Revised Transportation Impact Analysis

SUMNER EARLY LEARNING CENTER AND ATHLETIC FIELD UPGRADE

Prepared for:
Sumner School District

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Executive Summary

This Transportation Impact Analysis has been updated to reflect changes to the proposal based upon comments received during review under the State Environmental Policy Act. The revisions include a new access, closure of an access (except for emergencies), relocation of the track and field, and District operating procedures for community use at the site.

The proposed Early Learning Center (ELC) project would be located on the existing school campus that includes the Sumner Middle School (SMS) and Maple Lawn Elementary (MLE) and is located south of Willow Street and east of Sumner Avenue. Within the school campus, the ELC would be located southwest of SMS where the tennis courts and other sports fields are currently located. Approximately 129 new parking spaces would be constructed as part of the proposed ELC.

General vehicle access for the proposed ELC project will occur via the westernmost SMS driveway on Willow Street. School bus access (both ingress and egress) related to the ELC would occur via the proposed driveway located just west of the Wood Avenue/Gault Street intersection. ELC staff may also use the new Gault Street access as convenient to staff travel. The existing Sumner Avenue driveway would be closed except for emergency use.

The ELC would serve kindergarten students that are within the boundaries for MLE and Daffodil Valley Elementary (DVE) schools plus preschool students within the Sumner School District. The proposed ELC would have capacity for up to 250 students including up to 182 kindergarten students and 68 preschool students at the school at one time.

The existing SMS sports fields primarily serve school-related athletic activities but are also rented to local youth sports organizations and youth leagues. The sports fields and track would be reconfigured to include a new alignment with a new synthetic turf field on the football field, and relocation of a regulation-sized softball field to MLE where an existing softball field is located. The reconfiguration would reduce athletic capacity by eliminating the tennis courts and a small grass playfield. The modified facility would have a baseball field, a football/soccer field overlaid on the outfield of the baseball field, a new synthetic turf football/soccer field surrounded by a new track, and relocation of the softball field to the existing softball field at MLE. The District, by District operating procedure, will limit campus activity to no more than 3 community groups of no more than 150 participants per day collectively. In the event, a community group is larger than 150 people, no other community reservations would be allowed in a day although school-related use is permitted.

The transportation analysis of the proposal assumes the Sumner School District would maintain the existing student population of 641 students at the MLE and traffic associated with the MLE would be similar to current conditions. This study considers the MLE traffic as it relates to the analysis periods.

Key findings and potential transportation-related impacts of the proposed project are summarized below.

Trip Generation

- **ELC.** With the proposed enrollment of 250 students at the ELC, the project is anticipated to generate trips in each of the study periods as described below:
    - School Arrival peak hour = 174 trips
    - School Dismissal peak hour = 134 trips
- **Athletic Fields.** Community-related activity traffic generation is anticipated to decrease as a result of the proposed athletic field reconfiguration. This is due to the

removal of the tennis courts, elimination of the small grass playfield and the new Sumner School District Standard Operating Procedures (SOP) which limits the community use of the SMS facilities (both exterior and interior facilities). Community related activities at the SMS facilities would be limited to no more than three user groups per day provided such user group is no more than 150 participants. In the event a user group is more than 150 participants, than only one non-school related user group may be scheduled in a day for use of the SMS facilities.

Parking

- **ELC.** School day parking demand could range between 25 to 46 vehicles for the ELC, which would be fully accommodated in the proposed 129 parking spaces.
- **Athletic Fields.** Peak parking utilization based upon existing parking spaces for the athletic fields is approximately 57 percent campus wide. While one parking lot did experience higher than 90 percent utilization, there is capacity to accommodate parking throughout the campus. Parking utilization would be anticipated to decrease in the future given the additional 129 parking spaces proposed with the Sumner ELC. With the anticipated decrease in athletic field capacity together with the District's adopted SOP, participation is anticipated to decrease resulting in a decrease in parking demand. Parking for the reconfigured athletic field is anticipated to be fully accommodated on-campus.

Traffic Operations

- **Off-Site Impacts.**
  - There is capacity at the study intersections to accommodate potential increases in traffic related to the ELC and athletic field reconfiguration. No significant adverse level of service impact is identified within the study area during both the weekday school arrival, dismissal, and commute PM peak hours.
  - The proposed ELC results in small increases of 15 to 30-feet (or 2 vehicles or less) in northbound and southbound queues along SR 162 at the SR 410 Ramps during the weekday school arrival and dismissal peak hours. These increases would likely not be noticeable to drivers.
  - Peak activity associated with community use of the athletic fields occurs between 4:30 and 5:30 p.m. With the proposed project, vehicle trips associated with community use of the athletic fields would decrease and school activity could also decrease, which result in less off-site impacts of the athletic fields. No significant adverse level of service and queue impacts are anticipated as a result of the athletic field upgrade.
- **Campus Access and Operations.**
  - Operations at the campus access points are anticipated to be LOS B or better during the weekday school arrival and dismissal peak hours.
  - SMS queuing currently occurs along Willow Street during the weekday school arrival and dismissal periods. The total time this queuing occurs has decreased with the striping improvements within the SMS drop-off/pick-up loop made by the School District prior to the 2016-2017 school year.
  - Vehicle queues associated with pick-up/drop-off for the ELC are anticipated to range between 200- and 365-feet, which would be fully accommodated within the proposed 500-foot pick-up/drop-off zone on-site. Vehicle queuing associated with entering the site via Willow Street and Wood Avenue would

increase slightly by 2 vehicles or less during both the school arrival and dismissal peaks.

- Parking demand related to the ELC preschool pick-up/drop-off is anticipated to be up to 24 vehicles, which would be fully accommodated within the proposed ELC parking.

Mitigation Measures

- **Transportation Impact Fee:** The City of Sumner has a transportation impact fee program to help offset impacts of development projects. The campus is currently located in District 2 as noted by Sumner's *Traffic Impact Fee District Map*. Based on coordination with the City of Sumner, the "Impact Fee per Unit" for the proposed ELC applied was for "Middle/High School" Developments.[1] The current "Impact Fee per Unit" in District 2 is 2,529 per 1,000 square feet. At 35,290 square feet, the total impact fee for the ELC would be $89,248.31. These calculations are preliminary and actual Traffic impact fees will be calculated for the project as part of the permit review and issuance per the adopted fee schedule in effect at the time of building permit and in accordance with Sumner Municipal Code Chapter 12.36 Transportation Impact Fees.

[1] City of Sumner Traffic Impact Fee Schedule did not have an "Impact Fee per Unit" for Elementary Schools.

Chapter 1. Introduction

This Revised Transportation Impact Analysis (TIA) was prepared to identify potential transportation-related impacts associated with the proposed Sumner Early Learning Center (ELC) and reconfiguration to the athletic fields. All references to the project or proposal are intended to reflect the revised and updated project. As necessary, mitigation measures are identified for discussion purposes to offset or reduce any adverse impacts.

Project Description

The following sections provide an overview of the proposed ELC and athletic field reconfiguration as well as the location of the proposal. It is anticipated that the project would be completed for the 2018-2019 school year; therefore, a horizon year of 2018 is evaluated.

Campus Location and Access

The proposed project would be located on the existing school campus that includes the Sumner Middle School (SMS) and Maple Lawn Elementary (MLE) and is located south of Willow Street and east of Sumner Avenue. Within the school campus, the ELC would be located southwest of SMS where the tennis courts and other sports fields are currently located. Figure 1 illustrates the existing site vicinity.

There are 10 existing driveways serving the campus with 6 along Willow Street, 3 along Wood Avenue, and 1 on Sumner Avenue. With the proposed project, the Sumner Avenue driveway would be closed (except for emergency use) and a new access via Gault Street would be provided. Parent/general vehicle access to and from the ELC would be provided via the existing westernmost access on Willow Street. School bus access (both ingress and egress) related to the ELC would occur via the new Gault Street access. ELC and SMS staff may also use the new Gault Street access before school hours. SMS bus service would utilize Gault Street for ingress and Willow Street for egress. The access for the athletic fields would be via the new driveway from Gault Street, which would be used by the community outside of school hours and the westernmost driveway on Willow Street.

Figure 2 provides the preliminary site plan and shows the location of the ELC parent drop-off/pick-up and bus loading. Approximately 129 new parking spaces would be constructed as part of the proposed ELC. The Sumner School District, in compliance with the Washington Administrative Code (WAC) section 170-295-7030, requires that preschool children not being transported by school bus be signed-in and signed-out by the parent or other person authorized to transport the child to or from the center. Therefore, parents or authorized person dropping off or picking up students would park and escort children into and out of the building.

Proposed ELC

The ELC would serve kindergarten students that are within the boundaries for MLE and Daffodil Valley Elementary (DVE) schools plus preschool students within the Sumner School District. The proposed ELC would have capacity for up to 250 students including up to 182 kindergarten students and 68 preschool students at the school at one time. Kindergarten students would start school at 8:35 a.m. and dismissal would occur at 3:00 p.m. Preschool students would have two half-day sessions with up to 68 students in each session. The morning session would occur between 8:35 and 11:25 a.m. and the afternoon session would occur between 12:05 and 2:55 p.m.

With the removal of kindergarten at MLE, the Sumner School District would backfill the classrooms with other grades maintaining the existing student population of 641 students; therefore, traffic associated with the MLE would be similar to current conditions.

Study Intersections and Existing Campus Boundary

FIGURE 1

Sumner Early Learning Center

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WHAT TRANSPORTATION CAN BE.

Jun 09, 2017 - 2:01pm mattt M:\16\16425.00 - Sumner Early Learning Center\Graphics\Sumner ELC Graphics.dwg Layout: Study Intersections

Preliminary Site Plan

Sumner Early Learning Center

FIGURE **2**

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WHAT TRANSPORTATION CAN BE.

Proposed Athletic Field Reconfiguration

The existing SMS sports fields primarily serve school-related athletic activities but are also rented to local youth sports organizations and youth leagues. The existing SMS exterior sports facilities include a softball field and a baseball field with a football/soccer field overlaid on the outfields, a separate football/soccer field surrounded by a track, a smaller grass playfield, and 4 tennis courts. The sports fields and track would be reconfigured with realignment of a new synthetic turf field on the football field, elimination of the tennis courts and a smaller grass playfield and relocation of a regulation-sized softball field to MLE where an existing softball field is located.

The School District operating procedures, will limit SMS activity to no more than 3 community groups per day of no more than 150 participants per day, collectively. In the event, a community group is larger than 150 people, no other community reservations would be allowed that day although school uses are permitted (consistent with current conditions). The overall proposal would reduce the after school activity by eliminating the tennis courts and small grass playfield and community use with the elimination of the facilities and limiting the number of community groups per day.

Campus Operations

The start and end times for the SMS and MLE are not anticipated to change. The early start and late dismissal times for the ELC would correspond closely with those of MLE to ease parents' pick-up/drop-off with students in both schools. Table 1 details the current and proposed arrival and dismissal times at each school on the campus.

Table 1. Arrival and Dismissal Times for Campus Schools

Time Period	SMS	MLE	Proposed ELC [1]
Arrival	7:25 AM	8:25 AM	8:35 AM & 12:05 PM [2]
Dismissal	2:20 PM	3:10 PM	11:25 AM [2] & 2:55/3:00 PM

1. Kindergarten is from 8:35 a.m. to 3:00 p.m.
2. Preschool would have 2 sessions with the morning session from 8:35 to 11:25 a.m. and the afternoon from 12:05 to 2:55 p.m. The midday period was not studied as part of this analysis since traffic levels would be less than other periods when both kindergarten and preschool students are arriving and departing.

Study Area and Scope

The scope of this analysis was coordinated with the City of Sumner and includes an evaluation of existing (2016) and future (2018) traffic operations at 18 off-site study intersections and 11 campus access intersections.[2] Figure 1 (Page 2) shows the study area and identifies the location of the study intersections, which include:

Off-Site Study Intersections

1. Valley Avenue/Main Street
2. Sumner Avenue/Silver Street
3. Guptil Avenue/Silver Street
4. Wood Avenue/Silver Street
5. Wood Avenue/Meade-McCumber Road
6. Valley Avenue/Meade-McCumber Road
7. Sumner Avenue/Rainer Street
8. Guptil Avenue/Rainer Street
9. Wood Avenue/Rainer Street

[2] The Guptil Avenue/Willow Street and Wood Avenue/Gary Street off-site intersections also have one approach that provides access to the campus; therefore, they are also considered in the evaluation of campus access.

10. Alder Avenue/Willow Street
11. Sumner Avenue/Willow Street
12. Guptil Avenue (School Pick-up/Drop-off Exit)[1]/Willow Street
13. Wood Avenue/Willow Street
14. Wood Avenue/Gary Street (MLE Parking) [1]
15. Valley Avenue/Gary Street
16. Valley Avenue (SR 162)/SR 410 WB On/Off Ramp
17. Valley Avenue (SR 162)/SR 410 EB On/Off Ramp
18. Valley Avenue (SR 162)/74th Street

Campus Access Intersections

12. Guptil Avenue (School Pick-up/Drop-off Exit) [1]/Willow Street
14. Wood Avenue/Gary Street (MLE Parking) [1]
19. SMS Parking Driveway/Willow Street
20. School Pick-up/Drop-off Entrance/Willow Street
21. MLE School Bus Entrance/Willow Street
22. MLE School Bus Exit/Willow Street
23. MLE Main Entrance/Willow Street
24. Sumner Avenue/SMS Driveway
25. Wood Avenue/MLE Main Exit
26. Wood Avenue/MLE Parking
27. Wood Avenue/Gault Street

The study area, shown above and illustrated on Figure 1, was evaluated for the weekday morning (arrival) and afternoon (dismissal) peak hours. These periods were selected because they represent the time periods when the ELC impacts are anticipated to be highest. The weekday PM peak commuter hour was also evaluated during existing conditions to provide context of operations but is not evaluated in the future conditions given the ELC will have minimal impact to time periods outside of the school hours.

The following sections first describe existing and future (2018) without-project conditions in the study area. These include the street system, existing and future without-project weekday PM peak hour traffic volumes, traffic operations, traffic safety, non-motorized facilities, and transit service. Future (2018) with-project conditions are then described. The project's impacts on the surrounding transportation system were identified by comparing the future with-project conditions to the future without-project conditions.

Chapter 2. Existing Conditions

This section describes existing conditions within the identified study area. Characteristics are provided for the street system, non-motorized facilities, transit service, existing traffic volumes, traffic operations, and traffic safety.

Street System

The project site is located in the City of Sumner south of Willow Street and east of Sumner Avenue. The streets in the immediate vicinity of the campus are local streets serving the surrounding residential neighborhood. These facilities are generally 2-lanes with sidewalks and parking on both sides and a speed limit of 25 mph. Existing street system characteristics for key arterial and collectors in the study area are described in detail in Table 2.

Table 2. Study Area Existing Street System Summary

Roadway	Roadway Classification[1]	Posted Speed Limit	Number of Travel Lanes	Parking	Sidewalks	Bicycle Facilities
Valley Avenue	Minor Arterial	25 mph	2 to 3	Yes	Yes	Yes[4]
Main Street	Arterial	25 mph	2 to 3	Yes	Yes	No
Wood Avenue	Collector	25 mph	2	No	Yes	No
Meade McCumber Road E	Collector	25 mph	2	Yes	Yes[2]	No
Willow Street	Local Street	25 mph	2	Yes	Yes	No
Sumner Avenue	Local Street	25 mph	2	Yes	Yes	No
Gary Avenue	Local Street	25 mph	2	Yes	Yes[3]	No

1. Per *2015 City of Sumner Transportation Plan.*
2. Sidewalk are present on north side of Meade McCumber Road E between Valley and Wood Avenues.
3. Sidewalks are provided on the north side of Gary Street and a separated shoulder is provided on the south side of the street.
4. Valley Avenue has a protected bike lane or shoulder throughout the majority of the study area.

Transit Service

Sound Transit provides public transit service in the City of Sumner. This includes both Regional Express bus routes and Sounder commuter rail service. All Sounder Commuter Rail service and the majority of bus service is accessed at Sumner Station located on the west side of Traffic Avenue at Maple Street. The Sounder provides commuter rail service between Lakewood, Tacoma, downtown Seattle, and cities to the north with stops in Tacoma, Puyallup, Sumner, Auburn, Kent, and Tukwila. There are currently 8 morning and 2 afternoon trains serving Sumner Station during the peak commute hours.

The Regional Express bus routes that serve Sumner Station include Routes 578 and 596.

Route 578 provides service between Seattle and Puyallup. It currently has stops in Puyallup, Sumner, Federal Way, and three stops in Seattle. The route operates on 30 minute headways (time between consecutive buses) on weekdays and one-hour headways on weekends.

Route 596 provides weekday shuttle service between the Bonney Lake Park-and-Ride and Sumner Station. The route operates with 20 to 30 minute headways in coordination with the Sounder train schedule to shuttle commuters to and from the Bonney Lake Park-and-Ride.

There is no public transit service in the immediate vicinity of the ELC site. The School District provides school bus transportation to students that qualify, which generally applies to those living more than 2 miles from the assigned school or in an area where safety conditions or

lack of improvements make pedestrian traffic hazardous.[3] The MLE is currently served by 6 larger buses and 2 smaller buses and the SMS has 14 larger buses and 6 smaller buses.

Non-Motorized Facilities

As described in the street system section, sidewalks are provided along the local streets in the immediately vicinity of the site. There are crosswalks provided at key intersections along the campus frontage including Sumner Avenue, Guptil Avenue, and Wood Avenue at Willow Street as well as Wood Avenue and Gary Street. Both existing SMS and MLE dismissal periods experience high pedestrian activity associated with students walking to and from campus, especially at the Guptil Avenue/ Willow Street intersection. The school currently provides two crossing guards at both the Guptil Avenue/Willow Street and Wood Avenue/Willow Street intersections along with a crossing guard who assists vehicles maneuvering within the drop/off-pick-up loop during the arrival and dismissal periods.

There are dedicated bicycle lanes on both sides of Valley Avenue between Main Street and Gary Street. Otherwise, bicyclist share neighborhood streets with vehicles or ride on sidewalks.

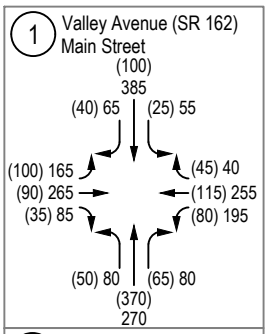
Traffic Volumes

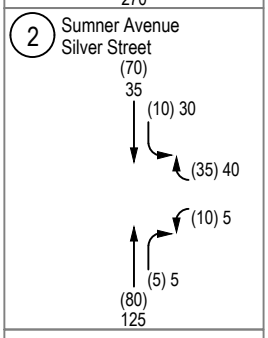
This transportation analysis focuses on the weekday school arrival peak hour and school dismissal peak hour when impacts of the ELC would be highest. This analysis accounts for traffic associated with the MLE since the arrival and dismissal for this school would occur within the same peak hour as the ELC. Existing turning movement counts at the study intersections and proposed driveways were conducted in September 2016, October 2016, and May 2017. These counts were used to establish existing conditions. The weekday school peak hours occur at the following times:

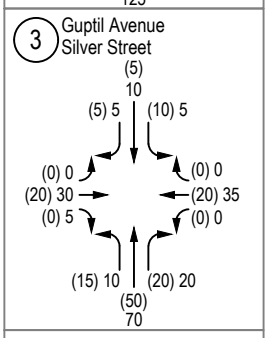
- School Arrival peak hour – 7:45 to 8:45 a.m.
- School Dismissal peak hour – 2:45 to 3:45 p.m.

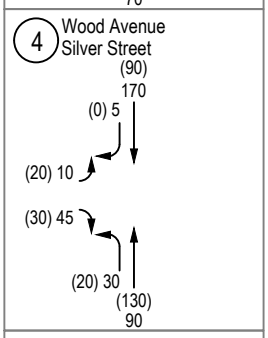
The weekday PM peak commuter hour was also evaluated during existing conditions to provide context of operations to other time periods but is not evaluated in the future conditions given the proposed ELC and athletic field reconfiguration will have minimal impact to this time period. Figure 3 (a and b) and Figure 4 (a and b) summarize existing traffic volumes at study intersections for each of the analysis peak hours. Daily traffic counts were also collected for five consecutive weekdays along Willow Street near Wood Avenue in May 2017. Detailed intersection turning movement and daily traffic count data sheets are provided in Appendix A. The highest traffic levels in the study area occur along SR 162 in the vicinity of the SR 410 interchange.

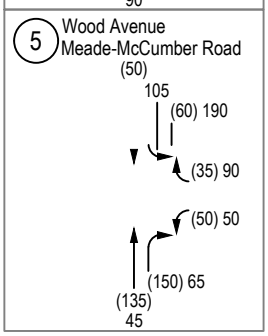
[3] Sumner School District Regulations & Procedures No. 6600P, Revised August 2011.

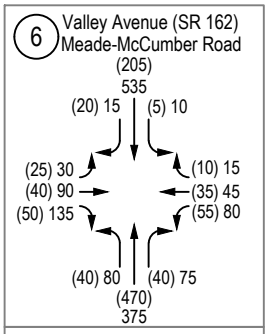


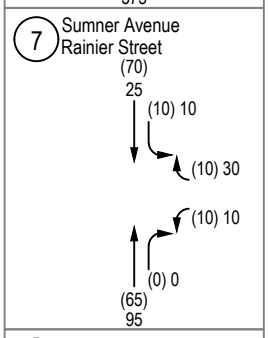


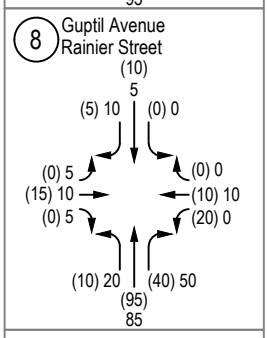


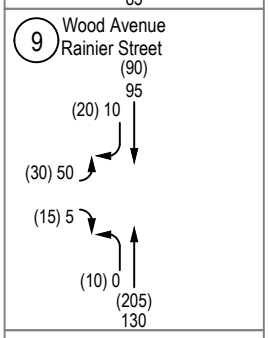


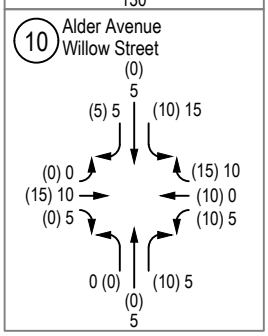


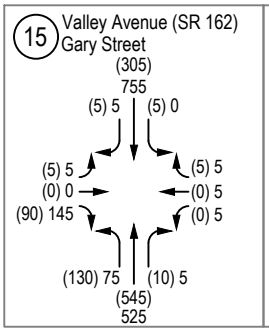


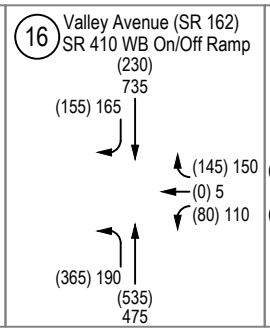


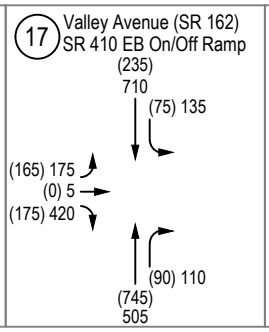


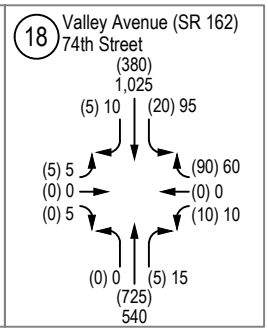












Existing (2016) Weekday School Arrival and Dismissal Weekday Peak Hour Traffic Volumes

FIGURE **3a**

Sumner Early Learning Center

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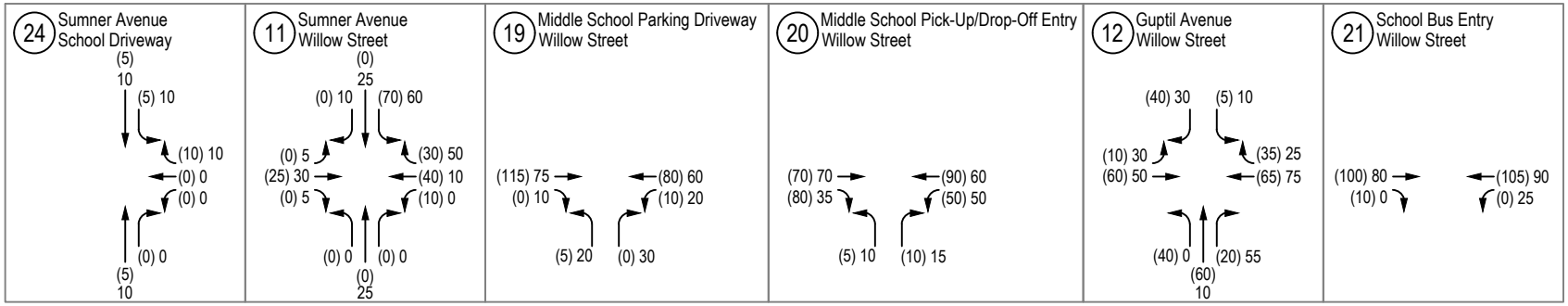
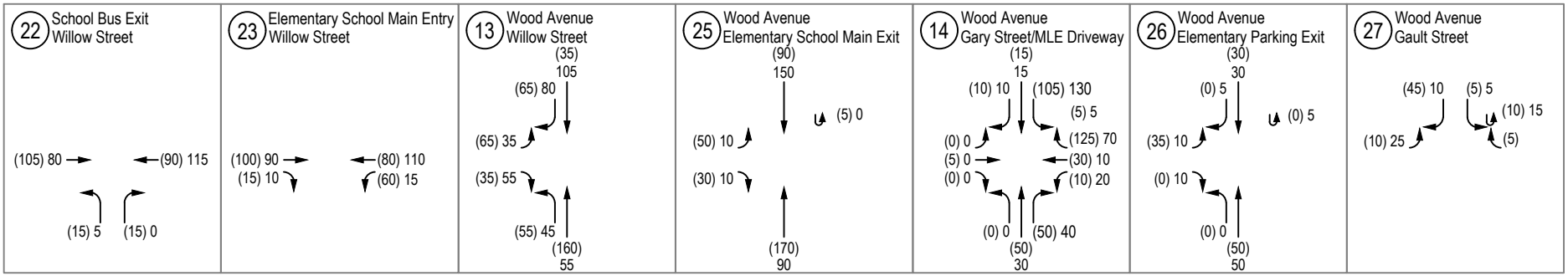
WHAT TRANSPORTATION CAN BE.





Existing (2016) Weekday School Arrival and Dismissal Peak Hour Traffic Volumes (Continued)

FIGURE **3b**

Sumner Early Learning Center

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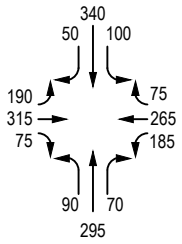
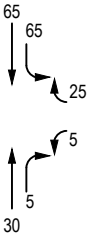
WHAT TRANSPORTATION CAN BE.

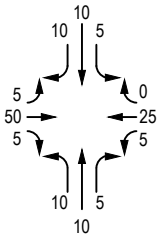
1 Valley Avenue (SR 162) Main Street



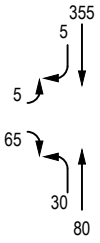
2 Sumner Avenue Silver Street



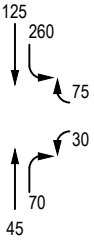
3 Guptil Avenue Silver Street



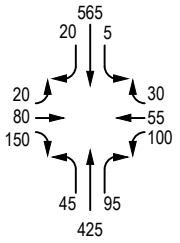
4 Wood Avenue Silver Street



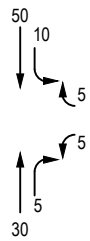
5 Wood Avenue Meade-McCumber Road



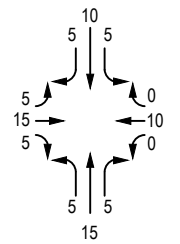
6 Valley Avenue (SR 162) Meade-McCumber Road



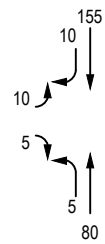
7 Sumner Avenue Rainier Street



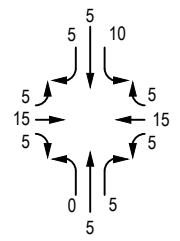
8 Guptil Avenue Rainier Street



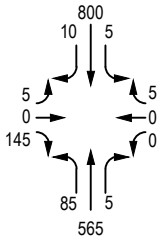
9 Wood Avenue Rainier Street



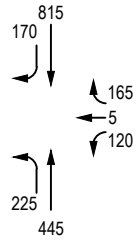
10 Alder Avenue Willow Street



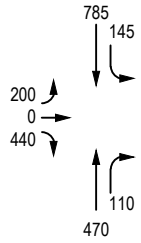
15 Valley Avenue (SR 162) Gary Street



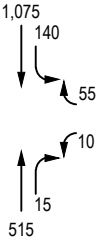
16 Valley Avenue (SR 162) SR 410 WB On/Off Ramp



17 Valley Avenue (SR 162) SR 410 EB On/Off Ramp



18 Valley Avenue (SR 162) 74th Street

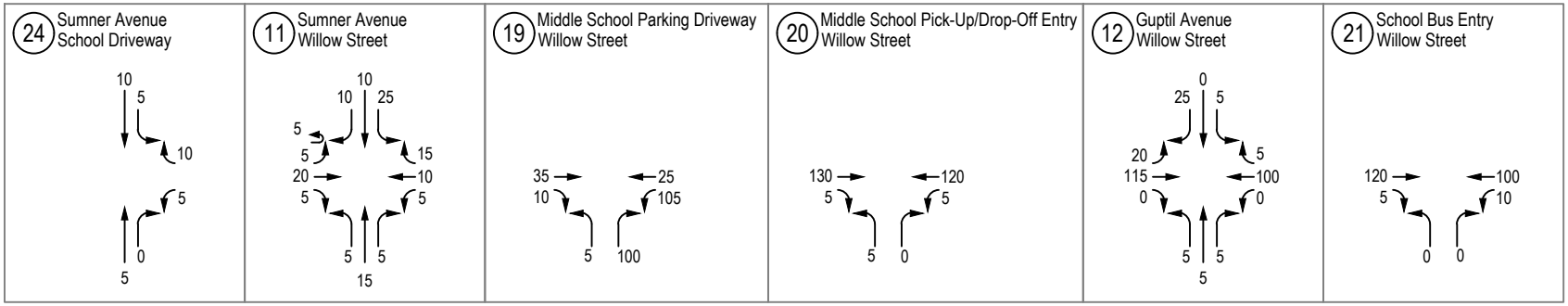


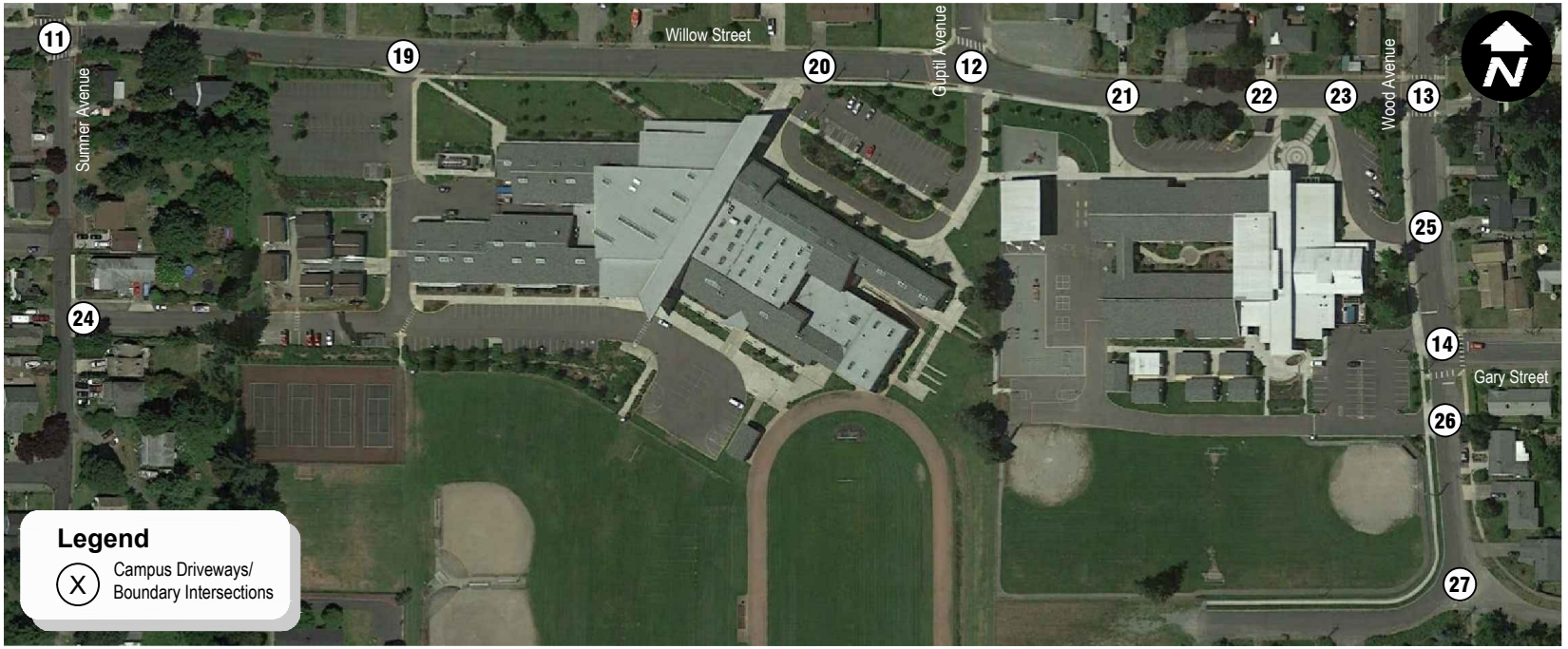
Existing Weekday PM Peak Hour Traffic Volumes

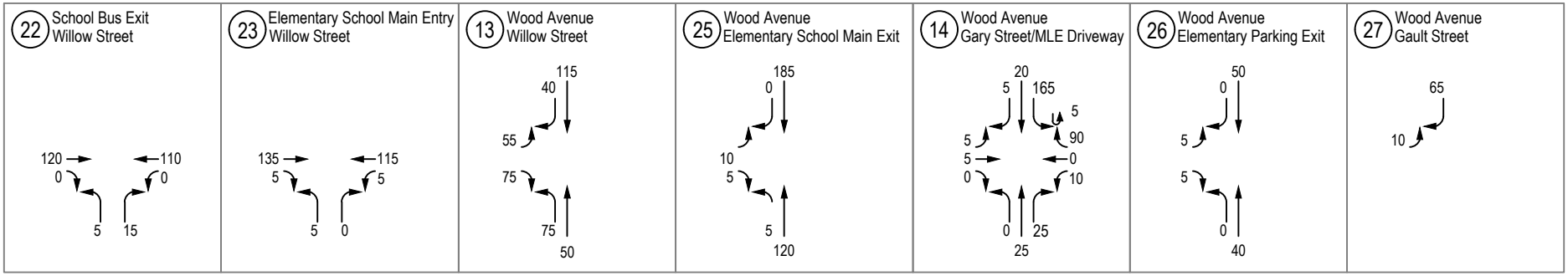
FIGURE **4a**

Sumner Early Learning Center

transpogroup
WHAT TRANSPORTATION CAN BE.







Existing (2016) Weekday PM Peak Hour Traffic Volumes (Continued)

FIGURE **4b**

Sumner Early Learning Center

transpogroup
WHAT TRANSPORTATION CAN BE.

The City of Sumner provided comments on the January 2017 State Environmental Policy Act (SEPA) checklist requesting a review of the average daily traffic (ADT) along Willow Street relative to the existing residential local street classification as identified in the *2015 Sumner Transportation Plan*, June 2015. Daily traffic volumes were collected in May 2017 along Willow Street. The mid-week ADT along Willow Street was 1,850 vehicles per day[4]. A review of Table 5-1, Functional Classification Guidelines, in the *2015 Sumner Transportation Plan*, June 2015 shows a typical range of daily traffic volumes for local access streets of up to 1,000 vehicles per day (vpd) and for collectors of up to 5,000 vpd. These ADT ranges are general guidelines for typical volumes relative to the functional classification. These roadways typically have the operational capacity to accommodate more traffic and functional classifications standards are not established for levels of service and operations to analyze traffic impacts. Levels of service and operations are based on industry standard practices identified through the *Highway Capacity Manual* and are evaluated in the following Traffic Operations section.

Traffic Operations

The peak hour intersection operations were evaluated at the study intersections based on Level of Service (LOS) procedures and methodologies identified in the *Highway Capacity Manual* (2010) and evaluated using the *Synchro* version 9.1 traffic operations analysis software. This is standard industry practice and provides a consistent analytical approach to evaluating traffic operations.

At signalized intersections, LOS is measured in average control delay per vehicle and is typically reported using the overall intersection delay. At stop-sign-controlled intersections, LOS is reported in delay per vehicle by intersection for all-way stop-control and by worst movements for one- or two-way-stop-control. Traffic operations for an intersection can be described alphabetically with a range of levels of service (LOS A through F), with LOS A representing the best operating conditions and indicating free-flowing traffic and LOS F the worst indicating flows are unstable or vehicle delays are high. Appendix B contains a detailed explanation of HCM 2010 LOS criteria and definitions.

The City of Sumner and the Puget Sound Regional Council (PSRC) establishes LOS standards within the study area. As outlined in the City of Sumner *Comprehensive Plan 2015*, the LOS standard for arterials and collectors is LOS D, except for the Valley Avenue/Main Street intersection, which has a LOS F standard. There is no specific LOS standard for non-arterial collector roads, streets, or driveways intersecting with arterials; these locations are evaluated by the City at the time of development review.

PSRC has adopted LOS standards for regionally significant state highways such as SR 410 and SR 162. Based on the PSRC tiered LOS system, both SR 410 and SR 162 have an adopted LOS D standards.

Table 3 and Table 4 summarize the existing weekday peak hour LOS at study intersections. The detailed LOS worksheets are included in Appendix C.

[4] The average daily traffic (ADT) shown in Appendix D of this study and the *Sumner Early Learning Center and Athletic Field Upgrade Transportation Impact Analysis*, January 2017 is for the whole intersection or driveway considering all turning movements for both driveways and intersections. This is different from the ADT along a roadway segment, which is through volumes for one street.

Table 3. Existing Weekday School Peak Hour Intersection LOS Summary

		Arrival Peak Hour			Dismissal Peak Hour		
Intersection	**Traffic Control**	**LOS[1]**	**Delay[2]**	**WM[3]**	**LOS**	**Delay**	**WM**
Off-Site Study Intersections							
1. Valley Ave/ Main St E	Signalized	C	24.2	-	D	37.3	-
2. Sumner Ave/Silver St	Side Street Stop	A	9.1	WB	A	9.5	WB
3. Guptil Ave/Silver St	Side Street Stop	A	9.4	NB	B	10.4	NB
4. Wood Ave/Silver St	Side Street Stop	A	9.6	EB	A	9.7	EB
5. Wood Ave/Meade McCumber Road E	Side Street Stop	B	11.6	WB	C	15.0	WB
6. Valley Ave/Mead McCumber Road E	Signalized	B	14.3	-	C	22.3	-
7. Sumner Ave/Rainer St	Side Street Stop	A	9.1	WB	A	9.1	WB
8. Guptil Ave/Rainer St	Side Street Stop	B	10.3	NB	B	10.6	NB
9. Wood Ave/Rainer St	Side Street Stop	B	10.7	EB	B	10.7	EB
10. Alder Ave/Willow St	Side Street Stop	A	8.9	SB	A	9.0	NB
11. Sumner Ave/Willow St	All-Way Stop	A	7.6	-	A	7.5	-
12. Guptil Ave (School Pick-Up/Drop-Off Exit)/ Willow St	Side Street Stop	B	11.7	NB	D	26.5	SB
13. Wood Ave/Willow St	Side Street Stop	C	16.3	EB	B	13.9	EB
14. Wood Ave/Gary St (MLE Parking)	All-Way Stop	A	8.4	-	A	7.9	-
15. Valley Ave/ Gary St	Side Street Stop	B	13.4	EB	B	12.9	EB
16. Valley Ave (SR 162)/SR 410 WB On/Off Ramps	Signalized	C	20.4	-	D	38.0	-
17. Valley Ave (SR 162)/SR 410 EB On/Off Ramps	Signalized	D	40.1	-	D	41.8	-
18. Valley Ave (SR 162)/74th St E	Side Street Stop	C	19.1	WB	C	15.7	WB
Campus Access Intersections							
19. SMS Parking Driveway/Willow St	Side Street Stop	B	10.2	NB	A	9.7	NB
20. School Pick-up/Drop-off Entrance/Willow St	Side Street Stop	A	9.5	NB	B	10.4	WB
21. MLE School Bus Entrance/Willow St	Side Street Stop	A	0[4]	WB	A	1.7	WB
22. MLE School Bus Exit/Willow St	Side Street Stop	B	10.8	NB	B	11.9	NB
23. MLE Main Entrance/Willow St	Side Street Stop	A	3.9	WB	A	1.0	WB
24. Sumner Ave/School Driveway	Side Street Stop	A	8.4	WB	A	8.4	WB
25. Wood Ave/ MLE Main Exit	Side Street Stop	B	10.4	EB	B	10.2	EB
26. Wood Ave/MLE Parking	Side Street Stop	B	10.0	EB	A	9.6	EB
27. Wood Ave/Gault Street	Side Street Stop	A	8.7	EB	A	8.6	EB

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (TRB, 2010)
2. Average delay per vehicle in seconds.
3. Worst movement reported for side street stop intersections
4. Zero Delay reported for these intersections due to zero outbound traffic volumes (entrance-only driveways)

As summarized in the table, all study intersections operate at LOS D or better and meet the current LOS standards. It should be noted that the signalized ramp intersections at SR 410/Valley Avenue (SR 162) are congested during the peak commute hours. The school arrival period is just after the weekday AM peak commute hour, which generally occurs between 6:30 and 7:30 a.m. The dismissal period is just before the weekday PM commute hour (4 to 5 p.m.), so traffic levels are typically increasing in the afternoon approaching this hour.

With the close spacing of the intersections near the SR 162/SR 410 interchange, queues occasionally spillback into adjacent intersections. A review of 95th-percentile queues along SR 162 during the weekday school arrival and dismissal peak hours was conducted. The 95th-percentile queue represents a queue that is only exceeded 5 percent of the time. During

the weekday school arrival peak, a review of the queues shows that northbound 95th-percentile queue at the SR 162/SR 410 EB Ramps extends approximately 830-feet to the south, which is past 74th Street E. The southbound queue at the SR162/SR 410 WB Ramps extends approximately 205-feet to the north during the school arrival peak, which is within the available storage and does not impact the adjacent intersection. In addition, during the weekday school dismissal peak hour, the southbound vehicle queue along SR 162 at the SR 410 WB Ramps extends approximately 700-feet to the north past Gary Street and the northbound vehicles queue along SR 162 at the SR 410 EB Ramps extends approximately 550-feet to the south, past 74th Street E.

Table 4. Existing Weekday PM Peak Hour Intersection LOS Summary

		PM Peak Hour		
Intersection	**Traffic Control**	**LOS**	**Delay**	**WM**
Off-Site Study Intersections				
1. Valley Ave/ Main St E	Signalized	D	38.3	-
2. Sumner Ave/Silver St	Side Street Stop	A	9.2	WB
3. Guptil Ave/Silver St	Side Street Stop	B	10.2	NB
4. Wood Ave/Silver St	Side Street Stop	B	13.1	EB
5. Wood Ave/Meade McCumber Road E	Side Street Stop	B	12.7	WB
6. Valley Ave/Mead McCumber Road E	Signalized	C	22.4	-
7. Sumner Ave/Rainer St	Side Street Stop	A	8.9	WB
8. Guptil Ave/Rainer St	Side Street Stop	A	9.4	NB
9. Wood Ave/Rainer St	Side Street Stop	B	10.3	EB
10. Alder Ave/Willow St	Side Street Stop	A	9.1	SB
11. Sumner Ave/Willow St	All-Way Stop	A	7.2	-
12. Guptil Ave (School Pick-Up/Drop-Off Exit)/Willow St	Side Street Stop	B	11.1	SB
13. Wood Ave/Willow St	Side Street Stop	B	11.6	EB
14. Wood Ave/Gary St (MLE Parking)	All-Way Stop	A	8.1	-
15. Valley Ave/Gary St	Side Street Stop	B	13.4	EB
16. Valley Ave (SR 162)/SR 410 WB On/Off Ramps	Signalized	D	43.4	-
17. Valley Ave (SR 162)/SR 410 EB On/Off Ramps	Signalized	D	37.3	-
18. Valley Ave (SR 162)/74th St E	Side Street Stop	C	15.6	WB
Campus Access Intersections				
19. SMS Parking Driveway/Willow St	Side Street Stop	A	9.2	NB
20. School Pick-up/Drop-off Entrance/ Willow St	Side Street Stop	B	10.9	WB
21. MLE School Bus Entrance/Willow St	Side Street Stop	A	7.5	WB
22. MLE School Bus Exit/Willow St	Side Street Stop	A	9.5	NB
23. MLE Main Entrance/Willow St	Side Street Stop	B	10.5	NB
24. Sumner Ave/School Driveway	Side Street Stop	A	8.5	WB
25. Wood Ave/ MLE Main Exit	Side Street Stop	B	9.5	EB
26. Wood Ave/ MLE Parking	Side Street Stop	A	9.8	EB
27. Wood Ave/Gault Street	Side Street Stop	A	8.6	EB

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (TRB, 2010)
2. Average delay per vehicle in seconds.
3. Worst movement reported for side street stop intersections

As summarized in the table, all study intersections operate at LOS D or better and meet the current LOS standards. Weekday PM peak hour traffic volumes at intersections closer to the school are generally less compared to the school dismissal peak hour resulting in fewer seconds of delay per vehicle at the campus access intersections.

A review of 95th-percentile queues along SR 162 during the weekday PM peak hour shows that northbound queue along SR 162 at SR 410 EB Ramps extends approximately 460-feet to the south, which is into the 74th Street E intersection. The southbound queue along SR 162 at SR 410 WB Ramps extend approximately 720-feet to the north, which is past Gary Street.

Traffic Safety

Collision records for the most recent complete three-year period were reviewed for the off-site study intersections. Historical safety data was collected from WSDOT for the period of January 1, 2013 to December 31, 2015. A review of historical collisions was completed to identify potential safety issues for vehicles, pedestrians, and cyclists. Appendix D provides the historical collision data for the study area.

For the campus access intersections, only the Wood Avenue/Gary Street (MLE Parking Lot) and the Wood Avenue/Gault Street intersection had reported collisions over the 3-year period (see below for additional review). Within the neighborhood, there was one collision each reported at the Silver Street intersections with Sumner and Wood Avenues. The collision at the Sumner Avenue/Silver Street intersection was related to a vehicle hitting a parked car and the collision at the Wood Avenue/Silver Street intersection was pedestrian-related. The majority of the collisions within the study area occurred along the Valley Avenue/SR 162 corridor. The most common type of collision in the study area was a rear end with in the intersection area, which can occur for a number of reasons and typically not indicative of a safety design issue. Approximately 25 percent of the collisions resulted in an injury; however, no fatalities occurred within the study area within the last three years.

Further review of collisions in the study area was completed by determining crash rates by study intersection to identify potentially problematic locations. This review is consistent with the City of Sumner *Comprehensive Plan* analysis of traffic safety and is based on Chapter 4 of the *Highway Safety Manual* (HSM) (AASHTO, 2010). Observed crash rates were calculated for the study intersections to identify the average crash frequency based on the number of vehicles traveling through the study intersections. The typical measure for determining crash rates at intersections is the number of crashes per million entering vehicles (MEV)[5]. In addition, critical crash rates were calculated for each study intersection based on the HSM method and a 95 percent confidence interval.

The study area intersections were grouped into three categories: traffic signals; side-street stop-control; and all-way stop-control intersections. The observed crash rates at intersections were compared to a critical crash rate calculated for each intersection as a means of comparison among study intersections that have similar characteristics. This comparison is used to determine if further evaluation is needed to identify if there are any consistent types of collisions that would indicate a specific safety issue. This method of safety analysis is based on the critical rate method and it takes into consideration variance in crash data, allows for a threshold of comparison among similar intersections in the study area, and accounts for the influence low volumes have on crash rates. Detailed collision analysis is provided in Appendix D. Table 5 shows the intersections identified for further review based on the critical rate method.

[5] The calculation of MEV is based on average daily traffic (ADT) shown in Appendix D of this study and the *Sumner Early Learning Center and Athletic Field Upgrade Transportation Impact Analysis*, January 2017. This ADT is for the whole intersection or driveway considering all turning movements for both driveways and intersections. This is different from the ADT along a roadway segment, which is through volumes for one street.

Table 5. Summary of Intersections Identified for Further Review

Intersection	Dismissal Peak Hour TEV[1]	Intersection Control	Observed Crash Rate[2]	Critical Crash Rate[4]	Observed Greater than Critical?
15. Valley Avenue/Gary Street	1,517	Side Street Stop	0.54	0.22	Yes
18. Valley Avenue (SR 162)/74th Street	1,758	Side Street Stop	0.21	0.21	Yes
27. Wood Avenue/Gault Street	560	Side Street Stop	1.63	1.47	Yes

1. Total Entering Vehicles. Total Entering Vehicles.
2. Crashes per Million Entering Vehicles (MEV).
3. Calculated according to Equation 4-10 in the *Highway Safety Manual*, 2010.
4. Calculated according to Equation 4-11 in the *Highway Safety Manual*, 2010.

As shown in Table 5, 3 of the 27 study intersections had an observed crash rate higher than the intersection's critical crash rate and are identified for further review. All three of the intersections identified for further review are two-way stop-controlled. The intersections identified in Table 5 have observed crash rates higher than the critical crash rate and consistent with guidance provided in the HSM, were examined further. As outlined in HSM, the collision data is reviewed to identify any specific collision patterns that could be addressed by countermeasures.

A review of collision data at the Valley Avenue (SR 162)/Gary Street intersection reveals that of the 9 collisions reported during the analysis period, the majority were rear-end collisions. Rear-end collisions are common in stop-and-go conditions such as what typically occurs along SR 162 during peak periods. There are no other clear patterns of collisions at the Valley Avenue/Gary Street intersection that would indicate a potential safety concern.

The intersection of Valley Avenue (SR 162)/74th Street had an observed crash rate equal to its critical crash rate although the intersection only experienced 4 collisions (3 rear-end) over the course of three years. As noted previously, rear-end collisions are more common in stop-and-go conditions such as what typically occurs along SR 162 during peak periods.

The intersection of Wood Avenue/ Gault Street is noted as having an observed crash rate greater than its critical crash rate; however, the intersection only experienced one collision over the course of three years which does not indicate a pattern or a potential safety concern.

The analysis shows that no specific safety issues are identified that would indicate the need for countermeasures.

Campus Access Operations

The existing campus consists of the SMS and MLE schools. As discussed previously, SMS's hours are 7:25 a.m. to 2:20 p.m. and MLE's hours are from 8:25 a.m. to 3:10 p.m. In June 2016, the Sumner School District retained Heffron Transportation to review existing access operations and vehicle queuing at SMS and along Willow Street. As a result of that work, Heffron Transportation and District staff jointly developed recommendations for adjustments to the SMS pick-up/drop-off area and to arrival and departure operations. These adjustments were intended to minimize queuing overspill to Willow Street and encourage more activity on site and within the designated pick-up/drop-off loop. Improvements included changes in striping at the drop-off/pick-up loop intended to maximize use of the on-site load/unload facilities.

For this analysis of the proposed ELC project, new field observations of morning drop-off activity at SMS and MLE were performed in September 2016 and compared to the previous observations conducted in May 2016 (by Heffron) to determine if the improvements recommended by Heffron Transportation result in reduced impacts along Willow Street.

Observations at SMS were conducted between 6:30 and 7:25 a.m. and observations at MLE were conducted between 7:30 and 8:30 a.m. Video observations were recorded in both east and west directions during the arrival and dismissal periods of both schools near the intersection of Guptil Avenue/ Willow Street.

Similar to what was observed in the Heffron study, the majority of drop-off activity for SMS occurred in both the drop-off/pick-up loop and along the south side of Willow Street just west of the middle driveway. The maximum observed queue along Willow Street occurred during the AM arrival period of SMS. The longest queue recorded by the Heffron Study at the drop-off/pick-up loop driveway was approximately 9 vehicles and occurred between 7:11 and 7:18 a.m. While both in-person and video observations in September 2016 confirmed that queues still extended to roughly 9 vehicles, the striping improvements have decreased total time that queuing occurs. While Heffron noted that queueing on Willow Street occurs for roughly 8 minutes, observations in September 2016 show that the rolling westbound queue lasted for approximately 5 minutes. The westbound queue extended past the intersection of Guptil Avenue/Willow Street consistent with the Heffron Transportations observations; however, drivers were not blocking the intersection or impeding pedestrian or driver movements. The Heffron observations noted that drivers would block the intersection and as a result additional personnel have been provided along Willow Street to manage pedestrian and vehicle flows. During the afternoon dismissal period, queueing observed in Heffron review remained similar to queueing observed in September 2016 post-improvements.

It should be noted that the development of the proposed ELC would not impact queueing associated with SMS since the dismissal and arrival hours would be different and is there is no overlap in dismissal and arrival times. In addition, the proposed ELC would not utilize the SMS drop-off/pick-up loop; therefore, no queuing related to drop-off/pick-up would occur along Willow Street due to the ELC.

At the time of September 2016 observations of the MLE school arrival and dismissal periods, MLE also used the SMS drop-off/pick-up area. Since completion of these observations, the School District has completed an expansion of the Wood Avenue parking lot allowing for pick-up and drop-off to occur at both the SMS drop-off/pick-up area and the expanded parking lot. Utilization of both the SMS loop and the MLE expanded parking lot provides for more space for drop-off/pick-up resulting in the majority of school-related activity occurring on-campus. Observations by the School District staff, as of December 2016, indicate that there is no queuing along Willow Street during the MLE arrival and dismissal periods with the additional space provided by the MLE parking lot expansion.

Parking

The following sections describe the data collection and occupancy of existing on-street parking and on-site parking lots within the school campus. The campus parking was assessed for both the school hours and during after school activities.

Data Collection

Parking data was collected along the adjacent neighborhood streets and on-site in September and November 2016 to document existing parking conditions. The data collection includes days with school activities both inside and outside including Tae Kwon Do and SMS baseball and fast pitch games in September 2016 and junior varsity and varsity basketball games in November 2016. Data was collected on September 22 and November 15, 2016 at 10 a.m. and 3:30 to 5:00 p.m. in 30-minute intervals and for a further hour from 5:00 to 6:00 p.m. in November 2016. On-street parking data was collected along Sumner Avenue, Willow Street, Guptil Avenue, Adele Street, Wood Avenue, and Gary Street.

Further data collection relative to sport activities was conducted on May 2 and May 11, 2017 between 2 to 8 p.m. to understand parking demand associated with specific school and community activity levels. Data collection occurred in the same study area as in September and November 2016. Sport activities on campus during the data collection included volleyball, tennis, and football games.

Supply, Demand and Occupancy

Campus School-Related Parking

There are currently 294 total parking spaces on the campus. The School District recently completed an expansion of the MLE parking lot, which added 67 spaces to the campus. The campus peak parking demand when school was in session was determined based on utilizing September and November 2016 parking counts. The parking utilization counts found that peak parking demand occurred at 10 a.m. when both MLE and SMS were in session. Overall, an average of 60 percent of the parking was utilized on-campus at 10 a.m. when school is in session.

Campus After School/Community Use Parking

After school the peak parking demand occurred on May 2, 2017 at 4 p.m. This hour represents the period of transition between after school activity ending and community activity beginning. The peak parking utilization during this transition period was 57 percent for the campus. After this period parking demand declines and observations show that between 5 and 8 p.m. parking utilization ranged between 6 and 18 percent. Parking for the after school/community use primarily occurs in the SMS parking lot on the south side of the school adjacent to the athletic fields. It was observed at 4 p.m. that this parking lot was 104 percent full due to parents dropping off and picking up athletics. Although parking on the south side of the school was full, all parking was contained on site during the observations. The SMS staff parking lot was only 55 percent full at 4 p.m. and overall the campus has sufficient capacity to accommodate parking demand associated with school and community activities.

Utilization rates lower than 85 to 90 percent indicate there is sufficient parking to accommodate needs; therefore, parking is sufficient to accommodate the existing demands. However, it is noted that some school-related demand occurs on-street due to use preference or convenience even when excess supply is available on site.

On-Street Parking

On-street parking is allowed adjacent to the school and within the neighborhood and there are no restricted permit zones. Based on observations conducted in September 2016, November 2016, and May 2017, the total on-street parking demand in the area studied ranged between 19 and 47 vehicles along streets neighboring the school campus including Sumner Avenue, Willow Street, Guptil Avenue, Adele Street, Wood Avenue, and Gary Street. The data show that the on-street parking levels were slightly higher in May 2017 compared to September and November 2016. On-street parking demand was highest at 3 p.m. during both the MLE dismissal and after school activities indicating there could be some parking within the neighborhood related to school activities. After 3 p.m. on-street parking utilization decreases; however, during the period when residents arrive home from work starting at approximately 5:30 p.m. parking utilization begins to increase. Overall, on-street utilization was observed to be low with blocks no more than 50 percent full with on-street parking still available. Difficulty with finding on-street parking typically does not occur until occupancies reach 85 percent or higher.

Chapter 3. Future (2018) Baseline Conditions

This section describes the future baseline 2018 traffic conditions during the study time periods without the addition of project traffic. The following describes planned transportation improvements, traffic volume forecasts, and traffic operations.

Street System

A review of the City of Sumner's *2017-2022 Six-Year Transportation Improvement Program* (TIP) was conducted to determine planned transportation projects that would affect the study area within the 2018 horizon year. There are no funded improvements that would be completed by 2018 that would change the configuration or capacity of study area intersections. The TIP does include a project that would construct additional lanes along SR 162 and reconstruct the SR 162/SR 410 interchange; however, no funding for these improvements has been identified. The TIP anticipates planning for the SR 162 improvements in 2017 with design in 2018 and construction in 2019.

Another project—the SR 162 Sumner to Orting Corridor Planning Study—is being conducted by WSDOT. The purpose of the study is to identify ranked strategies that increase mobility by reducing delay for travelers using the highway corridor while maintaining or improving safe operation of the highway. WSDOT is currently working with the surrounding agencies and community to rank strategies. Currently, there is no specific timing and funding identified to implement identified strategies.

Transit Service

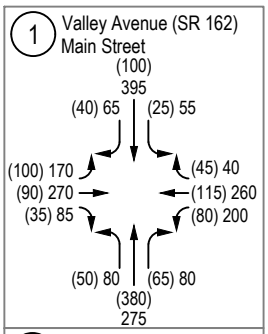
Sound Transit (ST) 3 was approved by voters on November 8, 2016. Within the study area, funding from ST 3 would include projects that facilitate the efficient flow of new and expanded bus connections to Sumner Station. Projects include transit signal priority, queue jump lanes, and other transit-related improvements. These projects are anticipated to be completed between 2019 and 2024. ST 3 would also fund a high capacity transit (HCT) study to review the potential for commuter rail service between Sumner and Orting. There are no transit service changes planned by 2018 in the study area.

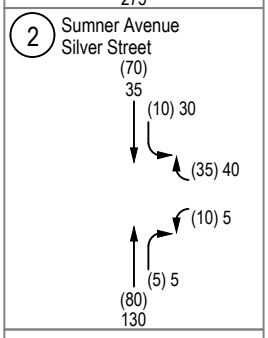
Non-Motorized Facilities

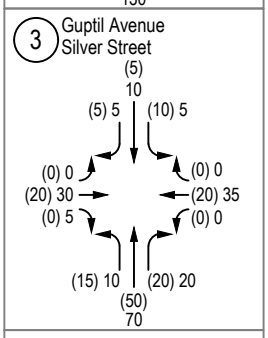
The City of Sumner *Americans with Disabilities Act Transit Plan: Pedestrian Facilities in the Public Right-of-way* is intended to ensure that there are reasonable and accessible paths of travel in the public right-of-way for everyone. Within the study area, ramp improvements were identified at Silver Street at Sumner Avenue and Meade McCumber Road E by 2016.

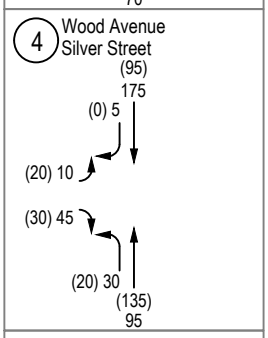
Baseline Traffic Volumes

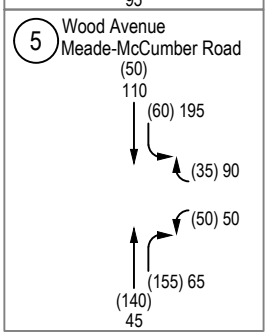
A review of the Sumner travel demand model indicates an anticipated growth rate of 1 percent per year for traffic within the study area between 2000 and 2035. Forecasts for the 2018 school arrival and dismissal peak hour conditions were determined by applying a 1 percent per year growth rate to existing 2016 traffic volumes. In addition, one pipeline project (Stepping Stones Estates Plat) was identified in the study area and was included in baseline conditions. Figure 5 (a and b) shows the resulting 2018 traffic volumes at the study intersections.

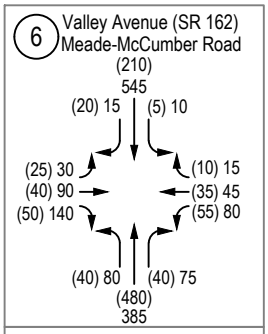


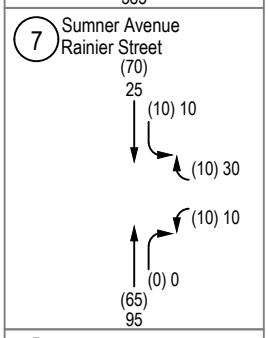


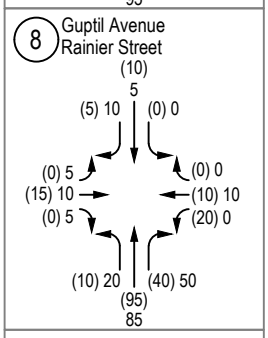


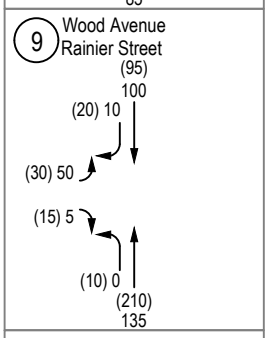


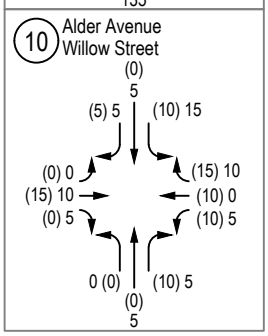


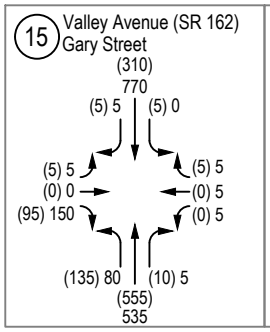


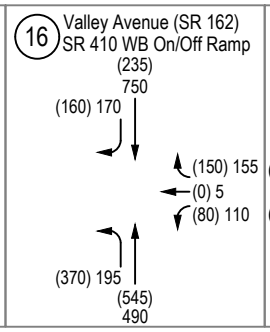


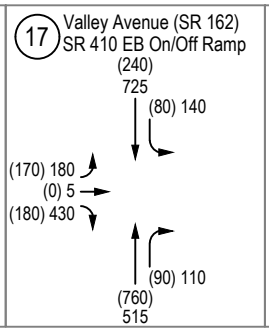


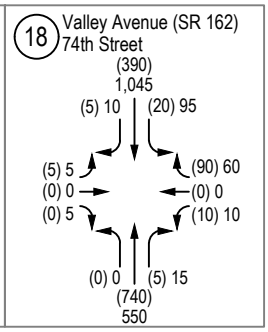










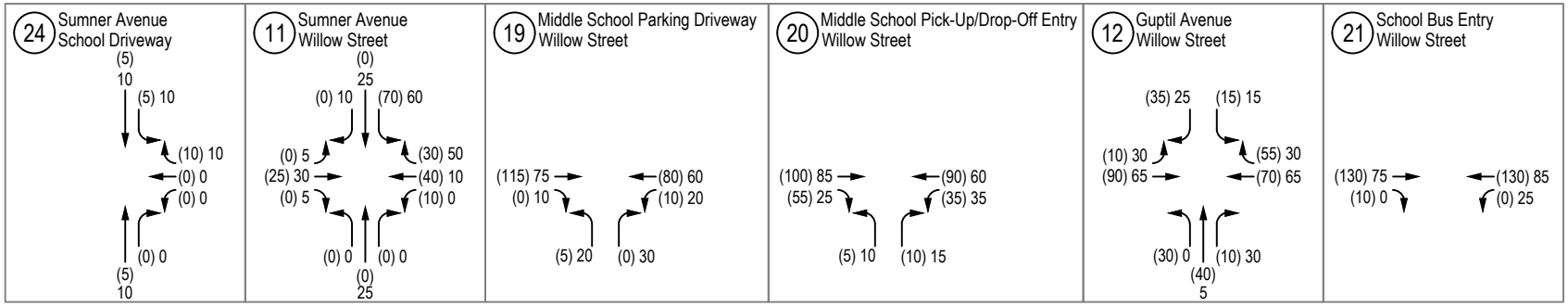


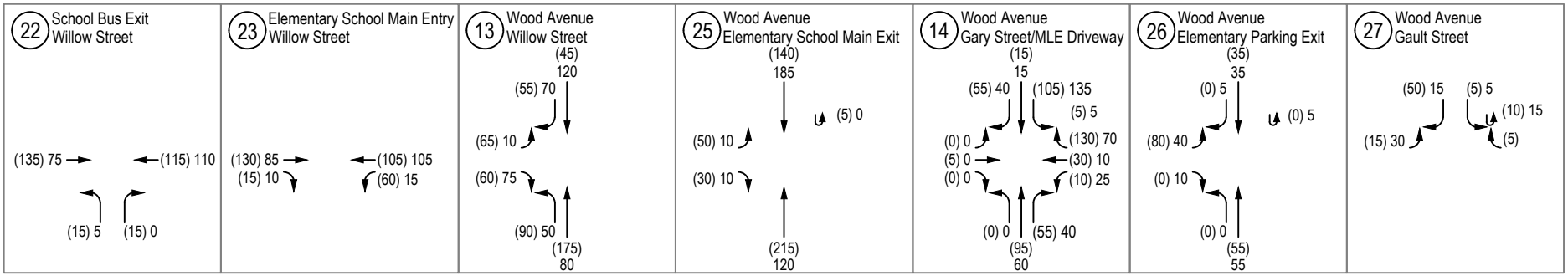
Future Baseline (2018) School Arrival and Dismissal Weekday Peak Hour Traffic Volumes

FIGURE **5a**

Sumner Early Learning Center

transpogroup
WHAT TRANSPORTATION CAN BE.





Future Baseline (2018) School Arrival and Dismissal Weekday Peak Hour Traffic Volumes (Continued)

FIGURE **5b**

Sumner Early Learning Center

transpogroup
WHAT TRANSPORTATION CAN BE.

Baseline Traffic Operations

Peak hour intersection operations were evaluated for the future baseline 2018 conditions. Intersection LOS was calculated at the study intersections using the LOS method described for existing conditions. There are no planned improvements within at the study intersections that would be completed by 2018; therefore, existing intersection geometrics and signal timing were assumed. Table 6 and Table 7 summarize LOS for the weekday school arrival and school dismissal peak hours. The detailed LOS worksheets are included in Appendix C.

Table 6. Comparison of Existing and Future Without-Project Arrival Peak Hour Intersection LOS

		Existing (2016)			Without-Project (2018)		
Intersection	**Traffic Control**	**LOS[1]**	**Delay[2]**	**WM[3]**	**LOS**	**Delay**	**WM**
Off-Site Study Intersections							
1. Valley Ave/ Main St E	Signalized	C	24.2	-	C	24.4	-
2. Sumner Ave/Silver St	Side Street Stop	A	9.1	WB	A	9.1	WB
3. Guptil Ave/Silver St	Side Street Stop	A	9.4	NB	A	9.4	NB
4. Wood Ave/Silver St	Side Street Stop	A	9.6	EB	A	9.7	EB
5. Wood Ave/Meade McCumber Road E	Side Street Stop	B	11.6	WB	B	11.7	WB
6. Valley Ave/Mead McCumber Road E	Signalized	B	14.3	-	B	14.4	-
7. Sumner Ave/Rainer St	Side Street Stop	A	9.1	WB	A	9.1	WB
8. Guptil Ave/Rainer St	Side Street Stop	B	10.3	NB	B	10.3	NB
9. Wood Ave/Rainer St	Side Street Stop	B	10.7	EB	B	11.1	EB
10. Alder Ave/Willow St	Side Street Stop	A	8.9	SB	A	8.9	SB
11. Sumner Ave/Willow St	All-Way Stop	A	7.6	-	A	7.6	-
12. Guptil Ave (School Pick-Up/Drop-Off Exit)/Willow St	Side Street Stop	B	11.7	NB	B	11.8	NB
13. Wood Ave/Willow St	Side Street Stop	C	16.3	EB	C	18.1	EB
14. Wood Ave/Gary St (MLE Parking)	All-Way Stop	B	8.4	-	B	8.4	-
15. Valley Ave/ Gary St	Side Street Stop	B	13.4	EB	B	13.5	EB
16. Valley Ave (SR 162)/SR 410 WB On/Off Ramps	Signalized	C	20.4	-	C	20.3	-
17. Valley Ave (SR 162)/SR 410 EB On/Off Ramps	Signalized	D	40.1	-	D	42.7	-
18. Valley Ave (SR 162)/74th St E	Side Street Stop	C	19.1	WB	C	19.6	WB
Campus Access Intersections							
19. SMS Parking Driveway/Willow St	Side Street Stop	B	10.2	NB	B	10.2	NB
20. School Pick-up/Drop-off Entrance/ Willow St	Side Street Stop	A	9.5	NB	A	9.5	NB
21. MLE School Bus Entrance/Willow St	Side Street Stop	A	0[4]	WB	A	0[4]	-
22. MLE School Bus Exit/Willow St	Side Street Stop	B	10.8	NB	B	11.2	NB
23. MLE Main Entrance/Willow St	Side Street Stop	A	3.9	WB	A	3.4	WB
24. Sumner Ave/School Driveway	Side Street Stop	A	8.4	WB	A	8.4	WB
25. Wood Ave/ MLE Main Exit	Side Street Stop	B	10.4	EB	B	11.1	EB
26. Wood Ave/ MLE Parking	Side Street Stop	B	10.0	EB	B	10.5	EB
27. Wood Ave/ Gault Street	Side Street Stop	A	8.7	EB	A	8.8	EB

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (TRB, 2010)
2. Average delay per vehicle in seconds.
3. Worst movement reported for side street stop intersections
4. Zero Delay reported for these intersections due to zero outbound traffic volumes (entrance-only driveways)

As summarized in Table 6, the study intersections would operate at similar levels to existing conditions with some increases in average delay due to assumed growth in traffic. During the

forecast 2018 weekday school arrival peak hour, northbound queue along SR 162 at the SR 410 EB Ramps are projected to extend approximately 860-feet to the south or an increase of approximately 30-feet compared to existing conditions. This increase is equivalent to approximately one to two vehicles over existing conditions, which is not likely to be noticeable to drivers. The southbound queue at the SR162/SR 410 WB Ramps would extend approximately 210-feet to the north during the arrival peak hour, which would be within the available storage and would not impact the adjacent intersection.

Table 7. Comparison of Existing and Future Weekday Dismissal Peak Hour Intersection LOS

		Existing (2016)			Without-Project (2018)		
Intersection	**Traffic Control**	**LOS[1]**	**Delay[2]**	**WM[3]**	**LOS**	**Delay**	**WM**
Off-Site Study Intersections							
1. Valley Ave/ Main St E	Signalized	D	37.3	-	D	38.3	-
2. Sumner Ave/Silver St	Side Street Stop	A	9.5	WB	A	9.5	WB
3. Guptil Ave/Silver St	Side Street Stop	B	10.4	NB	B	10.4	NB
4. Wood Ave/Silver St	Side Street Stop	A	9.7	EB	A	9.8	EB
5. Wood Ave/Meade McCumber Road E	Side Street Stop	C	15.0	WB	C	15.3	WB
6. Valley Ave/Mead McCumber Road E	Signalized	C	22.3	-	C	22.9	-
7. Sumner Ave/Rainer St	Side Street Stop	A	9.1	WB	A	9.1	WB
8. Guptil Ave/Rainer St	Side Street Stop	B	10.6	NB	B	10.6	NB
9. Wood Ave/Rainer St	Side Street Stop	B	10.7	EB	B	10.7	EB
10. Alder Ave/Willow St	Side Street Stop	A	9.0	NB	A	9.0	NB
11. Sumner Ave/Willow St	All-Way Stop	A	7.5	-	A	7.5	-
12. Guptil Ave (School Pick-Up/Drop-Off Exit)/Willow St	Side Street Stop	D	26.5	SB	D	26.0	SB
13. Wood Ave/Willow St	Side Street Stop	B	13.9	EB	B	13.2	EB
14. Wood Ave/Gary St (MLE Parking)	All-Way Stop	B	7.9	-	B	8.1	-
15. Valley Ave/ Gary St	Side Street Stop	B	12.9	EB	B	13.1	EB
16. Valley Ave (SR 162)/SR 410 WB On/Off Ramps	Signalized	D	38.0	-	D	42.3	-
17. Valley Ave (SR 162)/SR 410 EB On/Off Ramps	Signalized	D	41.8	-	D	39.5	-
18. Valley Ave (SR 162)/74th St E	Side Street Stop	C	15.7	WB	C	15.9	WB
Campus Access Intersections							
19. SMS Parking Driveway/Willow St	Side Street Stop	A	9.7	NB	A	9.7	NB
20. School Pick-up/Drop-off Entrance/ Willow St	Side Street Stop	B	10.4	WB	B	10.2	WB
21. MLE School Bus Entrance/Willow St	Side Street Stop	A	1.7	WB	A	1.8	WB
22. MLE School Bus Exit/Willow St	Side Street Stop	B	11.9	NB	B	11.8	NB
23. MLE Main Entrance/Willow St	Side Street Stop	A	1.0	WB	A	1.0	WB
24. Sumner Ave/School Driveway	Side Street Stop	A	8.4	WB	A	8.4	WB
25. Wood Ave/ MLE Main Exit	Side Street Stop	B	10.2	EB	B	10.5	EB
26. Wood Ave/ MLE Parking	Side Street Stop	A	9.6	EB	B	10.0	EB
27. Wood Ave/ Gault Street	Side Street Stop	A	8.6	EB	A	8.6	EB

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (TRB, 2010)
2. Average delay per vehicle in seconds.
3. Worst movement reported for side street stop intersections
4. Zero Delay reported for these intersections due to zero outbound traffic volumes (entrance-only driveways)

As summarized in Table 7, the study intersections would have similar operations to existing conditions with some increases in average delay due to assumed growth in traffic. During the forecast 2018 weekday dismissal peak hour, southbound vehicle queue along SR 162 at the SR 410 WB Ramps are projected to extend approximately 715-feet to the north, which

reflects an increase of 15-feet or less than 1 vehicle over existing conditions. The northbound vehicle queue at the SR 162/SR 410 EB Ramps would extend approximately 560-feet to the south during the weekday dismissal peak hour, which reflects an increase of approximately 10-feet or less than 1 vehicle over existing conditions. These increases are not likely to be noticeable to drivers.

Parking

It is not anticipated that parking demand for SMS and MLE including after school and community activities would change for the baseline conditions without the project. As described in existing conditions, MLE parking lot has recently been expanded and approximately 67 parking spaces have been added to the existing 31 space parking lot. The parking lot expansion accommodates existing parking needs as well as on-site MLE parent drop-off/pick-up.

Chapter 4. Future (2018) With-Project Impacts

This section documents transportation impacts anticipated with the development of the new Sumner Early Learning Center (ELC) and Athletic Field reconfiguration. This includes estimated trip generation, distribution of trips through the system, and evaluation of potential transportation impacts to the surrounding system.

Street System

Primary access for general vehicle trips to and from the ELC would be provided via the existing westernmost SMS driveway on Willow Street. Parents would be instructed to use the driveway along Willow Street. Buses to and from the ELC would access the site to and from Gault Street. Access to the athletic fields would be via the new Gault Street access and the existing driveway along Willow Street.

Bus Service

As discussed previously, the School District provides school bus transportation to students that qualify, which generally applies to those living more than 2 miles from the assigned school or in an area where safety conditions or lack of improvements make pedestrian traffic hazardous.[6] The School District anticipates up to 7 buses could serve the ELC. This service would be provided for the ELC students during the morning and afternoon (preschool only) arrival periods as well as the morning (preschool only) and afternoon dismissal periods. No after-school activities are anticipated associated with the ELC.

Non-Motorized Facilities

The proposed project will include a network of safe and efficient non-motorized connections through the site between primary generators including buildings, parking lots, sports fields, and pick-up/drop-off areas. The internal network would be connected to off-site facilities and would include a new sidewalk from the proposed ELC to Sumner Avenue.

There could be some level of walking or biking to the site given the proximately of the ELC to student residences. In addition, given the age of the students served by the ELC, an adult would accompany them for any walking or biking trips. The neighborhood to the north of the ELC has a well-connected network of sidewalks facilitating access to the campus.

Trip Generation

Trip generation was determined for the ELC and the athletic field reconfiguration.

ELC

While the Institute of Transportation Engineers' *Trip Generation Manual*, 9th Edition contains information on school uses, trip generation based on students, local model splits and travel characteristics is recommended when possible. The ELC is anticipated to have similar traffic generating characteristics as the existing MLE including the same service boundaries and parents are anticipated to have similar travel behaviors within these boundaries. Therefore, trip generation for the proposed ELC was based on data collected at the existing MLE driveways and off-site where pick-up/drop-off activity occurs on-street near the MLE.

[6] Sumner School District Regulations & Procedures No. 6600P, Revised August 2011.

Driveway counts were conducted at MLE driveways on Thursday, September 22, 2016 during the morning school arrival (6:30 to 9:30 a.m.) and afternoon school dismissal (2:00 to 4:00 p.m.) periods. Observations of off-site pick-up/drop-off were also conducted and recorded during the same morning arrival and afternoon dismissal peaks of the MLE. Based on the existing student enrollment of 641 students, the driveway trips were used to calculate a trip rate per student for both peak periods. The existing MLE trip generation and calculated rates are shown in Table 8.

Table 8. Existing MLE School Trip Generation[1]

Time Period	Total Trips			% Distribution		Trip Rate[2]
	In	Out	Total	In	Out	
Morning Arrival Peak Hour	231	214	445	52%	48%	0.69
Afternoon Dismissal Peak Hour	155	188	343	45%	55%	0.54

1. Based on traffic data collected on Thursday, September 22, 2016.
2. Trip Rate represents the number of vehicle trips per student.

The trip generation values above include vehicular traffic associated with students, staff, and buses. As shown in Table 8, the existing school generates approximately 340 to 450 peak hour trips with the highest trip generation occurring during the Morning Arrival period.

The ELC is expected to have similar travel characteristics as the MLE School relative to the portion of students arriving by bus and parent/family vehicle; therefore, trip generation estimates were developed based on the observed data from the existing MLE School. The estimated trip generation for the proposed ELC is shown in Table 9.

Table 9. Proposed Early Learning Center Estimated Trip Generation

Time Period	Size	Trip Rate[1]	Total Trips		
			In	Out	Total
Morning Arrival Peak Hour	250 students	0.69	90	84	174
Afternoon Dismissal Peak Hour		0.54	60	74	134

1. Based on trip rate per student calculated based on existing MLE.

As shown in the table, the ELC is forecast to generate 174 trips during the morning arrival period and 134 trips during the dismissal period. No additional after school activities associated with the ELC are anticipated on campus.

Athletic Field Reconfiguration

As described previously, the existing SMS sports fields are currently used by the school but are also rented to local community youth sports organizations and youth leagues. The existing SMS sports fields and facilities include a softball field and baseball field with a football/soccer field overlaid in the outfields, a football/soccer field surrounded by a track, a smaller grass playfield, and 4 tennis courts. The modified facility would have a baseball field, a football/soccer field overlaid on the outfield of the baseball field, a new synthetic turf football/soccer field surrounded by a new track, and relocation of the softball field to the existing softball field at MLE. The existing tennis courts and small grass playfield would be eliminated reducing the exterior sports capacity.

Observations and driveway counts were completed for two days on May 2 and 11, 2017 to assess school and community activities occurring at the SMS facilities. Data was collected between 2 and 7 p.m. and included vehicle counts at the driveways as well as counts of participants, coaches, and spectators for each school and community activity that occurred during that period. The school facilities are typically used on weekday during after school hours from approximately 2:30 to 8 p.m. and the number of participants varies depending on

the season. School activities usually occur from 2:30 to 5 p.m. while community use occurs from approximately 5:15 to 8 p.m.[7]

The observation days were scheduled to coincide with high-participant events including volleyball and tennis games on May 2, 2017 and a football game on May 11, 2017. The data collection shows that the number of participants and vehicle trips to and from the campus were higher on May 2, 2017 compared to May 11, 2017. Trip generation estimates for the SMS facilities interior and exterior uses were based on the data collection on May 2, 2017 to provide a conservative estimate. Table 10 shows the activities and participants, coaches, and spectators for the sports observed on May 2, 2017 at the SMS facilities. The observations also included spot checks of other activities on campus including non-sports and MLE sports; however, since school-related non-sports and MLE sports activity would not change with the proposed project these are not considered in the summary of participants.[8,9] It should be noted that there was no community use of interior SMS facilities occurring during the observation period.

Table 10. Existing SMS Athletic Facilities Activity Level – May 2, 2017

Activity	Total Observed During Activity[1]			
	Participants	Coaches	Spectators	Total
School-Related: 2:30-5 p.m.				
Football Practice	52	6	13	71
Flag Football	34	2	3	39
Tennis	45	2	43	90
Volleyball (Practice)	19	4	1	24
Volleyball (Game)	70	4	75	149
Track and Field (Practice)	43	4	6	53
Community Use: 5:15-8 p.m.				
Soccer[2]	6	1	0	7
Rec Basketball (Practice)	7	1	17	25
Tae Kwon Do	11	1	7	19
Lacrosse	18	2	4	24
Baseball (Practice)	10	2	4	16
Softball (Practice)	16	5	5	26
Community Use: After 8 p.m.				
Rec Basketball (Practice)	8	1	4	13
Total Observed Activity	*366*	*55*	*191*	*612*
Peak Hour Activity (4:30 to 5:30 p.m.)[3]	**281**	**27**	**170**	**478**

1. Data was collected until 8:30 p.m. so participants, coaches, and spectators outside of this time period were not captured. Data was collected in 15-minute increments and the numbers shown represent the maximum observed for the duration of the activity.
2. This activity began at 3:30 p.m. and ended at 4:45 p.m. instead of the typical community use period.
3. The peak hour activity excludes school flag football, community soccer practice, and community recreational basketball since arrivals and departures did not occur between 4:30 and 5:30 p.m.

The activities with the highest attendance were the volleyball and tennis games, which included 70 and 45 participants, respectively. During the observation period, there were 4 or more activities occurring with a maximum of 7 concurrent events for community use.

Based on the vehicle counts serving the athletic fields, 4:30-5:30 p.m. was identified as the evening peak hour. This peak hour occurs during the period when school-related activities

[7] Community soccer was observed during the 2:30-5:30 p.m. time period and indoor basketball practices for community teams were also observed to practice beyond 8 p.m.
[8] There was a 3 p.m. spot-check at non-athletic related activities including the robotics and art club.
[9] Little league baseball/softball activities occurred on the MLE fields.

are ending and community use is beginning. Table 11 shows the existing evening peak hour campus vehicle trip generation and the trip rate per athletic field participant.

Table 11. Existing Evening Peak Hour Campus Trip Generation

Time Period	Total Campus Vehicle Trips[1]	Observed Athletic Field Participants	Trip Rate (Vehicles per Participants)
Evening Peak Hour	436	281	1.55

1. Total vehicles trips were calculated based on inbound/outbound vehicle trips at all campus driveways between 4:30 and 5:30 p.m.

As shown in Table 11, the existing trip generation rate is 1.55 vehicles/participant. Future trip generation for the evening peak hour with the athletic field reconfiguration was calculated based on the existing trip generation and consideration of how the field use would change with the proposed project.

Overall, the proposal would decrease the number of available athletic facilities by eliminating the tennis courts and small grass playfield. The reconfiguration and the SOP would reduce the total SMS interior and exterior activities for concurrent community use. Appendix E shows the SOP that have been adopted by the School District. The adopted District operating procedure has the following restrictions on the use of the SMS interior and exterior facilities:

- There shall be not more than 3 Small User Groups (groups of 150 participants or less) scheduled in a day; provided, however, such 3 Small User Groups shall total not more than 150 participants (collectively) in a day.
- When a Church is a User, there shall be no other User Group scheduled during the time period for a Church User.
- For Large User Groups (groups of 150 or more participants), there shall be only 1 User Group scheduled in a day except for a Sumner Middle School school-related use of not more than 150 participants shall be allowed in the same day a Large User Group is scheduled.
- When scheduling User Groups consecutively, there shall be not less than 30 minutes between User Group reservations to avoid overlap; provided, however, 2 or 3 Small User Groups may be scheduled concurrently. However, any such concurrent scheduling of a Small User Group shall total not more than 150 participants (collectively) in a day.
- The term “User Group” shall mean a User Group scheduled during one reservation period.

The SOP would only apply to community use of the interior and exterior SMS facilities; however, the reconfiguration would impact the number of concurrent exterior sports activities for school and community activities by eliminating the tennis courts and small grass playfield. Table 12 summarizes the number of concurrent activities and participation level for existing and future conditions with the proposed athletic field reconfiguration and the SOP. With the community use restricted to 3 groups, to estimate participation it was assumed that lacrosse, Tae Kwan Do, and basketball would occur representing the 3 community activities with the highest observed participation.

Table 12. Existing and Future Peak Hour Athletic Field Activity

	Existing		Future with Project	
	Number of Activities	Participants	Number of Activities	Peak Hour Participants
After School Sports Activities (Afternoon)[1]	5	229	4	184[3]
Community Sports Activities (Evening)[2]	7	52	3	39
Total Activities	12	281	7	223

1. Excludes flag football since it started and ended before 4:30 p.m.
2. Although arrival and dismissal of recreation soccer, softball, and recreation basketball (post 8:00 p.m.) occurred outside the 4:30-5:30 peak hour, all three sports were included as community sports since District's adopted SOP would not allow this to occur with the requirement of only 3 community activities in one day.
3. Assumes elimination of the tennis courts.

As noted in Table 12, the District's adopted SOP and reconfiguration of the fields would reduce the number of activities occurring on-campus in one day. This reduction in activities would reduce overall participant levels and vehicle trip generation. Table 13 summarizes anticipated participant level and the corresponding future vehicle traffic.

Table 13. Estimate Future Evening Peak Hour Campus Trip Generation

	Trip Rate (Vehicles per Participants)	Participants	Trips
Proposed Project	1.55	223	346
Existing		281	436
Net New		**-58**	**-90**

1. Calculated by multiplying the trip generation rate by the anticipated field participants

As shown in Table 13, the proposed project would reduce the overall participate levels and trip generation for the athletic fields with the adopted District SOP and reconfiguration of the fields. This would reduce the overall impacts of the proposed athletic field reconfiguration on the surrounding transportation system. While monthly fluctuations in activities could alter trip generation estimates, the combination of exterior sports capacity reductions and the SOP are anticipated to depress school and community participant levels and vehicle trips compared to existing conditions during the evening activity peak hour. Traffic volumes related to the after school and community use activities are anticipated to decrease resulting in a decrease in project impacts; therefore, no further traffic operations analysis of the evening peak period is presented.

It is noted that the new SOP could allow for one community group with no more than 150 participants to use the SMS facilities. As discussed previously, a community group of this size is not a typical occurrence and generally these bookings are in the summer or on weekends when there are no school activities. Without school activities, these larger community groups would generate less participants and traffic than the combined effects of the school-related and community use activities.

There is also occasional special events on site where participation may be more than 150 people. Examples of events that have occurred in the past include USA Volleyball Tournament with 170 participants, Pierce County Democrats Caucus with 120 participants, and YMCA staff event 325 participants. A majority of these special events occur outside school hours and the adopted SOP would restrict the School District from scheduling community events on the same day. These types of events occur infrequently are not typical.

Trip Distribution and Assignment

Trip distribution patterns for the proposed ELC were developed based on the location of existing kindergarten and preschool students living within the school boundary area as well

as existing travel patterns in the study area. Figure 6 illustrates the general areas where students live within the Sumner School District that would be served by the ELC. As shown in the figure, a majority of the likely students live either north of Main Street or west of SR 167 and approximately 20 percent live just north of the campus within the residential neighborhood.

It is anticipated that some school traffic may circulate on neighborhood streets to and from the site. Much of the school traffic on neighborhood streets would be related to students living in these areas. Parents/care-givers driving students to and from school would be directed to the Willow Street access. The distribution patterns and resulting trip assignments reflect this potential circulation on neighborhood streets.

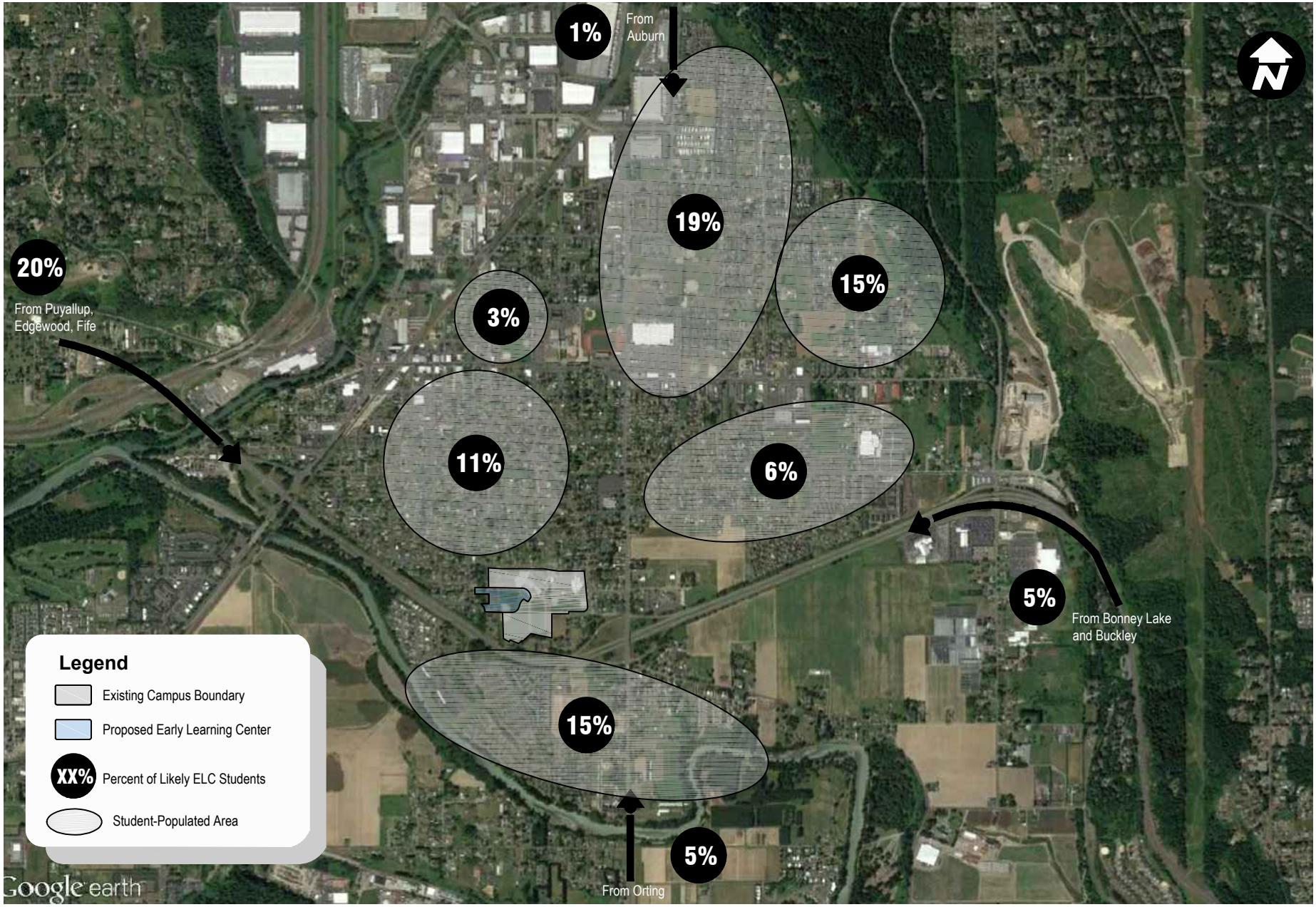
Figure 7 illustrates the resulting trip distribution patterns, which include approximately 35 percent of the project trips traveling to and from north of the site, 20 percent from the south along SR 162, 10 percent to and from the west via SR 410, and 5 percent to and from the east via SR 410. The remaining 20 percent of the trips is represented by trips originating proximate to the school. Bus traffic to and from the campus was assigned to the new Gault Street access. The remaining traffic was assigned to the Willow Street access. Figure 8 (a and b) shows the project trip assignments estimated for the proposed ELC.

Future With-Project Traffic Volumes

Future 2018 with-project traffic volumes were developed by adding the proposed project trips to the baseline 2018 forecasts based on the assignments shown on Figure 8 (a and b). Figure 9 (a and b) shows the resulting 2018 with-project traffic volumes at the study intersections.

As previously noted, the existing ADT along Willow Street is approximately 1,850 vpd. This daily traffic could increase slightly to 1,870 vpd by 2018 with anticipated background growth. The proposed project would increase ADT along Willow Street. Based on ITE's *Trip Generation Manual* (9th Edition) for Elementary School (land use 520), the daily trip generation is 1.29 vehicles per student. The ELC is anticipated to have daily trip generation that is the same as or potentially less than an elementary school. Trip generation could be less because there would be little to no after school activity at the ELC. Assuming 250 ELC students, the ELC would generate approximately 320 daily trips with most of the trips directed towards Willow Street the resulting ADT could be up to 2,200 vpd. The athletic field reconfiguration and implementation of the adopted SOP would reduce daily traffic related to the SMS interior and exterior activity.

As described in the evaluation of existing and baseline operations conditions through the use of the *Highway Capacity Manual*, Willow Street has operational capacity to accommodate additional traffic with intersections operating at LOS A or B during the weekday peak periods. Future With-Project Traffic Operations are described on pages 37-38 and show that Willow Street intersections would continue to operate at LOS A or B during the weekday peak periods with increase in traffic volumes associated with the proposed project. Intersection operations would remain at acceptable levels under the City's level of service standards with an increase in ADT along Willow Street.



General □□□ati□n □□St□dent P□□□lati□n

FIGURE 6

Sumner Early Learning Center

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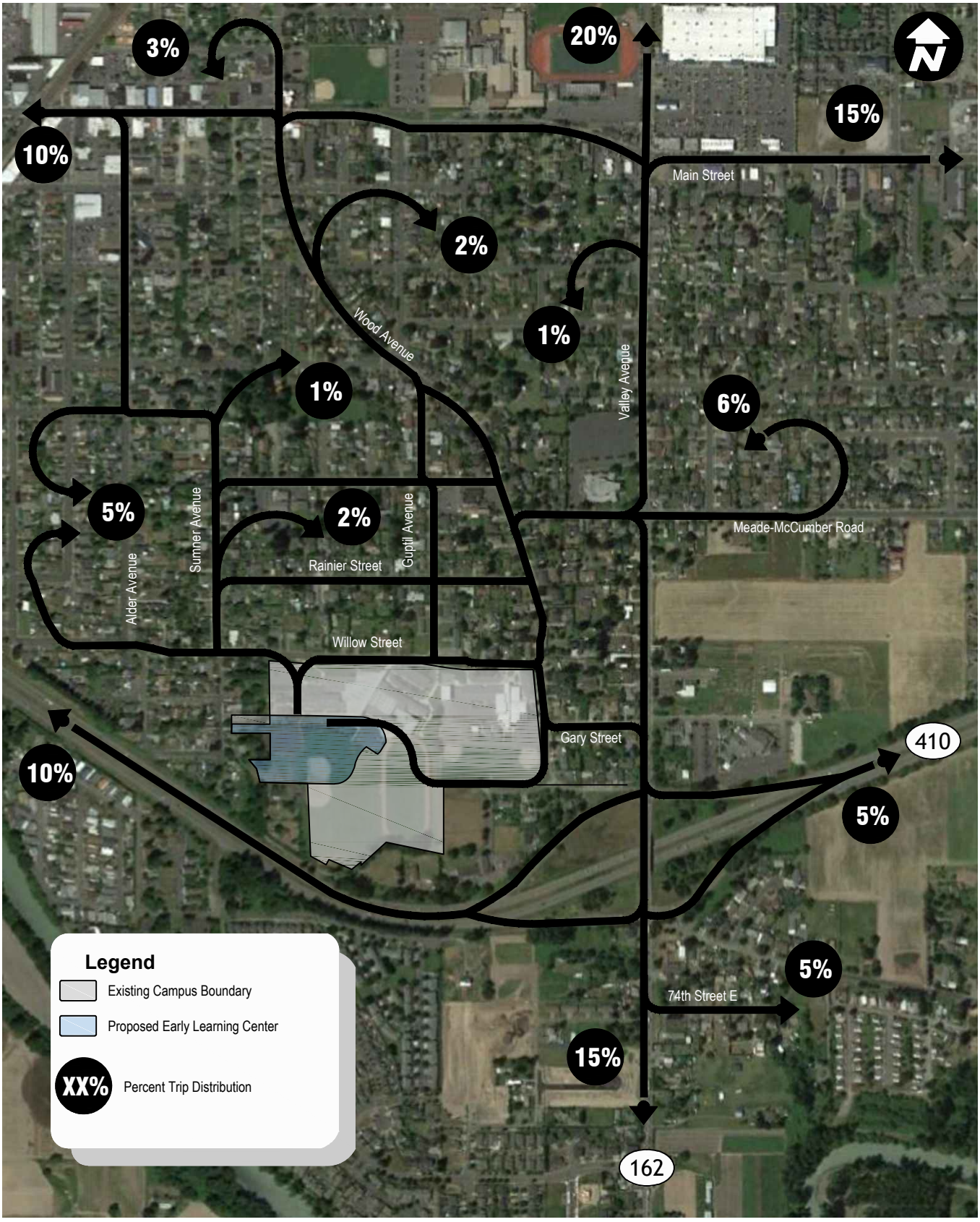
WHAT TRANSPORTATION CAN BE.



Project Trip Distribution

Sumner Early Learning Center

FIGURE
7

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WHAT TRANSPORTATION CAN BE.

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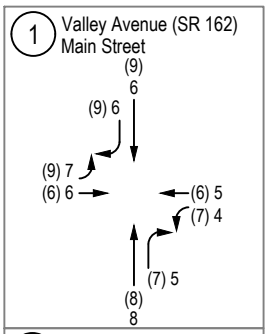

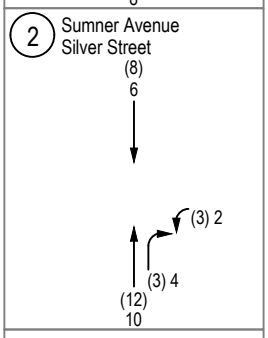

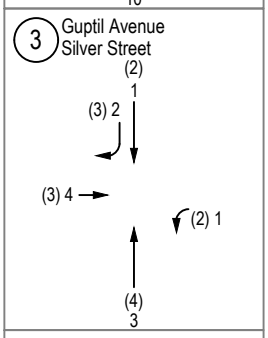

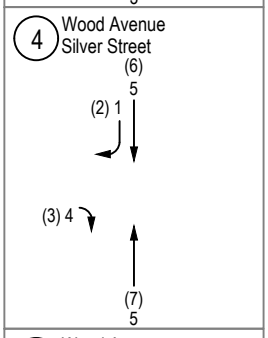

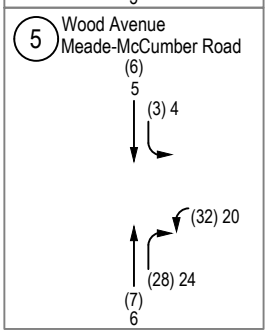

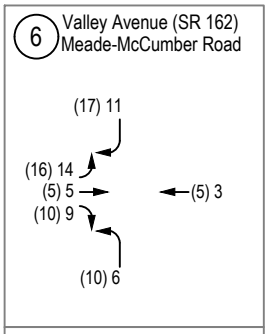

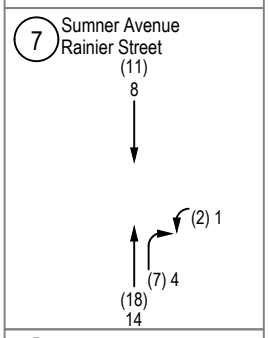

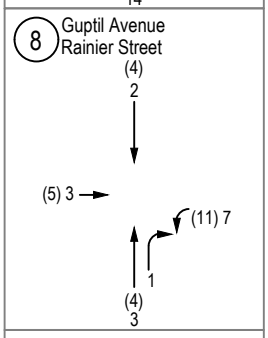

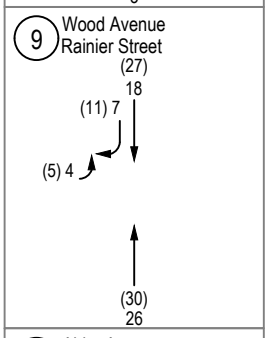

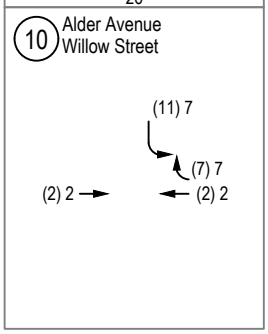

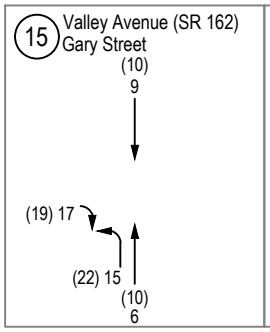

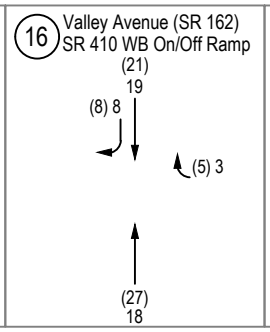

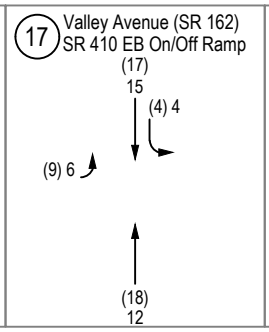

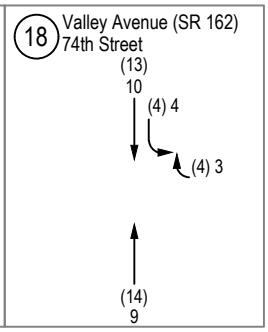

Project Trip Assignment

Sumner Early Learning Center

FIGURE **8a**

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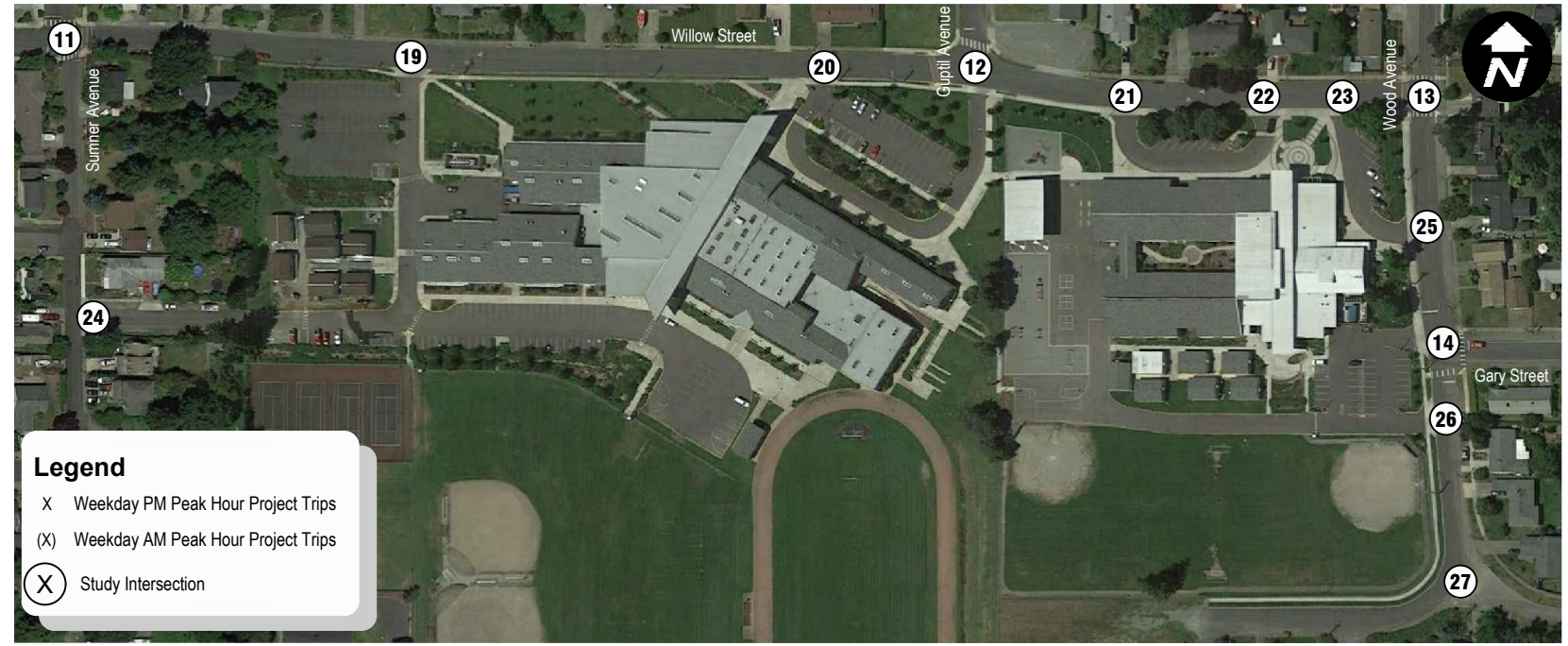
WHAT TRANSPORTATION CAN BE.



Project Trip Assignment (Continued)

FIGURE **8b**

Sumner Early Learning Center

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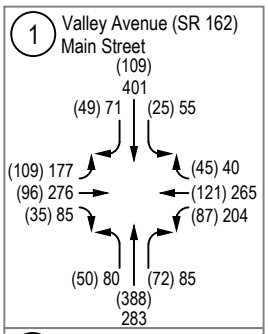
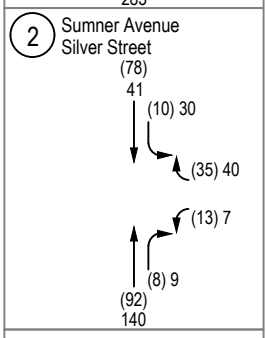
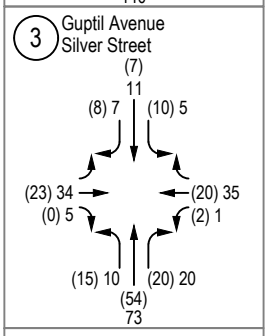
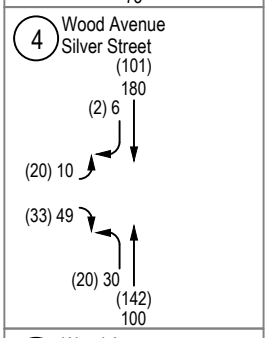
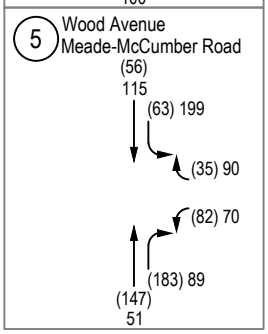
WHAT TRANSPORTATION CAN BE.

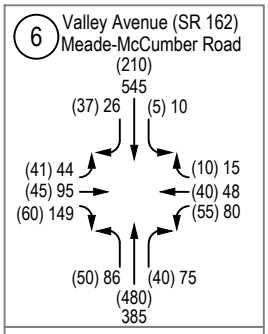


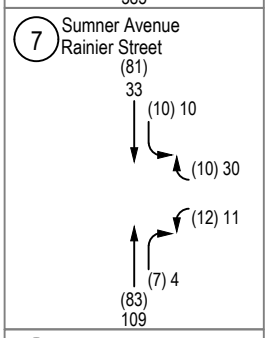


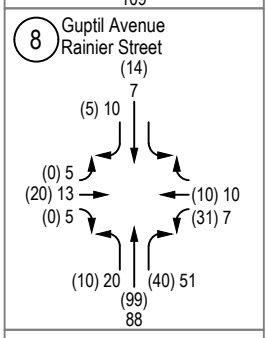


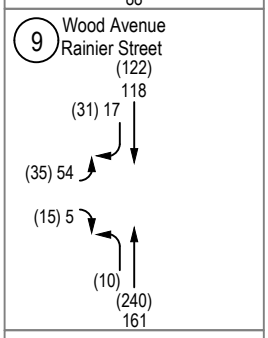


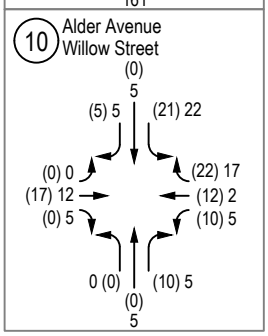


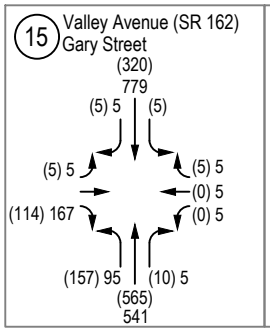


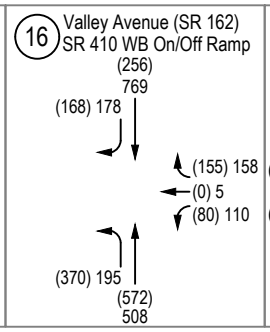


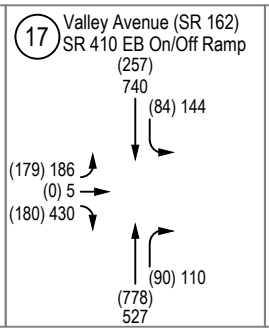


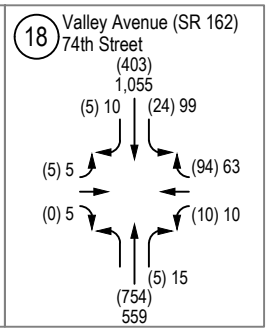










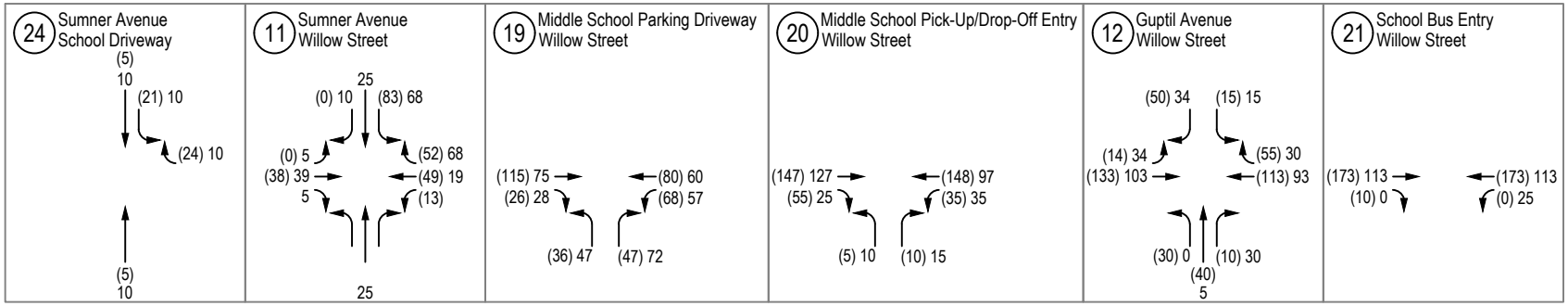


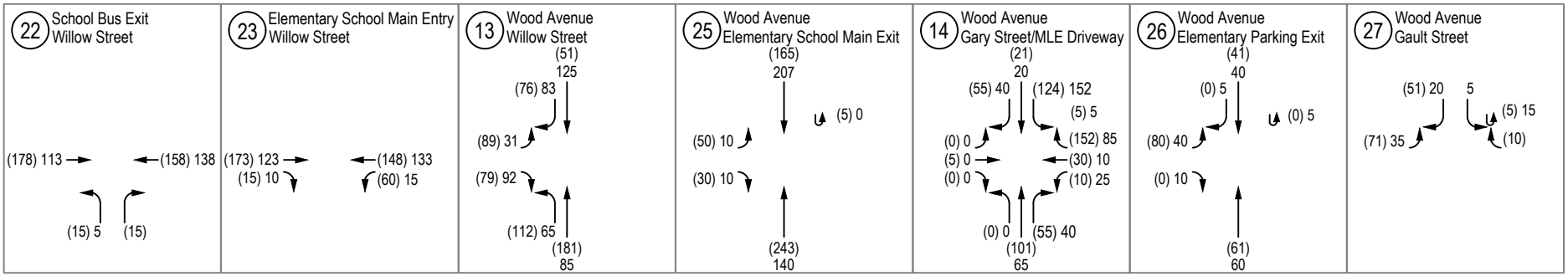
Future (2018) With-Project Arrival and Dismissal Weekday Peak Hour Traffic Volumes

FIGURE **9a**

Sumner Early Learning Center

transpogroup
WHAT TRANSPORTATION CAN BE.





Future (2018) With-Project Arrival and Dismissal Weekday Peak Hour Traffic Volumes (Continued)

FIGURE **9b**

Sumner Early Learning Center

transpogroup
WHAT TRANSPORTATION CAN BE.

Future With-Project Traffic Operations

Intersection operations analysis was conducted in the study area to evaluate the future 2018 with-project conditions. Intersection LOS was calculated at the study intersections using the LOS methodology and assumptions described previously and accounts for future forecasted volumes. Table 14 and Table 15 show the LOS results for With-Project conditions for each time period. The detailed LOS worksheets are included in Appendix C.

Table 14. Comparison of Existing and Future Without-Project Arrival Peak Hour Intersection LOS

Intersection	Traffic Control	Without-Project (2018)			With-Project (2018)		
		LOS[1]	Delay[2]	WM[3]	LOS	Delay	WM
Off-Site Study Intersections							
1. Valley Ave/ Main St E	Signalized	C	24.4	-	C	25.7	-
2. Sumner Ave/Silver St	Side Street Stop	A	9.1	WB	A	9.2	WB
3. Guptil Ave/Silver St	Side Street Stop	A	9.4	NB	A	9.5	NB
4. Wood Ave/Silver St	Side Street Stop	A	9.7	EB	A	9.7	EB
5. Wood Ave/Meade McCumber Road E	Side Street Stop	B	11.7	WB	B	12.8	WB
6. Valley Ave/Mead McCumber Road E	Signalized	B	14.4	-	B	14.9	-
7. Sumner Ave/Rainer St	Side Street Stop	A	9.1	WB	A	9.3	WB
8. Guptil Ave/Rainer St	Side Street Stop	B	10.3	NB	B	10.6	NB
9. Wood Ave/Rainer St	Side Street Stop	B	11.1	EB	B	11.4	EB
10. Alder Ave/Willow St	Side Street Stop	A	8.9	SB	A	9.1	SB
11. Sumner Ave/Willow St	All-Way Stop	A	7.6	-	A	7.7	-
12. Guptil Ave (School Pick-Up/Drop-Off Exit)/Willow St	Side Street Stop	B	11.8	NB	B	13.0	NB
13. Wood Ave/Willow St	Side Street Stop	C	18.1	EB	C	23.2	EB
14. Wood Ave/Gary St (Elementary School Parking)	All-Way Stop	B	8.4	-	A	8.8	-
15. Valley Ave/ Gary St	Side Street Stop	B	13.5	EB	B	13.7	EB
16. Valley Ave (SR 162)/SR 410 WB On/Off Ramps	Signalized	C	20.3	-	C	20.3	-
17. Valley Ave (SR 162)/SR 410 EB On/Off Ramps	Signalized	D	42.7	-	D	45.5	-
18. Valley Ave (SR 162)/74th St E	Side Street Stop	C	19.6	WB	C	20.4	WB
Campus Access Intersections							
19. SMS Parking Driveway/Willow St	Side Street Stop	B	10.2	NB	B	10.9	NB
20. School Pick-up/Drop-off Entrance/ Willow St	Side Street Stop	A	9.5	NB	B	10.0	NB
21. MLE School Bus Entrance/Willow St	Side Street Stop	A	0[4]	-	A	0[4]	-
22. MLE School Bus Exit/Willow St	Side Street Stop	B	11.2	NB	B	12.2	NB
23. MLE Main Entrance/Willow St	Side Street Stop	A	3.4	WB	A	2.7	WB
24. Sumner Ave/School Driveway[5]	Side Street Stop	A	8.4	WB	-	-	-
25. Wood Ave/ MLE Main Exit	Side Street Stop	B	11.1	EB	B	11.4	EB
26. Wood Ave/ MLE Parking	Side Street Stop	B	10.5	EB	A	10.6	EB
27. Wood Ave/ Gault Street (Bus Access)	Side Street Stop	A	8.8	EB	A	8.8	EB

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (TRB, 2010)
2. Average delay per vehicle in seconds.
3. Worst movement reported for side street stop intersections
4. Zero Delay reported for these intersections due to zero outbound traffic volumes (entrance-only driveways)
5. Driveway would be removed with the construction of the proposed project.

As summarized in Table 14, with the addition project traffic, all the study intersections would continue to meet LOS standards operating at LOS D or better during the arrival peak hour. The ELC would result in small increases in delay of approximately 6 seconds or less at the study intersections during the arrival peak hour. The evaluation shows there is capacity at the study intersections to accommodate potential increases related to the ELC. No significant adverse level of service impact is identified within the study area. The increase in vehicle 95th-percentile queue to the south along SR 162 at the SR 410 EB Ramps as a result of the ELC traffic is anticipated to be 30-feet during the weekday arrival peak hour. The queue to the north along SR 162 at the SR 410 WB Ramps would increase by 20-feet as a result of the ELC; however, it would continue to not impact the adjacent Gary Street intersection. The queue increases would be approximately one to two vehicles over the future without-project conditions, which would not likely be noticeable to drivers.

Table 15. Comparison of Existing and Future Weekday Dismissal Peak Hour Intersection LOS

		Without-Project (2018)			With-Project (2018)		
Intersection	**Traffic Control**	**LOS[1]**	**Delay[2]**	**WM[3]**	**LOS**	**Delay**	**WM**
Off-Site Study Intersections							
1. Valley Ave/ Main St E	Signalized	D	38.3	-	D	39.7	-
2. Sumner Ave/Silver St	Side Street Stop	A	9.5	WB	A	9.7	WB
3. Guptil Ave/Silver St	Side Street Stop	B	10.4	NB	B	10.5	NB
4. Wood Ave/Silver St	Side Street Stop	A	9.8	EB	A	9.8	EB
5. Wood Ave/Meade McCumber Road E	Side Street Stop	C	15.3	WB	C	18.5	WB
6. Valley Ave/Mead McCumber Road E	Signalized	C	22.9	-	C	24.8	-
7. Sumner Ave/Rainer St	Side Street Stop	A	9.1	WB	A	9.2	WB
8. Guptil Ave/Rainer St	Side Street Stop	B	10.6	NB	B	10.8	NB
9. Wood Ave/Rainer St	Side Street Stop	B	10.7	EB	B	11.2	EB
10. Alder Ave/Willow St	Side Street Stop	A	9.0	NB	A	9.0	NB
11. Sumner Ave/Willow St	All-Way Stop	A	7.5	-	A	7.5	-
12. Guptil Ave (School Pick-Up/Drop-Off Exit)/Willow St	Side Street Stop	D	26.0	SB	D	29.1	SB
13. Wood Ave/Willow St	Side Street Stop	B	13.2	EB	C	15.0	EB
14. Wood Ave/Gary St (MLE Parking)	All-Way Stop	B	8.1	-	B	8.4	-
15. Valley Ave/ Gary St	Side Street Stop	B	13.1	EB	B	13.5	EB
16. Valley Ave (SR 162)/SR 410 WB On/Off Ramps	Signalized	D	42.3	-	D	45.9	-
17. Valley Ave (SR 162)/SR 410 EB On/Off Ramps	Signalized	D	39.5	-	D	39.9	-
18. Valley Ave (SR 162)/74th St E	Side Street Stop	C	15.9	WB	C	16.1	WB
Campus Access Intersections							
19. SMS Parking Driveway/Willow St	Side Street Stop	A	9.7	NB	B	10.6	NB
20. School Pick-up/Drop-off Entrance/ Willow St	Side Street Stop	B	10.2	WB	B	10.6	NB
21. MLE School Bus Entrance/Willow St	Side Street Stop	A	1.8	WB	A	1.4	WB
22. MLE School Bus Exit/Willow St	Side Street Stop	B	11.8	NB	B	13.0	NB
23. MLE Main Entrance/Willow St	Side Street Stop	A	1.0	WB	A	0.9	WB
24. Sumner Ave/School Driveway[5]	Side Street Stop	A	8.4	WB	-	-	-
25. Wood Ave/ MLE Main Exit	Side Street Stop	B	10.5	EB	B	10.8	EB
26. Wood Ave/ MLE Parking	Side Street Stop	B	10.0	EB	A	10.1	EB
27. Wood Ave/ Gault Street (Bus Access)	Side Street Stop	A	8.6	EB	A	8.6	EB

1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (TRB, 2010)
2. Average delay per vehicle in seconds.
3. Worst movement reported for side street stop intersections
4. Zero Delay reported for these intersections due to zero outbound traffic volumes (entrance-only driveways)
5. Driveway would be removed with the construction of the proposed project.

As summarized in Table 15, with the addition of project traffic, all the study intersections would continue to meet LOS standards and would operate at LOS D or better during the dismissal peak hour. The ELC would result in small increases in delay of approximately 5 seconds or less at the study intersections during the dismissal peak hour. The evaluation shows there is capacity at the study intersections to accommodate potential increases related to the ELC. No significant adverse level of service impact is identified within the study area. In addition, with-project it is anticipated that the increase in the 95th-percentile southbound queue along SR 162 at the SR 410 WB Ramps would be approximately 25-feet to the north during the dismissal peak hour compared to future without-project conditions. The northbound queue along SR 162 at the SR 410 EB Ramps would increase by approximately 30-feet to the south during the dismissal peak compared to future without-project conditions. These increases are equivalent to one to two vehicles and would likely be unnoticeable to drivers.

Traffic Safety

As noted in the existing three-year accident history, the study area has not experienced an unusually high level of accidents to date. Three intersections were identified for further review based on the HSM method. Additional review indicated that there was no existing pattern of collisions and no safety issue was identified. In general, as traffic volumes increase, the potential for traffic safety issues increases proportionately. Traffic generated by the proposed development would likely result in a proportionate increase in the probability of traffic accidents; however, based on impacts to intersection operations it is unlikely that this increased probability would create a new safety issue or significantly increase the number of reported accidents.

Parking

It is anticipated that parking demand for the ELC during the school day would be similar to demands observed for the campus as a whole. Parking counts at 10 a.m. showed that the peak parking demand on campus was approximately 137 vehicles. With an existing combined enrollment of 1,398, this equates to a parking rate of 0.10 vehicles per student[10]. Applying this to the proposed enrollment of the ELC (250 students), the peak parking demand would be 25 vehicles. The parking rate based on the current campus travelling characteristics shows that not all staff are currently driving to campus i.e., they could be using alternative modes or carpooling. The proposed ELC would have 36 teachers; therefore, if they all drove parking demand could be higher. If all the staff drove and there were 10 volunteers that drove parking demand could be as a high as 46 vehicles. The proposal includes 129 additional parking spaces for a total of 490 spaces campus wide (i.e., 294 existing spaces, 67 additional spaces in the MLE parking lot expansion, and 129 spaces for the ELC). The proposed campus parking would be adequate to support the anticipated peak parking demand of 25 to 46 vehicles for the ELC.

It is anticipated that with the reconfiguration of the athletic field, parking demand would decrease similar to trip generation. The May 2017 data collection indicated that peak parking utilization during the athletic field use was approximately 57 percent.[11] While one parking lot did experience higher than 90 percent utilization, there is capacity to accommodate parking throughout the campus. Parking utilization would be anticipated to decrease in the future given the additional 129 parking spaces proposed with the Sumner ELC. Parking for the reconfigured athletic field is anticipated to be fully accommodated on-campus.

[10] Parking rates were reviewed for the MLE, similar to trip generation; however, the parking rate per student for the MLE is less than the campus as a whole, so the study uses the parking rate based on the campus as a whole since it is more conservative.
[11] The ELC would not have any corresponding athletic activity that would add athletic participants to future (2018) conditions.

Campus Access and Operations

As shown in Tables 14 and 15, operations at the campus access points are anticipated to be LOS B or better during the campus arrival and dismissal periods. The proposal includes a bus loop to the south of the ELC to accommodate preschool and kindergarten buses entering from the Gault Street Access. In addition, there would be a drop-off/pick-up area in the front of the ELC to accommodate kindergartens.

A review of national data on queueing for schools estimates a queue length during drop-off/pick-up period of 1.2 to 2.0 feet per student[12]. The queue estimation accounts for some level of walking, biking or bus service to the site. Preschool pick-up/drop-off would need to occur within the proposed ELC parking lot since parents/care-providers need to sign the children in and out of the center. With the proposed 182 kindergarten students, the on-site queue length for the ELC is estimated to be approximately 220 to 365-feet. The proposed ELC pick-up/drop-off area is over 500-feet in length; therefore, it would be sufficient to accommodate anticipated queuing activity and no impacts are anticipated to the adjacent Sumner Avenue or Willow Street as a result of site activity.

As noted in above, preschool pick-up/drop-off would need to occur in the ELC parking lot. The peak parking demand for the ELC is anticipated to be 28 to 46 vehicles; therefore, with 129 parking spaces there would be 75 to 93 spaces available for preschool arrival and departure activity. Based on the anticipated arrival and departure times of the preschool, peak parking demand would likely occur midday when students are arriving for the afternoon session. There is a 40-minute gap between the morning and afternoon preschool sessions, so it is unlikely that the two sessions would overlap. Based on trip generation for school arrival peak hour, there would be 24 vehicles arriving for the afternoon preschool session. The anticipated 24 vehicles associated with afternoon preschool could be accommodated within the 75 to 96 parking spaces are available.

As noted in Existing Conditions section of this study, there is some SMS queuing that occurs along Willow Street during school arrival and dismissal periods. The longest queues are associated with arrival and dismissal of the SMS. The ELC is being planned such that arrival and dismissal are after that of SMS. In addition, arrival and dismissal periods will be staggered with about 10-minutes between the ELC and MLE arrival and departure times. The small overlap between ELC and MLE arrival and dismissal would accommodate parents who have students at both schools and allow them to make one trip to the campus instead of multiple. The ELC and MLE would use different driveways and drop-off/pick-up areas. The ELC is not anticipated to increase activity in the drop-off/pick-up areas along Willow Street, where the SMS related queues were observed. All queuing activity related to the drop-off/pick-up ELC is anticipated to occur on-site.

A microsimulation analysis using *SimTraffic* 9.1 software was used to understand the queuing impacts on streets surrounding the site related to accessing the ELC. As noted in the Introduction section of this study, traffic associated with the MLE is considered as part of the analysis. The analysis shows that the proposed ELC would have a relatively small impact on queues at the intersections surrounding the campus. During the school arrival peak hour, the proposed ELC would increase external queues by approximately two or fewer vehicles. During the school dismissal peak hour, the proposed ELC would also increase external queues by approximately two or fewer vehicles. These increases in queues due to the ELC would likely be unnoticeable to drivers. The ELC impacts on the adjacent street queues are related to vehicles accessing the site and not due to vehicles stopping to drop-off/pick-up

[12] Research from the North Carolina Department of Transportation, South Carolina Department of Transportation, Texas Transportation Institute, and Hatch Mott MacDonald. Transpo has also conducted pick-up/drop-off queuing studies for the Edmonds School District and results are consistent with this research.

students. As mentioned above, all queuing activity related to the drop-off/pick-up ELC is anticipated to occur on-site.

Chapter 5. Findings

The proposal includes an ELC for up to 250 kindergarten and preschool students and modification of the existing SMS athletic fields to provide a baseball field, a football/soccer field overlaid on the outfield of the baseball field, a newly aligned synthetic turf football/soccer field surrounded by the existing new track, and relocation of the softball field to the existing softball field at MLE. This section summarizes the findings of this TIA and the potential transportation-related impacts of the proposed project.

Site Access

- **Vehicle.** Vehicle access for the ELC will occur via the westernmost SMS driveway on Willow Street while school bus access (both ingress and egress) would occur via the proposed driveway located just west of the Wood Avenue/Gault Street intersection. Community access, outside of school hours, would be via the new Gault Street access and the westernmost driveway on Willow Street.
- **Bus Service.** The School District will provide bus service to the ELC consistent with current District operating procedure of generally serving students that live more than 2 miles from the campus or where there may be safety concerns for pedestrians. The School District anticipates up to 7 buses could serve the ELC.
- **Walking and Biking.** Safe and efficient non-motorized connections would be provided through the site between primary generators as well as connect to off-site facilities including a new sidewalk from the proposed ELC to Sumner Avenue.

Trip Generation

- **ELC.** With the proposed enrollment of 250 students at the ELC, the project is anticipated to generate trips in each of the study periods as described below:
  - School Arrival peak hour = 174 trips
  - School Dismissal peak hour = 134 trips
- **Athletic Fields.** Community-related activity traffic generation is anticipated to decrease as a result of the proposed athletic field reconfiguration. This is due to the removal of the tennis courts, elimination of the small grass playfield and the new Sumner School District Standard Operating Procedures (SOP), which limits the community use of the SMS facilities (both exterior and interior facilities). Community-related activities at the SMS facilities would be limited to no more than three user groups per day and such user groups shall collectively be no more than 150 participants per day. In the event a single user group is more than 150 participants, than only one non-school related user group may be scheduled in a day for use of the SMS facilities.

Parking

- **ELC.** School day parking demand could range between 25 to 46 vehicles for the ELC, which would be fully accommodated in the proposed 129 parking spaces.
- **Athletic Fields.** Peak parking utilization based on existing parking spaces for the athletic fields is approximately 57 percent campus wide. While one parking lot did experience higher than 90 percent utilization, there is capacity to accommodate parking throughout the campus. Parking utilization would be anticipated to decrease in the future given the additional 129 parking spaces proposed with the Sumner ELC. In addition, with the anticipated decrease in athletic field capacity together with the District's adopted SOP, participation is anticipated to decrease resulting in a

decrease in parking demand. Parking for the reconfigured athletic field is anticipated to be fully accommodated on-campus.

Traffic Operations

- **Off-Site Impacts.**
    - There is capacity at the study intersections to accommodate potential increases in traffic related to the ELC and athletic field reconfiguration. No significant adverse level of service impact is identified within the study area during both the weekday school arrival, dismissal, and commute PM peak hours.
    - The proposed ELC results in small increases of 15 to 30-feet (or 2 vehicles or less) in northbound and southbound queues along SR 162 at the SR 410 Ramps during the weekday school arrival and dismissal peak hours. These increases would likely not be noticeable to drivers.
    - Peak activity associated with community use of the athletic fields occurs between 4:30 and 5:30 p.m. With the proposed project, vehicle trips associated with community use of the athletic fields would decrease and school activity could also decrease, which result in less off-site impacts of the athletic fields. No significant adverse level of service and queue impacts are anticipated as a result of the athletic field upgrade.
- **Campus Access and Operations.**
    - Operations at the campus access points are anticipated to be LOS B or better during the weekday school arrival and dismissal peak hours.
    - SMS queuing currently occurs along Willow Street during the weekday school arrival and dismissal periods. The total time this queuing occurs has decreased with the striping improvements within the SMS drop-off/pick-up loop made by the School District prior to the 2016-2017 school year.
    - Vehicle queues associated with pick-up/drop-off for the ELC are anticipated to range between 200- and 365-feet, which would be fully accommodated within the proposed 500-foot pick-up/drop-off zone on-site. Vehicle queuing associated with entering the site via Willow Street and Wood Avenue would increase slightly by 2 vehicles or less during both the school arrival and dismissal peaks.
    - Parking demand related to ELC preschool pick-up/drop-off is anticipated to be up to 24 vehicles, which would be fully accommodated within the proposed ELC parking.

Mitigation Measures

- **Transportation Impact Fee:** The City of Sumner has a transportation impact fee program to help offset impacts of development projects. The campus is currently located in District 2 as noted by Sumner's *Traffic Impact Fee District Map*. Based on coordination with the City of Sumner, the "Impact Fee per Unit" for the proposed ELC applied was for "Middle/High School" Developments.[13] The current "Impact Fee per Unit" in District 2 is 2,529 per 1,000 square feet. At 35,290 square feet, the total impact fee for the ELC would be $89,248.31. These calculations are preliminary and actual Traffic impact fees will be calculated for the project as part of the permit review and issuance per the adopted fee schedule in effect at the time of building permit and in accordance with Sumner Municipal Code Chapter 12.36 Transportation Impact Fees.

[13] City of Sumner Traffic Impact Fee Schedule did not have an "Impact Fee per Unit" for Elementary Schools.