



HEATH & ASSOCIATES

Transportation Planning & Engineering

TRAFFIC IMPACT ANALYSIS

Sandstone Ridge

Poulsbo, WA

Revised: December 31, 2024

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SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

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December 31, 2024

To: City of Poulsbo

Subject: Updates to the Sandstone Ridge TIA.

This letter is in response to the City of Poulsbo's, review comments regarding the TIA for Sandstone Ridge. Below lists each comment and how it was addressed.

City of Poulsbo Comments

- Page 29: A sight distance diagram for the access location on Noll Road is requested to better illustrate the conditions of the proposed intersection.

A sight distance exhibit is now available in the updated TIA, refer to Figure 14.

- Include the Concurrency Application either within the TIA or separately.

The Concurrency Application will be submitted separately.

- The Construction Traffic route is reasonable. Construction of the Plat may or may not occur at the same time as Noll Road construction and construction between the two projects will have to be coordinated in the field at that time. Likely construction access via Langaunet will not be available thus the proposed construction entrance and route is supported by the City.

Comment acknowledged.

Please call if you require anything further.

Sincerely,
Aaron Van Aken, P.E., PTOE



SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

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SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

1. INTRODUCTION

Heath & Associates has been engaged to prepare a Traffic Impact Analysis (TIA) to assess the impacts of a proposed residential development within Poulsbo city limits. The tasks include reviewing existing traffic conditions in the site vicinity and comparing them to future buildout conditions, both with and without the proposed development. As a final step, conclusions, and if necessary, mitigation measures, will be identified.

2. PROJECT DESCRIPTION

Proposal:

Sandstone Ridge is a proposed residential development comprised of 87 single-family homes located within Poulsbo city limits.

Site Location:

The subject site is bordered to the west by Langaunet Lane NE and to the south/east by Noll Road NE situated on 18.14-acres within tax parcel #: 132601-4-008-2004.

Access:

Site ingress/egress is proposed via two new roadway connections. One access would extend north from Noll Road NE and the second would extend east from Langaunet Lane NE.

Figure 1 displays the vicinity map with the subject site highlighted in yellow. A conceptual site plan is provided in **Figure 2**.





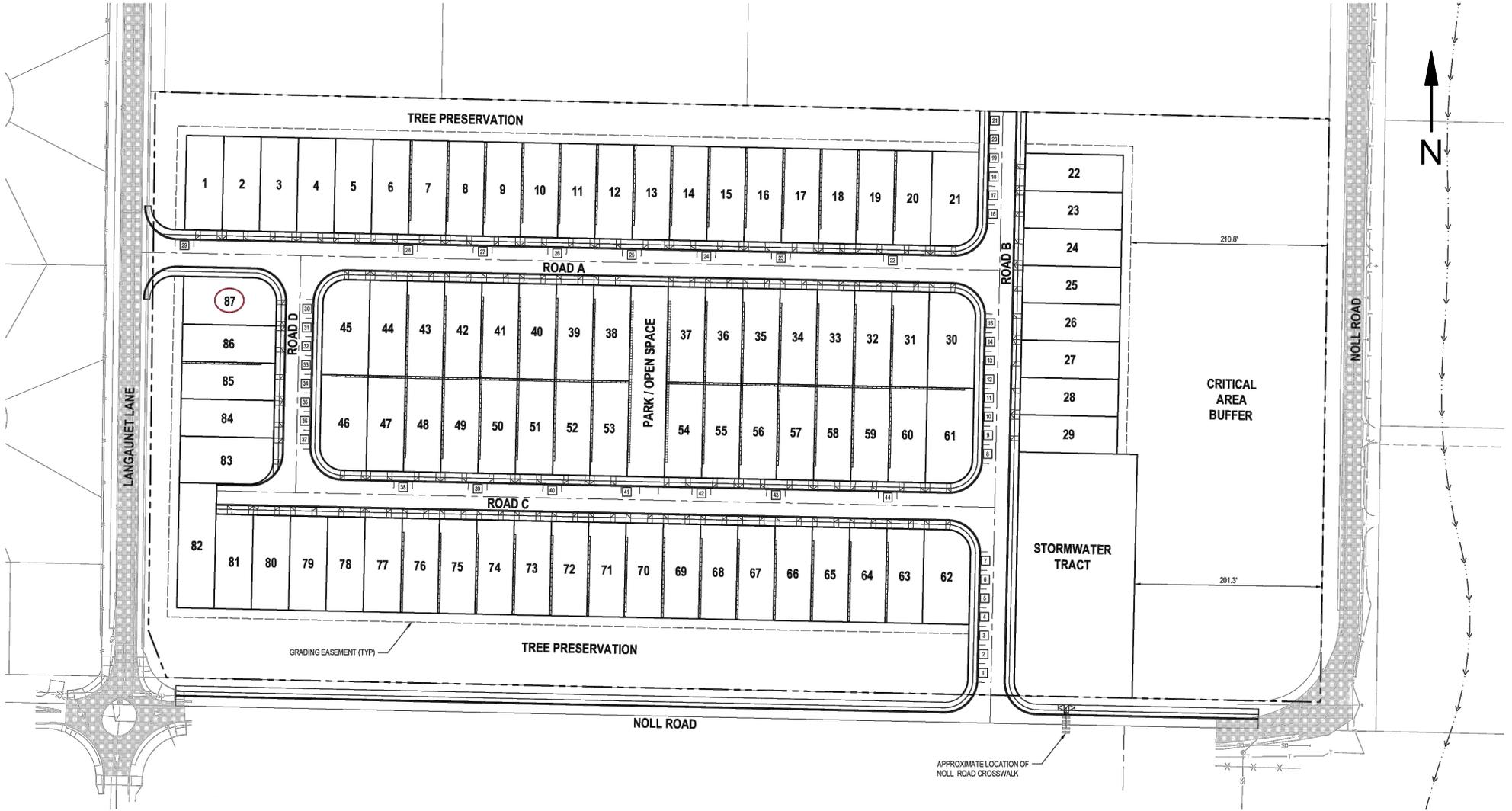
Figure 1: Vicinity Map

Subject Site

Langaunet Ln NE

Noll Rd NE

N



3. EXISTING CONDITIONS

3.1 Existing Street System

Characteristics of the major roadways and arterials serving the subject site are provided in **Table 1** below.

Table 1: Roadway Network

Functional Classification	Roadway	Speed Limit (mph)	Lanes	Sidewalk	Bike Facilities
Principal Arterial	SR 305	40	2-5	Yes	Yes
Minor Arterial	NE Lincoln Rd	20-25	2-3	Yes	Yes
	Noll Rd NE	20-25	2	Some	Some
Neighborhood Collector	NE Hostmark St	15-25	2-3	Yes	Yes
	NE Mesford St	20-25	2	Yes	No
	Caldart Ave NE	20-25	2	Yes	No
Local	Langaunet Ln NE	--	Narrow	No	No

3.2 Transit Service

A review of the Kitsap County Transit website indicates that transit is provided within one mile walking distance to/from the site. Route 344 - Poulsbo Central is provided at the intersection of Caldart Avenue NE & NE Mesford Road. Route 344 provides service from the North Viking Transit Center to the intersection of 10th Avenue & Forest Rock. Weekday service is provided from 8:30 AM to 7:22 PM, Saturday service is provided from 10:30 AM to 5:53 PM, and Sunday service is provided from 10:53 to 6:20 PM. Refer to the Kitsap County Transit website for more detailed information.

3.3 Roadway Improvements

The City of Poulsbo’s (2025-2030) Transportation Improvement Program (TIP) and WSDOT’s STIP (2024-2027) were both reviewed. According to the Poulsbo TIP, four improvements are planned in the site vicinity. Refer to **Table 2** on the following page for project summaries.



Table 2: City of Poulsbo - Planned Transportation Improvement Projects

Name	Location	Improvement	Cost
Noll Rd Middle Segment (PN: 1)	Hostmark to Mesford	Construct a separated ADA accessible shared use path, curb, gutter with connections to the existing roadway and associated drainage in the middle segment of the Noll Road corridor. Construction is estimated to begin in 2026.	1,530,000
Noll Rd Corridor Improvements (PN: 2)	Lincoln and Johnson	The project will connect SR 305 to NE Lincoln Rd via Noll Rd, Languanet Ln & Maranatha Ln. The project includes roadway, illumination, sidewalk and shared use path improvements. The project realigns Noll Rd from NE Lincoln Rd/Maranatha Ln to SR 305/Johnson Rd intersection. It includes a roundabout at Johnson Rd (completed), a nonmotorized crossing at SR 305 and potential intersection traffic controls at the existing Noll Rd/SR 305 intersection. Stormwater conveyance improvements will extend to the Liberty Bay Outfall location. Utility relocation/replacement and new water/sewer as needed. Misc temporary and permanent signage may extend outside the project termini. Construction is planned for three stages (southern portion completed 2022/2023). Construction for the next stages is estimated to begin in 2026.	\$5,675,000
Mesford Ave Improvements (PN: 7)	Karl Pl to Noll Rd	Overlay, add sidewalks, drainage improvements and illumination. Construction is estimated to begin in 2027.	\$1,900,000

As part of the Noll Road Corridor Improvements project, a new north-to-south connection between Langaunet Lane NE and to Kevos Po/Maranatha Lane NE would be constructed. Refer to the figure on the following page for reference. Moreover, a new single-lane roundabout is planned at the Noll Road NE/NE Mesford Road & Langaunet Lane NE intersection. Both of these improvements are anticipated to be completed in the forecast horizon year of this report.





Shown above is the approximate road segment that would be completed as part of the Noll Road Corridor Improvements project. It should be noted that, based on the City's *Noll Road Corridor Plan Executive Summary* (Dec. 2008), this connection is for local routing and accessibility and not intended to serve as a cut-through corridor. The intersection of NE Linoctn Road & Maranatha Lane NE will remain stop-controlled and is planned to have curb bulb outs to discourage cut-through traffic with the intent to keep traffic on Noll Road NE.



3.4 Existing Peak Hour Volumes and Travel Patterns

Field data for this study was collected in May of 2024 at the following seven outlying study intersections:

1. SR 305 & NE Lincoln Road/NE Iverson Street
2. SR 305 & NE Hostmark Street
3. NE Lincoln Road & Caldart Avenue NE
4. NE Mesford Street & Cladart Avenue NE
5. NE Hostmark Street & Caldart Avenue NE
6. Noll Road NE/Languanet Lane NE & NE Mesford Road/Noll Road NE
7. Noll Road NE & NE Hostmark Street/NE Redford Street

Data were obtained during a typical weekday when local schools were in session for the AM and PM peak periods between the hours of 7:00-9:00 AM and 4:00-6:00 PM. The one-hour reflecting highest overall volumes for each peak hour is then derived and used for intersection capacity analysis. The AM peak activity generally occurred between 7:00-8:00 AM the PM peak around 5:00-6:00 PM. **Figures 3 and 4** illustrate existing AM and PM peak hour volumes. Full turning movement count sheets are available in the appendix for reference.

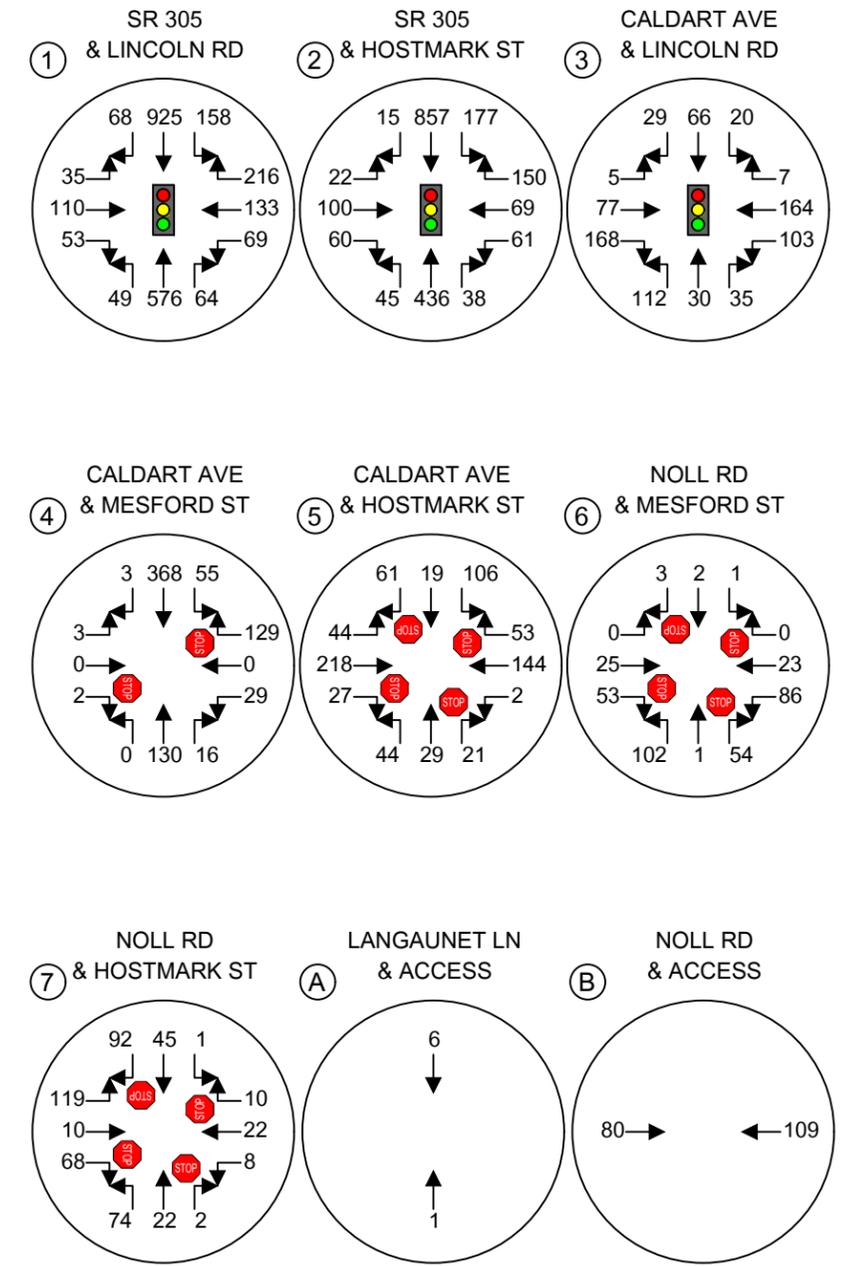
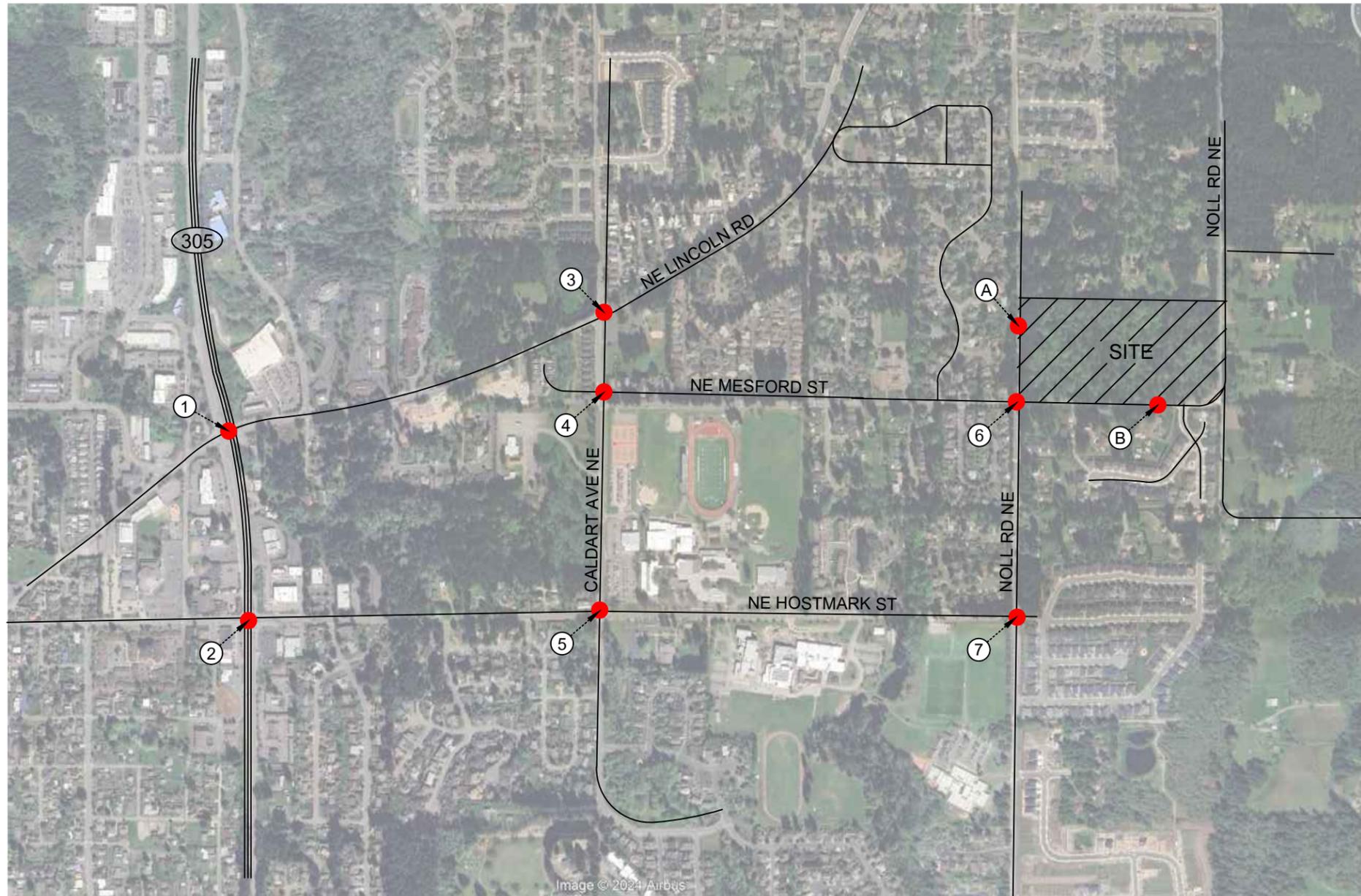
3.5 Non-Motorist Activity & Infrastructure

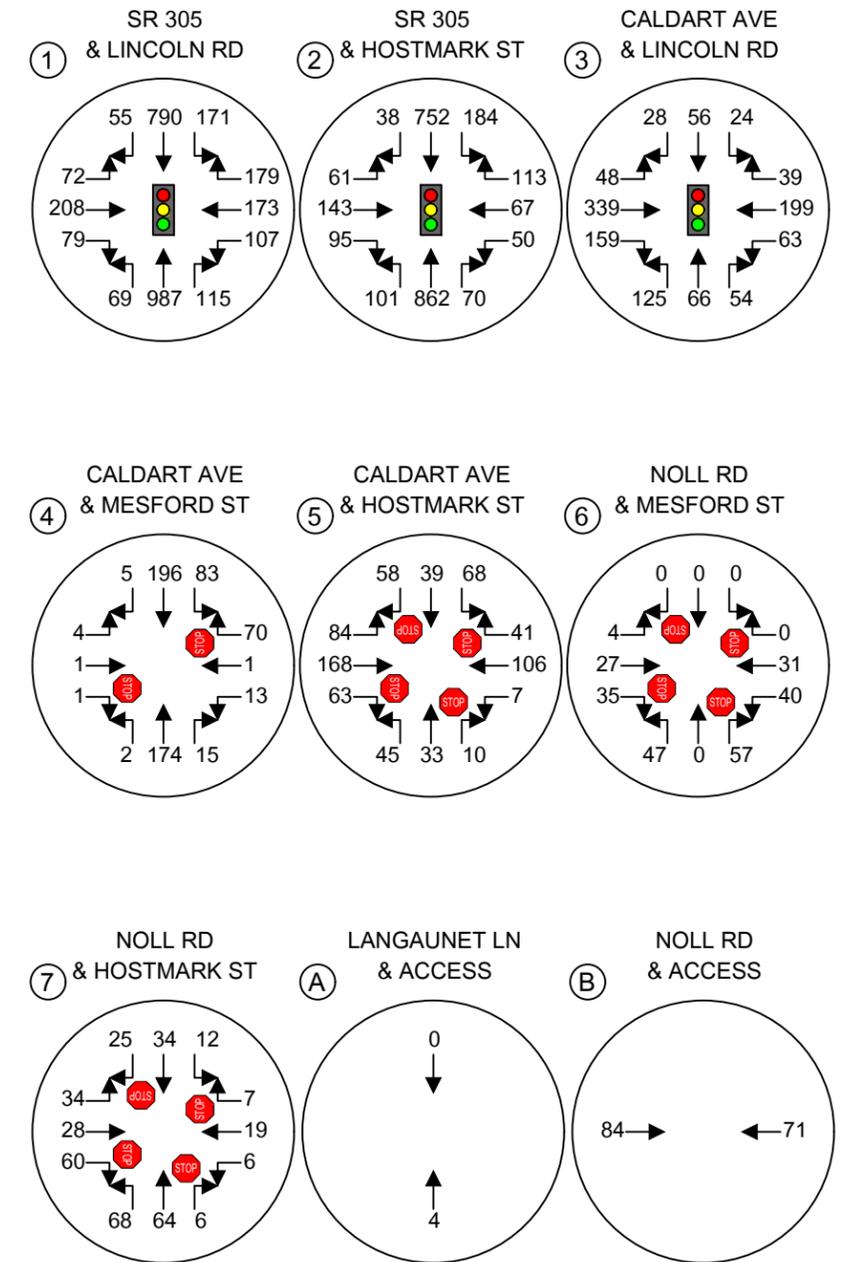
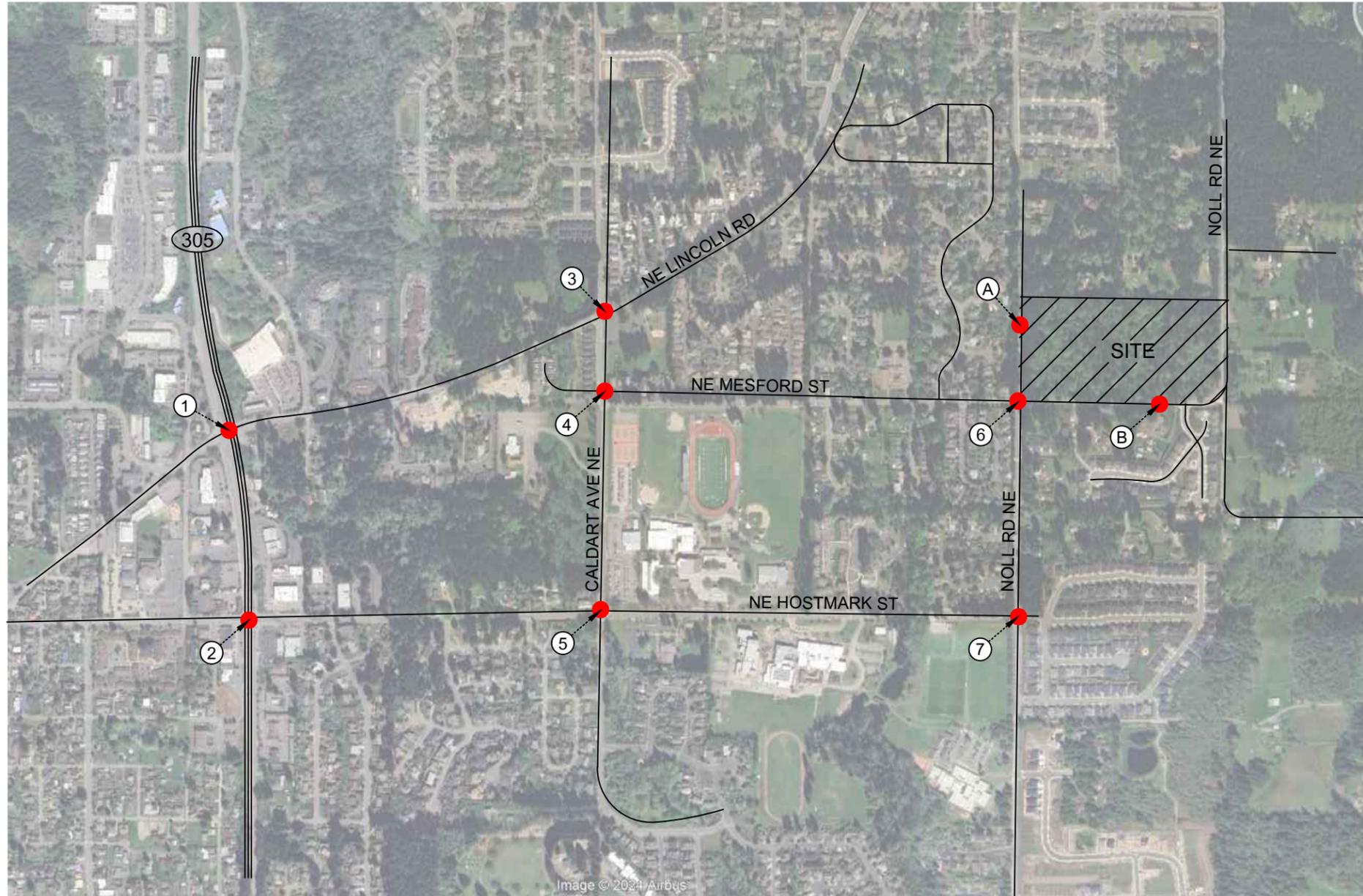
Non-motorist traffic was monitored during the AM and PM peak hour counts. Refer to **Figures 5 and 6** for AM and PM peak hour non-motorist peak hour activity at each study intersection. Non-motorist volumes were generally higher around the school in the morning hours, while in the PM, activity was higher near SR 305.

Sidewalk segments and marked crosswalks are generally available south and west of the subject site along NE Mesford Road, Noll Road NE, NE Hostmark Street, and Caldart Avenue NE, encouraging non-motorist transport. However, no sidewalk segments are currently provided along the project frontage (Languanet Lane NE; Noll Road NE). Transportation improvement projects are outlined in the City's TIP, which are anticipated to improve active transport accessibility in the vicinity of the subject site.

It should be noted that school-aged children would likely attend Poulsbo Elementary School and Poulsbo Middle School. Both of these school campuses are located approximately 0.50-miles walking distance south of the subject site. Continuous sidewalk segments, marked crosswalks, and reduced school speed zone signs are provided between the subject site and schools facilitating student transport.



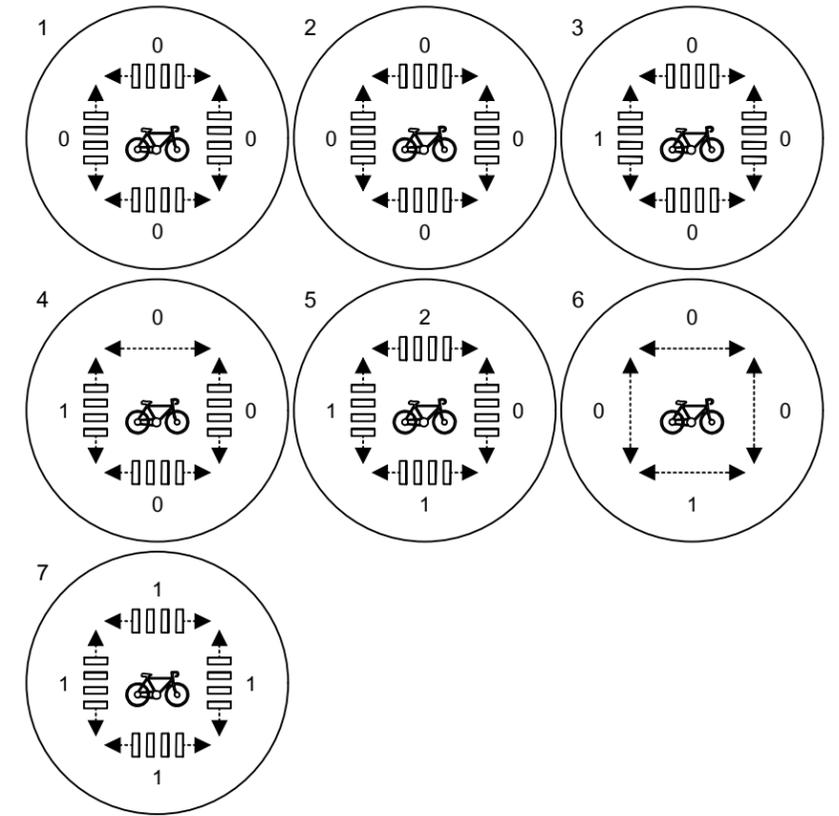
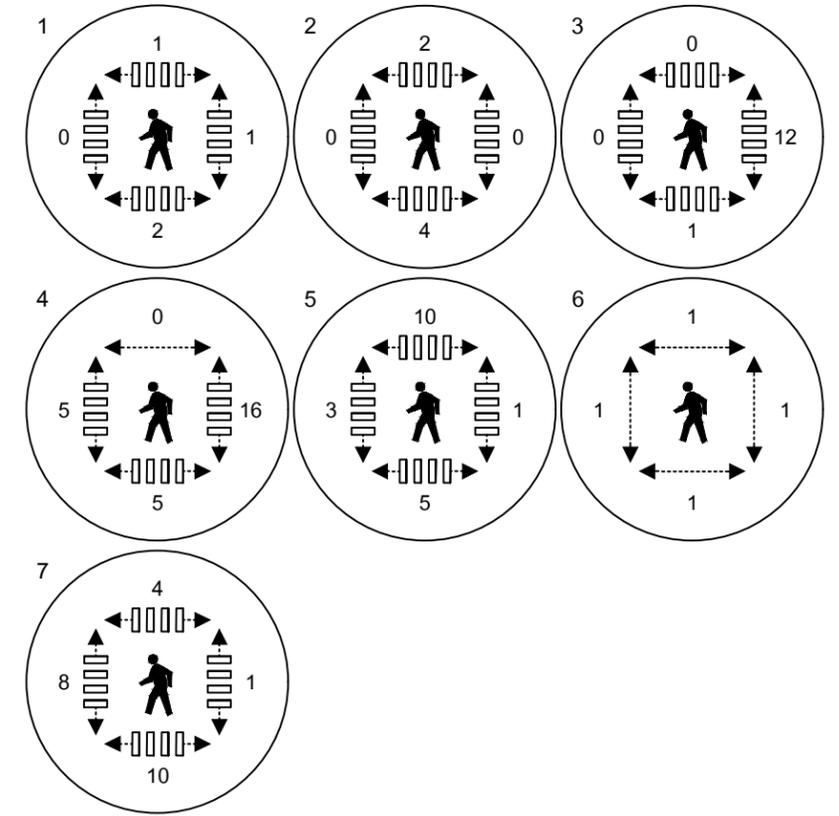






INTERSECTIONS OF STUDY

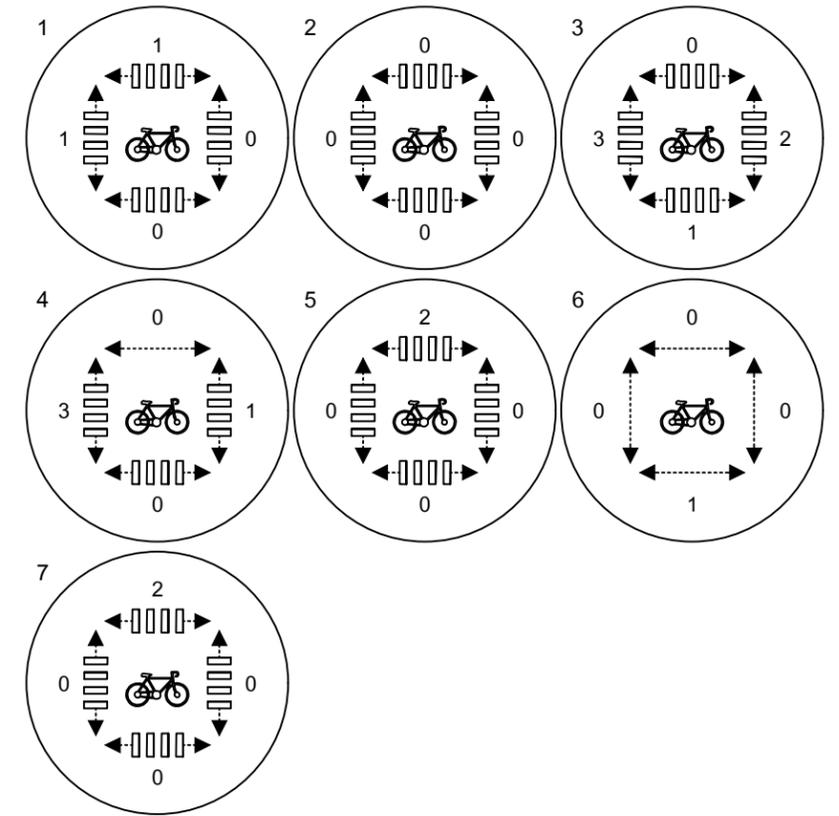
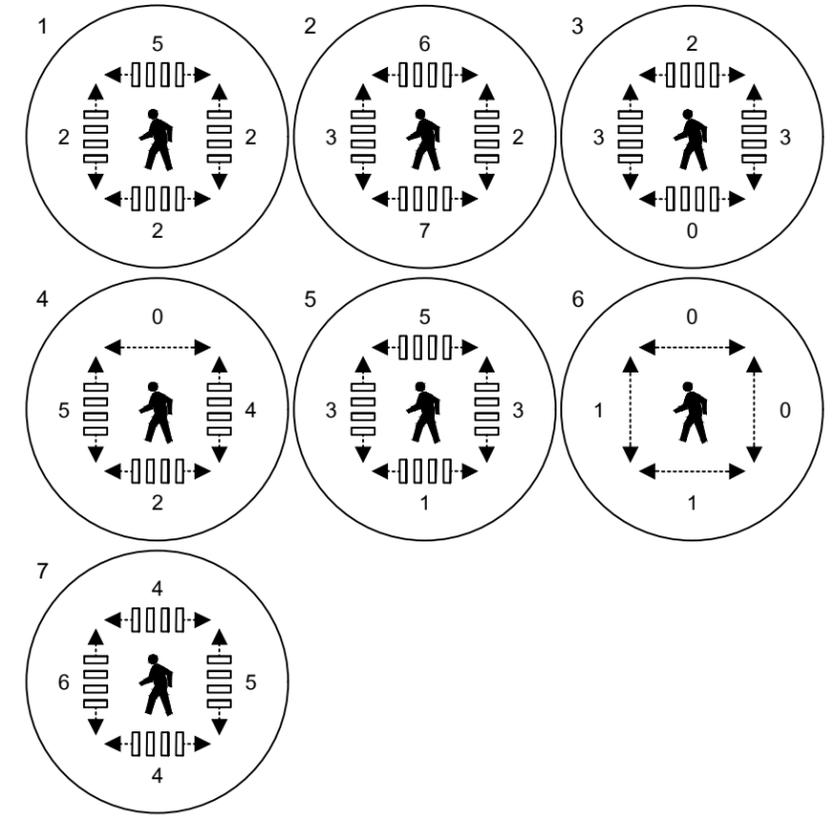
- 1. HIGHWAY 305 & NE LINCOLN RD
- 2. HIGHWAY 305 & NE HOSTMARK ST
- 3. CALDART AVE NE & NE LINCOLN RD
- 4. CALDART AVE NE & NE MESFORD ST
- 5. CALDART AVE NE & NE HOSTMARK ST
- 6. NOLL RD NE & NE MESFORD ST
- 7. NOLL RD NE & NE HOSTMARK ST
- A. LANGAUNET LN NE & ACCESS
- B. NOLL RD NE & ACCESS





INTERSECTIONS OF STUDY

1. HIGHWAY 305 & NE LINCOLN RD
2. HIGHWAY 305 & NE HOSTMARK ST
3. CALDART AVE NE & NE LINCOLN RD
4. CALDART AVE NE & NE MESFORD ST
5. CALDART AVE NE & NE HOSTMARK ST
6. NOLL RD NE & NE MESFORD ST
7. NOLL RD NE & NE HOSTMARK ST
- A. LANGAUNET LN NE & ACCESS
- B. NOLL RD NE & ACCESS



3.6 Existing Level of Service

Existing intersection delays were determined using the *Highway Capacity Manual, 7th Edition*. Capacity analysis is used to establish the level of service (LOS) which is a measure of congestion for transportation facilities. The range¹ for intersection level of service is LOS A to LOS F with the former indicating the best operating conditions with low control delays and the latter indicating the saturated conditions with heavy control delays. Detailed descriptions of intersection LOS are provided in the *Highway Capacity Manual*. Level of service calculations were made using the *Synchro 12* analysis. For side-street, stop-controlled intersections, LOS is determined by the approach with the highest delay. For signalized and all-way stop-controlled (AWSC) intersections, LOS is determined by the overall delay. **Table 3** summarizes existing peak hour LOS delays for each study intersection.

Table 3: Existing Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	Peak Hour	Critical Movement	LOS	Delay
SR 305 & Lincoln Rd	Signal	AM	Overall	C	26.7
		PM		C	30.6
SR 305 & Hostmark St	Signal	AM	Overall	C	23.9
		PM		C	27.7
Lincoln Rd & Caldart Ave	Signal	AM	Overall	B	17.4
		PM		B	15.8
Mesford St & Caldart Ave	TWSC	AM	EB	C	22.1
		PM		B	14.8
Hostmark St & Caldart Ave	AWSC	AM	Overall	B	13.4
		PM		B	10.5
Noll Rd & Mesford St	AWSC	AM	Overall	A	9.2
		PM		A	7.6
Noll Rd & Hostmark St	AWSC	AM	Overall	B	10.3
		PM		A	8.2

¹ *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
A	[10
B	\$10 and [20
C	\$20 and [35
D	\$35 and [55
E	\$55 and [80
F	\$80

Highway Capacity Manual, 7th Edition

Stop Controlled Intersections - Level of Service

Level of Service	Control Delay per Vehicle (sec)
A	[10
B	\$10 and [15
C	\$15 and [25
D	\$25 and [35
E	\$35 and [50
F	\$50



City Level of Service Standards²: LOS E or better.

State Level of Service Standards³: LOS D or better.

Existing level of service is shown to meet City and WSDOT standards operating with LOS C conditions or better for both AM and PM peak travel hours.

3.7 Collision History

A list of the recorded incident history for the five most recent full years (beginning of 2019 through the end of 2023) for each study intersection/corridor was requested from WSDOT. **Table 4** below outlines the yearly incident history for the study area.

Table 4: Collision History Overview

(Ref #) Intersection/Corridor	2019	2020	2021	2022	2023	Avg/Yr
(1) SR 305 & Lincoln Rd	5	5	2	2	4	3.6
(2) 305 from Lincoln to Hostmark	3	1	5	2	0	2.2
(3) SR 305 & Hostmark St	2	2	3	2	1	2.0
(4) Lincoln from 305 to Caldart	0	0	1	0	1	0.4
(5) Lincoln Rd & Caldart Ave	3	1	0	0	0	0.8
(6) Hostmark from 305 to Caldart	2	0	0	0	1	0.6
Mesford St & Caldart Ave	0	0	0	0	0	0.0
(7) Mesford from Caldart to Noll	1	0	0	0	0	0.2
(8) Hostmark St & Caldart Ave	3	2	1	0	1	1.4
(9) Hostmark from Caldart to Noll	1	0	0	0	1	0.4
Noll Rd & Mesford St	0	0	0	0	0	0.0
(10) Noll Rd & Hostmark St	0	1	0	0	1	0.4
Noll Rd from Mesford to Noll	0	0	0	0	0	0.0
Along Langaunet Ln near Access	0	0	0	0	0	0.0

A total of 60 collisions were recorded in the study area, 22 resulting in injury with one fatality.

² Poulsbo Comprehensive Plan - Chapter 4 - Transportation.

³ WSDOT Level of Service Standards - ArcGIS.



Collision Type Analysis: **Table 5** summarizes the collision types for each study location.

Table 5: Collision History Crash Types

<u>Crash Type</u>	Number of Crashes (2019-2023)									
	Ref #1	2	3	4	5	6	7	8	9	10
Rear-End	8	4	5	2	1	1	1	3	0	1
Enter at Angle	5	1	2	0	0	2	0	3	0	0
From Opposite Direction	3	1	2	0	2	0	0	0	0	0
Sideswipe	0	3	0	0	0	0	0	0	0	0
From Same Direction	1	0	1	0	0	0	0	0	0	0
One Car Leaving Parked Position	0	0	0	0	0	0	0	0	1	0
Over Roadway Power Lines	0	1	0	0	0	0	0	0	0	0
Cyclist Strikes Moving Vehicle	1	0	0	0	0	0	0	0	0	0
Tree/Stump	0	0	0	0	1	0	0	0	0	0
Vehicle Going Straight Hits Ped	0	0	0	0	0	0	0	0	1	0
Vehicle Strikes Cyclist	0	0	0	0	0	0	0	1	0	0
Vehicle Turning Left Hits Ped	0	0	0	0	0	0	0	0	0	1
Wood Sign Post	0	1	0	0	0	0	0	0	0	0

Collision Severity Analysis: A collision severity summary is summarized in **Table 6**.

Table 6: Collision History Severity

<u>Crash Type</u>	Number of Crashes (2019-2023)									
	Ref #1	2	3	4	5	6	7	8	9	10
Fatal (K)	0	1	0	0	0	0	0	0	0	0
Incapacitating Injury (A)	0	0	0	0	0	0	0	0	0	0
Non-incapacitating Injury (B)	2	1	0	0	0	0	0	0	1	0
Possible Injury (C)	4	1	1	0	2	0	0	4	0	2
Property Damage Only (PDO)/Unknown	12	8	9	2	2	3	1	3	1	0

Out of the 60 total collisions, one resulted in a fatality, four non-incapacitating injuries, and 14 possible injuries. A more in-depth analysis is provided for all collisions that resulted in a fatality or involved a pedestrian/cyclist. Refer to **Figure 7** which illustrates the collision history location map.



Fatal Collision:

The fatal collision occurred on August 28th, 2021, at around 7:00 PM when a northbound vehicle struck a wood signpost along SR 305 (milepost 11.45). Weather conditions are listed as daylight with dry roadway conditions. No driver contributing circumstance is listed.

Pedalcyclist Strikes Moving Vehicle:

This collision occurred at SR 305 & Lincoln Road in September of 2020 at around 12:30 PM when a cyclist struck a stationary vehicle. Weather conditions are listed as daylight with dry roadway conditions. The cyclist's contributing circumstance is listed as unknown distraction. The collision resulted in a suspected minor injury.

Vehicle Going Straight Hits Pedestrian:

This collision occurred along Hostmark Street from Caldart to Noll in August of 2023 at around 2:30 PM when an eastbound vehicle struck a pedestrian. Weather conditions are listed as daylight with dry roadway conditions. The contributing vehicle contribution is listed as none, with the pedestrian's circumstance listed as did not grant right-of-way to vehicle. The collision resulted in a suspected minor injury.

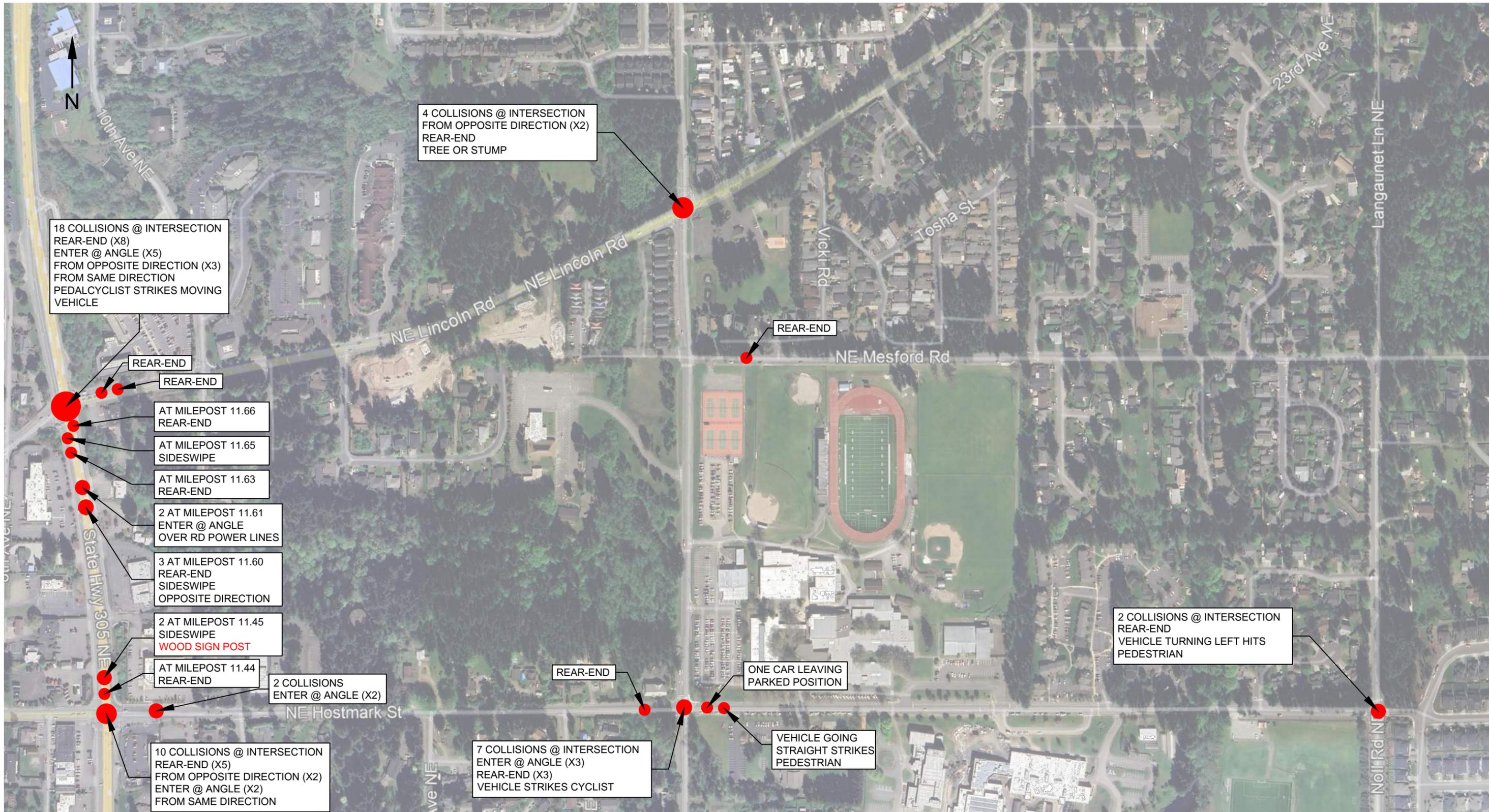
Vehicle Strikes Cyclist:

This collision occurred at the intersection of Hostmark Street & Caldart Avenue in January of 2019 at around 12:15 PM when a southbound vehicle struck a cyclist. Weather conditions are listed as daylight with wet roadway conditions. The driver contributing circumstance is listed as did not grant right-of-way to cyclist. The collision resulted in a possible injury.

Vehicle Turning Left Hits Pedestrian:

This collision occurred at the intersection of Hostmark Street & Noll Road in June of 2023 at around 9:20 AM when a northbound vehicle (turning left) strikes the pedestrian. Weather conditions are listed as daylight with wet roadway conditions. The driver contributing circumstance is not listed. The collision resulted in a possible injury.





4. FORECAST TRAFFIC DEMAND & ANALYSIS

4.1 Project Trip Generation

Trip generation is used to assess the impact a project will have on the surrounding street system by estimating the number of new trips that will enter and exit the site during specific time periods, such as peak hours (AM or PM) or over the course of a day. The expected vehicle trip generation for the proposed project was calculated using data from the Institute of Transportation Engineers (ITE) publication, *Trip Generation Manual, 11th Edition*. For this analysis, Land Use Code (LUC) 210 - Single-Family Detached Housing was selected, with dwelling units used as the input variable and ITE average rates applied to determine the number of trip ends.

A summary of the average weekday daily trips (AWDT), AM peak hour trips, and PM peak hour trips is shown below in **Table 7**.

Table 7: Project Trip Generation

Land Use	Units	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
LUC 210 - Single-Family Housing	87	820	15	46	61	52	30	82

Based on ITE data, the proposed project is estimated to generate 820 daily weekday trips with 61 AM peak hour trips (15 inbound / 46 outbound) and 82 PM peak hour trips (52 inbound / 30 outbound).

4.2 Distribution & Assignment

Trip distribution is the method used to allocate project-generated trips across the road network in the vicinity of the site. Peak hour trips generated by the development are expected to follow the general patterns as shown in **Figures 8 and 9**, respectively. As illustrated, 15 percent of project traffic is anticipated to travel to/from the north/northeast (5% to/from the new north/south connection described further in later Section 4.4) with the remaining 85% traveling to/from the west/southwest. Percentages are primarily based on existing traveling patterns, previous projects in the area, and engineering judgment. Given the plat layout, ~40% of trips were assigned to the Langaunet Lane access.



4.3 Future Peak Hour Volumes

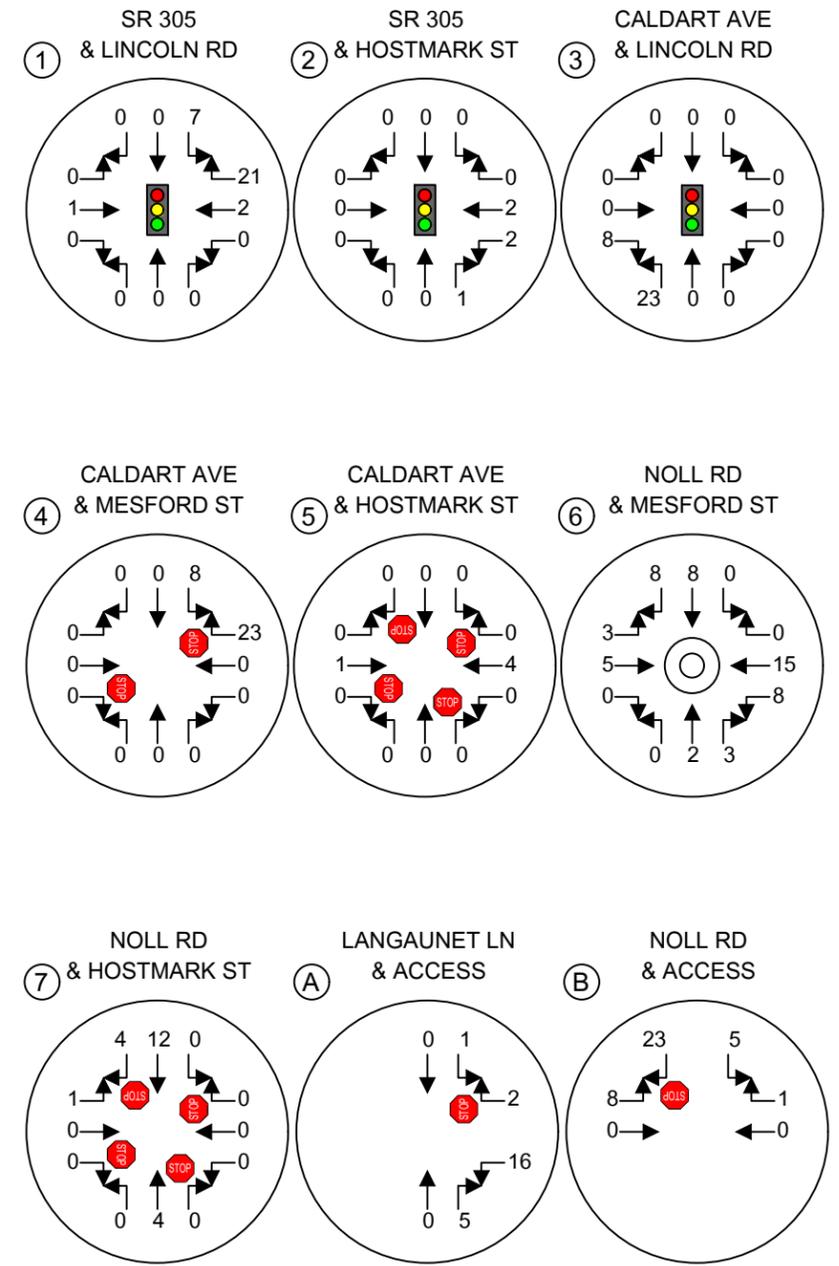
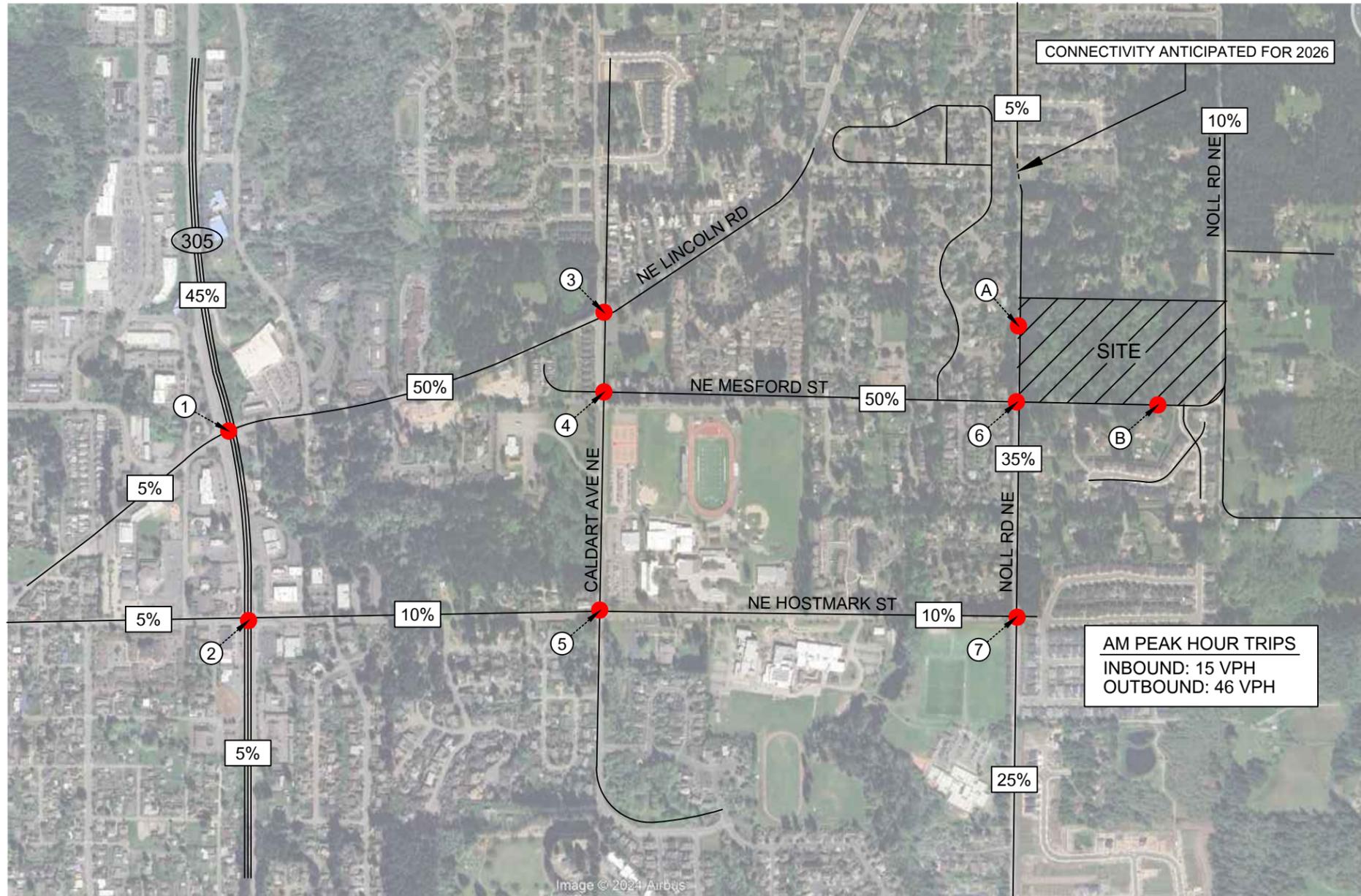
A 5-year horizon of 2029 was used for future traffic delay analysis. Forecast 2029 background traffic volumes were derived by applying a one percent compound annual growth rate⁴ to the existing AM and PM peak hour volumes shown in Figure 3 (to account for miscellaneous in-process pipeline projects). Forecast 2029 AM and PM peak hour volumes without project trips associated with the proposed development are shown in **Figures 10 and 11**. **Figures 12 and 13** illustrate forecast 2029 peak hour volumes with the project generated traffic.

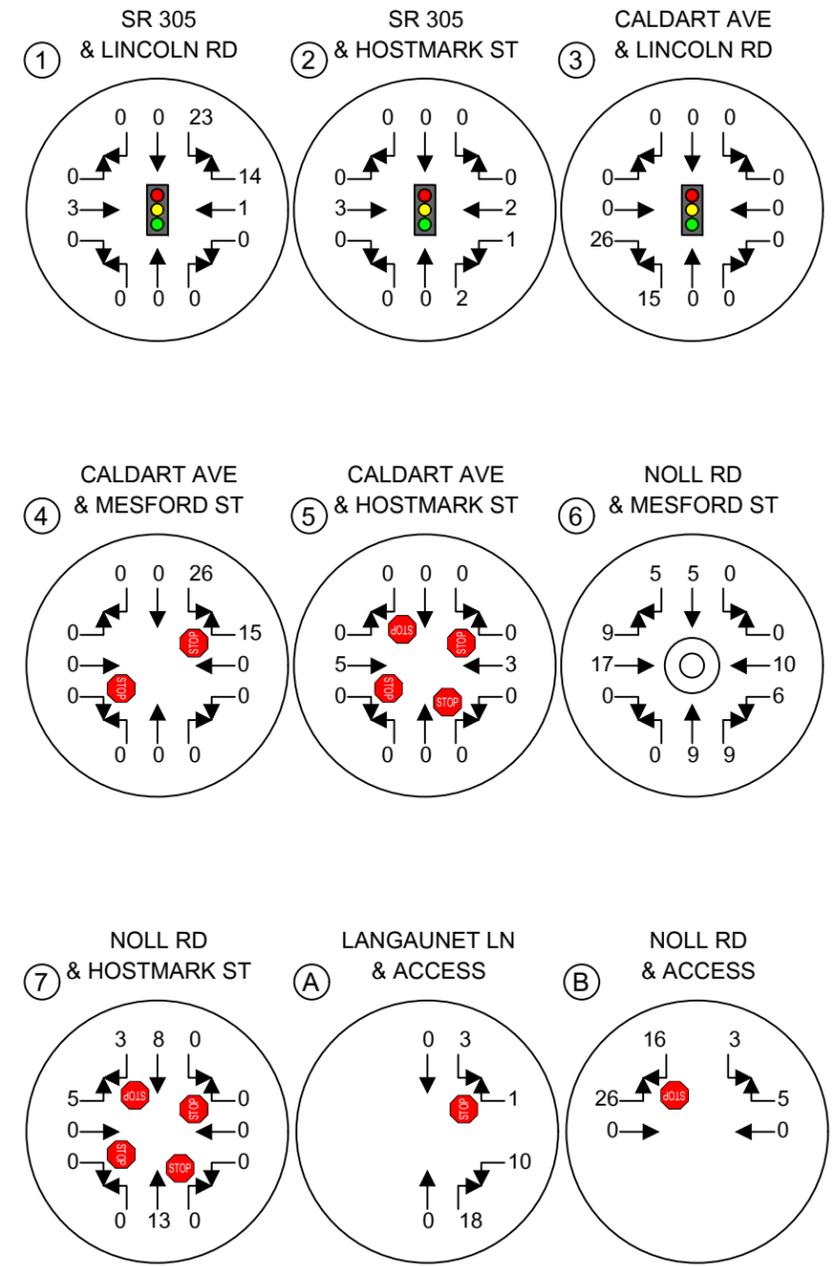
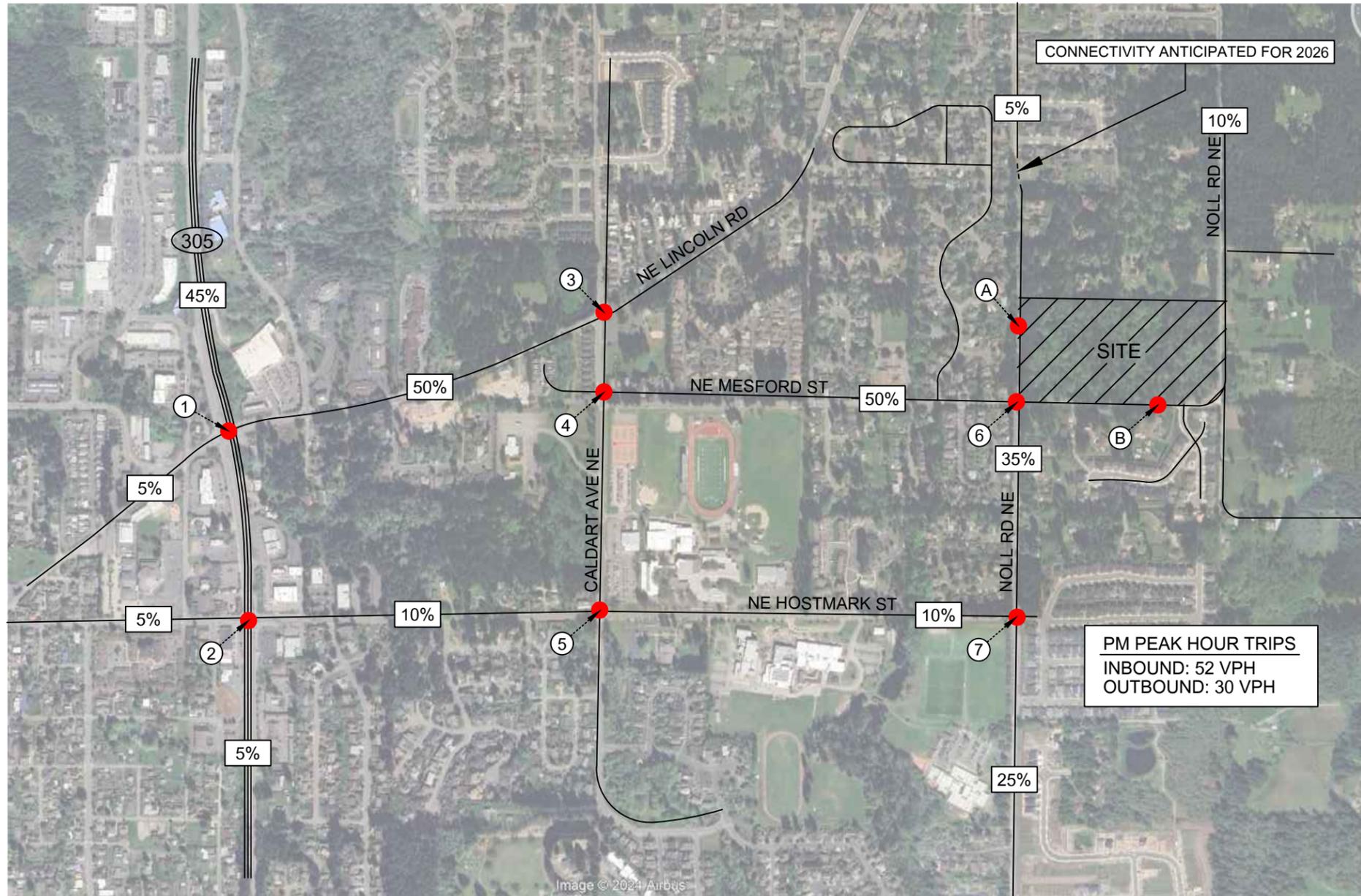
4.4 City Planned Improvements & New Roadway Connection

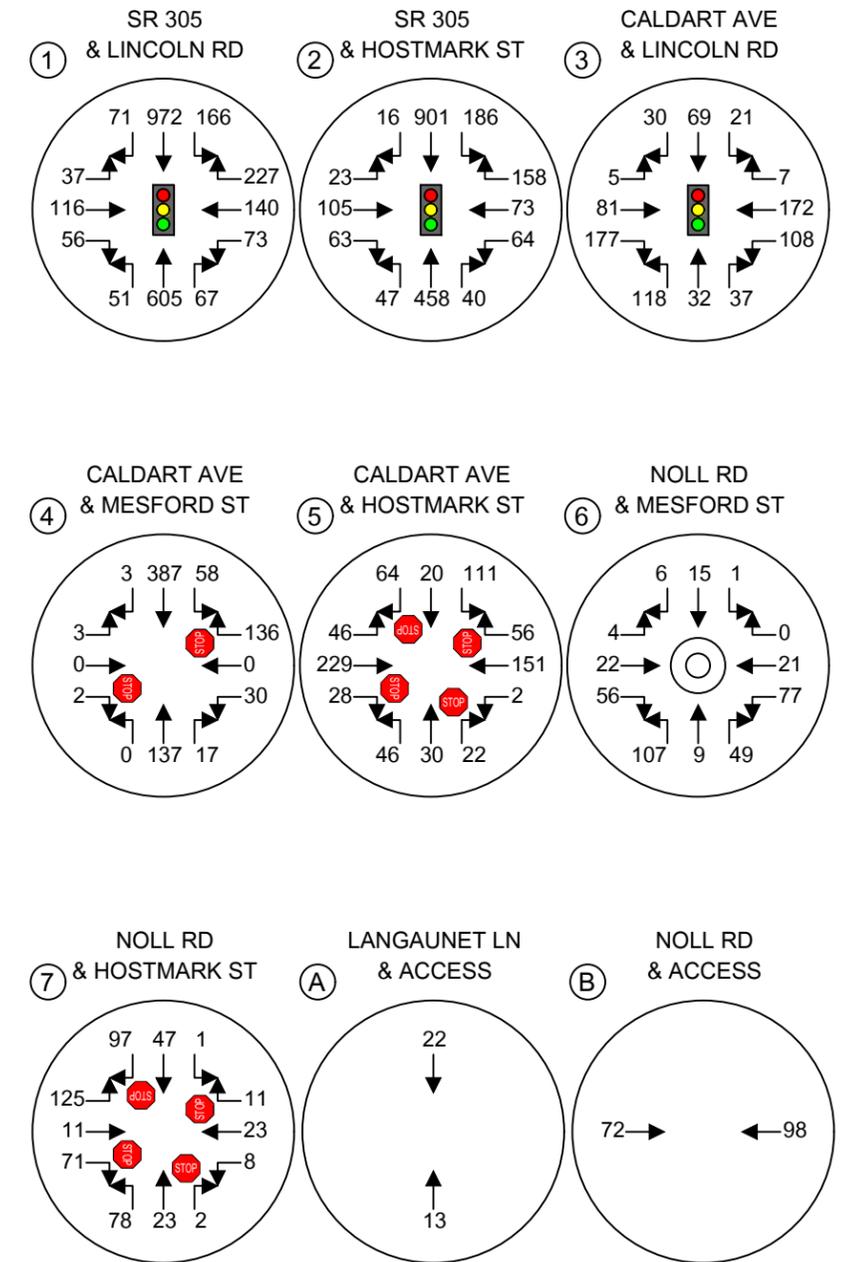
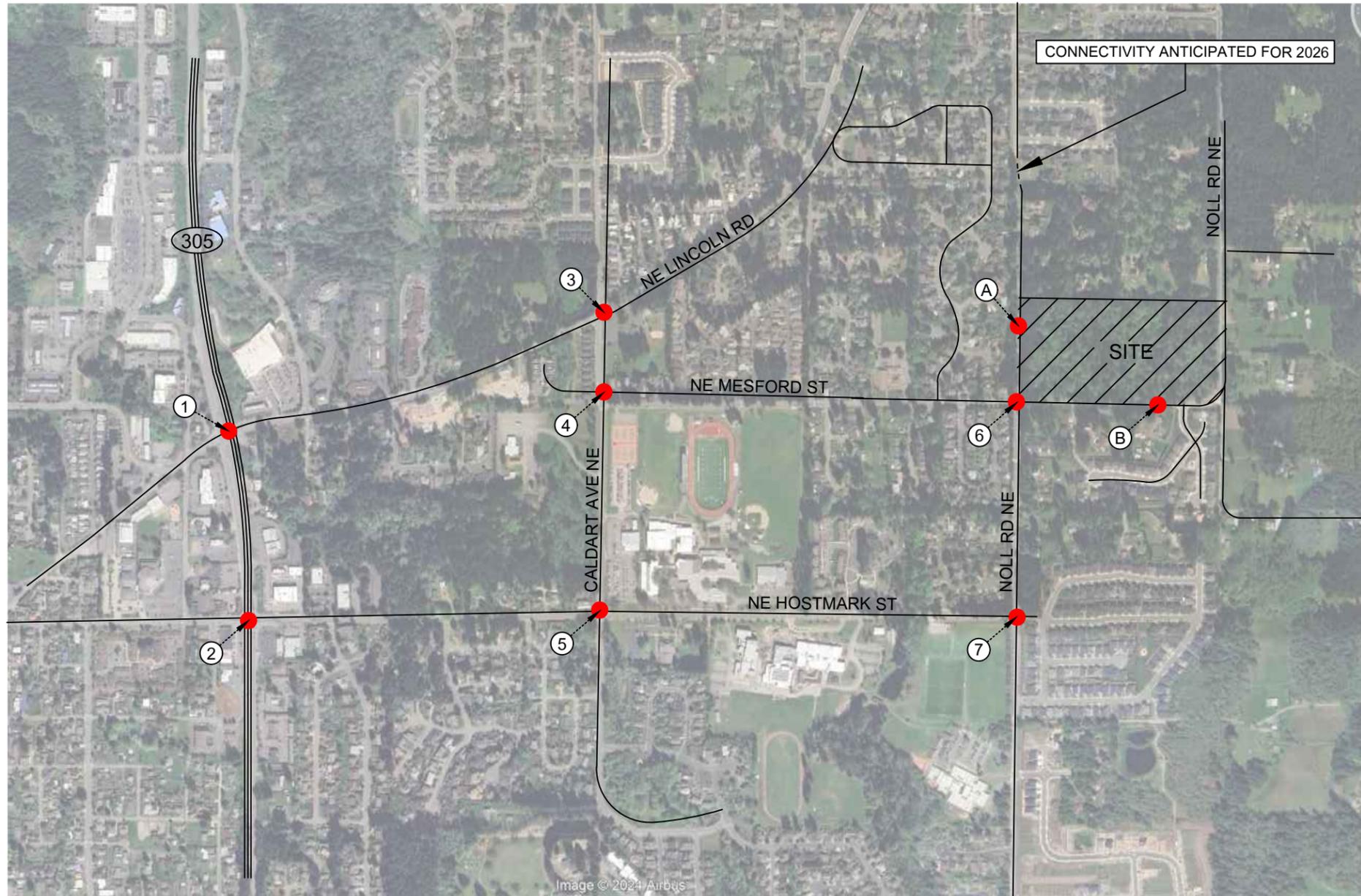
The Noll Road Corridor Improvements aim to enhance connectivity and safety for all users, including motorists, pedestrians, and cyclists. As part of the improvements Langaunet Lane will connect into Maranatha Lane creating a new north/south connection. However, this connection is not intended to create a “cut-through” route and would be designed accordingly. Therefore, with this connection in-place, not a significant amount of traffic is anticipated to divert from Noll Road. To account for some diverted traffic, 15 percent of the Noll Road peak hour volumes, east of Langaunet Lane NE were rerouted to use this new connection. Refer to appendix for an illustration of the diverted trips which are accounted for in the forecast LOS analysis. Lastly, it is also assumed that the planned roundabout at Noll Road NE/NE Mesford Road & Langaunet Lane NE would be constructed in the buildout scenario with and without project.

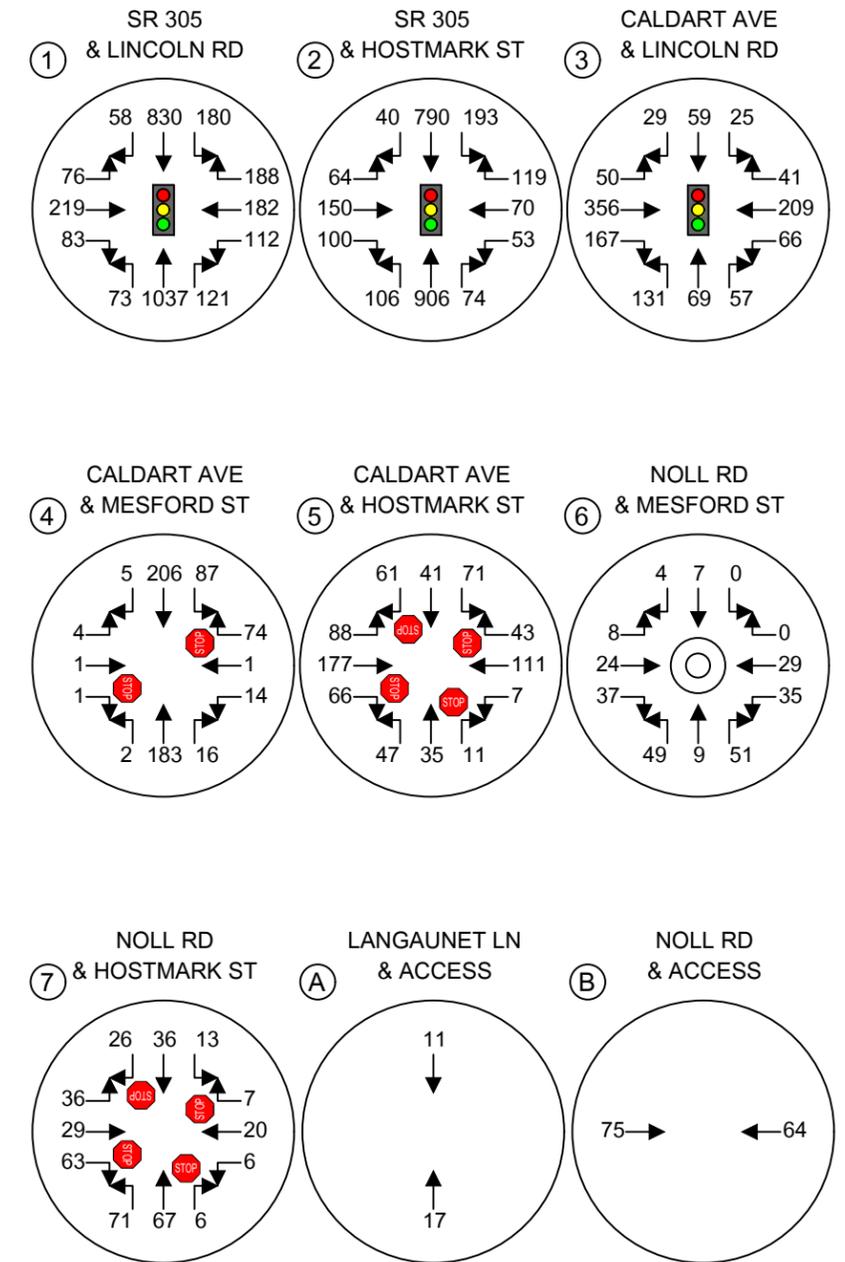
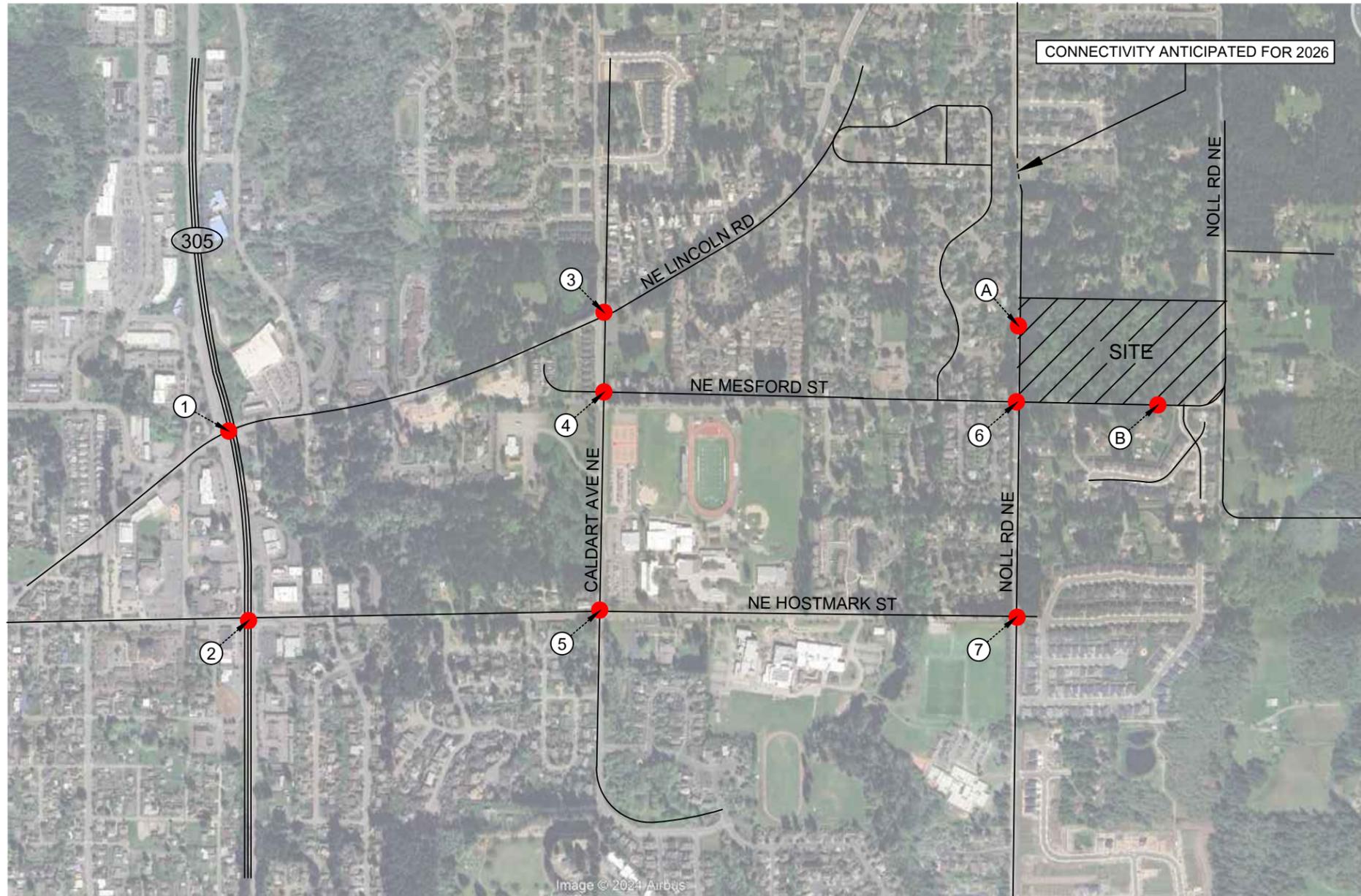
⁴ Based on WSDOT AADT volumes along SR 305 (just north of Hostmark) - (2017-23,000) (2023-24,000).

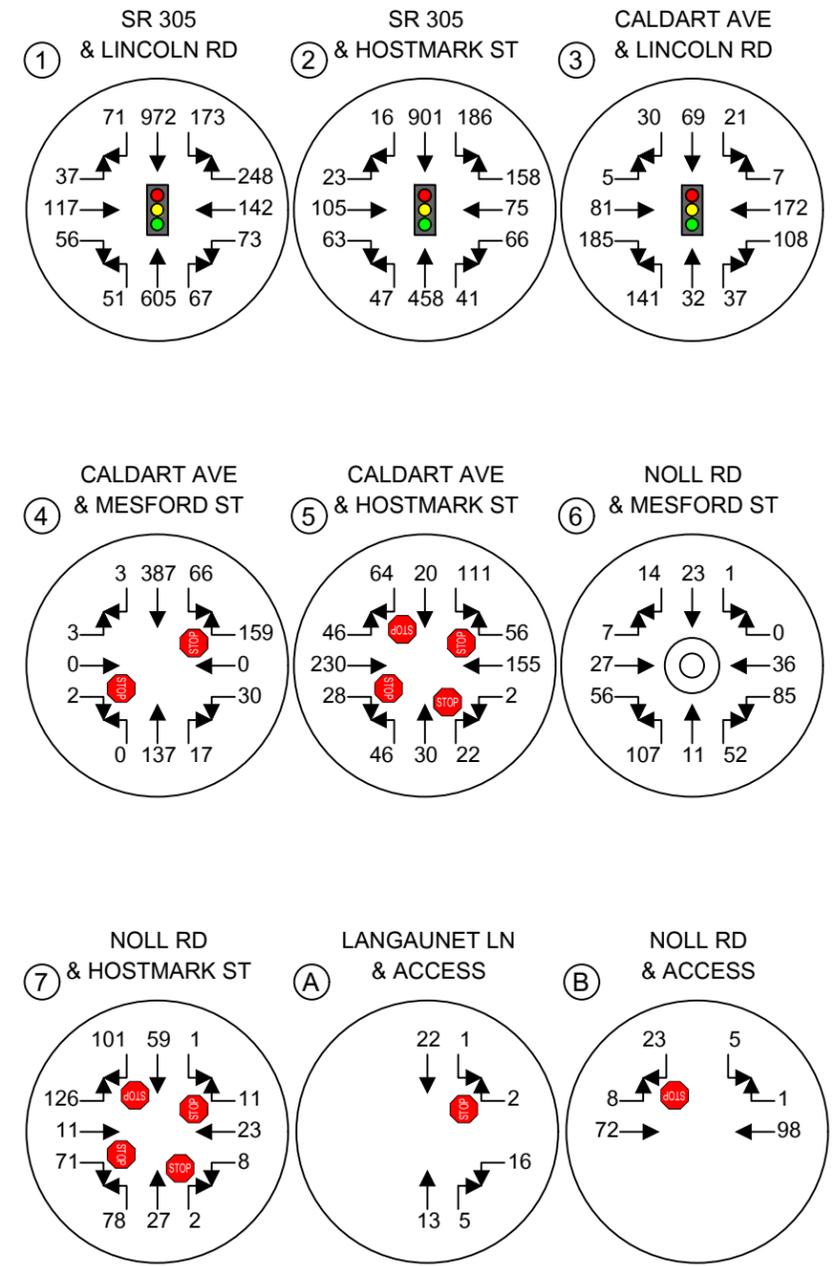
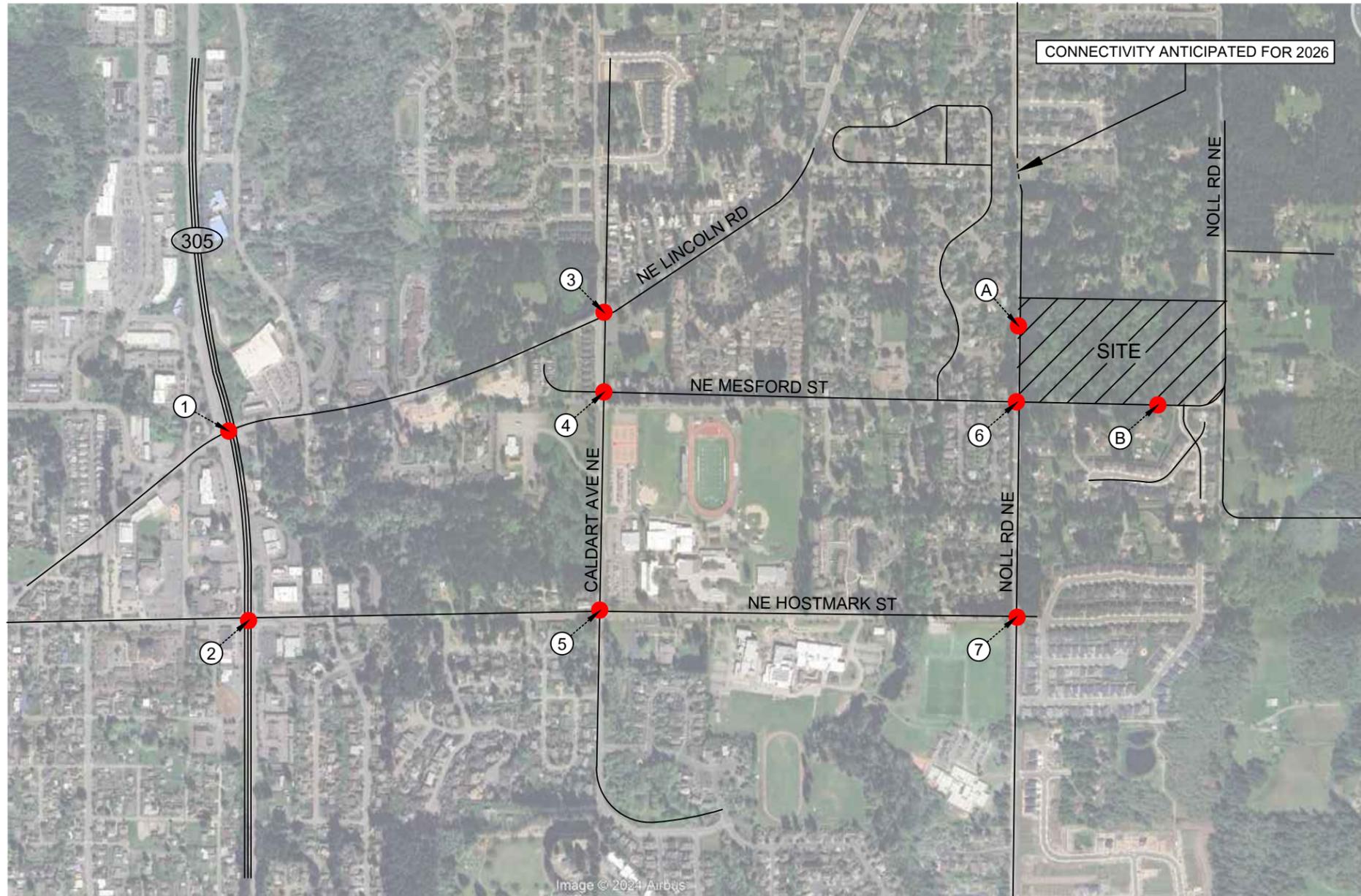


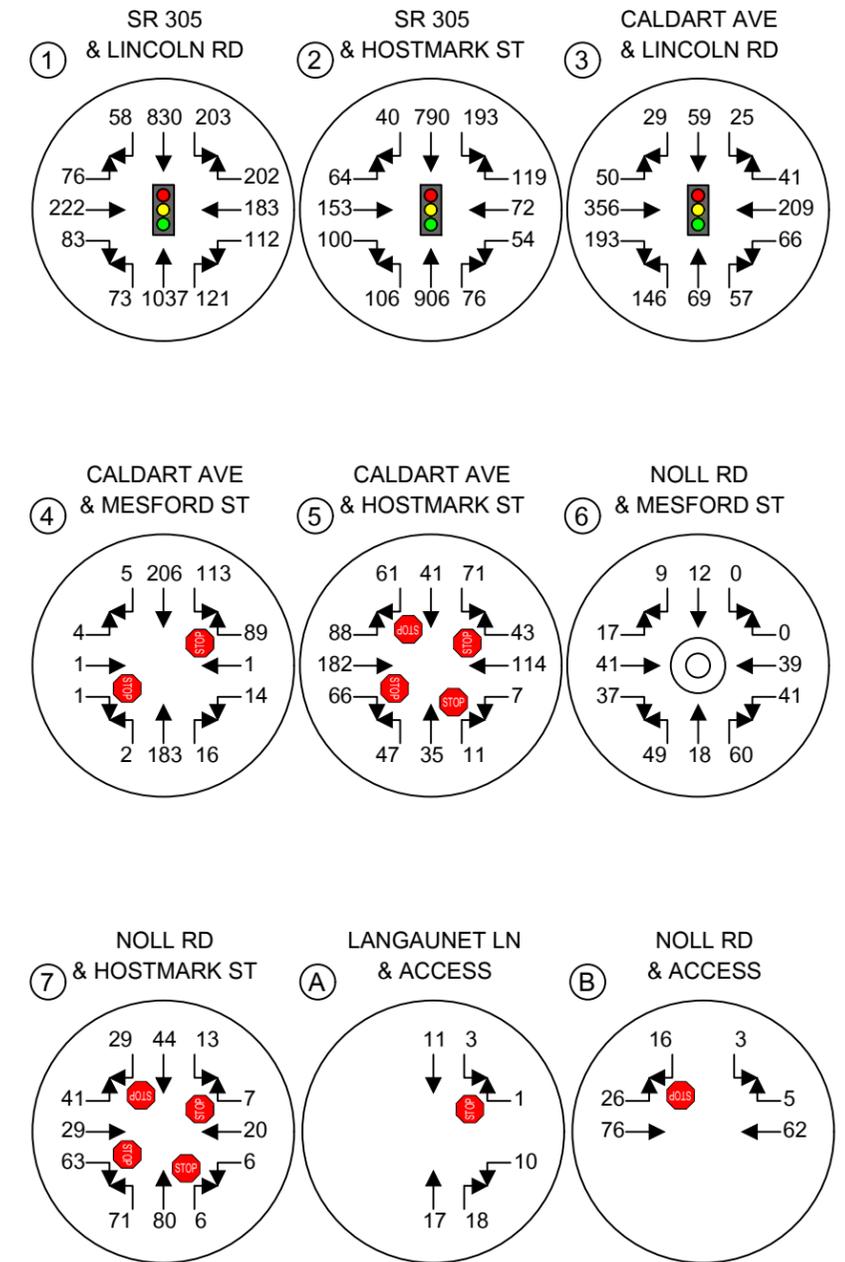
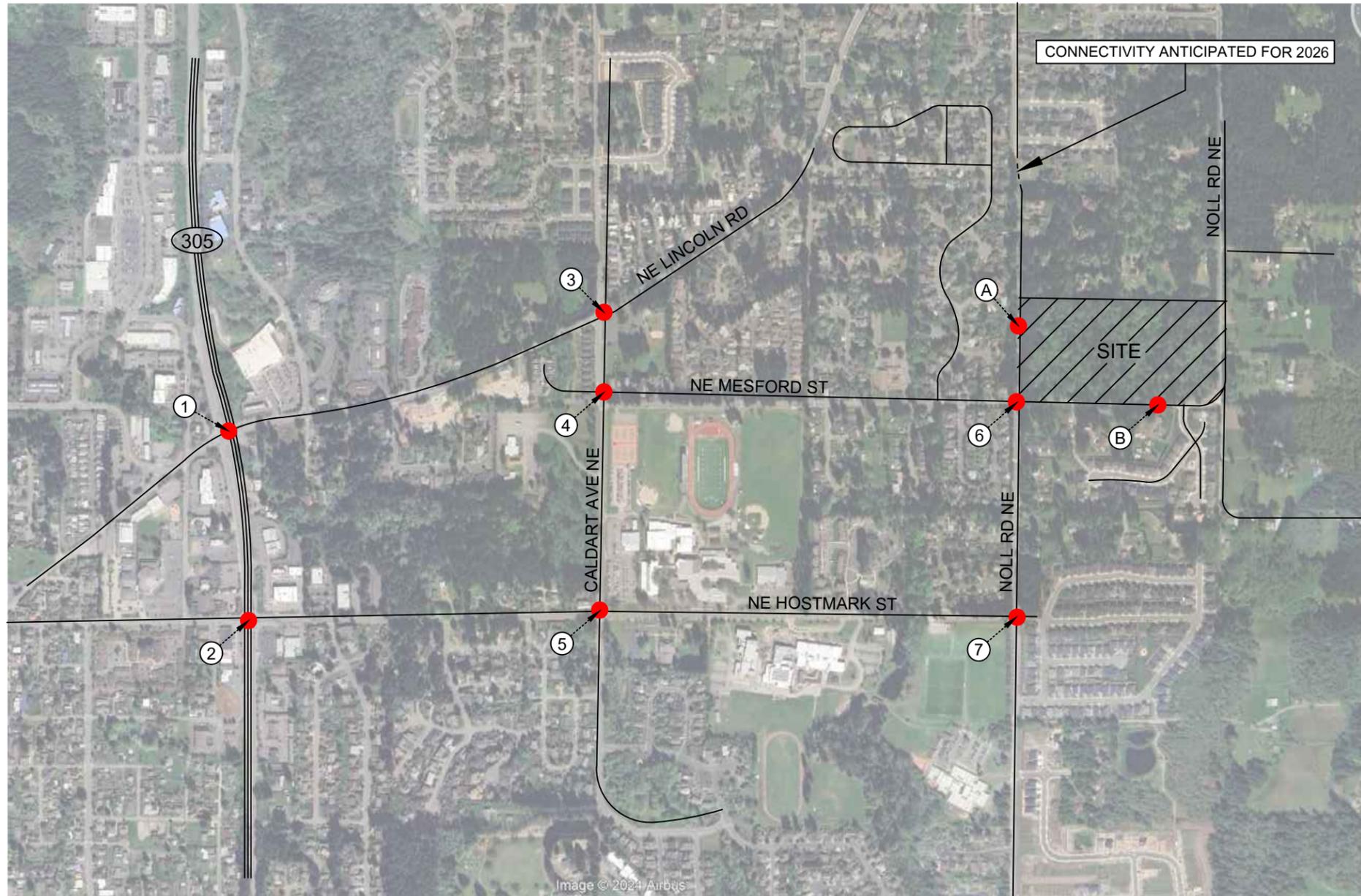












4.5 Level of Service & Left Turn Warrants

Level of service analyses were made of the future peak hour volumes without (background) and with project related trips added to the key roadways and intersections. This analysis once again involved the use of the *Synchro 12* analysis program. Delays for each study intersection under future 2029 conditions are shown below in **Table 8**. Per WSDOT standards, SR 305 intersections have a 1.0 peak hour factor (PHF). All other intersections maintained existing PHF values.

Table 8: Forecast 2029 Weekday Peak Hour Level of Service

Delays Given in Seconds per Vehicle

Intersection	Control	Peak-Hour	Crt. Mvmt.	<i>Without Project</i>		<i>With Project</i>	
				LOS	Delay	LOS	Delay
SR 305 & Lincoln Rd	Signal	AM	Overall	C	23.9	C	25.8
		PM		C	32.1	C	34.6
SR 305 & Hostmark St	Signal	AM	Overall	C	21.9	C	22.0
		PM		C	28.8	C	29.1
Lincoln Rd & Caldart Ave	Signal	AM	Overall	B	18.1	B	19.9
		PM		B	16.1	B	16.3
Mesford St & Caldart Ave	Stop	AM	EB	C	24.0	D	26.1
		PM		C	15.4	C	16.8
Hostmark St & Caldart Ave	Stop	AM	Overall	B	14.3	B	14.4
		PM		B	10.9	B	11.1
Noll Rd & Mesford St	RAB	AM	Overall	A	4.5	A	4.7
		PM		A	3.4	A	3.6
Noll Rd & Hostmark St	Stop	AM	Overall	B	10.7	B	10.9
		PM		A	8.3	A	8.4
Langaunet Ln & Access	Stop	AM	WB	--	--	A	8.6
		PM		A	8.6		
Noll Rd & Access	Stop	AM	SB	--	--	A	9.2
		PM		A	9.0		

RAB: Roundabout

Forecast 2029 peak hour level of service is shown to operate with LOS D conditions or better, meeting State and City level of service standards. No intersection deficiencies are identified with the proposal.

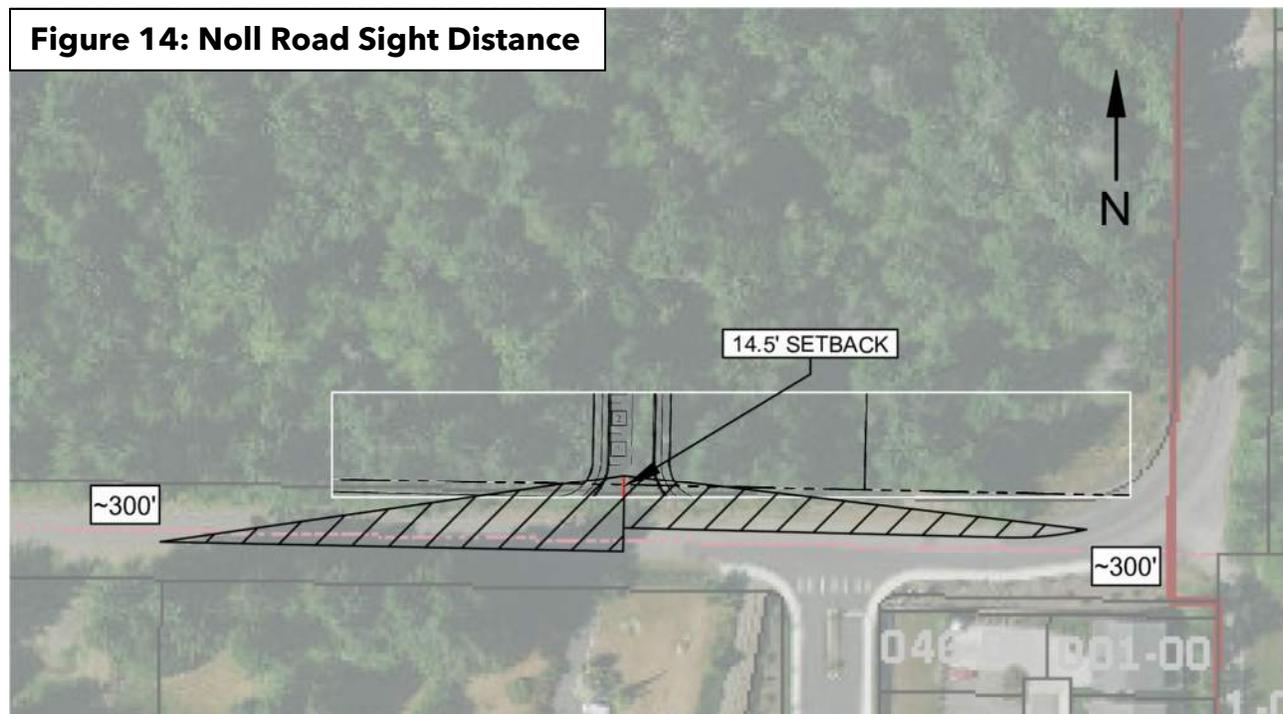


Left-Turn Lane Warrants:

Left turn lanes provide necessary storage space for vehicles making left turns at intersections. Procedures outlined in WSDOT Design Manual Exhibit 1310-9 were used to determine storage requirements at the access intersection on Langaunet Lane and Noll Road. Based on projected 2029 AM and PM peak hour volumes, including project traffic, a left turn lane is not warranted at either access. Refer to the appendix for the left turn warrant nomographs.

4.6 Project Access

Site ingress/egress is proposed via one roadway on Langaunet Lane and one roadway on Noll Road. Based on AASHTO⁵ sight distance standards and a 25-mph speed limit (both access roadways), sight lines are recommended to meet a minimum distance of 280-feet in all directions. All new access and roadways shall be designed in accordance with City of Poulsbo engineering standards. At the Noll Road access location, sight lines are estimated to be clear in excess of 300-feet in both east and west directions. The limiting factor to the east becomes a horizontal curve that jogs north approximately 340-feet east of the access roadway. Overall, no sight distance deficiencies are identified; however, sight lines should be verified upon final site plan. Refer to **Figure 14** below for the Noll Road sight distance exhibit.



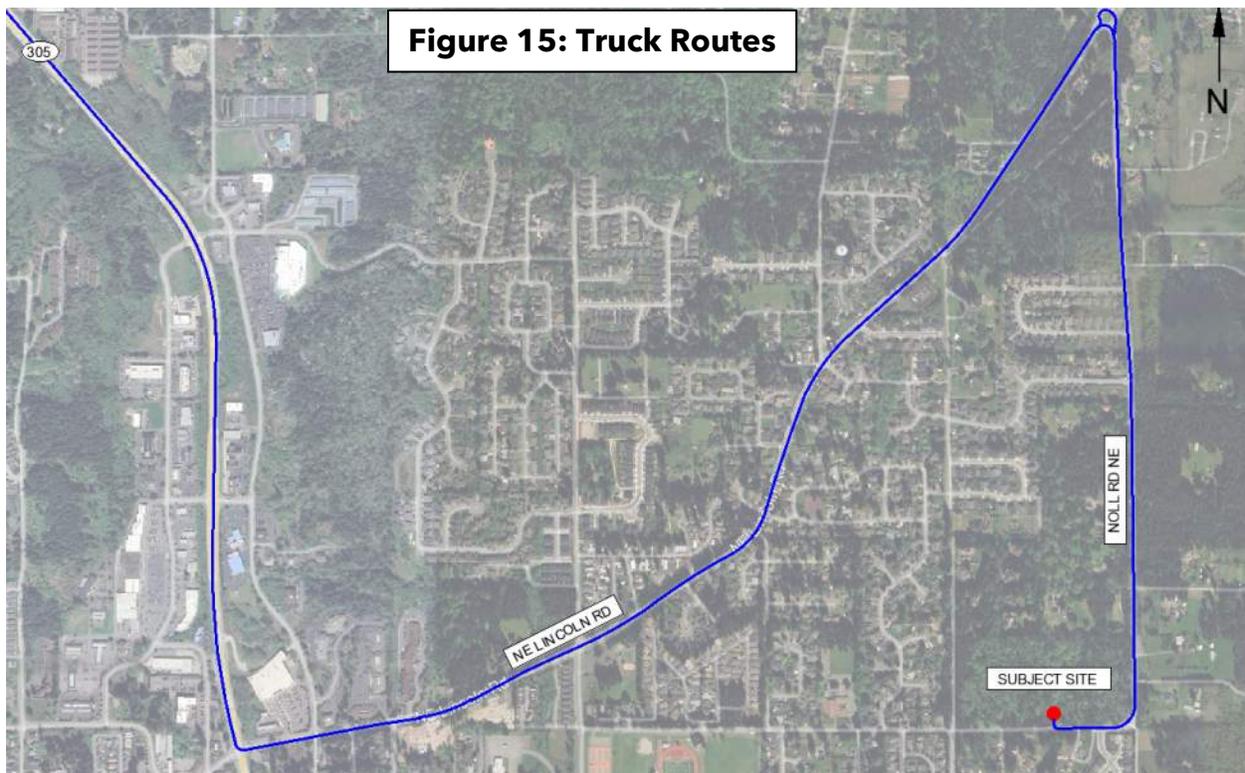
⁵ American Association of State Highway and Transportation Officials



4.7 Construction Traffic

According to the project manager, construction activity could take anywhere from 9-12 months but could vary based on time of year, and project complexity. Throughout the 12-month construction period, truck activity will be periodic, with an estimated maximum of up to 10 trucks per day during different phases of construction (e.g., timber removal, rock import, concrete, etc.). Also, there is estimated to be around 20 daily construction employees.

Construction traffic is anticipated to primarily utilize arterials/state routes (SR 305 - state route / Lincoln - minor arterial / Noll - minor arterial) to and from the subject property. Potential construction routes are illustrated in **Figure 15** below. Any route restrictions or preferences can be coordinated with the City.



5. CONCLUSIONS & MITIGATION

Sandstone Ridge is a proposed residential project comprised of 87 single-family homes located within Poulsbo city limits. The subject site is situated on 18.14-acres within a single tax parcel. Access to and from the site is proposed via two new roadway connections, with the first to extend north from Noll Road NE and the second to extend east from Langaunet Lane. AM and PM peak hour counts were conducted at seven outlying intersections. Existing level of service operate with LOS C conditions or better meeting State (LOS D) and City (LOS E) standards. Based on ITE data, the project is estimated to generate 820 average weekday daily trips with 61 AM peak hour trips and 82 PM peak hour trips.

A forecast horizon analysis of 2029 was evaluated to assess future roadway conditions with and without project traffic. Planned Noll Road Corridor Improvements, including the Langaunet connection to NE Lincoln Road and a roundabout at NE Mesford/Noll Road NE were included in the operational assessment. Forecast 2029 AM and PM peak hour level of service is projected to continue to meet City and State standards operating with LOS D conditions or better. Construction activity will vary over the 9-12 month anticipated construction period. Trucks are encouraged to utilize state routes and should coordinate preferred truck routes with the City.

Based on the above analysis, the following mitigation measures are identified:

1. Any frontage improvements should be coordinated with the City of Poulsbo and should be designed for compatibility with the ultimate Noll Road Corridor Improvements.
2. The proposed development would be subject to Traffic Impact Fees (TIF) as imposed by the City of Poulsbo (PMC 3.86). Fees are based on new average daily project trips, assessed at \$564.00 per net new trip. Therefore, an estimated fee calculation is as follows:

$$820 \text{ daily trips} \times \$564.00 \text{ per daily trip} = \mathbf{\$462,480.00}$$

Actual traffic impact fees will be calculated and determined by the City at the time of building permit issuance. Frontage improvements may be credit eligible for completion of a portion of the planned Noll Road Improvements and should be discussed with the City.

No other mitigation is identified at this time.



SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX Traffic Counts



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355a
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

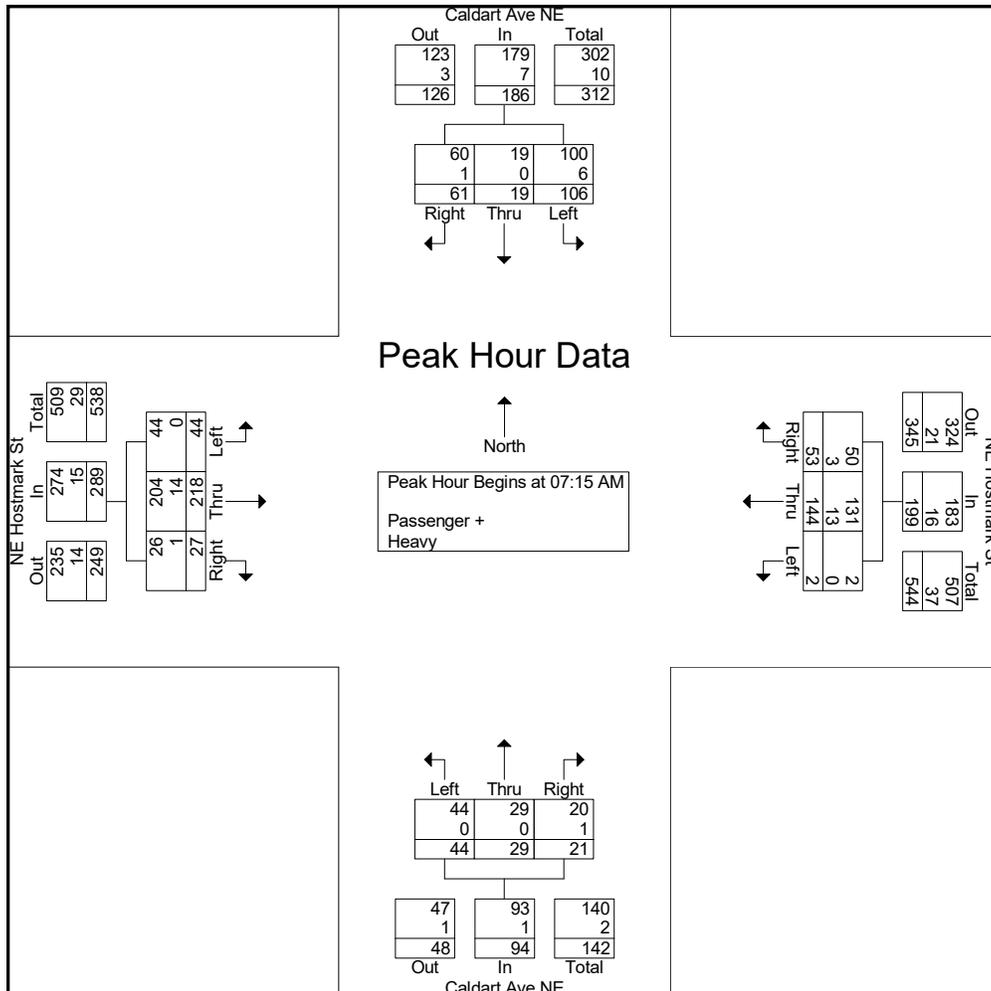
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	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	19	0	8	27	4	24	0	28	2	4	12	18	5	17	3	25	98
07:15 AM	13	3	22	38	4	30	0	34	2	6	13	21	9	59	14	82	175
07:30 AM	16	4	45	65	12	52	0	64	7	10	9	26	7	79	13	99	254
07:45 AM	14	6	30	50	29	46	0	75	9	9	10	28	7	63	13	83	236
Total	62	13	105	180	49	152	0	201	20	29	44	93	28	218	43	289	763
08:00 AM	18	6	9	33	8	16	2	26	3	4	12	19	4	17	4	25	103
08:15 AM	7	7	5	19	1	20	1	22	1	4	8	13	11	17	7	35	89
08:30 AM	14	5	17	36	4	19	0	23	2	4	7	13	7	25	10	42	114
08:45 AM	17	4	21	42	7	32	1	40	0	7	13	20	8	37	12	57	159
Total	56	22	52	130	20	87	4	111	6	19	40	65	30	96	33	159	465
Grand Total	118	35	157	310	69	239	4	312	26	48	84	158	58	314	76	448	1228
Apprch %	38.1	11.3	50.6		22.1	76.6	1.3		16.5	30.4	53.2		12.9	70.1	17		
Total %	9.6	2.9	12.8	25.2	5.6	19.5	0.3	25.4	2.1	3.9	6.8	12.9	4.7	25.6	6.2	36.5	
Passenger +	115	34	150	299	65	220	4	289	23	46	82	151	54	293	74	421	1160
% Passenger +	97.5	97.1	95.5	96.5	94.2	92.1	100	92.6	88.5	95.8	97.6	95.6	93.1	93.3	97.4	94	94.5
Heavy	3	1	7	11	4	19	0	23	3	2	2	7	4	21	2	27	68
% Heavy	2.5	2.9	4.5	3.5	5.8	7.9	0	7.4	11.5	4.2	2.4	4.4	6.9	6.7	2.6	6	5.5

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File Name : 5355a
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Caldart Ave NE Southbound				NE Hostmark St Westbound				Caldart Ave NE Northbound				NE Hostmark St Eastbound				Int. Total
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	13	3	22	38	4	30	0	34	2	6	13	21	9	59	14	82	175
07:30 AM	16	4	45	65	12	52	0	64	7	10	9	26	7	79	13	99	254
07:45 AM	14	6	30	50	29	46	0	75	9	9	10	28	7	63	13	83	236
08:00 AM	18	6	9	33	8	16	2	26	3	4	12	19	4	17	4	25	103
Total Volume	61	19	106	186	53	144	2	199	21	29	44	94	27	218	44	289	768
% App. Total	32.8	10.2	57		26.6	72.4	1		22.3	30.9	46.8		9.3	75.4	15.2		
PHF	.847	.792	.589	.715	.457	.692	.250	.663	.583	.725	.846	.839	.750	.690	.786	.730	.756
Passenger +	60	19	100	179	50	131	2	183	20	29	44	93	26	204	44	274	729
% Passenger +	98.4	100	94.3	96.2	94.3	91.0	100	92.0	95.2	100	100	98.9	96.3	93.6	100	94.8	94.9
Heavy	1	0	6	7	3	13	0	16	1	0	0	1	1	14	0	15	39
% Heavy	1.6	0	5.7	3.8	5.7	9.0	0	8.0	4.8	0	0	1.1	3.7	6.4	0	5.2	5.1



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File Name : 5355b
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

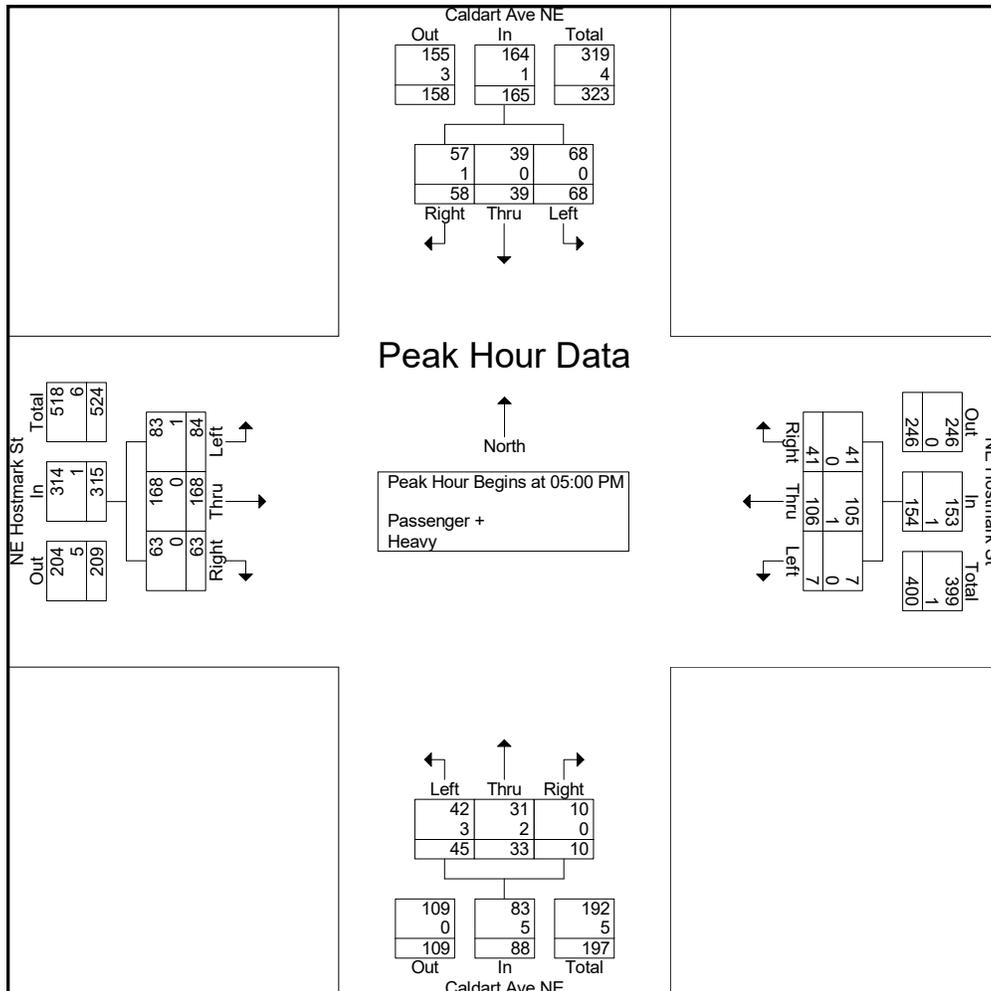
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04:00 PM	10	9	7	26	16	38	0	54	1	13	17	31	22	29	12	63	174
04:15 PM	16	12	8	36	10	32	2	44	0	12	9	21	12	26	14	52	153
04:30 PM	13	9	8	30	8	27	4	39	0	5	11	16	11	30	19	60	145
04:45 PM	7	12	10	29	9	22	1	32	0	5	11	16	14	46	21	81	158
Total	46	42	33	121	43	119	7	169	1	35	48	84	59	131	66	256	630
05:00 PM	19	6	13	38	3	23	0	26	3	10	7	20	17	39	22	78	162
05:15 PM	15	9	16	40	13	31	4	48	2	9	15	26	14	39	15	68	182
05:30 PM	15	7	19	41	12	29	2	43	3	8	10	21	18	48	19	85	190
05:45 PM	9	17	20	46	13	23	1	37	2	6	13	21	14	42	28	84	188
Total	58	39	68	165	41	106	7	154	10	33	45	88	63	168	84	315	722
Grand Total	104	81	101	286	84	225	14	323	11	68	93	172	122	299	150	571	1352
Apprch %	36.4	28.3	35.3		26	69.7	4.3		6.4	39.5	54.1		21.4	52.4	26.3		
Total %	7.7	6	7.5	21.2	6.2	16.6	1	23.9	0.8	5	6.9	12.7	9	22.1	11.1	42.2	
Passenger +	101	79	101	281	84	224	14	322	11	66	88	165	121	298	148	567	1335
% Passenger +	97.1	97.5	100	98.3	100	99.6	100	99.7	100	97.1	94.6	95.9	99.2	99.7	98.7	99.3	98.7
Heavy	3	2	0	5	0	1	0	1	0	2	5	7	1	1	2	4	17
% Heavy	2.9	2.5	0	1.7	0	0.4	0	0.3	0	2.9	5.4	4.1	0.8	0.3	1.3	0.7	1.3

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File Name : 5355b
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Caldart Ave NE Southbound				NE Hostmark St Westbound				Caldart Ave NE Northbound				NE Hostmark St Eastbound				Int. Total
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	19	6	13	38	3	23	0	26	3	10	7	20	17	39	22	78	162
05:15 PM	15	9	16	40	13	31	4	48	2	9	15	26	14	39	15	68	182
05:30 PM	15	7	19	41	12	29	2	43	3	8	10	21	18	48	19	85	190
05:45 PM	9	17	20	46	13	23	1	37	2	6	13	21	14	42	28	84	188
Total Volume	58	39	68	165	41	106	7	154	10	33	45	88	63	168	84	315	722
% App. Total	35.2	23.6	41.2		26.6	68.8	4.5		11.4	37.5	51.1		20	53.3	26.7		
PHF	.763	.574	.850	.897	.788	.855	.438	.802	.833	.825	.750	.846	.875	.875	.750	.926	.950
Passenger +	57	39	68	164	41	105	7	153	10	31	42	83	63	168	83	314	714
% Passenger +	98.3	100	100	99.4	100	99.1	100	99.4	100	93.9	93.3	94.3	100	100	98.8	99.7	98.9
Heavy	1	0	0	1	0	1	0	1	0	2	3	5	0	0	1	1	8
% Heavy	1.7	0	0	0.6	0	0.9	0	0.6	0	6.1	6.7	5.7	0	0	1.2	0.3	1.1



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File Name : 5355i
 Site Code : 00005355
 Start Date : 5/30/2024
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Groups Printed- Passenger + - Heavy

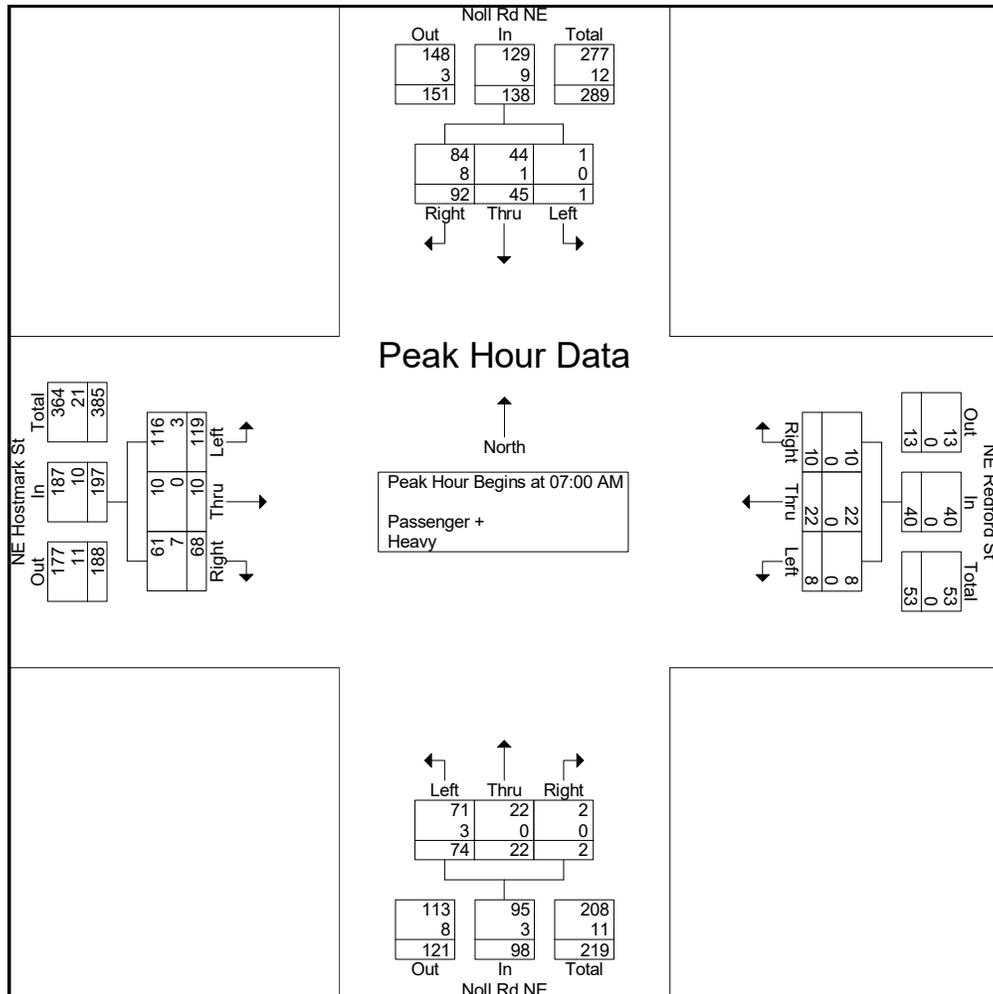
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07:15 AM	20	7	0	27	2	3	1	6	0	3	22	25	12	2	5	19	77
07:30 AM	45	14	0	59	7	9	3	19	2	7	26	35	11	4	51	66	179
07:45 AM	17	11	0	28	1	3	2	6	0	7	20	27	33	3	61	97	158
Total	92	45	1	138	10	22	8	40	2	22	74	98	68	10	119	197	473
08:00 AM	2	12	1	15	2	3	1	6	1	8	3	12	9	0	4	13	46
08:15 AM	1	6	1	8	2	2	2	6	1	10	5	16	12	2	2	16	46
08:30 AM	2	15	0	17	1	3	0	4	0	8	12	20	13	2	4	19	60
08:45 AM	4	22	2	28	0	3	2	5	1	10	15	26	19	1	3	23	82
Total	9	55	4	68	5	11	5	21	3	36	35	74	53	5	13	71	234
Grand Total	101	100	5	206	15	33	13	61	5	58	109	172	121	15	132	268	707
Apprch %	49	48.5	2.4		24.6	54.1	21.3		2.9	33.7	63.4		45.1	5.6	49.3		
Total %	14.3	14.1	0.7	29.1	2.1	4.7	1.8	8.6	0.7	8.2	15.4	24.3	17.1	2.1	18.7	37.9	
Passenger +	92	95	4	191	15	33	13	61	5	58	101	164	110	15	126	251	667
% Passenger +	91.1	95	80	92.7	100	100	100	100	100	100	92.7	95.3	90.9	100	95.5	93.7	94.3
Heavy	9	5	1	15	0	0	0	0	0	0	8	8	11	0	6	17	40
% Heavy	8.9	5	20	7.3	0	0	0	0	0	0	7.3	4.7	9.1	0	4.5	6.3	5.7

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File Name : 5355i
 Site Code : 00005355
 Start Date : 5/30/2024
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Start Time	Noll Rd NE Southbound				NE Redford St Westbound				Noll Rd NE Northbound				NE Hostmark St Eastbound				Int. Total
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	10	13	1	24	0	7	2	9	0	5	6	11	12	1	2	15	59
07:15 AM	20	7	0	27	2	3	1	6	0	3	22	25	12	2	5	19	77
07:30 AM	45	14	0	59	7	9	3	19	2	7	26	35	11	4	51	66	179
07:45 AM	17	11	0	28	1	3	2	6	0	7	20	27	33	3	61	97	158
Total Volume	92	45	1	138	10	22	8	40	2	22	74	98	68	10	119	197	473
% App. Total	66.7	32.6	0.7		25	55	20		2	22.4	75.5		34.5	5.1	60.4		
PHF	.511	.804	.250	.585	.357	.611	.667	.526	.250	.786	.712	.700	.515	.625	.488	.508	.661
Passenger +	84	44	1	129	10	22	8	40	2	22	71	95	61	10	116	187	451
% Passenger +	91.3	97.8	100	93.5	100	100	100	100	100	100	95.9	96.9	89.7	100	97.5	94.9	95.3
Heavy	8	1	0	9	0	0	0	0	0	0	3	3	7	0	3	10	22
% Heavy	8.7	2.2	0	6.5	0	0	0	0	0	0	4.1	3.1	10.3	0	2.5	5.1	4.7



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File Name : 5355j
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

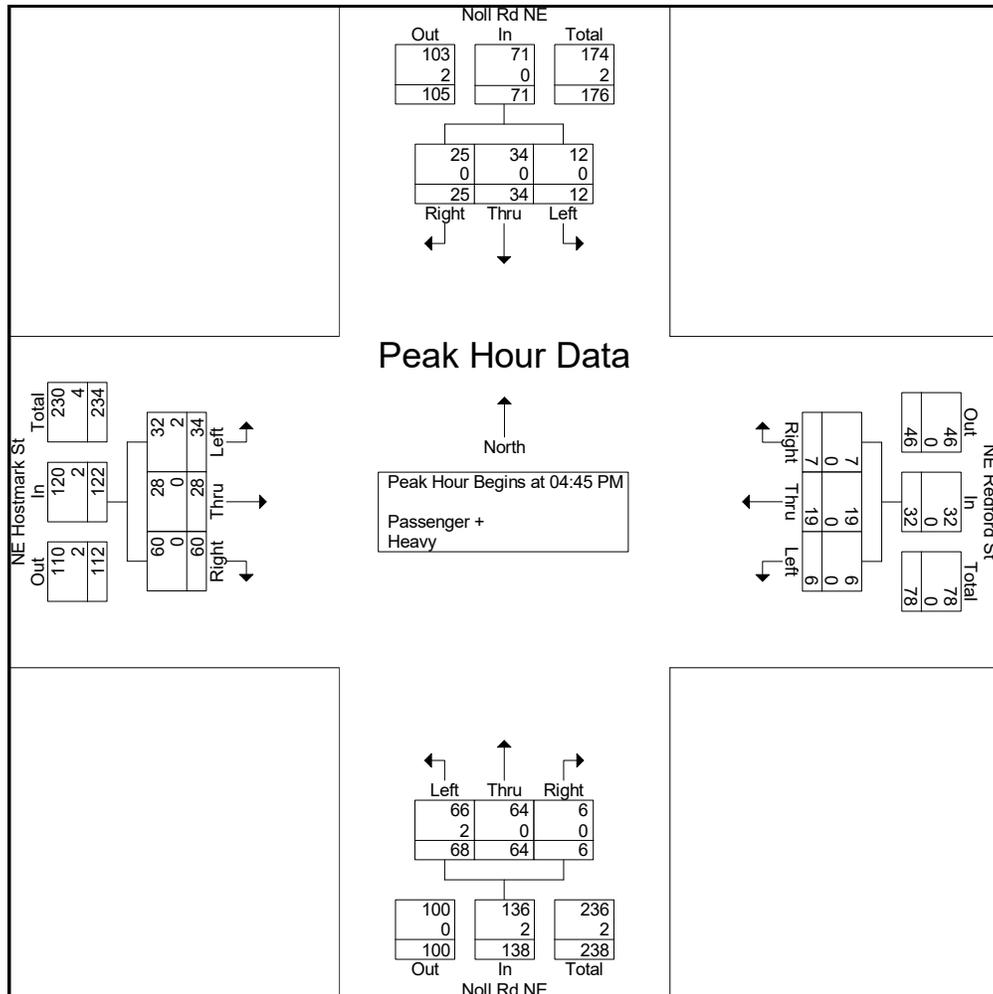
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	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
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04:15 PM	2	10	2	14	1	8	0	9	1	13	17	31	14	4	5	23	77
04:30 PM	2	11	1	14	1	1	0	2	0	14	17	31	8	5	3	16	63
04:45 PM	4	15	5	24	2	3	3	8	1	16	13	30	16	8	12	36	98
Total	14	45	9	68	6	17	3	26	2	64	68	134	52	20	30	102	330
05:00 PM	6	5	2	13	3	3	0	6	2	13	16	31	22	5	6	33	83
05:15 PM	5	5	3	13	1	8	1	10	1	17	24	42	10	9	6	25	90
05:30 PM	10	9	2	21	1	5	2	8	2	18	15	35	12	6	10	28	92
05:45 PM	8	8	5	21	3	7	0	10	2	16	13	31	12	1	5	18	80
Total	29	27	12	68	8	23	3	34	7	64	68	139	56	21	27	104	345
Grand Total	43	72	21	136	14	40	6	60	9	128	136	273	108	41	57	206	675
Apprch %	31.6	52.9	15.4		23.3	66.7	10		3.3	46.9	49.8		52.4	19.9	27.7		
Total %	6.4	10.7	3.1	20.1	2.1	5.9	0.9	8.9	1.3	19	20.1	40.4	16	6.1	8.4	30.5	
Passenger +	43	72	21	136	14	40	6	60	9	127	132	268	108	41	55	204	668
% Passenger +	100	100	100	100	100	100	100	100	100	99.2	97.1	98.2	100	100	96.5	99	99
Heavy	0	0	0	0	0	0	0	0	0	1	4	5	0	0	2	2	7
% Heavy	0	0	0	0	0	0	0	0	0	0.8	2.9	1.8	0	0	3.5	1	1

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File Name : 5355j
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Noll Rd NE Southbound				NE Redford St Westbound				Noll Rd NE Northbound				NE Hostmark St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	15	5	24	2	3	3	8	1	16	13	30	16	8	12	36	98
05:00 PM	6	5	2	13	3	3	0	6	2	13	16	31	22	5	6	33	83
05:15 PM	5	5	3	13	1	8	1	10	1	17	24	42	10	9	6	25	90
05:30 PM	10	9	2	21	1	5	2	8	2	18	15	35	12	6	10	28	92
Total Volume	25	34	12	71	7	19	6	32	6	64	68	138	60	28	34	122	363
% App. Total	35.2	47.9	16.9		21.9	59.4	18.8		4.3	46.4	49.3		49.2	23	27.9		
PHF	.625	.567	.600	.740	.583	.594	.500	.800	.750	.889	.708	.821	.682	.778	.708	.847	.926
Passenger +	25	34	12	71	7	19	6	32	6	64	66	136	60	28	32	120	359
% Passenger +	100	100	100	100	100	100	100	100	100	100	97.1	98.6	100	100	94.1	98.4	98.9
Heavy	0	0	0	0	0	0	0	0	0	0	2	2	0	0	2	2	4
% Heavy	0	0	0	0	0	0	0	0	0	0	2.9	1.4	0	0	5.9	1.6	1.1



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355k
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

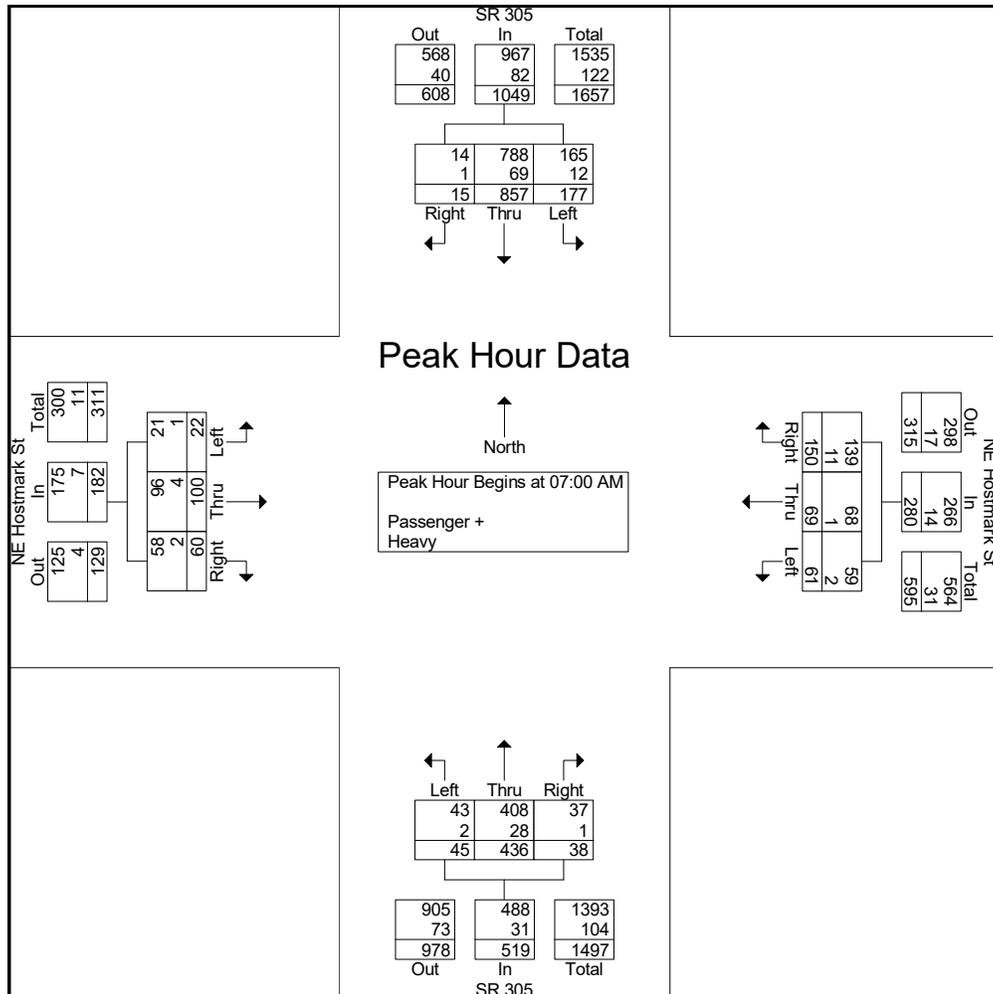
Start Time	SR 305 Southbound				NE Hostmark St Westbound				SR 305 Northbound				NE Hostmark St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	4	220	22	246	29	15	15	59	18	90	9	117	11	8	2	21	443
07:15 AM	3	219	62	284	33	16	17	66	7	102	12	121	22	23	7	52	523
07:30 AM	4	213	48	265	43	22	12	77	6	127	13	146	14	45	6	65	553
07:45 AM	4	205	45	254	45	16	17	78	7	117	11	135	13	24	7	44	511
Total	15	857	177	1049	150	69	61	280	38	436	45	519	60	100	22	182	2030
08:00 AM	3	167	22	192	28	11	9	48	4	111	12	127	12	6	6	24	391
08:15 AM	4	170	28	202	25	13	6	44	2	158	10	170	10	9	8	27	443
08:30 AM	5	198	26	229	24	13	12	49	7	115	13	135	13	9	5	27	440
08:45 AM	11	199	45	255	31	23	8	62	10	158	12	180	10	22	5	37	534
Total	23	734	121	878	108	60	35	203	23	542	47	612	45	46	24	115	1808
Grand Total	38	1591	298	1927	258	129	96	483	61	978	92	1131	105	146	46	297	3838
Apprch %	2	82.6	15.5		53.4	26.7	19.9		5.4	86.5	8.1		35.4	49.2	15.5		
Total %	1	41.5	7.8	50.2	6.7	3.4	2.5	12.6	1.6	25.5	2.4	29.5	2.7	3.8	1.2	7.7	
Passenger +	35	1442	278	1755	240	125	92	457	58	905	88	1051	102	139	44	285	3548
% Passenger +	92.1	90.6	93.3	91.1	93	96.9	95.8	94.6	95.1	92.5	95.7	92.9	97.1	95.2	95.7	96	92.4
Heavy	3	149	20	172	18	4	4	26	3	73	4	80	3	7	2	12	290
% Heavy	7.9	9.4	6.7	8.9	7	3.1	4.2	5.4	4.9	7.5	4.3	7.1	2.9	4.8	4.3	4	7.6

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355k
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	SR 305 Southbound				NE Hostmark St Westbound				SR 305 Northbound				NE Hostmark St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	4	220	22	246	29	15	15	59	18	90	9	117	11	8	2	21	443
07:15 AM	3	219	62	284	33	16	17	66	7	102	12	121	22	23	7	52	523
07:30 AM	4	213	48	265	43	22	12	77	6	127	13	146	14	45	6	65	553
07:45 AM	4	205	45	254	45	16	17	78	7	117	11	135	13	24	7	44	511
Total Volume	15	857	177	1049	150	69	61	280	38	436	45	519	60	100	22	182	2030
% App. Total	1.4	81.7	16.9		53.6	24.6	21.8		7.3	84	8.7		33	54.9	12.1		
PHF	.938	.974	.714	.923	.833	.784	.897	.897	.528	.858	.865	.889	.682	.556	.786	.700	.918
Passenger +	14	788	165	967	139	68	59	266	37	408	43	488	58	96	21	175	1896
% Passenger +	93.3	91.9	93.2	92.2	92.7	98.6	96.7	95.0	97.4	93.6	95.6	94.0	96.7	96.0	95.5	96.2	93.4
Heavy	1	69	12	82	11	1	2	14	1	28	2	31	2	4	1	7	134
% Heavy	6.7	8.1	6.8	7.8	7.3	1.4	3.3	5.0	2.6	6.4	4.4	6.0	3.3	4.0	4.5	3.8	6.6



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355I
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

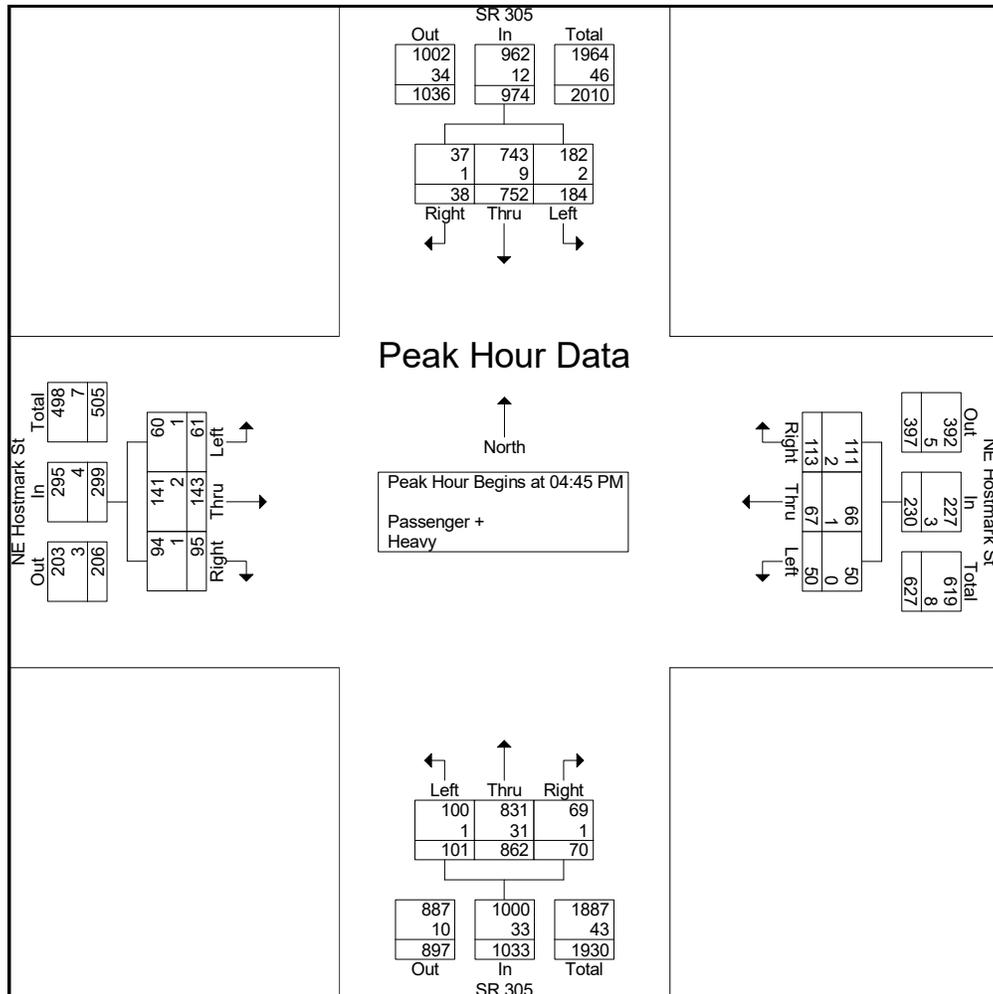
Start Time	SR 305 Southbound				NE Hostmark St Westbound				SR 305 Northbound				NE Hostmark St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	10	197	35	242	39	28	12	79	8	208	16	232	22	40	18	80	633
04:15 PM	12	186	41	239	43	14	16	73	12	214	32	258	23	24	16	63	633
04:30 PM	9	184	30	223	27	23	7	57	14	199	23	236	20	26	18	64	580
04:45 PM	9	206	48	263	22	21	10	53	7	181	22	210	20	36	25	81	607
Total	40	773	154	967	131	86	45	262	41	802	93	936	85	126	77	288	2453
05:00 PM	10	183	52	245	27	11	18	56	10	222	22	254	27	40	13	80	635
05:15 PM	7	173	39	219	32	22	14	68	37	243	31	311	20	28	8	56	654
05:30 PM	12	190	45	247	32	13	8	53	16	216	26	258	28	39	15	82	640
05:45 PM	9	145	45	199	32	20	16	68	13	192	23	228	12	38	13	63	558
Total	38	691	181	910	123	66	56	245	76	873	102	1051	87	145	49	281	2487
Grand Total	78	1464	335	1877	254	152	101	507	117	1675	195	1987	172	271	126	569	4940
Apprch %	4.2	78	17.8		50.1	30	19.9		5.9	84.3	9.8		30.2	47.6	22.1		
Total %	1.6	29.6	6.8	38	5.1	3.1	2	10.3	2.4	33.9	3.9	40.2	3.5	5.5	2.6	11.5	
Passenger +	77	1443	332	1852	246	150	101	497	116	1604	191	1911	170	266	124	560	4820
% Passenger +	98.7	98.6	99.1	98.7	96.9	98.7	100	98	99.1	95.8	97.9	96.2	98.8	98.2	98.4	98.4	97.6
Heavy	1	21	3	25	8	2	0	10	1	71	4	76	2	5	2	9	120
% Heavy	1.3	1.4	0.9	1.3	3.1	1.3	0	2	0.9	4.2	2.1	3.8	1.2	1.8	1.6	1.6	2.4

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355I
 Site Code : 00005355
 Start Date : 5/30/2024
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Start Time	SR 305 Southbound				NE Hostmark St Westbound				SR 305 Northbound				NE Hostmark St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	9	206	48	263	22	21	10	53	7	181	22	210	20	36	25	81	607
05:00 PM	10	183	52	245	27	11	18	56	10	222	22	254	27	40	13	80	635
05:15 PM	7	173	39	219	32	22	14	68	37	243	31	311	20	28	8	56	654
05:30 PM	12	190	45	247	32	13	8	53	16	216	26	258	28	39	15	82	640
Total Volume	38	752	184	974	113	67	50	230	70	862	101	1033	95	143	61	299	2536
% App. Total	3.9	77.2	18.9		49.1	29.1	21.7		6.8	83.4	9.8		31.8	47.8	20.4		
PHF	.792	.913	.885	.926	.883	.761	.694	.846	.473	.887	.815	.830	.848	.894	.610	.912	.969
Passenger +	37	743	182	962	111	66	50	227	69	831	100	1000	94	141	60	295	2484
% Passenger +	97.4	98.8	98.9	98.8	98.2	98.5	100	98.7	98.6	96.4	99.0	96.8	98.9	98.6	98.4	98.7	97.9
Heavy	1	9	2	12	2	1	0	3	1	31	1	33	1	2	1	4	52
% Heavy	2.6	1.2	1.1	1.2	1.8	1.5	0	1.3	1.4	3.6	1.0	3.2	1.1	1.4	1.6	1.3	2.1



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355m
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

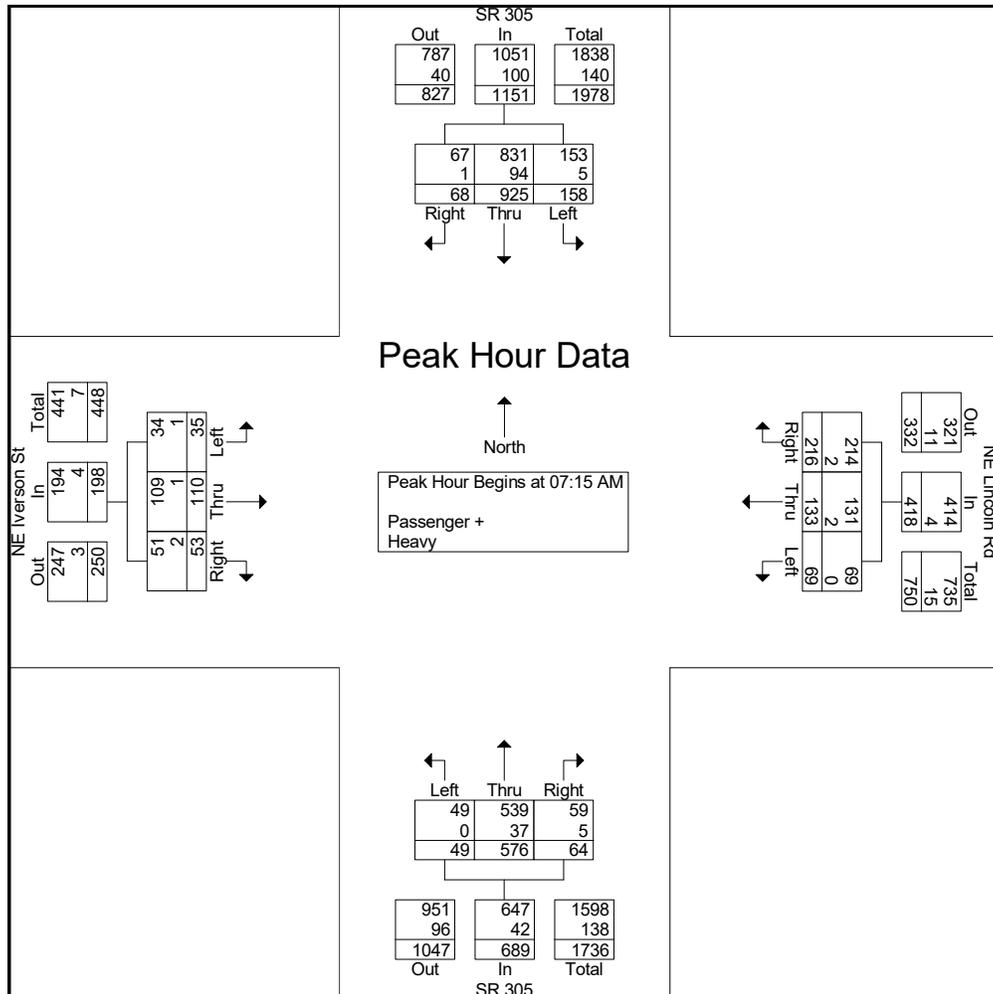
Start Time	SR 305 Southbound				NE Lincoln Rd Westbound				SR 305 Northbound				NE Iverson St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	12	232	15	259	23	18	16	57	11	141	5	157	13	15	2	30	503
07:15 AM	20	263	34	317	34	18	15	67	7	132	4	143	11	22	4	37	564
07:30 AM	11	241	54	306	58	30	19	107	31	141	13	185	15	32	2	49	647
07:45 AM	14	233	46	293	72	55	24	151	12	150	15	177	14	35	11	60	681
Total	57	969	149	1175	187	121	74	382	61	564	37	662	53	104	19	176	2395
08:00 AM	23	188	24	235	52	30	11	93	14	153	17	184	13	21	18	52	564
08:15 AM	8	185	24	217	36	41	12	89	15	175	16	206	9	13	11	33	545
08:30 AM	10	198	28	236	27	21	19	67	12	132	8	152	14	22	9	45	500
08:45 AM	13	225	26	264	32	30	26	88	18	184	12	214	12	17	8	37	603
Total	54	796	102	952	147	122	68	337	59	644	53	756	48	73	46	167	2212
Grand Total	111	1765	251	2127	334	243	142	719	120	1208	90	1418	101	177	65	343	4607
Apprch %	5.2	83	11.8		46.5	33.8	19.7		8.5	85.2	6.3		29.4	51.6	19		
Total %	2.4	38.3	5.4	46.2	7.2	5.3	3.1	15.6	2.6	26.2	2	30.8	2.2	3.8	1.4	7.4	
Passenger +	107	1602	244	1953	329	240	141	710	110	1125	89	1324	95	171	63	329	4316
% Passenger +	96.4	90.8	97.2	91.8	98.5	98.8	99.3	98.7	91.7	93.1	98.9	93.4	94.1	96.6	96.9	95.9	93.7
Heavy	4	163	7	174	5	3	1	9	10	83	1	94	6	6	2	14	291
% Heavy	3.6	9.2	2.8	8.2	1.5	1.2	0.7	1.3	8.3	6.9	1.1	6.6	5.9	3.4	3.1	4.1	6.3

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355m
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	SR 305 Southbound				NE Lincoln Rd Westbound				SR 305 Northbound				NE Iverson St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	20	263	34	317	34	18	15	67	7	132	4	143	11	22	4	37	564
07:30 AM	11	241	54	306	58	30	19	107	31	141	13	185	15	32	2	49	647
07:45 AM	14	233	46	293	72	55	24	151	12	150	15	177	14	35	11	60	681
08:00 AM	23	188	24	235	52	30	11	93	14	153	17	184	13	21	18	52	564
Total Volume	68	925	158	1151	216	133	69	418	64	576	49	689	53	110	35	198	2456
% App. Total	5.9	80.4	13.7		51.7	31.8	16.5		9.3	83.6	7.1		26.8	55.6	17.7		
PHF	.739	.879	.731	.908	.750	.605	.719	.692	.516	.941	.721	.931	.883	.786	.486	.825	.902
Passenger +	67	831	153	1051	214	131	69	414	59	539	49	647	51	109	34	194	2306
% Passenger +	98.5	89.8	96.8	91.3	99.1	98.5	100	99.0	92.2	93.6	100	93.9	96.2	99.1	97.1	98.0	93.9
Heavy	1	94	5	100	2	2	0	4	5	37	0	42	2	1	1	4	150
% Heavy	1.5	10.2	3.2	8.7	0.9	1.5	0	1.0	7.8	6.4	0	6.1	3.8	0.9	2.9	2.0	6.1



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355n
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

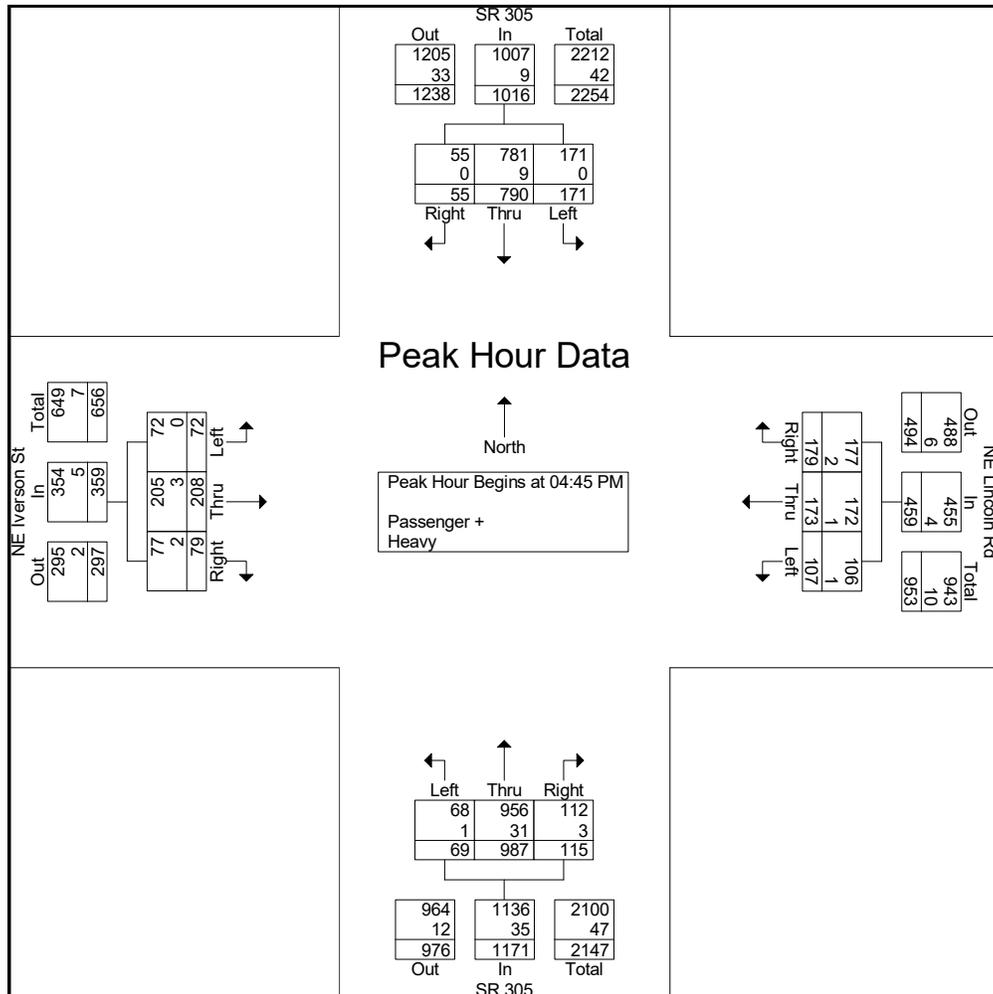
Start Time	SR 305 Southbound				NE Lincoln Rd Westbound				SR 305 Northbound				NE Iverson St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	12	200	45	257	41	50	34	125	20	250	18	288	23	55	16	94	764
04:15 PM	16	168	55	239	50	40	36	126	35	259	24	318	20	50	13	83	766
04:30 PM	14	200	30	244	47	61	34	142	29	233	14	276	13	62	22	97	759
04:45 PM	14	210	36	260	39	44	31	114	28	194	17	239	24	52	18	94	707
Total	56	778	166	1000	177	195	135	507	112	936	73	1121	80	219	69	368	2996
05:00 PM	11	177	47	235	48	44	31	123	26	252	17	295	24	62	19	105	758
05:15 PM	17	203	39	259	52	44	17	113	30	275	13	318	20	50	15	85	775
05:30 PM	13	200	49	262	40	41	28	109	31	266	22	319	11	44	20	75	765
05:45 PM	14	155	51	220	41	33	24	98	26	211	24	261	11	51	13	75	654
Total	55	735	186	976	181	162	100	443	113	1004	76	1193	66	207	67	340	2952
Grand Total	111	1513	352	1976	358	357	235	950	225	1940	149	2314	146	426	136	708	5948
Apprch %	5.6	76.6	17.8		37.7	37.6	24.7		9.7	83.8	6.4		20.6	60.2	19.2		
Total %	1.9	25.4	5.9	33.2	6	6	4	16	3.8	32.6	2.5	38.9	2.5	7.2	2.3	11.9	
Passenger +	111	1493	345	1949	353	356	233	942	217	1867	146	2230	141	421	136	698	5819
% Passenger +	100	98.7	98	98.6	98.6	99.7	99.1	99.2	96.4	96.2	98	96.4	96.6	98.8	100	98.6	97.8
Heavy	0	20	7	27	5	1	2	8	8	73	3	84	5	5	0	10	129
% Heavy	0	1.3	2	1.4	1.4	0.3	0.9	0.8	3.6	3.8	2	3.6	3.4	1.2	0	1.4	2.2

Heath & Associates

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File Name : 5355n
 Site Code : 00005355
 Start Date : 5/30/2024
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Start Time	SR 305 Southbound				NE Lincoln Rd Westbound				SR 305 Northbound				NE Iverson St Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	14	210	36	260	39	44	31	114	28	194	17	239	24	52	18	94	707
05:00 PM	11	177	47	235	48	44	31	123	26	252	17	295	24	62	19	105	758
05:15 PM	17	203	39	259	52	44	17	113	30	275	13	318	20	50	15	85	775
05:30 PM	13	200	49	262	40	41	28	109	31	266	22	319	11	44	20	75	765
Total Volume	55	790	171	1016	179	173	107	459	115	987	69	1171	79	208	72	359	3005
% App. Total	5.4	77.8	16.8		39	37.7	23.3		9.8	84.3	5.9		22	57.9	20.1		
PHF	.809	.940	.872	.969	.861	.983	.863	.933	.927	.897	.784	.918	.823	.839	.900	.855	.969
Passenger +	55	781	171	1007	177	172	106	455	112	956	68	1136	77	205	72	354	2952
% Passenger +	100	98.9	100	99.1	98.9	99.4	99.1	99.1	97.4	96.9	98.6	97.0	97.5	98.6	100	98.6	98.2
Heavy	0	9	0	9	2	1	1	4	3	31	1	35	2	3	0	5	53
% Heavy	0	1.1	0	0.9	1.1	0.6	0.9	0.9	2.6	3.1	1.4	3.0	2.5	1.4	0	1.4	1.8



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355e
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

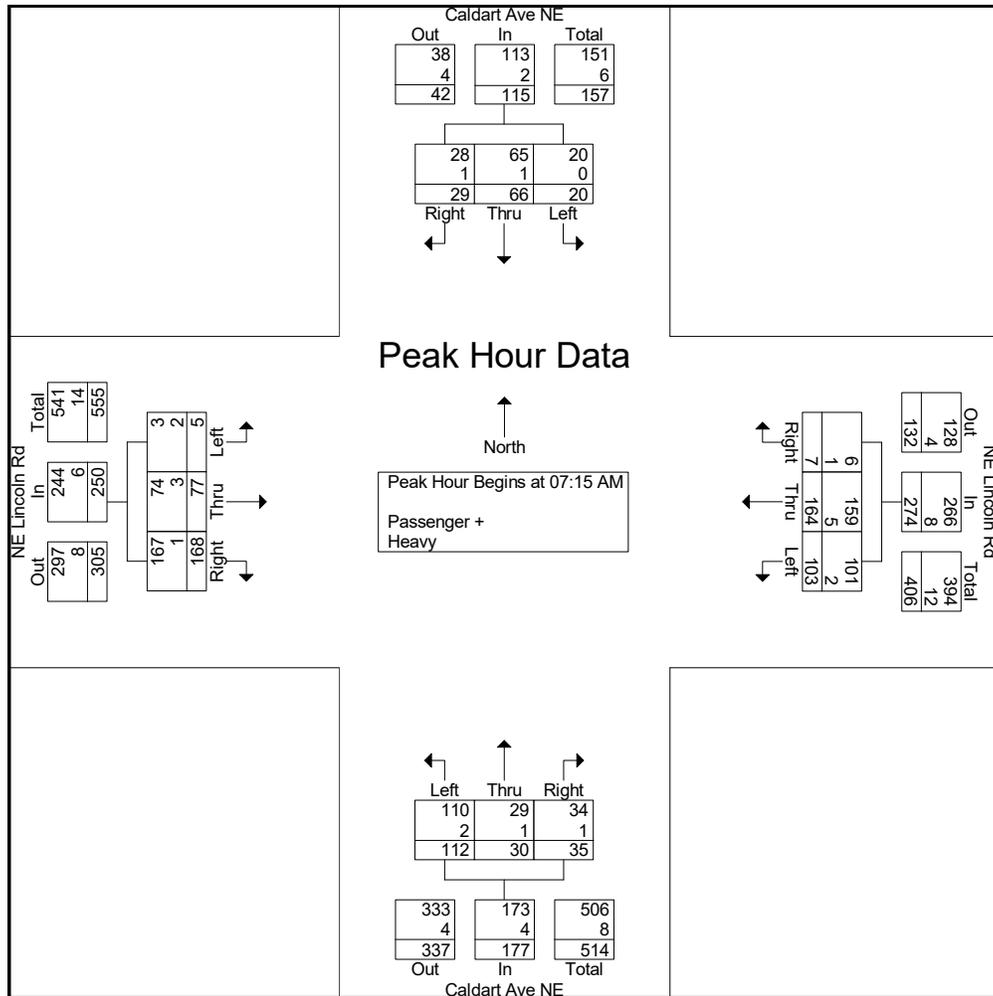
Start Time	Caldart Ave NE Southbound				NE Lincoln Rd Westbound				Caldart Ave NE Northbound				NE Lincoln Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	9	17	1	27	3	47	12	62	4	3	5	12	16	13	0	29	130
07:15 AM	4	18	4	26	1	41	20	62	3	4	14	21	43	15	1	59	168
07:30 AM	14	32	9	55	2	53	57	112	19	18	48	85	93	21	1	115	367
07:45 AM	2	9	1	12	1	12	15	28	8	3	20	31	11	6	0	17	88
Total	29	76	15	120	7	153	104	264	34	28	87	149	163	55	2	220	753
08:00 AM	9	7	6	22	3	58	11	72	5	5	30	40	21	35	3	59	193
08:15 AM	5	7	1	13	1	60	11	72	7	1	18	26	15	32	5	52	163
08:30 AM	10	10	6	26	2	52	17	71	6	6	15	27	23	23	5	51	175
08:45 AM	4	15	6	25	4	41	15	60	8	8	25	41	17	28	1	46	172
Total	28	39	19	86	10	211	54	275	26	20	88	134	76	118	14	208	703
Grand Total	57	115	34	206	17	364	158	539	60	48	175	283	239	173	16	428	1456
Apprch %	27.7	55.8	16.5		3.2	67.5	29.3		21.2	17	61.8		55.8	40.4	3.7		
Total %	3.9	7.9	2.3	14.1	1.2	25	10.9	37	4.1	3.3	12	19.4	16.4	11.9	1.1	29.4	
Passenger +	54	113	33	200	16	358	152	526	57	47	171	275	236	168	12	416	1417
% Passenger +	94.7	98.3	97.1	97.1	94.1	98.4	96.2	97.6	95	97.9	97.7	97.2	98.7	97.1	75	97.2	97.3
Heavy	3	2	1	6	1	6	6	13	3	1	4	8	3	5	4	12	39
% Heavy	5.3	1.7	2.9	2.9	5.9	1.6	3.8	2.4	5	2.1	2.3	2.8	1.3	2.9	25	2.8	2.7

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355e
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Caldart Ave NE Southbound				NE Lincoln Rd Westbound				Caldart Ave NE Northbound				NE Lincoln Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	4	18	4	26	1	41	20	62	3	4	14	21	43	15	1	59	168
07:30 AM	14	32	9	55	2	53	57	112	19	18	48	85	93	21	1	115	367
07:45 AM	2	9	1	12	1	12	15	28	8	3	20	31	11	6	0	17	88
08:00 AM	9	7	6	22	3	58	11	72	5	5	30	40	21	35	3	59	193
Total Volume	29	66	20	115	7	164	103	274	35	30	112	177	168	77	5	250	816
% App. Total	25.2	57.4	17.4		2.6	59.9	37.6		19.8	16.9	63.3		67.2	30.8	2		
PHF	.518	.516	.556	.523	.583	.707	.452	.612	.461	.417	.583	.521	.452	.550	.417	.543	.556
Passenger +	28	65	20	113	6	159	101	266	34	29	110	173	167	74	3	244	796
% Passenger +	96.6	98.5	100	98.3	85.7	97.0	98.1	97.1	97.1	96.7	98.2	97.7	99.4	96.1	60.0	97.6	97.5
Heavy	1	1	0	2	1	5	2	8	1	1	2	4	1	3	2	6	20
% Heavy	3.4	1.5	0	1.7	14.3	3.0	1.9	2.9	2.9	3.3	1.8	2.3	0.6	3.9	40.0	2.4	2.5



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355f
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

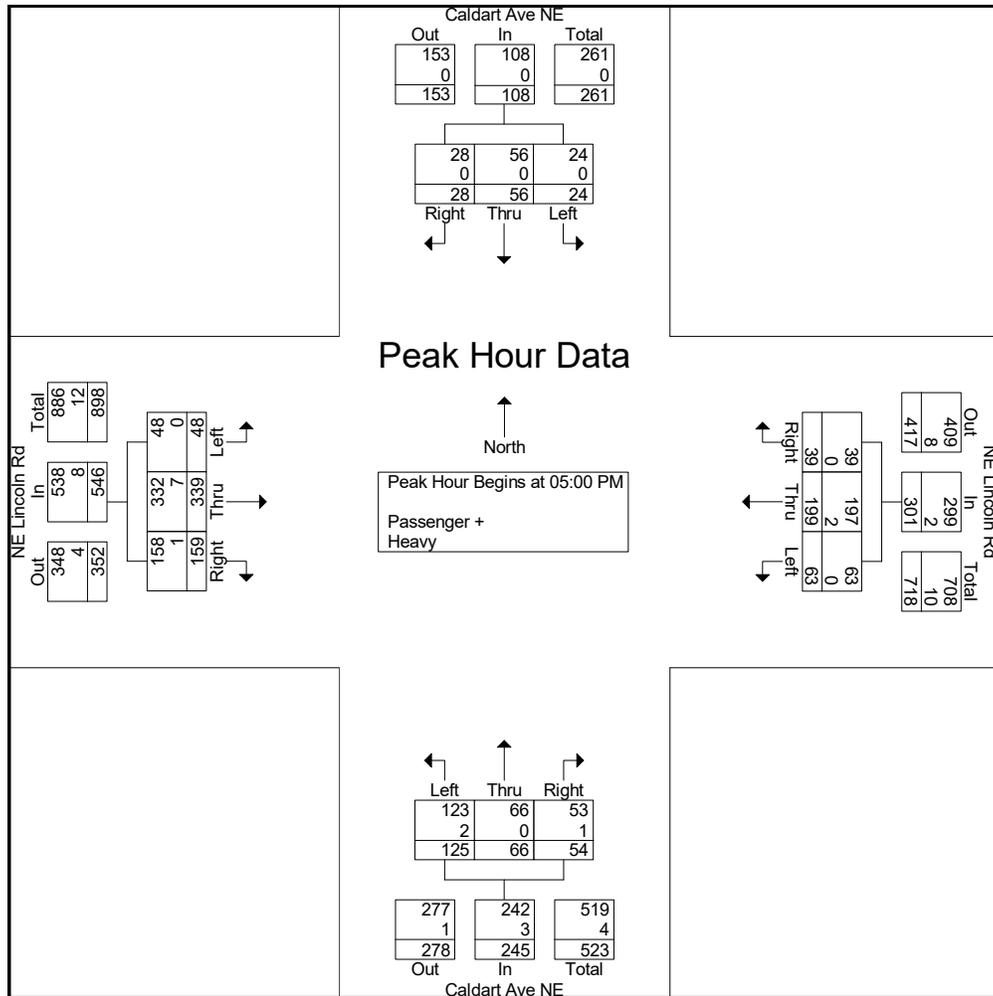
Start Time	Caldart Ave NE Southbound				NE Lincoln Rd Westbound				Caldart Ave NE Northbound				NE Lincoln Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	8	11	7	26	10	60	6	76	16	20	36	72	39	75	7	121	295
04:15 PM	9	9	12	30	10	56	16	82	11	13	23	47	27	92	11	130	289
04:30 PM	8	6	9	23	5	52	8	65	12	12	25	49	33	78	12	123	260
04:45 PM	7	7	9	23	3	63	7	73	7	9	21	37	36	72	6	114	247
Total	32	33	37	102	28	231	37	296	46	54	105	205	135	317	36	488	1091
05:00 PM	11	15	3	29	12	56	14	82	19	22	21	62	41	90	13	144	317
05:15 PM	8	14	10	32	7	47	12	66	13	21	53	87	31	71	15	117	302
05:30 PM	5	12	6	23	9	46	13	68	13	15	29	57	38	85	14	137	285
05:45 PM	4	15	5	24	11	50	24	85	9	8	22	39	49	93	6	148	296
Total	28	56	24	108	39	199	63	301	54	66	125	245	159	339	48	546	1200
Grand Total	60	89	61	210	67	430	100	597	100	120	230	450	294	656	84	1034	2291
Apprch %	28.6	42.4	29		11.2	72	16.8		22.2	26.7	51.1		28.4	63.4	8.1		
Total %	2.6	3.9	2.7	9.2	2.9	18.8	4.4	26.1	4.4	5.2	10	19.6	12.8	28.6	3.7	45.1	
Passenger +	58	89	60	207	67	426	99	592	98	119	226	443	289	646	83	1018	2260
% Passenger +	96.7	100	98.4	98.6	100	99.1	99	99.2	98	99.2	98.3	98.4	98.3	98.5	98.8	98.5	98.6
Heavy	2	0	1	3	0	4	1	5	2	1	4	7	5	10	1	16	31
% Heavy	3.3	0	1.6	1.4	0	0.9	1	0.8	2	0.8	1.7	1.6	1.7	1.5	1.2	1.5	1.4

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355f
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Caldart Ave NE Southbound				NE Lincoln Rd Westbound				Caldart Ave NE Northbound				NE Lincoln Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	11	15	3	29	12	56	14	82	19	22	21	62	41	90	13	144	317
05:15 PM	8	14	10	32	7	47	12	66	13	21	53	87	31	71	15	117	302
05:30 PM	5	12	6	23	9	46	13	68	13	15	29	57	38	85	14	137	285
05:45 PM	4	15	5	24	11	50	24	85	9	8	22	39	49	93	6	148	296
Total Volume	28	56	24	108	39	199	63	301	54	66	125	245	159	339	48	546	1200
% App. Total	25.9	51.9	22.2		13	66.1	20.9		22	26.9	51		29.1	62.1	8.8		
PHF	.636	.933	.600	.844	.813	.888	.656	.885	.711	.750	.590	.704	.811	.911	.800	.922	.946
Passenger +	28	56	24	108	39	197	63	299	53	66	123	242	158	332	48	538	1187
% Passenger +	100	100	100	100	100	99.0	100	99.3	98.1	100	98.4	98.8	99.4	97.9	100	98.5	98.9
Heavy	0	0	0	0	0	2	0	2	1	0	2	3	1	7	0	8	13
% Heavy	0	0	0	0	0	1.0	0	0.7	1.9	0	1.6	1.2	0.6	2.1	0	1.5	1.1



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355c
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

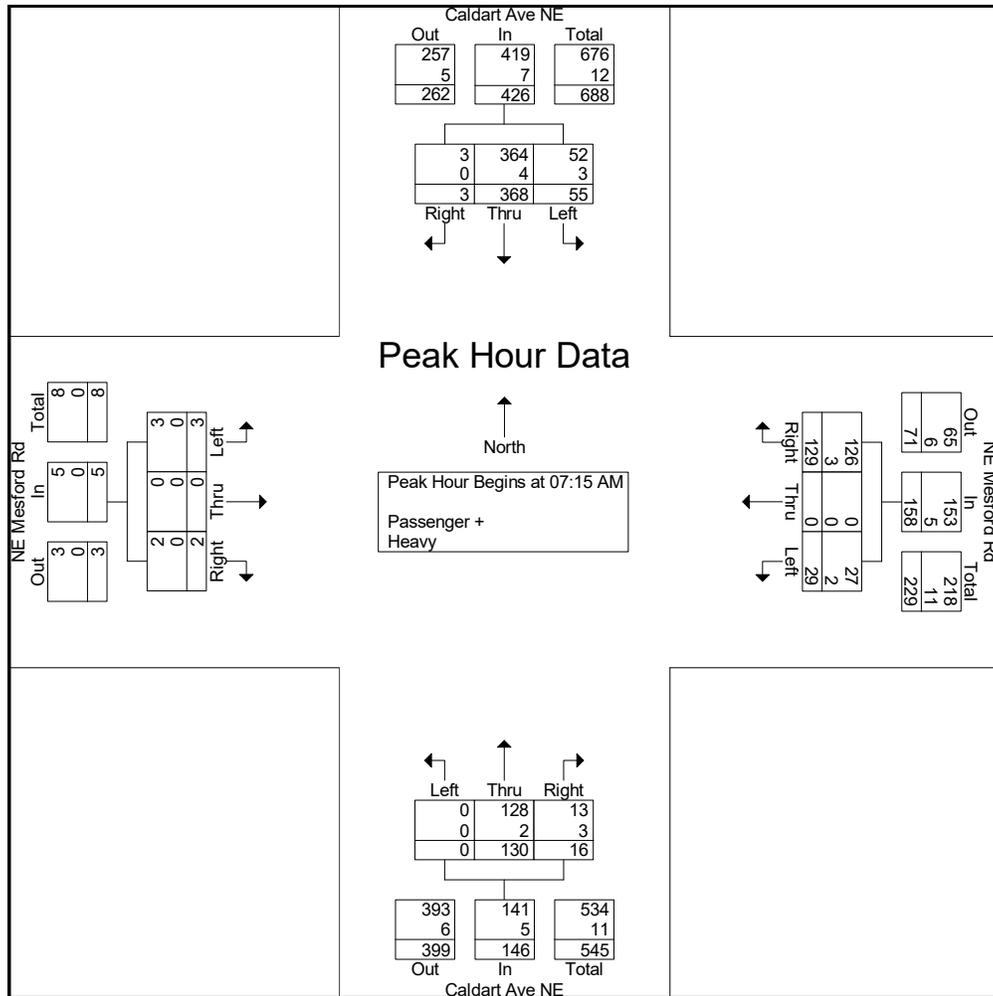
Start Time	Caldart Ave NE Southbound				NE Mesford Rd Westbound				Caldart Ave NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	0	35	11	46	5	0	4	9	2	7	0	9	2	0	0	2	66
07:15 AM	1	68	13	82	13	0	12	25	3	8	0	11	0	0	1	1	119
07:30 AM	0	155	20	175	45	0	5	50	8	43	0	51	0	0	2	2	278
07:45 AM	0	117	12	129	54	0	6	60	4	62	0	66	1	0	0	1	256
Total	1	375	56	432	117	0	27	144	17	120	0	137	3	0	3	6	719
08:00 AM	2	28	10	40	17	0	6	23	1	17	0	18	1	0	0	1	82
08:15 AM	0	20	13	33	16	0	2	18	2	9	0	11	0	0	1	1	63
08:30 AM	0	35	14	49	15	0	4	19	2	14	0	16	0	0	0	0	84
08:45 AM	0	38	9	47	14	0	4	18	1	27	0	28	0	0	0	0	93
Total	2	121	46	169	62	0	16	78	6	67	0	73	1	0	1	2	322
Grand Total	3	496	102	601	179	0	43	222	23	187	0	210	4	0	4	8	1041
Apprch %	0.5	82.5	17		80.6	0	19.4		11	89	0		50	0	50		
Total %	0.3	47.6	9.8	57.7	17.2	0	4.1	21.3	2.2	18	0	20.2	0.4	0	0.4	0.8	
Passenger +	3	488	96	587	176	0	41	217	18	180	0	198	4	0	4	8	1010
% Passenger +	100	98.4	94.1	97.7	98.3	0	95.3	97.7	78.3	96.3	0	94.3	100	0	100	100	97
Heavy	0	8	6	14	3	0	2	5	5	7	0	12	0	0	0	0	31
% Heavy	0	1.6	5.9	2.3	1.7	0	4.7	2.3	21.7	3.7	0	5.7	0	0	0	0	3

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355c
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Caldart Ave NE Southbound				NE Mesford Rd Westbound				Caldart Ave NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	68	13	82	13	0	12	25	3	8	0	11	0	0	1	1	119
07:30 AM	0	155	20	175	45	0	5	50	8	43	0	51	0	0	2	2	278
07:45 AM	0	117	12	129	54	0	6	60	4	62	0	66	1	0	0	1	256
08:00 AM	2	28	10	40	17	0	6	23	1	17	0	18	1	0	0	1	82
Total Volume	3	368	55	426	129	0	29	158	16	130	0	146	2	0	3	5	735
% App. Total	0.7	86.4	12.9		81.6	0	18.4		11	89	0		40	0	60		
PHF	.375	.594	.688	.609	.597	.000	.604	.658	.500	.524	.000	.553	.500	.000	.375	.625	.661
Passenger +	3	364	52	419	126	0	27	153	13	128	0	141	2	0	3	5	718
% Passenger +	100	98.9	94.5	98.4	97.7	0	93.1	96.8	81.3	98.5	0	96.6	100	0	100	100	97.7
Heavy	0	4	3	7	3	0	2	5	3	2	0	5	0	0	0	0	17
% Heavy	0	1.1	5.5	1.6	2.3	0	6.9	3.2	18.8	1.5	0	3.4	0	0	0	0	2.3



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355d
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

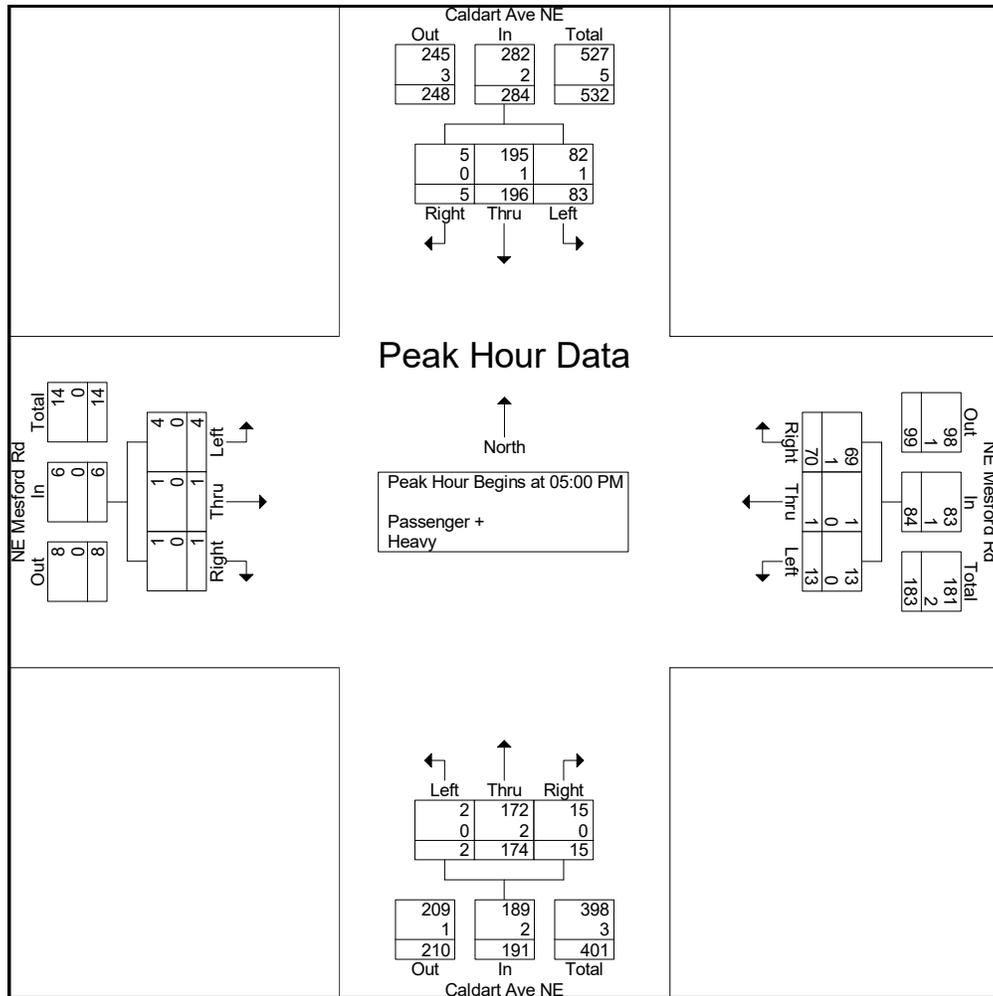
Start Time	Caldart Ave NE Southbound				NE Mesford Rd Westbound				Caldart Ave NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	3	26	25	54	27	1	3	31	0	47	1	48	1	0	0	1	134
04:15 PM	0	32	21	53	17	0	3	20	6	36	1	43	2	0	0	2	118
04:30 PM	0	32	15	47	16	0	2	18	3	25	0	28	0	0	0	0	93
04:45 PM	0	42	11	53	15	0	4	19	4	27	0	31	0	0	2	2	105
Total	3	132	72	207	75	1	12	88	13	135	2	150	3	0	2	5	450
05:00 PM	3	49	17	69	18	0	4	22	1	42	1	44	1	0	1	2	137
05:15 PM	1	47	11	59	27	0	5	32	5	59	1	65	0	0	0	0	156
05:30 PM	0	43	26	69	13	1	2	16	4	42	0	46	0	1	2	3	134
05:45 PM	1	57	29	87	12	0	2	14	5	31	0	36	0	0	1	1	138
Total	5	196	83	284	70	1	13	84	15	174	2	191	1	1	4	6	565
Grand Total	8	328	155	491	145	2	25	172	28	309	4	341	4	1	6	11	1015
Apprch %	1.6	66.8	31.6		84.3	1.2	14.5		8.2	90.6	1.2		36.4	9.1	54.5		
Total %	0.8	32.3	15.3	48.4	14.3	0.2	2.5	16.9	2.8	30.4	0.4	33.6	0.4	0.1	0.6	1.1	
Passenger +	8	323	153	484	143	2	25	170	28	305	4	337	4	1	6	11	1002
% Passenger +	100	98.5	98.7	98.6	98.6	100	100	98.8	100	98.7	100	98.8	100	100	100	100	98.7
Heavy	0	5	2	7	2	0	0	2	0	4	0	4	0	0	0	0	13
% Heavy	0	1.5	1.3	1.4	1.4	0	0	1.2	0	1.3	0	1.2	0	0	0	0	1.3

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355d
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Caldart Ave NE Southbound				NE Mesford Rd Westbound				Caldart Ave NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	3	49	17	69	18	0	4	22	1	42	1	44	1	0	1	2	137
05:15 PM	1	47	11	59	27	0	5	32	5	59	1	65	0	0	0	0	156
05:30 PM	0	43	26	69	13	1	2	16	4	42	0	46	0	1	2	3	134
05:45 PM	1	57	29	87	12	0	2	14	5	31	0	36	0	0	1	1	138
Total Volume	5	196	83	284	70	1	13	84	15	174	2	191	1	1	4	6	565
% App. Total	1.8	69	29.2		83.3	1.2	15.5		7.9	91.1	1		16.7	16.7	66.7		
PHF	.417	.860	.716	.816	.648	.250	.650	.656	.750	.737	.500	.735	.250	.250	.500	.500	.905
Passenger +	5	195	82	282	69	1	13	83	15	172	2	189	1	1	4	6	560
% Passenger +	100	99.5	98.8	99.3	98.6	100	100	98.8	100	98.9	100	99.0	100	100	100	100	99.1
Heavy	0	1	1	2	1	0	0	1	0	2	0	2	0	0	0	0	5
% Heavy	0	0.5	1.2	0.7	1.4	0	0	1.2	0	1.1	0	1.0	0	0	0	0	0.9



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355g
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

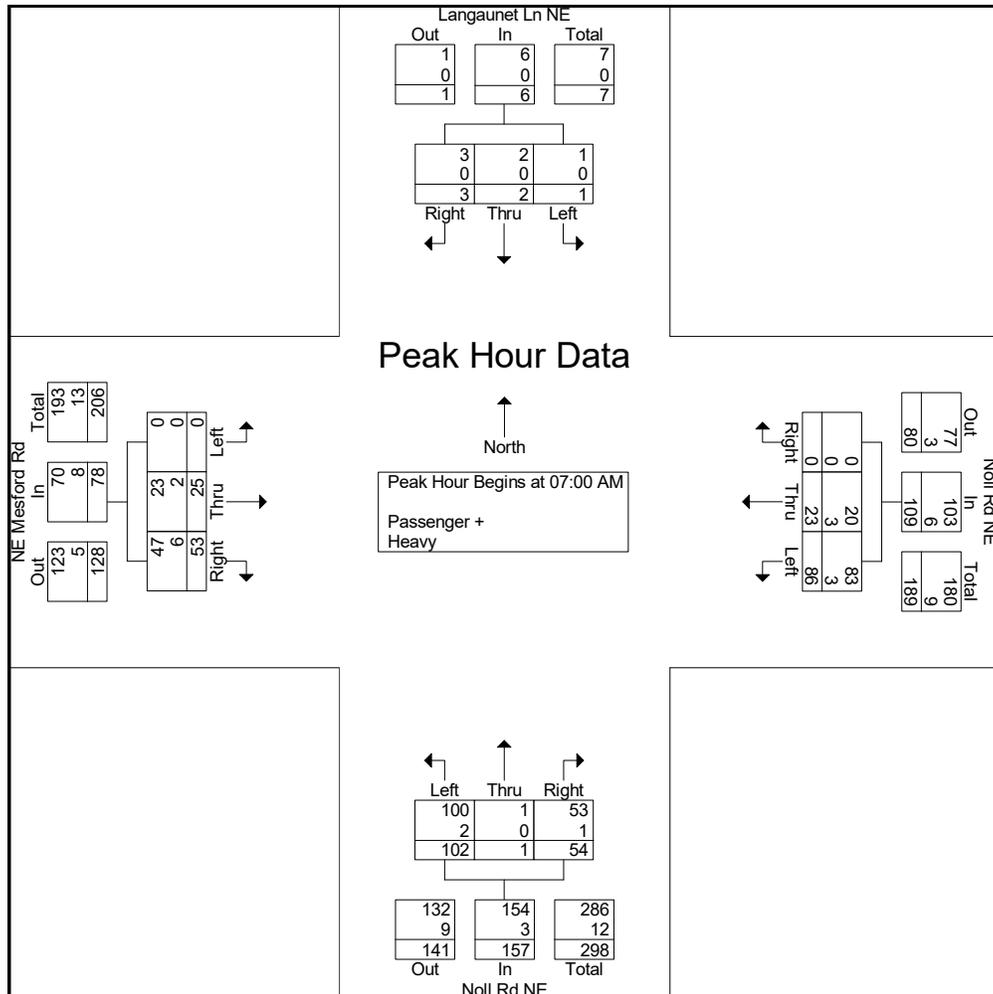
Start Time	Langaunet Ln NE Southbound				Noll Rd NE Westbound				Noll Rd NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
07:00 AM	0	0	0	0	0	2	14	16	5	0	2	7	10	5	0	15	38
07:15 AM	2	2	0	4	0	8	17	25	7	1	3	11	11	9	0	20	60
07:30 AM	1	0	0	1	0	6	44	50	19	0	42	61	18	6	0	24	136
07:45 AM	0	0	1	1	0	7	11	18	23	0	55	78	14	5	0	19	116
Total	3	2	1	6	0	23	86	109	54	1	102	157	53	25	0	78	350
08:00 AM	0	0	0	0	0	2	7	9	8	0	6	14	7	2	0	9	32
08:15 AM	0	0	0	0	0	6	2	8	8	0	8	16	7	1	0	8	32
08:30 AM	0	0	0	0	0	2	9	11	6	0	9	15	8	4	0	12	38
08:45 AM	0	0	0	0	0	8	9	17	4	0	4	8	15	2	0	17	42
Total	0	0	0	0	0	18	27	45	26	0	27	53	37	9	0	46	144
Grand Total	3	2	1	6	0	41	113	154	80	1	129	210	90	34	0	124	494
Apprch %	50	33.3	16.7		0	26.6	73.4		38.1	0.5	61.4		72.6	27.4	0		
Total %	0.6	0.4	0.2	1.2	0	8.3	22.9	31.2	16.2	0.2	26.1	42.5	18.2	6.9	0	25.1	
Passenger +	3	2	1	6	0	38	106	144	77	1	126	204	82	30	0	112	466
% Passenger +	100	100	100	100	0	92.7	93.8	93.5	96.2	100	97.7	97.1	91.1	88.2	0	90.3	94.3
Heavy	0	0	0	0	0	3	7	10	3	0	3	6	8	4	0	12	28
% Heavy	0	0	0	0	0	7.3	6.2	6.5	3.8	0	2.3	2.9	8.9	11.8	0	9.7	5.7

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355g
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Langaunet Ln NE Southbound				Noll Rd NE Westbound				Noll Rd NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	2	14	16	5	0	2	7	10	5	0	15	38
07:15 AM	2	2	0	4	0	8	17	25	7	1	3	11	11	9	0	20	60
07:30 AM	1	0	0	1	0	6	44	50	19	0	42	61	18	6	0	24	136
07:45 AM	0	0	1	1	0	7	11	18	23	0	55	78	14	5	0	19	116
Total Volume	3	2	1	6	0	23	86	109	54	1	102	157	53	25	0	78	350
% App. Total	50	33.3	16.7		0	21.1	78.9		34.4	0.6	65		67.9	32.1	0		
PHF	.375	.250	.250	.375	.000	.719	.489	.545	.587	.250	.464	.503	.736	.694	.000	.813	.643
Passenger +	3	2	1	6	0	20	83	103	53	1	100	154	47	23	0	70	333
% Passenger +	100	100	100	100	0	87.0	96.5	94.5	98.1	100	98.0	98.1	88.7	92.0	0	89.7	95.1
Heavy	0	0	0	0	0	3	3	6	1	0	2	3	6	2	0	8	17
% Heavy	0	0	0	0	0	13.0	3.5	5.5	1.9	0	2.0	1.9	11.3	8.0	0	10.3	4.9



Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355h
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 1

Groups Printed- Passenger + - Heavy

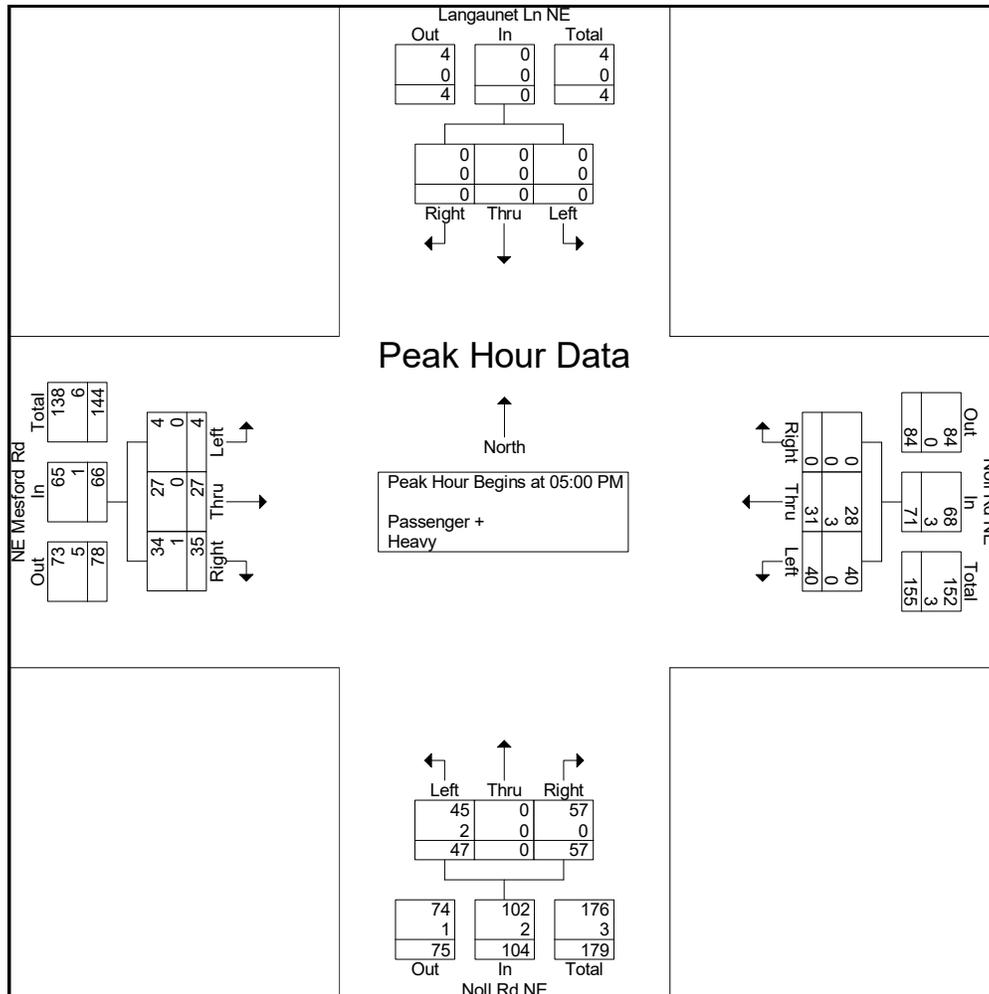
Start Time	Langaunet Ln NE Southbound				Noll Rd NE Westbound				Noll Rd NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
04:00 PM	1	0	0	1	0	8	10	18	15	0	19	34	8	9	0	17	70
04:15 PM	0	0	0	0	0	4	10	14	11	0	14	25	7	5	0	12	51
04:30 PM	0	0	0	0	0	6	7	13	11	0	8	19	7	5	2	14	46
04:45 PM	0	0	0	0	0	5	16	21	16	0	12	28	6	4	0	10	59
Total	1	0	0	1	0	23	43	66	53	0	53	106	28	23	2	53	226
05:00 PM	0	0	0	0	0	6	8	14	11	0	12	23	9	8	1	18	55
05:15 PM	0	0	0	0	0	10	10	20	13	0	13	26	3	6	0	9	55
05:30 PM	0	0	0	0	0	6	12	18	21	0	9	30	12	8	1	21	69
05:45 PM	0	0	0	0	0	9	10	19	12	0	13	25	11	5	2	18	62
Total	0	0	0	0	0	31	40	71	57	0	47	104	35	27	4	66	241
Grand Total	1	0	0	1	0	54	83	137	110	0	100	210	63	50	6	119	467
Apprch %	100	0	0		0	39.4	60.6		52.4	0	47.6		52.9	42	5		
Total %	0.2	0	0	0.2	0	11.6	17.8	29.3	23.6	0	21.4	45	13.5	10.7	1.3	25.5	
Passenger +	1	0	0	1	0	51	83	134	108	0	98	206	62	49	6	117	458
% Passenger +	100	0	0	100	0	94.4	100	97.8	98.2	0	98	98.1	98.4	98	100	98.3	98.1
Heavy	0	0	0	0	0	3	0	3	2	0	2	4	1	1	0	2	9
% Heavy	0	0	0	0	0	5.6	0	2.2	1.8	0	2	1.9	1.6	2	0	1.7	1.9

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 5355h
 Site Code : 00005355
 Start Date : 5/30/2024
 Page No : 2

Start Time	Langaunet Ln NE Southbound				Noll Rd NE Westbound				Noll Rd NE Northbound				NE Mesford Rd Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	6	8	14	11	0	12	23	9	8	1	18	55
05:15 PM	0	0	0	0	0	10	10	20	13	0	13	26	3	6	0	9	55
05:30 PM	0	0	0	0	0	6	12	18	21	0	9	30	12	8	1	21	69
05:45 PM	0	0	0	0	0	9	10	19	12	0	13	25	11	5	2	18	62
Total Volume	0	0	0	0	0	31	40	71	57	0	47	104	35	27	4	66	241
% App. Total	0	0	0	0	0	43.7	56.3		54.8	0	45.2		53	40.9	6.1		
PHF	.000	.000	.000	.000	.000	.775	.833	.888	.679	.000	.904	.867	.729	.844	.500	.786	.873
Passenger +	0	0	0	0	0	28	40	68	57	0	45	102	34	27	4	65	235
% Passenger +	0	0	0	0	0	90.3	100	95.8	100	0	95.7	98.1	97.1	100	100	98.5	97.5
Heavy	0	0	0	0	0	3	0	3	0	0	2	2	1	0	0	1	6
% Heavy	0	0	0	0	0	9.7	0	4.2	0	0	4.3	1.9	2.9	0	0	1.5	2.5



SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
ITE Sheets



Single-Family Detached Housing (210)

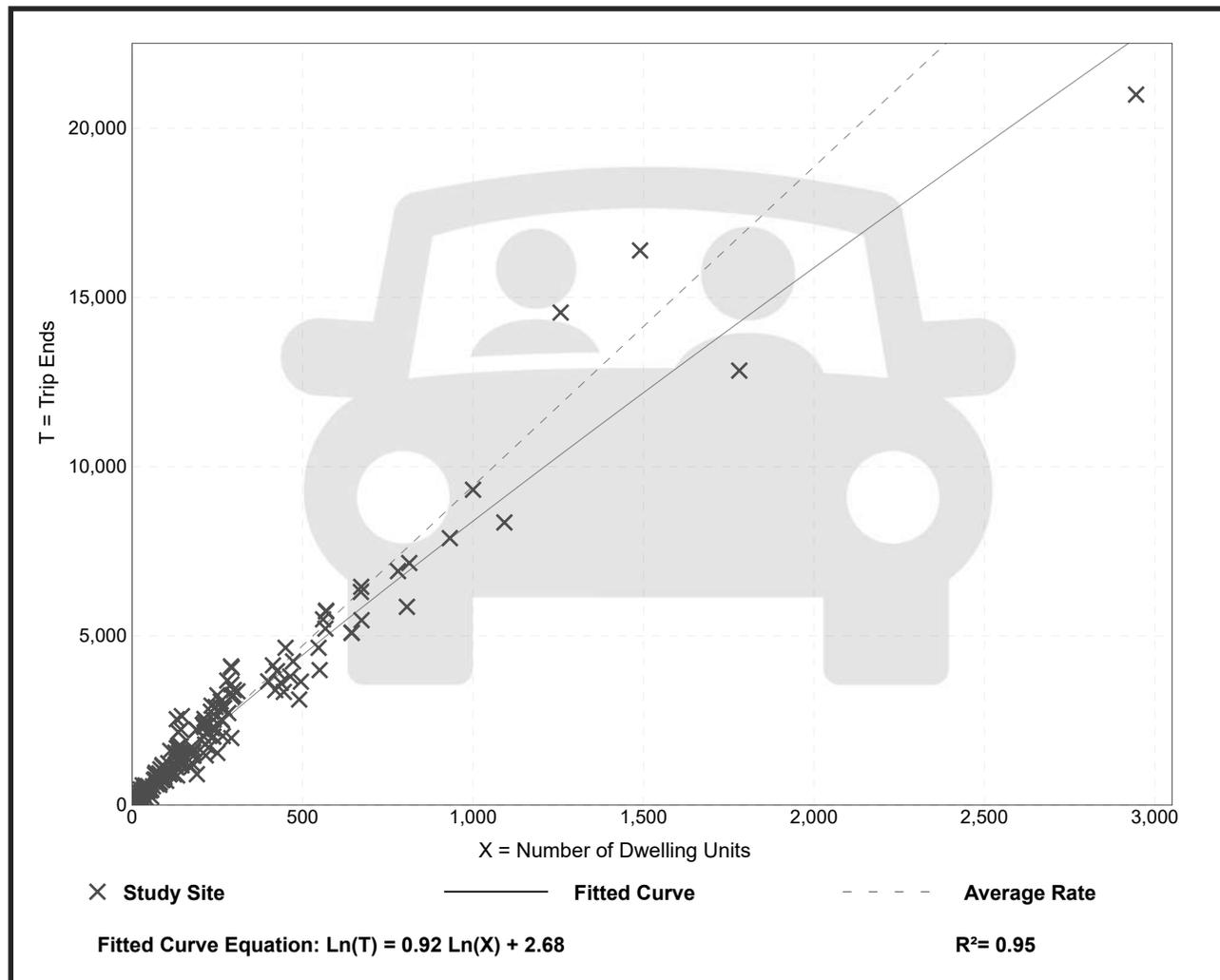
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

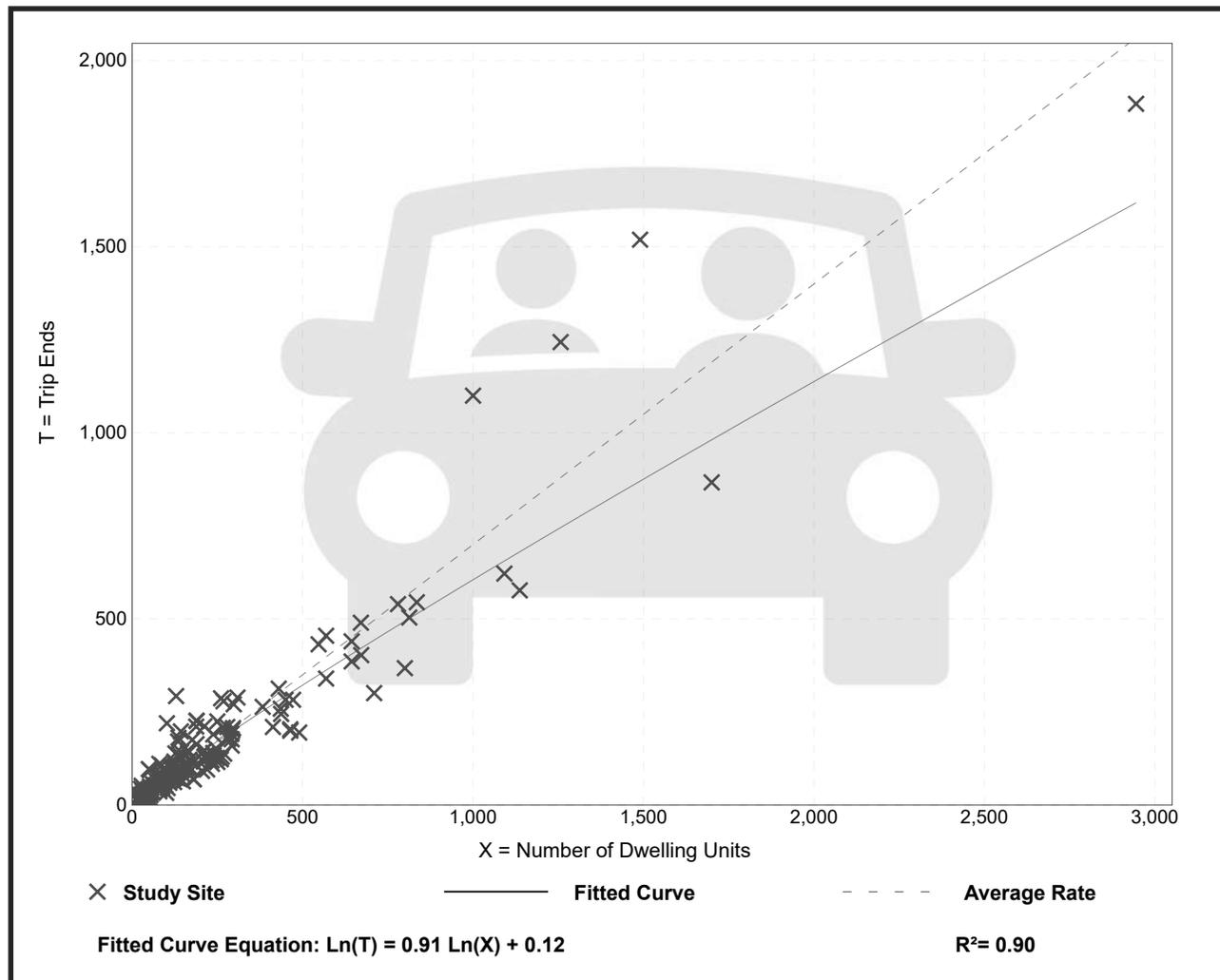
Setting/Location: General Urban/Suburban

Number of Studies: 192
 Avg. Num. of Dwelling Units: 226
 Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

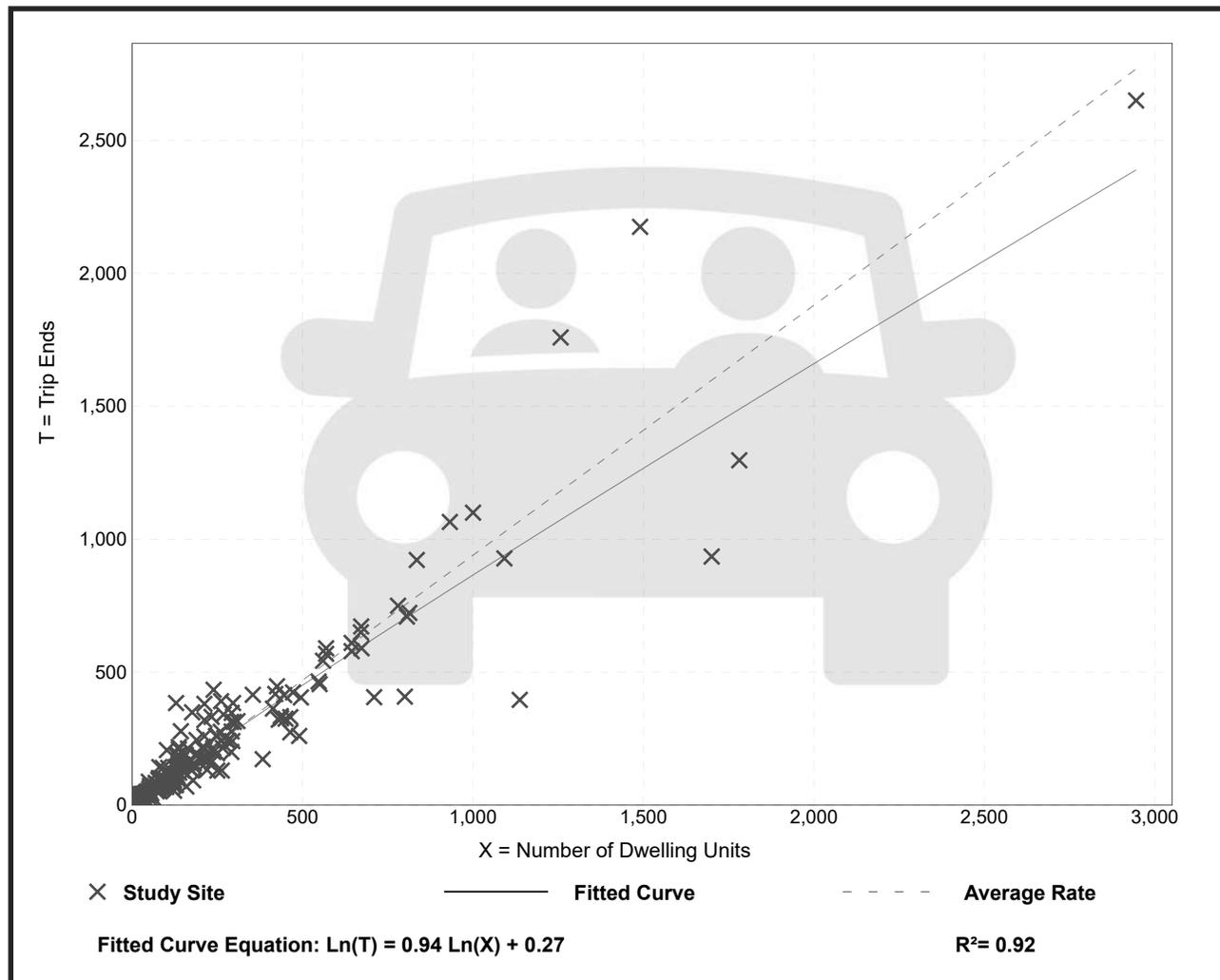
Setting/Location: General Urban/Suburban

Number of Studies: 208
 Avg. Num. of Dwelling Units: 248
 Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast Excel



Peak Hour Forecast Intersection Volumes

Annual Growth Rate: 1 %
of Years to Horizon: 5
2029

AM

1. SR 305 & Lincoln Rd

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	68	925	158	216	133	69	64	576	49	53	110	35
Project Trips	0	0	7	21	2	0	0	0	0	0	1	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	71	972	166	227	140	73	67	605	51	56	116	37
With	71	972	173	248	142	73	67	605	51	56	117	37

2. SR 305 & Hostmark St

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	15	857	177	150	69	61	38	436	45	60	100	22
Project Trips	0	0	0	0	2	2	1	0	0	0	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	16	901	186	158	73	64	40	458	47	63	105	23
With	16	901	186	158	75	66	41	458	47	63	105	23

3. Lincoln Rd & Caldart Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	29	66	20	7	164	103	35	30	112	168	77	5
Project Trips	0	0	0	0	0	0	0	0	23	8	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	30	69	21	7	172	108	37	32	118	177	81	5
With	30	69	21	7	172	108	37	32	141	185	81	5

4. Mesford St & Caldart Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	3	368	55	129	0	29	16	130	0	2	0	3
Project Trips	0	0	8	23	0	0	0	0	0	0	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	3	387	58	136	0	30	17	137	0	2	0	3
With	3	387	66	159	0	30	17	137	0	2	0	3

5. Hostmark St & Caldart Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	61	19	106	53	144	2	21	29	44	27	218	44
Project Trips	0	0	0	0	4	0	0	0	0	0	1	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	64	20	111	56	151	2	22	30	46	28	229	46
With	64	20	111	56	155	2	22	30	46	28	230	46

6. Noll Rd & Mesford St

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	3	2	1	0	23	86	54	1	102	53	25	0
Project Trips	8	8	0	0	15	8	3	2	0	0	5	3
Traffic Reroute	3	13	0	0	-3	-13	-8	8	0	0	-4	4
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	6	15	1	0	21	77	49	9	107	56	22	4
With	14	23	1	0	36	85	52	11	107	56	27	7

7. Noll Rd & Hostmark St

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	92	45	1	10	22	8	2	22	74	68	10	119
Project Trips	4	12	0	0	0	0	0	4	0	0	0	1
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	97	47	1	11	23	8	2	23	78	71	11	125
With	101	59	1	11	23	8	2	27	78	71	11	126

PM

1. SR 305 & Lincoln Rd

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	55	790	171	179	173	107	115	987	69	79	208	72
Project Trips	0	0	23	14	1	0	0	0	0	0	3	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	58	830	180	188	182	112	121	1,037	73	83	219	76
With	58	830	203	202	183	112	121	1,037	73	83	222	76

2. SR 305 & Hostmark St

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	38	752	184	113	67	50	70	862	101	95	143	61
Project Trips	0	0	0	0	2	1	2	0	0	0	3	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	40	790	193	119	70	53	74	906	106	100	150	64
With	40	790	193	119	72	54	76	906	106	100	153	64

3. Lincoln Rd & Caldart Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	28	56	24	39	199	63	54	66	125	159	339	48
Project Trips	0	0	0	0	0	0	0	0	15	26	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	29	59	25	41	209	66	57	69	131	167	356	50
With	29	59	25	41	209	66	57	69	146	193	356	50

4. Mesford St & Caldart Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	5	196	83	70	1	13	15	174	2	1	1	4
Project Trips	0	0	26	15	0	0	0	0	0	0	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	5	206	87	74	1	14	16	183	2	1	1	4
With	5	206	113	89	1	14	16	183	2	1	1	4

5. Hostmark St & Caldart Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	58	39	68	41	106	7	10	33	45	63	168	84
Project Trips	0	0	0	0	3	0	0	0	0	0	5	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	61	41	71	43	111	7	11	35	47	66	177	88
With	61	41	71	43	114	7	11	35	47	66	182	88

6. Noll Rd & Mesford St

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	31	40	57	0	47	35	27	4
Project Trips	5	5	0	0	10	6	9	9	0	0	17	9
Traffic Reroute	4	7	0	0	-4	-7	-9	9	0	0	-4	4
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	4	7	0	0	29	35	51	9	49	37	24	8
With	9	12	0	0	39	41	60	18	49	37	41	17

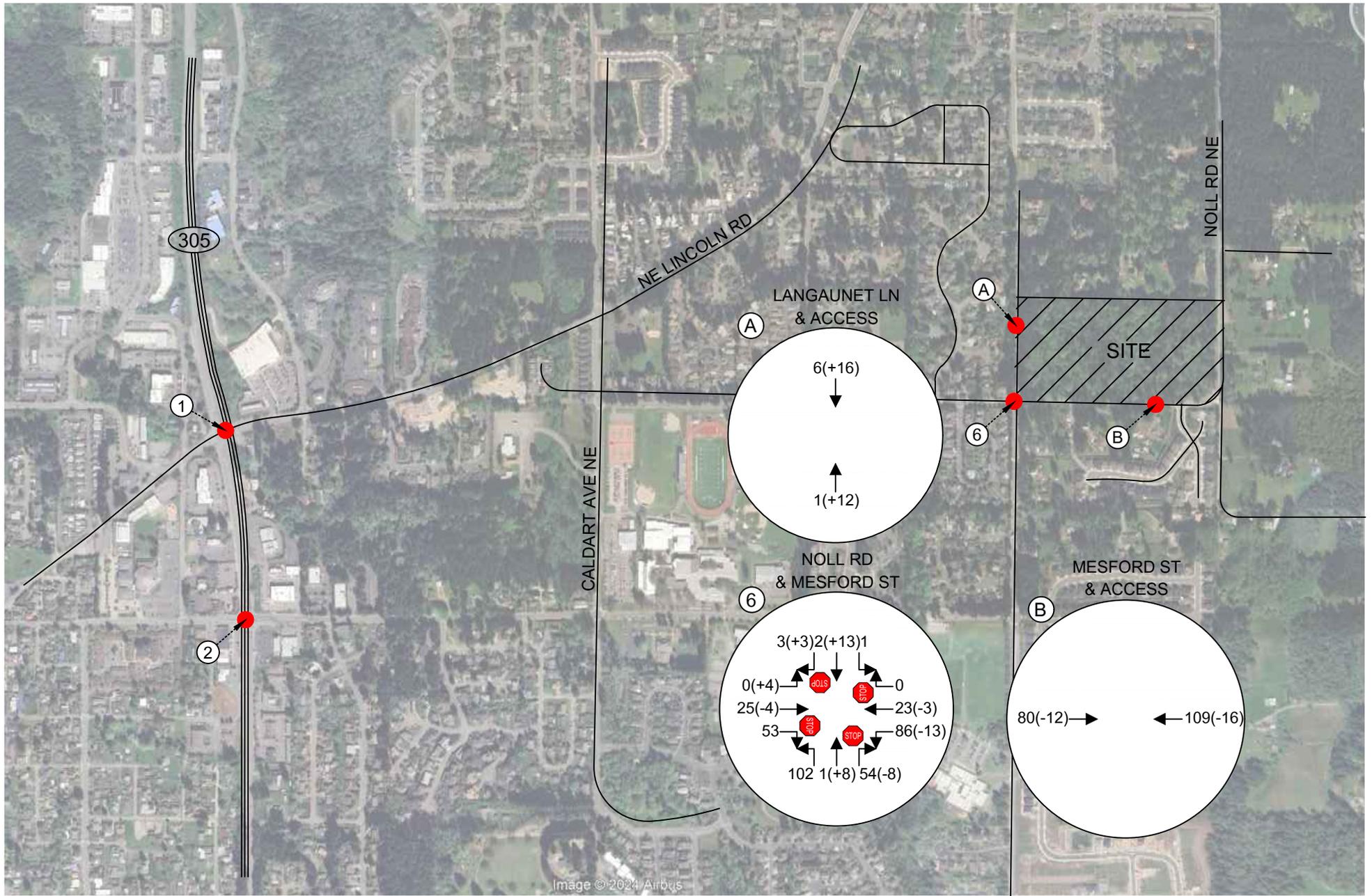
7. Noll Rd & Hostmark St

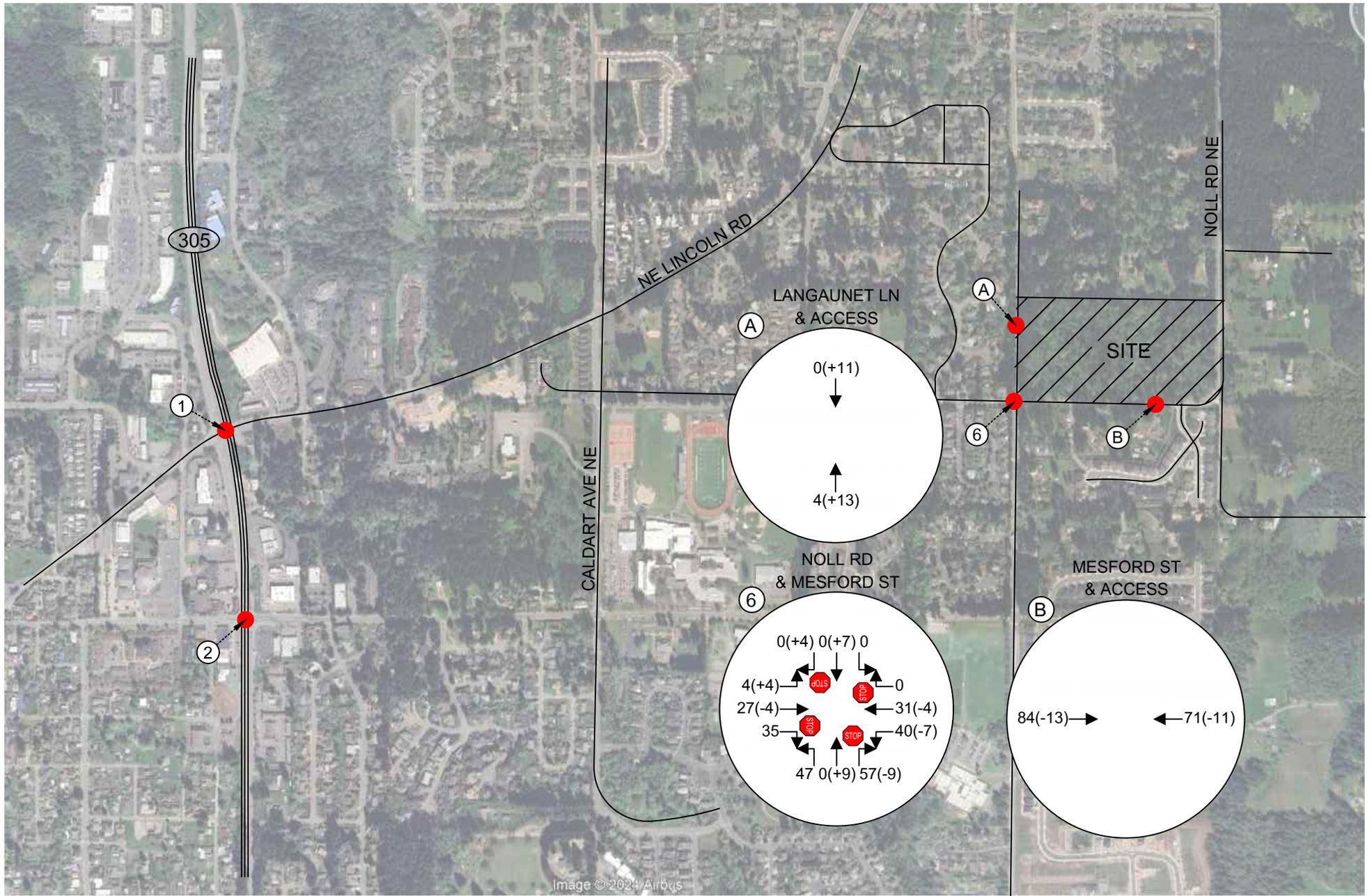
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	25	34	12	7	19	6	6	64	68	60	28	34
Project Trips	3	8	0	0	0	0	0	13	0	0	0	5
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Without	26	36	13	7	20	6	6	67	71	63	29	36
With	29	44	13	7	20	6	6	80	71	63	29	41

SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX Traffic Reroute







SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Existing AM Peak Hour LOS



HCM 7th Signalized Intersection Summary
 1: SR 305 & NE Iverson St/NE Lincoln Rd

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	110	53	69	133	216	49	576	64	158	925	68
Future Volume (veh/h)	35	110	53	69	133	216	49	576	64	158	925	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1786	1744	1786	1772	1786	1786	1744	1688	1758	1660	1772
Adj Flow Rate, veh/h	39	122	59	77	148	240	54	640	71	176	1028	76
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	1	4	1	2	1	1	4	8	3	10	2
Cap, veh/h	80	261	215	122	301	256	100	1043	116	217	1244	92
Arrive On Green	0.05	0.15	0.15	0.07	0.17	0.17	0.06	0.35	0.35	0.13	0.42	0.42
Sat Flow, veh/h	1674	1786	1472	1701	1772	1506	1701	3006	333	1674	2976	220
Grp Volume(v), veh/h	39	122	59	77	148	240	54	352	359	176	544	560
Grp Sat Flow(s),veh/h/ln	1674	1786	1472	1701	1772	1506	1701	1657	1682	1674	1577	1619
Q Serve(g_s), s	1.4	3.8	2.2	2.7	4.6	9.6	1.9	10.8	10.8	6.3	18.8	18.8
Cycle Q Clear(g_c), s	1.4	3.8	2.2	2.7	4.6	9.6	1.9	10.8	10.8	6.3	18.8	18.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.14
Lane Grp Cap(c), veh/h	80	261	215	122	301	256	100	575	584	217	659	677
V/C Ratio(X)	0.49	0.47	0.27	0.63	0.49	0.94	0.54	0.61	0.61	0.81	0.83	0.83
Avail Cap(c_a), veh/h	285	304	250	289	301	256	289	815	828	285	776	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	23.9	23.2	27.6	23.0	25.1	28.0	16.6	16.6	25.9	15.8	15.8
Incr Delay (d2), s/veh	4.6	1.3	0.7	5.3	1.2	39.6	4.4	1.1	1.1	12.5	6.4	6.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.6	0.8	1.2	1.9	6.1	0.8	3.6	3.7	3.0	6.6	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.0	25.2	23.9	32.9	24.2	64.6	32.4	17.6	17.6	38.4	22.2	22.1
LnGrp LOS	C	C	C	C	C	E	C	B	B	D	C	C
Approach Vol, veh/h		220			465			765			1280	
Approach Delay, s/veh		26.3			46.5			18.7			24.4	
Approach LOS		C			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	30.5	7.5	15.0	12.5	26.1	9.0	13.5				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	10.4	30.1	10.4	10.4	10.4	30.1	10.4	10.4				
Max Q Clear Time (g_c+I1), s	3.9	20.8	3.4	11.6	8.3	12.8	4.7	5.8				
Green Ext Time (p_c), s	0.0	4.6	0.0	0.0	0.1	3.9	0.1	0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			26.7									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
2: SR 305 & NE Hostmark St

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	100	60	61	69	150	45	436	38	177	857	15
Future Volume (veh/h)	22	100	60	61	69	150	45	436	38	177	857	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1730	1744	1758	1758	1786	1702	1744	1716	1758	1702	1688	1702
Adj Flow Rate, veh/h	24	109	65	66	75	163	49	474	41	192	932	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	4	3	3	1	7	4	6	3	7	8	7
Cap, veh/h	55	234	198	117	304	244	96	1007	87	192	1265	22
Arrive On Green	0.03	0.13	0.13	0.07	0.17	0.17	0.06	0.33	0.33	0.12	0.39	0.39
Sat Flow, veh/h	1647	1744	1476	1674	1786	1432	1661	3035	262	1621	3225	55
Grp Volume(v), veh/h	24	109	65	66	75	163	49	254	261	192	463	485
Grp Sat Flow(s),veh/h/ln	1647	1744	1476	1674	1786	1432	1661	1630	1667	1621	1603	1678
Q Serve(g_s), s	0.8	3.1	2.2	2.1	2.0	5.8	1.5	6.7	6.7	6.4	13.3	13.3
Cycle Q Clear(g_c), s	0.8	3.1	2.2	2.1	2.0	5.8	1.5	6.7	6.7	6.4	13.3	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.03
Lane Grp Cap(c), veh/h	55	234	198	117	304	244	96	541	553	192	629	658
V/C Ratio(X)	0.43	0.47	0.33	0.56	0.25	0.67	0.51	0.47	0.47	1.00	0.74	0.74
Avail Cap(c_a), veh/h	317	658	557	322	674	540	197	1360	1391	192	1338	1400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	21.6	21.2	24.3	19.4	21.0	24.7	14.3	14.3	23.8	14.0	14.0
Incr Delay (d2), s/veh	5.3	1.4	1.0	4.2	0.4	3.1	4.1	0.5	0.5	65.1	1.5	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.3	0.8	0.9	0.8	2.0	0.7	2.1	2.2	5.6	4.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.9	23.1	22.1	28.6	19.8	24.1	28.9	14.8	14.9	88.9	15.5	15.4
LnGrp LOS	C	C	C	C	B	C	C	B	B	F	B	B
Approach Vol, veh/h		198			304			564			1140	
Approach Delay, s/veh		23.7			24.0			16.1			27.8	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	26.1	6.4	13.8	11.0	22.8	8.4	11.9				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	6.4	45.1	10.4	20.4	6.4	45.1	10.4	20.4				
Max Q Clear Time (g_c+I1), s	3.5	15.3	2.8	7.8	8.4	8.7	4.1	5.1				
Green Ext Time (p_c), s	0.0	5.6	0.0	0.7	0.0	2.7	0.1	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			23.9									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
3: Caldart Ave NE & NE Lincoln Rd

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	77	168	103	164	7	112	30	35	20	66	29
Future Volume (veh/h)	5	77	168	103	164	7	112	30	35	20	66	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		1.00	1.00		0.97	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	9	138	0	184	293	12	200	54	62	36	118	52
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	284		468	449	18	255	225	258	72	222	98
Arrive On Green	0.01	0.15	0.00	0.11	0.25	0.25	0.14	0.29	0.29	0.04	0.18	0.18
Sat Flow, veh/h	1781	1870	1585	1781	1782	73	1781	784	900	1781	1207	532
Grp Volume(v), veh/h	9	138	0	184	0	305	200	0	116	36	0	170
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1855	1781	0	1684	1781	0	1739
Q Serve(g_s), s	0.2	3.0	0.0	3.5	0.0	6.5	4.8	0.0	2.3	0.9	0.0	3.9
Cycle Q Clear(g_c), s	0.2	3.0	0.0	3.5	0.0	6.5	4.8	0.0	2.3	0.9	0.0	3.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.53	1.00		0.31
Lane Grp Cap(c), veh/h	294	284		468	0	467	255	0	484	72	0	320
V/C Ratio(X)	0.03	0.49		0.39	0.00	0.65	0.78	0.00	0.24	0.50	0.00	0.53
Avail Cap(c_a), veh/h	475	824		475	0	821	384	0	833	231	0	711
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	17.1	0.0	12.1	0.0	14.8	18.2	0.0	12.0	20.7	0.0	16.2
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.5	0.0	1.5	5.9	0.0	0.3	5.3	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.2	0.0	1.2	0.0	2.5	2.1	0.0	0.8	0.4	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	18.4	0.0	12.6	0.0	16.3	24.1	0.0	12.3	26.0	0.0	17.6
LnGrp LOS	B	B		B		B	C		B	C		B
Approach Vol, veh/h		147			489			316			206	
Approach Delay, s/veh		18.2			14.9			19.8			19.1	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	11.2	10.8	12.6	5.0	15.6	6.3	17.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	19.4	9.5	18.0	5.0	19.5	5.7	21.8				
Max Q Clear Time (g_c+I1), s	5.5	5.0	6.8	5.9	2.2	8.5	2.9	4.3				
Green Ext Time (p_c), s	0.0	0.5	0.1	0.7	0.0	1.3	0.0	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			17.4									
HCM 7th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 7th TWSC
4: Caldart Ave NE & NE Mesford Rd

Existing AM Peak Hour

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	2	29	0	129	0	130	16	55	368	3
Future Vol, veh/h	3	0	2	29	0	129	0	130	16	55	368	3
Conflicting Peds, #/hr	5	0	10	21	0	16	10	0	21	16	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	1	1	1	7	1	2	1	2	19	6	1	1
Mvmt Flow	5	0	3	44	0	195	0	197	24	83	558	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	949	979	591	975	969	246	572	0	0	242	0	0
Stage 1	737	737	-	230	230	-	-	-	-	-	-	-
Stage 2	213	242	-	745	739	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.17	6.51	6.22	4.11	-	-	4.16	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.17	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.17	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.563	4.009	3.318	2.209	-	-	2.254	-	-
Pot Cap-1 Maneuver	241	251	509	226	255	793	1006	-	-	1301	-	-
Stage 1	412	426	-	762	716	-	-	-	-	-	-	-
Stage 2	791	707	-	398	425	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	158	221	494	195	224	765	996	-	-	1275	-	-
Mov Cap-2 Maneuver	158	221	-	195	224	-	-	-	-	-	-	-
Stage 1	408	382	-	746	701	-	-	-	-	-	-	-
Stage 2	580	693	-	351	381	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v22.14		18.74	0	1.04
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	996	-	-	218	498	1275	-	-
HCM Lane V/C Ratio	-	-	-	0.035	0.481	0.065	-	-
HCM Control Delay (s/veh)	0	-	-	22.1	18.7	8	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.6	0.2	-	-

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	↔
Traffic Vol, veh/h	44	218	27	2	144	53	44	29	21	106	19	61
Future Vol, veh/h	44	218	27	2	144	53	44	29	21	106	19	61
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	1	6	4	1	9	6	1	1	5	6	1	2
Mvmt Flow	58	287	36	3	189	70	58	38	28	139	25	80
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	15.8	12.3	11.1	11.9
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	47%	15%	1%	85%	0%
Vol Thru, %	31%	75%	72%	15%	0%
Vol Right, %	22%	9%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	94	289	199	125	61
LT Vol	44	44	2	106	0
Through Vol	29	218	144	19	0
RT Vol	21	27	53	0	61
Lane Flow Rate	124	380	262	164	80
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.215	0.577	0.402	0.32	0.129
Departure Headway (Hd)	6.271	5.464	5.533	7.015	5.783
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	569	658	647	510	616
Service Time	4.353	3.522	3.598	4.784	3.551
HCM Lane V/C Ratio	0.218	0.578	0.405	0.322	0.13
HCM Control Delay, s/veh	11.1	15.8	12.3	13.1	9.4
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	0.8	3.7	1.9	1.4	0.4

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	25	53	86	23	0	102	1	54	1	2	3
Future Vol, veh/h	0	25	53	86	23	0	102	1	54	1	2	3
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles, %	1	8	11	4	13	1	2	1	2	1	1	1
Mvmt Flow	0	39	83	134	36	0	159	2	84	2	3	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	9.4	9.6	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	65%	0%	79%	17%
Vol Thru, %	1%	32%	21%	33%
Vol Right, %	34%	68%	0%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	157	78	109	6
LT Vol	102	0	86	1
Through Vol	1	25	23	2
RT Vol	54	53	0	3
Lane Flow Rate	245	122	170	9
Geometry Grp	1	1	1	1
Degree of Util (X)	0.311	0.15	0.23	0.012
Departure Headway (Hd)	4.558	4.442	4.867	4.641
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	787	806	737	768
Service Time	2.591	2.481	2.904	2.69
HCM Lane V/C Ratio	0.311	0.151	0.231	0.012
HCM Control Delay, s/veh	9.6	8.3	9.4	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.5	0.9	0

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵			↕	
Traffic Vol, veh/h	119	10	68	8	22	10	74	22	2	1	45	92
Future Vol, veh/h	119	10	68	8	22	10	74	22	2	1	45	92
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	3	1	10	1	1	1	4	1	1	1	2	9
Mvmt Flow	180	15	103	12	33	15	112	33	3	2	68	139
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.2	8.7	10	9.6
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	60%	20%	1%
Vol Thru, %	0%	92%	5%	55%	33%
Vol Right, %	0%	8%	35%	25%	67%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	24	197	40	138
LT Vol	74	0	119	8	1
Through Vol	0	22	10	22	45
RT Vol	0	2	68	10	92
Lane Flow Rate	112	36	298	61	209
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.192	0.056	0.401	0.086	0.274
Departure Headway (Hd)	6.168	5.552	4.841	5.108	4.726
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	577	639	737	693	753
Service Time	3.958	3.341	2.909	3.205	2.806
HCM Lane V/C Ratio	0.194	0.056	0.404	0.088	0.278
HCM Control Delay, s/veh	10.4	8.7	11.2	8.7	9.6
HCM Lane LOS	B	A	B	A	A
HCM 95th-tile Q	0.7	0.2	1.9	0.3	1.1

SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Existing PM Peak Hour LOS



HCM 7th Signalized Intersection Summary
 1: SR 305 & NE Iverson St/NE Lincoln Rd

Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	208	79	107	173	179	69	987	115	171	790	55
Future Volume (veh/h)	72	208	79	107	173	179	69	987	115	171	790	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1758	1786	1786	1786	1786	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	74	214	81	110	178	185	71	1018	119	176	814	57
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	3	1	1	1	1	3	3	1	1	1
Cap, veh/h	110	258	209	140	290	239	108	1164	136	214	1441	101
Arrive On Green	0.06	0.14	0.14	0.08	0.16	0.16	0.06	0.39	0.39	0.13	0.45	0.45
Sat Flow, veh/h	1701	1786	1448	1701	1786	1474	1701	3011	352	1701	3209	225
Grp Volume(v), veh/h	74	214	81	110	178	185	71	564	573	176	430	441
Grp Sat Flow(s),veh/h/ln	1701	1786	1448	1701	1786	1474	1701	1670	1692	1701	1697	1738
Q Serve(g_s), s	3.0	8.3	3.6	4.5	6.6	8.6	2.9	22.4	22.5	7.2	13.4	13.4
Cycle Q Clear(g_c), s	3.0	8.3	3.6	4.5	6.6	8.6	2.9	22.4	22.5	7.2	13.4	13.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.13
Lane Grp Cap(c), veh/h	110	258	209	140	290	239	108	646	655	214	762	780
V/C Ratio(X)	0.67	0.83	0.39	0.79	0.61	0.77	0.66	0.87	0.87	0.82	0.56	0.56
Avail Cap(c_a), veh/h	247	259	210	247	290	239	247	701	711	247	762	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	29.8	27.8	32.3	27.9	28.8	32.8	20.4	20.4	30.6	14.6	14.6
Incr Delay (d2), s/veh	7.0	19.6	1.2	9.4	3.8	14.6	6.7	11.2	11.2	17.7	1.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.9	1.3	2.2	3.1	3.9	1.3	9.6	9.7	3.8	4.6	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.8	49.4	28.9	41.7	31.8	43.3	39.5	31.6	31.5	48.2	15.5	15.5
LnGrp LOS	D	D	C	D	C	D	D	C	C	D	B	B
Approach Vol, veh/h		369			473			1208			1047	
Approach Delay, s/veh		43.0			38.6			32.0			21.0	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	37.1	9.2	16.2	13.6	32.6	10.5	15.0				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	10.4	30.1	10.4	10.4	10.4	30.1	10.4	10.4				
Max Q Clear Time (g_c+I1), s	4.9	15.4	5.0	10.6	9.2	24.5	6.5	10.3				
Green Ext Time (p_c), s	0.1	4.5	0.1	0.0	0.1	3.2	0.1	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			30.6									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
 2: SR 305 & NE Hostmark St

Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	143	95	50	67	113	101	862	70	184	752	38
Future Volume (veh/h)	61	143	95	50	67	113	101	862	70	184	752	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1786	1786	1786	1772	1772	1786	1744	1786	1786	1786	1758
Adj Flow Rate, veh/h	63	147	98	52	69	116	104	889	72	190	775	39
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	1	1	1	2	2	1	4	1	1	1	3
Cap, veh/h	107	275	228	97	261	217	136	1211	98	173	1355	68
Arrive On Green	0.06	0.15	0.15	0.06	0.15	0.15	0.08	0.39	0.39	0.10	0.41	0.41
Sat Flow, veh/h	1688	1786	1484	1701	1772	1474	1701	3100	251	1701	3285	165
Grp Volume(v), veh/h	63	147	98	52	69	116	104	475	486	190	400	414
Grp Sat Flow(s),veh/h/ln	1688	1786	1484	1701	1772	1474	1701	1657	1695	1701	1697	1754
Q Serve(g_s), s	2.3	4.8	3.8	1.9	2.2	4.6	3.8	15.4	15.4	6.4	11.4	11.4
Cycle Q Clear(g_c), s	2.3	4.8	3.8	1.9	2.2	4.6	3.8	15.4	15.4	6.4	11.4	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.09
Lane Grp Cap(c), veh/h	107	275	228	97	261	217	136	647	662	173	700	724
V/C Ratio(X)	0.59	0.53	0.43	0.54	0.26	0.53	0.77	0.73	0.73	1.10	0.57	0.57
Avail Cap(c_a), veh/h	279	578	481	281	574	477	173	1186	1214	173	1215	1256
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.7	24.6	24.1	28.9	23.8	24.9	28.4	16.4	16.4	28.3	14.2	14.2
Incr Delay (d2), s/veh	5.0	1.6	1.3	4.6	0.5	2.0	14.3	1.4	1.4	97.5	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.1	1.4	0.9	0.9	1.7	2.0	5.1	5.2	7.1	3.8	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.7	26.2	25.4	33.5	24.4	26.9	42.7	17.8	17.8	125.8	14.9	14.8
LnGrp LOS	C	C	C	C	C	C	D	B	B	F	B	B
Approach Vol, veh/h		308			237			1065			1004	
Approach Delay, s/veh		27.5			27.6			20.2			35.8	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	30.9	8.6	13.9	11.0	29.5	8.2	14.3				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	6.4	45.1	10.4	20.4	6.4	45.1	10.4	20.4				
Max Q Clear Time (g_c+I1), s	5.8	13.4	4.3	6.6	8.4	17.4	3.9	6.8				
Green Ext Time (p_c), s	0.0	4.6	0.1	0.6	0.0	5.6	0.0	0.9				
Intersection Summary												
HCM 7th Control Delay, s/veh			27.7									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
 3: Caldart Ave NE & NE Lincoln Rd

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	339	159	63	199	39	125	66	54	24	56	28
Future Volume (veh/h)	48	339	159	63	199	39	125	66	54	24	56	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1885	1885	1885	1870	1885	1870	1885	1885	1885
Adj Flow Rate, veh/h	51	357	0	66	209	41	132	69	57	25	59	29
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	1	1	1	1	2	1	2	1	1	1
Cap, veh/h	461	506		393	428	84	172	183	151	54	151	74
Arrive On Green	0.05	0.27	0.00	0.06	0.28	0.28	0.10	0.20	0.20	0.03	0.13	0.13
Sat Flow, veh/h	1795	1870	1598	1795	1522	298	1781	939	775	1795	1172	576
Grp Volume(v), veh/h	51	357	0	66	0	250	132	0	126	25	0	88
Grp Sat Flow(s),veh/h/ln	1795	1870	1598	1795	0	1820	1781	0	1714	1795	0	1748
Q Serve(g_s), s	0.8	7.0	0.0	1.0	0.0	4.7	3.0	0.0	2.6	0.6	0.0	1.9
Cycle Q Clear(g_c), s	0.8	7.0	0.0	1.0	0.0	4.7	3.0	0.0	2.6	0.6	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.45	1.00		0.33
Lane Grp Cap(c), veh/h	461	506		393	0	512	172	0	334	54	0	225
V/C Ratio(X)	0.11	0.71		0.17	0.00	0.49	0.77	0.00	0.38	0.46	0.00	0.39
Avail Cap(c_a), veh/h	584	887		501	0	867	413	0	913	250	0	769
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.9	13.5	0.0	10.0	0.0	12.3	18.0	0.0	14.3	19.5	0.0	16.4
Incr Delay (d2), s/veh	0.1	1.8	0.0	0.2	0.0	0.7	7.0	0.0	0.7	6.0	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.6	0.0	0.3	0.0	1.6	1.4	0.0	0.9	0.3	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.0	15.3	0.0	10.2	0.0	13.0	25.1	0.0	15.0	25.5	0.0	17.5
LnGrp LOS	A	B		B		B	C		B	C		B
Approach Vol, veh/h		408			316			258				113
Approach Delay, s/veh		14.6			12.4			20.2				19.2
Approach LOS		B			B			C				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	15.6	8.4	9.8	6.7	16.0	5.7	12.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	19.4	9.5	18.0	5.0	19.5	5.7	21.8				
Max Q Clear Time (g_c+I1), s	3.0	9.0	5.0	3.9	2.8	6.7	2.6	4.6				
Green Ext Time (p_c), s	0.0	1.5	0.1	0.3	0.0	1.1	0.0	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			15.8									
HCM 7th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

HCM 7th TWSC
4: Caldart Ave NE & NE Mesford Rd

Existing PM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	1	1	13	1	70	2	174	15	83	196	5
Future Vol, veh/h	4	1	1	13	1	70	2	174	15	83	196	5
Conflicting Peds, #/hr	5	0	7	6	0	4	7	0	6	4	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	1	1	14	1	78	2	193	17	92	218	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	615	632	235	622	627	213	230	0	0	216	0	0
Stage 1	412	412	-	212	212	-	-	-	-	-	-	-
Stage 2	203	220	-	410	415	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	405	399	807	401	402	830	1343	-	-	1360	-	-
Stage 1	619	596	-	792	729	-	-	-	-	-	-	-
Stage 2	801	723	-	621	594	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	332	362	796	363	365	821	1335	-	-	1352	-	-
Mov Cap-2 Maneuver	332	362	-	363	365	-	-	-	-	-	-	-
Stage 1	614	546	-	786	723	-	-	-	-	-	-	-
Stage 2	719	717	-	567	544	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	14.81	11.15	0.08	2.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1335	-	-	374	678	1352	-	-
HCM Lane V/C Ratio	0.002	-	-	0.018	0.138	0.068	-	-
HCM Control Delay (s/veh)	7.7	0	-	14.8	11.2	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.2	-	-

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	84	168	63	7	106	41	45	33	10	68	39	58
Future Vol, veh/h	84	168	63	7	106	41	45	33	10	68	39	58
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	1	1	1	1	1	1	7	6	1	1	1	2
Mvmt Flow	88	177	66	7	112	43	47	35	11	72	41	61
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	11.6	9.4	9.7	9.7
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	51%	27%	5%	64%	0%
Vol Thru, %	38%	53%	69%	36%	0%
Vol Right, %	11%	20%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	88	315	154	107	58
LT Vol	45	84	7	68	0
Through Vol	33	168	106	39	0
RT Vol	10	63	41	0	58
Lane Flow Rate	93	332	162	113	61
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.147	0.439	0.225	0.195	0.088
Departure Headway (Hd)	5.707	4.769	5.003	6.222	5.191
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	631	746	721	579	693
Service Time	3.721	2.862	3.003	3.932	2.901
HCM Lane V/C Ratio	0.147	0.445	0.225	0.195	0.088
HCM Control Delay, s/veh	9.7	11.6	9.4	10.4	8.4
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.5	2.3	0.9	0.7	0.3

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	27	35	40	31	0	47	0	57	0	0	0
Future Vol, veh/h	4	27	35	40	31	0	47	0	57	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	1	1	3	1	10	1	4	1	1	1	1	1
Mvmt Flow	5	31	40	46	36	0	54	0	66	0	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.3	7.8	7.7	0
HCM LOS	A	A	A	-

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	6%	56%	0%
Vol Thru, %	0%	41%	44%	100%
Vol Right, %	55%	53%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	66	71	0
LT Vol	47	4	40	0
Through Vol	0	27	31	0
RT Vol	57	35	0	0
Lane Flow Rate	120	76	82	0
Geometry Grp	1	1	1	1
Degree of Util (X)	0.133	0.082	0.097	0
Departure Headway (Hd)	3.999	3.883	4.298	4.385
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	886	910	826	0
Service Time	2.073	1.958	2.365	2.385
HCM Lane V/C Ratio	0.135	0.084	0.099	0
HCM Control Delay, s/veh	7.7	7.3	7.8	7.4
HCM Lane LOS	A	A	A	N
HCM 95th-tile Q	0.5	0.3	0.3	0

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵			↕	
Traffic Vol, veh/h	34	28	60	6	19	7	68	64	6	12	34	25
Future Vol, veh/h	34	28	60	6	19	7	68	64	6	12	34	25
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	6	1	1	1	1	1	3	1	1	1	1	1
Mvmt Flow	37	30	65	6	20	8	73	69	6	13	37	27
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	8.2	7.7	8.5	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	28%	19%	17%
Vol Thru, %	0%	91%	23%	59%	48%
Vol Right, %	0%	9%	49%	22%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	68	70	122	32	71
LT Vol	68	0	34	6	12
Through Vol	0	64	28	19	34
RT Vol	0	6	60	7	25
Lane Flow Rate	73	75	131	34	76
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.112	0.102	0.158	0.043	0.093
Departure Headway (Hd)	5.491	4.894	4.348	4.518	4.396
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	654	734	826	794	816
Service Time	3.209	2.612	2.364	2.538	2.417
HCM Lane V/C Ratio	0.112	0.102	0.159	0.043	0.093
HCM Control Delay, s/veh	8.9	8.2	8.2	7.7	7.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.3	0.6	0.1	0.3

SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast AM Without (LOS)



HCM 7th Signalized Intersection Summary
 1: SR 305 & NE Iverson St/NE Lincoln Rd

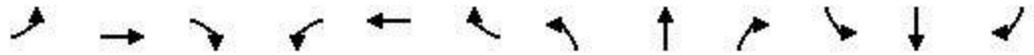
Forecast 2029 AM Peak Hour
 Without Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	116	56	73	140	227	51	605	67	166	972	71
Future Volume (veh/h)	37	116	56	73	140	227	51	605	67	166	972	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1786	1744	1786	1772	1786	1786	1744	1688	1758	1660	1772
Adj Flow Rate, veh/h	37	116	56	73	140	227	51	605	67	166	972	71
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	1	4	1	2	1	1	4	8	3	10	2
Cap, veh/h	77	269	222	120	310	264	98	1024	113	207	1210	88
Arrive On Green	0.05	0.15	0.15	0.07	0.18	0.18	0.06	0.34	0.34	0.12	0.41	0.41
Sat Flow, veh/h	1674	1786	1472	1701	1772	1506	1701	3007	332	1674	2979	218
Grp Volume(v), veh/h	37	116	56	73	140	227	51	333	339	166	514	529
Grp Sat Flow(s),veh/h/ln	1674	1786	1472	1701	1772	1506	1701	1657	1682	1674	1577	1620
Q Serve(g_s), s	1.3	3.5	2.0	2.5	4.2	8.7	1.7	9.8	9.9	5.7	17.1	17.1
Cycle Q Clear(g_c), s	1.3	3.5	2.0	2.5	4.2	8.7	1.7	9.8	9.9	5.7	17.1	17.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.13
Lane Grp Cap(c), veh/h	77	269	222	120	310	264	98	564	573	207	641	658
V/C Ratio(X)	0.48	0.43	0.25	0.61	0.45	0.86	0.52	0.59	0.59	0.80	0.80	0.80
Avail Cap(c_a), veh/h	293	313	258	298	310	264	298	840	853	293	799	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	22.9	22.3	26.8	21.9	23.8	27.2	16.2	16.2	25.3	15.5	15.5
Incr Delay (d2), s/veh	4.5	1.1	0.6	4.9	1.0	23.9	4.3	1.0	1.0	10.2	4.8	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.5	0.7	1.1	1.7	4.7	0.8	3.3	3.4	2.6	5.8	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.2	24.0	22.9	31.6	23.0	47.7	31.4	17.2	17.2	35.6	20.3	20.2
LnGrp LOS	C	C	C	C	C	D	C	B	B	D	C	C
Approach Vol, veh/h		209			440			723			1209	
Approach Delay, s/veh		25.1			37.2			18.2			22.4	
Approach LOS		C			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	29.0	7.3	15.0	11.9	25.1	8.8	13.5				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	10.4	30.1	10.4	10.4	10.4	30.1	10.4	10.4				
Max Q Clear Time (g_c+I1), s	3.7	19.1	3.3	10.7	7.7	11.9	4.5	5.5				
Green Ext Time (p_c), s	0.0	4.8	0.0	0.0	0.1	3.7	0.1	0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			23.9									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
2: SR 305 & NE Hostmark St

Forecast 2029 AM Peak Hour
Without Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	105	63	64	73	158	47	458	40	186	901	16
Future Volume (veh/h)	23	105	63	64	73	158	47	458	40	186	901	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1730	1744	1758	1758	1786	1702	1744	1716	1758	1702	1688	1702
Adj Flow Rate, veh/h	23	105	63	64	73	158	47	458	40	186	901	16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	4	3	3	1	7	4	6	3	7	8	7
Cap, veh/h	54	230	195	116	301	241	94	969	84	198	1241	22
Arrive On Green	0.03	0.13	0.13	0.07	0.17	0.17	0.06	0.32	0.32	0.12	0.39	0.39
Sat Flow, veh/h	1647	1744	1476	1674	1786	1432	1661	3032	264	1621	3223	57
Grp Volume(v), veh/h	23	105	63	64	73	158	47	245	253	186	448	469
Grp Sat Flow(s),veh/h/ln	1647	1744	1476	1674	1786	1432	1661	1630	1666	1621	1603	1677
Q Serve(g_s), s	0.7	2.9	2.0	1.9	1.9	5.4	1.4	6.3	6.4	6.0	12.5	12.5
Cycle Q Clear(g_c), s	0.7	2.9	2.0	1.9	1.9	5.4	1.4	6.3	6.4	6.0	12.5	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.03
Lane Grp Cap(c), veh/h	54	230	195	116	301	241	94	521	533	198	617	646
V/C Ratio(X)	0.43	0.46	0.32	0.55	0.24	0.65	0.50	0.47	0.47	0.94	0.73	0.73
Avail Cap(c_a), veh/h	327	679	575	332	696	558	203	1403	1435	198	1380	1444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	21.0	20.6	23.6	18.9	20.3	24.0	14.3	14.3	22.8	13.7	13.7
Incr Delay (d2), s/veh	5.3	1.4	1.0	4.0	0.4	3.0	4.0	0.6	0.6	46.9	1.4	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.2	0.7	0.9	0.8	1.9	0.6	2.0	2.0	4.6	3.7	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.2	22.4	21.6	27.6	19.3	23.3	28.0	14.8	14.9	69.7	15.2	15.1
LnGrp LOS	C	C	C	C	B	C	C	B	B	E	B	B
Approach Vol, veh/h		191			295			545			1103	
Approach Delay, s/veh		23.1			23.3			16.0			24.3	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	25.1	6.3	13.4	11.0	21.6	8.2	11.5				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	6.4	45.1	10.4	20.4	6.4	45.1	10.4	20.4				
Max Q Clear Time (g_c+I1), s	3.4	14.5	2.7	7.4	8.0	8.4	3.9	4.9				
Green Ext Time (p_c), s	0.0	5.4	0.0	0.7	0.0	2.6	0.1	0.6				

Intersection Summary												
HCM 7th Control Delay, s/veh				21.9								
HCM 7th LOS				C								

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

HCM 7th Signalized Intersection Summary
 3: Caldart Ave NE & NE Lincoln Rd

Forecast 2029 AM Peak Hour
 Without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	81	177	108	172	7	118	32	37	21	69	30
Future Volume (veh/h)	5	81	177	108	172	7	118	32	37	21	69	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		1.00	1.00		0.97	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	9	145	0	193	307	12	211	57	66	38	123	54
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	288		462	454	18	267	230	266	75	225	99
Arrive On Green	0.01	0.15	0.00	0.11	0.25	0.25	0.15	0.29	0.29	0.04	0.19	0.19
Sat Flow, veh/h	1781	1870	1585	1781	1786	70	1781	780	903	1781	1209	531
Grp Volume(v), veh/h	9	145	0	193	0	319	211	0	123	38	0	177
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1856	1781	0	1684	1781	0	1739
Q Serve(g_s), s	0.2	3.2	0.0	3.8	0.0	7.0	5.2	0.0	2.5	0.9	0.0	4.2
Cycle Q Clear(g_c), s	0.2	3.2	0.0	3.8	0.0	7.0	5.2	0.0	2.5	0.9	0.0	4.2
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.54	1.00		0.31
Lane Grp Cap(c), veh/h	283	288		462	0	472	267	0	496	75	0	324
V/C Ratio(X)	0.03	0.50		0.42	0.00	0.68	0.79	0.00	0.25	0.51	0.00	0.55
Avail Cap(c_a), veh/h	459	801		462	0	799	374	0	810	224	0	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.9	17.6	0.0	12.4	0.0	15.2	18.6	0.0	12.2	21.2	0.0	16.7
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.6	0.0	1.7	7.5	0.0	0.3	5.3	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.3	0.0	1.3	0.0	2.7	2.4	0.0	0.8	0.5	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.0	19.0	0.0	13.0	0.0	16.9	26.0	0.0	12.4	26.5	0.0	18.1
LnGrp LOS	B	B		B		B	C		B	C		B
Approach Vol, veh/h		154			512			334			215	
Approach Delay, s/veh		18.8			15.4			21.0			19.6	
Approach LOS		B			B			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	11.5	11.3	12.9	5.0	16.0	6.4	17.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	19.4	9.5	18.0	5.0	19.5	5.7	21.8				
Max Q Clear Time (g_c+I1), s	5.8	5.2	7.2	6.2	2.2	9.0	2.9	4.5				
Green Ext Time (p_c), s	0.0	0.6	0.1	0.7	0.0	1.3	0.0	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				18.1								
HCM 7th LOS				B								
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	0	2	30	0	136	0	137	17	58	387	3
Future Vol, veh/h	3	0	2	30	0	136	0	137	17	58	387	3
Conflicting Peds, #/hr	5	0	10	21	0	16	10	0	21	16	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	1	1	1	7	1	2	1	2	19	6	1	1
Mvmt Flow	5	0	3	45	0	206	0	208	26	88	586	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	998	1029	620	1025	1018	257	601	0	0	254	0	0
Stage 1	774	774	-	241	241	-	-	-	-	-	-	-
Stage 2	224	254	-	783	777	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.17	6.51	6.22	4.11	-	-	4.16	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.17	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.17	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.563	4.009	3.318	2.209	-	-	2.254	-	-
Pot Cap-1 Maneuver	224	235	490	209	238	781	981	-	-	1288	-	-
Stage 1	393	410	-	751	708	-	-	-	-	-	-	-
Stage 2	781	699	-	379	409	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	142	204	476	179	207	754	972	-	-	1262	-	-
Mov Cap-2 Maneuver	142	204	-	179	207	-	-	-	-	-	-	-
Stage 1	389	364	-	736	694	-	-	-	-	-	-	-
Stage 2	559	685	-	331	363	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v23.96		20.68	0	1.04
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	972	-	-	197	477	1262	-	-
HCM Lane V/C Ratio	-	-	-	0.038	0.528	0.07	-	-
HCM Control Delay (s/veh)	0	-	-	24	20.7	8.1	0	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3	0.2	-	-

Intersection	
Intersection Delay, s/veh	14.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	↔
Traffic Vol, veh/h	46	229	28	2	151	56	46	30	22	111	20	64
Future Vol, veh/h	46	229	28	2	151	56	46	30	22	111	20	64
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	1	6	4	1	9	6	1	1	5	6	1	2
Mvmt Flow	61	301	37	3	199	74	61	39	29	146	26	84
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	17.3	13	11.5	12.3
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	47%	15%	1%	85%	0%
Vol Thru, %	31%	76%	72%	15%	0%
Vol Right, %	22%	9%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	98	303	209	131	64
LT Vol	46	46	2	111	0
Through Vol	30	229	151	20	0
RT Vol	22	28	56	0	64
Lane Flow Rate	129	399	275	172	84
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.23	0.617	0.432	0.342	0.138
Departure Headway (Hd)	6.433	5.571	5.654	7.148	5.915
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	553	646	633	500	601
Service Time	4.532	3.641	3.732	4.931	3.697
HCM Lane V/C Ratio	0.233	0.618	0.434	0.344	0.14
HCM Control Delay, s/veh	11.5	17.3	13	13.6	9.7
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	0.9	4.2	2.2	1.5	0.5

Intersection				
Intersection Delay, s/veh	4.5			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	128	153	258	34
Demand Flow Rate, veh/h	141	162	263	34
Vehicles Circulating, veh/h	150	190	45	332
Vehicles Exiting, veh/h	216	118	246	20
Ped Vol Crossing Leg, #/h	2	1	2	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	4.6	4.5	4.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	141	162	263	34
Cap Entry Lane, veh/h	1184	1137	1318	984
Entry HV Adj Factor	0.910	0.943	0.980	0.993
Flow Entry, veh/h	128	153	258	34
Cap Entry, veh/h	1077	1072	1292	977
V/C Ratio	0.119	0.143	0.200	0.035
Control Delay, s/veh	4.4	4.6	4.5	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵			↕	
Traffic Vol, veh/h	125	11	71	8	23	11	78	23	2	1	47	97
Future Vol, veh/h	125	11	71	8	23	11	78	23	2	1	47	97
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	3	1	10	1	1	1	4	1	1	1	2	9
Mvmt Flow	189	17	108	12	35	17	118	35	3	2	71	147
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.7	8.9	10.2	10
HCM LOS	B	A	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	60%	19%	1%
Vol Thru, %	0%	92%	5%	55%	32%
Vol Right, %	0%	8%	34%	26%	67%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	25	207	42	145
LT Vol	78	0	125	8	1
Through Vol	0	23	11	23	47
RT Vol	0	2	71	11	97
Lane Flow Rate	118	38	314	64	220
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.208	0.06	0.427	0.094	0.299
Departure Headway (Hd)	6.341	5.727	4.998	5.293	4.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	568	628	724	678	738
Service Time	4.052	3.437	2.998	3.315	2.893
HCM Lane V/C Ratio	0.208	0.061	0.434	0.094	0.298
HCM Control Delay, s/veh	10.7	8.8	11.7	8.9	10
HCM Lane LOS	B	A	B	A	A
HCM 95th-tile Q	0.8	0.2	2.1	0.3	1.3

SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast PM Without (LOS)



HCM 7th Signalized Intersection Summary
 1: SR 305 & NE Iverson St/NE Lincoln Rd

Forecast 2029 PM Peak Hour
 Without Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	219	83	112	182	188	73	1037	121	180	830	58
Future Volume (veh/h)	76	219	83	112	182	188	73	1037	121	180	830	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1758	1786	1786	1786	1786	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	76	219	83	112	182	188	73	1037	121	180	830	58
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	3	1	1	1	1	3	3	1	1	1
Cap, veh/h	110	256	207	142	289	239	108	1169	136	217	1452	101
Arrive On Green	0.06	0.14	0.14	0.08	0.16	0.16	0.06	0.39	0.39	0.13	0.45	0.45
Sat Flow, veh/h	1701	1786	1448	1701	1786	1474	1701	3011	351	1701	3210	224
Grp Volume(v), veh/h	76	219	83	112	182	188	73	575	583	180	439	449
Grp Sat Flow(s),veh/h/ln	1701	1786	1448	1701	1786	1474	1701	1670	1693	1701	1697	1738
Q Serve(g_s), s	3.2	8.7	3.8	4.7	6.9	8.9	3.1	23.3	23.4	7.5	13.9	13.9
Cycle Q Clear(g_c), s	3.2	8.7	3.8	4.7	6.9	8.9	3.1	23.3	23.4	7.5	13.9	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.13
Lane Grp Cap(c), veh/h	110	256	207	142	289	239	108	648	657	217	768	786
V/C Ratio(X)	0.69	0.86	0.40	0.79	0.63	0.79	0.67	0.89	0.89	0.83	0.57	0.57
Avail Cap(c_a), veh/h	243	256	207	243	289	239	243	692	701	243	768	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	30.4	28.3	32.7	28.4	29.3	33.3	20.7	20.8	30.9	14.7	14.7
Incr Delay (d2), s/veh	7.5	23.8	1.2	9.3	4.3	16.0	7.1	12.8	12.7	18.9	1.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.3	1.4	2.3	3.2	4.1	1.4	10.2	10.3	4.0	4.8	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	54.2	29.5	42.0	32.7	45.3	40.4	33.5	33.5	49.8	15.7	15.7
LnGrp LOS	D	D	C	D	C	D	D	C	C	D	B	B
Approach Vol, veh/h		378			482			1231			1068	
Approach Delay, s/veh		46.1			39.8			33.9			21.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	37.8	9.3	16.4	13.9	33.1	10.7	15.0				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	10.4	30.1	10.4	10.4	10.4	30.1	10.4	10.4				
Max Q Clear Time (g_c+I1), s	5.1	15.9	5.2	10.9	9.5	25.4	6.7	10.7				
Green Ext Time (p_c), s	0.1	4.6	0.1	0.0	0.0	2.8	0.1	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			32.1									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
2: SR 305 & NE Hostmark St

Forecast 2029 PM Peak Hour
Without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	150	100	53	70	119	106	906	74	193	790	40
Future Volume (veh/h)	64	150	100	53	70	119	106	906	74	193	790	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1786	1786	1786	1772	1772	1786	1744	1786	1786	1786	1758
Adj Flow Rate, veh/h	64	150	100	53	70	119	106	906	74	193	790	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	1	1	1	2	2	1	4	1	1	1	3
Cap, veh/h	108	276	230	97	263	218	135	1223	100	171	1364	69
Arrive On Green	0.06	0.15	0.15	0.06	0.15	0.15	0.08	0.39	0.39	0.10	0.42	0.42
Sat Flow, veh/h	1688	1786	1484	1701	1772	1474	1701	3098	253	1701	3284	166
Grp Volume(v), veh/h	64	150	100	53	70	119	106	484	496	193	408	422
Grp Sat Flow(s),veh/h/ln	1688	1786	1484	1701	1772	1474	1701	1657	1694	1701	1697	1754
Q Serve(g_s), s	2.4	4.9	3.9	1.9	2.2	4.8	3.9	16.0	16.0	6.4	11.8	11.8
Cycle Q Clear(g_c), s	2.4	4.9	3.9	1.9	2.2	4.8	3.9	16.0	16.0	6.4	11.8	11.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.09
Lane Grp Cap(c), veh/h	108	276	230	97	263	218	135	654	669	171	705	728
V/C Ratio(X)	0.59	0.54	0.44	0.54	0.27	0.54	0.78	0.74	0.74	1.13	0.58	0.58
Avail Cap(c_a), veh/h	275	571	474	277	566	471	171	1171	1198	171	1199	1240
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	24.9	24.4	29.3	24.1	25.2	28.8	16.5	16.5	28.7	14.4	14.4
Incr Delay (d2), s/veh	5.2	1.7	1.3	4.7	0.5	2.1	16.6	1.4	1.4	108.6	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.1	1.4	0.9	0.9	1.7	2.1	5.3	5.4	7.5	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.2	26.5	25.7	33.9	24.6	27.3	45.4	18.0	17.9	137.3	15.0	15.0
LnGrp LOS	C	C	C	C	C	C	D	B	B	F	B	B
Approach Vol, veh/h		314			242			1086			1023	
Approach Delay, s/veh		27.9			28.0			20.6			38.1	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	31.4	8.7	14.1	11.0	30.1	8.3	14.5				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	6.4	45.1	10.4	20.4	6.4	45.1	10.4	20.4				
Max Q Clear Time (g_c+I1), s	5.9	13.8	4.4	6.8	8.4	18.0	3.9	6.9				
Green Ext Time (p_c), s	0.0	4.7	0.1	0.6	0.0	5.8	0.0	1.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			28.8									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
 3: Caldart Ave NE & NE Lincoln Rd

Forecast 2029 PM Peak Hour
 Without Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	356	167	66	209	41	131	69	57	25	59	29
Future Volume (veh/h)	50	356	167	66	209	41	131	69	57	25	59	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1885	1885	1885	1870	1885	1870	1885	1885	1885
Adj Flow Rate, veh/h	53	375	0	69	220	43	138	73	60	26	62	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	1	1	1	1	2	1	2	1	1	1
Cap, veh/h	458	519		387	439	86	180	186	152	56	148	74
Arrive On Green	0.05	0.28	0.00	0.07	0.29	0.29	0.10	0.20	0.20	0.03	0.13	0.13
Sat Flow, veh/h	1795	1870	1598	1795	1523	298	1781	941	774	1795	1164	582
Grp Volume(v), veh/h	53	375	0	69	0	263	138	0	133	26	0	93
Grp Sat Flow(s),veh/h/ln	1795	1870	1598	1795	0	1820	1781	0	1715	1795	0	1746
Q Serve(g_s), s	0.9	7.6	0.0	1.1	0.0	5.0	3.2	0.0	2.8	0.6	0.0	2.1
Cycle Q Clear(g_c), s	0.9	7.6	0.0	1.1	0.0	5.0	3.2	0.0	2.8	0.6	0.0	2.1
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.45	1.00		0.33
Lane Grp Cap(c), veh/h	458	519		387	0	525	180	0	338	56	0	222
V/C Ratio(X)	0.12	0.72		0.18	0.00	0.50	0.77	0.00	0.39	0.46	0.00	0.42
Avail Cap(c_a), veh/h	573	864		487	0	845	403	0	890	244	0	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.9	13.7	0.0	10.2	0.0	12.4	18.4	0.0	14.7	20.0	0.0	16.9
Incr Delay (d2), s/veh	0.1	1.9	0.0	0.2	0.0	0.7	6.7	0.0	0.7	5.9	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.9	0.0	0.4	0.0	1.8	1.5	0.0	1.0	0.3	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.0	15.6	0.0	10.4	0.0	13.2	25.1	0.0	15.4	25.9	0.0	18.1
LnGrp LOS	B	B		B		B	C		B	C		B
Approach Vol, veh/h		428			332			271				119
Approach Delay, s/veh		14.9			12.6			20.4				19.8
Approach LOS		B			B			C				B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	16.2	8.7	9.9	6.8	16.6	5.8	12.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	19.4	9.5	18.0	5.0	19.5	5.7	21.8				
Max Q Clear Time (g_c+I1), s	3.1	9.6	5.2	4.1	2.9	7.0	2.6	4.8				
Green Ext Time (p_c), s	0.0	1.6	0.1	0.3	0.0	1.2	0.0	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			16.1									
HCM 7th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	1	1	14	1	74	2	183	16	87	206	5
Future Vol, veh/h	4	1	1	14	1	74	2	183	16	87	206	5
Conflicting Peds, #/hr	5	0	7	6	0	4	7	0	6	4	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	1	1	16	1	82	2	203	18	97	229	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	645	664	246	652	657	223	241	0	0	227	0	0
Stage 1	432	432	-	223	223	-	-	-	-	-	-	-
Stage 2	213	232	-	430	435	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	386	383	796	382	386	819	1331	-	-	1347	-	-
Stage 1	604	584	-	782	721	-	-	-	-	-	-	-
Stage 2	791	715	-	606	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	313	346	785	344	349	810	1322	-	-	1339	-	-
Mov Cap-2 Maneuver	313	346	-	344	349	-	-	-	-	-	-	-
Stage 1	599	532	-	776	716	-	-	-	-	-	-	-
Stage 2	705	709	-	550	530	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v15.36		11.42	0.08	2.31
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	354	660	1339	-
HCM Lane V/C Ratio	0.002	-	-	0.019	0.15	0.072	-
HCM Control Delay (s/veh)	7.7	0	-	15.4	11.4	7.9	0
HCM Lane LOS	A	A	-	C	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.2	-

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	88	177	66	7	111	43	47	35	11	71	41	61
Future Vol, veh/h	88	177	66	7	111	43	47	35	11	71	41	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	1	1	1	1	1	1	7	6	1	1	1	2
Mvmt Flow	93	186	69	7	117	45	49	37	12	75	43	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	12.3	9.7	9.9	10
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	51%	27%	4%	63%	0%
Vol Thru, %	38%	53%	69%	37%	0%
Vol Right, %	12%	20%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	93	331	161	112	61
LT Vol	47	88	7	71	0
Through Vol	35	177	111	41	0
RT Vol	11	66	43	0	61
Lane Flow Rate	98	348	169	118	64
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.158	0.477	0.239	0.207	0.094
Departure Headway (Hd)	5.803	4.929	5.069	6.309	5.278
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	618	735	708	569	679
Service Time	3.839	2.929	3.099	4.042	3.01
HCM Lane V/C Ratio	0.159	0.473	0.239	0.207	0.094
HCM Control Delay, s/veh	9.9	12.3	9.7	10.7	8.6
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.6	2.6	0.9	0.8	0.3

Intersection				
Intersection Delay, s/veh	3.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	80	73	125	13
Demand Flow Rate, veh/h	81	76	128	13
Vehicles Circulating, veh/h	48	77	37	134
Vehicles Exiting, veh/h	99	88	92	19
Ped Vol Crossing Leg, #/h	2	1	2	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.3	3.4	3.6	3.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	81	76	128	13
Cap Entry Lane, veh/h	1314	1276	1329	1204
Entry HV Adj Factor	0.984	0.957	0.976	0.994
Flow Entry, veh/h	80	73	125	13
Cap Entry, veh/h	1293	1221	1296	1196
V/C Ratio	0.062	0.060	0.096	0.011
Control Delay, s/veh	3.3	3.4	3.6	3.1
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↕	
Traffic Vol, veh/h	36	29	63	6	20	7	71	67	6	13	36	26
Future Vol, veh/h	36	29	63	6	20	7	71	67	6	13	36	26
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	6	1	1	1	1	1	3	1	1	1	1	1
Mvmt Flow	39	31	68	6	22	8	76	72	6	14	39	28
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	8.3	7.8	8.6	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	28%	18%	17%
Vol Thru, %	0%	92%	23%	61%	48%
Vol Right, %	0%	8%	49%	21%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	73	128	33	75
LT Vol	71	0	36	6	13
Through Vol	0	67	29	20	36
RT Vol	0	6	63	7	26
Lane Flow Rate	76	78	138	35	81
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.117	0.107	0.167	0.045	0.099
Departure Headway (Hd)	5.514	4.92	4.378	4.557	4.43
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	651	730	822	787	810
Service Time	3.235	2.641	2.394	2.579	2.451
HCM Lane V/C Ratio	0.117	0.107	0.168	0.044	0.1
HCM Control Delay, s/veh	9	8.2	8.3	7.8	7.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.4	0.6	0.1	0.3

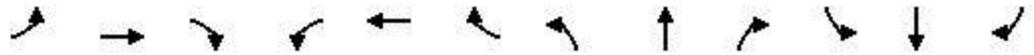
SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast AM With (LOS)



HCM 7th Signalized Intersection Summary
 1: SR 305 & NE Iverson St/NE Lincoln Rd

Forecast 2029 AM Peak Hour
 With Project



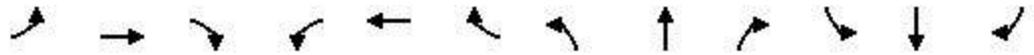
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	117	56	73	142	248	51	605	67	173	972	71
Future Volume (veh/h)	37	117	56	73	142	248	51	605	67	173	972	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1786	1744	1786	1772	1786	1786	1744	1688	1758	1660	1772
Adj Flow Rate, veh/h	37	117	56	73	142	248	51	605	67	173	972	71
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	1	4	1	2	1	1	4	8	3	10	2
Cap, veh/h	77	269	222	120	310	264	98	1010	112	214	1210	88
Arrive On Green	0.05	0.15	0.15	0.07	0.18	0.18	0.06	0.34	0.34	0.13	0.41	0.41
Sat Flow, veh/h	1674	1786	1472	1701	1772	1506	1701	3007	332	1674	2979	218
Grp Volume(v), veh/h	37	117	56	73	142	248	51	333	339	173	514	529
Grp Sat Flow(s),veh/h/ln	1674	1786	1472	1701	1772	1506	1701	1657	1682	1674	1577	1620
Q Serve(g_s), s	1.3	3.5	2.0	2.5	4.3	9.7	1.7	9.9	10.0	6.0	17.1	17.1
Cycle Q Clear(g_c), s	1.3	3.5	2.0	2.5	4.3	9.7	1.7	9.9	10.0	6.0	17.1	17.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.13
Lane Grp Cap(c), veh/h	77	269	222	120	310	264	98	556	565	214	641	658
V/C Ratio(X)	0.48	0.44	0.25	0.61	0.46	0.94	0.52	0.60	0.60	0.81	0.80	0.80
Avail Cap(c_a), veh/h	293	313	258	298	310	264	298	840	853	293	799	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	22.9	22.3	26.8	22.0	24.2	27.2	16.4	16.4	25.2	15.5	15.5
Incr Delay (d2), s/veh	4.5	1.1	0.6	4.9	1.1	39.5	4.3	1.0	1.0	11.1	4.8	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.5	0.7	1.1	1.8	6.1	0.8	3.3	3.4	2.8	5.8	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.2	24.0	22.9	31.6	23.0	63.7	31.4	17.4	17.4	36.3	20.3	20.2
LnGrp LOS	C	C	C	C	C	E	C	B	B	D	C	C
Approach Vol, veh/h		210			463			723			1216	
Approach Delay, s/veh		25.2			46.2			18.4			22.5	
Approach LOS		C			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	29.0	7.3	15.0	12.2	24.8	8.8	13.5				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	10.4	30.1	10.4	10.4	10.4	30.1	10.4	10.4				
Max Q Clear Time (g_c+I1), s	3.7	19.1	3.3	11.7	8.0	12.0	4.5	5.5				
Green Ext Time (p_c), s	0.0	4.8	0.0	0.0	0.1	3.7	0.1	0.3				

Intersection Summary												
HCM 7th Control Delay, s/veh											25.8	
HCM 7th LOS											C	

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

HCM 7th Signalized Intersection Summary
2: SR 305 & NE Hostmark St

Forecast 2029 AM Peak Hour
With Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	105	63	66	75	158	47	458	41	186	901	16
Future Volume (veh/h)	23	105	63	66	75	158	47	458	41	186	901	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1730	1744	1758	1758	1786	1702	1744	1716	1758	1702	1688	1702
Adj Flow Rate, veh/h	23	105	63	66	75	158	47	458	41	186	901	16
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	5	4	3	3	1	7	4	6	3	7	8	7
Cap, veh/h	54	228	193	118	301	242	94	967	86	198	1241	22
Arrive On Green	0.03	0.13	0.13	0.07	0.17	0.17	0.06	0.32	0.32	0.12	0.39	0.39
Sat Flow, veh/h	1647	1744	1476	1674	1786	1432	1661	3025	270	1621	3223	57
Grp Volume(v), veh/h	23	105	63	66	75	158	47	246	253	186	448	469
Grp Sat Flow(s),veh/h/ln	1647	1744	1476	1674	1786	1432	1661	1630	1665	1621	1603	1677
Q Serve(g_s), s	0.7	2.9	2.0	2.0	1.9	5.4	1.4	6.3	6.4	6.0	12.5	12.5
Cycle Q Clear(g_c), s	0.7	2.9	2.0	2.0	1.9	5.4	1.4	6.3	6.4	6.0	12.5	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		0.03
Lane Grp Cap(c), veh/h	54	228	193	118	301	242	94	521	532	198	617	646
V/C Ratio(X)	0.43	0.46	0.33	0.56	0.25	0.65	0.50	0.47	0.48	0.94	0.73	0.73
Avail Cap(c_a), veh/h	327	679	575	332	695	558	203	1403	1433	198	1380	1444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	21.1	20.7	23.6	18.9	20.3	24.0	14.3	14.3	22.8	13.8	13.8
Incr Delay (d2), s/veh	5.3	1.5	1.0	4.1	0.4	3.0	4.0	0.6	0.6	46.9	1.4	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.2	0.7	0.9	0.8	1.9	0.6	2.0	2.0	4.6	3.7	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.2	22.5	21.7	27.6	19.3	23.3	28.0	14.9	14.9	69.7	15.2	15.1
LnGrp LOS	C	C	C	C	B	C	C	B	B	E	B	B
Approach Vol, veh/h		191			299			546			1103	
Approach Delay, s/veh		23.2			23.3			16.0			24.3	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	25.1	6.3	13.4	11.0	21.6	8.3	11.4				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	6.4	45.1	10.4	20.4	6.4	45.1	10.4	20.4				
Max Q Clear Time (g_c+I1), s	3.4	14.5	2.7	7.4	8.0	8.4	4.0	4.9				
Green Ext Time (p_c), s	0.0	5.4	0.0	0.7	0.0	2.6	0.1	0.6				

Intersection Summary												
HCM 7th Control Delay, s/veh				22.0								
HCM 7th LOS				C								

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

HCM 7th Signalized Intersection Summary
 3: Caldart Ave NE & NE Lincoln Rd

Forecast 2029 AM Peak Hour
 With Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	81	185	108	172	7	141	32	37	21	69	30
Future Volume (veh/h)	5	81	185	108	172	7	141	32	37	21	69	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		1.00	1.00		0.97	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	9	145	0	193	307	12	252	57	66	38	123	54
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	269	283		445	443	17	310	247	286	74	222	98
Arrive On Green	0.01	0.15	0.00	0.11	0.25	0.25	0.17	0.32	0.32	0.04	0.18	0.18
Sat Flow, veh/h	1781	1870	1585	1781	1786	70	1781	781	904	1781	1209	531
Grp Volume(v), veh/h	9	145	0	193	0	319	252	0	123	38	0	177
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1856	1781	0	1685	1781	0	1739
Q Serve(g_s), s	0.2	3.4	0.0	4.0	0.0	7.3	6.4	0.0	2.5	1.0	0.0	4.4
Cycle Q Clear(g_c), s	0.2	3.4	0.0	4.0	0.0	7.3	6.4	0.0	2.5	1.0	0.0	4.4
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.54	1.00		0.31
Lane Grp Cap(c), veh/h	269	283		445	0	460	310	0	533	74	0	320
V/C Ratio(X)	0.03	0.51		0.43	0.00	0.69	0.81	0.00	0.23	0.51	0.00	0.55
Avail Cap(c_a), veh/h	437	771		445	0	769	360	0	781	216	0	665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.6	18.4	0.0	13.2	0.0	16.1	18.7	0.0	11.9	22.1	0.0	17.4
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.7	0.0	1.9	11.8	0.0	0.2	5.4	0.0	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.4	0.0	1.4	0.0	2.9	3.3	0.0	0.8	0.5	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.7	19.8	0.0	13.9	0.0	18.0	30.5	0.0	12.1	27.5	0.0	18.9
LnGrp LOS	B	B		B		B	C		B	C		B
Approach Vol, veh/h		154			512			375			215	
Approach Delay, s/veh		19.6			16.4			24.5			20.5	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	11.6	12.7	13.2	5.1	16.2	6.5	19.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	19.4	9.5	18.0	5.0	19.5	5.7	21.8				
Max Q Clear Time (g_c+I1), s	6.0	5.4	8.4	6.4	2.2	9.3	3.0	4.5				
Green Ext Time (p_c), s	0.0	0.6	0.1	0.7	0.0	1.3	0.0	0.6				

Intersection Summary												
HCM 7th Control Delay, s/veh				19.9								
HCM 7th LOS				B								

Notes
 User approved pedestrian interval to be less than phase max green.
 Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	2	30	0	159	0	137	17	66	387	3
Future Vol, veh/h	3	0	2	30	0	159	0	137	17	66	387	3
Conflicting Peds, #/hr	5	0	10	21	0	16	10	0	21	16	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	1	1	1	7	1	2	1	2	19	6	1	1
Mvmt Flow	5	0	3	45	0	241	0	208	26	100	586	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1022	1053	620	1049	1042	257	601	0	0	254	0	0
Stage 1	799	799	-	241	241	-	-	-	-	-	-	-
Stage 2	224	254	-	807	801	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.17	6.51	6.22	4.11	-	-	4.16	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.17	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.17	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.563	4.009	3.318	2.209	-	-	2.254	-	-
Pot Cap-1 Maneuver	215	227	490	201	230	781	981	-	-	1288	-	-
Stage 1	381	399	-	751	708	-	-	-	-	-	-	-
Stage 2	781	699	-	368	398	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	126	194	476	169	197	754	972	-	-	1262	-	-
Mov Cap-2 Maneuver	126	194	-	169	197	-	-	-	-	-	-	-
Stage 1	377	349	-	736	694	-	-	-	-	-	-	-
Stage 2	523	685	-	316	348	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v26.07		22.41	0	1.17
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	972	-	-	178	487	1262	-	-
HCM Lane V/C Ratio	-	-	-	0.042	0.588	0.079	-	-
HCM Control Delay (s/veh)	0	-	-	26.1	22.4	8.1	0	-
HCM Lane LOS	A	-	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.7	0.3	-	-

Intersection	
Intersection Delay, s/veh	14.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	46	230	28	2	155	56	46	30	22	111	20	64
Future Vol, veh/h	46	230	28	2	155	56	46	30	22	111	20	64
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	1	6	4	1	9	6	1	1	5	6	1	2
Mvmt Flow	61	303	37	3	204	74	61	39	29	146	26	84
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	17.5	13.2	11.5	12.4
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	47%	15%	1%	85%	0%
Vol Thru, %	31%	76%	73%	15%	0%
Vol Right, %	22%	9%	26%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	98	304	213	131	64
LT Vol	46	46	2	111	0
Through Vol	30	230	155	20	0
RT Vol	22	28	56	0	64
Lane Flow Rate	129	400	280	172	84
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.231	0.621	0.441	0.343	0.139
Departure Headway (Hd)	6.46	5.587	5.666	7.171	5.938
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	551	644	631	498	600
Service Time	4.56	3.658	3.746	4.955	3.721
HCM Lane V/C Ratio	0.234	0.621	0.444	0.345	0.14
HCM Control Delay, s/veh	11.5	17.5	13.2	13.7	9.7
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	0.9	4.3	2.3	1.5	0.5

Intersection				
Intersection Delay, s/veh	4.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	141	189	265	60
Demand Flow Rate, veh/h	154	201	270	60
Vehicles Circulating, veh/h	176	198	58	371
Vehicles Exiting, veh/h	255	130	272	28
Ped Vol Crossing Leg, #/h	2	1	2	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.6	5.0	4.6	4.4
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	154	201	270	60
Cap Entry Lane, veh/h	1153	1128	1301	945
Entry HV Adj Factor	0.913	0.939	0.981	0.994
Flow Entry, veh/h	141	189	265	60
Cap Entry, veh/h	1053	1059	1275	939
V/C Ratio	0.134	0.178	0.208	0.063
Control Delay, s/veh	4.6	5.0	4.6	4.4
LOS	A	A	A	A
95th %tile Queue, veh	0	1	1	0

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↵			↕	
Traffic Vol, veh/h	126	11	71	8	23	11	78	27	2	1	59	101
Future Vol, veh/h	126	11	71	8	23	11	78	27	2	1	59	101
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Heavy Vehicles, %	3	1	10	1	1	1	4	1	1	1	2	9
Mvmt Flow	191	17	108	12	35	17	118	41	3	2	89	153
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.9	9	10.3	10.4
HCM LOS	B	A	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	61%	19%	1%
Vol Thru, %	0%	93%	5%	55%	37%
Vol Right, %	0%	7%	34%	26%	63%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	29	208	42	161
LT Vol	78	0	126	8	1
Through Vol	0	27	11	23	59
RT Vol	0	2	71	11	101
Lane Flow Rate	118	44	315	64	244
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.21	0.071	0.435	0.095	0.335
Departure Headway (Hd)	6.394	5.787	5.086	5.395	4.948
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	564	622	712	665	732
Service Time	4.105	3.498	3.086	3.42	2.948
HCM Lane V/C Ratio	0.209	0.071	0.442	0.096	0.333
HCM Control Delay, s/veh	10.8	8.9	11.9	9	10.4
HCM Lane LOS	B	A	B	A	B
HCM 95th-tile Q	0.8	0.2	2.2	0.3	1.5

Intersection						
Int Delay, s/veh	2.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	16	2	13	5	1	22
Future Vol, veh/h	16	2	13	5	1	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	2	14	5	1	24

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	43	17	0	0	20	0
Stage 1	17	-	-	-	-	-
Stage 2	26	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	968	1062	-	-	1597	-
Stage 1	1006	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	967	1062	-	-	1597	-
Mov Cap-2 Maneuver	967	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	996	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	8.76	0	0.32
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	977	78
HCM Lane V/C Ratio	-	-	0.02	0.001
HCM Control Delay (s/veh)	-	-	8.8	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		2	
Traffic Vol, veh/h	8	72	98	1	5	23
Future Vol, veh/h	8	72	98	1	5	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	78	107	1	5	25

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	108	0	-	0	203
Stage 1	-	-	-	-	107
Stage 2	-	-	-	-	96
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1483	-	-	-	786
Stage 1	-	-	-	-	917
Stage 2	-	-	-	-	928
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1483	-	-	-	781
Mov Cap-2 Maneuver	-	-	-	-	781
Stage 1	-	-	-	-	912
Stage 2	-	-	-	-	928

Approach	EB	WB	SB
HCM Control Delay, s/v	0.74	0	9.08
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	180	-	-	-	912
HCM Lane V/C Ratio	0.006	-	-	-	0.033
HCM Control Delay (s/veh)	7.4	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast PM With (LOS)



HCM 7th Signalized Intersection Summary
 1: SR 305 & NE Iverson St/NE Lincoln Rd

Forecast 2029 PM Peak Hour
 With Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	222	83	112	183	202	73	1037	121	203	830	58
Future Volume (veh/h)	76	222	83	112	183	202	73	1037	121	203	830	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1786	1786	1758	1786	1786	1786	1786	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	76	222	83	112	183	202	73	1037	121	203	830	58
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	3	1	1	1	1	3	3	1	1	1
Cap, veh/h	109	250	203	142	285	235	107	1157	135	238	1482	104
Arrive On Green	0.06	0.14	0.14	0.08	0.16	0.16	0.06	0.38	0.38	0.14	0.46	0.46
Sat Flow, veh/h	1701	1786	1448	1701	1786	1474	1701	3011	351	1701	3210	224
Grp Volume(v), veh/h	76	222	83	112	183	202	73	575	583	203	439	449
Grp Sat Flow(s),veh/h/ln	1701	1786	1448	1701	1786	1474	1701	1670	1693	1701	1697	1738
Q Serve(g_s), s	3.2	9.1	3.9	4.8	7.1	9.9	3.1	24.0	24.0	8.6	13.9	13.9
Cycle Q Clear(g_c), s	3.2	9.1	3.9	4.8	7.1	9.9	3.1	24.0	24.0	8.6	13.9	13.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.13
Lane Grp Cap(c), veh/h	109	250	203	142	285	235	107	642	650	238	783	802
V/C Ratio(X)	0.70	0.89	0.41	0.79	0.64	0.86	0.68	0.90	0.90	0.85	0.56	0.56
Avail Cap(c_a), veh/h	238	250	203	238	285	235	238	677	686	238	783	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	31.3	29.1	33.4	29.2	30.4	34.0	21.4	21.5	31.2	14.5	14.5
Incr Delay (d2), s/veh	7.8	29.4	1.3	9.4	4.8	25.8	7.4	14.1	14.1	24.4	0.9	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.9	1.4	2.3	3.4	5.1	1.4	10.7	10.9	4.9	4.8	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.9	60.7	30.4	42.7	34.0	56.2	41.5	35.5	35.5	55.5	15.4	15.4
LnGrp LOS	D	E	C	D	C	E	D	D	D	E	B	B
Approach Vol, veh/h		381			497			1231			1091	
Approach Delay, s/veh		50.4			45.0			35.9			22.9	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	39.2	9.3	16.4	15.0	33.4	10.8	15.0				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	10.4	30.1	10.4	10.4	10.4	30.1	10.4	10.4				
Max Q Clear Time (g_c+I1), s	5.1	15.9	5.2	11.9	10.6	26.0	6.8	11.1				
Green Ext Time (p_c), s	0.1	4.6	0.1	0.0	0.0	2.5	0.1	0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			34.6									
HCM 7th LOS			C									

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

HCM 7th Signalized Intersection Summary
2: SR 305 & NE Hostmark St

Forecast 2029 PM Peak Hour
With Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	153	100	54	72	119	106	906	76	193	790	40
Future Volume (veh/h)	64	153	100	54	72	119	106	906	76	193	790	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1786	1786	1786	1772	1772	1786	1744	1786	1786	1786	1758
Adj Flow Rate, veh/h	64	153	100	54	72	119	106	906	76	193	790	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	1	1	1	2	2	1	4	1	1	1	3
Cap, veh/h	107	278	231	98	266	221	135	1220	102	170	1364	69
Arrive On Green	0.06	0.16	0.16	0.06	0.15	0.15	0.08	0.39	0.39	0.10	0.42	0.42
Sat Flow, veh/h	1688	1786	1484	1701	1772	1475	1701	3091	259	1701	3284	166
Grp Volume(v), veh/h	64	153	100	54	72	119	106	486	496	193	408	422
Grp Sat Flow(s),veh/h/ln	1688	1786	1484	1701	1772	1475	1701	1657	1693	1701	1697	1754
Q Serve(g_s), s	2.4	5.1	3.9	2.0	2.3	4.8	3.9	16.1	16.1	6.4	11.9	11.9
Cycle Q Clear(g_c), s	2.4	5.1	3.9	2.0	2.3	4.8	3.9	16.1	16.1	6.4	11.9	11.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		0.09
Lane Grp Cap(c), veh/h	107	278	231	98	266	221	135	654	668	170	704	728
V/C Ratio(X)	0.60	0.55	0.43	0.55	0.27	0.54	0.78	0.74	0.74	1.14	0.58	0.58
Avail Cap(c_a), veh/h	274	568	472	276	564	469	170	1165	1191	170	1194	1234
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	25.0	24.5	29.4	24.1	25.2	29.0	16.6	16.6	28.9	14.4	14.4
Incr Delay (d2), s/veh	5.2	1.7	1.3	4.7	0.5	2.0	17.0	1.4	1.4	110.5	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.2	1.4	0.9	1.0	1.7	2.1	5.4	5.5	7.6	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.4	26.7	25.8	34.1	24.7	27.2	46.0	18.1	18.0	139.4	15.1	15.1
LnGrp LOS	C	C	C	C	C	C	D	B	B	F	B	B
Approach Vol, veh/h		317			245			1088			1023	
Approach Delay, s/veh		27.9			28.0			20.8			38.5	
Approach LOS		C			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	31.5	8.7	14.2	11.0	30.2	8.3	14.6				
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6				
Max Green Setting (Gmax), s	6.4	45.1	10.4	20.4	6.4	45.1	10.4	20.4				
Max Q Clear Time (g_c+I1), s	5.9	13.9	4.4	6.8	8.4	18.1	4.0	7.1				
Green Ext Time (p_c), s	0.0	4.7	0.1	0.6	0.0	5.8	0.0	1.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			29.1									
HCM 7th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 7th Signalized Intersection Summary
3: Caldart Ave NE & NE Lincoln Rd

Forecast 2029 PM Peak Hour
With Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	356	193	66	209	41	146	69	57	25	59	29
Future Volume (veh/h)	50	356	193	66	209	41	146	69	57	25	59	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		0.97	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1885	1885	1885	1870	1885	1870	1885	1885	1885
Adj Flow Rate, veh/h	53	375	0	69	220	43	154	73	60	26	62	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	1	1	1	1	2	1	2	1	1	1
Cap, veh/h	452	516		381	436	85	200	195	160	56	146	73
Arrive On Green	0.05	0.28	0.00	0.07	0.29	0.29	0.11	0.21	0.21	0.03	0.13	0.13
Sat Flow, veh/h	1795	1870	1598	1795	1523	298	1781	941	774	1795	1164	582
Grp Volume(v), veh/h	53	375	0	69	0	263	154	0	133	26	0	93
Grp Sat Flow(s),veh/h/ln	1795	1870	1598	1795	0	1820	1781	0	1715	1795	0	1746
Q Serve(g_s), s	0.9	7.8	0.0	1.1	0.0	5.2	3.6	0.0	2.9	0.6	0.0	2.1
Cycle Q Clear(g_c), s	0.9	7.8	0.0	1.1	0.0	5.2	3.6	0.0	2.9	0.6	0.0	2.1
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.45	1.00		0.33
Lane Grp Cap(c), veh/h	452	516		381	0	522	200	0	355	56	0	219
V/C Ratio(X)	0.12	0.73		0.18	0.00	0.50	0.77	0.00	0.37	0.47	0.00	0.42
Avail Cap(c_a), veh/h	564	848		478	0	830	396	0	874	239	0	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.2	14.0	0.0	10.4	0.0	12.7	18.4	0.0	14.6	20.4	0.0	17.3
Incr Delay (d2), s/veh	0.1	2.0	0.0	0.2	0.0	0.8	6.1	0.0	0.7	5.9	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.0	0.0	0.4	0.0	1.8	1.6	0.0	1.0	0.3	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.3	16.0	0.0	10.6	0.0	13.5	24.6	0.0	15.2	26.3	0.0	18.6
LnGrp LOS	B	B		B		B	C		B	C		B
Approach Vol, veh/h		428			332			287				119
Approach Delay, s/veh		15.3			12.9			20.2				20.3
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	16.3	9.3	9.9	6.8	16.8	5.8	13.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	19.4	9.5	18.0	5.0	19.5	5.7	21.8				
Max Q Clear Time (g_c+I1), s	3.1	9.8	5.6	4.1	2.9	7.2	2.6	4.9				
Green Ext Time (p_c), s	0.0	1.6	0.1	0.3	0.0	1.2	0.0	0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			16.3									
HCM 7th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	1	1	14	1	89	2	183	16	113	206	5
Future Vol, veh/h	4	1	1	14	1	89	2	183	16	113	206	5
Conflicting Peds, #/hr	5	0	7	6	0	4	7	0	6	4	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	1	1	16	1	99	2	203	18	126	229	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	703	721	246	710	715	223	241	0	0	227	0	0
Stage 1	490	490	-	223	223	-	-	-	-	-	-	-
Stage 2	213	232	-	488	493	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.11	6.51	6.21	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.509	4.009	3.309	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	354	354	796	350	357	819	1331	-	-	1347	-	-
Stage 1	562	551	-	782	721	-	-	-	-	-	-	-
Stage 2	791	715	-	563	549	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	272	312	785	306	314	810	1322	-	-	1339	-	-
Mov Cap-2 Maneuver	272	312	-	306	314	-	-	-	-	-	-	-
Stage 1	557	488	-	776	716	-	-	-	-	-	-	-
Stage 2	689	709	-	497	486	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v16.75		11.67	0.08	2.78
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	313	655	1339	-	-
HCM Lane V/C Ratio	0.002	-	-	0.021	0.176	0.094	-	-
HCM Control Delay (s/veh)	7.7	0	-	16.8	11.7	8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0.3	-	-

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	88	182	66	7	114	43	47	35	11	71	41	61
Future Vol, veh/h	88	182	66	7	114	43	47	35	11	71	41	61
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	1	1	1	1	1	1	7	6	1	1	1	2
Mvmt Flow	93	192	69	7	120	45	49	37	12	75	43	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	12.5	9.8	10	10
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	51%	26%	4%	63%	0%
Vol Thru, %	38%	54%	70%	37%	0%
Vol Right, %	12%	20%	26%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	93	336	164	112	61
LT Vol	47	88	7	71	0
Through Vol	35	182	114	41	0
RT Vol	11	66	43	0	61
Lane Flow Rate	98	354	173	118	64
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.159	0.485	0.244	0.207	0.095
Departure Headway (Hd)	5.829	4.939	5.082	6.335	5.303
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	615	736	706	567	675
Service Time	3.866	2.939	3.114	4.067	3.036
HCM Lane V/C Ratio	0.159	0.481	0.245	0.208	0.095
HCM Control Delay, s/veh	10	12.5	9.8	10.7	8.6
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.6	2.7	1	0.8	0.3

Intersection				
Intersection Delay, s/veh	3.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	110	92	146	24
Demand Flow Rate, veh/h	111	97	149	24
Vehicles Circulating, veh/h	61	99	67	155
Vehicles Exiting, veh/h	118	117	105	41
Ped Vol Crossing Leg, #/h	2	1	2	1
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.5	3.7	3.8	3.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	111	97	149	24
Cap Entry Lane, veh/h	1297	1247	1289	1178
Entry HV Adj Factor	0.987	0.953	0.978	0.994
Flow Entry, veh/h	110	92	146	24
Cap Entry, veh/h	1279	1189	1261	1171
V/C Ratio	0.086	0.078	0.116	0.020
Control Delay, s/veh	3.5	3.7	3.8	3.2
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖			↕	
Traffic Vol, veh/h	41	29	63	6	20	7	71	80	6	13	44	29
Future Vol, veh/h	41	29	63	6	20	7	71	80	6	13	44	29
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	6	1	1	1	1	1	3	1	1	1	1	1
Mvmt Flow	44	31	68	6	22	8	76	86	6	14	47	31
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	8.4	7.9	8.7	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	31%	18%	15%
Vol Thru, %	0%	93%	22%	61%	51%
Vol Right, %	0%	7%	47%	21%	34%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	86	133	33	86
LT Vol	71	0	41	6	13
Through Vol	0	80	29	20	44
RT Vol	0	6	63	7	29
Lane Flow Rate	76	92	143	35	92
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.118	0.127	0.177	0.046	0.115
Departure Headway (Hd)	5.541	4.955	4.454	4.627	4.463
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	647	724	807	774	803
Service Time	3.268	2.683	2.476	2.656	2.492
HCM Lane V/C Ratio	0.117	0.127	0.177	0.045	0.115
HCM Control Delay, s/veh	9	8.4	8.4	7.9	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.4	0.6	0.1	0.4

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	10	1	17	18	3	11
Future Vol, veh/h	10	1	17	18	3	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	1	18	20	3	12

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	47	28	0	0	38
Stage 1	28	-	-	-	-
Stage 2	18	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	963	1047	-	-	1572
Stage 1	994	-	-	-	-
Stage 2	1004	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	961	1047	-	-	1572
Mov Cap-2 Maneuver	961	-	-	-	-
Stage 1	994	-	-	-	-
Stage 2	1002	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	8.76	0	1.56
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	968	386
HCM Lane V/C Ratio	-	-	0.012	0.002
HCM Control Delay (s/veh)	-	-	8.8	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		2	
Traffic Vol, veh/h	26	76	62	5	3	16
Future Vol, veh/h	26	76	62	5	3	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	83	67	5	3	17

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	73	0	-	0	209 70
Stage 1	-	-	-	-	70 -
Stage 2	-	-	-	-	139 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1527	-	-	-	779 993
Stage 1	-	-	-	-	953 -
Stage 2	-	-	-	-	888 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1527	-	-	-	764 993
Mov Cap-2 Maneuver	-	-	-	-	764 -
Stage 1	-	-	-	-	934 -
Stage 2	-	-	-	-	888 -

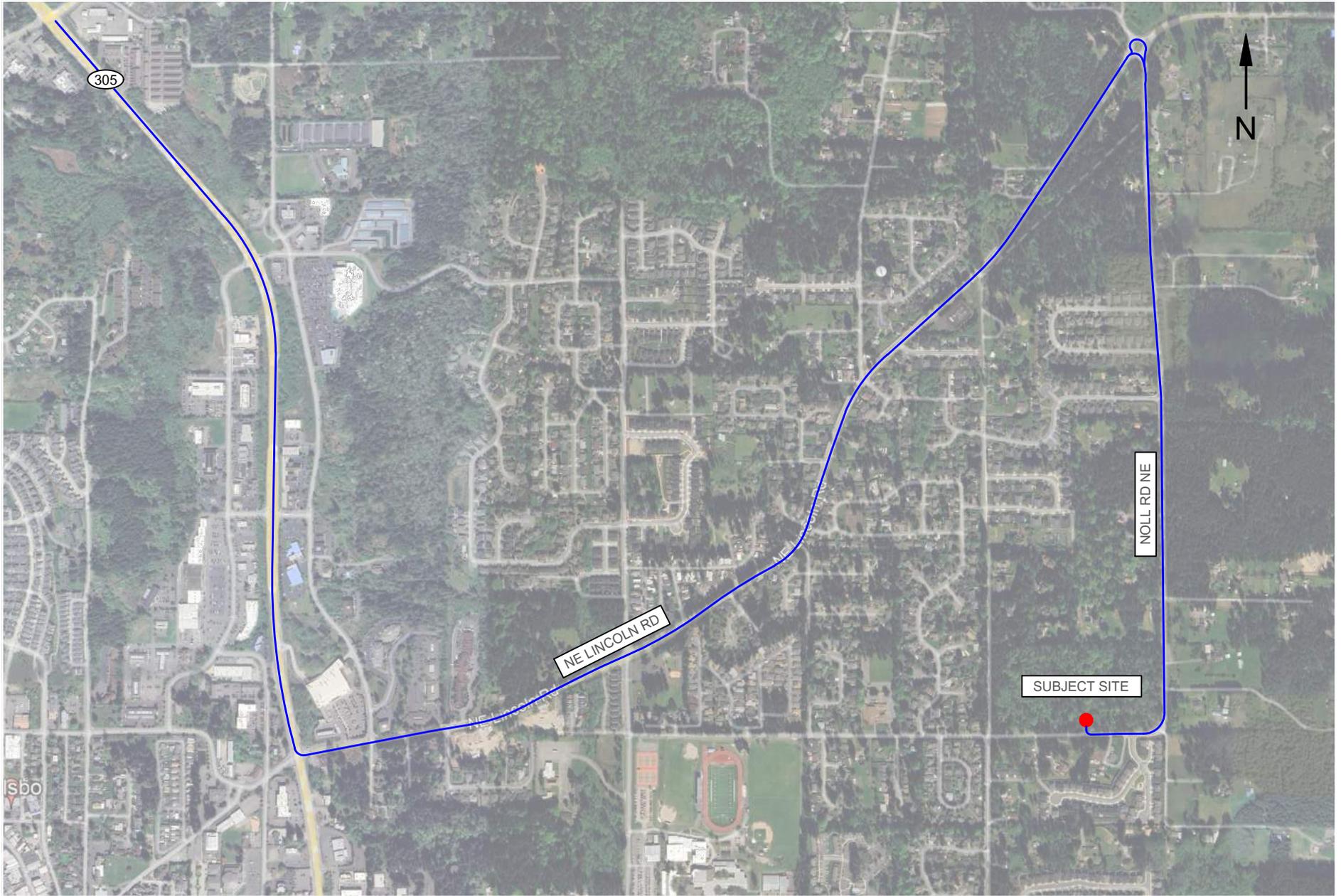
Approach	EB	WB	SB
HCM Control Delay, s/v	1.89	0	8.88
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	459	-	-	-	948
HCM Lane V/C Ratio	0.019	-	-	-	0.022
HCM Control Delay (s/veh)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX Truck Routes





SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX Left Turn Lane Warrants



Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized

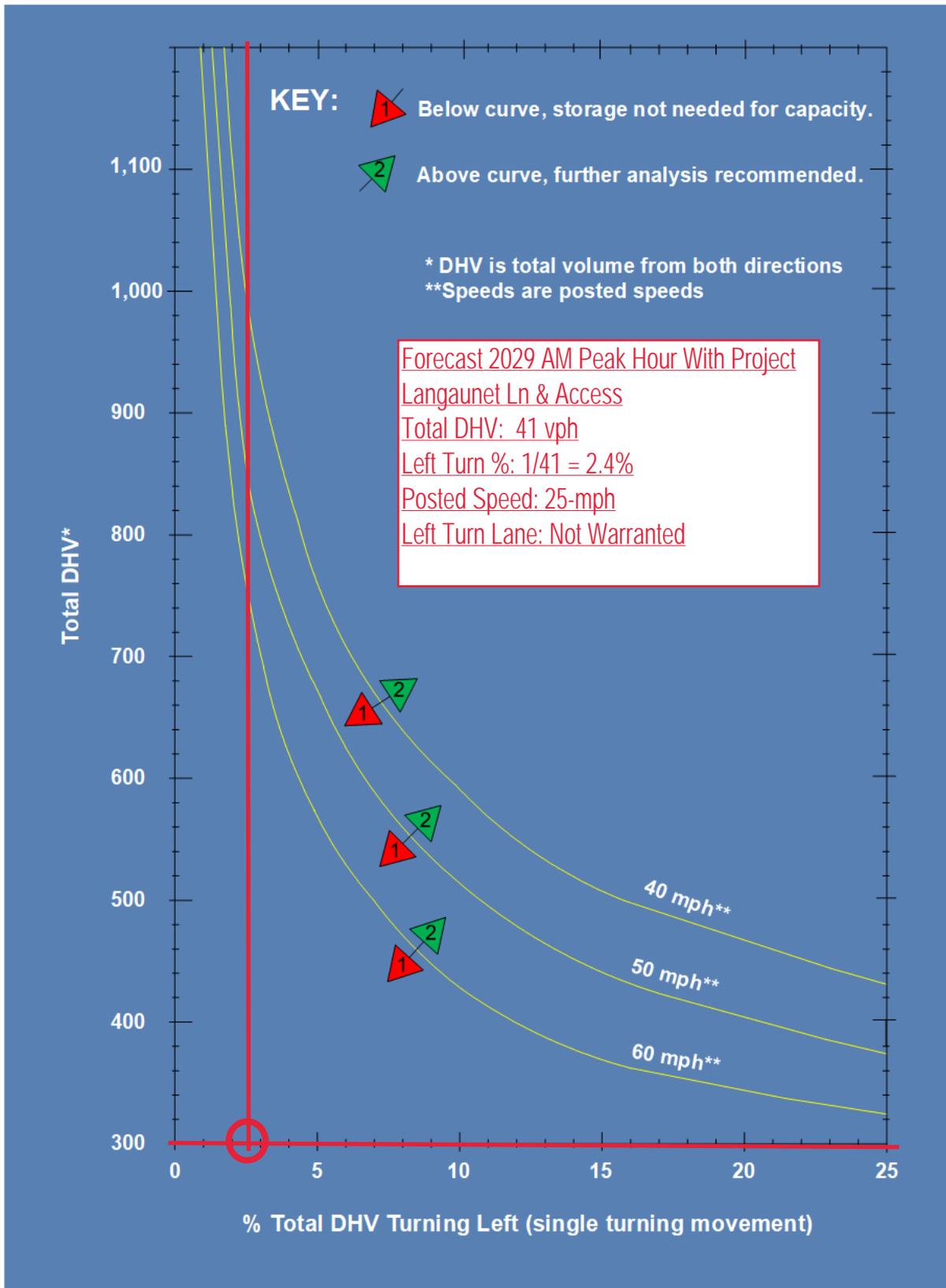


Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized

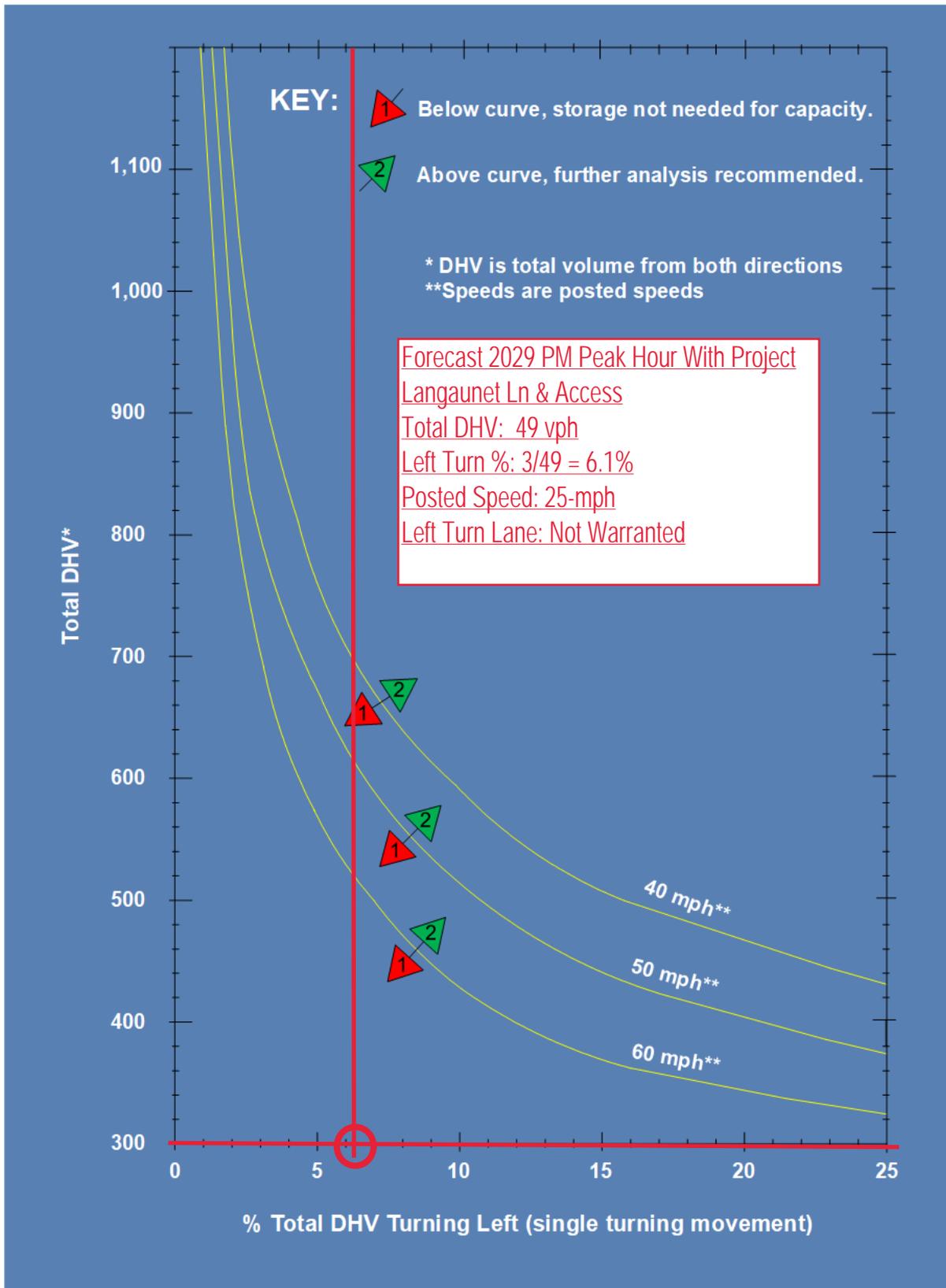


Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized

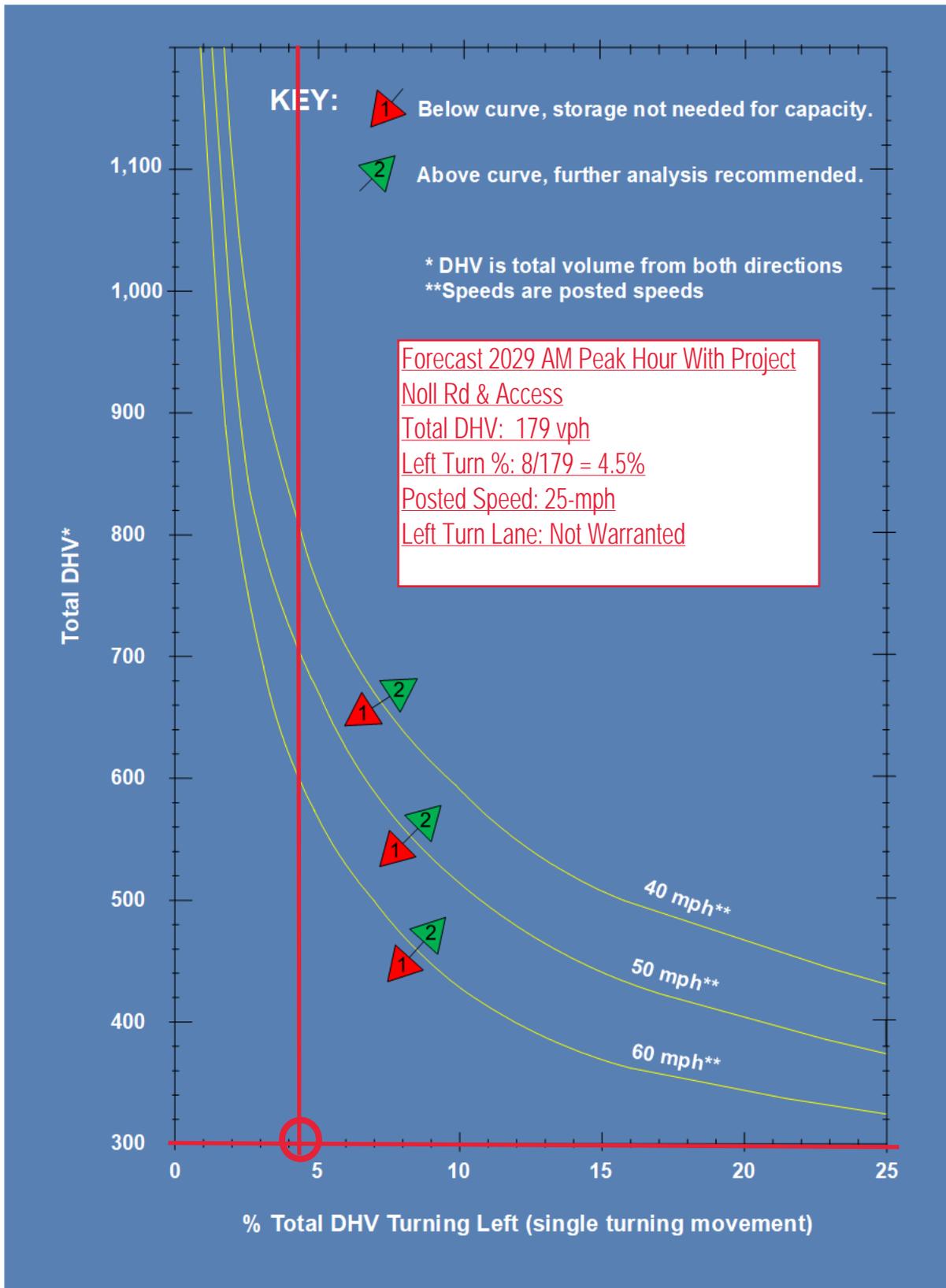
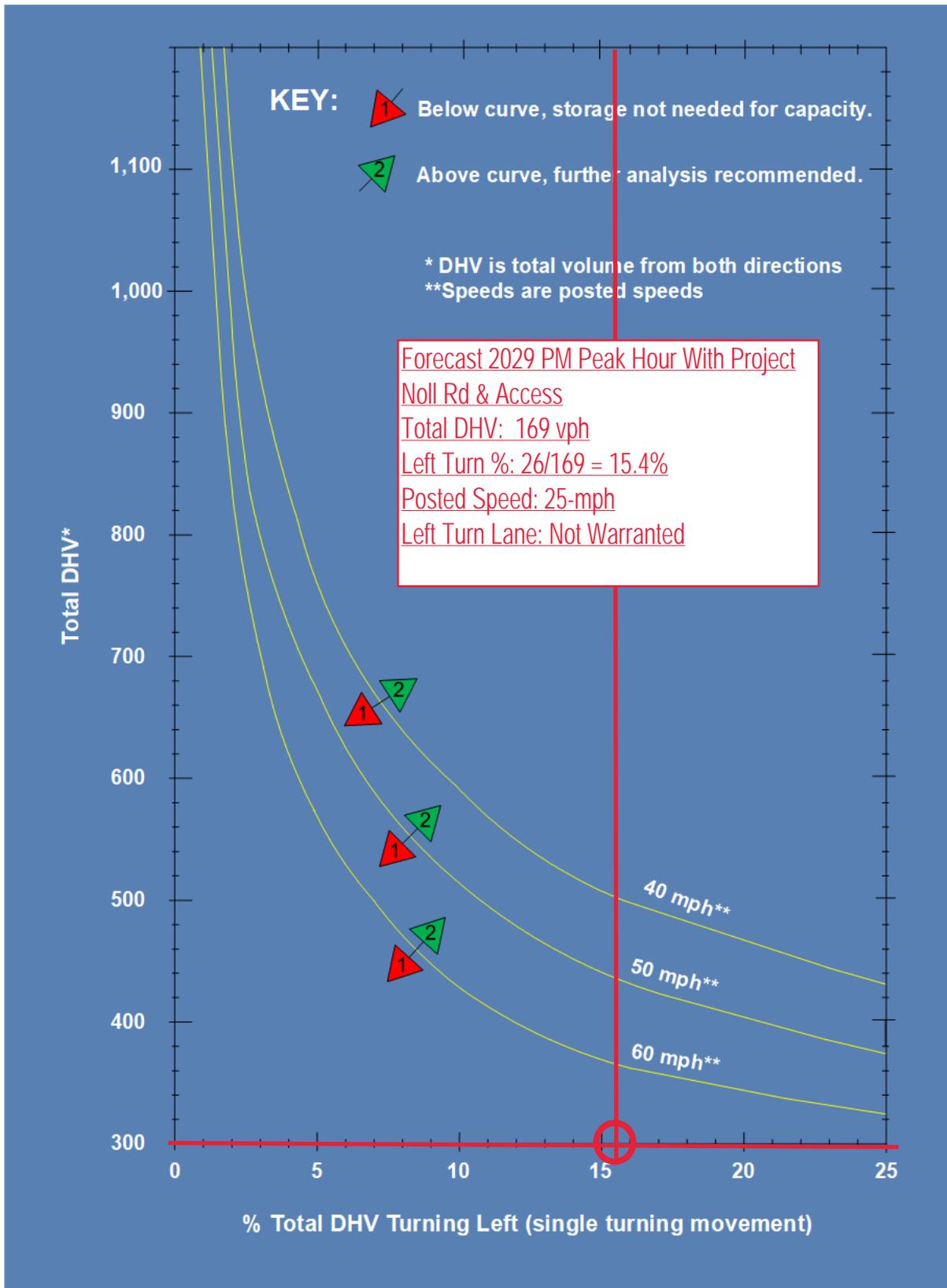


Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized



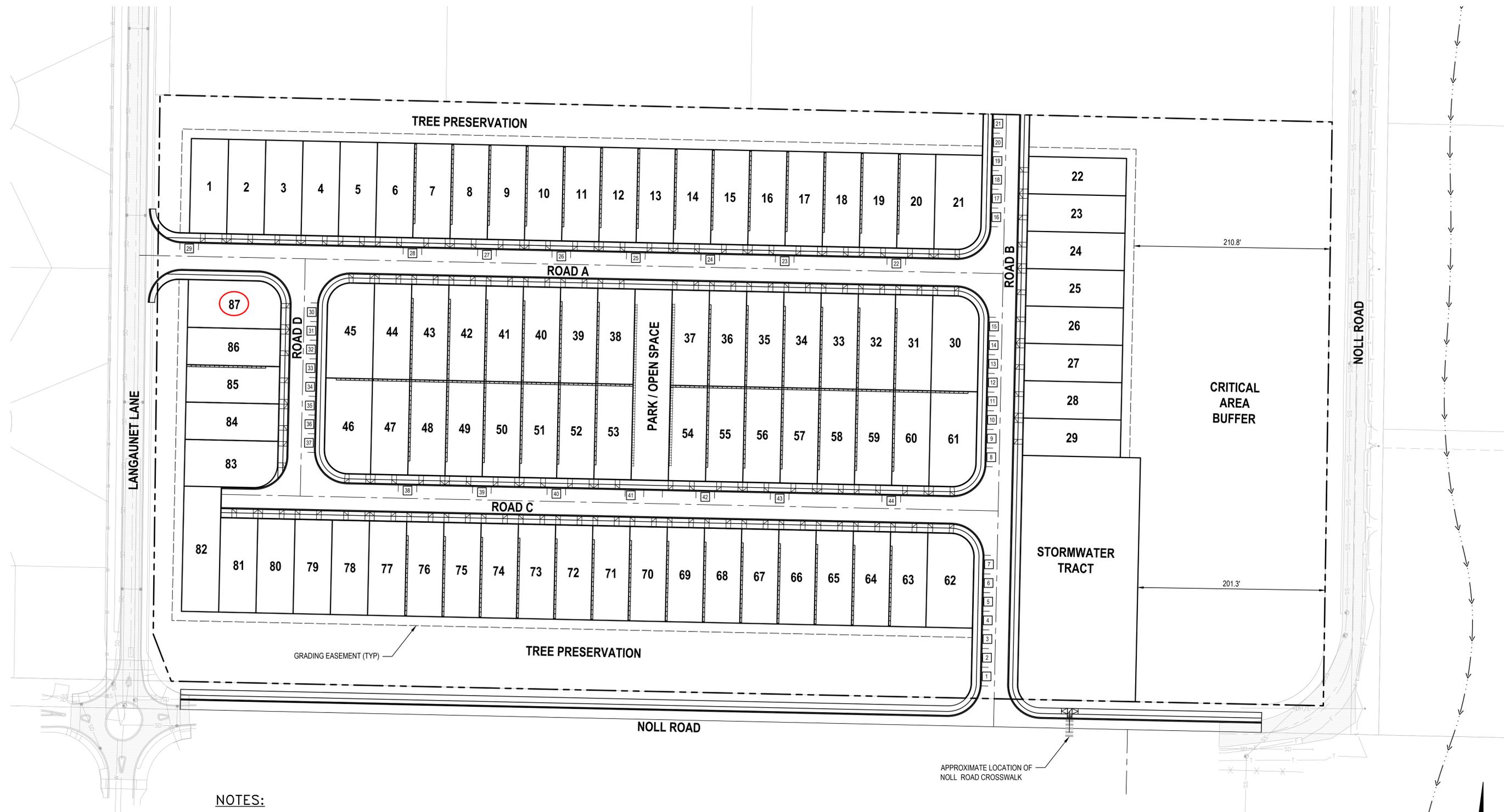
SANDSTONE RIDGE TRAFFIC IMPACT ANALYSIS

APPENDIX
Site Plan



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Apr. 20, 2024 - 1:49pm
alexc



NOTES:

- EXISTING CONDITIONS SHOWN ON LANGAUNET LANE AND NOLL ROAD ARE APPROXIMATE FROM CITY PROVIDED ASBUILT AND CONSTRUCTION DRAWING PDFS. PROPOSED IMPROVEMENTS WILL BE REDESIGNED TO TIE INTO EXISTING/PROPOSED ROAD WHEN SURVEY/DESIGN CAD ARE AVAILABLE.
- CURRENT SITE PLAN LAYOUT INCLUDES 44 ON-STREET PARKING SPACES. 43 ON-STREET PARKING SPACES REQUIRED BY CODE.
- 200± FEET AT EAST END OF SITE ARE SET ASIDE AS CRITICAL AREA BUFFER FOR STREAM PROTECTION.

1	X/XXXX	DMK	EKC	JSF	XXX
NO.	DATE	BY	CHD.	APPR.	REVISION

DRAWN BY KSA	DESIGNED BY DMK
CHECKED BY EKC	APPROVED BY JSF
DATE XXXXXXXX XX, XXXX	
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SITE PLAN		C1