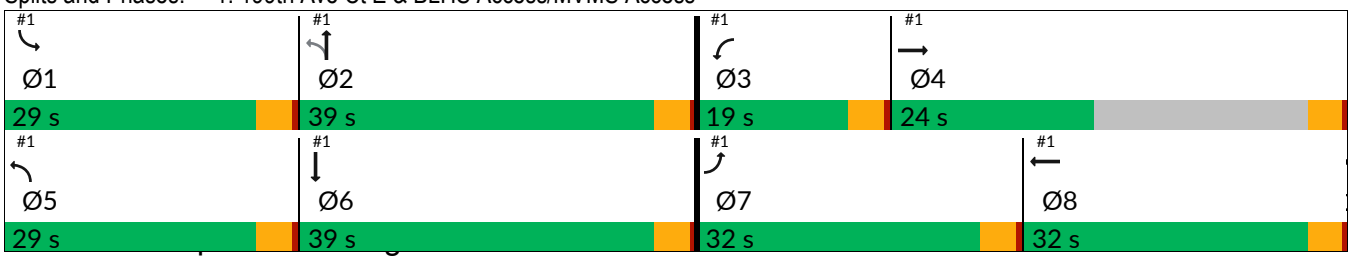
Intersection Summary	
HCM 7th Control Delay, s/veh	7.3
HCM 7th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	5	139	101	9	84	55	395	61	33	541	42
Future Volume (vph)	119	5	139	101	9	84	55	395	61	33	541	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	110		0	220		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		582			228			319			1559	
Travel Time (s)		15.9			6.2			8.7			42.5	
Confl. Peds. (#/hr)	20		120	120		20	3		54	54		3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	7%	4%	0%	0%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2					
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	32.0	24.0		19.0	32.0		29.0	39.0		29.0	39.0	
Total Split (%)	24.2%	18.2%		14.4%	24.2%		22.0%	29.5%		22.0%	29.5%	
Maximum Green (s)	28.0	20.0		15.0	28.0		25.0	35.0		25.0	35.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Don't Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		30			19			30			1	

Intersection Summary

Area Type: Other
Cycle Length: 132
Actuated Cycle Length: 74.2
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: 199th Ave Ct E & BLHS Access/MVMS Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	5	139	101	9	84	55	395	61	33	541	42
Future Volume (veh/h)	119	5	139	101	9	84	55	395	61	33	541	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.75	1.00		0.74	1.00		0.93	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1796	1841	1900	1900	1870	1870
Adj Flow Rate, veh/h	134	6	156	113	10	94	62	444	69	37	608	47
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	2	0	0	0	7	4	0	0	2	2
Cap, veh/h	173	11	290	146	27	256	234	631	98	66	675	52
Arrive On Green	0.10	0.24	0.24	0.08	0.23	0.23	0.05	0.41	0.41	0.04	0.40	0.40
Sat Flow, veh/h	1810	46	1186	1810	119	1115	1711	1539	239	1810	1704	132
Grp Volume(v), veh/h	134	0	162	113	0	104	62	0	513	37	0	655
Grp Sat Flow(s),veh/h/ln	1810	0	1232	1810	0	1234	1711	0	1778	1810	0	1835
Q Serve(g_s), s	5.1	0.0	8.0	4.3	0.0	5.0	1.5	0.0	16.8	1.4	0.0	23.5
Cycle Q Clear(g_c), s	5.1	0.0	8.0	4.3	0.0	5.0	1.5	0.0	16.8	1.4	0.0	23.5
Prop In Lane	1.00		0.96	1.00		0.90	1.00		0.13	1.00		0.07
Lane Grp Cap(c), veh/h	173	0	301	146	0	284	234	0	729	66	0	728
V/C Ratio(X)	0.77	0.00	0.54	0.77	0.00	0.37	0.26	0.00	0.70	0.56	0.00	0.90
Avail Cap(c_a), veh/h	722	0	351	387	0	493	758	0	887	645	0	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	0.0	23.0	31.6	0.0	22.7	15.4	0.0	17.2	33.2	0.0	19.9
Incr Delay (d2), s/veh	2.8	0.0	0.6	3.2	0.0	0.3	0.2	0.0	1.3	2.7	0.0	8.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	2.3	2.0	0.0	1.4	0.5	0.0	6.6	0.7	0.0	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.8	0.0	23.6	34.8	0.0	23.0	15.7	0.0	18.5	35.9	0.0	28.7
LnGrp LOS	C		C	C		C	B		B	D		C
Approach Vol, veh/h		296			217			575			692	
Approach Delay, s/veh		28.2			29.2			18.2			29.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	32.7	9.7	21.2	7.5	31.8	10.7	20.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	25.0	35.0	15.0	20.0	25.0	35.0	28.0	28.0
Max Q Clear Time (g_c+I1), s	3.4	18.8	6.3	10.0	3.5	25.5	7.1	7.0
Green Ext Time (p_c), s	0.0	2.2	0.1	0.6	0.1	2.3	0.2	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	25.4
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	10.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	113	29	37	145	106	121
Future Vol, veh/h	113	29	37	145	106	121
Conflicting Peds, #/hr	0	47	47	0	2	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	91	91	56	56
Heavy Vehicles, %	11	0	0	3	0	1
Mvmt Flow	143	37	41	159	189	216

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	227	0	451	209
Stage 1	-	-	-	-	208	-
Stage 2	-	-	-	-	243	-
Critical Hdwy	-	-	4.1	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1354	-	570	833
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	526	795
Mov Cap-2 Maneuver	-	-	-	-	526	-
Stage 1	-	-	-	-	769	-
Stage 2	-	-	-	-	801	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.6	19.71
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	642	-	-	1293	-
HCM Lane V/C Ratio	0.631	-	-	0.031	-
HCM Ctrl Dly (s/v)	19.7	-	-	7.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	4.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	109	8	2	244	18	28
Future Vol, veh/h	109	8	2	244	18	28
Conflicting Peds, #/hr	0	17	17	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	71	71	61	61
Heavy Vehicles, %	3	0	50	2	39	32
Mvmt Flow	111	8	3	344	30	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	136	0	482	134
Stage 1	-	-	-	-	132	-
Stage 2	-	-	-	-	349	-
Critical Hdwy	-	-	4.6	-	6.79	6.52
Critical Hdwy Stg 1	-	-	-	-	5.79	-
Critical Hdwy Stg 2	-	-	-	-	5.79	-
Follow-up Hdwy	-	-	2.65	-	3.851	3.588
Pot Cap-1 Maneuver	-	-	1199	-	482	841
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	639	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1180	-	473	825
Mov Cap-2 Maneuver	-	-	-	-	581	-
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	639	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.07	10.68
HCM LOS			B

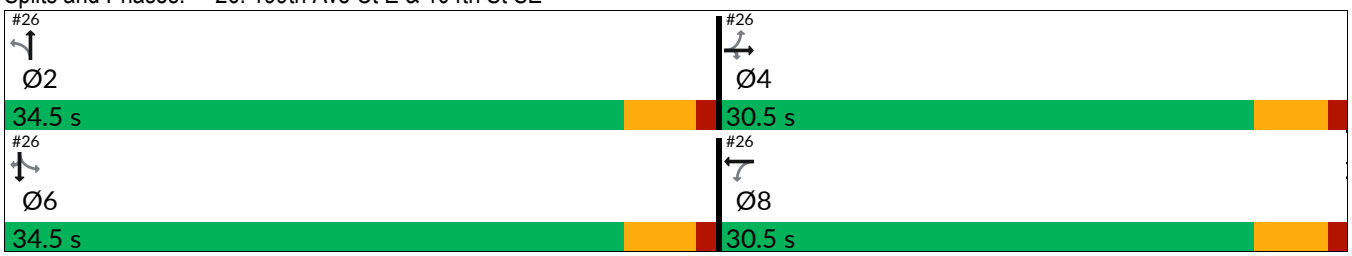
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	709	-	-	1180	-
HCM Lane V/C Ratio	0.106	-	-	0.002	-
HCM Ctrl Dly (s/v)	10.7	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	0	26	2	0	2	20	581	0	0	611	137
Future Volume (vph)	250	0	26	2	0	2	20	581	0	0	611	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			768	
Travel Time (s)		43.3			8.3			42.5			20.9	
Confl. Peds. (#/hr)			5	5			2		29	29		2
Confl. Bikes (#/hr)									2			1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	19%	0%	0%	0%	0%	3%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		34.5	34.5		34.5	34.5	34.5
Total Split (%)	46.9%	46.9%	46.9%	46.9%	46.9%		53.1%	53.1%		53.1%	53.1%	53.1%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		30.0	30.0		30.0	30.0	30.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	5	5	5	0	0		29	29		2	2	2

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 41.1
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	0	26	2	0	2	20	581	0	0	611	137
Future Volume (veh/h)	250	0	26	2	0	2	20	581	0	0	611	137
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	0.99		1.00	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1618	1900	1900	1900	1900	1856	0	1900	1870	1885
Adj Flow Rate, veh/h	266	0	28	2	0	2	21	618	0	0	650	146
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	19	0	0	0	0	3	0	0	2	1
Cap, veh/h	597	0	338	341	54	213	348	832	0	242	838	678
Arrive On Green	0.25	0.00	0.25	0.25	0.00	0.25	0.45	0.45	0.00	0.00	0.45	0.45
Sat Flow, veh/h	1426	0	1358	641	216	857	688	1856	0	818	1870	1514
Grp Volume(v), veh/h	266	0	28	4	0	0	21	618	0	0	650	146
Grp Sat Flow(s),veh/h/ln	1426	0	1358	1714	0	0	688	1856	0	818	1870	1514
Q Serve(g_s), s	5.1	0.0	0.5	0.0	0.0	0.0	0.8	8.2	0.0	0.0	8.7	1.8
Cycle Q Clear(g_c), s	5.1	0.0	0.5	0.1	0.0	0.0	9.5	8.2	0.0	0.0	8.7	1.8
Prop In Lane	1.00		1.00	0.50		0.50	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	597	0	338	609	0	0	348	832	0	242	838	678
V/C Ratio(X)	0.45	0.00	0.08	0.01	0.00	0.00	0.06	0.74	0.00	0.00	0.78	0.22
Avail Cap(c_a), veh/h	1488	0	1188	1552	0	0	735	1873	0	701	1888	1528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	10.3	0.0	8.6	8.4	0.0	0.0	11.0	6.8	0.0	0.0	6.9	5.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.1	0.0	0.0	0.0	0.1	1.9	0.0	0.0	2.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.5	0.0	8.6	8.4	0.0	0.0	11.0	7.3	0.0	0.0	7.5	5.1
LnGrp LOS	B		A	A			B	A			A	A
Approach Vol, veh/h		294			4			639			796	
Approach Delay, s/veh		10.3			8.4			7.4			7.1	
Approach LOS		B			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.8		11.9		17.8		11.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		26.0		30.0		26.0				
Max Q Clear Time (g_c+I1), s		11.5		7.1		10.7		2.1				
Green Ext Time (p_c), s		0.8		0.3		0.8		0.0				

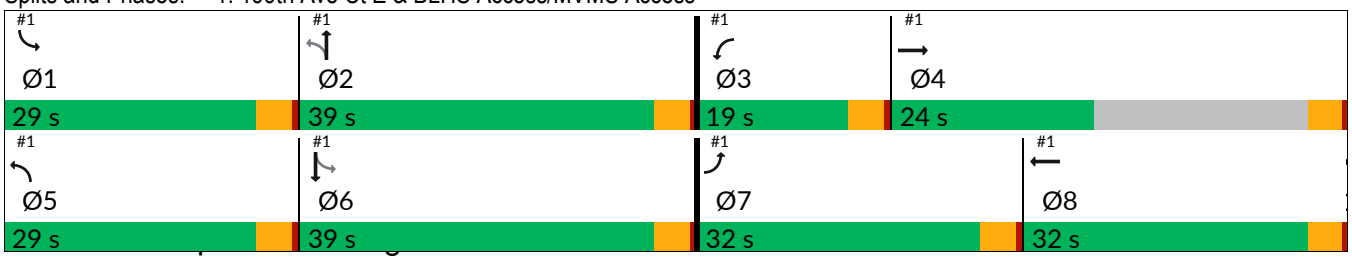
Intersection Summary	
HCM 7th Control Delay, s/veh	7.7
HCM 7th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	2	27	72	3	32	27	551	37	27	700	14
Future Volume (vph)	19	2	27	72	3	32	27	551	37	27	700	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	110		0	220		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		582			228			319			1559	
Travel Time (s)		15.9			6.2			8.7			42.5	
Confl. Peds. (#/hr)	3		2	2		3	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	32.0	24.0		19.0	32.0		29.0	39.0		29.0	39.0	
Total Split (%)	24.2%	18.2%		14.4%	24.2%		22.0%	29.5%		22.0%	29.5%	
Maximum Green (s)	28.0	20.0		15.0	28.0		25.0	35.0		25.0	35.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Don't Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		2			3			1			2	

Intersection Summary

Area Type: Other
Cycle Length: 132
Actuated Cycle Length: 64.3
Natural Cycle: 75
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: 199th Ave Ct E & BLHS Access/MVMS Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	2	27	72	3	32	27	551	37	27	700	14
Future Volume (veh/h)	19	2	27	72	3	32	27	551	37	27	700	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1856	1900	1900	1885	1900
Adj Flow Rate, veh/h	20	2	28	74	3	33	28	568	38	28	722	14
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	1	0
Cap, veh/h	44	9	126	121	17	187	306	800	54	384	858	17
Arrive On Green	0.02	0.08	0.08	0.07	0.13	0.13	0.03	0.47	0.47	0.03	0.47	0.47
Sat Flow, veh/h	1810	107	1499	1810	134	1479	1810	1720	115	1810	1843	36
Grp Volume(v), veh/h	20	0	30	74	0	36	28	0	606	28	0	736
Grp Sat Flow(s),veh/h/ln	1810	0	1606	1810	0	1613	1810	0	1835	1810	0	1879
Q Serve(g_s), s	0.5	0.0	0.8	1.8	0.0	0.9	0.4	0.0	12.0	0.4	0.0	15.7
Cycle Q Clear(g_c), s	0.5	0.0	0.8	1.8	0.0	0.9	0.4	0.0	12.0	0.4	0.0	15.7
Prop In Lane	1.00		0.93	1.00		0.92	1.00		0.06	1.00		0.02
Lane Grp Cap(c), veh/h	44	0	135	121	0	204	306	0	854	384	0	874
V/C Ratio(X)	0.45	0.00	0.22	0.61	0.00	0.18	0.09	0.00	0.71	0.07	0.00	0.84
Avail Cap(c_a), veh/h	1112	0	705	596	0	991	1239	0	1409	1317	0	1443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	19.5	20.7	0.0	17.8	8.6	0.0	9.7	7.5	0.0	10.7
Incr Delay (d2), s/veh	2.6	0.0	0.3	1.9	0.0	0.2	0.0	0.0	0.4	0.0	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3	0.8	0.0	0.3	0.1	0.0	3.8	0.1	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.6	0.0	19.8	22.6	0.0	17.9	8.7	0.0	10.1	7.5	0.0	11.8
LnGrp LOS	C		B	C		B	A		B	A		B
Approach Vol, veh/h		50			110			634			764	
Approach Delay, s/veh		21.7			21.1			10.1			11.6	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	25.2	7.0	7.8	5.5	25.2	5.1	9.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	25.0	35.0	15.0	20.0	25.0	35.0	28.0	28.0
Max Q Clear Time (g_c+I1), s	2.4	14.0	3.8	2.8	2.4	17.7	2.5	2.9
Green Ext Time (p_c), s	0.0	2.9	0.1	0.1	0.0	3.5	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	12.0
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	110	11	12	142	14	22
Future Vol, veh/h	110	11	12	142	14	22
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	84	84	64	64
Heavy Vehicles, %	15	0	0	2	0	0
Mvmt Flow	124	12	14	169	22	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	138	0	329	132
Stage 1	-	-	-	-	132	-
Stage 2	-	-	-	-	198	-
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	-	-	1458	-	669	923
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	841	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1455	-	661	921
Mov Cap-2 Maneuver	-	-	-	-	691	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	841	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.58	9.74
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	816	-	-	1455	-
HCM Lane V/C Ratio	0.069	-	-	0.01	-
HCM Ctrl Dly (s/v)	9.7	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	113	6	5	152	1	2	5
Future Vol, veh/h	113	6	5	152	1	2	5
Conflicting Peds, #/hr	0	5	5	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	75	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	2	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	88	88	91	91	50	50	50
Heavy Vehicles, %	16	0	0	2	0	0	0
Mvmt Flow	128	7	5	167	2	4	10

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	140	0	0	315	138
Stage 1	-	-	-	-	0	137	-
Stage 2	-	-	-	-	0	178	-
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	-	-	1455	-	0	682	916
Stage 1	-	-	-	-	0	895	-
Stage 2	-	-	-	-	0	858	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1449	-	0	676	911
Mov Cap-2 Maneuver	-	-	-	-	0	763	-
Stage 1	-	-	-	-	0	887	-
Stage 2	-	-	-	-	0	858	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.24	9.24
HCM LOS			A

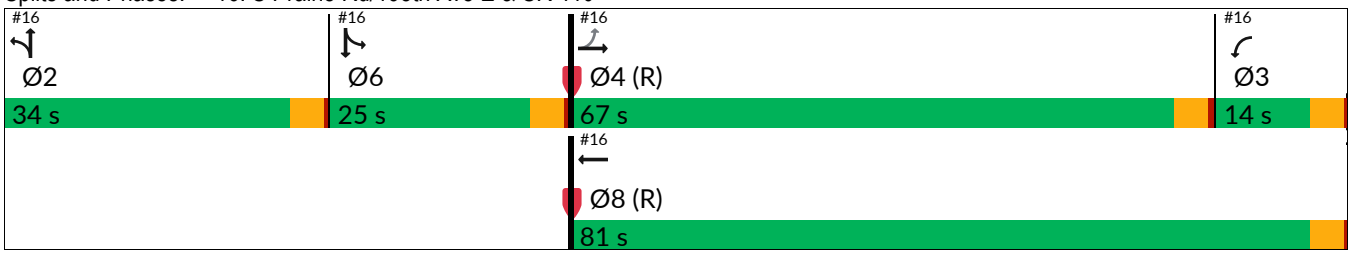
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	863	-	-	1449	-
HCM Lane V/C Ratio	0.016	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.2	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1286	1070	90	1039	79	868	109	61	170	165	23
Future Volume (vph)	20	1286	1070	90	1039	79	868	109	61	170	165	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			3%			0%	
Storage Length (ft)	300		0	350		300	500		0	275		0
Storage Lanes	1		1	1		1	0		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			No			No			No			No
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		829			1056			545			555	
Travel Time (s)		14.1			18.0			14.9			15.1	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	2%	2%	1%	3%	4%	3%	3%	2%	1%	5%	9%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Free	Prot	NA		Split	NA		Split	NA	
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases	4		Free									
Detector Phase	4	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	34.0	34.0		8.0	34.0		34.0	34.0		20.0	20.0	
Total Split (s)	67.0	67.0		14.0	81.0		34.0	34.0		25.0	25.0	
Total Split (%)	47.9%	47.9%		10.0%	57.9%		24.3%	24.3%		17.9%	17.9%	
Maximum Green (s)	63.0	63.0		10.0	77.0		30.0	30.0		21.0	21.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		Min	Min		Min	Min	
Walk Time (s)	6.0	6.0			6.0		6.0	6.0				
Flash Don't Walk (s)	24.0	24.0			24.0		24.0	24.0				
Pedestrian Calls (#/hr)	0	0			1		1	1				

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of 1st Green
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 16: S Prairie Rd/198th Ave E & SR 410



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1286	1070	90	1039	79	868	109	61	170	165	23
Future Volume (veh/h)	20	1286	1070	90	1039	79	868	109	61	170	165	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1802	1847	1847	1964	1934	1919	1803	1803	1817	1885	1826	1767
Adj Flow Rate, veh/h	21	1326	0	93	1071	81	895	112	0	175	170	24
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	1	3	4	3	3	2	1	5	9
Cap, veh/h	210	1579		198	2926	221	988	368		225	196	28
Arrive On Green	0.45	0.45	0.00	0.11	0.58	0.58	0.20	0.20	0.00	0.13	0.13	0.13
Sat Flow, veh/h	470	3509	1565	1870	5006	378	4841	1803	0	1795	1565	221
Grp Volume(v), veh/h	21	1326	0	93	753	399	895	112	0	175	0	194
Grp Sat Flow(s),veh/h/ln	470	1754	1565	1870	1760	1865	1614	1803	0	1795	0	1786
Q Serve(g_s), s	4.3	46.8	0.0	6.5	15.8	15.9	25.3	7.4	0.0	13.2	0.0	14.9
Cycle Q Clear(g_c), s	20.2	46.8	0.0	6.5	15.8	15.9	25.3	7.4	0.0	13.2	0.0	14.9
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.00	1.00		0.12
Lane Grp Cap(c), veh/h	210	1579		198	2057	1090	988	368		225	0	224
V/C Ratio(X)	0.10	0.84		0.47	0.37	0.37	0.91	0.30		0.78	0.00	0.87
Avail Cap(c_a), veh/h	210	1579		198	2057	1090	1037	386		269	0	268
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	34.0	0.0	58.9	15.4	15.4	54.4	47.3	0.0	59.3	0.0	60.1
Incr Delay (d2), s/veh	1.0	5.5	0.0	1.7	0.5	1.0	10.9	0.5	0.0	11.3	0.0	21.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	20.4	0.0	3.2	6.3	6.8	11.4	3.4	0.0	6.8	0.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.2	39.6	0.0	60.6	15.9	16.3	65.3	47.7	0.0	70.6	0.0	81.7
LnGrp LOS	C	D		E	B	B	E	D		E		F
Approach Vol, veh/h		1347			1245			1007			369	
Approach Delay, s/veh		39.5			19.4			63.3			76.4	
Approach LOS		D			B			E			E	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		32.6	18.8	67.0		21.6		85.8				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0				
Max Green Setting (Gmax), s		30.0	10.0	63.0		21.0		77.0				
Max Q Clear Time (g_c+I1), s		27.3	8.5	48.8		16.9		17.9				
Green Ext Time (p_c), s		1.3	0.0	7.9		0.7		9.5				

Intersection Summary

HCM 7th Control Delay, s/veh			42.7									
HCM 7th LOS			D									

Notes

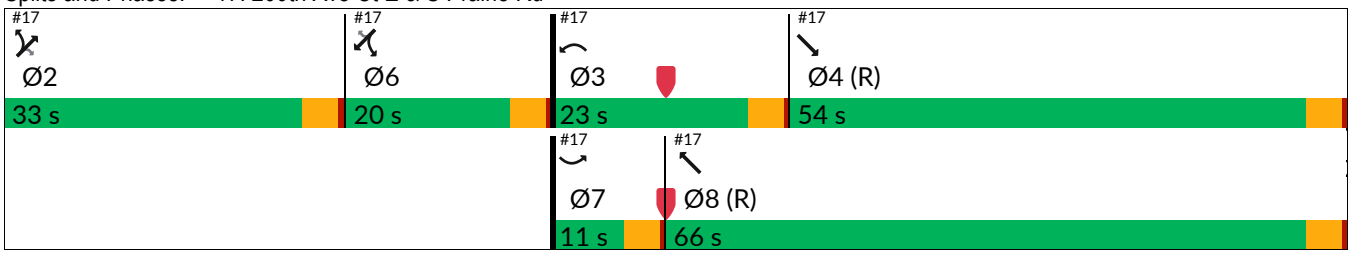
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	38	550	720	202	398	52	548	48	205	37	43	31
Future Volume (vph)	38	550	720	202	398	52	548	48	205	37	43	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	225		225	350		250	100		0
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		510			814			1840			137	
Travel Time (s)		13.9			22.2			50.2			3.7	
Confl. Peds. (#/hr)			5	5					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	2%	1%	1%	2%	2%	2%	0%	0%	7%	3%
Shared Lane Traffic (%)							46%					
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	25.0		8.0	25.0		25.0	25.0	25.0	20.0	20.0	20.0
Total Split (s)	11.0	54.0		23.0	66.0		33.0	33.0	33.0	20.0	20.0	20.0
Total Split (%)	8.5%	41.5%		17.7%	50.8%		25.4%	25.4%	25.4%	15.4%	15.4%	15.4%
Maximum Green (s)	7.0	50.0		19.0	62.0		29.0	29.0	29.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Walk Time (s)		6.0			6.0		6.0	6.0	6.0			
Flash Don't Walk (s)		15.0			15.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5			0		2	2	2			

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 4:SET and 8:NWT, Start of 1st Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 17: 200th Ave Ct E & S Prairie Rd



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	38	550	720	202	398	52	548	48	205	37	43	31
Future Volume (veh/h)	38	550	720	202	398	52	548	48	205	37	43	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1870	1885	1885	1870	1870	1870	1900	1900	1796	1856
Adj Flow Rate, veh/h	39	567	0	208	410	54	600	0	211	38	44	32
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	2	1	1	2	2	2	0	0	7	3
Cap, veh/h	50	913		234	1891	248	685	0	308	51	59	97
Arrive On Green	0.03	0.49	0.00	0.13	0.59	0.59	0.19	0.00	0.19	0.06	0.06	0.06
Sat Flow, veh/h	1767	1856	1585	1795	3183	417	3563	0	1602	814	942	1557
Grp Volume(v), veh/h	39	567	0	208	230	234	600	0	211	82	0	32
Grp Sat Flow(s),veh/h/ln	1767	1856	1585	1795	1791	1808	1781	0	1602	1756	0	1557
Q Serve(g_s), s	2.9	29.0	0.0	14.8	7.8	7.9	21.3	0.0	15.9	6.0	0.0	2.6
Cycle Q Clear(g_c), s	2.9	29.0	0.0	14.8	7.8	7.9	21.3	0.0	15.9	6.0	0.0	2.6
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	0.46		1.00
Lane Grp Cap(c), veh/h	50	913		234	1064	1074	685	0	308	109	0	97
V/C Ratio(X)	0.78	0.62		0.89	0.22	0.22	0.88	0.00	0.69	0.75	0.00	0.33
Avail Cap(c_a), veh/h	95	913		262	1064	1074	795	0	357	216	0	192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.85	0.00	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	62.8	24.1	0.0	55.6	12.3	12.3	51.0	0.0	48.9	60.0	0.0	58.4
Incr Delay (d2), s/veh	22.7	3.2	0.0	27.1	0.5	0.5	8.5	0.0	3.8	9.8	0.0	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	13.6	0.0	8.5	3.3	3.4	10.4	0.0	6.8	3.0	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	85.4	27.3	0.0	82.7	12.7	12.8	59.5	0.0	52.6	69.8	0.0	60.3
LnGrp LOS	F	C		F	B	B	E		D	E		E
Approach Vol, veh/h		606			672			811			114	
Approach Delay, s/veh		31.0			34.4			57.7			67.1	
Approach LOS		C			C			E			E	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		29.0	20.9	68.0		12.1	7.7	81.2				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		29.0	19.0	50.0		16.0	7.0	62.0				
Max Q Clear Time (g_c+I1), s		23.3	16.8	31.0		8.0	4.9	9.9				
Green Ext Time (p_c), s		1.7	0.1	3.8		0.3	0.0	3.3				

Intersection Summary

HCM 7th Control Delay, s/veh	43.7
HCM 7th LOS	D

Notes

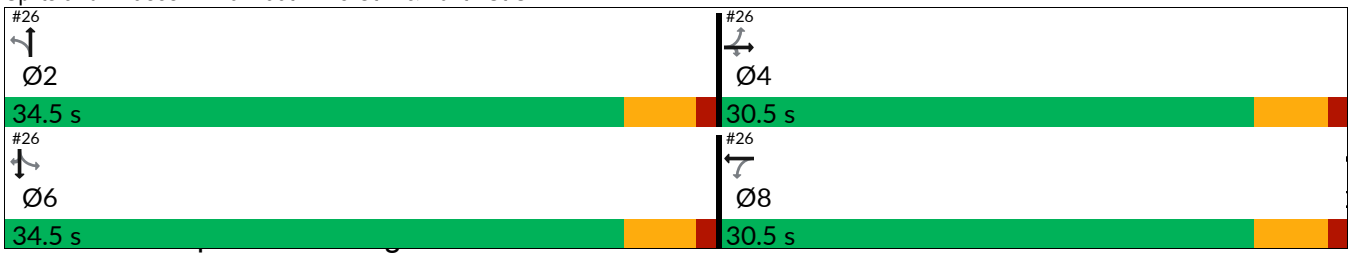
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [SER] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	0	10	1	1	2	12	584	0	3	744	144
Future Volume (vph)	145	0	10	1	1	2	12	584	0	3	744	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			1840	
Travel Time (s)		43.3			8.3			42.5			50.2	
Confl. Peds. (#/hr)			2	2					4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	33%	2%	0%	0%	1%	13%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		31.5	31.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		34.5	34.5		34.5	34.5	34.5
Total Split (%)	46.9%	46.9%	46.9%	46.9%	46.9%		53.1%	53.1%		53.1%	53.1%	53.1%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		30.0	30.0		30.0	30.0	30.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	2	2	2	0	0		4	4		0	0	0

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 43.2
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



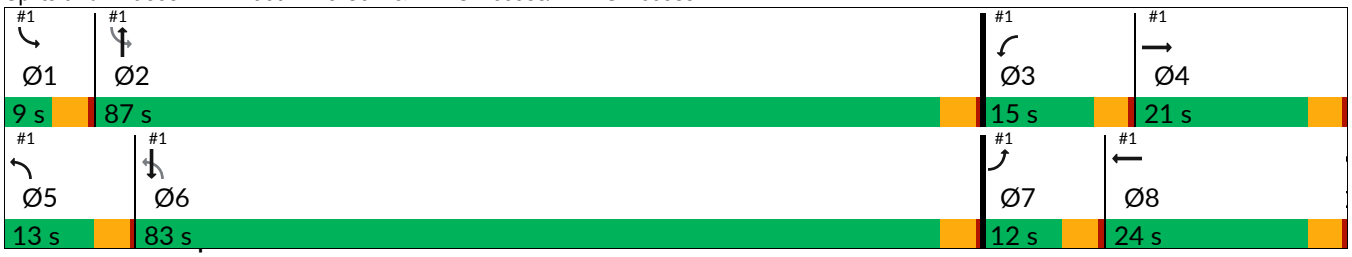
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	0	10	1	1	2	12	584	0	3	744	144
Future Volume (veh/h)	145	0	10	1	1	2	12	584	0	3	744	144
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1900	1900	1900	1411	1870	0	1900	1885	1707
Adj Flow Rate, veh/h	154	0	11	1	1	2	13	621	0	3	791	153
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	0	0	0	33	2	0	0	1	13
Cap, veh/h	527	0	308	188	131	163	308	924	0	449	931	712
Arrive On Green	0.19	0.00	0.19	0.19	0.19	0.19	0.49	0.49	0.00	0.49	0.49	0.49
Sat Flow, veh/h	1432	0	1604	164	682	845	448	1870	0	816	1885	1441
Grp Volume(v), veh/h	154	0	11	4	0	0	13	621	0	3	791	153
Grp Sat Flow(s),veh/h/ln	1432	0	1604	1691	0	0	448	1870	0	816	1885	1441
Q Serve(g_s), s	2.7	0.0	0.2	0.0	0.0	0.0	0.7	7.2	0.0	0.1	10.5	1.7
Cycle Q Clear(g_c), s	2.8	0.0	0.2	0.1	0.0	0.0	11.2	7.2	0.0	7.3	10.5	1.7
Prop In Lane	1.00		1.00	0.25		0.50	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	527	0	308	482	0	0	308	924	0	449	931	712
V/C Ratio(X)	0.29	0.00	0.04	0.01	0.00	0.00	0.04	0.67	0.00	0.01	0.85	0.22
Avail Cap(c_a), veh/h	1547	0	1454	1639	0	0	556	1957	0	899	1973	1508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.5	0.0	9.4	9.4	0.0	0.0	11.2	5.5	0.0	8.3	6.3	4.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.9	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.0	0.0	0.0	0.1	1.4	0.0	0.0	2.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.6	0.0	9.4	9.4	0.0	0.0	11.3	5.8	0.0	8.3	7.2	4.2
LnGrp LOS	B		A	A			B	A		A	A	A
Approach Vol, veh/h		165			4			634			947	
Approach Delay, s/veh		10.5			9.4			5.9			6.7	
Approach LOS		B			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.7		10.0		18.7		10.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		26.0		30.0		26.0				
Max Q Clear Time (g_c+I1), s		13.2		4.8		12.5		2.1				
Green Ext Time (p_c), s		0.9		0.2		1.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			6.8									
HCM 7th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	42	108	173	56	147	137	888	263	106	424	136
Future Volume (vph)	92	42	108	173	56	147	137	888	263	106	424	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	110		0	220		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		582			228			319			1559	
Travel Time (s)		15.9			6.2			8.7			42.5	
Confl. Peds. (#/hr)	10		35	35		10			20	20		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	8%	1%	0%	1%	7%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	12.0	21.0		15.0	24.0		13.0	87.0		9.0	83.0	
Total Split (%)	9.1%	15.9%		11.4%	18.2%		9.8%	65.9%		6.8%	62.9%	
Maximum Green (s)	8.0	17.0		11.0	20.0		9.0	83.0		5.0	79.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Don't Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		35			10			20			0	

Intersection Summary

Area Type: Other
Cycle Length: 132
Actuated Cycle Length: 128.1
Natural Cycle: 160
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: 199th Ave Ct E & BLHS Access/MVMS Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	42	108	173	56	147	137	888	263	106	424	136
Future Volume (veh/h)	92	42	108	173	56	147	137	888	263	106	424	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.86	1.00		0.88	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1900	1900	1781	1885	1900	1885	1796	1900
Adj Flow Rate, veh/h	102	47	120	192	62	163	152	987	292	118	471	151
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	1	0	0	0	8	1	0	1	7	0
Cap, veh/h	110	55	139	151	64	168	443	875	259	123	802	257
Arrive On Green	0.06	0.13	0.13	0.08	0.15	0.15	0.05	0.63	0.63	0.04	0.62	0.62
Sat Flow, veh/h	1810	423	1081	1810	422	1108	1697	1392	412	1795	1297	416
Grp Volume(v), veh/h	102	0	167	192	0	225	152	0	1279	118	0	622
Grp Sat Flow(s),veh/h/ln	1810	0	1505	1810	0	1530	1697	0	1803	1795	0	1713
Q Serve(g_s), s	7.4	0.0	14.4	11.0	0.0	19.3	4.3	0.0	83.0	4.6	0.0	28.7
Cycle Q Clear(g_c), s	7.4	0.0	14.4	11.0	0.0	19.3	4.3	0.0	83.0	4.6	0.0	28.7
Prop In Lane	1.00		0.72	1.00		0.72	1.00		0.23	1.00		0.24
Lane Grp Cap(c), veh/h	110	0	194	151	0	232	443	0	1134	123	0	1060
V/C Ratio(X)	0.93	0.00	0.86	1.27	0.00	0.97	0.34	0.00	1.13	0.96	0.00	0.59
Avail Cap(c_a), veh/h	110	0	194	151	0	232	477	0	1134	123	0	1060
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.7	0.0	56.3	60.5	0.0	55.7	12.0	0.0	24.5	41.9	0.0	15.1
Incr Delay (d2), s/veh	63.2	0.0	29.3	164.5	0.0	50.5	0.2	0.0	69.2	69.1	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	7.1	12.0	0.0	10.7	1.6	0.0	55.2	4.8	0.0	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	124.9	0.0	85.7	225.0	0.0	106.2	12.1	0.0	93.7	111.0	0.0	15.7
LnGrp LOS	F		F	F		F	B		F	F		B
Approach Vol, veh/h		269			417			1431			740	
Approach Delay, s/veh		100.6			160.9			85.1			30.9	
Approach LOS		F			F			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	87.0	15.0	21.0	10.4	85.6	12.0	24.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	83.0	11.0	17.0	9.0	79.0	8.0	20.0				
Max Q Clear Time (g_c+I1), s	6.6	85.0	13.0	16.4	6.3	30.7	9.4	21.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	3.4	0.0	0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	83.6
HCM 7th LOS	F

Intersection	
Int Delay, s/veh	7.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	118	185	170	67	44	94
Future Vol, veh/h	118	185	170	67	44	94
Conflicting Peds, #/hr	0	19	19	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	63	63	59	59
Heavy Vehicles, %	16	0	1	15	0	3
Mvmt Flow	187	294	270	106	75	159

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	500	0	999	353
Stage 1	-	-	-	-	353	-
Stage 2	-	-	-	-	646	-
Critical Hdwy	-	-	4.11	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.327
Pot Cap-1 Maneuver	-	-	1069	-	272	688
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1050	-	199	676
Mov Cap-2 Maneuver	-	-	-	-	226	-
Stage 1	-	-	-	-	522	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	6.89	24.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	413	-	-	1050	-
HCM Lane V/C Ratio	0.566	-	-	0.257	-
HCM Ctrl Dly (s/v)	24.5	-	-	9.6	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	3.4	-	-	1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	2	293	6	5	107	6	15
Future Vol, veh/h	2	293	6	5	107	6	15
Conflicting Peds, #/hr	0	0	15	15	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	75	-	0	-
Veh in Median Storage, #	-	0	-	-	0	2	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	61	61	61	67	67	67	67
Heavy Vehicles, %	0	1	0	50	6	29	88
Mvmt Flow	3	480	10	7	160	9	22

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	-	0	0	505	0	675	500
Stage 1	-	-	-	-	-	500	-
Stage 2	-	-	-	-	-	175	-
Critical Hdwy	-	-	-	4.6	-	6.69	7.08
Critical Hdwy Stg 1	-	-	-	-	-	5.69	-
Critical Hdwy Stg 2	-	-	-	-	-	5.69	-
Follow-up Hdwy	-	-	-	2.65	-	3.761	4.092
Pot Cap-1 Maneuver	-	-	-	853	-	381	431
Stage 1	-	-	-	-	-	557	-
Stage 2	-	-	-	-	-	795	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	-	-	-	841	-	372	425
Mov Cap-2 Maneuver	-	-	-	-	-	499	-
Stage 1	-	-	-	-	-	545	-
Stage 2	-	-	-	-	-	795	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v		0.42	13.73
HCM LOS			B

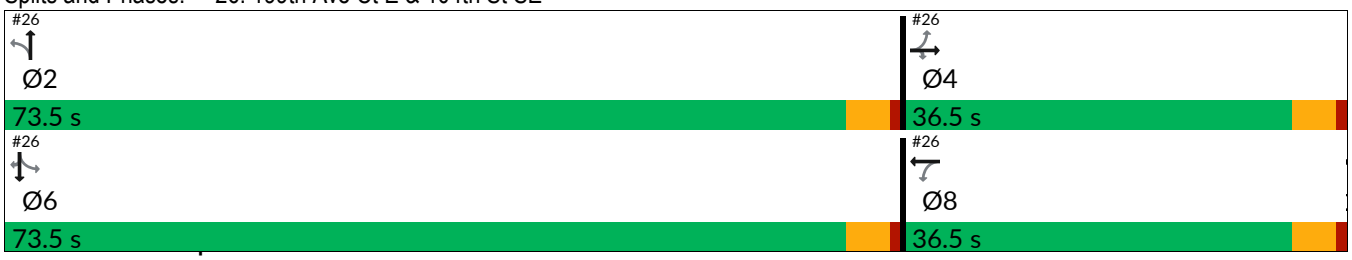
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	444	-	-	841	-
HCM Lane V/C Ratio	0.071	-	-	0.009	-
HCM Ctrl Dly (s/v)	13.7	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	218	0	52	1	1	6	29	1124	1	1	623	177
Future Volume (vph)	218	0	52	1	1	6	29	1124	1	1	623	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			769	
Travel Time (s)		43.3			8.3			42.5			21.0	
Confl. Peds. (#/hr)			6	6					12	12		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	13%	0%	0%	0%	0%	1%	0%	0%	5%	5%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	36.5	36.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	36.5	36.5	36.5	36.5	36.5		73.5	73.5		73.5	73.5	73.5
Total Split (%)	33.2%	33.2%	33.2%	33.2%	33.2%		66.8%	66.8%		66.8%	66.8%	66.8%
Maximum Green (s)	32.0	32.0	32.0	32.0	32.0		69.0	69.0		69.0	69.0	69.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	6	6	6	0	0		12	12		0	0	0

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 99.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



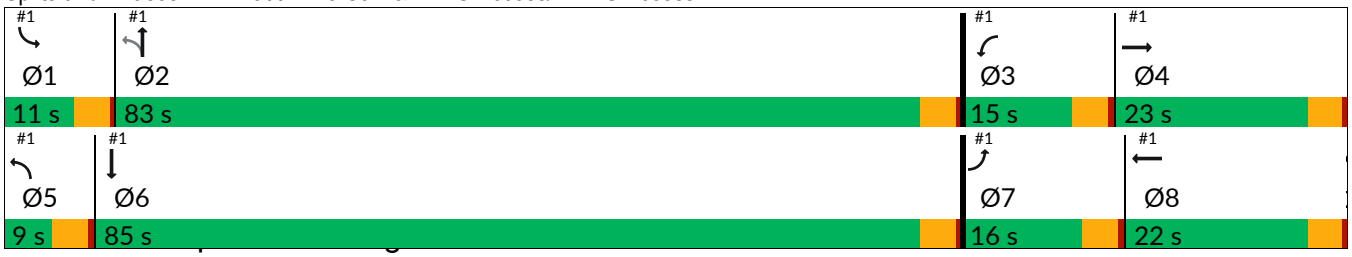
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	0	52	1	1	6	29	1124	1	1	623	177
Future Volume (veh/h)	218	0	52	1	1	6	29	1124	1	1	623	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1900	1707	1900	1900	1900	1900	1885	1900	1900	1826	1826
Adj Flow Rate, veh/h	237	0	57	1	1	7	32	1222	1	1	677	192
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	0	13	0	0	0	0	1	0	0	5	5
Cap, veh/h	390	0	291	70	61	265	408	1262	1	129	1224	1028
Arrive On Green	0.20	0.00	0.20	0.20	0.20	0.20	0.67	0.67	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1417	0	1426	70	301	1300	646	1883	2	463	1826	1534
Grp Volume(v), veh/h	237	0	57	9	0	0	32	0	1223	1	677	192
Grp Sat Flow(s),veh/h/ln	1417	0	1426	1672	0	0	646	0	1885	463	1826	1534
Q Serve(g_s), s	11.1	0.0	2.4	0.0	0.0	0.0	2.0	0.0	43.6	0.1	13.9	3.4
Cycle Q Clear(g_c), s	11.4	0.0	2.4	0.3	0.0	0.0	15.9	0.0	43.6	43.8	13.9	3.4
Prop In Lane	1.00		1.00	0.11		0.78	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	390	0	291	397	0	0	408	0	1263	129	1224	1028
V/C Ratio(X)	0.61	0.00	0.20	0.02	0.00	0.00	0.08	0.00	0.97	0.01	0.55	0.19
Avail Cap(c_a), veh/h	731	0	637	784	0	0	598	0	1815	264	1758	1477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	23.6	22.8	0.0	0.0	10.3	0.0	11.1	31.6	6.2	4.5
Incr Delay (d2), s/veh	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.8	0.1	0.0	0.0	0.3	0.0	17.2	0.0	4.3	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.8	0.0	23.8	22.8	0.0	0.0	10.4	0.0	21.2	31.7	6.3	4.5
LnGrp LOS	C		C	C			B		C	C	A	A
Approach Vol, veh/h		294			9			1255			870	
Approach Delay, s/veh		27.0			22.8			20.9			6.0	
Approach LOS		C			C			C			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		52.5		19.1		52.5		19.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		69.0		32.0		69.0		32.0				
Max Q Clear Time (g_c+I1), s		45.6		13.4		45.8		2.3				
Green Ext Time (p_c), s		2.4		0.3		0.9		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			16.3									
HCM 7th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	5	123	102	9	86	48	508	62	34	805	37
Future Volume (vph)	104	5	123	102	9	86	48	508	62	34	805	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	110		0	220		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		582			228			319			1559	
Travel Time (s)		15.9			6.2			8.7			42.5	
Confl. Peds. (#/hr)	20		120	120		20	3		54	54		3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	7%	4%	0%	0%	2%	2%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2					
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	16.0	23.0		15.0	22.0		9.0	83.0		11.0	85.0	
Total Split (%)	12.1%	17.4%		11.4%	16.7%		6.8%	62.9%		8.3%	64.4%	
Maximum Green (s)	12.0	19.0		11.0	18.0		5.0	79.0		7.0	81.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Don't Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		30			19			30			1	

Intersection Summary

Area Type: Other
Cycle Length: 132
Actuated Cycle Length: 98.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: 199th Ave Ct E & BLHS Access/MVMS Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	5	123	102	9	86	48	508	62	34	805	37
Future Volume (veh/h)	104	5	123	102	9	86	48	508	62	34	805	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.65	1.00		0.64	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1796	1841	1900	1900	1870	1870
Adj Flow Rate, veh/h	117	6	138	115	10	97	54	571	70	38	904	42
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	2	0	0	0	7	4	0	0	2	2
Cap, veh/h	146	8	173	144	17	166	185	891	109	59	975	45
Arrive On Green	0.08	0.17	0.17	0.08	0.17	0.17	0.04	0.56	0.56	0.03	0.55	0.55
Sat Flow, veh/h	1810	44	1017	1810	101	982	1711	1598	196	1810	1768	82
Grp Volume(v), veh/h	117	0	144	115	0	107	54	0	641	38	0	946
Grp Sat Flow(s),veh/h/ln	1810	0	1062	1810	0	1083	1711	0	1794	1810	0	1851
Q Serve(g_s), s	6.3	0.0	13.0	6.2	0.0	9.1	1.3	0.0	24.5	2.1	0.0	46.8
Cycle Q Clear(g_c), s	6.3	0.0	13.0	6.2	0.0	9.1	1.3	0.0	24.5	2.1	0.0	46.8
Prop In Lane	1.00		0.96	1.00		0.91	1.00		0.11	1.00		0.04
Lane Grp Cap(c), veh/h	146	0	180	144	0	183	185	0	1000	59	0	1020
V/C Ratio(X)	0.80	0.00	0.80	0.80	0.00	0.59	0.29	0.00	0.64	0.64	0.00	0.93
Avail Cap(c_a), veh/h	218	0	202	200	0	196	205	0	1421	127	0	1503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	39.7	45.1	0.0	38.2	20.8	0.0	15.2	47.7	0.0	20.5
Incr Delay (d2), s/veh	6.8	0.0	15.8	9.9	0.0	2.3	0.3	0.0	0.3	4.3	0.0	6.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	4.2	3.2	0.0	2.5	0.6	0.0	9.7	1.0	0.0	20.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.9	0.0	55.5	55.0	0.0	40.5	21.1	0.0	15.4	51.9	0.0	26.6
LnGrp LOS	D		E	E		D	C		B	D		C
Approach Vol, veh/h		261			222			695			984	
Approach Delay, s/veh		53.9			48.0			15.9			27.6	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	59.6	11.9	20.9	7.9	59.0	12.1	20.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	79.0	11.0	19.0	5.0	81.0	12.0	18.0
Max Q Clear Time (g_c+I1), s	4.1	26.5	8.2	15.0	3.3	48.8	8.3	11.1
Green Ext Time (p_c), s	0.0	3.5	0.0	0.3	0.0	6.2	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	29.1
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	25	33	151	94	107
Future Vol, veh/h	133	25	33	151	94	107
Conflicting Peds, #/hr	0	47	47	0	2	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	91	91	56	56
Heavy Vehicles, %	11	0	0	3	0	1
Mvmt Flow	168	32	36	166	168	191

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	247	0	472	232
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	240	-
Critical Hdwy	-	-	4.1	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1331	-	554	809
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1271	-	514	772
Mov Cap-2 Maneuver	-	-	-	-	514	-
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	803	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.42	18.23
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	625	-	-	1271	-
HCM Lane V/C Ratio	0.574	-	-	0.029	-
HCM Ctrl Dly (s/v)	18.2	-	-	7.9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	3.6	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	7	2	238	16	25
Future Vol, veh/h	127	7	2	238	16	25
Conflicting Peds, #/hr	0	17	17	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	71	71	61	61
Heavy Vehicles, %	3	0	50	2	39	32
Mvmt Flow	130	7	3	335	26	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	154	0	491	152
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	341	-
Critical Hdwy	-	-	4.6	-	6.79	6.52
Critical Hdwy Stg 1	-	-	-	-	5.79	-
Critical Hdwy Stg 2	-	-	-	-	5.79	-
Follow-up Hdwy	-	-	2.65	-	3.851	3.588
Pot Cap-1 Maneuver	-	-	1181	-	476	821
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	645	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1161	-	467	806
Mov Cap-2 Maneuver	-	-	-	-	582	-
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	645	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.07	10.68
HCM LOS			B

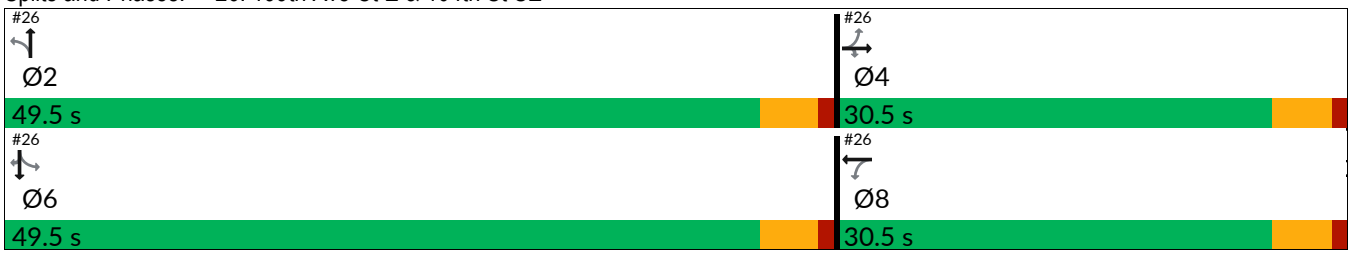
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	701	-	-	1161	-
HCM Lane V/C Ratio	0.096	-	-	0.002	-
HCM Ctrl Dly (s/v)	10.7	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	0	45	2	0	2	21	687	0	0	856	139
Future Volume (vph)	243	0	45	2	0	2	21	687	0	0	856	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			768	
Travel Time (s)		43.3			8.3			42.5			20.9	
Confl. Peds. (#/hr)			5	5			2		29	29		2
Confl. Bikes (#/hr)									2			1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	19%	0%	0%	0%	0%	3%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		49.5	49.5		49.5	49.5	49.5
Total Split (%)	38.1%	38.1%	38.1%	38.1%	38.1%		61.9%	61.9%		61.9%	61.9%	61.9%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		45.0	45.0		45.0	45.0	45.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	5	5	5	0	0		29	29		2	2	2

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 58
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



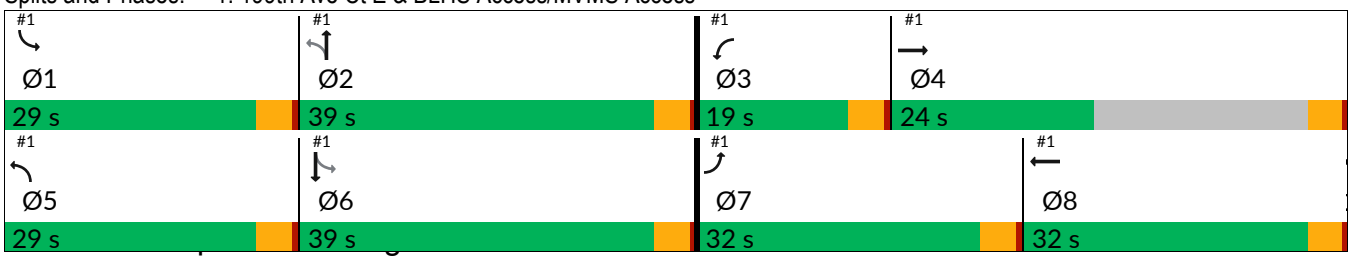
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	243	0	45	2	0	2	21	687	0	0	856	139
Future Volume (veh/h)	243	0	45	2	0	2	21	687	0	0	856	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1618	1900	1900	1900	1900	1856	0	1900	1870	1885
Adj Flow Rate, veh/h	259	0	48	2	0	2	22	731	0	0	911	148
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	19	0	0	0	0	3	0	0	2	1
Cap, veh/h	512	0	321	295	41	204	236	1011	0	175	1019	830
Arrive On Green	0.24	0.00	0.24	0.24	0.00	0.24	0.54	0.54	0.00	0.00	0.54	0.54
Sat Flow, veh/h	1425	0	1357	692	172	864	539	1856	0	736	1870	1523
Grp Volume(v), veh/h	259	0	48	4	0	0	22	731	0	0	911	148
Grp Sat Flow(s),veh/h/ln	1425	0	1357	1728	0	0	539	1856	0	736	1870	1523
Q Serve(g_s), s	6.9	0.0	1.2	0.0	0.0	0.0	1.6	12.2	0.0	0.0	17.8	2.0
Cycle Q Clear(g_c), s	7.0	0.0	1.2	0.1	0.0	0.0	19.3	12.2	0.0	0.0	17.8	2.0
Prop In Lane	1.00		1.00	0.50		0.50	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	512	0	321	540	0	0	236	1011	0	175	1019	830
V/C Ratio(X)	0.51	0.00	0.15	0.01	0.00	0.00	0.09	0.72	0.00	0.00	0.89	0.18
Avail Cap(c_a), veh/h	1074	0	857	1136	0	0	532	2029	0	579	2045	1665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	12.4	12.0	0.0	0.0	16.9	7.0	0.0	0.0	8.3	4.7
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.0	0.0	0.0	0.1	0.4	0.0	0.0	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.3	0.0	0.0	0.0	0.2	3.2	0.0	0.0	4.9	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.9	0.0	12.5	12.0	0.0	0.0	16.9	7.4	0.0	0.0	9.5	4.8
LnGrp LOS	B		B	B			B	A			A	A
Approach Vol, veh/h		307			4			753			1059	
Approach Delay, s/veh		14.6			12.0			7.7			8.8	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		26.9		14.2		26.9		14.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		45.0		26.0		45.0		26.0				
Max Q Clear Time (g_c+I1), s		21.3		9.0		19.8		2.1				
Green Ext Time (p_c), s		1.1		0.3		1.3		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			9.2									
HCM 7th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	2	24	73	3	33	24	704	38	27	1046	12
Future Volume (vph)	17	2	24	73	3	33	24	704	38	27	1046	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	170		0	200		0	110		0	220		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		582			228			319			1559	
Travel Time (s)		15.9			6.2			8.7			42.5	
Confl. Peds. (#/hr)	3		2	2		3	2		1	1		2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	21.0		9.0	21.0		9.0	21.0		9.0	21.0	
Total Split (s)	32.0	24.0		19.0	32.0		29.0	39.0		29.0	39.0	
Total Split (%)	24.2%	18.2%		14.4%	24.2%		22.0%	29.5%		22.0%	29.5%	
Maximum Green (s)	28.0	20.0		15.0	28.0		25.0	35.0		25.0	35.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Don't Walk (s)		10.0			10.0			10.0			10.0	
Pedestrian Calls (#/hr)		2			3			1			2	

Intersection Summary

Area Type: Other
Cycle Length: 132
Actuated Cycle Length: 64.5
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: 199th Ave Ct E & BLHS Access/MVMS Access



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	2	24	73	3	33	24	704	38	27	1046	12
Future Volume (veh/h)	17	2	24	73	3	33	24	704	38	27	1046	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1856	1900	1900	1885	1900
Adj Flow Rate, veh/h	18	2	25	75	3	34	25	726	39	28	1078	12
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	1	0
Cap, veh/h	39	9	108	107	14	163	170	1001	54	367	1073	12
Arrive On Green	0.02	0.07	0.07	0.06	0.11	0.11	0.03	0.57	0.57	0.03	0.58	0.58
Sat Flow, veh/h	1810	119	1482	1810	131	1479	1810	1745	94	1810	1861	21
Grp Volume(v), veh/h	18	0	27	75	0	37	25	0	765	28	0	1090
Grp Sat Flow(s),veh/h/ln	1810	0	1601	1810	0	1610	1810	0	1838	1810	0	1881
Q Serve(g_s), s	0.6	0.0	1.0	2.5	0.0	1.3	0.3	0.0	18.4	0.4	0.0	35.0
Cycle Q Clear(g_c), s	0.6	0.0	1.0	2.5	0.0	1.3	0.3	0.0	18.4	0.4	0.0	35.0
Prop In Lane	1.00		0.93	1.00		0.92	1.00		0.05	1.00		0.01
Lane Grp Cap(c), veh/h	39	0	116	107	0	177	170	0	1055	367	0	1084
V/C Ratio(X)	0.46	0.00	0.23	0.70	0.00	0.21	0.15	0.00	0.73	0.08	0.00	1.01
Avail Cap(c_a), veh/h	834	0	527	447	0	742	864	0	1060	1056	0	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.4	0.0	26.6	28.0	0.0	24.6	14.9	0.0	9.4	7.7	0.0	12.9
Incr Delay (d2), s/veh	3.1	0.0	0.4	3.1	0.0	0.2	0.1	0.0	2.2	0.0	0.0	28.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	1.1	0.0	0.5	0.2	0.0	6.6	0.1	0.0	20.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.5	0.0	26.9	31.1	0.0	24.8	15.0	0.0	11.6	7.8	0.0	41.4
LnGrp LOS	C		C	C		C	B		B	A		F
Approach Vol, veh/h		45			112			790			1118	
Approach Delay, s/veh		29.2			29.1			11.7			40.6	
Approach LOS		C			C			B			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	38.8	7.6	8.4	5.7	39.0	5.3	10.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	25.0	35.0	15.0	20.0	25.0	35.0	28.0	28.0
Max Q Clear Time (g_c+I1), s	2.4	20.4	4.5	3.0	2.3	37.0	2.6	3.3
Green Ext Time (p_c), s	0.0	3.5	0.1	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	28.7
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	117	10	11	151	12	19
Future Vol, veh/h	117	10	11	151	12	19
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	84	84	64	64
Heavy Vehicles, %	15	0	0	2	0	0
Mvmt Flow	131	11	13	180	19	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	145	0	345	139
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	206	-
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	-	-	1450	-	656	914
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	833	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1447	-	648	913
Mov Cap-2 Maneuver	-	-	-	-	682	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	833	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.51	9.74
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	807	-	-	1447	-
HCM Lane V/C Ratio	0.06	-	-	0.009	-
HCM Ctrl Dly (s/v)	9.7	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	120	5	4	160	1	2	4
Future Vol, veh/h	120	5	4	160	1	2	4
Conflicting Peds, #/hr	0	5	5	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	75	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	2	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	88	88	91	91	50	50	50
Heavy Vehicles, %	16	0	0	2	0	0	0
Mvmt Flow	136	6	4	176	2	4	8

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	147	0	0	329	145
Stage 1	-	-	-	-	0	144	-
Stage 2	-	-	-	-	0	185	-
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	-	-	1447	-	0	670	907
Stage 1	-	-	-	-	0	888	-
Stage 2	-	-	-	-	0	852	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1440	-	0	665	902
Mov Cap-2 Maneuver	-	-	-	-	0	756	-
Stage 1	-	-	-	-	0	881	-
Stage 2	-	-	-	-	0	852	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.18	9.31
HCM LOS			A

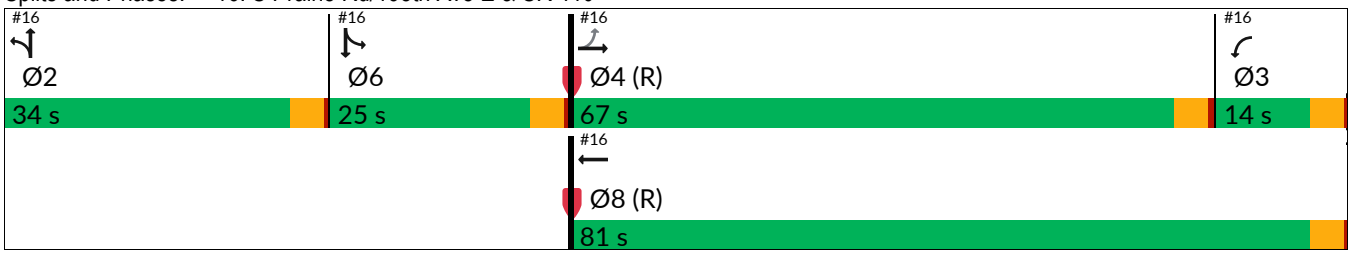
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	847	-	-	1440	-
HCM Lane V/C Ratio	0.014	-	-	0.003	-
HCM Ctrl Dly (s/v)	9.3	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1486	1282	143	1282	104	952	116	103	204	195	24
Future Volume (vph)	20	1486	1282	143	1282	104	952	116	103	204	195	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			3%			0%	
Storage Length (ft)	300		0	350		300	500		0	275		0
Storage Lanes	1		1	1		1	0		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			No			No			No			No
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		829			1056			545			555	
Travel Time (s)		14.1			18.0			14.9			15.1	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	2%	2%	1%	3%	4%	3%	3%	2%	1%	5%	9%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Free	Prot	NA		Split	NA		Split	NA	
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases	4		Free									
Detector Phase	4	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	34.0	34.0		8.0	34.0		34.0	34.0		20.0	20.0	
Total Split (s)	67.0	67.0		14.0	81.0		34.0	34.0		25.0	25.0	
Total Split (%)	47.9%	47.9%		10.0%	57.9%		24.3%	24.3%		17.9%	17.9%	
Maximum Green (s)	63.0	63.0		10.0	77.0		30.0	30.0		21.0	21.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		Min	Min		Min	Min	
Walk Time (s)	6.0	6.0			6.0		6.0	6.0				
Flash Don't Walk (s)	24.0	24.0			24.0		24.0	24.0				
Pedestrian Calls (#/hr)	0	0			1		1	1				

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of 1st Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 16: S Prairie Rd/198th Ave E & SR 410



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1486	1282	143	1282	104	952	116	103	204	195	24
Future Volume (veh/h)	20	1486	1282	143	1282	104	952	116	103	204	195	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1802	1847	1847	1964	1934	1919	1803	1803	1817	1885	1826	1767
Adj Flow Rate, veh/h	21	1532	0	147	1322	107	981	120	0	210	201	25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	1	3	4	3	3	2	1	5	9
Cap, veh/h	156	1579		151	2783	225	1037	386		253	224	28
Arrive On Green	0.45	0.45	0.00	0.08	0.56	0.56	0.21	0.21	0.00	0.14	0.14	0.14
Sat Flow, veh/h	361	3509	1565	1870	4977	403	4841	1803	0	1795	1592	198
Grp Volume(v), veh/h	21	1532	0	147	935	494	981	120	0	210	0	226
Grp Sat Flow(s),veh/h/ln	361	1754	1565	1870	1760	1861	1614	1803	0	1795	0	1790
Q Serve(g_s), s	6.1	59.7	0.0	11.0	22.3	22.3	28.0	7.8	0.0	15.9	0.0	17.4
Cycle Q Clear(g_c), s	28.5	59.7	0.0	11.0	22.3	22.3	28.0	7.8	0.0	15.9	0.0	17.4
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.00	1.00		0.11
Lane Grp Cap(c), veh/h	156	1579		151	1968	1040	1037	386		253	0	252
V/C Ratio(X)	0.13	0.97		0.98	0.48	0.48	0.95	0.31		0.83	0.00	0.90
Avail Cap(c_a), veh/h	156	1579		151	1968	1040	1037	386		269	0	268
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.4	37.6	0.0	64.2	18.5	18.5	54.2	46.3	0.0	58.5	0.0	59.1
Incr Delay (d2), s/veh	1.8	16.6	0.0	65.9	0.8	1.6	16.6	0.5	0.0	18.3	0.0	28.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	28.2	0.0	7.9	9.0	9.8	13.0	3.6	0.0	8.6	0.0	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.2	54.2	0.0	130.1	19.4	20.1	70.8	46.8	0.0	76.8	0.0	87.7
LnGrp LOS	D	D		F	B	C	E	D		E		F
Approach Vol, veh/h		1553			1576			1101			436	
Approach Delay, s/veh		54.0			29.9			68.2			82.4	
Approach LOS		D			C			E			F	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		34.0	15.3	67.0		23.7		82.3				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0				
Max Green Setting (Gmax), s		30.0	10.0	63.0		21.0		77.0				
Max Q Clear Time (g_c+I1), s		30.0	13.0	61.7		19.4		24.3				
Green Ext Time (p_c), s		0.0	0.0	1.1		0.4		13.2				

Intersection Summary

HCM 7th Control Delay, s/veh			51.9									
HCM 7th LOS			D									

Notes

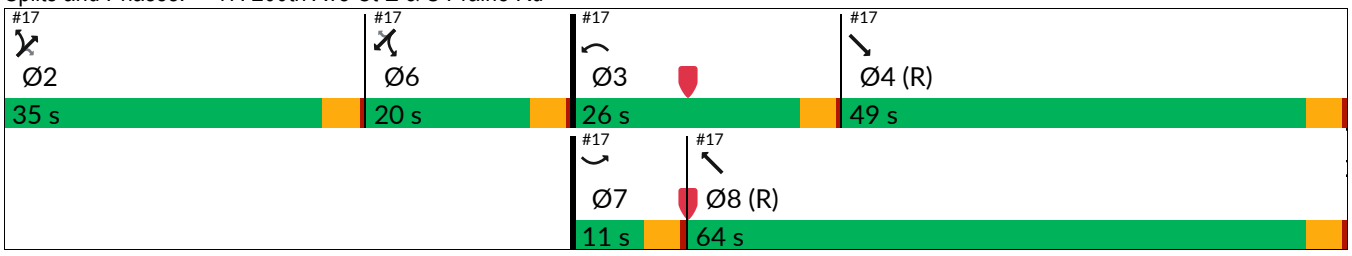
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	39	569	995	269	410	53	666	55	236	38	57	32
Future Volume (vph)	39	569	995	269	410	53	666	55	236	38	57	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	225		225	350		250	100		0
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		510			814			1840			137	
Travel Time (s)		13.9			22.2			50.2			3.7	
Confl. Peds. (#/hr)			5	5					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	2%	1%	1%	2%	2%	2%	0%	0%	7%	3%
Shared Lane Traffic (%)							46%					
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	25.0		8.0	25.0		25.0	25.0	25.0	20.0	20.0	20.0
Total Split (s)	11.0	49.0		26.0	64.0		35.0	35.0	35.0	20.0	20.0	20.0
Total Split (%)	8.5%	37.7%		20.0%	49.2%		26.9%	26.9%	26.9%	15.4%	15.4%	15.4%
Maximum Green (s)	7.0	45.0		22.0	60.0		31.0	31.0	31.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Walk Time (s)		6.0			6.0		6.0	6.0	6.0			
Flash Don't Walk (s)		15.0			15.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5			0		2	2	2			

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 4:SET and 8:NWT, Start of 1st Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 17: 200th Ave Ct E & S Prairie Rd



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	39	569	995	269	410	53	666	55	236	38	57	32
Future Volume (veh/h)	39	569	995	269	410	53	666	55	236	38	57	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1870	1885	1885	1870	1870	1870	1900	1900	1796	1856
Adj Flow Rate, veh/h	40	587	0	277	423	55	728	0	243	39	59	33
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	2	1	1	2	2	2	0	0	7	3
Cap, veh/h	51	767		301	1759	227	800	0	360	50	76	112
Arrive On Green	0.03	0.41	0.00	0.17	0.55	0.55	0.22	0.00	0.22	0.07	0.07	0.07
Sat Flow, veh/h	1767	1856	1585	1795	3188	412	3563	0	1603	701	1060	1559
Grp Volume(v), veh/h	40	587	0	277	237	241	728	0	243	98	0	33
Grp Sat Flow(s),veh/h/ln	1767	1856	1585	1795	1791	1809	1781	0	1603	1761	0	1559
Q Serve(g_s), s	2.9	35.3	0.0	19.7	8.9	9.0	25.9	0.0	18.0	7.1	0.0	2.6
Cycle Q Clear(g_c), s	2.9	35.3	0.0	19.7	8.9	9.0	25.9	0.0	18.0	7.1	0.0	2.6
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	0.40		1.00
Lane Grp Cap(c), veh/h	51	767		301	988	998	800	0	360	126	0	112
V/C Ratio(X)	0.78	0.77		0.92	0.24	0.24	0.91	0.00	0.68	0.78	0.00	0.30
Avail Cap(c_a), veh/h	95	767		304	988	998	850	0	382	217	0	192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.79	0.00	0.79	1.00	0.00	1.00
Uniform Delay (d), s/veh	62.7	32.7	0.0	53.3	15.0	15.1	49.1	0.0	46.1	59.3	0.0	57.2
Incr Delay (d2), s/veh	22.1	7.2	0.0	31.8	0.6	0.6	11.0	0.0	3.4	9.8	0.0	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	17.4	0.0	11.6	3.8	3.9	12.8	0.0	7.6	3.5	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.8	39.9	0.0	85.1	15.6	15.6	60.1	0.0	49.5	69.1	0.0	58.7
LnGrp LOS	F	D		F	B	B	E		D	E		E
Approach Vol, veh/h		627			755			971			131	
Approach Delay, s/veh		42.8			41.1			57.4			66.5	
Approach LOS		D			D			E			E	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		33.2	25.8	57.7		13.3	7.8	75.7				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		31.0	22.0	45.0		16.0	7.0	60.0				
Max Q Clear Time (g_c+I1), s		27.9	21.7	37.3		9.1	4.9	11.0				
Green Ext Time (p_c), s		1.3	0.0	2.4		0.3	0.0	3.4				

Intersection Summary

HCM 7th Control Delay, s/veh			49.3									
HCM 7th LOS			D									

Notes

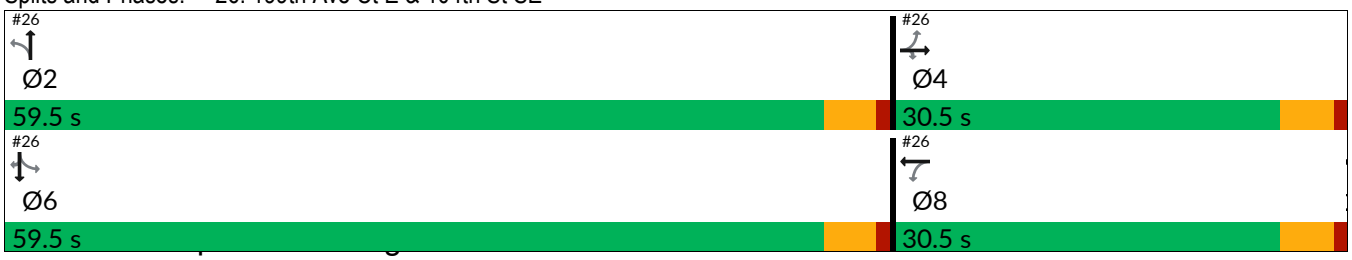
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [SER] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	0	14	1	1	2	14	735	0	3	1086	150
Future Volume (vph)	146	0	14	1	1	2	14	735	0	3	1086	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			1840	
Travel Time (s)		43.3			8.3			42.5			50.2	
Confl. Peds. (#/hr)			2	2					4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	33%	2%	0%	0%	1%	13%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		59.5	59.5		59.5	59.5	59.5
Total Split (%)	33.9%	33.9%	33.9%	33.9%	33.9%		66.1%	66.1%		66.1%	66.1%	66.1%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		55.0	55.0		55.0	55.0	55.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	2	2	2	0	0		4	4		0	0	0

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 78.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	0	14	1	1	2	14	735	0	3	1086	150
Future Volume (veh/h)	146	0	14	1	1	2	14	735	0	3	1086	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1900	1900	1900	1411	1870	0	1900	1885	1707
Adj Flow Rate, veh/h	155	0	15	1	1	2	15	782	0	3	1155	160
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	0	0	0	33	2	0	0	1	13
Cap, veh/h	367	0	235	126	98	126	193	1229	0	445	1239	948
Arrive On Green	0.15	0.00	0.15	0.15	0.15	0.15	0.66	0.66	0.00	0.66	0.66	0.66
Sat Flow, veh/h	1431	0	1600	191	670	861	315	1870	0	702	1885	1442
Grp Volume(v), veh/h	155	0	15	4	0	0	15	782	0	3	1155	160
Grp Sat Flow(s),veh/h/ln	1431	0	1600	1722	0	0	315	1870	0	702	1885	1442
Q Serve(g_s), s	4.7	0.0	0.4	0.0	0.0	0.0	2.0	11.3	0.0	0.1	24.9	2.0
Cycle Q Clear(g_c), s	4.8	0.0	0.4	0.1	0.0	0.0	26.9	11.3	0.0	11.4	24.9	2.0
Prop In Lane	1.00		1.00	0.25		0.50	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	0	235	351	0	0	193	1229	0	445	1239	948
V/C Ratio(X)	0.42	0.00	0.06	0.01	0.00	0.00	0.08	0.64	0.00	0.01	0.93	0.17
Avail Cap(c_a), veh/h	965	0	905	1028	0	0	363	2239	0	824	2257	1727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	0.0	16.9	16.8	0.0	0.0	18.9	4.6	0.0	8.0	7.0	3.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	1.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.1	0.0	0.0	0.0	0.1	2.4	0.0	0.0	5.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.0	0.0	16.9	16.8	0.0	0.0	19.0	4.8	0.0	8.0	8.9	3.1
LnGrp LOS	B		B	B			B	A		A	A	A
Approach Vol, veh/h		170			4			797			1318	
Approach Delay, s/veh		18.8			16.8			5.1			8.2	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.7		11.2		34.7		11.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		55.0		26.0		55.0		26.0				
Max Q Clear Time (g_c+I1), s		28.9		6.8		26.9		2.1				
Green Ext Time (p_c), s		1.2		0.2		2.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.9
HCM 7th LOS	A

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	420	429	1593	777
Demand Flow Rate, veh/h	422	429	1628	811
Vehicles Circulating, veh/h	821	1480	321	605
Vehicles Exiting, veh/h	595	469	922	1304
Ped Vol Crossing Leg, #/h	0	20	35	10
Ped Cap Adj	1.000	1.000	0.971	0.995
Approach Delay, s/veh	9.4	25.5	20.2	11.7
Approach LOS	A	D	C	B

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	R	LT	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.479	0.521	0.471	0.529	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420	1420	1420
B (Slope)	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	202	220	202	227	765	863	381	430
Cap Entry Lane, veh/h	673	673	369	369	1060	1060	819	819
Entry HV Adj Factor	1.000	0.991	0.998	1.002	0.979	0.978	0.958	0.957
Flow Entry, veh/h	202	218	202	227	749	844	365	412
Cap Entry, veh/h	673	667	369	370	1007	1007	781	780
V/C Ratio	0.300	0.327	0.547	0.615	0.743	0.839	0.468	0.528
Control Delay, s/veh	9.1	9.6	23.7	27.2	16.9	23.1	10.9	12.3
LOS	A	A	C	D	C	C	B	B
95th %tile Queue, veh	1	1	3	4	7	10	3	3

Intersection						
Int Delay, s/veh	12.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	225	198	82	44	109
Future Vol, veh/h	125	225	198	82	44	109
Conflicting Peds, #/hr	0	19	19	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	63	63	59	59
Heavy Vehicles, %	16	0	1	15	0	3
Mvmt Flow	198	357	314	130	75	185

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	575	0	1155	396
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	759	-
Critical Hdwy	-	-	4.11	-	6.4	6.23
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.327
Pot Cap-1 Maneuver	-	-	1004	-	220	651
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	466	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	985	-	147	639
Mov Cap-2 Maneuver	-	-	-	-	144	-
Stage 1	-	-	-	-	458	-
Stage 2	-	-	-	-	466	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	7.32	49.95
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	321	-	-	985	-
HCM Lane V/C Ratio	0.807	-	-	0.319	-
HCM Ctrl Dly (s/v)	49.9	-	-	10.4	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	6.7	-	-	1.4	-

Intersection							
Int Delay, s/veh	1						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	2	333	10	7	120	8	22
Future Vol, veh/h	2	333	10	7	120	8	22
Conflicting Peds, #/hr	0	0	15	15	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	75	-	0	-
Veh in Median Storage, #	-	0	-	-	0	2	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	61	61	61	67	67	67	67
Heavy Vehicles, %	0	1	0	50	6	29	88
Mvmt Flow	3	546	16	10	179	12	33

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	-	0	0	577	0	769	569
Stage 1	-	-	-	-	-	569	-
Stage 2	-	-	-	-	-	200	-
Critical Hdwy	-	-	-	4.6	-	6.69	7.08
Critical Hdwy Stg 1	-	-	-	-	-	5.69	-
Critical Hdwy Stg 2	-	-	-	-	-	5.69	-
Follow-up Hdwy	-	-	-	2.65	-	3.761	4.092
Pot Cap-1 Maneuver	-	-	-	797	-	334	390
Stage 1	-	-	-	-	-	517	-
Stage 2	-	-	-	-	-	773	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	-	-	-	786	-	324	385
Mov Cap-2 Maneuver	-	-	-	-	-	459	-
Stage 1	-	-	-	-	-	502	-
Stage 2	-	-	-	-	-	773	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v		0.53	15.08
HCM LOS			C

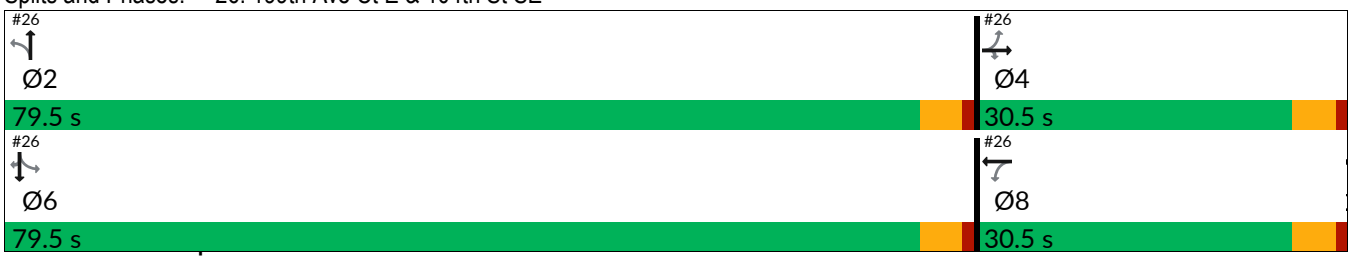
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	402	-	-	786	-
HCM Lane V/C Ratio	0.111	-	-	0.013	-
HCM Ctrl Dly (s/v)	15.1	-	-	9.6	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	0	52	1	1	6	48	1143	1	1	651	207
Future Volume (vph)	240	0	52	1	1	6	48	1143	1	1	651	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			769	
Travel Time (s)		43.3			8.3			42.5			21.0	
Confl. Peds. (#/hr)			6	6					12	12		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	13%	0%	0%	0%	0%	1%	0%	0%	5%	5%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		79.5	79.5		79.5	79.5	79.5
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%		72.3%	72.3%		72.3%	72.3%	72.3%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		75.0	75.0		75.0	75.0	75.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	6	6	6	0	0		12	12		0	0	0

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 100
Natural Cycle: 100
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	0	52	1	1	6	48	1143	1	1	651	207
Future Volume (veh/h)	240	0	52	1	1	6	48	1143	1	1	651	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1900	1707	1900	1900	1900	1900	1885	1900	1900	1826	1826
Adj Flow Rate, veh/h	261	0	57	1	1	7	52	1242	1	1	708	225
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	0	13	0	0	0	0	1	0	0	5	5
Cap, veh/h	389	0	305	66	63	281	376	1277	1	112	1238	1040
Arrive On Green	0.21	0.00	0.21	0.21	0.21	0.21	0.68	0.68	0.68	0.68	0.68	0.68
Sat Flow, veh/h	1417	0	1435	81	296	1321	609	1883	2	455	1826	1534
Grp Volume(v), veh/h	261	0	57	9	0	0	52	0	1243	1	708	225
Grp Sat Flow(s),veh/h/ln	1417	0	1435	1699	0	0	609	0	1885	455	1826	1534
Q Serve(g_s), s	14.3	0.0	2.7	0.0	0.0	0.0	4.0	0.0	51.4	0.2	16.8	4.6
Cycle Q Clear(g_c), s	14.6	0.0	2.7	0.4	0.0	0.0	20.9	0.0	51.4	51.6	16.8	4.6
Prop In Lane	1.00		1.00	0.11		0.78	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	389	0	305	410	0	0	376	0	1278	112	1238	1040
V/C Ratio(X)	0.67	0.00	0.19	0.02	0.00	0.00	0.14	0.00	0.97	0.01	0.57	0.22
Avail Cap(c_a), veh/h	533	0	452	574	0	0	517	0	1714	217	1660	1394
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	0.0	26.6	25.7	0.0	0.0	12.5	0.0	12.5	36.9	7.0	5.0
Incr Delay (d2), s/veh	0.8	0.0	0.1	0.0	0.0	0.0	0.1	0.0	12.3	0.0	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	0.9	0.1	0.0	0.0	0.5	0.0	21.6	0.0	5.5	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.0	0.0	26.7	25.7	0.0	0.0	12.5	0.0	24.8	36.9	7.1	5.0
LnGrp LOS	C		C	C			B		C	D	A	A
Approach Vol, veh/h		318			9			1295			934	
Approach Delay, s/veh		31.1			25.7			24.4			6.7	
Approach LOS		C			C			C			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		60.4		22.0		60.4		22.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		75.0		26.0		75.0		26.0				
Max Q Clear Time (g_c+I1), s		53.4		16.6		53.6		2.4				
Green Ext Time (p_c), s		2.5		0.2		0.9		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			18.7									
HCM 7th LOS			B									

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	399	224	737	993
Demand Flow Rate, veh/h	404	224	767	1012
Vehicles Circulating, veh/h	1075	840	189	230
Vehicles Exiting, veh/h	167	116	1290	834
Ped Vol Crossing Leg, #/h	3	54	120	20
Ped Cap Adj	1.000	0.992	0.897	0.981
Approach Delay, s/veh	13.6	7.5	7.2	8.1
Approach LOS	B	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	R	L	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.374	0.626	0.513	0.487	0.469	0.531	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420	1420	1420
B (Slope)	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	151	253	115	109	360	407	476	536
Cap Entry Lane, veh/h	534	534	661	661	1196	1196	1152	1152
Entry HV Adj Factor	1.000	0.980	1.000	1.000	0.962	0.960	0.980	0.982
Flow Entry, veh/h	151	248	115	109	346	391	467	526
Cap Entry, veh/h	534	523	656	656	1032	1029	1108	1110
V/C Ratio	0.283	0.474	0.175	0.166	0.336	0.380	0.421	0.474
Control Delay, s/veh	10.8	15.3	7.5	7.4	6.9	7.5	7.7	8.5
LOS	B	C	A	A	A	A	A	A
95th %tile Queue, veh	1	3	1	1	1	2	2	3

Intersection	
Int Delay, s/veh	13.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	137	32	38	151	117	131
Future Vol, veh/h	137	32	38	151	117	131
Conflicting Peds, #/hr	0	47	47	0	2	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	91	91	56	56
Heavy Vehicles, %	11	0	0	3	0	1
Mvmt Flow	173	41	42	166	209	234

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	261	0	492	242
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	251	-
Critical Hdwy	-	-	4.1	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1315	-	540	800
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1256	-	497	763
Mov Cap-2 Maneuver	-	-	-	-	497	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	794	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.6	25
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	609	-	-	1256	-
HCM Lane V/C Ratio	0.727	-	-	0.033	-
HCM Ctrl Dly (s/v)	25	-	-	8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	6.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	134	8	2	261	18	29
Future Vol, veh/h	134	8	2	261	18	29
Conflicting Peds, #/hr	0	17	17	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	71	71	61	61
Heavy Vehicles, %	3	0	50	2	39	32
Mvmt Flow	137	8	3	368	30	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	162	0	531	160
Stage 1	-	-	-	-	158	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	-	-	4.6	-	6.79	6.52
Critical Hdwy Stg 1	-	-	-	-	5.79	-
Critical Hdwy Stg 2	-	-	-	-	5.79	-
Follow-up Hdwy	-	-	2.65	-	3.851	3.588
Pot Cap-1 Maneuver	-	-	1172	-	450	813
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	622	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1153	-	442	798
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	622	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.06	10.9
HCM LOS			B

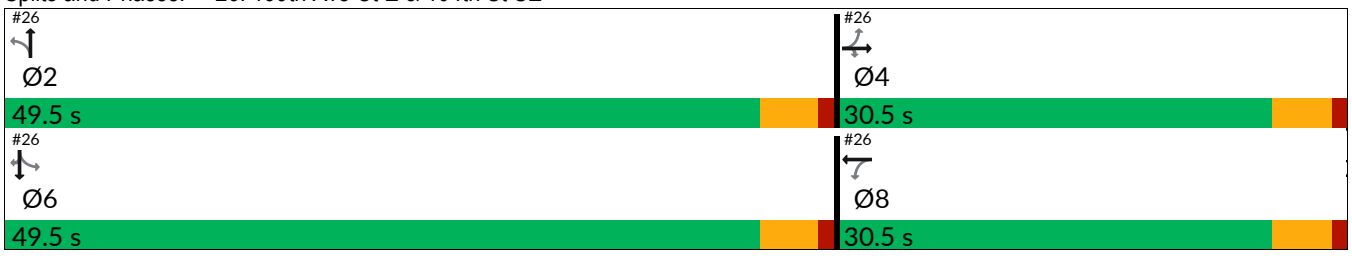
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	687	-	-	1153	-
HCM Lane V/C Ratio	0.112	-	-	0.002	-
HCM Ctrl Dly (s/v)	10.9	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	266	0	45	2	0	2	21	710	0	0	864	144
Future Volume (vph)	266	0	45	2	0	2	21	710	0	0	864	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			768	
Travel Time (s)		43.3			8.3			42.5			20.9	
Confl. Peds. (#/hr)			5	5			2		29	29		2
Confl. Bikes (#/hr)									2			1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	0%	19%	0%	0%	0%	0%	3%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		49.5	49.5		49.5	49.5	49.5
Total Split (%)	38.1%	38.1%	38.1%	38.1%	38.1%		61.9%	61.9%		61.9%	61.9%	61.9%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		45.0	45.0		45.0	45.0	45.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	5	5	5	0	0		29	29		2	2	2

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 59.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	266	0	45	2	0	2	21	710	0	0	864	144
Future Volume (veh/h)	266	0	45	2	0	2	21	710	0	0	864	144
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		1.00	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1618	1900	1900	1900	1900	1856	0	1900	1870	1885
Adj Flow Rate, veh/h	283	0	48	2	0	2	22	755	0	0	919	153
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	19	0	0	0	0	3	0	0	2	1
Cap, veh/h	519	0	341	301	38	218	221	1015	0	163	1023	833
Arrive On Green	0.25	0.00	0.25	0.25	0.00	0.25	0.55	0.55	0.00	0.00	0.55	0.55
Sat Flow, veh/h	1426	0	1363	718	153	871	533	1856	0	720	1870	1523
Grp Volume(v), veh/h	283	0	48	4	0	0	22	755	0	0	919	153
Grp Sat Flow(s),veh/h/ln	1426	0	1363	1742	0	0	533	1856	0	720	1870	1523
Q Serve(g_s), s	8.1	0.0	1.2	0.0	0.0	0.0	1.7	13.8	0.0	0.0	19.4	2.2
Cycle Q Clear(g_c), s	8.2	0.0	1.2	0.1	0.0	0.0	21.1	13.8	0.0	0.0	19.4	2.2
Prop In Lane	1.00		1.00	0.50		0.50	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	519	0	341	557	0	0	221	1015	0	163	1023	833
V/C Ratio(X)	0.55	0.00	0.14	0.01	0.00	0.00	0.10	0.74	0.00	0.00	0.90	0.18
Avail Cap(c_a), veh/h	999	0	801	1067	0	0	471	1886	0	501	1901	1548
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	12.9	12.5	0.0	0.0	18.3	7.7	0.0	0.0	8.9	5.1
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.0	0.0	0.0	0.1	0.4	0.0	0.0	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.3	0.0	0.0	0.0	0.2	3.8	0.0	0.0	5.6	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.9	0.0	13.0	12.5	0.0	0.0	18.4	8.1	0.0	0.0	10.1	5.1
LnGrp LOS	B		B	B			B	A			B	A
Approach Vol, veh/h		331			4			777			1072	
Approach Delay, s/veh		15.4			12.5			8.4			9.4	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		28.7		15.6		28.7		15.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		45.0		26.0		45.0		26.0				
Max Q Clear Time (g_c+I1), s		23.1		10.2		21.4		2.1				
Green Ext Time (p_c), s		1.1		0.3		1.3		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.0
HCM 7th LOS	A

Intersection	
Intersection Delay, s/veh	6.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	2	2
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	65	112	806	1121
Demand Flow Rate, veh/h	65	112	828	1132
Vehicles Circulating, veh/h	1192	810	51	119
Vehicles Exiting, veh/h	59	69	1206	803
Ped Vol Crossing Leg, #/h	2	1	2	3
Ped Cap Adj	1.000	1.000	0.998	0.997
Approach Delay, s/veh	8.5	6.3	5.5	7.4
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	LT	TR	LT	TR
Assumed Moves	LT	R	L	TR	LT	TR	LT	TR
RT Channelized								
Lane Util	0.354	0.646	0.670	0.330	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.544	4.544	4.544	4.544	4.544	4.544	4.544	4.544
A (Intercept)	1420	1420	1420	1420	1420	1420	1420	1420
B (Slope)	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4	9.101e-4
Entry Flow, veh/h	23	42	75	37	389	439	532	600
Cap Entry Lane, veh/h	480	480	679	679	1356	1356	1274	1274
Entry HV Adj Factor	1.000	1.000	1.000	1.000	0.974	0.973	0.991	0.990
Flow Entry, veh/h	23	42	75	37	379	427	527	594
Cap Entry, veh/h	480	480	679	679	1318	1317	1258	1258
V/C Ratio	0.048	0.088	0.110	0.054	0.288	0.325	0.419	0.472
Control Delay, s/veh	8.1	8.7	6.5	5.9	5.3	5.7	7.0	7.8
LOS	A	A	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	0	1	1	2	3

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	118	12	14	152	14	25
Future Vol, veh/h	118	12	14	152	14	25
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	60	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	84	84	64	64
Heavy Vehicles, %	15	0	0	2	0	0
Mvmt Flow	133	13	17	181	22	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	148	0	356	141
Stage 1	-	-	-	-	141	-
Stage 2	-	-	-	-	214	-
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	-	-	1446	-	647	912
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	826	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1443	-	638	910
Mov Cap-2 Maneuver	-	-	-	-	674	-
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	826	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.63	9.82
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	808	-	-	1443	-
HCM Lane V/C Ratio	0.075	-	-	0.012	-
HCM Ctrl Dly (s/v)	9.8	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	122	6	5	162	1	3	5
Future Vol, veh/h	122	6	5	162	1	3	5
Conflicting Peds, #/hr	0	5	5	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	75	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	2	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	88	88	91	91	50	50	50
Heavy Vehicles, %	16	0	0	2	0	0	0
Mvmt Flow	139	7	5	178	2	6	10

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	150	0	0	336	148
Stage 1	-	-	-	-	0	147	-
Stage 2	-	-	-	-	0	189	-
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	-	-	1443	-	0	663	904
Stage 1	-	-	-	-	0	885	-
Stage 2	-	-	-	-	0	848	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1436	-	0	658	899
Mov Cap-2 Maneuver	-	-	-	-	0	751	-
Stage 1	-	-	-	-	0	878	-
Stage 2	-	-	-	-	0	848	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.23	9.38
HCM LOS			A

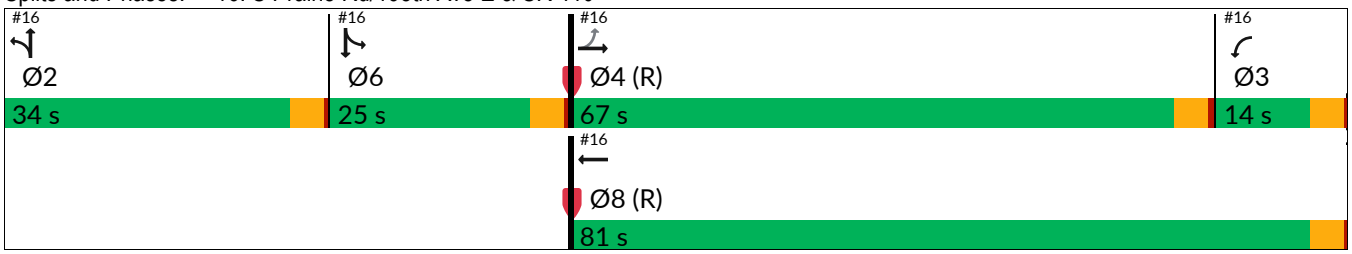
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	837	-	-	1436	-
HCM Lane V/C Ratio	0.019	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.4	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1486	1286	143	1282	104	952	124	103	204	198	24
Future Volume (vph)	20	1486	1286	143	1282	104	952	124	103	204	198	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			3%			0%	
Storage Length (ft)	300		0	350		300	500		0	275		0
Storage Lanes	1		1	1		1	0		0	1		0
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			No			No			No			No
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		829			1056			545			555	
Travel Time (s)		14.1			18.0			14.9			15.1	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	5%	2%	2%	1%	3%	4%	3%	3%	2%	1%	5%	9%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Free	Prot	NA		Split	NA		Split	NA	
Protected Phases		4		3	8		2	2		6	6	
Permitted Phases	4		Free									
Detector Phase	4	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	34.0	34.0		8.0	34.0		34.0	34.0		20.0	20.0	
Total Split (s)	67.0	67.0		14.0	81.0		34.0	34.0		25.0	25.0	
Total Split (%)	47.9%	47.9%		10.0%	57.9%		24.3%	24.3%		17.9%	17.9%	
Maximum Green (s)	63.0	63.0		10.0	77.0		30.0	30.0		21.0	21.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		None	C-Max		Min	Min		Min	Min	
Walk Time (s)	6.0	6.0			6.0		6.0	6.0				
Flash Don't Walk (s)	24.0	24.0			24.0		24.0	24.0				
Pedestrian Calls (#/hr)	0	0			1		1	1				

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of 1st Green
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 16: S Prairie Rd/198th Ave E & SR 410



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1486	1286	143	1282	104	952	124	103	204	198	24
Future Volume (veh/h)	20	1486	1286	143	1282	104	952	124	103	204	198	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1802	1847	1847	1964	1934	1919	1803	1803	1817	1885	1826	1767
Adj Flow Rate, veh/h	21	1532	0	147	1322	107	981	128	0	210	204	25
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	2	2	1	3	4	3	3	2	1	5	9
Cap, veh/h	156	1579		148	2776	225	1037	386		256	227	28
Arrive On Green	0.45	0.45	0.00	0.08	0.56	0.56	0.21	0.21	0.00	0.14	0.14	0.14
Sat Flow, veh/h	361	3509	1565	1870	4977	403	4841	1803	0	1795	1595	195
Grp Volume(v), veh/h	21	1532	0	147	935	494	981	128	0	210	0	229
Grp Sat Flow(s),veh/h/ln	361	1754	1565	1870	1760	1861	1614	1803	0	1795	0	1790
Q Serve(g_s), s	6.1	59.7	0.0	11.0	22.4	22.4	28.0	8.4	0.0	15.9	0.0	17.6
Cycle Q Clear(g_c), s	28.5	59.7	0.0	11.0	22.4	22.4	28.0	8.4	0.0	15.9	0.0	17.6
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.00	1.00		0.11
Lane Grp Cap(c), veh/h	156	1579		148	1963	1038	1037	386		256	0	255
V/C Ratio(X)	0.13	0.97		0.99	0.48	0.48	0.95	0.33		0.82	0.00	0.90
Avail Cap(c_a), veh/h	156	1579		148	1963	1038	1037	386		269	0	269
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.5	37.6	0.0	64.4	18.6	18.6	54.2	46.5	0.0	58.3	0.0	59.0
Incr Delay (d2), s/veh	1.8	16.6	0.0	71.6	0.8	1.6	16.6	0.5	0.0	17.5	0.0	29.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	28.2	0.0	8.1	9.0	9.8	13.0	3.9	0.0	8.5	0.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.2	54.2	0.0	136.0	19.5	20.2	70.8	47.0	0.0	75.8	0.0	88.4
LnGrp LOS	D	D		F	B	C	E	D		E		F
Approach Vol, veh/h		1553			1576			1109			439	
Approach Delay, s/veh		54.0			30.6			68.0			82.3	
Approach LOS		D			C			E			F	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		34.0	15.1	67.0		23.9		82.1				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0				
Max Green Setting (Gmax), s		30.0	10.0	63.0		21.0		77.0				
Max Q Clear Time (g_c+I1), s		30.0	13.0	61.7		19.6		24.4				
Green Ext Time (p_c), s		0.0	0.0	1.1		0.3		13.2				

Intersection Summary

HCM 7th Control Delay, s/veh			52.1									
HCM 7th LOS			D									

Notes

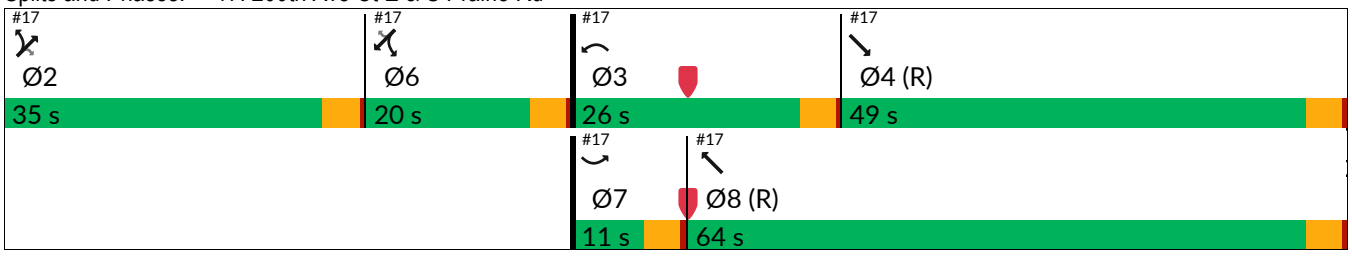
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	39	569	1002	269	410	53	674	55	238	38	57	32
Future Volume (vph)	39	569	1002	269	410	53	674	55	238	38	57	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	225		225	350		250	100		0
Storage Lanes	1		1	1		0	1		1	0		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		510			814			1840			137	
Travel Time (s)		13.9			22.2			50.2			3.7	
Confl. Peds. (#/hr)			5	5					2	2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	2%	1%	1%	2%	2%	2%	0%	0%	7%	3%
Shared Lane Traffic (%)							46%					
Turn Type	Prot	NA	Free	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			Free						2			6
Detector Phase	7	4		3	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	25.0		8.0	25.0		25.0	25.0	25.0	20.0	20.0	20.0
Total Split (s)	11.0	49.0		26.0	64.0		35.0	35.0	35.0	20.0	20.0	20.0
Total Split (%)	8.5%	37.7%		20.0%	49.2%		26.9%	26.9%	26.9%	15.4%	15.4%	15.4%
Maximum Green (s)	7.0	45.0		22.0	60.0		31.0	31.0	31.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Min		None	C-Min		None	None	None	None	None	None
Walk Time (s)		6.0			6.0		6.0	6.0	6.0			
Flash Don't Walk (s)		15.0			15.0		15.0	15.0	15.0			
Pedestrian Calls (#/hr)		5			0		2	2	2			

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 4:SET and 8:NWT, Start of 1st Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 17: 200th Ave Ct E & S Prairie Rd



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	39	569	1002	269	410	53	674	55	238	38	57	32
Future Volume (veh/h)	39	569	1002	269	410	53	674	55	238	38	57	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1870	1885	1885	1870	1870	1870	1900	1900	1796	1856
Adj Flow Rate, veh/h	40	587	0	277	423	55	736	0	245	39	59	33
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	2	1	1	2	2	2	0	0	7	3
Cap, veh/h	51	764		301	1754	227	806	0	363	50	76	112
Arrive On Green	0.03	0.41	0.00	0.17	0.55	0.55	0.23	0.00	0.23	0.07	0.07	0.07
Sat Flow, veh/h	1767	1856	1585	1795	3188	412	3563	0	1603	701	1060	1559
Grp Volume(v), veh/h	40	587	0	277	237	241	736	0	245	98	0	33
Grp Sat Flow(s),veh/h/ln	1767	1856	1585	1795	1791	1809	1781	0	1603	1761	0	1559
Q Serve(g_s), s	2.9	35.4	0.0	19.7	8.9	9.0	26.2	0.0	18.1	7.1	0.0	2.6
Cycle Q Clear(g_c), s	2.9	35.4	0.0	19.7	8.9	9.0	26.2	0.0	18.1	7.1	0.0	2.6
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	0.40		1.00
Lane Grp Cap(c), veh/h	51	764		301	985	995	806	0	363	126	0	112
V/C Ratio(X)	0.78	0.77		0.92	0.24	0.24	0.91	0.00	0.68	0.78	0.00	0.30
Avail Cap(c_a), veh/h	95	764		304	985	995	850	0	382	217	0	192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	0.79	0.00	0.79	1.00	0.00	1.00
Uniform Delay (d), s/veh	62.7	32.9	0.0	53.3	15.2	15.2	49.1	0.0	45.9	59.3	0.0	57.2
Incr Delay (d2), s/veh	22.1	7.3	0.0	31.8	0.6	0.6	11.4	0.0	3.5	9.8	0.0	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	17.5	0.0	11.6	3.9	3.9	13.0	0.0	7.7	3.5	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.8	40.2	0.0	85.1	15.7	15.8	60.4	0.0	49.4	69.1	0.0	58.7
LnGrp LOS	F	D		F	B	B	E		D	E		E
Approach Vol, veh/h		627			755			981			131	
Approach Delay, s/veh		43.1			41.2			57.7			66.5	
Approach LOS		D			D			E			E	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		33.4	25.8	57.5		13.3	7.8	75.5				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		31.0	22.0	45.0		16.0	7.0	60.0				
Max Q Clear Time (g_c+I1), s		28.2	21.7	37.4		9.1	4.9	11.0				
Green Ext Time (p_c), s		1.2	0.0	2.4		0.3	0.0	3.4				

Intersection Summary

HCM 7th Control Delay, s/veh	49.5	
HCM 7th LOS	D	

Notes

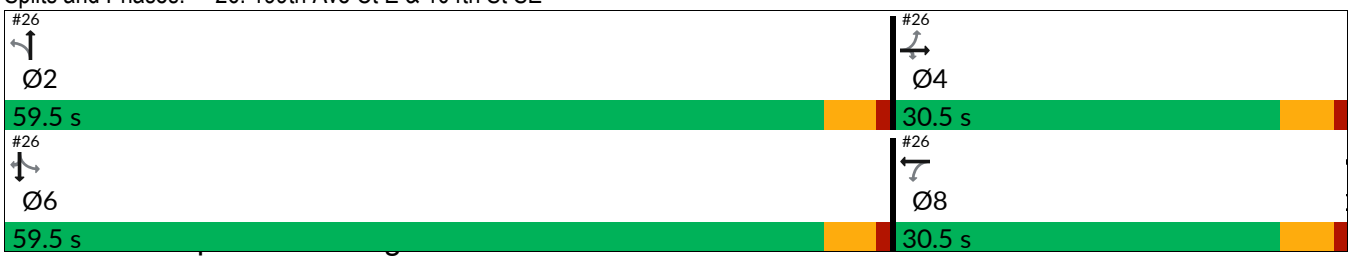
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [SER] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	0	14	1	1	2	14	738	0	3	1089	154
Future Volume (vph)	153	0	14	1	1	2	14	738	0	3	1089	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	215		0	175		90
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	50		50	50		50	50		50	50		50
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1589			304			1559			1840	
Travel Time (s)		43.3			8.3			42.5			50.2	
Confl. Peds. (#/hr)			2	2					4	4		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	33%	2%	0%	0%	1%	13%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.5	26.5	26.5	30.5	30.5		26.5	26.5		30.5	30.5	30.5
Total Split (s)	30.5	30.5	30.5	30.5	30.5		59.5	59.5		59.5	59.5	59.5
Total Split (%)	33.9%	33.9%	33.9%	33.9%	33.9%		66.1%	66.1%		66.1%	66.1%	66.1%
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		55.0	55.0		55.0	55.0	55.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2	0.2	0.2	0.2		0.2	0.2		0.2	0.2	0.2
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	6.0	6.0		7.0	7.0		6.0	6.0	6.0
Flash Don't Walk (s)	15.0	15.0	15.0	20.0	20.0		11.0	11.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	2	2	2	0	0		4	4		0	0	0

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 79
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 26: 199th Ave Ct E & 104th St SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	0	14	1	1	2	14	738	0	3	1089	154
Future Volume (veh/h)	153	0	14	1	1	2	14	738	0	3	1089	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1900	1900	1900	1411	1870	0	1900	1885	1707
Adj Flow Rate, veh/h	163	0	15	1	1	2	15	785	0	3	1159	164
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	0	0	0	33	2	0	0	1	13
Cap, veh/h	367	0	240	125	100	129	189	1232	0	442	1242	950
Arrive On Green	0.15	0.00	0.15	0.15	0.15	0.15	0.66	0.66	0.00	0.66	0.66	0.66
Sat Flow, veh/h	1431	0	1604	197	669	865	313	1870	0	700	1885	1443
Grp Volume(v), veh/h	163	0	15	4	0	0	15	785	0	3	1159	164
Grp Sat Flow(s),veh/h/ln	1431	0	1604	1731	0	0	313	1870	0	700	1885	1443
Q Serve(g_s), s	5.0	0.0	0.4	0.0	0.0	0.0	2.1	11.6	0.0	0.1	25.6	2.1
Cycle Q Clear(g_c), s	5.1	0.0	0.4	0.1	0.0	0.0	27.6	11.6	0.0	11.7	25.6	2.1
Prop In Lane	1.00		1.00	0.25		0.50	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	0	240	354	0	0	189	1232	0	442	1242	950
V/C Ratio(X)	0.44	0.00	0.06	0.01	0.00	0.00	0.08	0.64	0.00	0.01	0.93	0.17
Avail Cap(c_a), veh/h	945	0	889	1009	0	0	350	2193	0	802	2210	1691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	0.0	17.1	17.0	0.0	0.0	19.3	4.7	0.0	8.1	7.1	3.1
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	2.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.1	0.0	0.0	0.0	0.1	2.5	0.0	0.0	6.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.5	0.0	17.2	17.0	0.0	0.0	19.4	4.9	0.0	8.1	9.4	3.1
LnGrp LOS	B		B	B			B	A		A	A	A
Approach Vol, veh/h		178			4			800			1326	
Approach Delay, s/veh		19.3			17.0			5.2			8.7	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.4		11.5		35.4		11.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		55.0		26.0		55.0		26.0				
Max Q Clear Time (g_c+I1), s		29.6		7.1		27.6		2.1				
Green Ext Time (p_c), s		1.3		0.2		2.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			8.3									
HCM 7th LOS			A									

USER REPORT FOR SITE

Movement Report for Appendix - Import

Site: [101-AM] 2030 AM Peak (2030 With-Project)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Bonney Lake HS Expansion
Site Category: Proposed Design 1
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
West: Bonney Lake HS Access															
5	L2	All MCs	188	0.0	188	0.0	0.262	6.6	LOS A	1.3	32.0	0.67	0.70	0.67	18.9
2	T1	All MCs	75	0.0	75	0.0	0.392	3.0	LOS A	2.3	57.3	0.71	0.60	0.73	19.3
12	R2	All MCs	284	1.0	284	1.0	0.392	3.5	LOS A	2.3	57.3	0.71	0.60	0.73	19.3
Approach			548	0.5	548	0.5	0.392	4.5	LOS A	2.3	57.3	0.70	0.64	0.71	19.2
East: Mountain View MS Access															
1	L2	All MCs	228	0.0	228	0.0	0.842	50.2	LOS D	9.9	247.2	1.00	1.51	1.90	13.9
6	T1	All MCs	88	0.0	88	0.0	0.826	42.1	LOS D	11.2	280.0	1.00	1.53	1.90	14.5
16	R2	All MCs	193	0.0	193	0.0	0.826	43.6	LOS D	11.2	280.0	1.00	1.53	1.90	14.5
Approach			509	0.0	509	0.0	0.842	46.3	LOS D	11.2	280.0	1.00	1.52	1.90	14.2
South: 199th Ave Ct E															
3	L2	All MCs	289	8.0	289	8.0	1.080	48.3	LOS F	46.2	1179.5	1.00	3.05	3.56	14.2
8	T1	All MCs	906	1.0	906	1.0	1.080	44.4	LOS F	46.2	1179.5	1.00	3.04	3.55	14.2
18	R2	All MCs	268	0.0	268	0.0	0.375	2.4	LOS A	1.6	39.5	0.53	0.43	0.53	19.5
Approach			1463	2.2	1463	2.2	1.080	37.5	LOS D	46.2	1179.5	0.91	2.57	3.00	14.9
North: 199th Ave Ct E															
7	L2	All MCs	115	1.0	115	1.0	0.175	5.7	LOS A	0.7	17.1	0.55	0.64	0.55	19.0
4	T1	All MCs	466	7.0	466	7.0	0.648	3.8	LOS A	4.8	125.8	0.73	0.72	0.89	19.1
14	R2	All MCs	178	0.0	178	0.0	0.648	3.5	LOS A	4.8	125.8	0.73	0.72	0.89	19.1
Approach			760	4.4	760	4.4	0.648	4.0	LOS A	4.8	125.8	0.71	0.71	0.84	19.1
All Vehicles			3280	2.1	3280	2.1	1.080	25.6	LOS C	46.2	1179.5	0.84	1.65	1.95	16.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement Report for Appendix - Import

Site: [101-AFT] 2030 Afternoon Peak (2030 With-Project)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Bonney Lake HS Expansion
Site Category: Proposed Design 1
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
West: Bonney Lake HS Access															
5	L2	All MCs	249	0.0	249	0.0	0.454	11.3	LOS B	3.1	77.0	0.86	0.91	1.01	18.2
2	T1	All MCs	14	0.0	14	0.0	0.650	10.4	LOS B	6.3	161.1	0.96	1.07	1.35	18.2
12	R2	All MCs	433	2.0	433	2.0	0.650	11.0	LOS B	6.3	161.1	0.96	1.07	1.35	18.2
Approach			696	1.2	696	1.2	0.650	11.1	LOS B	6.3	161.1	0.92	1.01	1.23	18.2
East: Mountain View MS Access															
1	L2	All MCs	148	0.0	148	0.0	0.169	6.3	LOS A	0.9	22.6	0.67	0.67	0.67	18.9
6	T1	All MCs	16	0.0	16	0.0	0.189	3.7	LOS A	1.0	23.9	0.68	0.60	0.68	19.3
16	R2	All MCs	125	0.0	125	0.0	0.189	4.6	LOS A	1.0	23.9	0.68	0.60	0.68	19.3
Approach			288	0.0	288	0.0	0.189	5.4	LOS A	1.0	23.9	0.68	0.64	0.68	19.1
South: 199th Ave Ct E															
3	L2	All MCs	92	7.0	92	7.0	0.552	4.7	LOS A	3.5	90.7	0.59	0.33	0.60	19.3
8	T1	All MCs	552	4.0	552	4.0	0.552	1.7	LOS A	3.5	90.7	0.57	0.33	0.59	19.4
18	R2	All MCs	67	0.0	67	0.0	0.191	1.8	LOS A	0.8	19.2	0.46	0.32	0.46	19.6
Approach			712	4.0	712	4.0	0.552	2.1	LOS A	3.5	90.7	0.56	0.33	0.58	19.4
North: 199th Ave Ct E															
7	L2	All MCs	37	0.0	37	0.0	0.046	4.3	LOS A	0.2	4.0	0.36	0.49	0.36	19.2
4	T1	All MCs	875	2.0	875	2.0	0.757	2.6	LOS A	7.5	191.2	0.68	0.52	0.76	19.2
14	R2	All MCs	49	2.0	49	2.0	0.757	2.8	LOS A	7.5	191.2	0.68	0.52	0.76	19.2
Approach			961	1.9	961	1.9	0.757	2.7	LOS A	7.5	191.2	0.67	0.52	0.74	19.2
All Vehicles			2657	2.1	2657	2.1	0.757	5.0	LOS A	7.5	191.2	0.71	0.61	0.82	19.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement Report for Appendix - Import

Site: [101-PM] 2030 PM Peak (2030 With-Project)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Bonney Lake HS Expansion
Site Category: Proposed Design 1
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
West: Bonney Lake HS Access															
5	L2	All MCs	25	0.0	25	0.0	0.064	11.6	LOS B	0.4	9.3	0.86	0.81	0.86	18.2
2	T1	All MCs	2	0.0	2	0.0	0.102	7.0	LOS A	0.7	17.4	0.90	0.75	0.90	18.7
12	R2	All MCs	51	0.0	51	0.0	0.102	7.5	LOS A	0.7	17.4	0.90	0.75	0.90	18.7
Approach			79	0.0	79	0.0	0.102	8.8	LOS A	0.7	17.4	0.89	0.77	0.89	18.5
East: Mountain View MS Access															
1	L2	All MCs	162	0.0	162	0.0	0.165	5.7	LOS A	0.8	19.0	0.58	0.64	0.58	19.0
6	T1	All MCs	7	0.0	7	0.0	0.107	3.2	LOS A	0.4	11.0	0.58	0.53	0.58	19.4
16	R2	All MCs	73	0.0	73	0.0	0.107	4.0	LOS A	0.4	11.0	0.58	0.53	0.58	19.4
Approach			242	0.0	242	0.0	0.165	5.1	LOS A	0.8	19.0	0.58	0.60	0.58	19.1
South: 199th Ave Ct E															
3	L2	All MCs	43	0.0	43	0.0	0.486	5.6	LOS A	3.2	82.1	0.23	0.16	0.23	24.2
8	T1	All MCs	765	3.0	765	3.0	0.486	1.0	LOS A	3.2	82.1	0.22	0.16	0.22	24.4
18	R2	All MCs	41	0.0	41	0.0	0.169	1.7	LOS A	0.7	18.5	0.19	0.17	0.19	24.4
Approach			850	2.7	850	2.7	0.486	1.3	LOS A	3.2	82.1	0.22	0.16	0.22	24.4
North: 199th Ave Ct E															
7	L2	All MCs	28	0.0	28	0.0	0.033	6.4	LOS A	0.1	3.0	0.33	0.55	0.33	23.1
4	T1	All MCs	1067	1.0	1067	1.0	0.831	3.7	LOS A	11.1	280.9	0.76	0.59	0.85	23.3
14	R2	All MCs	15	0.0	15	0.0	0.831	4.4	LOS A	11.1	280.9	0.76	0.59	0.85	23.2
Approach			1110	1.0	1110	1.0	0.831	3.8	LOS A	11.1	280.9	0.75	0.59	0.83	23.3
All Vehicles			2281	1.5	2281	1.5	0.831	3.2	LOS A	11.1	280.9	0.54	0.44	0.58	22.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

APPENDIX D
Queuing Simulation Reports

Intersection: 1: 199th Ave Ct E & BLHS Access/MVMS Access

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	126	159	194	200	160	266	183	298
Average Queue (ft)	59	71	98	87	94	175	53	147
95th Queue (ft)	106	126	170	169	176	278	114	255
Link Distance (ft)		546		197		263		1492
Upstream Blk Time (%)			1	1		2		
Queuing Penalty (veh)			0	0		14		
Storage Bay Dist (ft)	170		200		110		220	
Storage Blk Time (%)	0	0	1	1	2	19		2
Queuing Penalty (veh)	0	0	2	2	12	30		2

Intersection: 1: 199th Ave Ct E & BLHS Access/MVMS Access

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	139	120	116	90	159	267	234	409
Average Queue (ft)	64	56	61	40	44	152	33	213
95th Queue (ft)	117	98	105	73	117	257	122	361
Link Distance (ft)		546		197		263		1492
Upstream Blk Time (%)						1		
Queuing Penalty (veh)						5		
Storage Bay Dist (ft)	170		200		110		220	
Storage Blk Time (%)	0				0	16		8
Queuing Penalty (veh)	0				0	9		3

Intersection: 1: 199th Ave Ct E & BLHS Access/MVMS Access

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	198	311	212	212	160	277	239	362
Average Queue (ft)	107	135	174	172	102	268	70	180
95th Queue (ft)	214	344	253	261	202	274	151	311
Link Distance (ft)		546		197		263		1492
Upstream Blk Time (%)		1	40	44		27		
Queuing Penalty (veh)		0	0	0		342		
Storage Bay Dist (ft)	170		200		110		220	
Storage Blk Time (%)	15	4	40	44	1	43		5
Queuing Penalty (veh)	22	4	84	78	13	59		5

Intersection: 1: 199th Ave Ct E & BLHS Access/MVMS Access

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	164	146	151	91	159	271	269	591
Average Queue (ft)	70	65	79	42	43	182	45	308
95th Queue (ft)	128	114	131	75	119	274	153	502
Link Distance (ft)		546		197		263		1492
Upstream Blk Time (%)			0			1		
Queuing Penalty (veh)			0			8		
Storage Bay Dist (ft)	170		200		110		220	
Storage Blk Time (%)	1	0	0		0	23		16
Queuing Penalty (veh)	1	0	0		1	11		6

USER REPORT FOR SITE

Movement Report for Appendix - Import

Site: [101-AM] 2030 AM Peak (2030 With-Project)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Bonney Lake HS Expansion
Site Category: Proposed Design 1
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
West: Bonney Lake HS Access															
5	L2	All MCs	188	0.0	188	0.0	0.262	6.6	LOS A	1.3	32.0	0.67	0.70	0.67	18.9
2	T1	All MCs	75	0.0	75	0.0	0.392	3.0	LOS A	2.3	57.3	0.71	0.60	0.73	19.3
12	R2	All MCs	284	1.0	284	1.0	0.392	3.5	LOS A	2.3	57.3	0.71	0.60	0.73	19.3
Approach			548	0.5	548	0.5	0.392	4.5	LOS A	2.3	57.3	0.70	0.64	0.71	19.2
East: Mountain View MS Access															
1	L2	All MCs	228	0.0	228	0.0	0.842	50.2	LOS D	9.9	247.2	1.00	1.51	1.90	13.9
6	T1	All MCs	88	0.0	88	0.0	0.826	42.1	LOS D	11.2	280.0	1.00	1.53	1.90	14.5
16	R2	All MCs	193	0.0	193	0.0	0.826	43.6	LOS D	11.2	280.0	1.00	1.53	1.90	14.5
Approach			509	0.0	509	0.0	0.842	46.3	LOS D	11.2	280.0	1.00	1.52	1.90	14.2
South: 199th Ave Ct E															
3	L2	All MCs	289	8.0	289	8.0	1.080	48.3	LOS F	46.2	1179.5	1.00	3.05	3.56	14.2
8	T1	All MCs	906	1.0	906	1.0	1.080	44.4	LOS F	46.2	1179.5	1.00	3.04	3.55	14.2
18	R2	All MCs	268	0.0	268	0.0	0.375	2.4	LOS A	1.6	39.5	0.53	0.43	0.53	19.5
Approach			1463	2.2	1463	2.2	1.080	37.5	LOS D	46.2	1179.5	0.91	2.57	3.00	14.9
North: 199th Ave Ct E															
7	L2	All MCs	115	1.0	115	1.0	0.175	5.7	LOS A	0.7	17.1	0.55	0.64	0.55	19.0
4	T1	All MCs	466	7.0	466	7.0	0.648	3.8	LOS A	4.8	125.8	0.73	0.72	0.89	19.1
14	R2	All MCs	178	0.0	178	0.0	0.648	3.5	LOS A	4.8	125.8	0.73	0.72	0.89	19.1
Approach			760	4.4	760	4.4	0.648	4.0	LOS A	4.8	125.8	0.71	0.71	0.84	19.1
All Vehicles			3280	2.1	3280	2.1	1.080	25.6	LOS C	46.2	1179.5	0.84	1.65	1.95	16.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement Report for Appendix - Import

Site: [101-AFT] 2030 Afternoon Peak (2030 With-Project)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Bonney Lake HS Expansion
Site Category: Proposed Design 1
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
West: Bonney Lake HS Access															
5	L2	All MCs	249	0.0	249	0.0	0.454	11.3	LOS B	3.1	77.0	0.86	0.91	1.01	18.2
2	T1	All MCs	14	0.0	14	0.0	0.650	10.4	LOS B	6.3	161.1	0.96	1.07	1.35	18.2
12	R2	All MCs	433	2.0	433	2.0	0.650	11.0	LOS B	6.3	161.1	0.96	1.07	1.35	18.2
Approach			696	1.2	696	1.2	0.650	11.1	LOS B	6.3	161.1	0.92	1.01	1.23	18.2
East: Mountain View MS Access															
1	L2	All MCs	148	0.0	148	0.0	0.169	6.3	LOS A	0.9	22.6	0.67	0.67	0.67	18.9
6	T1	All MCs	16	0.0	16	0.0	0.189	3.7	LOS A	1.0	23.9	0.68	0.60	0.68	19.3
16	R2	All MCs	125	0.0	125	0.0	0.189	4.6	LOS A	1.0	23.9	0.68	0.60	0.68	19.3
Approach			288	0.0	288	0.0	0.189	5.4	LOS A	1.0	23.9	0.68	0.64	0.68	19.1
South: 199th Ave Ct E															
3	L2	All MCs	92	7.0	92	7.0	0.552	4.7	LOS A	3.5	90.7	0.59	0.33	0.60	19.3
8	T1	All MCs	552	4.0	552	4.0	0.552	1.7	LOS A	3.5	90.7	0.57	0.33	0.59	19.4
18	R2	All MCs	67	0.0	67	0.0	0.191	1.8	LOS A	0.8	19.2	0.46	0.32	0.46	19.6
Approach			712	4.0	712	4.0	0.552	2.1	LOS A	3.5	90.7	0.56	0.33	0.58	19.4
North: 199th Ave Ct E															
7	L2	All MCs	37	0.0	37	0.0	0.046	4.3	LOS A	0.2	4.0	0.36	0.49	0.36	19.2
4	T1	All MCs	875	2.0	875	2.0	0.757	2.6	LOS A	7.5	191.2	0.68	0.52	0.76	19.2
14	R2	All MCs	49	2.0	49	2.0	0.757	2.8	LOS A	7.5	191.2	0.68	0.52	0.76	19.2
Approach			961	1.9	961	1.9	0.757	2.7	LOS A	7.5	191.2	0.67	0.52	0.74	19.2
All Vehicles			2657	2.1	2657	2.1	0.757	5.0	LOS A	7.5	191.2	0.71	0.61	0.82	19.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

APPENDIX E

Bonney Lake High School – Revised Access Review Analysis

TECHNICAL MEMORANDUM

Project: Sumner-Bonney Lake District's Bonney Lake High School

Subject: Revised Access Review Analysis

Date: June 30, 2022

Author: Tod S. McBryan, P.E.

This memorandum summarizes the revised analyses prepared to evaluate potential improvements to the Bonney Lake High School Access intersection with 199th Avenue Court E (located opposite the Mountain View Middle School main access). It evaluates the intersection configuration needed to accommodate potential increases in enrollment at Bonney Lake High School as well as additional traffic growth generated by other development in the area. The Sumner-Bonney Lake School District is examining options to improve the intersection in advance of a future school expansion. The District requested operational assessments of options that would retain the existing signalized intersection, but add right-turn lanes for both northbound and southbound traffic turning into the school sites from 199th Avenue Court E. In addition, the District requested operational analyses of single- and double-lane roundabout configurations for the intersection. The various options and how they would operate with extensive traffic growth are evaluated herein. Please contact Tod McBryan (206) 527-8410 with any questions regarding this memorandum.

1. Analysis Background and Purpose

The Sumner-Bonney Lake School District is exploring options to improve operations at the signalized Bonney Lake High School access on 199th Avenue Court E opposite the Mountain View Middle School access. Bonney Lake High School is located at 10920 – 199th Avenue Court E in Bonney Lake, Washington. The capacity of the existing school is 1,445 students (originally opened in 2002 with capacity of 1,200 and expanded by 245 in 2009); however, population growth has resulted in overcrowding and the school's current enrollment is 1,579 students. The District is working to address the overcrowding and to provide additional capacity for expected future growth. At this time, it is estimated that an expansion with capacity for 300 additional students could be constructed on the campus resulting in total school capacity of 1,775 students. Based on recent analysis and planning for the Mountain View Middle School classroom addition project,[1] it is recognized that increases in high school traffic at the signalized access on 199th Avenue Court E could result in added delays and increased queuing. Therefore, the District is examining a range of options to improve capacity and operations at that intersection to better accommodate both current conditions as well as future school expansion.

After discussing preliminary analyses and conceptual intersection improvement options with the City of Bonney Lake and Pierce County Traffic Section staff (in a meeting on May 16, 2022), two horizon years were selected for this analysis. A short-term horizon year of 2025 was selected to account for school expansion (up to an enrollment of 1,775 students) and City of Bonney Lake pipeline development traffic, including Phase 1 of the Tehaleh Planned Unit Development (PUD) in Pierce County to the south. A longer-term horizon year of 2030 was selected to account for full development of the Tehaleh PUD (with Phase 2). Intersection improvements were evaluated for these future conditions.

[1] Heffron Transportation, Inc., *Transportation Technical Report for the Mountain View Middle School Addition Project*, August 18, 2020.

2. School Trip Generation

Peak hour trip generation rates were derived from counts conducted at the intersections in February 2022 and in January and December 2019. The most recent video vehicle turning movement counts were performed on Thursday, February 17, 2022 from 6:30 and 8:30 A.M. and from 1:00 to 6:00 P.M. at the signalized school access on 199th Avenue Court E as well as the two high school driveways on 104th Street E. The counts from 2019 were conducted for the recently approved middle school addition project. Those were conducted at the signalized access on 199th Avenue Court E and the bus-only driveway on Tuesday, January 29, 2019 (6:30 to 8:30 A.M. and 1:30 to 6:00 P.M.) and on Tuesday, December 10, 2019. All count efforts were coordinated with District and school administration staff to ensure that the days on which data were collected represented normal school operations. The count data sheets are attached (Attachment A) and reflect all school-related activities as well as any extracurricular use of the school facilities and playfields. Note that regular school hours for both schools are 7:25 A.M. to 2:20 P.M.; late start at 9:05 A.M. on Wednesdays.

2.1. Trip Generation Rates

A comparison of the new counts and those from 2019 found that the 2022 middle school trip generation rates were notably higher in the morning and in the afternoon. The counts also indicated some shift of high school trips at the 199th Avenue Court E intersections. Based on our experience, this is likely due to the ongoing cascading effects of the COVID-19 pandemic, including school bus driver shortages, that resulted in many more families driving students to and from school compared to normal pre-pandemic conditions. As a result of the differences between the 2019 and 2022 counts, weighted average rates were derived for the morning and PM peak hours from the three counts of Mountain View Middle School. The result is higher morning and PM peak hour trip generation than was used for the recent school addition project, but also reflects some anticipated return to normal levels as COVID subsides. For the afternoon peak hour, the highest observed rate was selected (from December 2019). Table 1 summarizes the results of the trip generation derived from the most recent counts at both schools and the selected rates for use in this access review study.

Table 1. Trip Generation Rates – Bonney Lake High School and Mountain View Middle School

Vehicle Trip Counts / School Enrollment	Morning Peak Hour [1]			Afternoon Peak Hour [1]			PM Peak Hour [1]		
	In	Out	Total	In	Out	Total	In	Out	Total
Bonney Lake High School (2022)	741	384	1,125	156	502	658	49	78	127
Observed Rates (1,579 students)	*66%*	*34%*	*0.71*	*24%*	*76%*	*0.42*	*39%*	*61%*	*0.08*
Mountain View Middle School									
Jan. 29, 2019 (740 students)	*55%*	*45%*	*0.86*	*45%*	*55%*	*0.40*	*41%*	*59%*	*0.23*
Dec. 10, 2019 (841 students)	*54%*	*46%*	*0.74*	*43%*	*57%*	*0.41*	*48%*	*52%*	*0.15*
Thursday, February 17, 2022	411	355	766	112	216	328	50	57	107
Observed Rates (873 students)	*54%*	*46%*	*0.88*	*34%*	*66%*	*0.38*	*41%*	*59%*	*0.14*
Trip Rates Used for Analysis (vehicle trips per student)	**% In**	**% Out**	**Rate**	**% In**	**% Out**	**Rate**	**% In**	**% Out**	**Rate**
Bonney Lake High School [2]	66%	34%	0.71	24%	76%	0.42	39%	61%	0.08
Mountain View Middle School [3]	54%	46%	0.82	43%	57%	0.41	44%	56%	0.17
ITE Equations and Rates (vehicle trips per student) [4]	**% In**	**% Out**	**Rate**	**% In**	**% Out**	**Rate**	**% In**	**% Out**	**Rate**
High School (LU 530)	54%	46%	0.52	32%	68%	0.32	48%	52%	0.14
	Ln(T) = 0.71Ln(X) + 1.41			Ln(T) = 0.74Ln(X) + 0.72			n/a		
Middle School / Junior High School (LU 522)	55%	45%	0.74	46%	54%	0.36	48%	52%	0.15
	T = 0.65(X) + 91.79			T = 0.33(X) + 29.58			n/a		

Source: Heffron Transportation, Inc., March 2022, using data collected by Idax Data Solutions, Jan. and Dec, 2019, Feb. 2022.

1. *For the 2022 counts, morning peak hour for both schools began at 6:30 A.M.; the afternoon peak hour for both schools began at 2:15 P.M. and the PM peak hour on the adjacent street occurred from 4:30 to 5:30 P.M.*
2. *Observed and derived rates for high school based on February 2022 counts.*
3. *Weighted average for AM and PM peak hours derived as combined observed trip counts (e.g., 635 + 622 + 766) divided by the total enrollment (740 + 841 + 873); applied derived afternoon rate from December 2019.*
4. *ITE, Trip Generation Manual, 11th Ed., Sept. 2021. Note Middle School rate listed for morning is for AM peak hour of generator.*

The average rates published in the Institute of Transportation Engineers' [ITE] *Trip Generation Manual*[2] for High School (Land Use Code 530) and Middle School/Junior High School (Land Use Code 522) are shown for comparison. The trip generation rates observed at Mountain View Middle School and Bonney Lake High School are higher than the average published ITE rates (and equations where provided) during each time period (except for the PM peak at the high school); however, they are well within the ranges of the ITE data and are reasonable for application in this access review analysis. It is noted that these rates reflect all trips generated by the school, including student pick-up/drop-off, school bus trips, parent trips, teacher/staff trips, visitors, and after-hours use of fields or facilities.

2.2. Future Trip Generation Estimates for Both Schools

Table 2 summarizes the forecast trip generation assumed for both Bonney Lake High School and Mountain View Middle School. The estimates for Bonney Lake High School reflect a future school addition that could increase capacity by 300 students to an assumed enrollment of 1,745 students. The estimates for Mountain View Middle School reflect its enrollment to the planned future capacity of 1,055 students (with the recently approved addition), which would be 182 more students than its current enrollment level in 2022.

2 ITE, 11th Edition, 2021.

Table 2. Future Trip Generation Estimates

Site Condition	Capacity (Students)	AM Peak Hour (6:30 to 7:30 A.M.)			Afternoon Peak Hour (2:15 to 3:15 P.M.)			PM Peak Hour (4:30 to 5:30 P.M.)		
		In	Out	Total	In	Out	Total	In	Out	Total
BLHS with Addition [1]	1,745	819	424	1,243	172	555	727	54	86	140
MVMS School [2]	1,055	474	396	870	186	242	428	78	100	178

Source: Heffron Transportation, Inc., March 2022 using rates from Table 1 above.

1. *Possible future capacity of Bonney Lake High School with addition to accommodate 300 students.*
2. *Future capacity of Mountain View Middle School with recently approved classroom addition.*

3. Trip Distribution and Assignment

School trip allocations for Bonney Lake High School were based on the observed use of the three access driveways (two on 104th Street E and one at 199th Avenue Court E) during each peak hour. About 58% and 59% of high school trips enter from 104th Street E during the morning and afternoon peak hours, respectively; the remaining trips use 199th Avenue Court E. About 53% of morning peak hour trips and about 48% of afternoon peak hour trips exit to 199th Avenue Court E.

School trip allocations for Mountain View Middle School were based on the analysis prepared for the planned additional project. Those account for the new staff parking area that will be constructed within the school bus load area.

4. Future Background Traffic Forecasts

4.1. Short-Term Year 2025 Analysis

Based on direction from the City, traffic forecasts for year 2025 were developed using a combination of a background traffic growth rate and specific pipeline development traffic. A 2% compound annual growth rate was applied to existing non-school traffic volumes. In addition, school-generated traffic was increased to reflect potential future enrollment levels described above as well and to include traffic associated with the following 13 pipeline development projects provided by the City of Bonney Lake:[3]

- Berkshire Estates;
- Cascadia Phase 1 (Tehaleh Phase 1);
- East Lake Tapps;
- Haymond Preliminary Plat;
- WSU Bonney Lake Residential;
- Skystone Apartments;
- Bonney Lake Public Works Center;
- Eastown Industrial;
- Bonaventure;
- Park Place Bonney Lake;
- Bonney Lake Fire Station 111;
- 410 Apartments; and
- Myers Road Mine

Traffic analyses prepared for each pipeline development project evaluated the PM peak hour traffic conditions, but did not include morning or afternoon peak hour assignments. Therefore, pipeline trips for those hours were estimated based on relationship factors derived from rates and data published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*.[4] Morning peak hour trip rates for Single-Family Housing are about 75% of the PM peak hour rates with 75% of trips outbound. Residential trips during the school's afternoon dismissal peak hour were assumed to be

3 *May 2022 Pipeline Development* via email communication, J. Woodcock, City Engineer, May 27, 2022.
4 ITE, 10th Edition, September 2017, Volume 2, Part 1, Appendix A, pg. 478.

73% of the PM peak hour trips based on hourly trip percentages.[5] Figure 1 shows the forecast 2025 morning and afternoon peak hour volumes with the added capacity at both schools; Figure 2 shows the forecast 2025 PM peak hour volumes.

4.2. Long-Term Year 2030 Analysis

Pierce County Traffic Section staff requested[6] analysis of the intersection improvement options with full build-out (with Phase 2) of the Tehaleh PUD. Therefore, to account for the full-build condition, forecasts were derived using the model-generated 2030 through-traffic volumes on 199th Avenue Court E at the Bonney Lake High School intersection for conditions with the Tehaleh Applicant's Preferred Alternative. That alternative, planned for 9,700 dwelling units, is described in the *Transportation Discipline Report – Tehaleh Employment-Based Planned Community Phase 2 Draft SEIS*[7] as a 4,756-acre Employment-Based Planned Community (EBPC) PUD with 6,397 single-family homes, 1,101 multi-family homes, 2,202 age-qualified homes and up to approximately 3.07 million square-feet of employment use. Modeled AM and PM peak hour volumes from that report accounted for State Route (SR) 162 in its current two-lane configuration as well as a widened four-lane configuration. The volumes reflecting the two-lane SR 162 condition were used to evaluate the 199th Avenue Court E / Bonney Lake High School intersection improvements, since they are higher. Although the modeled 2030 volumes would likely have also included anticipated regional growth from other developments (including the pipeline projects listed previously), traffic from those projects was added separately. To estimate 2030 afternoon peak hour volumes, the northbound and southbound through volumes on 199th Avenue Court E were adjusted proportionally based on comparing the 2025 afternoon and PM peak hour volumes. The northbound afternoon peak hour volume is estimated at 70% of the PM peak hour volume; southbound afternoon peak hour volume is estimated at 84% of the PM peak hour volumes. Figure 3 shows the forecast 2030 morning and afternoon peak hour volumes with the added capacity at both schools, traffic from Tehaleh Phase 2, and the City's pipeline development described previously; Figure 4 shows the forecast 2030 PM peak hour volumes.

5. Intersection Improvement Options Considered

The District requested operational assessments of options that would retain the existing signalized intersection, but add right-turn lanes for both northbound and southbound traffic turning into the school sites from 199th Avenue Court E. In addition, the District requested operational analyses of single- and double-lane roundabout configurations for the intersection. The following seven intersection configurations were evaluated for operational level of service, delay, and queuing (a diagram of each configuration is provided in Table 3.

- **No Action:** Forecast 2025 and 3030 traffic volumes with the existing intersection configuration.
- **Alternative 1:** Retain existing signal and add right-turn lanes for northbound and southbound turns from 199th Avenue Court E;
- **Alternative 2:** Replace intersection with a single-lane roundabout with single lane approaches on all legs (smallest footprint);
- **Alternative 3:** Replace intersection with a double lane roundabout with two lanes in each direction on 199th Avenue Court E and single-lane approaches for both schools;
- **Alternative 4:** Replace the intersection with a double lane roundabout with single lanes approaching from north and south on 199th Avenue Court E, widen with left-turn channelization at the intersection and single lane approaches for both schools; and

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5 ITE data show that residential trips during the PM peak hour represent 9% of the daily trips while trips during the 2:00 P.M. hour represent 6.6% of the daily trips.

6 Meeting with City of Bonney Lake, Pierce County, and Sumner-Bonney Lake School District, May 16, 2022.

7 Transpo Group, December 2017.

- **Alternative 5:** Replace the intersection with a double lane roundabout with single lanes approaching from north and south on 199th Avenue Court E, widen with left-turn channelization at the intersection on all approaches.
- **Alternative 6:** Replace the intersection with a double lane roundabout with single lanes approaching from north and south on 199th Avenue Court E, widen with left-turn channelization at the intersection on all approaches, and provide two-lane northbound exit with merge back to one lane north of the intersection.

6. Traffic Operations

6.1. Intersection Levels of Service

Traffic operations analyses were performed for the 199th Avenue Court E / Bonney Lake High School Access / Mountain View Middle School Access intersection. Traffic operations are evaluated using levels of service (LOS) with six letter designations, "A" through "F." LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays. The City has adopted LOS D for all intersections within the City. An additional standard, added as part of the referenced *Comprehensive Plan*, requires that the volume-to-capacity (V/C) ratios for individual legs of each signalized intersection not exceed 1.0.

Analysis of the signalized intersection scenarios were performed using the *Synchro 10.3* traffic operations analysis software and reported using the *Highway Capacity Manual, 6th Edition* (*HCM 6*) module; the 95th-percentile queue-length estimates were reported from the *Synchro* results. The roundabout alternatives were evaluated using the *Sidra 9* analysis software and reporting methodology. Assumed lane geometry and model coding parameters established in the *WSDOT Sidra Policy Settings*[8] were applied. The level of service definitions and thresholds are provided in Attachment B.

For the No Action Alternative and Alternative 1, signal phasing and timing were based on the signal timing card obtained from the City of Bonney Lake for the prior Mountain View Middle School Addition analysis. Additional background information about the signal timings were obtained from the traffic engineer who assisted with their design and implementation.[9] Since the signal is actuated, the phase splits were optimized for the forecast 2025 and 2030 conditions to account for the large changes in traffic volumes on 199th Avenue Court E expected from pipeline projects and school growth. The operations analyses also accounted for the peaking characteristics of school traffic (school drop-off and pick-up primarily occurs during about 20 to 30 minutes in the peak hours), school-bus traffic (heavy vehicles), and pedestrian crossing activity. For analyses of unsignalized conditions (with the roundabout options), peak hour factors (PHFs) by approach were applied. For the side-streets (school access), observed PHFs were applied; for 199th Avenue Court E. Based on previous guidance from Pierce County Traffic Section staff, PHFs of 0.92 were applied for uncongested conditions (v/c ratios of 0.85 or lower) and PHFs of 0.98 were applied for congested conditions (v/c ratios above 0.85).

Table 3 summarizes the forecast 2025 operational results for conditions with the school expansion and seven intersection configurations—No Action and six Alternative options. The table presents levels of service, average delays, and V/C ratios. Table 4 summarizes the forecast 2030 operational results with the school expansion, Tehaleh Phase 2, and the pipeline traffic. The operational results that would not meet City standards are noted in red. Table 5 and Table 6 present the 95th-percentile queuing results for the 2025 and 2030 analysis periods, respectively.

[8] WSDOT, https://wsdot.wa.gov/sites/default/files/2021-03/TrafficOps-WSDOTSidraPolicyAndSettings.pdf, accessed March 2022.

[9] Personal communications, Mark Madden, PE, formerly of Concord Engineering, May 2020.

As shown, the turn-lane additions contemplated with Alternative 1 would improve operations at the signalized intersection in the short-term; however, the substantial growth anticipated with Phase 2 of the Tehaleh PUD would degrade operations in the longer term and cause failure for northbound and westbound movements as well as the overall intersection in the AM peak hour; it would also cause failure for eastbound movements in the afternoon peak hour. Conversion to a single lane roundabout with no auxiliary lanes (Alternative 2) is forecast to result in poor operations and very long queues for short-term and long-term conditions. The three roundabout options with two circulating lanes are all forecast to improve operations. Alternative 3 is forecast to operate best for the long-term conditions; however, it would require widening (to two lanes in both directions) north and south of the intersection. Alternative 6 with left-turn channelization for all four legs and two-lane northbound exit lanes appears to have the best performance results given the limited right-of-way beyond the intersection. All options except 2 and 4 are forecast to meet the City's LOS and V/C standards in the short term; however, only Alternatives 3 and 6 would meet those standards for all peak hours in the longer-term (2030 with Tehaleh Phase 2). The LOS calculations sheets are included in Attachment C.

The queue analysis also shows that Alternatives 3 and 6 would have the shortest queue length on all intersection approaches. Alternative 3 would have the shortest northbound and southbound queue lengths, while Alternative 6 would have the shortest eastbound and westbound queue lengths.

Intersection operations of the two Bonney Lake High School access driveways on 104th Street E were also evaluated for future conditions with the added enrollment capacity. Both are forecast to operate at LOS A overall with all turning movements operating at LOS D or better during all three analysis periods—LOS D or better in the morning, LOS C or better in the afternoon, and LOS B or better in the commuter PM peak for both short- and long-term conditions. The LOS calculations sheets are included in Attachment C.

7. Recommendation

Based on the analyses presented, we recommended Option 6 be advanced for further design study. If determined to be feasible and supported by the City, it is recommended for implementation to improve overall intersection operations and to mitigate future impacts of the Bonney Lake High School expansion.

Attachments: Attachment A: Traffic Count Data Sheets – February 2022
Attachment B: Level of Service Definitions and Thresholds
Attachment C: Level of Service Calculations Sheets

TSM/tsm

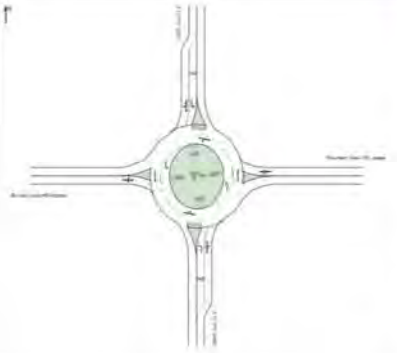
SBLSD - BLHS Revised Access Review Summary - FINAL

Table 3. Level of Service, Delay, and V/C Summary – Forecast 2025 Conditions

Alternative Image	Alternative / Approach	AM Peak LOS	AM Peak Delay (s)	AM Peak v/c	Afternoon Peak LOS	Afternoon Peak Delay (s)	Afternoon Peak v/c	PM Peak LOS	PM Peak Delay (s)	PM Peak v/c
	No Action: Signal with Existing Channelization									
	Overall	**D**	**54.0**		**C**	**30.4**		**B**	**15.6**	
	Eastbound	E	58.1	0.75	D	49.7	0.70	C	31.4	0.19
	Westbound	E	72.5	0.83	D	49.7	0.63	C	30.7	0.26
	Northbound	E	57.3	0.86	B	18.6	0.67	B	14.4	0.72
	Southbound	D	38.9	0.77	C	30.2	0.92	B	14.6	0.74
	Alternative 1: Signal with added NB and SB Right Turn Lanes									
	Overall	**C**	**31.4**		**C**	**23.1**		**B**	**16.8**	
	Eastbound	D	36.4	0.59	D	37.0	0.62	C	32.9	0.16
	Westbound	D	39.9	0.64	D	38.9	0.55	C	32.0	0.23
	Northbound	C	32.3	0.63	B	15.8	0.41	B	15.2	0.43
	Southbound	C	24.1	0.52	C	21.6	0.56	B	16.1	0.45
	Alternative 2: Single Lane Roundabout									
	Overall	**C**	**33.5**		**E**	**66.1**		**A**	**3.3**	
	Eastbound	B	17.1	0.75	F	256.9	1.52	B	10.4	0.19
	Westbound	D	54.3	1.02	B	16.0	0.72	A	7.6	0.37
	Northbound	D	41.6	1.04	A	5.1	0.74	A	1.2	0.71
	Southbound	B	17.3	0.91	A	10.0	0.90	A	3.7	0.86

Source: Heffron Transportation, Inc., June 2022;
LOS = Level of Service, Delay reported in seconds per vehicle; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

Table 3. Level of Service, Delay, and V/C Summary – Forecast 2025 Conditions (continued)

Alternative Image	Alternative / Approach	AM Peak			Afternoon Peak			PM Peak		
		LOS	Delay (s)	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
	No Action: Signal with Existing Channelization									
	Overall	**D**	**54.0**		**C**	**30.4**		**B**	**15.6**	
	Eastbound	E	58.1	0.75	D	49.7	0.70	C	31.4	0.19
	Westbound	E	72.5	0.83	D	49.7	0.63	C	30.7	0.26
	Northbound	E	57.3	0.86	B	18.6	0.67	B	14.4	0.72
	Southbound	D	38.9	0.77	C	30.2	0.92	B	14.6	0.74
	Alternative 3: Two-Lane Roundabout (single lanes on access driveways)									
	Overall	**A**	**5.5**		**A**	**7.2**		**A**	**1.3**	
	Eastbound	A	6.6	0.61	C	21.9	0.95	A	4.1	0.10
	Westbound	B	11.2	0.82	A	6.7	0.60	A	3.8	0.28
	Northbound	A	3.3	0.50	A	2.5	0.37	A	0.7	0.32
	Southbound	A	3.5	0.41	A	1.7	0.42	A	1.1	0.38
	**Alternative 4: Two-Lane Roundabout with NB and SB Left-Turn Lanes; Single Lane Driveways**									
	Overall	**A**	**7.9**		**C**	**24.7**		**A**	**1.6**	
	Eastbound	A	7.4	0.63	F	96.3	1.16	A	6.9	0.14
	Westbound	B	16.6	0.88	B	10.1	0.66	A	5.8	0.34
	Northbound	A	5.8	0.75	A	2.7	0.59	A	0.6	0.59
	Southbound	A	4.3	0.59	A	2.6	0.70	A	1.1	0.67

Source: Heffron Transportation, Inc., June 2022;
LOS = Level of Service, Delay reported in seconds per vehicle; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

Table 3. Level of Service, Delay, and V/C Summary – Forecast 2025 Conditions (continued)

Alternative Image	Alternative / Approach	AM Peak			Afternoon Peak			PM Peak		
		LOS	Delay (s)	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
	No Action: Signal with Existing Channelization									
	Overall	**D**	**54.0**		**C**	**30.4**		**B**	**15.6**	
	Eastbound	E	58.1	0.75	D	49.7	0.70	C	31.4	0.19
	Westbound	E	72.5	0.83	D	49.7	0.63	C	30.7	0.26
	Northbound	E	57.3	0.86	B	18.6	0.67	B	14.4	0.72
	Southbound	D	38.9	0.77	C	30.2	0.92	B	14.6	0.74
	Alternative 5: Two-Lane Roundabout with Left-Turn Lanes All Legs									
	Overall	**A**	**4.4**		**A**	**4.7**		**A**	**1.6**	
	Eastbound	A	4.3	0.29	A	8.3	0.48	A	1.6	0.07
	Westbound	A	4.9	0.38	A	5.7	0.32	A	5.1	0.16
	Northbound	A	4.6	0.77	A	3.3	0.66	A	0.7	0.68
	Southbound	A	3.7	0.63	A	3.0	0.75	A	1.3	0.77
	Alternative 6: Two-Lane Roundabout, Left-Turn Lanes All Legs, Two-Lane Exit / Merge Northbound									
	Overall	**A**	**4.0**		**A**	**3.8**		**A**	**1.3**	
	Eastbound	A	3.9	0.25	A	7.8	0.46	A	6.1	0.06
	Westbound	A	7.7	0.42	A	5.3	0.26	A	3.9	0.12
	Northbound	A	2.7	0.64	A	2.0	0.51	A	0.6	0.50
	Southbound	A	2.7	0.56	A	2.1	0.71	A	0.9	0.69

Source: Heffron Transportation, Inc., June 2022;

LOS = Level of Service, Delay reported in seconds per vehicle; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

Table 4. Level of Service, Delay, and V/C Summary – Forecast 2030 Conditions with Tehaleh Phase 2

Alternative Image	Alternative / Approach	AM Peak			Afternoon Peak			PM Peak		
		LOS	Delay (s)	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
	No Action: Signal with Existing Channelization									
	Overall	**F**	**191.0**		**E**	**70.2**		**C**	**25.7**	
	Eastbound	D	53.8	0.70	F	160.8	0.98	D	55.0	0.25
	Westbound	E	59.1	0.74	E	78.6	0.65	E	55.3	0.36
	Northbound	F	322.9	1.42	B	17.0	0.62	B	11.2	0.60
	Southbound	C	34.8	0.82	E	78.8	1.07	C	31.9	0.76
	Alternative 1: Signal with added NB and SB Right Turn Lanes									
	Overall	**F**	**83.9**		**E**	**56.2**		**C**	**29.9**	
	Eastbound	E	79.2	0.73	F	118.3	0.83	E	56.3	0.21
	Westbound	F	155.2	0.99	E	68.1	0.60	E	63.7	0.31
	Northbound	F	85.4	0.66	B	16.5	0.36	B	12.4	0.35
	Southbound	D	53.1	0.40	E	63.0	0.62	D	37.8	0.48
	Alternative 2: Single Lane Roundabout									
	Overall	**F**	**159.3**		**F**	**129.0**		**A**	**8.2**	
	Eastbound	B	18.3	0.74	F	503.9	2.05	B	19.8	0.30
	Westbound	F	135.1	1.22	A	8.3	0.54	A	6.3	0.29
	Northbound	F	284.7	1.62	A	1.8	0.60	A	0.9	0.62
	Southbound	A	8.6	0.84	E	58.9	1.11	B	12.6	0.99

Source: Heffron Transportation, Inc., June 2022;
LOS = Level of Service, Delay reported in seconds per vehicle; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

Table 4. Level of Service, Delay, and V/C Summary – Forecast 2030 Conditions with Tehaleh Phase 2 (continued)

Alternative Image	Alternative / Approach	AM Peak			Afternoon Peak			PM Peak		
		LOS	Delay (s)	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
	No Action: Signal with Existing Channelization									
	Overall	**F**	**191.0**		**E**	**70.2**		**C**	**25.7**	
	Eastbound	D	53.8	0.70	F	160.8	0.98	D	55.0	0.25
	Westbound	E	59.1	0.74	E	78.6	0.65	E	55.3	0.36
	Northbound	F	322.9	1.42	B	17.0	0.62	B	11.2	0.60
	Southbound	C	34.8	0.82	E	78.8	1.07	C	31.9	0.76
	Alternative 3: Two-Lane Roundabout (single lanes on access driveways)									
	Overall	**B**	**15.0**		**A**	**6.0**		**A**	**1.2**	
	Eastbound	A	5.6	0.55	B	20.0	0.93	A	4.2	0.10
	Westbound	E	66.5	1.10	A	5.0	0.50	A	3.2	0.24
	Northbound	A	6.0	0.75	A	2.1	0.32	A	0.6	0.29
	Southbound	A	2.9	0.42	A	1.6	0.50	A	1.0	0.45
	Alternative 4: Two-Lane Roundabout with NB and SB Left-Turn Lanes; Single Lane Driveways									
	Overall	**E**	**71.9**		**D**	**53.4**		**A**	**1.6**	
	Eastbound	A	6.4	0.56	F	248.7	1.50	B	10.8	0.17
	Westbound	F	195.2	1.38	A	6.2	0.53	A	4.9	0.28
	Northbound	F	83.2	1.18	A	1.5	0.48	A	0.4	0.51
	Southbound	A	2.6	0.58	A	3.9	0.83	A	1.2	0.78

Source: Heffron Transportation, Inc., June 2022;

LOS = Level of Service, Delay reported in seconds per vehicle; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

Table 4. Level of Service, Delay, and V/C Summary – Forecast 2030 Conditions with Tehaleh Phase 2 (continued)

Alternative Image	Alternative / Approach	AM Peak			Afternoon Peak			PM Peak		
		LOS	Delay (s)	v/c	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
	No Action: Signal with Existing Channelization									
	Overall	**F**	**191.0**		**E**	**70.2**		**C**	**25.7**	
	Eastbound	D	53.8	0.70	F	160.8	0.98	D	55.0	0.25
	Westbound	E	59.1	0.74	E	78.6	0.65	E	55.3	0.36
	Northbound	F	322.9	1.42	B	17.0	0.62	B	11.2	0.60
	Southbound	C	34.8	0.82	E	78.8	1.07	C	31.9	0.76
	Alternative 5: Two-Lane Roundabout with Left-Turn Lanes All Legs									
	Overall	**E**	**62.9**		**B**	**11.2**		**A**	**2.3**	
	Eastbound	A	4.6	0.28	C	27.2	0.80	B	10.5	0.10
	Westbound	B	12.2	0.59	A	5.0	0.27	A	4.5	0.14
	Northbound	F	127.4	1.29	A	2.2	0.58	A	0.5	0.59
	Southbound	A	3.4	0.68	B	10.4	0.97	A	2.6	0.91
	Alternative 6: Two-Lane Roundabout, Left-Turn Lanes All Legs, Two-Lane Exit / Merge Northbound									
	Overall	**C**	**33.6**		**B**	**11.1**		**A**	**2.2**	
	Eastbound	A	4.7	0.28	C	27.3	0.80	B	10.5	0.10
	Westbound	C	27.0	0.75	A	5.1	0.26	A	3.8	0.12
	Northbound	E	59.6	1.15	A	1.9	0.50	A	0.5	0.49
	Southbound	A	3.3	0.67	B	10.3	0.97	A	2.6	0.91

Source: Heffron Transportation, Inc., June 2022;

LOS = Level of Service, Delay reported in seconds per vehicle; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

Table 5. Intersection Queuing Results Summary – Forecast 2025 Conditions

95th %-tile Queue	No Action *Signal*					Alternative 1 *Signal with added RT lanes*					Alternative 2 *Single Lane R.A.B.*					Alternative 3 *Two-Lane R.A.B. (single lanes on access driveways)*				
AM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	157 ft	269 ft	62 ft	227 ft		135 ft	242 ft	73 ft	158 ft									92 ft	71 ft	
Through	140 ft	157 ft	844 ft	428 ft		129 ft	147 ft	635 ft	301 ft		225 ft	664 ft	978 ft	479 ft		98 ft	193 ft	91 ft	75 ft	
Right Turn								120 ft	62 ft									91 ft	75 ft	
Aftnn Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	221 ft	158 ft	25 ft	121 ft		221 ft	139 ft	28 ft	121 ft									63 ft	75 ft	
Through	69 ft	63 ft	554 ft	803 ft		69 ft	60 ft	502 ft	729 ft		2096 ft	202 ft	228 ft	491 ft		332 ft	93 ft	66 ft	77 ft	
Right Turn								12 ft	26 ft									66 ft	77 ft	
PM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	60 ft	78 ft	11 ft	18 ft		62 ft	79 ft	12 ft	20 ft									48 ft	64 ft	
Through	35 ft	48 ft	603 ft	707 ft		34 ft	48 ft	607 ft	749 ft		34 ft	61 ft	203 ft	393 ft		9 ft	26 ft	49 ft	65 ft	
Right Turn																		49 ft	65 ft	

95th %-tile Queue	No Action *Signal*					Alternative 4 *NBL SBL R.A.B. (single lanes on access driveways)*					Alternative 5 *All LT Pockets R.A.B.*					Alternative 6 *All LT Pockets; NB Two-Lane w/drop R.A.B.*				
AM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	157 ft	269 ft	62 ft	227 ft				28 ft	29 ft		30 ft	48 ft	23 ft	24 ft		28 ft	74 ft	116 ft	20 ft	
Through	140 ft	157 ft	844 ft	428 ft		110 ft	266 ft	242 ft	149 ft		38 ft	54 ft	182 ft	119 ft		33 ft	77 ft	116 ft	96 ft	
Right Turn								242 ft	149 ft		38 ft	54 ft	182 ft	119 ft		33 ft	77 ft	30 ft	96 ft	
Aftnn Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	221 ft	158 ft	25 ft	121 ft				9 ft	12 ft		81 ft	38 ft	8 ft	10 ft		79 ft	33 ft	81 ft	9 ft	
Through	69 ft	63 ft	554 ft	803 ft		1038 ft	132 ft	137 ft	202 ft		88 ft	46 ft	139 ft	197 ft		76 ft	38 ft	81 ft	167 ft	
Right Turn								137 ft	202 ft		88 ft	46 ft	139 ft	197 ft		76 ft	38 ft	20 ft	167 ft	
PM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	60 ft	78 ft	11 ft	18 ft				2 ft	5 ft		8 ft	18 ft	2 ft	5 ft		7 ft	12 ft	78 ft	4 ft	
Through	35 ft	48 ft	603 ft	707 ft		17 ft	43 ft	127 ft	180 ft		9 ft	22 ft	141 ft	209 ft		8 ft	14 ft	78 ft	155 ft	
Right Turn								127 ft	180 ft		9 ft	22 ft	141 ft	209 ft		8 ft	14 ft	19 ft	155 ft	

Source: Heffron Transportation, Inc., June 2022;

95th-percentile queue lengths from Synchro LOS module reported in feet; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

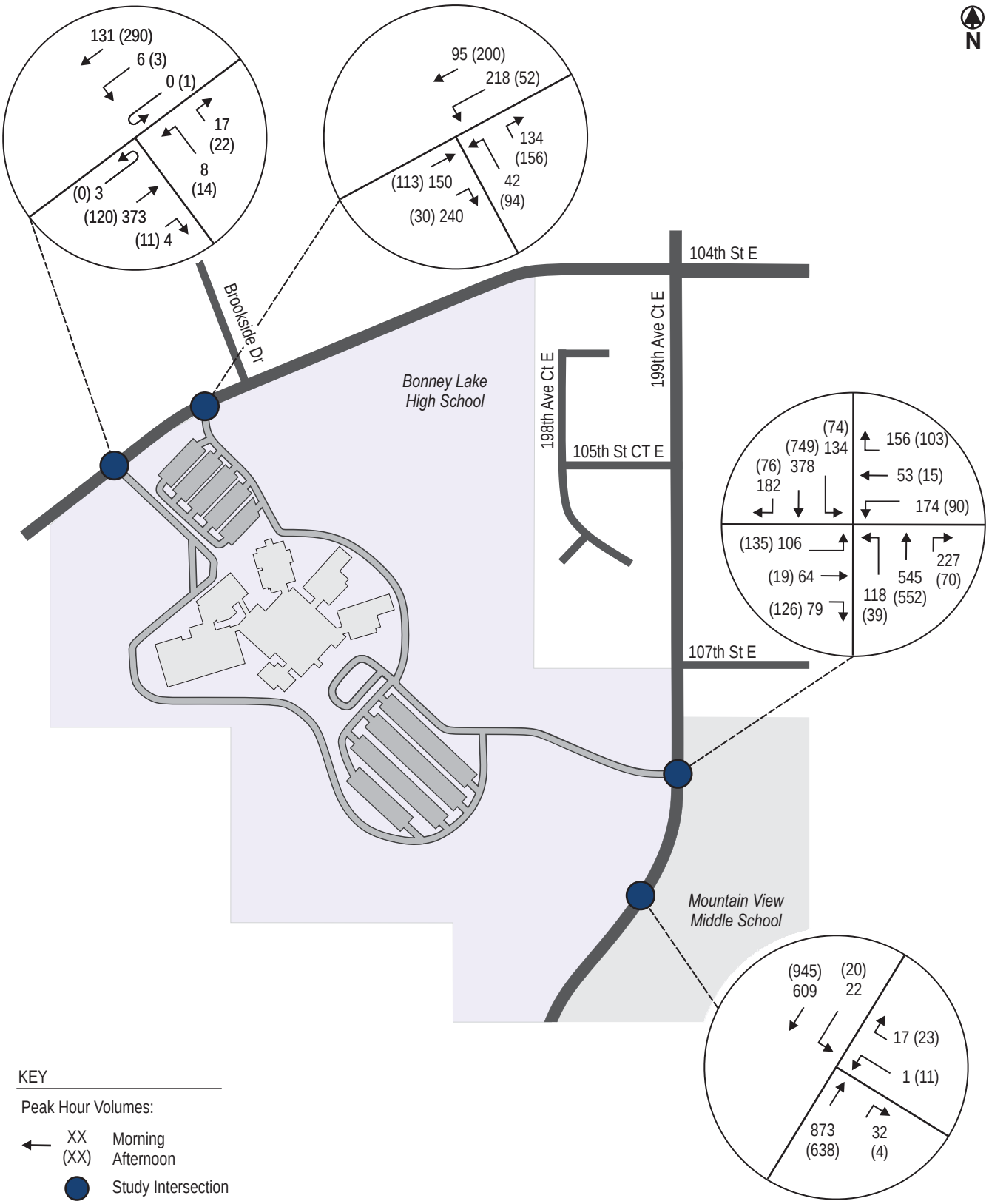
Table 6. Intersection Queuing Results Summary – Forecast 2030 Conditions

95th %-tile Queue	No Action *Signal*					Alternative 1 *Signal with added RT lanes*					Alternative 2 *Single Lane R.A.B.*					Alternative 3 *Two-Lane R.A.B. (single lanes on access driveways)*				
AM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	150 ft	254 ft	59 ft	216 ft		214 ft	225 ft	61 ft	323 ft									235 ft	75 ft	
Through	134 ft	148 ft	1912 ft	605 ft		185 ft	387 ft	1785 ft	380 ft		238 ft	1268 ft	5554 ft	373 ft		85 ft	690 ft	242 ft	81 ft	
Right Turn								106 ft	61 ft									242 ft	81 ft	
Aftnn Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	294 ft	182 ft	30 ft	120 ft		282 ft	170 ft	29 ft	121 ft									55 ft	97 ft	
Through	81 ft	63 ft	475 ft	1372 ft		82 ft	60 ft	435 ft	1284 ft		3047 ft	121 ft	130 ft	1749 ft		297 ft	72 ft	58 ft	102 ft	
Right Turn								11 ft	24 ft									58 ft	102 ft	
PM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	62 ft	79 ft	10 ft	18 ft		65 ft	101 ft	11 ft	19 ft									42 ft	82 ft	
Through	35 ft	50 ft	560 ft	1453 ft		34 ft	48 ft	542 ft	1447 ft		63 ft	49 ft	149 ft	1048 ft		9 ft	22 ft	43 ft	84 ft	
Right Turn								1 ft	0 ft									43 ft	84 ft	

95th %-tile Queue	No Action *Signal*					Alternative 4 *NBL SBL R.A.B. (single lanes on access driveways)*					Alternative 5 *All LT Pockets R.A.B.*					Alternative 6 *All LT Pockets; NB Two-Lane w/drop R.A.B.*				
AM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	150 ft	254 ft	59 ft	216 ft				22 ft	20 ft		34 ft	112 ft	19 ft	19 ft		34 ft	186 ft	1814 ft	19 ft	
Through	134 ft	148 ft	1912 ft	605 ft		98 ft	1558 ft	2460 ft	134 ft		40 ft	113 ft	3164 ft	145 ft		40 ft	183 ft	1814 ft	147 ft	
Right Turn								2460 ft	134 ft		40 ft	113 ft	3164 ft	145 ft		40 ft	183 ft	50 ft	147 ft	
Aftnn Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	294 ft	182 ft	30 ft	120 ft				7 ft	10 ft		217 ft	34 ft	7 ft	9 ft		217 ft	32 ft	80 ft	9 ft	
Through	81 ft	63 ft	475 ft	1372 ft		1996 ft	89 ft	97 ft	349 ft		194 ft	39 ft	105 ft	625 ft		194 ft	38 ft	80 ft	620 ft	
Right Turn								97 ft	349 ft		194 ft	39 ft	105 ft	625 ft		194 ft	38 ft	20 ft	620 ft	
PM Peak	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT	EB	WB	NB	SB	INT
Left Turn	62 ft	79 ft	10 ft	18 ft				2 ft	0 ft		15 ft	15 ft	2 ft	4 ft		15 ft	12 ft	77 ft	4 ft	
Through	35 ft	50 ft	560 ft	1453 ft		27 ft	36 ft	103 ft	268 ft		16 ft	18 ft	110 ft	424 ft		16 ft	14 ft	77 ft	411 ft	
Right Turn								103 ft	268 ft		16 ft	18 ft	110 ft	424 ft		16 ft	14 ft	19 ft	411 ft	

Source: Heffron Transportation, Inc., June 2022;

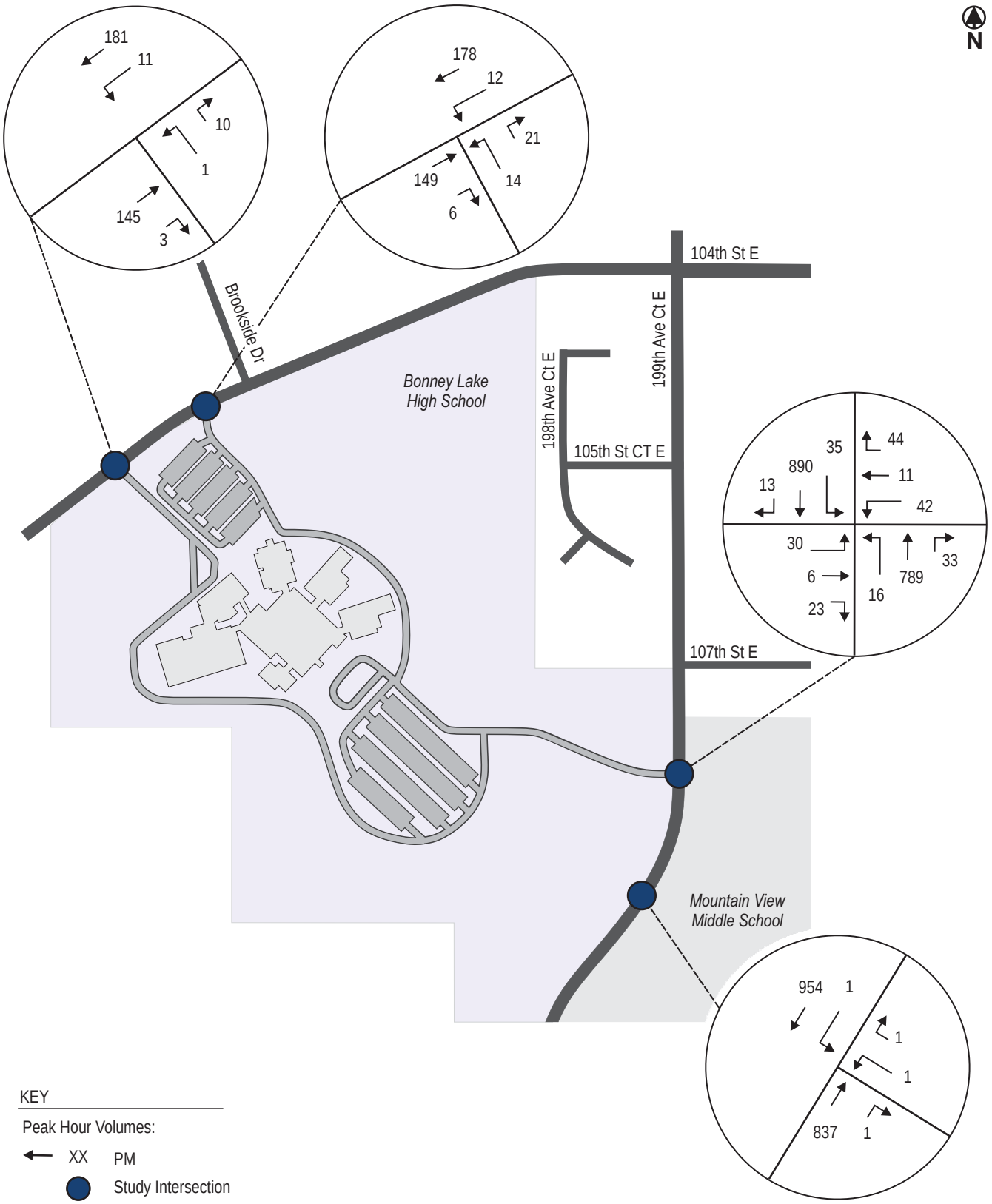
95th-percentile queue lengths from Synchro LOS module reported in feet; EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.



Bonney Lake High School
Revised Access Review Analysis

Figure 1
Forecast 2025 Traffic Volumes
Morning and Afternoon Peak Hours

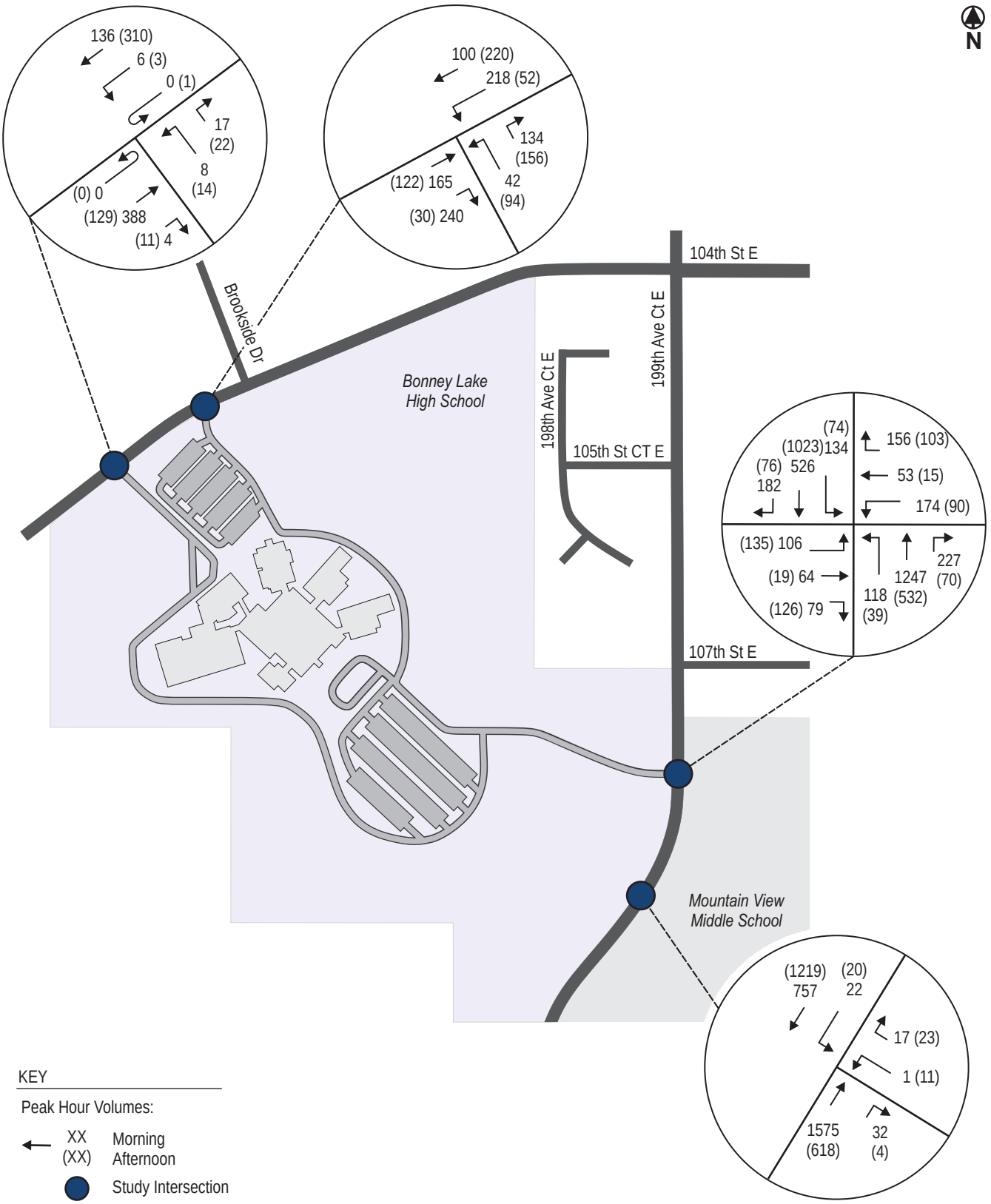
heffron transportation inc



Bonney Lake High School
Revised Access Review Analysis

Figure 2
Forecast 2025 Traffic Volumes
PM Peak Hours

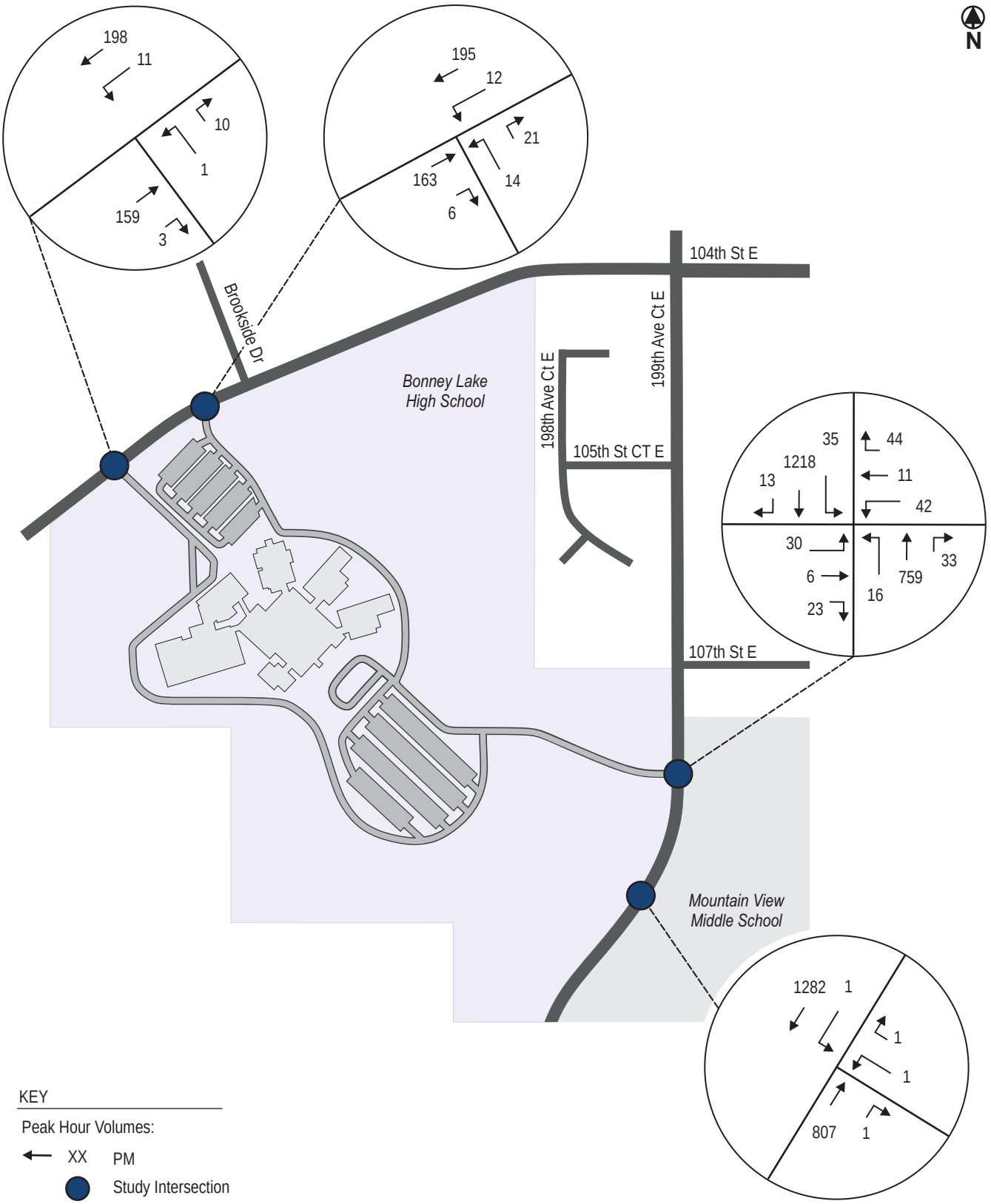
heffron transportation inc



Bonney Lake High School
Revised Access Review Analysis

Figure 3
Forecast 2030 Traffic Volumes
Morning and Afternoon Peak Hours

heffron transportation inc



Bonney Lake High School
Revised Access Review Analysis

Figure 4
Forecast 2030 Traffic Volumes
PM Peak Hour

heffron transportation inc

ATTACHMENT A
Traffic Count Data Sheets

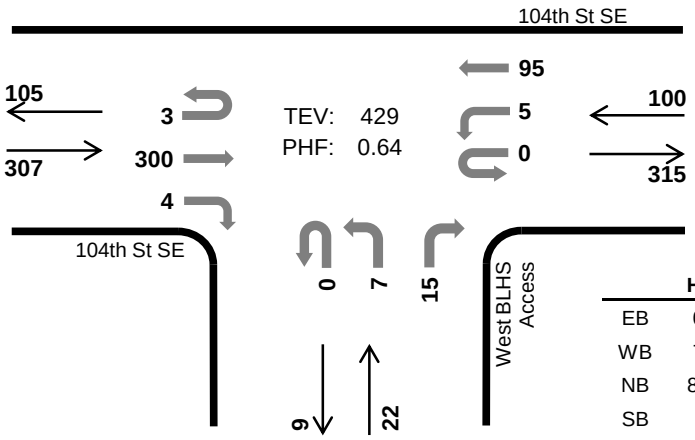
June 30, 2022

West BLHS Access
104th St SE

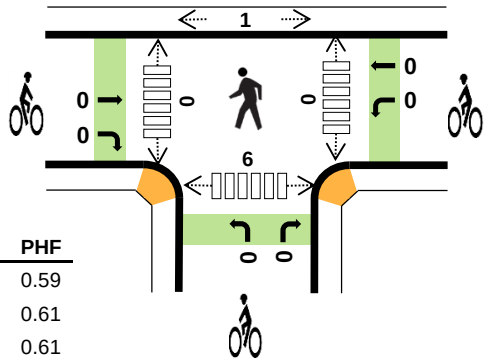
N

Peak Hour

Date: 02/17/2022
Count Period: 6:30 AM to 8:30 AM
Peak Hour: 6:30 AM to 7:30 AM



	HV %:	PHF
EB	0.7%	0.59
WB	7.0%	0.61
NB	81.8%	0.61
SB	-	-
TOTAL	6.3%	0.64



Two-Hour Count Summaries

Interval Start	104th St SE Eastbound				104th St SE Westbound				West BLHS Access Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM	**0**	**0**	**28**	**1**	**0**	**1**	**10**	**0**	**0**	**6**	**0**	**1**	**0**	**0**	**0**	**0**	**47**	0
6:45 AM	**0**	**0**	**86**	**0**	**0**	**2**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**105**	0
7:00 AM	**1**	**0**	**127**	**2**	**0**	**2**	**27**	**0**	**0**	**1**	**0**	**8**	**0**	**0**	**0**	**0**	**168**	0
7:15 AM	**2**	**0**	**59**	**1**	**0**	**0**	**41**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**109**	**429**
7:30 AM	0	0	20	0	0	0	12	0	0	0	0	0	0	0	0	0	32	414
7:45 AM	0	0	19	0	0	0	20	0	0	0	0	0	0	0	0	0	39	348
8:00 AM	0	0	23	0	0	0	21	0	0	0	0	1	0	0	0	0	45	225
8:15 AM	0	0	46	0	0	0	25	0	0	1	0	0	0	0	0	0	72	188
Count Total	3	0	408	4	0	5	173	0	0	8	0	16	0	0	0	0	617	0
Peak Hour All	**3**	**0**	**300**	**4**	**0**	**5**	**95**	**0**	**0**	**7**	**0**	**15**	**0**	**0**	**0**	**0**	**429**	**0**
Peak Hour HV	**0**	**0**	**1**	**1**	**0**	**3**	**4**	**0**	**0**	**5**	**0**	**13**	**0**	**0**	**0**	**0**	**27**	**0**
Peak Hour HV%	**0%**	**-**	**0%**	**25%**	**-**	**60%**	**4%**	**-**	**-**	**71%**	**-**	**87%**	**-**	**-**	**-**	**-**	**6%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:30 AM	**0**	**2**	**5**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
6:45 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
7:00 AM	**1**	**2**	**8**	**0**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**1**	*2*
7:15 AM	**1**	**2**	**5**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	***3***
7:30 AM	0	2	0	0	*2*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	1	3	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	1	2	1	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	16	20	0	*40*	0	0	0	0	*0*	1	0	1	6	*8*
Peak Hr	**2**	**7**	**18**	**0**	***27***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**6**	***7***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St SE				104th St SE				West BLHS Access				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
7:00 AM	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**11**	0
7:15 AM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**8**	**27**
7:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	22
7:45 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	25
8:00 AM	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3	17
8:15 AM	0	0	1	0	0	0	2	0	0	1	0	0	0	0	0	0	4	13
Count Total	0	0	3	1	0	3	13	0	0	6	0	14	0	0	0	0	40	0
Peak Hour	**0**	**0**	**1**	**1**	**0**	**3**	**4**	**0**	**0**	**5**	**0**	**13**	**0**	**0**	**0**	**0**	**27**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	104th St SE			104th St SE			West BLHS Access			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
6:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

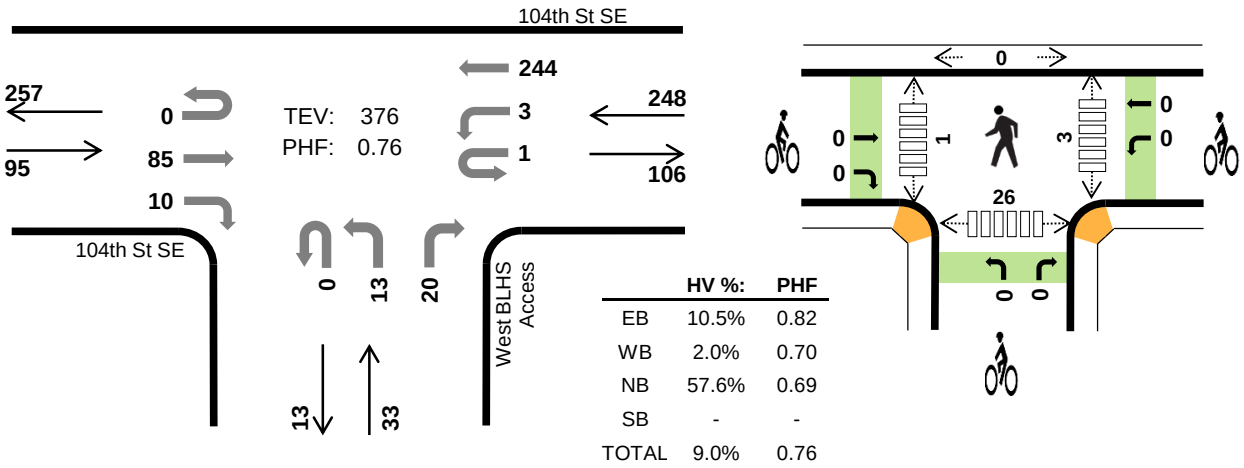
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

West BLHS Access
104th St SE

N

Peak Hour

Date: 02/17/2022
Count Period: 1:00 PM to 6:00 PM
Peak Hour: 2:15 PM to 3:15 PM



	HV %:	PHF
EB	10.5%	0.82
WB	2.0%	0.70
NB	57.6%	0.69
SB	-	-
TOTAL	9.0%	0.76

Five-Hour Count Summaries

Interval Start		104th St SE Eastbound				104th St SE Westbound				West BLHS Access Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:15 PM		0	0	29	0	0	2	55	0	0	2	0	10	0	0	0	0	98	0
2:30 PM		0	0	20	8	1	0	87	0	0	5	0	3	0	0	0	0	124	0
2:45 PM		0	0	16	2	0	1	47	0	0	1	0	4	0	0	0	0	71	0
3:00 PM		0	0	20	0	0	0	55	0	0	5	0	3	0	0	0	0	83	376
Peak Hour	All	0	0	85	10	1	3	244	0	0	13	0	20	0	0	0	0	376	0
	HV	0	0	2	8	0	1	4	0	0	9	0	10	0	0	0	0	34	0
	HV%	-	-	2%	80%	0%	33%	2%	-	-	69%	-	50%	-	-	-	-	9%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:15 PM	1	1	5	0	*7*	0	0	0	0	*0*	2	0	0	9	*11*
2:30 PM	7	0	7	0	*14*	0	0	0	0	*0*	1	0	0	13	*14*
2:45 PM	1	1	1	0	*3*	0	0	0	0	*0*	0	1	0	4	*5*
3:00 PM	1	3	6	0	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	10	5	19	0	*34*	0	0	0	0	*0*	3	1	0	26	*30*

Five-Hour Count Summaries

Interval Start		104th St SE Eastbound				104th St SE Westbound				West BLHS Access Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM		0	0	10	0	0	0	18	0	0	1	0	0	0	0	0	0	29	0
1:15 PM		0	0	13	0	0	0	15	0	0	0	0	0	0	0	0	0	28	0
1:30 PM		0	0	7	0	0	1	18	0	0	0	0	1	0	0	0	0	27	0
1:45 PM		0	0	17	0	0	0	15	0	0	0	0	0	0	0	0	0	32	116
2:00 PM		0	0	23	0	0	4	20	0	0	0	0	0	0	0	0	0	47	134
2:15 PM		**0**	**0**	**29**	**0**	**0**	**2**	**55**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**0**	**0**	**98**	204
2:30 PM		**0**	**0**	**20**	**8**	**1**	**0**	**87**	**0**	**0**	**5**	**0**	**3**	**0**	**0**	**0**	**0**	**124**	301
2:45 PM		**0**	**0**	**16**	**2**	**0**	**1**	**47**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**0**	**71**	340
3:00 PM		**0**	**0**	**20**	**0**	**0**	**0**	**55**	**0**	**0**	**5**	**0**	**3**	**0**	**0**	**0**	**0**	**83**	**376**
3:15 PM		0	0	52	1	0	0	41	0	0	1	0	1	0	0	0	0	96	374
3:30 PM		0	0	31	6	0	7	32	0	0	2	0	2	0	0	0	0	80	330
3:45 PM		0	0	13	3	0	5	30	0	0	3	0	8	0	0	0	0	62	321
4:00 PM		0	0	26	1	0	3	29	0	0	1	0	3	0	0	0	0	63	301
4:15 PM		0	0	32	0	0	2	39	0	0	0	0	2	0	0	0	0	75	280
4:30 PM		0	0	27	1	0	1	41	0	0	0	0	1	0	0	0	0	71	271
4:45 PM		0	0	25	1	0	4	38	0	0	0	0	3	0	0	0	0	71	280
5:00 PM		0	0	23	3	0	5	24	0	0	0	0	3	0	0	0	0	58	275
5:15 PM		0	0	24	9	0	6	30	0	0	3	0	7	0	0	0	0	79	279
5:30 PM		0	0	20	1	0	2	23	0	0	1	0	3	0	0	0	0	50	258
5:45 PM		0	0	15	2	0	2	30	0	0	1	0	2	0	0	0	0	52	239
Count Total		0	0	443	38	1	45	687	0	0	26	0	56	0	0	0	0	1,296	0
Peak Hour	**All**	**0**	**0**	**85**	**10**	**1**	**3**	**244**	**0**	**0**	**13**	**0**	**20**	**0**	**0**	**0**	**0**	**376**	**0**
	HV	**0**	**0**	**2**	**8**	**0**	**1**	**4**	**0**	**0**	**9**	**0**	**10**	**0**	**0**	**0**	**0**	**34**	**0**
	HV%	**-**	**-**	**2%**	**80%**	**0%**	**33%**	**2%**	**-**	**-**	**69%**	**-**	**50%**	**-**	**-**	**-**	**-**	**9%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
1:00 PM	1	0	1	0	*2*	0	0	0	0	*0*	0	0	1	0	*1*
1:15 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	2	0	*2*
1:30 PM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	1	*1*
2:15 PM	**1**	**1**	**5**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**9**	*11*
2:30 PM	**7**	**0**	**7**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**13**	*14*
2:45 PM	**1**	**1**	**1**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**4**	*5*
3:00 PM	**1**	**3**	**6**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	5	*5*
3:30 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	1	*1*
4:00 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	7	1	1	0	*9*	0	0	0	0	*0*	0	0	1	1	*2*
4:30 PM	6	0	0	0	*6*	0	0	0	0	*0*	0	0	1	2	*3*
4:45 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	1	1	*2*
5:00 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	1	0	*1*
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	1	0	1	1	*3*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	1	*2*
5:45 PM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	36	14	22	0	*72*	0	0	0	0	*0*	4	1	9	40	*54*
Peak Hr	**10**	**5**	**19**	**0**	***34***	**0**	**0**	**0**	**0**	***0***	**3**	**1**	**0**	**26**	***30***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St SE				104th St SE				West BLHS Access				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0
1:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
2:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	6
2:15 PM	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**7**	12
2:30 PM	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**0**	**0**	**14**	25
2:45 PM	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	28
3:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**0**	**0**	**10**	**34**
3:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	28
3:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	16
3:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	15
4:00 PM	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	4	9
4:15 PM	0	0	7	0	0	0	1	0	0	0	0	1	0	0	0	0	9	17
4:30 PM	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6	21
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	21
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	18
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	4
Count Total	0	0	28	8	0	6	8	0	0	10	0	12	0	0	0	0	72	0
Peak Hour	**0**	**0**	**2**	**8**	**0**	**1**	**4**	**0**	**0**	**9**	**0**	**10**	**0**	**0**	**0**	**0**	**34**	**0**

Five-Hour Count Summaries - Bikes

Interval Start	104th St SE			104th St SE			West BLHS Access			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

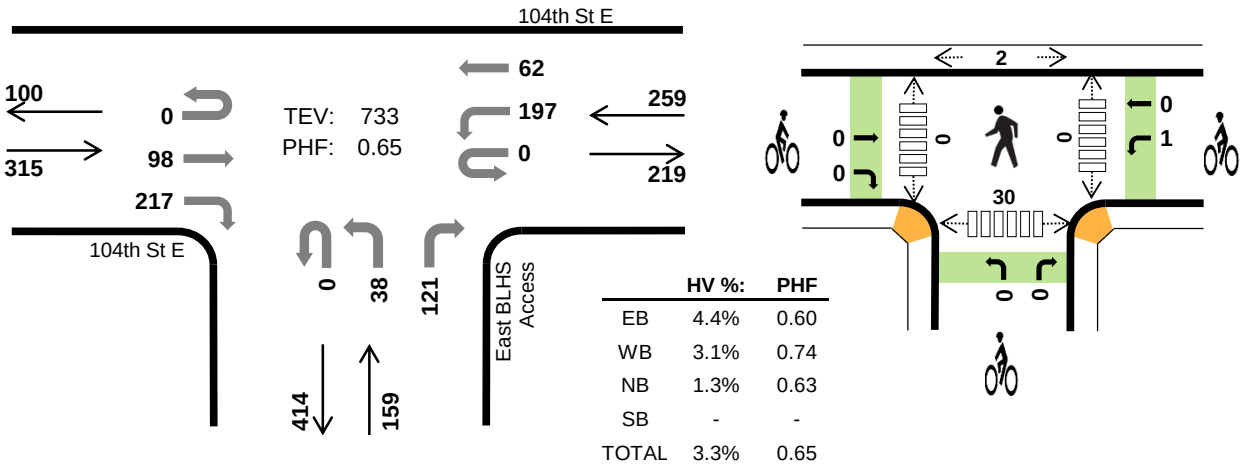
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

East BLHS Access
104th St E

N

Peak Hour

Date: 02/17/2022
Count Period: 6:30 AM to 8:30 AM
Peak Hour: 6:30 AM to 7:30 AM



	HV %:	PHF
EB	4.4%	0.60
WB	3.1%	0.74
NB	1.3%	0.63
SB	-	-
TOTAL	3.3%	0.65

Two-Hour Count Summaries

Interval Start		104th St E Eastbound				104th St E Westbound				East BLHS Access Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM		**0**	**0**	**20**	**9**	**0**	**11**	**11**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**55**	0
6:45 AM		**0**	**0**	**26**	**57**	**0**	**52**	**14**	**0**	**0**	**5**	**0**	**27**	**0**	**0**	**0**	**0**	**181**	0
7:00 AM		**0**	**0**	**26**	**105**	**0**	**74**	**14**	**0**	**0**	**15**	**0**	**48**	**0**	**0**	**0**	**0**	**282**	0
7:15 AM		**0**	**0**	**26**	**46**	**0**	**60**	**23**	**0**	**0**	**17**	**0**	**43**	**0**	**0**	**0**	**0**	**215**	**733**
7:30 AM		0	0	18	2	0	6	10	0	0	2	0	4	0	0	0	0	42	720
7:45 AM		0	0	18	1	0	1	19	0	0	1	0	3	0	0	0	0	43	582
8:00 AM		0	0	24	0	0	2	21	0	0	0	0	3	0	0	0	0	50	350
8:15 AM		0	0	42	4	0	0	25	0	0	0	0	0	0	0	0	0	71	206
Count Total		0	0	200	224	0	206	137	0	0	41	0	131	0	0	0	0	939	0
Peak Hour	**All**	**0**	**0**	**98**	**217**	**0**	**197**	**62**	**0**	**0**	**38**	**0**	**121**	**0**	**0**	**0**	**0**	**733**	**0**
	HV	**0**	**0**	**14**	**0**	**0**	**1**	**7**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**24**	**0**
	HV%	**-**	**-**	**14%**	**0%**	**-**	**1%**	**11%**	**-**	**-**	**0%**	**-**	**2%**	**-**	**-**	**-**	**-**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:30 AM	**1**	**2**	**0**	**0**	***3***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**2**	*2*
6:45 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	*3*
7:00 AM	**8**	**3**	**1**	**0**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**15**	*17*
7:15 AM	**5**	**2**	**1**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**10**	***10***
7:30 AM	0	2	1	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	1	3	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	1	2	1	0	*4*	0	0	0	0	*0*	0	0	0	2	*2*
8:15 AM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	17	17	4	0	*38*	0	1	0	0	*1*	0	0	2	34	*36*
Peak Hr	**14**	**8**	**2**	**0**	***24***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**2**	**30**	***32***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St E Eastbound				104th St E Westbound				East BLHS Access Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
7:00 AM	**0**	**0**	**8**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**12**	0
7:15 AM	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**8**	**24**
7:30 AM	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3	24
7:45 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	4	27
8:00 AM	0	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	4	19
8:15 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	14
Count Total	0	0	17	0	0	1	16	0	0	0	0	4	0	0	0	0	38	0
Peak Hour	**0**	**0**	**14**	**0**	**0**	**1**	**7**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**24**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	104th St E Eastbound			104th St E Westbound			East BLHS Access Northbound			0 Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
6:30 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

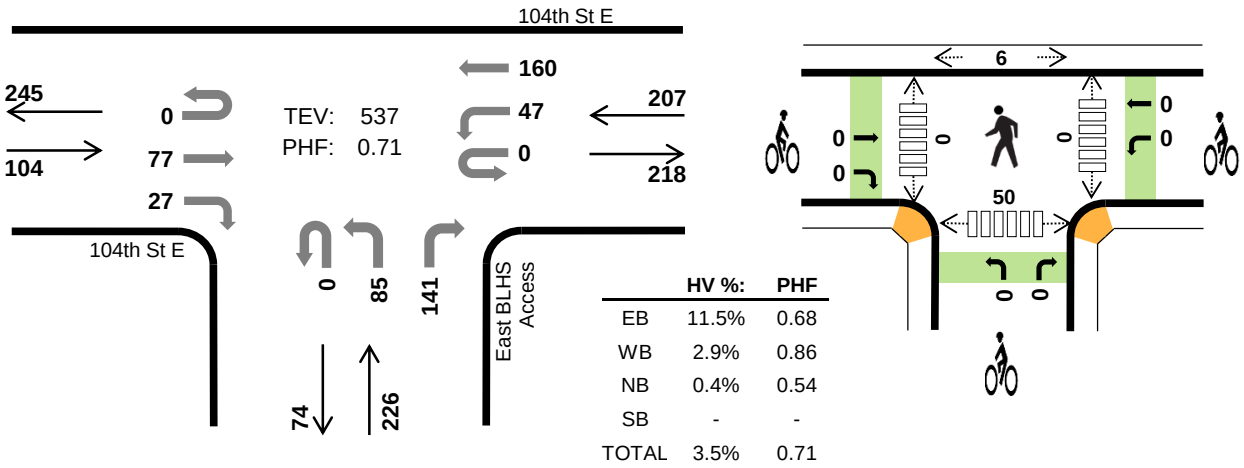
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

East BLHS Access
104th St E

N

Peak Hour

Date: 02/17/2022
Count Period: 1:00 PM to 6:00 PM
Peak Hour: 2:15 PM to 3:15 PM



	HV %:	PHF
EB	11.5%	0.68
WB	2.9%	0.86
NB	0.4%	0.54
SB	-	-
TOTAL	3.5%	0.71

Five-Hour Count Summaries

Interval Start		104th St E Eastbound				104th St E Westbound				East BLHS Access Northbound				0 Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:15 PM		0	0	26	12	0	14	32	0	0	26	0	41	0	0	0	0	151	0
2:30 PM		0	0	16	9	0	13	47	0	0	38	0	66	0	0	0	0	189	0
2:45 PM		0	0	14	5	0	11	36	0	0	13	0	21	0	0	0	0	100	0
3:00 PM		0	0	21	1	0	9	45	0	0	8	0	13	0	0	0	0	97	537
Peak Hour	All	0	0	77	27	0	47	160	0	0	85	0	141	0	0	0	0	537	0
	HV	0	0	12	0	0	1	5	0	0	0	0	1	0	0	0	0	19	0
	HV%	-	-	16%	0%	-	2%	3%	-	-	0%	-	1%	-	-	-	-	4%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:15 PM	6	1	1	0	*8*	0	0	0	0	*0*	0	0	4	21	*25*
2:30 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	2	25	*27*
2:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	4	*4*
3:00 PM	3	4	0	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	12	6	1	0	*19*	0	0	0	0	*0*	0	0	6	50	*56*

Five-Hour Count Summaries

Interval Start	104th St E Eastbound				104th St E Westbound				East BLHS Access Northbound				0 Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	8	2	0	1	19	0	0	2	0	0	0	0	0	0	32	0
1:15 PM	0	0	11	2	0	2	17	0	0	2	0	3	0	0	0	0	37	0
1:30 PM	0	0	8	0	0	0	19	0	0	0	0	1	0	0	0	0	28	0
1:45 PM	0	0	12	5	0	12	14	0	0	0	0	1	0	0	0	0	44	141
2:00 PM	0	0	18	4	0	9	24	0	0	0	0	2	0	0	0	0	57	166
2:15 PM	**0**	**0**	**26**	**12**	**0**	**14**	**32**	**0**	**0**	**26**	**0**	**41**	**0**	**0**	**0**	**0**	**151**	280
2:30 PM	**0**	**0**	**16**	**9**	**0**	**13**	**47**	**0**	**0**	**38**	**0**	**66**	**0**	**0**	**0**	**0**	**189**	441
2:45 PM	**0**	**0**	**14**	**5**	**0**	**11**	**36**	**0**	**0**	**13**	**0**	**21**	**0**	**0**	**0**	**0**	**100**	497
3:00 PM	**0**	**0**	**21**	**1**	**0**	**9**	**45**	**0**	**0**	**8**	**0**	**13**	**0**	**0**	**0**	**0**	**97**	**537**
3:15 PM	0	0	52	1	0	3	36	0	0	5	0	6	0	0	0	0	103	489
3:30 PM	0	0	32	2	0	8	36	0	0	4	0	13	0	0	0	0	95	395
3:45 PM	0	0	20	2	0	5	30	0	0	5	0	6	0	0	0	0	68	363
4:00 PM	0	0	29	1	0	2	27	0	0	4	0	4	0	0	0	0	67	333
4:15 PM	0	0	33	1	0	8	39	0	0	4	0	8	0	0	0	0	93	323
4:30 PM	0	0	28	1	0	1	38	0	0	2	0	5	0	0	0	0	75	303
4:45 PM	0	0	26	2	0	0	40	0	0	3	0	2	0	0	0	0	73	308
5:00 PM	0	0	25	0	0	1	27	0	0	0	0	0	0	0	0	0	53	294
5:15 PM	0	0	32	1	0	0	37	0	0	1	0	3	0	0	0	0	74	275
5:30 PM	0	0	22	1	0	2	22	0	0	1	0	1	0	0	0	0	49	249
5:45 PM	0	0	17	0	0	1	32	0	0	0	0	1	0	0	0	0	51	227
Count Total	0	0	450	52	0	102	617	0	0	118	0	197	0	0	0	0	1,536	0
Peak Hour All	**0**	**0**	**77**	**27**	**0**	**47**	**160**	**0**	**0**	**85**	**0**	**141**	**0**	**0**	**0**	**0**	**537**	**0**
Peak Hour HV	**0**	**0**	**12**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**19**	**0**
Peak Hour HV%	**-**	**-**	**16%**	**0%**	**-**	**2%**	**3%**	**-**	**-**	**0%**	**-**	**1%**	**-**	**-**	**-**	**-**	**4%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
1:00 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	1	0	*1*
1:15 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	2	0	*2*
1:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
1:45 PM	0	3	0	0	*3*	0	0	0	0	*0*	0	0	2	0	*2*
2:00 PM	0	8	0	0	*8*	0	0	0	0	*0*	0	0	0	1	*1*
2:15 PM	**6**	**1**	**1**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**4**	**21**	*25*
2:30 PM	**2**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**25**	*27*
2:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**4**	*4*
3:00 PM	**3**	**4**	**0**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
3:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
3:30 PM	3	0	0	0	*3*	0	0	0	0	*0*	0	0	0	1	*1*
3:45 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	2	*2*
4:00 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	8	1	0	0	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	6	0	0	0	*6*	0	0	0	0	*0*	0	0	2	2	*4*
4:45 PM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	1	0	*1*
5:00 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	1	1	*2*
5:15 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	0	*1*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	1	*2*
5:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	40	21	1	0	*62*	0	0	0	0	*0*	0	0	17	59	*76*
Peak Hr	**12**	**6**	**1**	**0**	***19***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**6**	**50**	***56***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	104th St E				104th St E				East BLHS Access				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	5
2:00 PM	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	8	12
2:15 PM	**0**	**0**	**6**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**8**	19
2:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	21
2:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	20
3:00 PM	**0**	**0**	**3**	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**19**
3:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	12
3:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	13
3:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	13
4:00 PM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	10
4:15 PM	0	0	8	0	0	0	1	0	0	0	0	0	0	0	0	0	9	18
4:30 PM	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6	21
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	21
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	18
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3
Count Total	0	0	40	0	0	8	13	0	0	0	0	1	0	0	0	0	62	0
Peak Hour	**0**	**0**	**12**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**19**	**0**

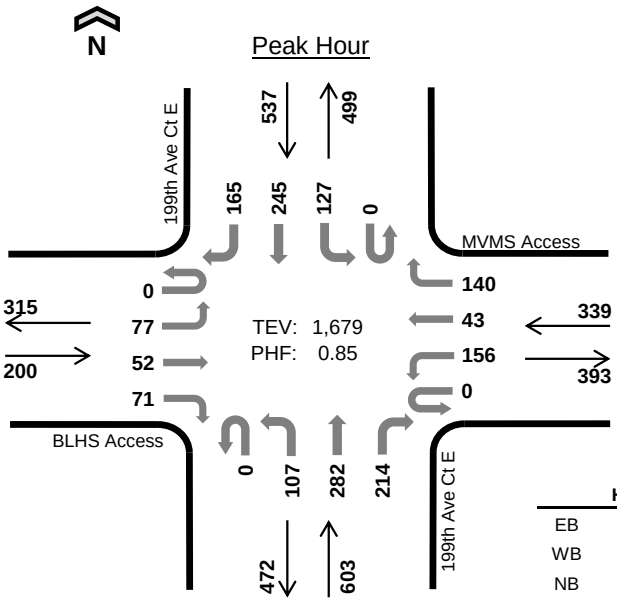
Five-Hour Count Summaries - Bikes

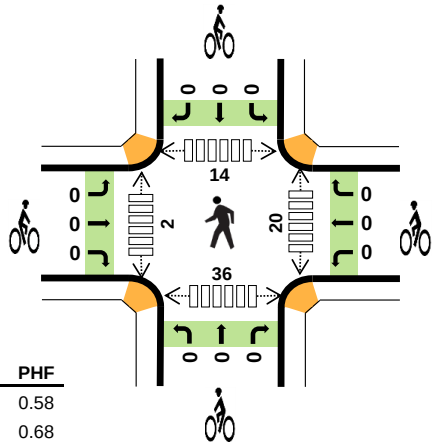
Interval Start	104th St E			104th St E			East BLHS Access			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

199th Ave Ct E
BLHS Access

Date: 02/17/2022
Count Period: 6:30 AM to 8:30 AM
Peak Hour: 6:30 AM to 7:30 AM





	HV %:	PHF
EB	1.5%	0.58
WB	0.0%	0.68
NB	3.6%	0.83
SB	7.3%	0.79
TOTAL	3.8%	0.85

Two-Hour Count Summaries

Interval Start		BLHS Access Eastbound				MVMS Access Westbound				199th Ave Ct E Northbound				199th Ave Ct E Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM		**0**	**4**	**3**	**3**	**0**	**9**	**1**	**7**	**0**	**13**	**122**	**22**	**0**	**8**	**54**	**28**	**274**	0
6:45 AM		**0**	**14**	**9**	**12**	**0**	**44**	**15**	**24**	**0**	**34**	**77**	**71**	**0**	**36**	**55**	**43**	**434**	0
7:00 AM		**0**	**27**	**23**	**36**	**0**	**48**	**21**	**46**	**0**	**53**	**25**	**74**	**0**	**36**	**49**	**57**	**495**	0
7:15 AM		**0**	**32**	**17**	**20**	**0**	**55**	**6**	**63**	**0**	**7**	**58**	**47**	**0**	**47**	**87**	**37**	**476**	**1,679**
7:30 AM		0	12	0	5	0	7	2	7	0	12	101	4	0	7	71	8	236	1,641
7:45 AM		0	2	0	4	0	1	0	2	0	2	102	3	0	1	98	3	218	1,425
8:00 AM		0	4	0	1	0	1	1	2	0	2	136	3	0	0	78	1	229	1,159
8:15 AM		0	2	0	5	0	0	1	0	0	6	134	0	0	2	97	5	252	935
Count Total		0	97	52	86	0	165	47	151	0	129	755	224	0	137	589	182	2,614	0
Peak Hour	**All**	**0**	**77**	**52**	**71**	**0**	**156**	**43**	**140**	**0**	**107**	**282**	**214**	**0**	**127**	**245**	**165**	**1,679**	**0**
	HV	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**14**	**8**	**0**	**0**	**1**	**38**	**0**	**64**	**0**
	HV%	**-**	**1%**	**0%**	**3%**	**-**	**0%**	**0%**	**0%**	**-**	**13%**	**3%**	**0%**	**-**	**1%**	**16%**	**0%**	**4%**	**0**

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

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
6:30 AM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**2**	*4*
6:45 AM	**0**	**0**	**3**	**9**	***12***	**0**	**0**	**0**	**0**	***0***	**4**	**1**	**5**	**5**	*15*
7:00 AM	**1**	**0**	**13**	**12**	***26***	**0**	**0**	**0**	**0**	***0***	**5**	**0**	**5**	**20**	*30*
7:15 AM	**1**	**0**	**3**	**14**	***18***	**0**	**0**	**0**	**0**	***0***	**11**	**0**	**3**	**9**	***23***
7:30 AM	0	1	2	8	*11*	0	0	0	0	*0*	0	0	1	5	*6*
7:45 AM	0	0	1	7	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	0	1	3	8	*12*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	0	0	8	*8*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	3	2	28	70	*103*	0	0	0	0	*0*	20	2	15	41	*78*
Peak Hour	**3**	**0**	**22**	**39**	***64***	**0**	**0**	**0**	**0**	***0***	**20**	**2**	**14**	**36**	***72***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	BLHS Access				MVMS Access				199th Ave Ct E				199th Ave Ct E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
6:30 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**0**	**8**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**9**	**0**	**12**	0
7:00 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**12**	**0**	**26**	0
7:15 AM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**13**	**0**	**18**	**64**
7:30 AM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	8	0	11	67
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	7	0	8	63
8:00 AM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	8	0	12	49
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	8	39
Count Total	0	1	0	2	0	1	1	0	0	14	13	1	0	1	68	1	103	0
Peak Hour	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**14**	**8**	**0**	**0**	**1**	**38**	**0**	**64**	**0**

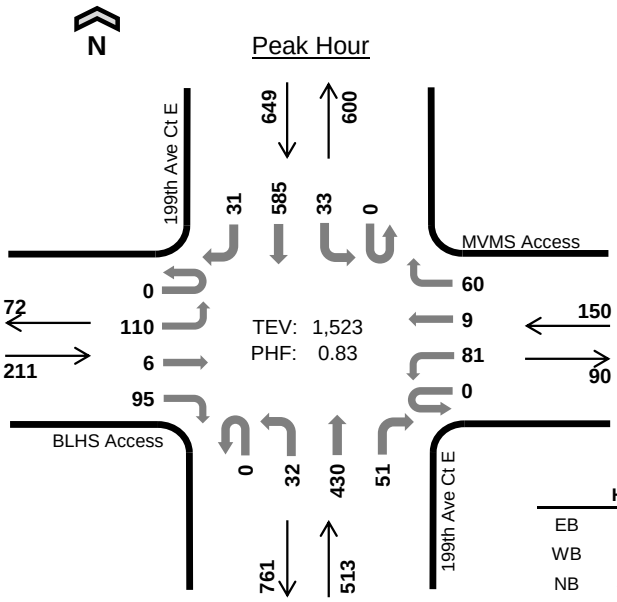
Two-Hour Count Summaries - Bikes

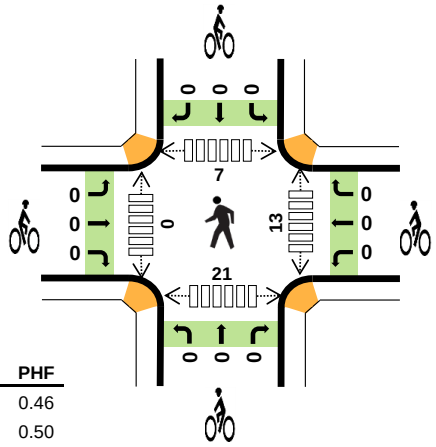
Interval Start	BLHS Access			MVMS Access			199th Ave Ct E			199th Ave Ct E			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
6:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
6:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

199th Ave Ct E
BLHS Access

Date: 02/17/2022
Count Period: 1:00 PM to 6:00 PM
Peak Hour: 2:30 PM to 3:30 PM





	HV %:	PHF
EB	0.5%	0.46
WB	0.0%	0.50
NB	4.7%	0.84
SB	3.2%	0.83
TOTAL	3.0%	0.83

Five-Hour Count Summaries

Interval Start		BLHS Access Eastbound				MVMS Access Westbound				199th Ave Ct E Northbound				199th Ave Ct E Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM		0	52	5	57	0	44	5	26	0	11	93	18	0	8	127	10	456	0
2:45 PM		0	23	1	10	0	11	2	12	0	5	99	8	0	6	135	5	317	0
3:00 PM		0	16	0	9	0	5	0	12	0	8	110	9	0	6	152	5	332	0
3:15 PM		0	19	0	19	0	21	2	10	0	8	128	16	0	13	171	11	418	1,523
Peak Hour	All	0	110	6	95	0	81	9	60	0	32	430	51	0	33	585	31	1,523	0
	HV	0	0	0	1	0	0	0	0	0	5	19	0	0	0	21	0	46	0
	HV%	-	0%	0%	1%	-	0%	0%	0%	-	16%	4%	0%	-	0%	4%	0%	3%	0

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	0	0	7	7	*14*	0	0	0	0	*0*	11	0	4	11	*26*
2:45 PM	0	0	5	4	*9*	0	0	0	0	*0*	2	0	1	3	*6*
3:00 PM	1	0	8	3	*12*	0	0	0	0	*0*	0	0	0	5	*5*
3:15 PM	0	0	4	7	*11*	0	0	0	0	*0*	0	0	2	2	*4*
Peak Hour	1	0	24	21	*46*	0	0	0	0	*0*	13	0	7	21	*41*

Five-Hour Count Summaries

Interval Start	BLHS Access Eastbound				MVMS Access Westbound				199th Ave Ct E Northbound				199th Ave Ct E Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	4	0	1	0	1	1	2	0	6	102	1	0	3	103	8	232	0
1:15 PM	0	3	0	9	0	1	0	2	0	2	102	4	0	6	103	3	235	0
1:30 PM	0	4	0	0	0	2	0	1	0	2	101	9	0	7	92	8	226	0
1:45 PM	0	0	1	0	0	0	0	3	0	9	103	17	0	13	103	8	257	950
2:00 PM	0	3	0	4	0	2	0	4	0	3	97	22	0	13	87	10	245	963
2:15 PM	0	31	1	38	0	28	2	51	0	11	94	23	0	13	116	5	413	1,141
2:30 PM	**0**	**52**	**5**	**57**	**0**	**44**	**5**	**26**	**0**	**11**	**93**	**18**	**0**	**8**	**127**	**10**	**456**	1,371
2:45 PM	**0**	**23**	**1**	**10**	**0**	**11**	**2**	**12**	**0**	**5**	**99**	**8**	**0**	**6**	**135**	**5**	**317**	1,431
3:00 PM	**0**	**16**	**0**	**9**	**0**	**5**	**0**	**12**	**0**	**8**	**110**	**9**	**0**	**6**	**152**	**5**	**332**	1,518
3:15 PM	**0**	**19**	**0**	**19**	**0**	**21**	**2**	**10**	**0**	**8**	**128**	**16**	**0**	**13**	**171**	**11**	**418**	**1,523**
3:30 PM	0	17	0	8	0	15	0	13	0	5	122	5	0	2	157	6	350	1,417
3:45 PM	0	11	0	4	0	5	0	2	0	6	110	1	0	1	140	2	282	1,382
4:00 PM	0	11	0	2	0	9	0	2	0	5	133	4	0	4	157	3	330	1,380
4:15 PM	0	0	0	6	0	7	0	6	0	3	143	10	0	12	144	1	332	1,294
4:30 PM	0	5	0	3	0	17	0	14	0	1	133	7	0	3	158	2	343	1,287
4:45 PM	0	7	0	2	0	0	0	2	0	4	138	1	0	4	143	1	302	1,307
5:00 PM	0	2	0	1	0	1	0	6	0	5	128	3	0	12	170	0	328	1,305
5:15 PM	0	4	0	5	0	1	0	13	0	4	131	3	0	14	164	3	342	1,315
5:30 PM	0	6	0	4	0	1	0	3	0	1	134	1	0	5	164	2	321	1,293
5:45 PM	0	0	0	1	0	0	0	1	0	0	131	2	0	3	172	2	312	1,303
Count Total	0	218	8	183	0	171	12	185	0	99	2,332	164	0	148	2,758	95	6,373	0
Peak Hour All	**0**	**110**	**6**	**95**	**0**	**81**	**9**	**60**	**0**	**32**	**430**	**51**	**0**	**33**	**585**	**31**	**1,523**	**0**
Peak Hour HV	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**19**	**0**	**0**	**0**	**21**	**0**	**46**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**1%**	**-**	**0%**	**0%**	**0%**	**-**	**16%**	**4%**	**0%**	**-**	**0%**	**4%**	**0%**	**3%**	**0**

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

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
1:00 PM	0	0	7	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
1:15 PM	0	0	7	2	*9*	0	0	0	0	*0*	0	0	0	0	*0*
1:30 PM	0	0	1	1	*2*	0	0	0	0	*0*	1	0	0	0	*1*
1:45 PM	0	0	7	4	*11*	0	0	0	0	*0*	0	0	0	0	*0*
2:00 PM	0	0	4	3	*7*	0	0	0	0	*0*	0	0	0	2	*2*
2:15 PM	6	0	4	6	*16*	0	0	0	0	*0*	32	0	14	114	*160*
2:30 PM	**0**	**0**	**7**	**7**	***14***	**0**	**0**	**0**	**0**	***0***	**11**	**0**	**4**	**11**	*26*
2:45 PM	**0**	**0**	**5**	**4**	***9***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**3**	*6*
3:00 PM	**1**	**0**	**8**	**3**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**5**	*5*
3:15 PM	**0**	**0**	**4**	**7**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**2**	***4***
3:30 PM	0	0	4	0	*4*	0	0	0	0	*0*	0	0	0	3	*3*
3:45 PM	0	0	5	4	*9*	0	0	0	0	*0*	3	0	2	2	*7*
4:00 PM	0	0	2	4	*6*	0	0	0	0	*0*	2	0	0	1	*3*
4:15 PM	0	0	5	0	*5*	0	0	0	0	*0*	0	0	0	1	*1*
4:30 PM	0	0	8	0	*8*	0	0	0	0	*0*	2	0	0	2	*4*
4:45 PM	0	0	4	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	0	0	2	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	2	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	2	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	7	1	90	49	*147*	0	0	0	0	*0*	53	0	23	146	*222*
Peak Hour	**1**	**0**	**24**	**21**	***46***	**0**	**0**	**0**	**0**	***0***	**13**	**0**	**7**	**21**	***41***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	BLHS Access				MVMS Access				199th Ave Ct E				199th Ave Ct E				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	1	0	8	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	4	0	11	30
2:00 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	7	29
2:15 PM	0	0	0	6	0	0	0	0	0	0	4	0	0	0	6	0	16	36
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**7**	**0**	**14**	48
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**4**	**0**	**9**	46
3:00 PM	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	**4**	**0**	**0**	**0**	**3**	**0**	**12**	51
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**7**	**0**	**11**	**46**
3:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	36
3:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0	9	36
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	6	30
4:15 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	5	24
4:30 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	8	28
4:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	23
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	20
5:15 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	4	19
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	14
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	12
Count Total	0	0	0	7	0	0	0	1	0	5	85	0	0	0	49	0	147	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**19**	**0**	**0**	**0**	**21**	**0**	**46**	**0**

Five-Hour Count Summaries - Bikes

Interval Start	BLHS Access			MVMS Access			199th Ave Ct E			199th Ave Ct E			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
2:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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

ATTACHMENT B
Level of Service Definitions

June 30, 2022

Signalized Intersections

Level of service for signalized intersections is defined in terms of average delay for all vehicles that travel through the intersection. Delay can be a cause of driver discomfort, frustration, inefficient fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average delay per vehicle in seconds. Delay is a complex measure and is dependent on a number of variables including: number and type of vehicles by movement, intersection lane geometry, signal phasing, the amount of green time allocated to each phase, transit stops and parking maneuvers. Table B-1 shows the level of service criteria for signalized intersections from the *Highway Capacity Manual, Sixth Edition.*

Table B-1. Level of Service for Signalized Intersections

Level of Service	Average Control Delay Per Vehicle
A	≤ 10 seconds
B	> 10 – 20 seconds
C	> 20 – 35 seconds
D	> 35 – 55 seconds
E	> 55 – 80 seconds
F	> 80 seconds

Source: Transportation Research Board, Highway Capacity Manual, Exhibit 19.8, 2016.

Stop-Controlled Intersections

For unsignalized stop-controlled intersections, level of service is based on the average delay per vehicle for each turning movement. The level of service for all-way stop-controlled intersections is based upon the average delay for all vehicles that travel through the intersection. The level of service for a one- or two-way, stop-controlled intersection, delay is related to the availability of gaps in the main street's traffic flow, and the ability of a driver to enter or pass through those gaps. Table B-2 shows the level of service criteria for unsignalized intersections from the *Highway Capacity Manual, Sixth Edition*.

Table B-2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle
A	0 – 10 seconds
B	> 10 – 15 seconds
C	> 15 – 25 seconds
D	> 25 – 35 seconds
E	> 35 – 50 seconds
F	> 50 seconds

Source: Transportation Research Board, Highway Capacity Manual, Exhibit 20.2, 2016.

Roundabout-Controlled Intersections Using SIDRA Method

The Washington State Department of Transportation (WSDOT) *Sidra Policy Settings*[10] recommends reporting roundabout operations using the SIDRA *Site LOS Method.* This method bases the LOS on both delay and degree of saturation (volume-to-capacity (V/C) ratio). The LOS criteria and thresholds are provided in Table B-3. The delay and V/C (HCM 6) method could be considered a simplified version of this method as it reports LOS F for oversaturated conditions (V/C > 1.0), but the *SIDRA* method applies V/C ratios that can result in LOS D or E for degrees of saturation close to 1.0. The results presented in this report reflect the *SIDRA Site LOS Method*, but consider the HCM 6.0 guidance as follows:

- the v/c ratio (degree of saturation) is taken into account together with the average delay value in determining LOS for *lanes* and *movements*, but
- only the average delay value is considered in determining LOS for *approaches* and the *intersection*.

Table B-3. Delay & Degree of Saturation (SIDRA) Level of Service Definitions for Roundabout Intersections

	Average Control Delay Per Vehicle		
Level of Service	Approaches and Intersections (overall)	Individual Movements	Degree of saturation (V/C ratio of movements)
A	≤ 10 seconds	0 – 10 seconds	≤ 0.85
B	> 10 – 20 seconds	> 10 – 20 seconds	≤ 0.85
C	> 20 – 35 seconds	> 20 – 35 seconds	≤ 0.85
D	> 35 – 55 seconds	> 30 – 50 seconds > 0 – 50 seconds	≤ 0.85 > 0.85 – ≤ 0.95
E	> 55 – 80 seconds	> 50 – 70 seconds > 0 – 70 seconds	≤ 0.95 > 0.95 – ≤ 1.00
F	> 80 seconds	> 70 seconds	> 1.00

Source: SIDRA Solutions, SIDRA 9.0 Analysis Method (based on a proposal by Berry, 1987). Only the average delay value is considered in determining LOS for approaches and the intersection.

[10] WSDOT, https://wsdot.wa.gov/sites/default/files/2021-03/TrafficOps-WSDOTSidraPolicyAndSettings.pdf, accessed Mar. 2022.

ATTACHMENT C
Level of Service Calculations Sheets

June 30, 2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	64	79	174	53	156	118	545	227	134	378	182
Future Volume (veh/h)	106	64	79	174	53	156	118	545	227	134	378	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.86	1.00		0.86	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1900	1900	1900	1722	1870	1900	1885	1752	1900
Adj Flow Rate, veh/h	125	75	87	205	62	137	139	641	255	158	445	202
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	1	0	2	0	0	0	12	2	0	1	10	0
Cap, veh/h	153	107	124	216	85	188	323	627	250	165	604	274
Arrive On Green	0.09	0.15	0.15	0.12	0.18	0.18	0.06	0.50	0.50	0.09	0.53	0.53
Sat Flow, veh/h	1795	731	848	1810	473	1045	1640	1265	503	1795	1133	514
Grp Volume(v), veh/h	125	0	162	205	0	199	139	0	896	158	0	647
Grp Sat Flow(s),veh/h/ln	1795	0	1579	1810	0	1518	1640	0	1768	1795	0	1648
Q Serve(g_s), s	7.5	0.0	10.6	12.2	0.0	13.5	4.5	0.0	54.0	9.5	0.0	32.9
Cycle Q Clear(g_c), s	7.5	0.0	10.6	12.2	0.0	13.5	4.5	0.0	54.0	9.5	0.0	32.9
Prop In Lane	1.00		0.54	1.00		0.69	1.00		0.28	1.00		0.31
Lane Grp Cap(c), veh/h	153	0	230	216	0	273	323	0	877	165	0	878
V/C Ratio(X)	0.82	0.00	0.70	0.95	0.00	0.73	0.43	0.00	1.02	0.96	0.00	0.74
Avail Cap(c_a), veh/h	181	0	247	216	0	273	323	0	877	165	0	878
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	0.0	44.3	47.6	0.0	42.1	16.7	0.0	27.4	49.2	0.0	19.6
Incr Delay (d2), s/veh	18.5	0.0	6.5	46.4	0.0	8.2	0.3	0.0	36.1	57.1	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.5	0.0	8.1	13.1	0.0	9.6	3.0	0.0	40.4	11.2	0.0	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.5	0.0	50.8	94.0	0.0	50.4	17.1	0.0	63.5	106.4	0.0	22.5
LnGrp LOS	E	A	D	F	A	D	B	A	F	F	A	C
Approach Vol, veh/h		287			404			1035			805	
Approach Delay, s/veh		58.1			72.5			57.3			38.9	
Approach LOS		E			E			E			D	

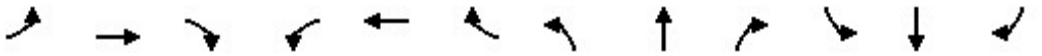
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	58.0	17.0	19.9	10.0	62.0	13.3	23.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	10.0	54.0	13.0	17.0	6.0	58.0	11.0	19.0
Max Q Clear Time (g_c+I1), s	11.5	56.0	14.2	12.6	6.5	34.9	9.5	15.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.0	3.4	0.0	0.3

Intersection Summary

HCM 6th Ctrl Delay	54.0
HCM 6th LOS	D

Notes

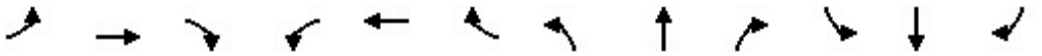
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	19	126	90	15	103	39	552	70	74	749	76
Future Volume (veh/h)	135	19	126	90	15	103	39	552	70	74	749	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.89	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1900	1707	1856	1900	1900	1856	1900
Adj Flow Rate, veh/h	163	23	113	108	18	73	47	665	82	89	902	90
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	6	0	0	0	13	3	0	0	3	0
Cap, veh/h	195	40	195	136	35	143	172	897	111	114	965	96
Arrive On Green	0.11	0.15	0.15	0.07	0.12	0.12	0.04	0.55	0.55	0.06	0.58	0.58
Sat Flow, veh/h	1810	263	1291	1810	298	1208	1626	1617	199	1810	1658	165
Grp Volume(v), veh/h	163	0	136	108	0	91	47	0	747	89	0	992
Grp Sat Flow(s),veh/h/ln	1810	0	1554	1810	0	1506	1626	0	1817	1810	0	1824
Q Serve(g_s), s	9.0	0.0	8.3	6.0	0.0	5.8	1.2	0.0	31.8	5.0	0.0	51.1
Cycle Q Clear(g_c), s	9.0	0.0	8.3	6.0	0.0	5.8	1.2	0.0	31.8	5.0	0.0	51.1
Prop In Lane	1.00		0.83	1.00		0.80	1.00		0.11	1.00		0.09
Lane Grp Cap(c), veh/h	195	0	234	136	0	178	172	0	1008	114	0	1061
V/C Ratio(X)	0.84	0.00	0.58	0.80	0.00	0.51	0.27	0.00	0.74	0.78	0.00	0.94
Avail Cap(c_a), veh/h	265	0	319	194	0	250	193	0	1278	212	0	1408
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.8	0.0	40.4	46.6	0.0	42.3	21.4	0.0	17.2	47.3	0.0	19.6
Incr Delay (d2), s/veh	11.9	0.0	0.8	8.6	0.0	0.8	0.3	0.0	1.2	4.3	0.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	3.3	3.0	0.0	2.2	0.6	0.0	13.0	2.4	0.0	22.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.7	0.0	41.3	55.2	0.0	43.2	21.7	0.0	18.4	51.6	0.0	28.2
LnGrp LOS	E	A	D	E	A	D	C	A	B	D	A	C
Approach Vol, veh/h		299			199			794			1081	
Approach Delay, s/veh		49.7			49.7			18.6			30.2	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	60.8	11.7	19.4	7.7	63.5	15.0	16.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	72.0	11.0	21.0	5.0	79.0	15.0	17.0
Max Q Clear Time (g_c+I1), s	7.0	33.8	8.0	10.3	3.2	53.1	11.0	7.8
Green Ext Time (p_c), s	0.0	4.3	0.0	0.4	0.0	6.5	0.1	0.2

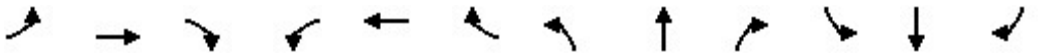
Intersection Summary	
HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	6	23	42	11	44	16	789	33	35	890	13
Future Volume (veh/h)	30	6	23	42	11	44	16	789	33	35	890	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.88	1.00		0.87	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1870	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	31	6	17	44	11	29	17	822	33	36	927	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	2	0	2	0	0	0	0
Cap, veh/h	59	60	171	74	67	176	212	965	39	266	1039	16
Arrive On Green	0.03	0.15	0.15	0.04	0.16	0.16	0.02	0.54	0.54	0.04	0.56	0.56
Sat Flow, veh/h	1810	398	1127	1810	416	1096	1810	1785	72	1810	1866	28
Grp Volume(v), veh/h	31	0	23	44	0	40	17	0	855	36	0	941
Grp Sat Flow(s),veh/h/ln	1810	0	1524	1810	0	1512	1810	0	1856	1810	0	1894
Q Serve(g_s), s	1.2	0.0	0.9	1.7	0.0	1.6	0.3	0.0	27.3	0.6	0.0	30.4
Cycle Q Clear(g_c), s	1.2	0.0	0.9	1.7	0.0	1.6	0.3	0.0	27.3	0.6	0.0	30.4
Prop In Lane	1.00		0.74	1.00		0.73	1.00		0.04	1.00		0.01
Lane Grp Cap(c), veh/h	59	0	232	74	0	243	212	0	1004	266	0	1055
V/C Ratio(X)	0.53	0.00	0.10	0.59	0.00	0.16	0.08	0.00	0.85	0.14	0.00	0.89
Avail Cap(c_a), veh/h	156	0	372	208	0	413	306	0	2294	331	0	2341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.1	0.0	25.4	32.8	0.0	25.2	13.1	0.0	13.6	12.0	0.0	13.6
Incr Delay (d2), s/veh	2.7	0.0	0.1	2.8	0.0	0.1	0.1	0.0	0.8	0.1	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.3	0.8	0.0	0.6	0.1	0.0	10.1	0.2	0.0	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.9	0.0	25.5	35.5	0.0	25.3	13.2	0.0	14.4	12.1	0.0	14.7
LnGrp LOS	D	A	C	D	A	C	B	A	B	B	A	B
Approach Vol, veh/h		54			84			872			977	
Approach Delay, s/veh		31.4			30.7			14.4			14.6	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	41.6	6.9	14.6	5.4	42.7	6.3	15.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	86.0	8.0	17.0	5.0	86.0	6.0	19.0
Max Q Clear Time (g_c+I1), s	2.6	29.3	3.7	2.9	2.3	32.4	3.2	3.6
Green Ext Time (p_c), s	0.0	5.3	0.0	0.0	0.0	6.3	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	64	79	174	53	156	118	545	227	134	378	182
Future Volume (veh/h)	106	64	79	174	53	156	118	545	227	134	378	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.90	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1900	1900	1900	1722	1870	1900	1885	1752	1900
Adj Flow Rate, veh/h	125	75	87	205	62	137	139	641	255	158	445	202
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	1	0	2	0	0	0	12	2	0	1	10	0
Cap, veh/h	157	153	177	242	121	268	350	698	585	194	717	643
Arrive On Green	0.09	0.20	0.20	0.13	0.25	0.25	0.07	0.37	0.37	0.11	0.41	0.41
Sat Flow, veh/h	1795	752	872	1810	486	1074	1640	1870	1567	1795	1752	1571
Grp Volume(v), veh/h	125	0	162	205	0	199	139	641	255	158	445	202
Grp Sat Flow(s),veh/h/ln	1795	0	1624	1810	0	1560	1640	1870	1567	1795	1752	1571
Q Serve(g_s), s	6.0	0.0	7.8	9.7	0.0	9.7	4.5	28.8	10.7	7.6	17.7	7.7
Cycle Q Clear(g_c), s	6.0	0.0	7.8	9.7	0.0	9.7	4.5	28.8	10.7	7.6	17.7	7.7
Prop In Lane	1.00		0.54	1.00		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	157	0	330	242	0	389	350	698	585	194	717	643
V/C Ratio(X)	0.79	0.00	0.49	0.85	0.00	0.51	0.40	0.92	0.44	0.81	0.62	0.31
Avail Cap(c_a), veh/h	306	0	406	309	0	390	362	787	659	408	996	893
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	0.0	31.0	37.2	0.0	28.4	16.3	26.3	20.6	38.4	20.6	17.6
Incr Delay (d2), s/veh	3.4	0.0	0.4	13.3	0.0	0.5	0.3	13.9	0.2	3.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.0	0.0	5.5	8.9	0.0	6.5	3.0	21.4	7.0	6.3	11.5	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	0.0	31.4	50.5	0.0	28.9	16.6	40.2	20.8	41.5	20.9	17.7
LnGrp LOS	D	A	C	D	A	C	B	D	C	D	C	B
Approach Vol, veh/h		287			404			1035			805	
Approach Delay, s/veh		36.4			39.9			32.3			24.1	
Approach LOS		D			D			C			C	

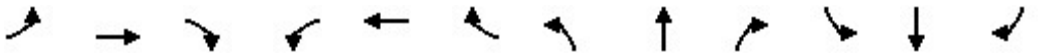
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.5	36.8	15.8	21.9	10.3	40.0	11.7	25.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	20.0	37.0	15.0	22.0	7.0	50.0	15.0	22.0
Max Q Clear Time (g_c+I1), s	9.6	30.8	11.7	9.8	6.5	19.7	8.0	11.7
Green Ext Time (p_c), s	0.2	2.1	0.1	0.5	0.0	2.4	0.1	0.6

Intersection Summary

HCM 6th Ctrl Delay	31.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	19	126	90	15	103	39	552	70	74	749	76
Future Volume (veh/h)	135	19	126	90	15	103	39	552	70	74	749	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.90	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1900	1707	1856	1900	1900	1856	1900
Adj Flow Rate, veh/h	163	23	113	108	18	73	47	665	82	89	902	90
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	6	0	0	0	13	3	0	0	3	0
Cap, veh/h	200	43	211	138	39	156	196	945	810	115	990	849
Arrive On Green	0.11	0.16	0.16	0.08	0.13	0.13	0.04	0.51	0.51	0.06	0.53	0.53
Sat Flow, veh/h	1810	264	1297	1810	300	1217	1626	1856	1590	1810	1856	1591
Grp Volume(v), veh/h	163	0	136	108	0	91	47	665	82	89	902	90
Grp Sat Flow(s),veh/h/ln	1810	0	1561	1810	0	1517	1626	1856	1590	1810	1856	1591
Q Serve(g_s), s	7.5	0.0	6.8	5.0	0.0	4.7	1.1	23.3	2.3	4.1	37.6	2.4
Cycle Q Clear(g_c), s	7.5	0.0	6.8	5.0	0.0	4.7	1.1	23.3	2.3	4.1	37.6	2.4
Prop In Lane	1.00		0.83	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	0	254	138	0	195	196	945	810	115	990	849
V/C Ratio(X)	0.81	0.00	0.54	0.78	0.00	0.47	0.24	0.70	0.10	0.77	0.91	0.11
Avail Cap(c_a), veh/h	361	0	348	319	0	303	228	1525	1306	255	1677	1438
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	0.0	32.7	38.6	0.0	34.4	17.1	16.0	10.8	39.3	18.0	9.8
Incr Delay (d2), s/veh	3.0	0.0	0.7	3.6	0.0	0.6	0.2	0.4	0.0	4.1	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	2.6	2.3	0.0	1.8	0.4	9.3	0.8	2.0	15.4	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.1	0.0	33.4	42.2	0.0	35.1	17.3	16.3	10.8	43.4	20.6	9.8
LnGrp LOS	D	A	C	D	A	D	B	B	B	D	C	A
Approach Vol, veh/h		299			199			794			1081	
Approach Delay, s/veh		37.0			38.9			15.8			21.6	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	47.4	10.5	17.8	7.4	49.5	13.4	14.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	70.0	15.0	19.0	5.0	77.0	17.0	17.0
Max Q Clear Time (g_c+I1), s	6.1	25.3	7.0	8.8	3.1	39.6	9.5	6.7
Green Ext Time (p_c), s	0.0	3.7	0.1	0.4	0.0	5.9	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.1
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	6	23	42	11	44	16	789	33	35	890	13
Future Volume (veh/h)	30	6	23	42	11	44	16	789	33	35	890	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.89	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1870	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	31	6	17	44	11	29	17	822	33	36	927	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	2	0	2	0	0	0	0
Cap, veh/h	58	73	208	73	80	211	198	988	838	264	1033	863
Arrive On Green	0.03	0.18	0.18	0.04	0.19	0.19	0.02	0.53	0.53	0.04	0.54	0.54
Sat Flow, veh/h	1810	404	1145	1810	422	1112	1810	1870	1587	1810	1900	1588
Grp Volume(v), veh/h	31	0	23	44	0	40	17	822	33	36	927	14
Grp Sat Flow(s),veh/h/ln	1810	0	1550	1810	0	1534	1810	1870	1587	1810	1900	1588
Q Serve(g_s), s	1.3	0.0	0.9	1.8	0.0	1.6	0.3	27.6	0.7	0.7	32.4	0.3
Cycle Q Clear(g_c), s	1.3	0.0	0.9	1.8	0.0	1.6	0.3	27.6	0.7	0.7	32.4	0.3
Prop In Lane	1.00		0.74	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	58	0	282	73	0	292	198	988	838	264	1033	863
V/C Ratio(X)	0.54	0.00	0.08	0.61	0.00	0.14	0.09	0.83	0.04	0.14	0.90	0.02
Avail Cap(c_a), veh/h	146	0	458	170	0	474	284	2058	1747	322	2091	1747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	0.0	25.3	35.2	0.0	25.1	14.4	14.8	8.5	12.6	15.2	7.8
Incr Delay (d2), s/veh	2.9	0.0	0.0	3.0	0.0	0.1	0.1	0.7	0.0	0.1	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.3	0.8	0.0	0.6	0.1	10.6	0.2	0.2	12.7	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.4	0.0	25.4	38.2	0.0	25.2	14.5	15.5	8.5	12.7	16.4	7.8
LnGrp LOS	D	A	C	D	A	C	B	B	A	B	B	A
Approach Vol, veh/h		54			84			872			977	
Approach Delay, s/veh		32.9			32.0			15.2			16.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	43.4	7.0	17.5	5.5	44.5	6.4	18.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	82.0	7.0	22.0	5.0	82.0	6.0	23.0
Max Q Clear Time (g_c+I1), s	2.7	29.6	3.8	2.9	2.3	34.4	3.3	3.6
Green Ext Time (p_c), s	0.0	5.0	0.0	0.0	0.0	6.1	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

USER REPORT FOR SITE

All Movement Classes

Project: Bonney Lake HS

Template: Movement Report for Appendix

Site: 101 [2025 AM Peak (Site Folder: Alt 2 -- Single Lane)]

Bonney Lake HS Access
2025 AM Peak
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	120	12.0	1.040	45.1	LOS F	38.3	978.3	1.00	2.49	3.04	15.3
8	T1	545	2.0	556	2.0	1.040	41.1	LOS F	38.3	978.3	1.00	2.49	3.04	14.6
18	R2	227	0.0	232	0.0	1.040	41.0	LOS F	38.3	978.3	1.00	2.49	3.04	14.6
Approach		890	2.8	908	2.8	1.040	41.6	LOS D	38.3	978.3	1.00	2.49	3.04	14.7
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	1.019	55.9	LOS F	26.6	664.4	1.00	2.42	3.18	14.2
6	T1	53	0.0	78	0.0	1.019	53.0	LOS F	26.6	664.4	1.00	2.42	3.18	13.5
16	R2	156	0.0	229	0.0	1.019	53.0	LOS F	26.6	664.4	1.00	2.42	3.18	13.5
Approach		383	0.0	563	0.0	1.019	54.3	LOS D	26.6	664.4	1.00	2.42	3.18	13.8
North: 199th Ave Ct E														
7	L2	134	1.0	146	1.0	0.913	19.4	LOS D	18.3	478.8	1.00	1.56	1.82	18.4
4	T1	378	10.0	411	10.0	0.913	17.1	LOS D	18.3	478.8	1.00	1.56	1.82	17.3
14	R2	182	0.0	198	0.0	0.913	16.3	LOS D	18.3	478.8	1.00	1.56	1.82	17.3
Approach		694	5.6	754	5.6	0.913	17.3	LOS B	18.3	478.8	1.00	1.56	1.82	17.5
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.746	18.8	LOS B	8.9	224.6	1.00	1.37	1.57	18.4
2	T1	64	0.0	110	0.0	0.746	15.8	LOS B	8.9	224.6	1.00	1.37	1.57	17.4
12	R2	79	2.0	136	2.0	0.746	15.9	LOS B	8.9	224.6	1.00	1.37	1.57	17.4
Approach		249	1.1	429	1.1	0.746	17.1	LOS B	8.9	224.6	1.00	1.37	1.57	17.8
All Vehicles		2216	3.0	2655	2.7	1.040	33.5	LOS C	38.3	978.3	1.00	2.03	2.48	15.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 Aftnn Peak (Site Folder: Alt 2 -- Single Lane)]

Bonney Lake HS Access
2025 Aftnn Peak
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.741	8.4	LOS A	8.9	228.1	0.83	0.81	0.98	20.4
8	T1	552	3.0	600	3.0	0.741	4.9	LOS A	8.9	228.1	0.83	0.81	0.98	19.1
18	R2	70	0.0	76	0.0	0.741	4.7	LOS A	8.9	228.1	0.83	0.81	0.98	19.1
Approach		661	3.3	718	3.3	0.741	5.1	LOS A	8.9	228.1	0.83	0.81	0.98	19.2
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.719	17.7	LOS B	8.1	201.6	1.00	1.34	1.52	18.6
6	T1	15	0.0	30	0.0	0.719	14.7	LOS B	8.1	201.6	1.00	1.34	1.52	17.5
16	R2	103	0.0	206	0.0	0.719	14.7	LOS B	8.1	201.6	1.00	1.34	1.52	17.5
Approach		208	0.0	416	0.0	0.719	16.0	LOS B	8.1	201.6	1.00	1.34	1.52	18.0
North: 199th Ave Ct E														
7	L2	74	0.0	76	0.0	0.900	12.6	LOS D	19.2	490.5	1.00	1.13	1.37	19.6
4	T1	749	3.0	764	3.0	0.900	9.8	LOS D	19.2	490.5	1.00	1.13	1.37	18.4
14	R2	76	0.0	78	0.0	0.900	9.6	LOS D	19.2	490.5	1.00	1.13	1.37	18.4
Approach		899	2.5	917	2.5	0.900	10.0	LOS B	19.2	490.5	1.00	1.13	1.37	18.5
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	1.517	258.2	LOS F	82.0	2095.5	1.00	4.89	7.15	6.2
2	T1	19	0.0	41	0.0	1.517	255.2	LOS F	82.0	2095.5	1.00	4.89	7.15	6.1
12	R2	126	6.0	274	6.0	1.517	255.7	LOS F	82.0	2095.5	1.00	4.89	7.15	6.1
Approach		280	2.7	609	2.7	1.517	256.9	LOS F	82.0	2095.5	1.00	4.89	7.15	6.1
All Vehicles		2048	2.5	2661	2.4	1.517	66.1	LOS E	82.0	2095.5	0.96	1.94	2.61	12.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 PM Peak (Site Folder: Alt 2 -- Single Lane)]

Bonney Lake HS Access
2025 PM Peak
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.710	6.3	LOS A	8.0	202.7	0.52	0.18	0.52	25.6
8	T1	789	2.0	805	2.0	0.710	1.0	LOS A	8.0	202.7	0.52	0.18	0.52	25.1
18	R2	33	0.0	34	0.0	0.710	2.0	LOS A	8.0	202.7	0.52	0.18	0.52	24.4
Approach		838	1.9	855	1.9	0.710	1.2	LOS A	8.0	202.7	0.52	0.18	0.52	25.1
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.366	9.2	LOS A	2.4	61.2	0.85	0.86	0.86	20.0
6	T1	11	0.0	25	0.0	0.366	6.2	LOS A	2.4	61.2	0.85	0.86	0.86	18.7
16	R2	44	2.0	100	2.0	0.366	6.4	LOS A	2.4	61.2	0.85	0.86	0.86	18.7
Approach		97	0.9	220	0.9	0.366	7.6	LOS A	2.4	61.2	0.85	0.86	0.86	19.3
North: 199th Ave Ct E														
7	L2	35	0.0	38	0.0	0.863	8.7	LOS D	15.7	392.6	0.93	0.61	0.98	24.9
4	T1	890	0.0	957	0.0	0.863	3.5	LOS D	15.7	392.6	0.93	0.61	0.98	24.4
14	R2	13	0.0	14	0.0	0.863	4.5	LOS D	15.7	392.6	0.93	0.61	0.98	23.8
Approach		938	0.0	1009	0.0	0.863	3.7	LOS A	15.7	392.6	0.93	0.61	0.98	24.4
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.192	11.8	LOS B	1.4	34.1	0.96	0.91	0.96	19.5
2	T1	6	0.0	7	0.0	0.192	8.8	LOS A	1.4	34.1	0.96	0.91	0.96	18.3
12	R2	23	0.0	28	0.0	0.192	8.8	LOS A	1.4	34.1	0.96	0.91	0.96	18.3
Approach		59	0.0	73	0.0	0.192	10.4	LOS B	1.4	34.1	0.96	0.91	0.96	18.9
All Vehicles		1932	0.9	2157	0.8	0.863	3.3	LOS A	15.7	392.6	0.76	0.47	0.78	23.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 AM Peak (Site Folder: Alt 3 -- Two-Lane)]

Bonney Lake HS Access
2025 AM Peak
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	128	12.0	0.496	6.8	LOS A	3.5	92.0	0.72	0.67	0.75	20.5
8	T1	545	2.0	592	2.0	0.496	2.9	LOS A	3.6	90.7	0.71	0.58	0.73	19.3
18	R2	227	0.0	247	0.0	0.496	2.5	LOS A	3.6	90.7	0.70	0.50	0.70	19.7
Approach		890	2.8	967	2.8	0.496	3.3	LOS A	3.6	92.0	0.71	0.57	0.73	19.5
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	0.823	12.7	LOS B	7.7	192.9	0.90	1.25	1.47	19.4
6	T1	53	0.0	78	0.0	0.823	9.9	LOS A	7.7	192.9	0.90	1.25	1.47	18.2
16	R2	156	0.0	229	0.0	0.823	9.9	LOS A	7.7	192.9	0.90	1.25	1.47	18.2
Approach		383	0.0	563	0.0	0.823	11.2	LOS B	7.7	192.9	0.90	1.25	1.47	18.8
North: 199th Ave Ct E														
7	L2	134	1.0	146	1.0	0.409	5.8	LOS A	2.7	71.4	0.71	0.62	0.71	20.5
4	T1	378	10.0	411	10.0	0.409	3.1	LOS A	2.9	75.3	0.71	0.57	0.71	19.3
14	R2	182	0.0	198	0.0	0.409	2.5	LOS A	2.9	75.3	0.71	0.52	0.71	19.7
Approach		694	5.6	754	5.6	0.409	3.5	LOS A	2.9	75.3	0.71	0.57	0.71	19.6
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.605	8.2	LOS A	3.9	98.2	0.76	0.93	0.97	20.2
2	T1	64	0.0	110	0.0	0.605	5.3	LOS A	3.9	98.2	0.76	0.93	0.97	18.9
12	R2	79	2.0	136	2.0	0.605	5.5	LOS A	3.9	98.2	0.76	0.93	0.97	18.9
Approach		249	1.1	429	1.1	0.605	6.6	LOS A	3.9	98.2	0.76	0.93	0.97	19.4
All Vehicles		2216	3.0	2714	2.7	0.823	5.5	LOS A	7.7	192.9	0.76	0.77	0.91	19.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 Aftnn Peak (Site Folder: Alt 3 -- Two-Lane)]

Bonney Lake HS Access
2025 Aftnn Peak
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.366	5.8	LOS A	2.4	62.7	0.67	0.47	0.67	20.6
8	T1	552	3.0	600	3.0	0.366	2.3	LOS A	2.6	65.6	0.67	0.42	0.67	19.3
18	R2	70	0.0	76	0.0	0.366	2.1	LOS A	2.6	65.6	0.66	0.38	0.66	19.7
Approach		661	3.3	718	3.3	0.366	2.5	LOS A	2.6	65.6	0.67	0.42	0.67	19.5
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.598	8.3	LOS A	3.7	92.5	0.76	0.93	0.98	20.2
6	T1	15	0.0	30	0.0	0.598	5.5	LOS A	3.7	92.5	0.76	0.93	0.98	18.9
16	R2	103	0.0	206	0.0	0.598	5.5	LOS A	3.7	92.5	0.76	0.93	0.98	18.9
Approach		208	0.0	416	0.0	0.598	6.7	LOS A	3.7	92.5	0.76	0.93	0.98	19.4
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	0.420	4.5	LOS A	2.9	74.7	0.56	0.33	0.56	20.7
4	T1	749	3.0	814	3.0	0.420	1.5	LOS A	3.0	77.0	0.55	0.29	0.55	19.4
14	R2	76	0.0	83	0.0	0.420	1.4	LOS A	3.0	77.0	0.55	0.25	0.55	19.8
Approach		899	2.5	977	2.5	0.420	1.7	LOS A	3.0	77.0	0.55	0.29	0.55	19.6
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	0.952	23.1	LOS E	13.0	332.1	0.96	1.79	2.41	17.8
2	T1	19	0.0	41	0.0	0.952	20.2	LOS E	13.0	332.1	0.96	1.79	2.41	16.8
12	R2	126	6.0	274	6.0	0.952	20.8	LOS E	13.0	332.1	0.96	1.79	2.41	16.8
Approach		280	2.7	609	2.7	0.952	21.9	LOS C	13.0	332.1	0.96	1.79	2.41	17.3
All Vehicles		2048	2.5	2720	2.4	0.952	7.2	LOS A	13.0	332.1	0.71	0.76	1.06	19.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 PM Peak (Site Folder: Alt 3 -- Two-Lane)]

Bonney Lake HS Access
2025 PM Peak
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.323	5.7	LOS A	1.9	48.3	0.27	0.11	0.27	26.0
8	T1	789	2.0	805	2.0	0.323	0.6	LOS A	1.9	48.6	0.27	0.11	0.27	25.5
18	R2	33	0.0	34	0.0	0.323	1.7	LOS A	1.9	48.6	0.26	0.10	0.26	24.8
Approach		838	1.9	855	1.9	0.323	0.7	LOS A	1.9	48.6	0.27	0.11	0.27	25.5
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.282	5.4	LOS A	1.0	26.2	0.55	0.62	0.55	20.7
6	T1	11	0.0	25	0.0	0.282	2.6	LOS A	1.0	26.2	0.55	0.62	0.55	19.3
16	R2	44	2.0	100	2.0	0.282	2.7	LOS A	1.0	26.2	0.55	0.62	0.55	19.3
Approach		97	0.9	220	0.9	0.282	3.8	LOS A	1.0	26.2	0.55	0.62	0.55	19.9
North: 199th Ave Ct E														
7	L2	35	0.0	38	0.0	0.378	6.1	LOS A	2.6	64.3	0.39	0.18	0.39	25.8
4	T1	890	0.0	957	0.0	0.378	0.9	LOS A	2.6	65.3	0.39	0.15	0.39	25.3
14	R2	13	0.0	14	0.0	0.378	2.0	LOS A	2.6	65.3	0.38	0.13	0.38	24.6
Approach		938	0.0	1009	0.0	0.378	1.1	LOS A	2.6	65.3	0.39	0.16	0.39	25.3
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.102	5.5	LOS A	0.4	9.1	0.56	0.64	0.56	20.7
2	T1	6	0.0	7	0.0	0.102	2.7	LOS A	0.4	9.1	0.56	0.64	0.56	19.3
12	R2	23	0.0	28	0.0	0.102	2.7	LOS A	0.4	9.1	0.56	0.64	0.56	19.3
Approach		59	0.0	73	0.0	0.102	4.1	LOS A	0.4	9.1	0.56	0.64	0.56	20.0
All Vehicles		1932	0.9	2157	0.8	0.378	1.3	LOS A	2.6	65.3	0.36	0.20	0.36	24.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 AM Peak (Site Folder: Alt 4 -- NBL SBL)]

Bonney Lake HS Access
2025 AM Peak
Site Category: Proposed Design 5
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	128	12.0	0.202	6.2	LOS A	1.0	28.1	0.62	0.66	0.62	20.4
8	T1	545	2.0	592	2.0	0.746	5.7	LOS A	9.6	241.6	0.87	0.92	1.10	19.0
18	R2	227	0.0	247	0.0	0.746	5.6	LOS A	9.6	241.6	0.87	0.92	1.10	19.0
Approach		890	2.8	967	2.8	0.746	5.8	LOS A	9.6	241.6	0.83	0.88	1.03	19.2
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	0.881	18.1	LOS D	10.7	266.4	0.97	1.50	1.85	18.7
6	T1	53	0.0	78	0.0	0.881	15.4	LOS D	10.7	266.4	0.97	1.50	1.85	17.5
16	R2	156	0.0	229	0.0	0.881	15.4	LOS D	10.7	266.4	0.97	1.50	1.85	17.5
Approach		383	0.0	563	0.0	0.881	16.6	LOS B	10.7	266.4	0.97	1.50	1.85	18.0
North: 199th Ave Ct E														
7	L2	134	1.0	146	1.0	0.204	5.8	LOS A	1.1	28.8	0.64	0.67	0.64	20.5
4	T1	378	10.0	411	10.0	0.591	4.1	LOS A	5.6	148.6	0.81	0.76	0.91	19.2
14	R2	182	0.0	198	0.0	0.591	3.7	LOS A	5.6	148.6	0.81	0.76	0.91	19.2
Approach		694	5.6	754	5.6	0.591	4.3	LOS A	5.6	148.6	0.78	0.74	0.86	19.5
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.625	8.9	LOS A	4.4	110.2	0.80	0.98	1.04	20.2
2	T1	64	0.0	110	0.0	0.625	6.2	LOS A	4.4	110.2	0.80	0.98	1.04	18.8
12	R2	79	2.0	136	2.0	0.625	6.3	LOS A	4.4	110.2	0.80	0.98	1.04	18.8
Approach		249	1.1	429	1.1	0.625	7.4	LOS A	4.4	110.2	0.80	0.98	1.04	19.4
All Vehicles		2216	3.0	2714	2.7	0.881	7.9	LOS A	10.7	266.4	0.84	0.99	1.15	19.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 Aftnn Peak (Site Folder: Alt 4 -- NBL SBL)]

Bonney Lake HS Access
2025 Aftnn Peak
Site Category: Proposed Design 5
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.065	5.3	LOS A	0.3	8.7	0.55	0.56	0.55	20.6
8	T1	552	3.0	600	3.0	0.589	2.6	LOS A	5.3	136.5	0.75	0.49	0.78	19.3
18	R2	70	0.0	76	0.0	0.589	2.5	LOS A	5.3	136.5	0.75	0.49	0.78	19.3
Approach		661	3.3	718	3.3	0.589	2.7	LOS A	5.3	136.5	0.74	0.49	0.77	19.4
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.660	11.6	LOS B	5.3	132.0	0.86	1.09	1.21	19.7
6	T1	15	0.0	30	0.0	0.660	8.9	LOS A	5.3	132.0	0.86	1.09	1.21	18.4
16	R2	103	0.0	206	0.0	0.660	8.9	LOS A	5.3	132.0	0.86	1.09	1.21	18.4
Approach		208	0.0	416	0.0	0.660	10.1	LOS B	5.3	132.0	0.86	1.09	1.21	18.9
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	0.093	4.2	LOS A	0.5	11.9	0.46	0.49	0.46	20.7
4	T1	749	3.0	814	3.0	0.701	2.5	LOS A	7.9	202.2	0.75	0.48	0.79	19.3
14	R2	76	0.0	83	0.0	0.701	2.4	LOS A	7.9	202.2	0.75	0.48	0.79	19.3
Approach		899	2.5	977	2.5	0.701	2.6	LOS A	7.9	202.2	0.73	0.48	0.76	19.4
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	1.161	97.4	LOS F	40.7	1038.3	1.00	3.67	5.55	11.3
2	T1	19	0.0	41	0.0	1.161	94.8	LOS F	40.7	1038.3	1.00	3.67	5.55	10.8
12	R2	126	6.0	274	6.0	1.161	95.3	LOS F	40.7	1038.3	1.00	3.67	5.55	10.8
Approach		280	2.7	609	2.7	1.161	96.3	LOS F	40.7	1038.3	1.00	3.67	5.55	11.0
All Vehicles		2048	2.5	2720	2.4	1.161	24.7	LOS C	40.7	1038.3	0.81	1.29	1.90	16.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 PM Peak (Site Folder: Alt 4 -- NBL SBL)]

Bonney Lake HS Access
2025 PM Peak
Site Category: Proposed Design 5
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.016	3.1	LOS A	0.1	1.8	0.23	0.35	0.23	20.9
8	T1	789	2.0	805	2.0	0.585	0.5	LOS A	5.0	127.2	0.36	0.09	0.36	19.6
18	R2	33	0.0	34	0.0	0.585	0.5	LOS A	5.0	127.2	0.36	0.09	0.36	19.6
Approach		838	1.9	855	1.9	0.585	0.6	LOS A	5.0	127.2	0.36	0.10	0.36	19.7
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.336	7.3	LOS A	1.7	43.4	0.71	0.76	0.71	20.5
6	T1	11	0.0	25	0.0	0.336	4.6	LOS A	1.7	43.4	0.71	0.76	0.71	19.0
16	R2	44	2.0	100	2.0	0.336	4.7	LOS A	1.7	43.4	0.71	0.76	0.71	19.0
Approach		97	0.9	220	0.9	0.336	5.8	LOS A	1.7	43.4	0.71	0.76	0.71	19.6
North: 199th Ave Ct E														
7	L2	35	0.0	38	0.0	0.039	3.4	LOS A	0.2	4.7	0.33	0.39	0.33	20.8
4	T1	890	0.0	957	0.0	0.669	1.0	LOS A	7.2	179.6	0.56	0.18	0.56	19.4
14	R2	13	0.0	14	0.0	0.669	1.0	LOS A	7.2	179.6	0.56	0.18	0.56	19.4
Approach		938	0.0	1009	0.0	0.669	1.1	LOS A	7.2	179.6	0.55	0.19	0.55	19.5
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.136	8.2	LOS A	0.7	17.2	0.74	0.77	0.74	20.3
2	T1	6	0.0	7	0.0	0.136	5.6	LOS A	0.7	17.2	0.74	0.77	0.74	18.9
12	R2	23	0.0	28	0.0	0.136	5.6	LOS A	0.7	17.2	0.74	0.77	0.74	18.9
Approach		59	0.0	73	0.0	0.136	6.9	LOS A	0.7	17.2	0.74	0.77	0.74	19.5
All Vehicles		1932	0.9	2157	0.8	0.669	1.6	LOS A	7.2	179.6	0.50	0.23	0.50	19.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 AM Peak (Site Folder: Alt 5 -- All LT Pockets)]

Bonney Lake HS Access
2025 AM Peak
Site Category: Proposed Design 6
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	120	12.0	0.229	6.2	LOS A	0.8	23.2	0.53	0.68	0.53	20.3
8	T1	545	2.0	556	2.0	0.766	4.4	LOS A	7.2	182.0	0.75	0.85	0.96	19.3
18	R2	227	0.0	232	0.0	0.766	4.3	LOS A	7.2	182.0	0.75	0.85	0.96	19.3
Approach		890	2.8	908	2.8	0.766	4.6	LOS A	7.2	182.0	0.72	0.83	0.90	19.4
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	0.362	6.7	LOS A	1.9	48.3	0.72	0.84	0.74	20.3
6	T1	53	0.0	78	0.0	0.379	3.4	LOS A	2.1	53.7	0.73	0.70	0.75	19.4
16	R2	156	0.0	229	0.0	0.379	3.4	LOS A	2.1	53.7	0.73	0.70	0.75	19.4
Approach		383	0.0	563	0.0	0.379	4.9	LOS A	2.1	53.7	0.72	0.76	0.75	19.8
North: 199th Ave Ct E														
7	L2	134	1.0	146	1.0	0.240	5.7	LOS A	0.9	23.6	0.53	0.68	0.53	20.4
4	T1	378	10.0	411	10.0	0.630	3.4	LOS A	4.5	118.7	0.67	0.67	0.79	19.4
14	R2	182	0.0	198	0.0	0.630	3.0	LOS A	4.5	118.7	0.67	0.67	0.79	19.4
Approach		694	5.6	754	5.6	0.630	3.7	LOS A	4.5	118.7	0.65	0.67	0.74	19.6
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.254	6.2	LOS A	1.2	30.2	0.65	0.77	0.65	20.3
2	T1	64	0.0	110	0.0	0.293	2.9	LOS A	1.5	37.5	0.66	0.58	0.66	19.4
12	R2	79	2.0	136	2.0	0.293	3.0	LOS A	1.5	37.5	0.66	0.58	0.66	19.4
Approach		249	1.1	429	1.1	0.293	4.3	LOS A	1.5	37.5	0.66	0.66	0.66	19.8
All Vehicles		2216	3.0	2655	2.7	0.766	4.4	LOS A	7.2	182.0	0.69	0.74	0.78	19.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 Aftnn Peak (Site Folder: Alt 5 -- All LT Pockets)]

Bonney Lake HS Access
2025 Aftnn Peak
Site Category: Proposed Design 6
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.081	5.8	LOS A	0.3	8.1	0.50	0.60	0.50	20.4
8	T1	552	3.0	600	3.0	0.664	3.2	LOS A	5.4	138.6	0.70	0.64	0.81	19.3
18	R2	70	0.0	76	0.0	0.664	3.0	LOS A	5.4	138.6	0.70	0.64	0.81	19.3
Approach		661	3.3	718	3.3	0.664	3.3	LOS A	5.4	138.6	0.69	0.64	0.80	19.4
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.283	7.6	LOS A	1.5	37.8	0.74	0.84	0.74	20.1
6	T1	15	0.0	30	0.0	0.316	4.3	LOS A	1.8	45.7	0.76	0.74	0.76	19.3
16	R2	103	0.0	206	0.0	0.316	4.3	LOS A	1.8	45.7	0.76	0.74	0.76	19.3
Approach		208	0.0	416	0.0	0.316	5.7	LOS A	1.8	45.7	0.75	0.78	0.75	19.6
North: 199th Ave Ct E														
7	L2	74	0.0	76	0.0	0.107	4.4	LOS A	0.4	10.3	0.40	0.52	0.40	20.6
4	T1	749	3.0	764	3.0	0.747	2.9	LOS A	7.7	197.2	0.71	0.58	0.79	19.3
14	R2	76	0.0	78	0.0	0.747	2.8	LOS A	7.7	197.2	0.71	0.58	0.79	19.3
Approach		899	2.5	917	2.5	0.747	3.0	LOS A	7.7	197.2	0.68	0.58	0.76	19.4
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	0.483	9.9	LOS A	3.3	81.3	0.84	1.00	1.01	19.7
2	T1	19	0.0	41	0.0	0.484	6.5	LOS A	3.4	87.5	0.84	0.95	1.01	18.9
12	R2	126	6.0	274	6.0	0.484	6.8	LOS A	3.4	87.5	0.84	0.95	1.01	18.9
Approach		280	2.7	609	2.7	0.484	8.3	LOS A	3.4	87.5	0.84	0.97	1.01	19.3
All Vehicles		2048	2.5	2661	2.4	0.747	4.7	LOS A	7.7	197.2	0.73	0.72	0.82	19.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 PM Peak (Site Folder: Alt 5 -- All LT Pockets)]

Bonney Lake HS Access
2025 PM Peak
Site Category: Proposed Design 6
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.020	3.3	LOS A	0.1	1.8	0.21	0.38	0.21	20.8
8	T1	789	2.0	805	2.0	0.678	0.6	LOS A	5.5	140.8	0.38	0.11	0.38	19.6
18	R2	33	0.0	34	0.0	0.678	0.6	LOS A	5.5	140.8	0.38	0.11	0.38	19.6
Approach		838	1.9	855	1.9	0.678	0.7	LOS A	5.5	140.8	0.38	0.11	0.38	19.6
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.141	6.9	LOS A	0.7	17.6	0.68	0.73	0.68	20.2
6	T1	11	0.0	25	0.0	0.162	3.7	LOS A	0.9	21.8	0.68	0.61	0.68	19.3
16	R2	44	2.0	100	2.0	0.162	3.8	LOS A	0.9	21.8	0.68	0.61	0.68	19.3
Approach		97	0.9	220	0.9	0.162	5.1	LOS A	0.9	21.8	0.68	0.67	0.68	19.7
North: 199th Ave Ct E														
7	L2	35	0.0	38	0.0	0.048	3.6	LOS A	0.2	4.5	0.29	0.42	0.29	20.7
4	T1	890	0.0	957	0.0	0.772	1.2	LOS A	8.3	208.5	0.63	0.21	0.63	19.4
14	R2	13	0.0	14	0.0	0.772	1.2	LOS A	8.3	208.5	0.63	0.21	0.63	19.4
Approach		938	0.0	1009	0.0	0.772	1.3	LOS A	8.3	208.5	0.62	0.22	0.62	19.4
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.059	7.6	LOS A	0.3	8.4	0.77	0.73	0.77	20.1
2	T1	6	0.0	7	0.0	0.065	5.4	LOS A	0.3	8.7	0.76	0.66	0.76	19.1
12	R2	23	0.0	28	0.0	0.065	5.4	LOS A	0.3	8.7	0.76	0.66	0.76	19.1
Approach		59	0.0	73	0.0	0.065	6.5	LOS A	0.3	8.7	0.76	0.70	0.76	19.6
All Vehicles		1932	0.9	2157	0.8	0.772	1.6	LOS A	8.3	208.5	0.54	0.24	0.54	19.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 AM Peak (Site Folder: Alt 6 -- NB Two-Lane w/drop)]

Bonney Lake HS Access
2025 AM Peak
Site Category: Proposed Design 7
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	128	12.0	0.635	5.5	LOS A	4.5	115.7	0.63	0.54	0.72	20.8
8	T1	545	2.0	592	2.0	0.635	2.5	LOS A	4.5	115.7	0.63	0.54	0.72	19.3
18	R2	227	0.0	247	0.0	0.293	1.9	LOS A	1.2	30.4	0.50	0.40	0.50	19.6
Approach		890	2.8	967	2.8	0.635	2.7	LOS A	4.5	115.7	0.59	0.51	0.66	19.6
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	0.415	9.8	LOS A	3.0	74.1	0.87	0.96	0.95	19.7
6	T1	53	0.0	78	0.0	0.407	5.6	LOS A	3.1	77.4	0.89	0.85	0.91	19.0
16	R2	156	0.0	229	0.0	0.407	6.1	LOS A	3.1	77.4	0.89	0.85	0.91	19.0
Approach		383	0.0	563	0.0	0.415	7.7	LOS A	3.1	77.4	0.88	0.90	0.93	19.4
North: 199th Ave Ct E														
7	L2	134	1.0	146	1.0	0.200	4.9	LOS A	0.8	20.1	0.51	0.64	0.51	20.5
4	T1	378	10.0	411	10.0	0.562	2.3	LOS A	3.7	96.3	0.63	0.46	0.69	19.4
14	R2	182	0.0	198	0.0	0.562	2.0	LOS A	3.7	96.3	0.63	0.46	0.69	19.4
Approach		694	5.6	754	5.6	0.562	2.7	LOS A	3.7	96.3	0.61	0.50	0.66	19.6
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.231	5.9	LOS A	1.1	27.7	0.64	0.74	0.64	20.4
2	T1	64	0.0	110	0.0	0.252	2.4	LOS A	1.3	32.9	0.64	0.48	0.64	19.4
12	R2	79	2.0	136	2.0	0.252	2.5	LOS A	1.3	32.9	0.64	0.48	0.64	19.4
Approach		249	1.1	429	1.1	0.252	3.9	LOS A	1.3	32.9	0.64	0.59	0.64	19.8
All Vehicles		2216	3.0	2714	2.7	0.635	4.0	LOS A	4.5	115.7	0.67	0.60	0.71	19.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 Aftnn Peak (Site Folder: Alt 6 -- NB Two-Lane w/drop)]

Bonney Lake HS Access
2025 Aftnn Peak
Site Category: Proposed Design 7
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.510	4.7	LOS A	3.1	80.8	0.59	0.32	0.61	20.8
8	T1	552	3.0	600	3.0	0.510	1.8	LOS A	3.1	80.8	0.58	0.33	0.60	19.4
18	R2	70	0.0	76	0.0	0.187	2.0	LOS A	0.8	19.6	0.50	0.39	0.50	19.6
Approach		661	3.3	718	3.3	0.510	2.0	LOS A	3.1	80.8	0.57	0.34	0.59	19.5
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.249	6.9	LOS A	1.3	32.8	0.71	0.80	0.71	20.2
6	T1	15	0.0	30	0.0	0.262	3.5	LOS A	1.5	38.1	0.72	0.66	0.72	19.4
16	R2	103	0.0	206	0.0	0.262	4.1	LOS A	1.5	38.1	0.72	0.66	0.72	19.4
Approach		208	0.0	416	0.0	0.262	5.3	LOS A	1.5	38.1	0.72	0.72	0.72	19.7
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	0.096	4.0	LOS A	0.4	9.3	0.38	0.49	0.38	20.6
4	T1	749	3.0	814	3.0	0.708	2.0	LOS A	6.5	166.7	0.64	0.39	0.68	19.4
14	R2	76	0.0	83	0.0	0.708	1.9	LOS A	6.5	166.7	0.64	0.39	0.68	19.4
Approach		899	2.5	977	2.5	0.708	2.1	LOS A	6.5	166.7	0.62	0.40	0.66	19.5
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	0.463	10.0	LOS A	3.1	78.6	0.84	1.00	1.00	19.7
2	T1	19	0.0	41	0.0	0.427	5.5	LOS A	2.9	76.4	0.84	0.90	0.93	19.0
12	R2	126	6.0	274	6.0	0.427	5.8	LOS A	2.9	76.4	0.84	0.90	0.93	19.0
Approach		280	2.7	609	2.7	0.463	7.8	LOS A	3.1	78.6	0.84	0.95	0.97	19.4
All Vehicles		2048	2.5	2720	2.4	0.708	3.8	LOS A	6.5	166.7	0.67	0.55	0.72	19.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2025 PM Peak (Site Folder: Alt 6 -- NB Two-Lane w/drop)]

Bonney Lake HS Access
2025 PM Peak
Site Category: Proposed Design 7
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.501	3.1	LOS A	3.1	77.8	0.27	0.07	0.27	21.2
8	T1	789	2.0	805	2.0	0.501	0.5	LOS A	3.1	77.8	0.27	0.07	0.27	19.7
18	R2	33	0.0	34	0.0	0.184	0.5	LOS A	0.8	19.1	0.23	0.09	0.23	19.8
Approach		838	1.9	855	1.9	0.501	0.6	LOS A	3.1	77.8	0.27	0.08	0.27	19.8
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.114	5.6	LOS A	0.5	12.3	0.58	0.67	0.58	20.4
6	T1	11	0.0	25	0.0	0.124	2.3	LOS A	0.6	14.4	0.58	0.48	0.58	19.5
16	R2	44	2.0	100	2.0	0.124	2.7	LOS A	0.6	14.4	0.58	0.48	0.58	19.5
Approach		97	0.9	220	0.9	0.124	3.9	LOS A	0.6	14.4	0.58	0.56	0.58	19.9
North: 199th Ave Ct E														
7	L2	35	0.0	38	0.0	0.041	3.4	LOS A	0.2	3.9	0.27	0.40	0.27	20.7
4	T1	890	0.0	957	0.0	0.692	0.8	LOS A	6.2	154.8	0.49	0.15	0.49	19.5
14	R2	13	0.0	14	0.0	0.692	0.8	LOS A	6.2	154.8	0.49	0.15	0.49	19.5
Approach		938	0.0	1009	0.0	0.692	0.9	LOS A	6.2	154.8	0.49	0.15	0.49	19.6
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.048	7.1	LOS A	0.3	7.1	0.75	0.68	0.75	20.2
2	T1	6	0.0	7	0.0	0.058	5.0	LOS A	0.3	7.7	0.74	0.63	0.74	19.1
12	R2	23	0.0	28	0.0	0.058	5.0	LOS A	0.3	7.7	0.74	0.63	0.74	19.1
Approach		59	0.0	73	0.0	0.058	6.1	LOS A	0.3	7.7	0.74	0.66	0.74	19.7
All Vehicles		1932	0.9	2157	0.8	0.692	1.3	LOS A	6.2	154.8	0.42	0.18	0.42	19.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Intersection	
Int Delay, s/veh	0.9

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	3	373	4	6	131	8	17
Future Vol, veh/h	3	373	4	6	131	8	17
Conflicting Peds, #/hr	0	0	6	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0	-
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	59	59	59	61	61	61	61
Heavy Vehicles, %	0	1	25	40	4	71	87
Mvmt Flow	5	632	7	10	215	13	28

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	-	0	0	645	0	877	642
Stage 1	-	-	-	-	-	642	-
Stage 2	-	-	-	-	-	235	-
Critical Hdwy	-	-	-	4.5	-	7.11	7.07
Critical Hdwy Stg 1	-	-	-	-	-	6.11	-
Critical Hdwy Stg 2	-	-	-	-	-	6.11	-
Follow-up Hdwy	-	-	-	2.56	-	4.139	4.083
Pot Cap-1 Maneuver	-	-	-	783	-	244	352
Stage 1	-	-	-	-	-	414	-
Stage 2	-	-	-	-	-	666	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	-	-	-	779	-	239	350
Mov Cap-2 Maneuver	-	-	-	-	-	239	-
Stage 1	-	-	-	-	-	412	-
Stage 2	-	-	-	-	-	657	-

Approach	EB	WB	NB
HCM Control Delay, s		0.4	18.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	305	-	-	779	-
HCM Lane V/C Ratio	0.134	-	-	0.013	-
HCM Control Delay (s)	18.6	-	-	9.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	150	240	218	95	42	134
Future Vol, veh/h	150	240	218	95	42	134
Conflicting Peds, #/hr	0	30	30	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	74	74	63	63
Heavy Vehicles, %	14	0	1	11	0	2
Mvmt Flow	250	400	295	128	67	213

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	680	0	1198	480
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	718	-
Critical Hdwy	-	-	4.11	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	917	-	207	586
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	891	-	135	569
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	326	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.7	27.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	434	-	-	891	-
HCM Lane V/C Ratio	0.644	-	-	0.331	-
HCM Control Delay (s)	27.1	-	-	11	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	4.4	-	-	1.5	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	120	11	1	3	290	14	22
Future Vol, veh/h	120	11	1	3	290	14	22
Conflicting Peds, #/hr	0	26	3	26	0	1	3
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	82	82	70	70	70	69	69
Heavy Vehicles, %	2	80	0	33	2	69	50
Mvmt Flow	146	13	1	4	414	20	32

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	0	-	185	0	602	182
Stage 1	-	-	-	-	-	179	-
Stage 2	-	-	-	-	-	423	-
Critical Hdwy	-	-	-	4.43	-	7.09	6.7
Critical Hdwy Stg 1	-	-	-	-	-	6.09	-
Critical Hdwy Stg 2	-	-	-	-	-	6.09	-
Follow-up Hdwy	-	-	-	2.497	-	4.121	3.75
Pot Cap-1 Maneuver	-	-	-	1223	-	369	751
Stage 1	-	-	-	-	-	714	-
Stage 2	-	-	-	-	-	539	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	~ -4	~ -4	-	359	730
Mov Cap-2 Maneuver	-	-	-	-	-	434	-
Stage 1	-	-	-	-	-	696	-
Stage 2	-	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0		11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	577	-	-	+	-
HCM Lane V/C Ratio	0.09	-	-	-	-
HCM Control Delay (s)	11.9	-	-	-	-
HCM Lane LOS	B	-	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	11.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	113	30	52	200	94	156
Future Vol, veh/h	113	30	52	200	94	156
Conflicting Peds, #/hr	0	50	50	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	86	86	54	54
Heavy Vehicles, %	16	0	2	3	0	1
Mvmt Flow	166	44	60	233	174	289

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	260	0	591	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	353	-
Critical Hdwy	-	-	4.12	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1304	-	473	803
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1242	-	429	765
Mov Cap-2 Maneuver	-	-	-	-	524	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	22.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	652	-	-	1242	-
HCM Lane V/C Ratio	0.71	-	-	0.049	-
HCM Control Delay (s)	22.9	-	-	8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	5.9	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	145	3	11	181	1	10
Future Vol, veh/h	145	3	11	181	1	10
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	89	89	63	63
Heavy Vehicles, %	9	0	10	0	0	11
Mvmt Flow	169	3	12	203	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	176	0	402	175
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	227	-
Critical Hdwy	-	-	4.2	-	6.4	6.31
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.29	-	3.5	3.399
Pot Cap-1 Maneuver	-	-	1353	-	608	846
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	815	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1348	-	600	843
Mov Cap-2 Maneuver	-	-	-	-	653	-
Stage 1	-	-	-	-	857	-
Stage 2	-	-	-	-	808	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	821	-	-	1348	-
HCM Lane V/C Ratio	0.021	-	-	0.009	-
HCM Control Delay (s)	9.5	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	149	6	12	178	14	21
Future Vol, veh/h	149	6	12	178	14	21
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	90	90	67	67
Heavy Vehicles, %	8	0	0	0	0	0
Mvmt Flow	171	7	13	198	21	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	181	0	402	178
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	224	-
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	-	-	1407	-	608	870
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	818	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1403	-	601	868
Mov Cap-2 Maneuver	-	-	-	-	654	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	811	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	768	-	-	1403	-
HCM Lane V/C Ratio	0.068	-	-	0.01	-
HCM Control Delay (s)	10	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	64	79	174	53	156	118	1247	227	134	526	182
Future Volume (veh/h)	106	64	79	174	53	156	118	1247	227	134	526	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.85	1.00		0.87	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1900	1900	1900	1722	1870	1900	1885	1752	1900
Adj Flow Rate, veh/h	112	67	78	183	56	122	124	1313	228	141	554	181
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	0	0	0	12	2	0	1	10	0
Cap, veh/h	139	104	122	212	88	191	270	772	134	166	676	221
Arrive On Green	0.08	0.14	0.14	0.12	0.18	0.18	0.05	0.50	0.50	0.09	0.54	0.54
Sat Flow, veh/h	1795	728	848	1810	479	1043	1640	1547	269	1795	1258	411
Grp Volume(v), veh/h	112	0	145	183	0	178	124	0	1541	141	0	735
Grp Sat Flow(s),veh/h/ln	1795	0	1576	1810	0	1522	1640	0	1816	1795	0	1669
Q Serve(g_s), s	6.6	0.0	9.4	10.7	0.0	11.7	4.0	0.0	54.0	8.4	0.0	39.4
Cycle Q Clear(g_c), s	6.6	0.0	9.4	10.7	0.0	11.7	4.0	0.0	54.0	8.4	0.0	39.4
Prop In Lane	1.00		0.54	1.00		0.69	1.00		0.15	1.00		0.25
Lane Grp Cap(c), veh/h	139	0	226	212	0	279	270	0	906	166	0	897
V/C Ratio(X)	0.81	0.00	0.64	0.86	0.00	0.64	0.46	0.00	1.70	0.85	0.00	0.82
Avail Cap(c_a), veh/h	182	0	248	217	0	279	273	0	906	166	0	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	43.7	46.9	0.0	40.9	18.8	0.0	27.1	48.4	0.0	20.7
Incr Delay (d2), s/veh	13.5	0.0	3.3	26.3	0.0	3.7	0.5	0.0	320.3	30.6	0.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.3	0.0	7.0	10.6	0.0	8.3	2.7	0.0	161.4	8.9	0.0	22.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.6	0.0	47.1	73.2	0.0	44.6	19.2	0.0	347.4	79.0	0.0	26.4
LnGrp LOS	E	A	D	E	A	D	B	A	F	E	A	C
Approach Vol, veh/h		257			361			1665			876	
Approach Delay, s/veh		53.8			59.1			322.9			34.8	
Approach LOS		D			E			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	58.0	16.7	19.5	9.8	62.2	12.4	23.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	10.0	54.0	13.0	17.0	6.0	58.0	11.0	19.0
Max Q Clear Time (g_c+I1), s	10.4	56.0	12.7	11.4	6.0	41.4	8.6	13.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.0	3.7	0.0	0.3

Intersection Summary

HCM 6th Ctrl Delay	191.0
HCM 6th LOS	F

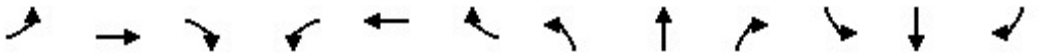
Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	19	126	90	15	103	39	532	70	74	1023	76
Future Volume (veh/h)	135	19	126	90	15	103	39	532	70	74	1023	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.89	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1900	1707	1856	1900	1900	1856	1900
Adj Flow Rate, veh/h	163	23	113	108	18	73	47	641	82	89	1233	90
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	6	0	0	0	13	3	0	0	3	0
Cap, veh/h	126	31	150	126	35	143	107	1009	129	112	1122	82
Arrive On Green	0.07	0.12	0.12	0.07	0.12	0.12	0.03	0.63	0.63	0.06	0.66	0.66
Sat Flow, veh/h	1810	258	1268	1810	298	1208	1626	1610	206	1810	1707	125
Grp Volume(v), veh/h	163	0	136	108	0	91	47	0	723	89	0	1323
Grp Sat Flow(s),veh/h/ln	1810	0	1526	1810	0	1506	1626	0	1816	1810	0	1832
Q Serve(g_s), s	9.0	0.0	11.2	7.6	0.0	7.3	1.3	0.0	31.9	6.3	0.0	85.0
Cycle Q Clear(g_c), s	9.0	0.0	11.2	7.6	0.0	7.3	1.3	0.0	31.9	6.3	0.0	85.0
Prop In Lane	1.00		0.83	1.00		0.80	1.00		0.11	1.00		0.07
Lane Grp Cap(c), veh/h	126	0	180	126	0	178	107	0	1138	112	0	1203
V/C Ratio(X)	1.29	0.00	0.75	0.86	0.00	0.51	0.44	0.00	0.64	0.80	0.00	1.10
Avail Cap(c_a), veh/h	126	0	201	126	0	198	118	0	1138	182	0	1203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	60.2	0.0	55.2	59.6	0.0	53.5	33.2	0.0	15.0	59.9	0.0	22.2
Incr Delay (d2), s/veh	179.2	0.0	11.3	39.5	0.0	0.8	1.1	0.0	0.9	4.8	0.0	57.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	0.0	4.9	4.9	0.0	2.9	1.0	0.0	13.2	3.1	0.0	53.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	239.4	0.0	66.5	99.0	0.0	54.4	34.2	0.0	15.9	64.8	0.0	79.8
LnGrp LOS	F	A	E	F	A	D	C	A	B	E	A	F
Approach Vol, veh/h		299			199			770			1412	
Approach Delay, s/veh		160.8			78.6			17.0			78.8	
Approach LOS		F			E			B			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	85.1	13.0	19.3	8.1	89.0	13.0	19.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	77.0	9.0	17.0	5.0	85.0	9.0	17.0
Max Q Clear Time (g_c+I1), s	8.3	33.9	9.6	13.2	3.3	87.0	11.0	9.3
Green Ext Time (p_c), s	0.0	4.1	0.0	0.2	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	70.2
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	6	23	42	11	44	16	759	33	35	1218	13
Future Volume (veh/h)	30	6	23	42	11	44	16	759	33	35	1218	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	1.00		0.83	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1870	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	31	6	17	44	11	29	17	791	33	36	1269	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	2	0	2	0	0	0	0
Cap, veh/h	49	43	122	59	47	125	126	1226	51	412	1312	14
Arrive On Green	0.03	0.11	0.11	0.03	0.12	0.12	0.02	0.69	0.69	0.03	0.70	0.70
Sat Flow, veh/h	1810	383	1086	1810	401	1057	1810	1782	74	1810	1875	21
Grp Volume(v), veh/h	31	0	23	44	0	40	17	0	824	36	0	1283
Grp Sat Flow(s),veh/h/ln	1810	0	1469	1810	0	1458	1810	0	1856	1810	0	1896
Q Serve(g_s), s	2.0	0.0	1.6	2.8	0.0	2.9	0.3	0.0	29.1	0.7	0.0	73.4
Cycle Q Clear(g_c), s	2.0	0.0	1.6	2.8	0.0	2.9	0.3	0.0	29.1	0.7	0.0	73.4
Prop In Lane	1.00		0.74	1.00		0.73	1.00		0.04	1.00		0.01
Lane Grp Cap(c), veh/h	49	0	166	59	0	172	126	0	1277	412	0	1326
V/C Ratio(X)	0.63	0.00	0.14	0.75	0.00	0.23	0.14	0.00	0.65	0.09	0.00	0.97
Avail Cap(c_a), veh/h	93	0	214	124	0	237	170	0	1367	436	0	1397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.2	0.0	46.7	56.0	0.0	46.7	28.2	0.0	10.2	8.6	0.0	16.3
Incr Delay (d2), s/veh	4.9	0.0	0.1	6.8	0.0	0.3	0.2	0.0	0.7	0.0	0.0	16.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.6	1.4	0.0	1.1	0.3	0.0	11.3	0.2	0.0	34.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.1	0.0	46.8	62.8	0.0	46.9	28.4	0.0	10.9	8.6	0.0	32.5
LnGrp LOS	E	A	D	E	A	D	C	A	B	A	A	C
Approach Vol, veh/h		54			84			841			1319	
Approach Delay, s/veh		55.0			55.3			11.2			31.9	
Approach LOS		E			E			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	84.4	7.8	17.2	6.1	85.7	7.2	17.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	86.0	8.0	17.0	5.0	86.0	6.0	19.0
Max Q Clear Time (g_c+I1), s	2.7	31.1	4.8	3.6	2.3	75.4	4.0	4.9
Green Ext Time (p_c), s	0.0	5.0	0.0	0.0	0.0	6.3	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	64	79	174	53	156	118	1247	227	134	526	182
Future Volume (veh/h)	106	64	79	174	53	156	118	1247	227	134	526	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.85	1.00		0.84	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1870	1900	1900	1900	1722	1870	1900	1885	1752	1900
Adj Flow Rate, veh/h	112	67	78	183	56	122	124	1313	228	141	554	181
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	2	0	0	0	12	2	0	1	10	0
Cap, veh/h	134	102	118	146	68	149	421	1143	968	109	1106	1001
Arrive On Green	0.07	0.14	0.14	0.08	0.15	0.15	0.04	0.61	0.61	0.06	0.63	0.63
Sat Flow, veh/h	1795	726	846	1810	467	1017	1640	1870	1584	1795	1752	1585
Grp Volume(v), veh/h	112	0	145	183	0	178	124	1313	228	141	554	181
Grp Sat Flow(s),veh/h/ln	1795	0	1572	1810	0	1484	1640	1870	1584	1795	1752	1585
Q Serve(g_s), s	9.2	0.0	13.0	12.0	0.0	17.3	4.2	91.0	6.4	9.0	25.4	7.1
Cycle Q Clear(g_c), s	9.2	0.0	13.0	12.0	0.0	17.3	4.2	91.0	6.4	9.0	25.4	7.1
Prop In Lane	1.00		0.54	1.00		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	0	220	146	0	217	421	1143	968	109	1106	1001
V/C Ratio(X)	0.84	0.00	0.66	1.25	0.00	0.82	0.29	1.15	0.24	1.30	0.50	0.18
Avail Cap(c_a), veh/h	145	0	232	146	0	219	421	1143	968	109	1106	1001
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.0	0.0	60.6	68.4	0.0	61.6	11.8	28.9	5.6	69.9	14.8	11.4
Incr Delay (d2), s/veh	29.2	0.0	4.7	158.5	0.0	19.8	0.1	77.3	0.0	186.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.1	0.0	9.4	19.1	0.0	12.4	2.9	86.5	6.1	16.1	15.5	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.2	0.0	65.3	226.9	0.0	81.4	12.0	106.2	5.7	256.4	14.9	11.4
LnGrp LOS	F	A	E	F	A	F	B	F	A	F	B	B
Approach Vol, veh/h		257			361			1665			876	
Approach Delay, s/veh		79.2			155.2			85.4			53.1	
Approach LOS		E			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	95.0	16.0	24.9	10.0	98.0	15.1	25.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	91.0	12.0	22.0	6.0	94.0	12.0	22.0
Max Q Clear Time (g_c+I1), s	11.0	93.0	14.0	15.0	6.2	27.4	11.2	19.3
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	3.1	0.0	0.2

Intersection Summary

HCM 6th Ctrl Delay	83.9
HCM 6th LOS	F

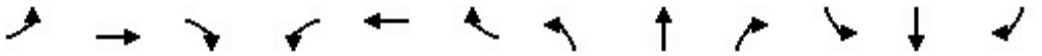
Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	19	126	90	15	103	39	532	70	74	1023	76
Future Volume (veh/h)	135	19	126	90	15	103	39	532	70	74	1023	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.90	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1900	1707	1856	1900	1900	1856	1900
Adj Flow Rate, veh/h	163	23	113	108	18	73	47	641	82	89	1233	90
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	6	0	0	0	13	3	0	0	3	0
Cap, veh/h	144	37	180	132	40	163	109	1109	952	112	1165	1000
Arrive On Green	0.08	0.14	0.14	0.07	0.13	0.13	0.03	0.60	0.60	0.06	0.63	0.63
Sat Flow, veh/h	1810	261	1285	1810	301	1220	1626	1856	1593	1810	1856	1593
Grp Volume(v), veh/h	163	0	136	108	0	91	47	641	82	89	1233	90
Grp Sat Flow(s),veh/h/ln	1810	0	1546	1810	0	1521	1626	1856	1593	1810	1856	1593
Q Serve(g_s), s	10.0	0.0	10.4	7.4	0.0	6.9	1.4	26.7	2.7	6.1	79.0	2.8
Cycle Q Clear(g_c), s	10.0	0.0	10.4	7.4	0.0	6.9	1.4	26.7	2.7	6.1	79.0	2.8
Prop In Lane	1.00		0.83	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	144	0	217	132	0	204	109	1109	952	112	1165	1000
V/C Ratio(X)	1.13	0.00	0.63	0.82	0.00	0.45	0.43	0.58	0.09	0.80	1.06	0.09
Avail Cap(c_a), veh/h	144	0	270	144	0	266	122	1109	952	173	1165	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.9	0.0	51.0	57.5	0.0	50.2	31.4	15.5	10.7	58.3	23.4	9.2
Incr Delay (d2), s/veh	115.5	0.0	1.2	25.2	0.0	0.6	1.0	0.5	0.0	6.4	43.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	0.0	4.2	4.3	0.0	2.7	0.9	11.3	1.0	3.0	46.4	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	173.5	0.0	52.2	82.7	0.0	50.8	32.4	16.0	10.7	64.7	66.8	9.3
LnGrp LOS	F	A	D	F	A	D	C	B	B	E	F	A
Approach Vol, veh/h		299			199			770			1412	
Approach Delay, s/veh		118.3			68.1			16.5			63.0	
Approach LOS		F			E			B			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	79.3	13.2	21.6	8.0	83.0	14.0	20.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	72.0	10.0	22.0	5.0	79.0	10.0	22.0
Max Q Clear Time (g_c+I1), s	8.1	28.7	9.4	12.4	3.4	81.0	12.0	8.9
Green Ext Time (p_c), s	0.0	3.5	0.0	0.3	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	56.2
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	6	23	42	11	44	16	759	33	35	1218	13
Future Volume (veh/h)	30	6	23	42	11	44	16	759	33	35	1218	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.87	1.00		0.86	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1870	1900	1870	1900	1900	1900	1900
Adj Flow Rate, veh/h	31	6	17	44	11	29	17	791	33	36	1269	14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	2	0	2	0	0	0	0
Cap, veh/h	48	54	154	58	59	155	108	1252	1066	400	1293	1084
Arrive On Green	0.03	0.14	0.14	0.03	0.14	0.14	0.02	0.67	0.67	0.03	0.68	0.68
Sat Flow, veh/h	1810	394	1115	1810	411	1083	1810	1870	1592	1810	1900	1592
Grp Volume(v), veh/h	31	0	23	44	0	40	17	791	33	36	1269	14
Grp Sat Flow(s),veh/h/ln	1810	0	1509	1810	0	1494	1810	1870	1592	1810	1900	1592
Q Serve(g_s), s	2.1	0.0	1.6	2.9	0.0	2.9	0.4	29.5	0.9	0.7	78.3	0.3
Cycle Q Clear(g_c), s	2.1	0.0	1.6	2.9	0.0	2.9	0.4	29.5	0.9	0.7	78.3	0.3
Prop In Lane	1.00		0.74	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	48	0	209	58	0	214	108	1252	1066	400	1293	1084
V/C Ratio(X)	0.64	0.00	0.11	0.76	0.00	0.19	0.16	0.63	0.03	0.09	0.98	0.01
Avail Cap(c_a), veh/h	74	0	273	74	0	270	150	1290	1098	422	1310	1098
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.7	0.0	45.9	58.5	0.0	45.9	31.3	11.5	6.8	9.4	18.7	6.3
Incr Delay (d2), s/veh	5.2	0.0	0.1	21.2	0.0	0.2	0.2	0.7	0.0	0.0	20.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.6	1.7	0.0	1.1	0.3	11.9	0.3	0.3	38.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.9	0.0	46.0	79.7	0.0	46.1	31.5	12.2	6.8	9.5	39.0	6.3
LnGrp LOS	E	A	D	E	A	D	C	B	A	A	D	A
Approach Vol, veh/h		54			84			841			1319	
Approach Delay, s/veh		56.3			63.7			12.4			37.8	
Approach LOS		E			E			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.5	85.6	7.9	20.9	6.2	86.9	7.2	21.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	84.0	5.0	22.0	5.0	84.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s	2.7	31.5	4.9	3.6	2.4	80.3	4.1	4.9				
Green Ext Time (p_c), s	0.0	4.7	0.0	0.0	0.0	2.6	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			29.9									
HCM 6th LOS			C									

USER REPORT FOR SITE

All Movement Classes

Project: Bonney Lake HS - 2030 Analysis

Template: Movement Report for Appendix

Site: 101 [2030 AM Peak (Site Folder: Alt 2 -- Single Lane)]

Bonney Lake HS Access
2030 AM Peak
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	120	12.0	1.620	288.0	LOS F	217.9	5553.8	1.00	8.59	10.65	5.8
8	T1	1247	2.0	1272	2.0	1.620	284.5	LOS F	217.9	5553.8	1.00	8.59	10.65	5.7
18	R2	227	0.0	232	0.0	1.620	284.4	LOS F	217.9	5553.8	1.00	8.59	10.65	5.7
Approach		1592	2.5	1624	2.5	1.620	284.7	LOS F	217.9	5553.8	1.00	8.59	10.65	5.7
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	1.221	136.7	LOS F	50.7	1268.2	1.00	3.65	5.04	9.4
6	T1	53	0.0	78	0.0	1.221	133.8	LOS F	50.7	1268.2	1.00	3.65	5.04	9.1
16	R2	156	0.0	229	0.0	1.221	133.8	LOS F	50.7	1268.2	1.00	3.65	5.04	9.1
Approach		383	0.0	563	0.0	1.221	135.1	LOS F	50.7	1268.2	1.00	3.65	5.04	9.2
North: 199th Ave Ct E														
7	L2	134	1.0	137	1.0	0.843	10.9	LOS B	14.2	372.8	0.99	1.13	1.34	19.8
4	T1	526	10.0	537	10.0	0.843	8.4	LOS A	14.2	372.8	0.99	1.13	1.34	18.6
14	R2	182	0.0	186	0.0	0.843	7.8	LOS A	14.2	372.8	0.99	1.13	1.34	18.6
Approach		842	6.4	859	6.4	0.843	8.6	LOS A	14.2	372.8	0.99	1.13	1.34	18.8
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.739	20.0	LOS B	9.4	237.7	1.00	1.39	1.58	18.3
2	T1	64	0.0	110	0.0	0.739	16.9	LOS B	9.4	237.7	1.00	1.39	1.58	17.2
12	R2	79	2.0	136	2.0	0.739	17.1	LOS B	9.4	237.7	1.00	1.39	1.58	17.2
Approach		249	1.1	429	1.1	0.739	18.3	LOS B	9.4	237.7	1.00	1.39	1.58	17.7
All Vehicles		3066	3.1	3476	2.9	1.620	159.3	LOS F	217.9	5553.8	1.00	5.06	6.32	8.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 Aftnn Peak (Site Folder: Alt 2 -- Single Lane)]

Bonney Lake HS Access
2030 Aftnn Peak
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.603	4.9	LOS A	5.1	129.8	0.64	0.31	0.64	20.7
8	T1	532	3.0	578	3.0	0.603	1.6	LOS A	5.1	129.8	0.64	0.31	0.64	19.4
18	R2	70	0.0	76	0.0	0.603	1.5	LOS A	5.1	129.8	0.64	0.31	0.64	19.4
Approach		641	3.3	697	3.3	0.603	1.8	LOS A	5.1	129.8	0.64	0.31	0.64	19.5
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.542	10.0	LOS A	4.8	121.0	0.90	1.00	1.08	19.9
6	T1	15	0.0	30	0.0	0.542	7.0	LOS A	4.8	121.0	0.90	1.00	1.08	18.6
16	R2	103	0.0	206	0.0	0.542	7.0	LOS A	4.8	121.0	0.90	1.00	1.08	18.6
Approach		208	0.0	416	0.0	0.542	8.3	LOS A	4.8	121.0	0.90	1.00	1.08	19.1
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	1.107	61.6	LOS F	68.5	1749.3	1.00	2.88	3.27	13.7
4	T1	1023	3.0	1112	3.0	1.107	58.8	LOS F	68.5	1749.3	1.00	2.88	3.27	13.1
14	R2	76	0.0	83	0.0	1.107	58.6	LOS F	68.5	1749.3	1.00	2.88	3.27	13.1
Approach		1173	2.6	1275	2.6	1.107	58.9	LOS E	68.5	1749.3	1.00	2.88	3.27	13.2
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	2.052	505.3	LOS F	119.3	3047.3	1.00	5.17	7.50	3.7
2	T1	19	0.0	41	0.0	2.052	502.3	LOS F	119.3	3047.3	1.00	5.17	7.50	3.6
12	R2	126	6.0	274	6.0	2.052	502.7	LOS F	119.3	3047.3	1.00	5.17	7.50	3.6
Approach		280	2.7	609	2.7	2.052	503.9	LOS F	119.3	3047.3	1.00	5.17	7.50	3.7
All Vehicles		2302	2.6	2996	2.4	2.052	129.0	LOS F	119.3	3047.3	0.90	2.49	3.21	9.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 PM Peak (Site Folder: Alt 2 -- Single Lane)]

Bonney Lake HS Access
2030 PM Peak
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.617	5.9	LOS A	5.9	149.0	0.41	0.13	0.41	25.8
8	T1	759	2.0	774	2.0	0.617	0.7	LOS A	5.9	149.0	0.41	0.13	0.41	25.2
18	R2	33	0.0	34	0.0	0.617	1.7	LOS A	5.9	149.0	0.41	0.13	0.41	24.6
Approach		808	1.9	824	1.9	0.617	0.9	LOS A	5.9	149.0	0.41	0.13	0.41	25.2
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.294	8.0	LOS A	2.0	49.1	0.80	0.77	0.80	20.2
6	T1	11	0.0	25	0.0	0.294	5.0	LOS A	2.0	49.1	0.80	0.77	0.80	18.9
16	R2	44	2.0	100	2.0	0.294	5.1	LOS A	2.0	49.1	0.80	0.77	0.80	18.9
Approach		97	0.9	220	0.9	0.294	6.3	LOS A	2.0	49.1	0.80	0.77	0.80	19.5
North: 199th Ave Ct E														
7	L2	35	0.0	36	0.0	0.991	17.7	LOS E	41.9	1047.5	1.00	0.92	1.31	23.2
4	T1	1218	0.0	1243	0.0	0.991	12.5	LOS E	41.9	1047.5	1.00	0.92	1.31	22.7
14	R2	13	0.0	13	0.0	0.991	13.5	LOS E	41.9	1047.5	1.00	0.92	1.31	22.2
Approach		1266	0.0	1292	0.0	0.991	12.6	LOS B	41.9	1047.5	1.00	0.92	1.31	22.7
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.301	21.2	LOS C	2.5	62.9	1.00	0.97	1.00	18.1
2	T1	6	0.0	7	0.0	0.301	18.2	LOS B	2.5	62.9	1.00	0.97	1.00	17.0
12	R2	23	0.0	28	0.0	0.301	18.2	LOS B	2.5	62.9	1.00	0.97	1.00	17.0
Approach		59	0.0	73	0.0	0.301	19.8	LOS B	2.5	62.9	1.00	0.97	1.00	17.5
All Vehicles		2230	0.7	2410	0.7	0.991	8.2	LOS A	41.9	1047.5	0.78	0.64	0.94	23.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 AM Peak (Site Folder: Alt 3 -- Two-Lane)]

Bonney Lake HS Access
2030 AM Peak
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	120	12.0	0.745	10.2	LOS B	9.1	235.1	0.88	0.99	1.15	20.1
8	T1	1247	2.0	1272	2.0	0.745	5.8	LOS A	9.6	242.2	0.86	0.92	1.09	19.0
18	R2	227	0.0	232	0.0	0.745	5.1	LOS A	9.6	242.2	0.85	0.86	1.05	19.4
Approach		1592	2.5	1624	2.5	0.745	6.0	LOS A	9.6	242.2	0.86	0.92	1.09	19.1
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	1.098	68.1	LOS F	27.6	690.4	1.00	2.99	4.63	13.2
6	T1	53	0.0	78	0.0	1.098	65.3	LOS F	27.6	690.4	1.00	2.99	4.63	12.6
16	R2	156	0.0	229	0.0	1.098	65.3	LOS F	27.6	690.4	1.00	2.99	4.63	12.6
Approach		383	0.0	563	0.0	1.098	66.5	LOS E	27.6	690.4	1.00	2.99	4.63	12.9
North: 199th Ave Ct E														
7	L2	134	1.0	137	1.0	0.418	5.4	LOS A	2.9	75.2	0.70	0.55	0.70	20.5
4	T1	526	10.0	537	10.0	0.418	2.5	LOS A	3.1	81.3	0.69	0.48	0.69	19.3
14	R2	182	0.0	186	0.0	0.418	2.0	LOS A	3.1	81.3	0.69	0.42	0.69	19.7
Approach		842	6.4	859	6.4	0.418	2.9	LOS A	3.1	81.3	0.69	0.48	0.69	19.6
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.553	7.2	LOS A	3.4	85.0	0.75	0.89	0.91	20.4
2	T1	64	0.0	110	0.0	0.553	4.3	LOS A	3.4	85.0	0.75	0.89	0.91	19.1
12	R2	79	2.0	136	2.0	0.553	4.4	LOS A	3.4	85.0	0.75	0.89	0.91	19.1
Approach		249	1.1	429	1.1	0.553	5.6	LOS A	3.4	85.0	0.75	0.89	0.91	19.6
All Vehicles		3066	3.1	3476	2.9	1.098	15.0	LOS B	27.6	690.4	0.83	1.14	1.54	17.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 Aftnn Peak (Site Folder: Alt 3 -- Two-Lane)]

Bonney Lake HS Access
2030 Aftnn Peak
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.322	5.5	LOS A	2.1	54.5	0.65	0.43	0.65	20.7
8	T1	532	3.0	578	3.0	0.322	1.9	LOS A	2.3	58.4	0.64	0.37	0.64	19.4
18	R2	70	0.0	76	0.0	0.322	1.8	LOS A	2.3	58.4	0.63	0.31	0.63	19.7
Approach		641	3.3	697	3.3	0.322	2.1	LOS A	2.3	58.4	0.64	0.36	0.64	19.5
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.504	6.6	LOS A	2.9	71.8	0.71	0.83	0.83	20.5
6	T1	15	0.0	30	0.0	0.504	3.8	LOS A	2.9	71.8	0.71	0.83	0.83	19.2
16	R2	103	0.0	206	0.0	0.504	3.8	LOS A	2.9	71.8	0.71	0.83	0.83	19.2
Approach		208	0.0	416	0.0	0.504	5.0	LOS A	2.9	71.8	0.71	0.83	0.83	19.7
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	0.501	4.5	LOS A	3.8	97.4	0.60	0.33	0.60	20.7
4	T1	1023	3.0	1112	3.0	0.501	1.5	LOS A	4.0	101.9	0.58	0.28	0.58	19.4
14	R2	76	0.0	83	0.0	0.501	1.4	LOS A	4.0	101.9	0.57	0.23	0.57	19.8
Approach		1173	2.6	1275	2.6	0.501	1.6	LOS A	4.0	101.9	0.58	0.28	0.58	19.5
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	0.934	21.3	LOS D	11.6	296.8	0.96	1.71	2.30	18.1
2	T1	19	0.0	41	0.0	0.934	18.4	LOS D	11.6	296.8	0.96	1.71	2.30	17.0
12	R2	126	6.0	274	6.0	0.934	18.9	LOS D	11.6	296.8	0.96	1.71	2.30	17.0
Approach		280	2.7	609	2.7	0.934	20.0	LOS C	11.6	296.8	0.96	1.71	2.30	17.5
All Vehicles		2302	2.6	2996	2.4	0.934	6.0	LOS A	11.6	296.8	0.69	0.67	0.98	19.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 PM Peak (Site Folder: Alt 3 -- Two-Lane)]

Bonney Lake HS Access
2030 PM Peak
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.288	5.7	LOS A	1.7	42.2	0.26	0.11	0.26	26.0
8	T1	759	2.0	774	2.0	0.288	0.5	LOS A	1.7	42.9	0.25	0.09	0.25	25.6
18	R2	33	0.0	34	0.0	0.288	1.6	LOS A	1.7	42.9	0.24	0.08	0.24	24.8
Approach		808	1.9	824	1.9	0.288	0.6	LOS A	1.7	42.9	0.25	0.09	0.25	25.5
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.240	4.8	LOS A	0.9	21.9	0.51	0.54	0.51	20.8
6	T1	11	0.0	25	0.0	0.240	2.0	LOS A	0.9	21.9	0.51	0.54	0.51	19.4
16	R2	44	2.0	100	2.0	0.240	2.0	LOS A	0.9	21.9	0.51	0.54	0.51	19.4
Approach		97	0.9	220	0.9	0.240	3.2	LOS A	0.9	21.9	0.51	0.54	0.51	20.0
North: 199th Ave Ct E														
7	L2	35	0.0	36	0.0	0.446	6.1	LOS A	3.3	82.2	0.41	0.18	0.41	25.7
4	T1	1218	0.0	1243	0.0	0.446	0.9	LOS A	3.4	84.1	0.40	0.15	0.40	25.3
14	R2	13	0.0	13	0.0	0.446	1.9	LOS A	3.4	84.1	0.39	0.12	0.39	24.6
Approach		1266	0.0	1292	0.0	0.446	1.0	LOS A	3.4	84.1	0.40	0.15	0.40	25.3
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.097	5.6	LOS A	0.4	9.2	0.61	0.66	0.61	20.7
2	T1	6	0.0	7	0.0	0.097	2.7	LOS A	0.4	9.2	0.61	0.66	0.61	19.3
12	R2	23	0.0	28	0.0	0.097	2.7	LOS A	0.4	9.2	0.61	0.66	0.61	19.3
Approach		59	0.0	73	0.0	0.097	4.2	LOS A	0.4	9.2	0.61	0.66	0.61	20.0
All Vehicles		2230	0.7	2410	0.7	0.446	1.2	LOS A	3.4	84.1	0.36	0.18	0.36	24.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 AM Peak (Site Folder: Alt 4 -- NBL SBL)]

Bonney Lake HS Access
2030 AM Peak
Site Category: Proposed Design 5
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	120	12.0	0.152	5.2	LOS A	0.8	21.8	0.58	0.60	0.58	20.5
8	T1	1247	2.0	1272	2.0	1.179	89.4	LOS F	97.1	2460.0	1.00	4.63	5.40	11.2
18	R2	227	0.0	232	0.0	1.179	89.3	LOS F	97.1	2460.0	1.00	4.63	5.40	11.2
Approach		1592	2.5	1624	2.5	1.179	83.2	LOS F	97.1	2460.0	0.97	4.33	5.05	11.6
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	1.382	196.6	LOS F	62.3	1558.0	1.00	4.57	7.09	7.5
6	T1	53	0.0	78	0.0	1.382	194.0	LOS F	62.3	1558.0	1.00	4.57	7.09	7.3
16	R2	156	0.0	229	0.0	1.382	194.0	LOS F	62.3	1558.0	1.00	4.57	7.09	7.3
Approach		383	0.0	563	0.0	1.382	195.2	LOS F	62.3	1558.0	1.00	4.57	7.09	7.4
North: 199th Ave Ct E														
7	L2	134	1.0	137	1.0	0.145	4.5	LOS A	0.8	20.2	0.54	0.55	0.54	20.6
4	T1	526	10.0	537	10.0	0.578	2.3	LOS A	5.1	134.1	0.72	0.43	0.74	19.3
14	R2	182	0.0	186	0.0	0.578	2.0	LOS A	5.1	134.1	0.72	0.43	0.74	19.3
Approach		842	6.4	859	6.4	0.578	2.6	LOS A	5.1	134.1	0.69	0.45	0.70	19.5
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.564	8.0	LOS A	3.9	97.5	0.79	0.94	0.97	20.3
2	T1	64	0.0	110	0.0	0.564	5.2	LOS A	3.9	97.5	0.79	0.94	0.97	18.9
12	R2	79	2.0	136	2.0	0.564	5.3	LOS A	3.9	97.5	0.79	0.94	0.97	18.9
Approach		249	1.1	429	1.1	0.564	6.4	LOS A	3.9	97.5	0.79	0.94	0.97	19.5
All Vehicles		3066	3.1	3476	2.9	1.382	71.9	LOS E	97.1	2460.0	0.88	2.99	3.80	12.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 Aftnn Peak (Site Folder: Alt 4 -- NBL SBL)]

Bonney Lake HS Access
2030 Aftnn Peak
Site Category: Proposed Design 5
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.050	4.3	LOS A	0.2	6.9	0.48	0.48	0.48	20.6
8	T1	532	3.0	578	3.0	0.480	1.4	LOS A	3.8	97.0	0.61	0.24	0.61	19.4
18	R2	70	0.0	76	0.0	0.480	1.3	LOS A	3.8	97.0	0.61	0.24	0.61	19.4
Approach		641	3.3	697	3.3	0.480	1.5	LOS A	3.8	97.0	0.60	0.26	0.60	19.5
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.526	7.8	LOS A	3.6	88.9	0.76	0.90	0.92	20.4
6	T1	15	0.0	30	0.0	0.526	5.1	LOS A	3.6	88.9	0.76	0.90	0.92	19.0
16	R2	103	0.0	206	0.0	0.526	5.1	LOS A	3.6	88.9	0.76	0.90	0.92	19.0
Approach		208	0.0	416	0.0	0.526	6.2	LOS A	3.6	88.9	0.76	0.90	0.92	19.6
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	0.077	3.8	LOS A	0.4	10.0	0.43	0.46	0.43	20.7
4	T1	1023	3.0	1112	3.0	0.830	3.9	LOS A	13.7	349.0	0.85	0.72	0.97	19.2
14	R2	76	0.0	83	0.0	0.830	3.8	LOS A	13.7	349.0	0.85	0.72	0.97	19.2
Approach		1173	2.6	1275	2.6	0.830	3.9	LOS A	13.7	349.0	0.82	0.70	0.93	19.3
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	1.501	249.9	LOS F	78.1	1995.8	1.00	5.20	8.11	6.4
2	T1	19	0.0	41	0.0	1.501	247.2	LOS F	78.1	1995.8	1.00	5.20	8.11	6.2
12	R2	126	6.0	274	6.0	1.501	247.6	LOS F	78.1	1995.8	1.00	5.20	8.11	6.2
Approach		280	2.7	609	2.7	1.501	248.7	LOS F	78.1	1995.8	1.00	5.20	8.11	6.3
All Vehicles		2302	2.6	2996	2.4	1.501	53.4	LOS D	78.1	1995.8	0.80	1.54	2.31	13.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 PM Peak (Site Folder: Alt 4 -- NBL SBL)]

Bonney Lake HS Access
2030 PM Peak
Site Category: Proposed Design 5
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.014	2.9	LOS A	0.1	1.6	0.22	0.35	0.22	20.9
8	T1	759	2.0	774	2.0	0.509	0.4	LOS A	4.1	103.2	0.32	0.07	0.32	19.7
18	R2	33	0.0	34	0.0	0.509	0.4	LOS A	4.1	103.2	0.32	0.07	0.32	19.7
Approach		808	1.9	824	1.9	0.509	0.4	LOS A	4.1	103.2	0.31	0.07	0.31	19.7
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.281	6.4	LOS A	1.4	36.3	0.67	0.70	0.67	20.6
6	T1	11	0.0	25	0.0	0.281	3.7	LOS A	1.4	36.3	0.67	0.70	0.67	19.2
16	R2	44	2.0	100	2.0	0.281	3.8	LOS A	1.4	36.3	0.67	0.70	0.67	19.2
Approach		97	0.9	220	0.9	0.281	4.9	LOS A	1.4	36.3	0.67	0.70	0.67	19.8
North: 199th Ave Ct E														
7	L2	35	0.0	36	0.0	0.031	3.2	LOS A	0.2	3.9	0.30	0.38	0.30	20.8
4	T1	1218	0.0	1243	0.0	0.777	1.1	LOS A	10.7	267.7	0.64	0.20	0.64	19.4
14	R2	13	0.0	13	0.0	0.777	1.1	LOS A	10.7	267.7	0.64	0.20	0.64	19.4
Approach		1266	0.0	1292	0.0	0.777	1.2	LOS A	10.7	267.7	0.63	0.20	0.63	19.4
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.174	12.1	LOS B	1.1	27.0	0.89	0.90	0.89	19.6
2	T1	6	0.0	7	0.0	0.174	9.4	LOS A	1.1	27.0	0.89	0.90	0.89	18.3
12	R2	23	0.0	28	0.0	0.174	9.4	LOS A	1.1	27.0	0.89	0.90	0.89	18.3
Approach		59	0.0	73	0.0	0.174	10.8	LOS B	1.1	27.0	0.89	0.90	0.89	18.9
All Vehicles		2230	0.7	2410	0.7	0.777	1.6	LOS A	10.7	267.7	0.53	0.22	0.53	19.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 AM Peak (Site Folder: Alt 5 -- All LT Pockets)]

Bonney Lake HS Access
2030 AM Peak
Site Category: Proposed Design 6
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	120	12.0	0.188	5.3	LOS A	0.7	19.2	0.50	0.63	0.50	20.5
8	T1	1247	2.0	1272	2.0	1.294	137.2	LOS F	124.9	3164.1	1.00	6.52	8.19	9.0
18	R2	227	0.0	232	0.0	1.294	137.1	LOS F	124.9	3164.1	1.00	6.52	8.19	9.0
Approach		1592	2.5	1624	2.5	1.294	127.4	LOS F	124.9	3164.1	0.96	6.08	7.62	9.4
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	0.587	15.4	LOS B	4.5	112.2	0.95	1.16	1.28	18.8
6	T1	53	0.0	78	0.0	0.540	9.5	LOS A	4.5	113.3	0.98	1.13	1.23	18.4
16	R2	156	0.0	229	0.0	0.540	9.5	LOS A	4.5	113.3	0.98	1.13	1.23	18.4
Approach		383	0.0	563	0.0	0.587	12.2	LOS B	4.5	113.3	0.97	1.15	1.25	18.6
North: 199th Ave Ct E														
7	L2	134	1.0	137	1.0	0.188	4.9	LOS A	0.8	19.2	0.51	0.63	0.51	20.5
4	T1	526	10.0	537	10.0	0.675	3.2	LOS A	5.5	145.4	0.72	0.66	0.84	19.3
14	R2	182	0.0	186	0.0	0.675	2.8	LOS A	5.5	145.4	0.72	0.66	0.84	19.3
Approach		842	6.4	859	6.4	0.675	3.4	LOS A	5.5	145.4	0.68	0.65	0.79	19.5
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.261	6.6	LOS A	1.3	33.8	0.71	0.81	0.71	20.3
2	T1	64	0.0	110	0.0	0.280	3.1	LOS A	1.6	40.1	0.72	0.62	0.72	19.4
12	R2	79	2.0	136	2.0	0.280	3.2	LOS A	1.6	40.1	0.72	0.62	0.72	19.4
Approach		249	1.1	429	1.1	0.280	4.6	LOS A	1.6	40.1	0.72	0.70	0.72	19.7
All Vehicles		3066	3.1	3476	2.9	1.294	62.9	LOS E	124.9	3164.1	0.86	3.28	4.05	13.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 Aftnn Peak (Site Folder: Alt 5 -- All LT Pockets)]

Bonney Lake HS Access
2030 Aftnn Peak
Site Category: Proposed Design 6
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.067	5.0	LOS A	0.3	7.1	0.49	0.57	0.49	20.5
8	T1	532	3.0	578	3.0	0.577	2.0	LOS A	4.1	105.0	0.64	0.39	0.69	19.4
18	R2	70	0.0	76	0.0	0.577	1.9	LOS A	4.1	105.0	0.64	0.39	0.69	19.4
Approach		641	3.3	697	3.3	0.577	2.2	LOS A	4.1	105.0	0.64	0.40	0.68	19.4
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.251	6.9	LOS A	1.3	33.6	0.72	0.79	0.72	20.2
6	T1	15	0.0	30	0.0	0.265	3.5	LOS A	1.6	39.0	0.73	0.66	0.73	19.4
16	R2	103	0.0	206	0.0	0.265	3.5	LOS A	1.6	39.0	0.73	0.66	0.73	19.4
Approach		208	0.0	416	0.0	0.265	5.0	LOS A	1.6	39.0	0.72	0.72	0.72	19.7
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	0.096	4.0	LOS A	0.4	9.4	0.38	0.49	0.38	20.6
4	T1	1023	3.0	1112	3.0	0.968	10.8	LOS E	24.4	624.8	1.00	1.25	1.51	18.3
14	R2	76	0.0	83	0.0	0.968	10.7	LOS E	24.4	624.8	1.00	1.25	1.51	18.3
Approach		1173	2.6	1275	2.6	0.968	10.4	LOS B	24.4	624.8	0.96	1.20	1.44	18.4
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	0.800	33.6	LOS C	8.7	217.3	1.00	1.51	1.86	16.4
2	T1	19	0.0	41	0.0	0.703	20.9	LOS C	7.4	193.6	1.00	1.38	1.60	16.8
12	R2	126	6.0	274	6.0	0.703	21.3	LOS C	7.4	193.6	1.00	1.38	1.60	16.8
Approach		280	2.7	609	2.7	0.800	27.2	LOS C	8.7	217.3	1.00	1.44	1.73	16.6
All Vehicles		2302	2.6	2996	2.4	0.968	11.2	LOS B	24.4	624.8	0.86	0.99	1.22	18.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 PM Peak (Site Folder: Alt 5 -- All LT Pockets)]

Bonney Lake HS Access
2030 PM Peak
Site Category: Proposed Design 6
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.018	3.1	LOS A	0.1	1.6	0.20	0.37	0.20	20.8
8	T1	759	2.0	774	2.0	0.591	0.4	LOS A	4.3	109.9	0.32	0.07	0.32	19.7
18	R2	33	0.0	34	0.0	0.591	0.4	LOS A	4.3	109.9	0.32	0.07	0.32	19.7
Approach		808	1.9	824	1.9	0.591	0.5	LOS A	4.3	109.9	0.32	0.08	0.32	19.7
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.124	6.3	LOS A	0.6	15.4	0.65	0.69	0.65	20.3
6	T1	11	0.0	25	0.0	0.135	3.0	LOS A	0.7	18.3	0.65	0.54	0.65	19.4
16	R2	44	2.0	100	2.0	0.135	3.1	LOS A	0.7	18.3	0.65	0.54	0.65	19.4
Approach		97	0.9	220	0.9	0.135	4.5	LOS A	0.7	18.3	0.65	0.61	0.65	19.8
North: 199th Ave Ct E														
7	L2	35	0.0	36	0.0	0.039	3.4	LOS A	0.1	3.7	0.27	0.40	0.27	20.7
4	T1	1218	0.0	1243	0.0	0.909	2.6	LOS D	16.9	423.6	0.85	0.49	0.90	19.2
14	R2	13	0.0	13	0.0	0.909	2.6	LOS D	16.9	423.6	0.85	0.49	0.90	19.2
Approach		1266	0.0	1292	0.0	0.909	2.6	LOS A	16.9	423.6	0.84	0.49	0.88	19.2
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.082	11.1	LOS B	0.6	15.0	0.96	0.83	0.96	19.5
2	T1	6	0.0	7	0.0	0.104	9.9	LOS A	0.7	16.4	0.92	0.86	0.92	18.4
12	R2	23	0.0	28	0.0	0.104	9.9	LOS A	0.7	16.4	0.92	0.86	0.92	18.4
Approach		59	0.0	73	0.0	0.104	10.5	LOS B	0.7	16.4	0.94	0.85	0.94	19.0
All Vehicles		2230	0.7	2410	0.7	0.909	2.3	LOS A	16.9	423.6	0.65	0.37	0.67	19.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 AM Peak (Site Folder: Alt 6 -- NB Two-Lane w/drop)]

Bonney Lake HS Access
2030 AM Peak
Site Category: Proposed Design 7
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	118	12.0	120	12.0	1.146	76.0	LOS F	70.9	1814.3	1.00	4.23	5.25	12.7
8	T1	1247	2.0	1272	2.0	1.146	68.4	LOS F	70.9	1814.3	0.97	3.99	4.95	12.5
18	R2	227	0.0	232	0.0	0.420	2.6	LOS A	2.0	49.7	0.57	0.53	0.59	19.5
Approach		1592	2.5	1624	2.5	1.146	59.6	LOS E	70.9	1814.3	0.92	3.51	4.35	13.2
East: Mountain View MS Access														
1	L2	174	0.0	256	0.0	0.754	32.1	LOS C	7.4	186.0	1.00	1.42	1.73	16.6
6	T1	53	0.0	78	0.0	0.681	21.3	LOS C	7.3	182.7	1.00	1.36	1.57	16.8
16	R2	156	0.0	229	0.0	0.681	23.2	LOS C	7.3	182.7	1.00	1.36	1.57	16.8
Approach		383	0.0	563	0.0	0.754	27.0	LOS C	7.4	186.0	1.00	1.39	1.64	16.7
North: 199th Ave Ct E														
7	L2	134	1.0	137	1.0	0.188	4.8	LOS A	0.8	19.4	0.51	0.63	0.51	20.5
4	T1	526	10.0	537	10.0	0.674	3.1	LOS A	5.6	147.0	0.72	0.64	0.84	19.3
14	R2	182	0.0	186	0.0	0.674	2.7	LOS A	5.6	147.0	0.72	0.64	0.84	19.3
Approach		842	6.4	859	6.4	0.674	3.3	LOS A	5.6	147.0	0.68	0.64	0.78	19.5
West: Bonney Lake HS Access														
5	L2	106	1.0	183	1.0	0.261	6.8	LOS A	1.3	33.8	0.71	0.81	0.71	20.3
2	T1	64	0.0	110	0.0	0.280	3.1	LOS A	1.6	40.2	0.72	0.62	0.72	19.4
12	R2	79	2.0	136	2.0	0.280	3.2	LOS A	1.6	40.2	0.72	0.62	0.72	19.4
Approach		249	1.1	429	1.1	0.280	4.7	LOS A	1.6	40.2	0.72	0.70	0.72	19.7
All Vehicles		3066	3.1	3476	2.9	1.146	33.6	LOS C	70.9	1814.3	0.85	2.11	2.58	15.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 Aftnn Peak (Site Folder: Alt 6 -- NB Two-Lane w/drop)]

Bonney Lake HS Access
2030 AM Peak
Site Category: Proposed Design 7
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	39	13.0	42	13.0	0.502	4.6	LOS A	3.1	80.4	0.60	0.31	0.62	20.8
8	T1	532	3.0	578	3.0	0.502	1.7	LOS A	3.1	80.4	0.59	0.32	0.61	19.4
18	R2	70	0.0	76	0.0	0.184	1.9	LOS A	0.8	19.6	0.51	0.39	0.51	19.5
Approach		641	3.3	697	3.3	0.502	1.9	LOS A	3.1	80.4	0.58	0.33	0.60	19.5
East: Mountain View MS Access														
1	L2	90	0.0	180	0.0	0.246	6.8	LOS A	1.3	32.3	0.71	0.79	0.71	20.2
6	T1	15	0.0	30	0.0	0.260	3.4	LOS A	1.5	37.5	0.71	0.65	0.71	19.4
16	R2	103	0.0	206	0.0	0.260	3.9	LOS A	1.5	37.5	0.71	0.65	0.71	19.4
Approach		208	0.0	416	0.0	0.260	5.1	LOS A	1.5	37.5	0.71	0.71	0.71	19.8
North: 199th Ave Ct E														
7	L2	74	0.0	80	0.0	0.096	4.0	LOS A	0.4	9.3	0.38	0.49	0.38	20.6
4	T1	1023	3.0	1112	3.0	0.967	10.7	LOS E	24.3	619.9	1.00	1.24	1.50	18.3
14	R2	76	0.0	83	0.0	0.967	10.6	LOS E	24.3	619.9	1.00	1.24	1.50	18.3
Approach		1173	2.6	1275	2.6	0.967	10.3	LOS B	24.3	619.9	0.96	1.19	1.43	18.4
West: Bonney Lake HS Access														
5	L2	135	0.0	293	0.0	0.800	33.7	LOS C	8.7	217.3	1.00	1.51	1.86	16.4
2	T1	19	0.0	41	0.0	0.703	20.9	LOS C	7.4	193.6	1.00	1.38	1.60	16.8
12	R2	126	6.0	274	6.0	0.703	21.3	LOS C	7.4	193.6	1.00	1.38	1.60	16.8
Approach		280	2.7	609	2.7	0.800	27.3	LOS C	8.7	217.3	1.00	1.44	1.73	16.6
All Vehicles		2302	2.6	2996	2.4	0.967	11.1	LOS B	24.3	619.9	0.85	0.97	1.20	18.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [2030 PM Peak (Site Folder: Alt 6 -- NB Two-Lane w/drop)]

Bonney Lake HS Access
2030 AM Peak
Site Category: Proposed Design 7
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 199th Ave Ct E														
3	L2	16	0.0	16	0.0	0.485	3.1	LOS A	3.0	76.9	0.28	0.07	0.28	21.2
8	T1	759	2.0	774	2.0	0.485	0.5	LOS A	3.0	76.9	0.27	0.07	0.27	19.7
18	R2	33	0.0	34	0.0	0.178	0.5	LOS A	0.7	18.8	0.23	0.09	0.23	19.8
Approach		808	1.9	824	1.9	0.485	0.5	LOS A	3.0	76.9	0.27	0.07	0.27	19.8
East: Mountain View MS Access														
1	L2	42	0.0	95	0.0	0.113	5.5	LOS A	0.5	12.0	0.57	0.66	0.57	20.4
6	T1	11	0.0	25	0.0	0.123	2.2	LOS A	0.6	14.1	0.57	0.46	0.57	19.5
16	R2	44	2.0	100	2.0	0.123	2.5	LOS A	0.6	14.1	0.57	0.46	0.57	19.5
Approach		97	0.9	220	0.9	0.123	3.8	LOS A	0.6	14.1	0.57	0.55	0.57	19.9
North: 199th Ave Ct E														
7	L2	35	0.0	36	0.0	0.039	3.4	LOS A	0.1	3.7	0.27	0.40	0.27	20.7
4	T1	1218	0.0	1243	0.0	0.905	2.5	LOS D	16.4	411.0	0.84	0.48	0.87	19.2
14	R2	13	0.0	13	0.0	0.905	2.5	LOS D	16.4	411.0	0.84	0.48	0.87	19.2
Approach		1266	0.0	1292	0.0	0.905	2.6	LOS A	16.4	411.0	0.82	0.48	0.86	19.2
West: Bonney Lake HS Access														
5	L2	30	0.0	37	0.0	0.081	11.2	LOS B	0.6	14.8	0.96	0.83	0.96	19.5
2	T1	6	0.0	7	0.0	0.102	9.9	LOS A	0.6	16.2	0.92	0.86	0.92	18.4
12	R2	23	0.0	28	0.0	0.102	9.9	LOS A	0.6	16.2	0.92	0.86	0.92	18.4
Approach		59	0.0	73	0.0	0.102	10.5	LOS B	0.6	16.2	0.94	0.84	0.94	19.0
All Vehicles		2230	0.7	2410	0.7	0.905	2.2	LOS A	16.4	411.0	0.61	0.36	0.63	19.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection							
Int Delay, s/veh	0.9						

Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	3	388	4	6	136	8	17
Future Vol, veh/h	3	388	4	6	136	8	17
Conflicting Peds, #/hr	0	0	6	6	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0	-
Veh in Median Storage, #	-	0	-	-	0	0	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	59	59	59	61	61	61	61
Heavy Vehicles, %	0	1	25	40	4	71	87
Mvmt Flow	5	658	7	10	223	13	28

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	-	0	0	671	0	911	668
Stage 1	-	-	-	-	-	668	-
Stage 2	-	-	-	-	-	243	-
Critical Hdwy	-	-	-	4.5	-	7.11	7.07
Critical Hdwy Stg 1	-	-	-	-	-	6.11	-
Critical Hdwy Stg 2	-	-	-	-	-	6.11	-
Follow-up Hdwy	-	-	-	2.56	-	4.139	4.083
Pot Cap-1 Maneuver	-	-	-	764	-	232	339
Stage 1	-	-	-	-	-	401	-
Stage 2	-	-	-	-	-	660	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	-	-	-	760	-	228	337
Mov Cap-2 Maneuver	-	-	-	-	-	228	-
Stage 1	-	-	-	-	-	399	-
Stage 2	-	-	-	-	-	651	-

Approach	EB	WB	NB
HCM Control Delay, s		0.4	19.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	292	-	-	760	-
HCM Lane V/C Ratio	0.14	-	-	0.013	-
HCM Control Delay (s)	19.3	-	-	9.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	8.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	165	240	218	100	42	134
Future Vol, veh/h	165	240	218	100	42	134
Conflicting Peds, #/hr	0	30	30	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	74	74	63	63
Heavy Vehicles, %	14	0	1	11	0	2
Mvmt Flow	275	400	295	135	67	213

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	705	0	1230	505
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	725	-
Critical Hdwy	-	-	4.11	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	898	-	198	567
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	483	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	872	-	127	551
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	320	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.7	28.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	421	-	-	872	-
HCM Lane V/C Ratio	0.664	-	-	0.338	-
HCM Control Delay (s)	28.9	-	-	11.2	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	4.7	-	-	1.5	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	129	11	1	3	310	14	22
Future Vol, veh/h	129	11	1	3	310	14	22
Conflicting Peds, #/hr	0	26	3	26	0	1	3
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	82	82	70	70	70	69	69
Heavy Vehicles, %	2	80	0	33	2	69	50
Mvmt Flow	157	13	1	4	443	20	32

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	0	-	196	0	642	193
Stage 1	-	-	-	-	-	190	-
Stage 2	-	-	-	-	-	452	-
Critical Hdwy	-	-	-	4.43	-	7.09	6.7
Critical Hdwy Stg 1	-	-	-	-	-	6.09	-
Critical Hdwy Stg 2	-	-	-	-	-	6.09	-
Follow-up Hdwy	-	-	-	2.497	-	4.121	3.75
Pot Cap-1 Maneuver	-	-	-	1211	-	348	740
Stage 1	-	-	-	-	-	705	-
Stage 2	-	-	-	-	-	521	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	~ -4	~ -4	-	339	720
Mov Cap-2 Maneuver	-	-	-	-	-	418	-
Stage 1	-	-	-	-	-	687	-
Stage 2	-	-	-	-	-	520	-

Approach	EB	WB	NB
HCM Control Delay, s	0		12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	562	-	-	+	-
HCM Lane V/C Ratio	0.093	-	-	-	-
HCM Control Delay (s)	12.1	-	-	-	-
HCM Lane LOS	B	-	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	11.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	122	30	52	220	94	156
Future Vol, veh/h	122	30	52	220	94	156
Conflicting Peds, #/hr	0	50	50	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	86	86	54	54
Heavy Vehicles, %	16	0	2	3	0	1
Mvmt Flow	179	44	60	256	174	289

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	273	0	627	251
Stage 1	-	-	-	-	251	-
Stage 2	-	-	-	-	376	-
Critical Hdwy	-	-	4.12	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.309
Pot Cap-1 Maneuver	-	-	1290	-	451	790
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1229	-	408	752
Mov Cap-2 Maneuver	-	-	-	-	508	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	665	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	24.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	637	-	-	1229	-
HCM Lane V/C Ratio	0.727	-	-	0.049	-
HCM Control Delay (s)	24.2	-	-	8.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	6.2	-	-	0.2	-

Intersection						
Int Delay, s/veh	0.6					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	159	3	11	198	1	10
Future Vol, veh/h	159	3	11	198	1	10
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	89	89	63	63
Heavy Vehicles, %	9	0	10	0	0	11
Mvmt Flow	185	3	12	222	2	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	192	0	437	191
Stage 1	-	-	-	-	191	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	4.2	-	6.4	6.31
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.29	-	3.5	3.399
Pot Cap-1 Maneuver	-	-	1335	-	581	828
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	800	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1330	-	573	825
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	803	-	-	1330	-
HCM Lane V/C Ratio	0.022	-	-	0.009	-
HCM Control Delay (s)	9.6	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	1.3					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	163	6	12	195	14	21
Future Vol, veh/h	163	6	12	195	14	21
Conflicting Peds, #/hr	0	3	3	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	90	90	67	67
Heavy Vehicles, %	8	0	0	0	0	0
Mvmt Flow	187	7	13	217	21	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	197	0	437	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	243	-
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	-	-	1388	-	581	853
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1384	-	574	851
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	795	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	749	-	-	1384	-
HCM Lane V/C Ratio	0.07	-	-	0.01	-
HCM Control Delay (s)	10.2	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-