Traffic Impact Analysis

Evans Vista Residential

Port Townsend, Washington

Prepared For:
City of Port Townsend, WA

Prepared By:
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November 2023

SCJ ALLIANCE
CONSULTING SERVICES

Traffic Impact Analysis

Project Information

Project:	Evans Vista Residential
Prepared for:	City of Port Townsend 250 Madison Street, Ste 2 Port Townsend, WA 98368

Reviewing Agency

Jurisdiction:	City of Port Townsend

Project Representative

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Contact:	Ryan Shea, PTP, Senior Transportation Planner Eric Johnston, PE, Principal

Project Reference:	SCJ #22-000827 Path: N:\Projects\1835 Thomas Architecture Studio, Inc\22-000827 Port Townsend Evans Vista Housing Development\Phase 03 - Traffic Impact Analysis Report\04-Dels\2023-0921 Evans Vista TIA.docx

Signature

The technical material and data contained in the Traffic Impact Analysis were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

Prepared by Ryan Shea, PTP, Senior Transportation Planner

11/13/2023

Approved by Eric Johnston, PE, Principal

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Executive Summary

The City of Port Townsend proposes to construct the *Evans Vista Residential* project to be located south and east of W Sims Way and west of Evans Vista in the City of Port Townsend, Washington. The project is expected to be built in one phase which would open in 2027. The project would consist of 287 apartments (both low and mid-rise) and 18 townhomes for a total of 305 multi-family dwelling units, and 8,500 square feet of small retail commercial development.

This report has been prepared to provide a Traffic Impact Analysis (TIA) and project information for the City of Port Townsend to use in reviewing the development proposal. Analysis is based on comments and direction received from City staff and City TIA guidelines. Operational analysis has been prepared for existing 2023 conditions and conditions expected in 2027 with and without completion of the development.

Figure 1 illustrates the site vicinity and the transportation network serving the project area.

Project Summary

At full occupancy in 2027, the project is estimated to generate approximately 143 new-to-network trip ends during the PM peak hour. Access to the project will be provided via an extension of Evans Vista west and southwest from its current terminus near the State DSHS office, and via a new intersection with Mill Road to the east of the signalized intersection with W Sims Way (SR 20). Most project-related traffic is assumed to travel east and north from the site in the direction of the most developed portions of Port Townsend.

Operational Results

Roadway and intersection analysis of the study area was conducted for existing 2023 PM peak hour conditions and for PM peak hour conditions with and without the proposed project during the 2027 opening year.

Based on the City's level of service standards identified in the *Port Townsend Transportation Functional Plan* (LOS D), there are no projected deficiencies in the 2027 horizon year.

Based on this finding, no off-site transportation system mitigation is necessary or recommended.

Roadway Improvements

The project will construct a full street improvement to match the existing Evans Vista cross-section from its current terminus near the Stat DSHS office to a new intersection with Mill Road to the east of the signalized intersection with W Sims Way.

1 Introduction and Summary

1.1 Purpose of the Report and Study Objectives

The City of Port Townsend proposes to construct the *Evans Vista Residential* project to be located south and east of W Sims Way and west of Evans Vista in the City of Port Townsend, Washington. The project is expected to be built in one phase which would open in 2027. The project would consist of 287 apartments (both low and mid-rise) and 18 townhomes for a total of 305 multi-family dwelling units, and 8,500 square feet of small retail commercial development. The purpose of this report is to present a discussion of potential traffic-impacts associated with the development of this project and to identify whether any impact mitigation measures should be provided.

Figure 1 illustrates the site vicinity and the transportation network serving the project area.

Figure 1. Site Vicinity Map

1.2 Traffic Analysis Parameters

Based on our assessment of intersections that could potentially be impacted by the proposed project, existing and forecasted operations analysis has been conducted for the following intersections:

- W Sims Way (SR 20) at Evans Vista/Rainier Street
- W Sims Way at Mill Road/Discovery Road
- Rainier Street/Discovery Road

Operational analysis has been prepared for existing 2023 PM peak hour conditions and forecasted 2027 PM peak hour conditions with and without completion of the development.

2 Project Description

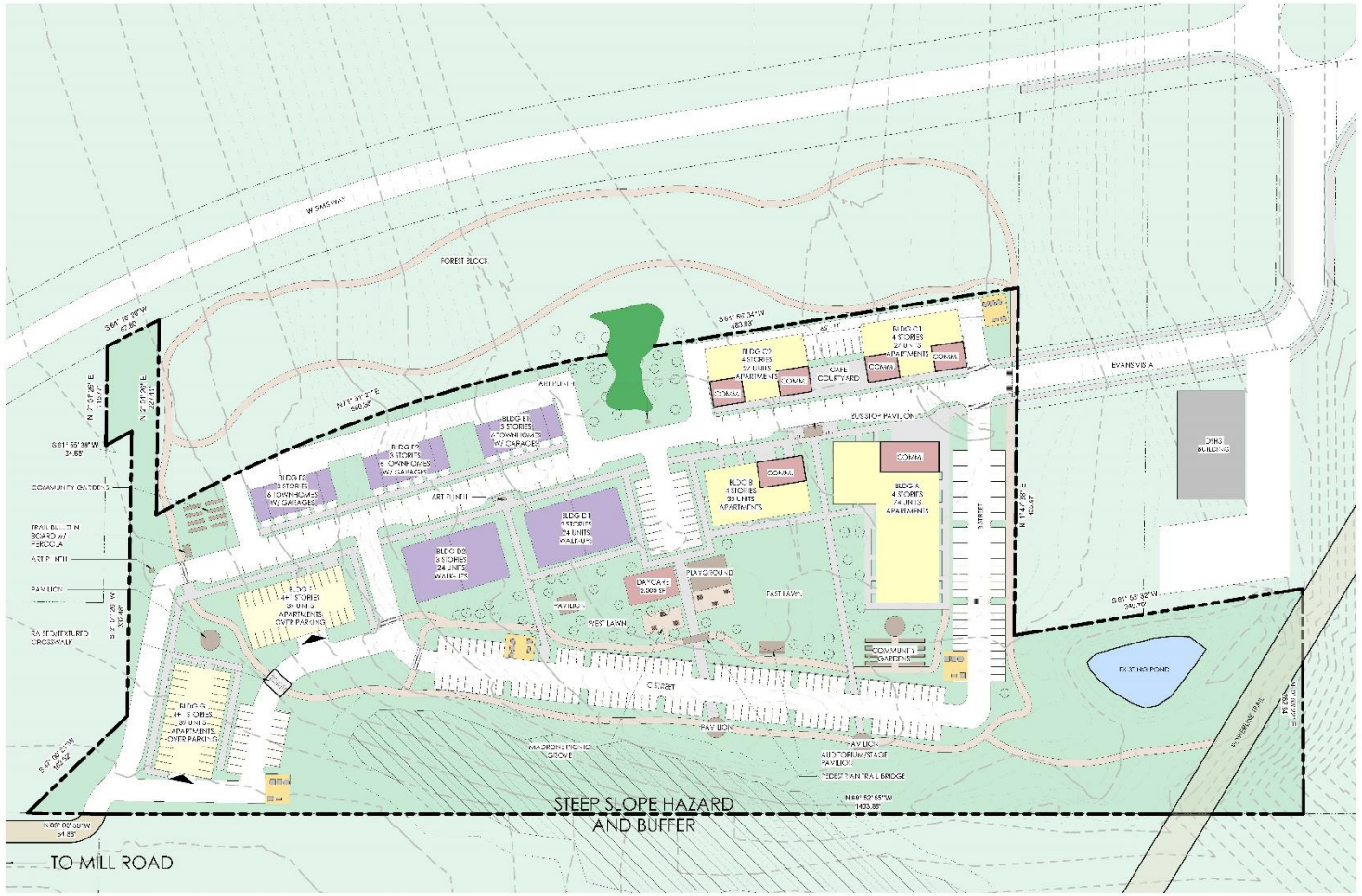
2.1 Development Proposal

The City of Port Townsend proposes to construct the *Evans Vista Residential* project to be located south and east of W Sims Way and west of Evans Vista in the City of Port Townsend, Washington. The project is expected to be built in one phase which would open in 2027. The project would consist of 287 apartments (both low and mid-rise) and 18 townhomes for a total of 305 multi-family dwelling units, and 8,500 square feet of small retail commercial development. The project would also include 355 parking spaces including 52 parking garages for apartments and 18 parking garages for the townhomes.

Access to the project will be provided by two internal street connections. One connection will entail the extension of Evans Vista further west through the site, linking it with the intersection of W Sims Way at Evans Vista. The second connection would entail a roadway extension off Mill Road to link with Evans Vista within the project site and to connect to the intersection of W Sims Way and Mill Road to the south and west of the site.

The preliminary site plan is provided in **Figure 2.**

Figure 2. Preliminary Site Plan



305 Units
355 Parking Spaces (285 parking stalls + 52 parking garage + 18 townhome garages)

3 Existing Conditions

3.1 Area Land Uses

The *Evans Vista Residential* project will be located on undeveloped property that is presently forested on the south side of W Sims Way to the south and west of the intersection with Evans Vista. Several small commercial uses are located west of the property on the northeast corner of the W Sims Way/Mill Road intersection. An office of the Department of Social and Health Services is located to the east of the project on Evans Vista to the south of its intersection with W Sims Way.

3.2 Roadway Inventory

Key streets within the project vicinity are described in this section including functional classification, number of travel lanes, presence of sidewalks and bicycle lanes, and speed limits.

3.2.1 W Sims Way (SR 20)

W Sims Way/SR 20 is a state highway that runs northeast/southwest and connects the project area to the heart of Port Towsend to the north and other destinations to the south. The road is classified by the City in its Transportation Functional Plan as a Principal Arterial and has one travel lane in each direction with bike lanes through the length of the roadway in the project area from the Mill Road traffic signal through the Evans Vista roundabout and further east. Sidewalks are provided through the Evans Vista roundabout and continuing to the east. Wide shoulders are provided south/west of the Mill Road intersection after the designated bicycle lanes end at the city limits. W Sims Way currently has a speed limit of 30 mph in the vicinity of the Evans Vista roundabout, increasing to 40 mph to the west of that intersection and through the Mill Road intersection. West of Mill Road, the speed limit increases to 50 mph.

3.2.2 Evans Vista

South of the intersection with W Sims Way, Evans Vista is classified as a local street. It has one travel lane in each direction with an unposted speed limit assumed to be 25 mph. The street has been improved to an urban cross-section to the western limit of the Department of Social and Health Services (DSHS) building where it currently ends. Sidewalks, bicycle lanes, street trees, and illumination is provided.

3.2.3 Rainier Street

Rainier Street is classified as a Minor Arterial that provides a single travel lane in each direction. The street has a posted speed limit of 25 mph and has been improved to an urban street section with sidewalks on both sides and a two-way bicycle path on the east side of the street.

3.2.4 Mill Road

Mill Road is classified as a local street that provides a single travel lane in each direction. The street has posted speed limit of 25 mph but has no sidewalks, bicycle lanes or shoulders.

3.2.5 Discovery Road

Discovery Road is classified as a Minor Arterial and provides one travel lane in each direction. Discovery Road runs parallel to and west of W Sims Way in the project vicinity and has limited or narrow shoulders. Discovery Road provides an alternative to Sims Way (SR 20) to/from Port Townsend and other areas of Jefferson County and the Olympic Peninsula. No sidewalks or bicycle lanes are provided.

A summary of the existing intersection channelization and control type for each of the study intersections is provided in **Figure 3.**

3.3 Traffic Volume Data

Traffic Count Consultants, TC2, a transportation data collection service, provided evening peak period turning movement counts at the two existing study intersections:

- W Sims Way (SR 20) at Evans Vista/Rainier Street
- W Sims Way at Mill Road/Discovery Road
- Rainier Street at Discovery Road

Counts were conducted for all study area intersections on Tuesday, September 26, 2023, between 4:00 and 6:00 PM. No adjustment was necessary to reflect traffic volume changes attributable to the COVID-19 pandemic.

The existing 2023 traffic volumes for the study intersections for the PM peak hour are presented in **Figure 4**. The turning movement count diagrams and daily count data are provided in **Appendix A.**

3.4 Crash History

The Washington State Department of Transportation provides crash data for study area roadways. The data was collected over the five-year span between January 1, 2018 and December 31, 2022 and is summarized for study area intersections in **Table 1**. Detailed crash data records are included in **Appendix B.**

Table 1. Existing Crash Severity by Study Intersection

Intersection	Fatal	Serious Injury	Minor Injury	Possible Injury	Property Damage Only	Total
W Sims Way at Evans Vista/Rainier Street	0	0	0	1	11	12
W Sims Way at Mill Road/Discovery Road	0	0	0	6	5	11
Rainier Street/Discovery Road	0	0	1	0	0	1
Total Crashes	**0**	**0**	**1**	**7**	**16**	**24**

As indicated in Table 1, no serious injury or fatal crashes occurred at study area intersections during the previous five year period. Approximately 67 percent of all recorded crashes involved Property Damage Only with the remainder involving either minor or possible injuries.

One crash at the intersection of W Sims Way (SR 20) with Mill Road involved a bicyclist who failed to yield to the motor vehicle while making a left turn. Another crash at the intersection of W Sims Way and Rainier Street involved a motor vehicle crash with a pedestrian. Inattention was cited as the primary contributing cause. Both crashes involved possible injuries.

3.5 Transit Facilities and Services

Jefferson Transit currently serves the City of Port Townsend with transit services providing connections throughout the city and to surrounding areas via local and express bus service to Port Ludlow, Poulsbo, Sequim, and other destinations. Additionally, service is provided to connect to the Port Townsend Ferry Terminal which offers connections to Keystone on Whidbey Island, and to the Kingston Ferry Terminal which connects to Edmonds.

The immediate study area is served by Route 4 – Upper Sims Loop which operates on a one-way loop on half hour headways Monday through Saturday. On weekdays service to the nearest time spot (Rainier Street at S Park Avenue) starts at 7:41 am and ends at 6:41 pm. On Saturdays, service starts at 8:41 am and ends at 6:56 pm. There are two stops in proximity to the Evans Vista Residential project, one at the corner of Rainier Street and S Park Avenue on the south side of the intersection, and the other on the east side of W Sims Way between Evans Vista and Cliff Street.

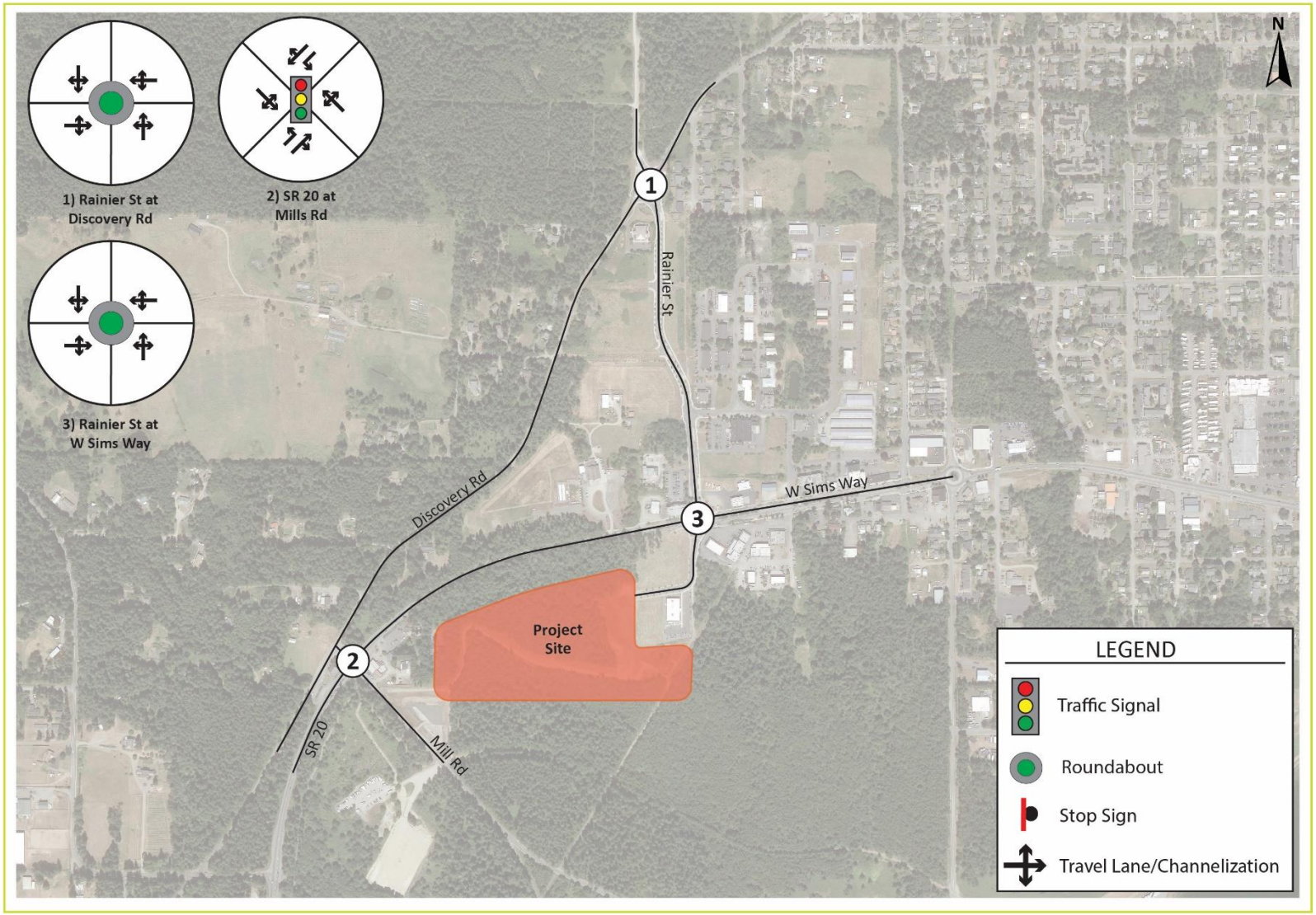


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Figure 3
Existing Channelization and Intersection Control

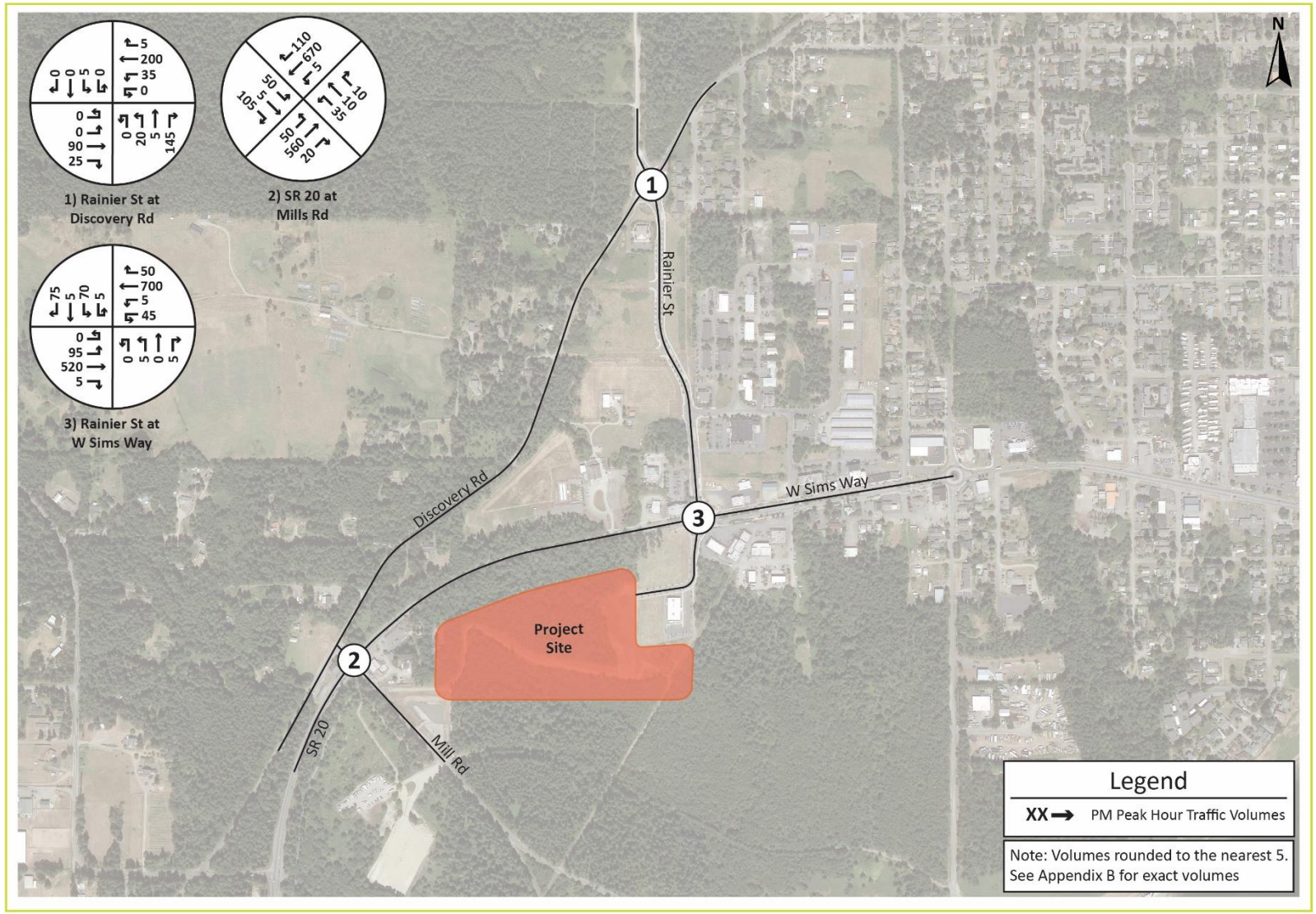

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Figure 4
Existing 2023 PM Peak Hour Traffic Volumes

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4 Project Traffic Characteristics

The project-related characteristics having the most effect on area traffic conditions are peak hour trip generation and the directional distribution of traffic volumes on the surrounding roadway network.

4.1 Site-Generated Traffic Volumes

Vehicle trip generation was estimated using the trip generation rates contained in the 11th edition of the *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE). The land-use category "Multifamily Housing (Low-Rise Not Close to Rail Transit)" (land-use code 220), Multifamily Housing (Mid rise Not Close to Rail Transit) (land use code 221), Single Family Housing Attached (land use code 215), and Strip Retail Plaza (land use code 822) were all used to calculate the trip generation. When appropriate the "fitted-curve" equation was used to estimate trips in preference to using the average trip rate as this approach was recommended by ITE.

The PM peak hour trip generation rates are shown in **Table 2**.

Table 2. PM Peak Hour Trip Generation Rate

Land Use	Land Use Code (LUC)	Unit	Trip Rate	Enter %	Exit %
Multifamily Housing (Low Rise Not Close to Rail Transit)	220	DU	0.51	63%	37%
Multifamily Housing (Mid Rise Not Close to Rail Transit)	221	DU	0.39*	61%	39%
Single Family Housing, Attached	215	DU	0.38*	59%	41%
Strip Retail Plaza (<40ksf)	822	KSF	6.59	50%	50%

*Fitted-curve equation rate, DU means dwelling unit, KSF means thousand square feet

The total trip generation expected from this project is calculated by applying the unit measure for each land use category (i.e., the number of houses) to the appropriate trip generation rate. The PM peak hour trip generation for the *Evans Vista Residential* project is shown in **Table 3** below.

Table 3. PM Peak Hour Project Trip Generation

		Total Trips			Internal		Pass-by		Net New Trips		
Land Use Category	**Size**	**In**	**Out**	**Total**	**%**	**Total**	**%**	**Total**	**In**	**Out**	**Total**
Apartments (Low Rise)	48	15	9	24	7%	3	0%	0	13	8	21
Apartments (Mid Rise)	239	57	37	94	7%	7	0%	0	53	34	87
Townhouses	18	4	3	7	7%	0	0%	0	4	3	7
Retail Commercial	8.5 ksf	28	28	56	18%	10	40%	18	14	14	28
Total Project Build-out		**104**	**77**	**181**		**20**		**18**	**87**	**59**	**143**

4.2 Site Traffic Distribution and Assignment

The directional distribution of traffic to and from the proposed project was estimated based on the spatial orientation of the project site to surrounding communities. For purposes of this report it was assumed that 75 percent of project traffic would be oriented to/from the north to major portions of the city of Port Townsend via either Discovery Road or SR 20. 25 percent of project traffic would be oriented to/from the south to business and other opportunities that lie in that direction.

The resultant traffic distribution percentages and site traffic assignments are shown in **Figure 5.**

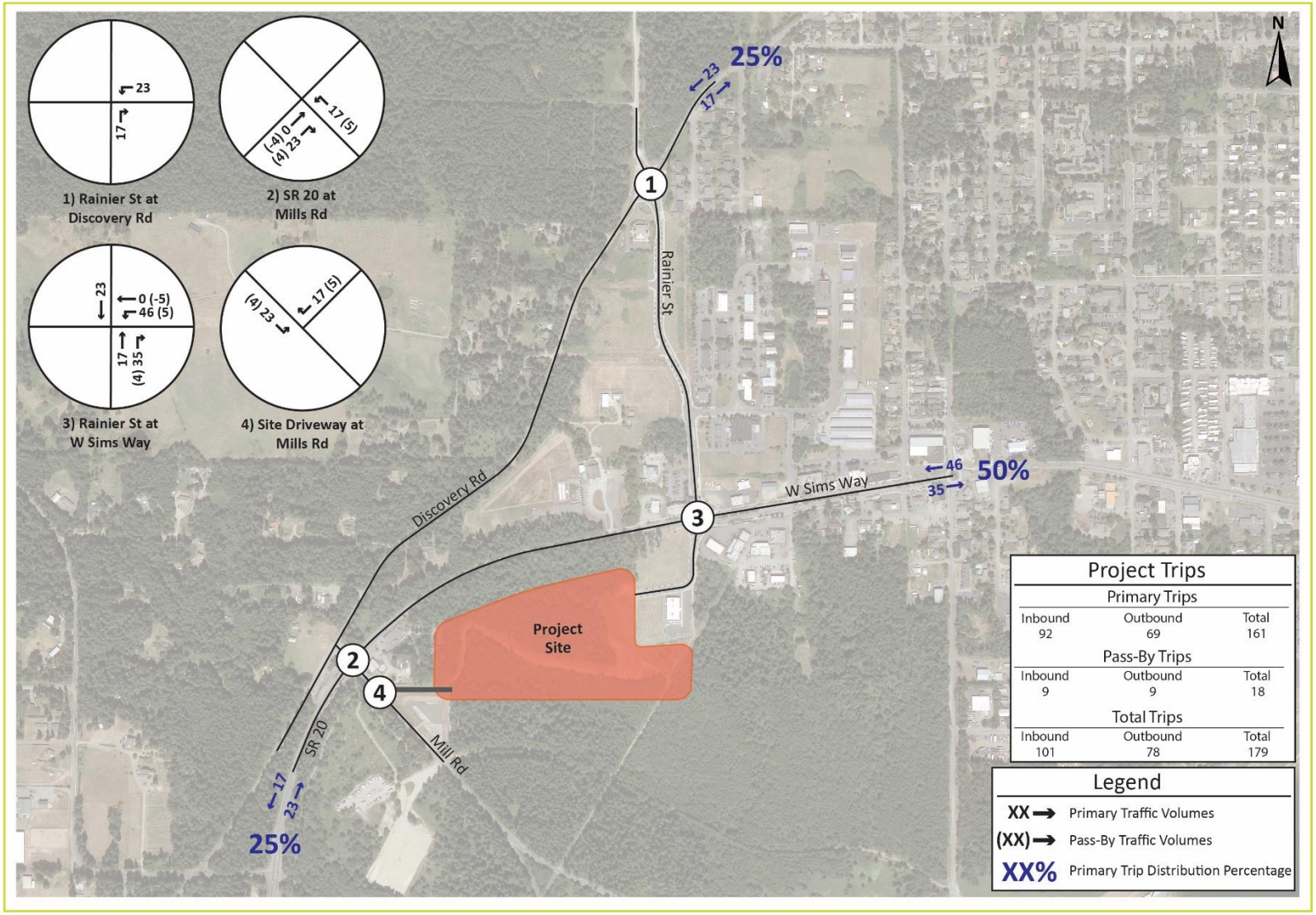

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Figure 5
Site-Generated Traffic Volumes
PM Peak Hour

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5 Future Traffic Conditions

5.1 Roadway Network Improvements

The City of Port Townsend *Six Year Transportation Improvement Program* (2024-2029) identifies the following roadway improvements within the vicinity of the *Evans Vista Residential* project:

- *Discovery Road, Rainier Street to Sheridan Street* – rebuild roadway, sidewalks, drainage, shoulder improvements and bicycle lanes.
- *Mill Road Intersection Improvements, Discovery Road to SR 20/Jacob Miller* – intersection improvements including Jacob Miller. Partnership with Jefferson County.
- *Discovery Road II, City Limits to Rainier Street* - Rebuild roadway, bike lanes, sidewalks, pathway, drainage, intersection improvements.

None of these projects are expected to impact the operation of the study area intersections within the studied horizons and are not reflected in the intersection analysis.

5.2 Future Traffic Volumes

Traffic volume forecasts were prepared for PM peak hour conditions for the 2027 opening year. The future traffic volume forecast includes non-specific background traffic growth, pipeline development traffic, and estimated traffic generated by the proposed *Evans Vista Residential* project.

For the non-specific background traffic growth, a 2.0 percent annual growth rate (non-compounded) was used. This growth rate is consistent with the assumed background traffic growth rates observed in numerous recent Traffic Impact Analysis reports for other projects in the vicinity of the *Evans Vista Residential* project.

One pipeline project was identified by the City of Port Townsend to be included in the future year traffic volume forecasts. This project involved construction of a 5,500 square foot building which will be used by a local contractor as a base for his office, shop, and the storage of materials. Trips to/from this building were expected to use Rainier Street before heading south to W Sims Way or north to Discovery Road.

The volumes for this pipeline project were included in the future background traffic volume projections for study area intersections and used as the basis for evaluating 2027 PM peak hour non-project traffic operations. Documentation of the traffic forecasting process is presented in **Appendix C** and projected volumes are illustrated in **Figure 6**.

5.2.1 2027 Traffic Volumes With Project

305 multi-family dwellings are expected to open on the project site by 2027. As noted in Table 3, this level of activity will generate 143 net new trips in the PM peak hour which will dissipate throughout the transportation network. The expected distribution of project trips is shown in Figure 5. These trips are added to the background traffic estimate shown in Figure 6. **Figure 7** illustrates the sum of background and project-related traffic. Appendix C provides further information about the traffic volume forecasting process.

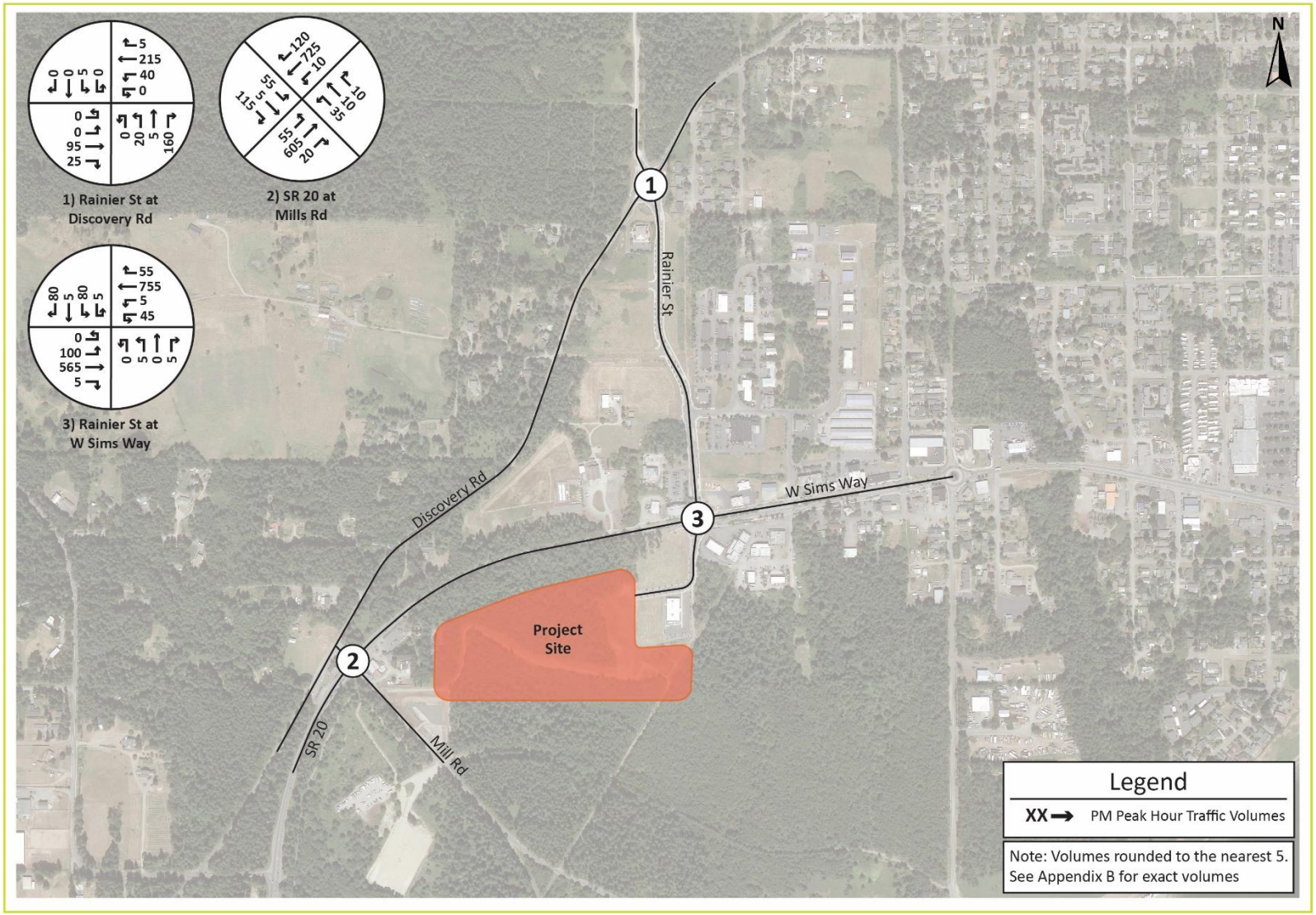

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Figure 6
Projected 2027 PM Peak Hour
Traffic Volumes Without Project

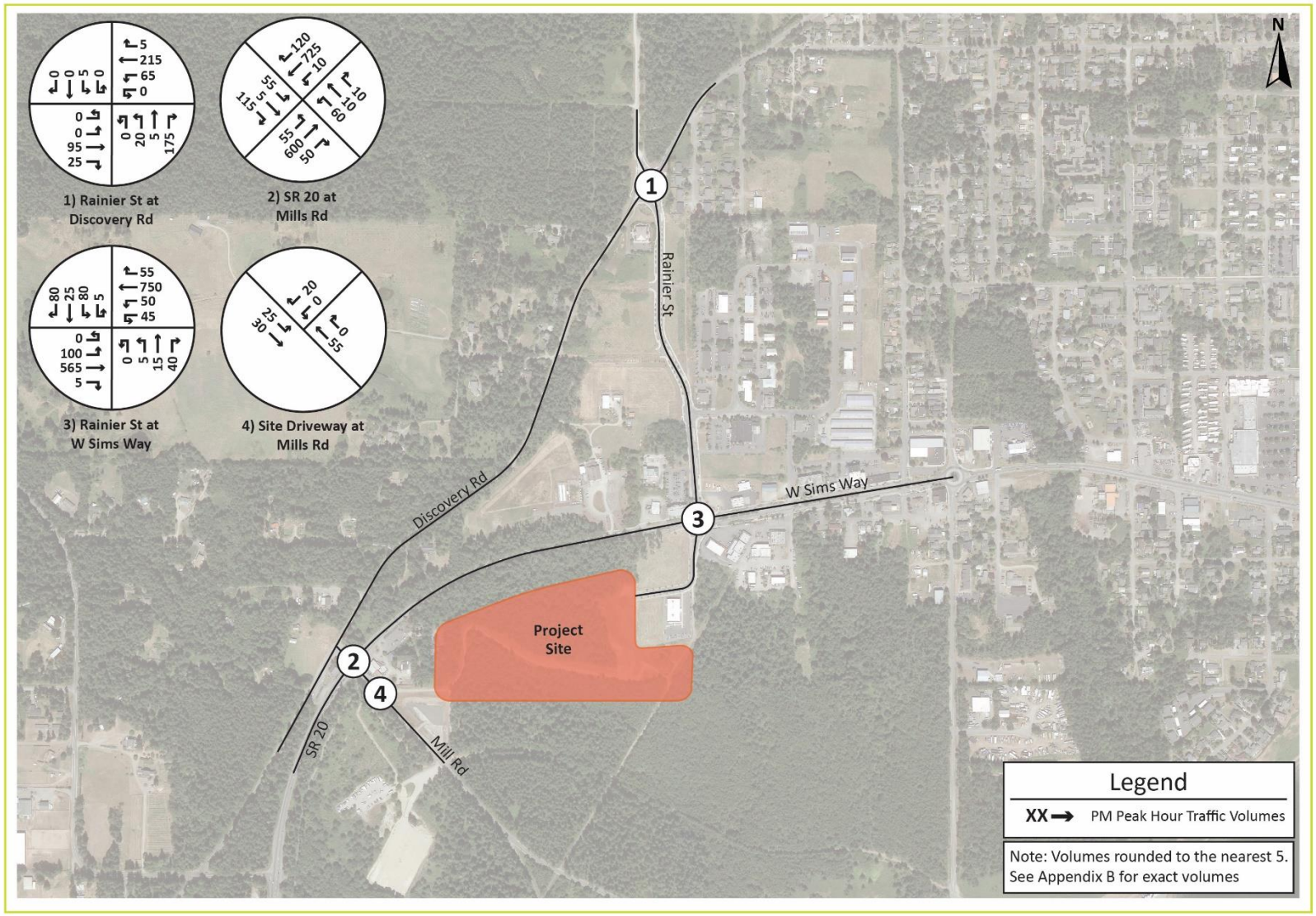

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Figure 7
Projected 2027 PM Peak Hour Traffic Volumes With Project

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6 Traffic Operations Analysis

Traffic analyses were conducted to identify any deficiencies within the study area for the PM peak hour in the 2023 base year and the 2027 project opening year.

6.1 Operations Analysis

The acknowledged source for determining overall traffic performance for arterial segments and independent intersections is the current (6th) edition of the *Highway Capacity Manual* (HCM). Operations analyses were completed for the 2023 base year and projected 2027 PM peak hour traffic volume scenario for study area intersections. The PM peak hour is the highest traffic flow period during the day in this area. This time period is typically selected for analysis as it reflects the greatest impact of a project on the areawide roadway system.

Signalized intersection analysis was performed using Synchro version 11, with the HCM6 output of the Synchro software. The Synchro software packages implement the methodologies described in the current HCM. Roundabout traffic operations analysis was conducted using the Sidra version 9 software package.

The City of Port Townsend identifies a Level of Service (LOS) D standard for the study area intersections as provided in the *City of Port Townsend Transportation Functional Plan*.

6.1.1 Intersection Levels of Service

For signalized intersections, the overall LOS grade represents the weighted average of all movements at the intersection. For intersections under minor street stop-sign control, the LOS of the most difficult movement (typically the minor street left turn) represents the intersection level of service. The LOS/delay criteria for stop sign-controlled intersections are different than for signalized intersections because driver expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay.

Table 4. Level of Service Criteria for Intersections

Level of Service	Signalized Intersection Average Control Delay (seconds/vehicle)	Stop-Controlled Intersection Average Control Delay (seconds/vehicle)
A	≤ 10	≤ 10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50

6.2 Intersection Analysis

Intersection operations analysis was conducted for the PM peak hour with the following scenarios:

- Existing 2023 traffic volumes

- Projected 2027 background traffic volumes without the *Evans Vista Residential* project
- Projected 2027 traffic volumes with the *Evans Vista Residential* project

6.2.1 Existing and 2027 Opening Year

The intersection control and channelization are documented above in Figure 3. The operations analysis worksheets are included in **Appendix D** and results are presented in **Table 5**. Following is a description of the operations analysis results for the study intersections for the scenarios listed above. Delay is reported as average seconds per vehicle.

Table 5. 2023 and 2027 PM Peak Hour Intersection Level of Service

Intersection		Control Type	Worst Movement	2023 LOS (Delay)	Projected 2027	
					Without Project LOS (Delay)	With Project LOS (Delay)
1	Rainier Street/Discovery Road	RBT[1]	--	A (4.6)	A (4.6)	A (4.8)
2	W Sims Way (SR 20) at Mill Road/Discovery Road	Signal	--	B (10.3)	B (12.8)	B (12.7)
3	W Sims Way (SR 20) at Evans Vista/Rainier Street	RBT[1]	--	A (6.1)	A (6.3)	A (6.8)
4	Mill Road at Site Driveway	Stop	SW Left/Right	--	--	A (8.7)

1 RBT means single lane roundabout

6.2.2 Rainier Street at Discovery Road

This is a four-legged roundabout controlled intersection. In the PM peak hour, the overall intersection currently operates at LOS A. It is expected to remain at LOS A in the projected 2027 horizon year with and without project traffic. The intersection is projected to operate within the LOS D standard for all scenarios.

6.2.3 W Sims Way at Mill Road/Discovery Road

This is a four-legged intersection with traffic signal control. In the PM peak hour, the overall intersection currently operates at LOS B. It is expected to remain at LOS B in the projected 2027 horizon year with and without project traffic. The intersection is projected to operate within the LOS D standard for all scenarios.

6.2.4 W Sims Way at Evans Vista/Rainier Street

This is a four-legged roundabout controlled intersection. In the PM peak hour, the overall intersection currently operates at LOS A. It is expected to remain at LOS A in the projected 2027 horizon year with and without project traffic. The intersection is projected to operate within the LOS D standard for all scenarios.

6.2.5 Mill Road at Site Driveway

This will be a three-legged intersection with stop control on the southbound leg coming from the project which will be an extension of the existing Evans Vista. In the 2027 PM peak hour with the project the intersection is expected to operate at LOS A.

6.3 Sight Distance Evaluation for Internal Roadway Access

6.3.1 Evans Vista at Mill Road

Evans Vista is proposed to be extended from its existing terminus near the State DSHS office to intersect with Mill Road. An in-field sight distance evaluation conducted at this location indicated that there was approximately 535 feet of sight distance to the east to the Pacific Northwest Trail crossing, and about 200 feet west to the signalized intersection with W Sims Way (SR 20). The posted speed along Mill Road is 25 mph which would require a minimum sight distance of 280 feet. This access intersection can be designed to provide adequate sight distance to the east. Sight distance needs to the west will be controlled, in part, by the presence of the signalized intersection which will provide gaps in traffic along Mill Road and will result in reduced speeds for most traffic coming from that direction.

6.4 Project Mitigation

6.4.1 New Road Improvements

The project will construct a full street improvement to match the existing Evans Vista cross-section from its current terminus near the State DSHS office to a new intersection with Mill Road to the east of the signalized intersection with W Sims Way.

6.4.2 Intersection Improvements

As no operational or safety problems were identified based on the analysis in this report, no traffic impact mitigation improvements are required.

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Appendix A

Traffic Volume Counts

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

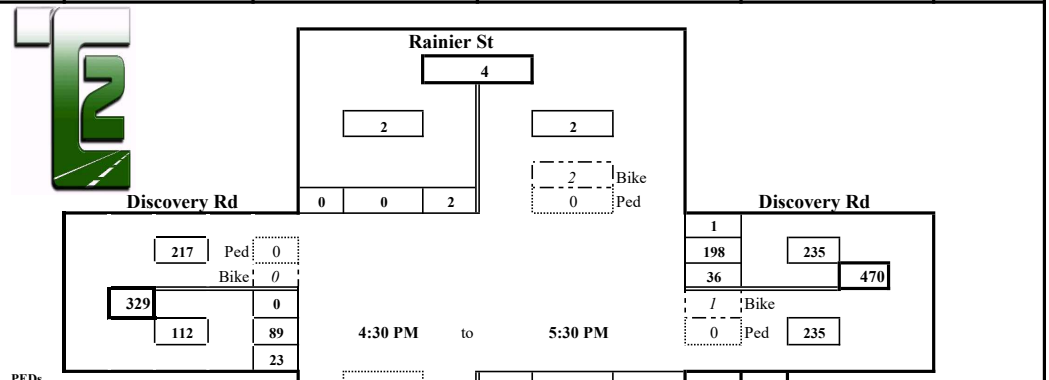
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: Rainier St & Discovery Rd **Date of Count:** Tue 09/26/2023

Location: Port Townsend, Washington **Checked By:** Jen

Time Interval	From North on (SB) Rainier St				From South on (NB) Rainier St				From East on (WB) Discovery Rd				From West on (EB) Discovery Rd				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	0	0	1	1	0	33	3	19	33	0	0	0	24	7	117
4:30 P	0	0	0	0	0	9	0	27	1	13	37	0	1	0	29	6	121
4:45 P	0	1	0	0	0	4	0	38	1	7	47	1	0	0	21	2	121
5:00 P	0	0	0	0	0	8	1	40	1	10	43	0	0	0	23	8	133
5:15 P	0	1	0	0	0	3	0	32	1	11	60	0	0	0	14	7	128
5:30 P	0	0	0	0	0	4	0	34	0	8	48	0	0	0	31	6	131
5:45 P	0	1	0	0	0	4	1	40	2	8	43	0	0	0	10	6	113
6:00 P	0	0	0	0	0	5	0	32	0	6	44	0	0	0	17	3	107
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	3	0	0	1	38	2	276	9	82	355	1	1	0	169	45	971
Peak Hour: 4:30 PM to 5:30 PM																	
Total	0	2	0	0	0	19	1	144	3	36	198	1	0	0	89	23	513
Approach	2				164				235				112				513
%HV	n/a				n/a				1.3%				n/a				0.6%
PHF	0.50				0.84				0.83				0.76				0.96



532 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.76	n/a
WB	0.83	1.3%
NB	0.84	n/a
SB	0.50	n/a
T Int.	0.96	0.6%

Check In: 513 Out: 513

Conditions:

PEDs Across:

	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07					0
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	0	0	0	0

Bicycles From:

	N	S	E	W	
INT 01	0	0	1	0	1
INT 02	0	0	0	1	1
INT 03	0	0	0	0	0
INT 04	0	0	0	0	0
INT 05	1	1	0	0	2
INT 06	1	1	1	0	3
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	2	2	1	7

Special Notes

SCJ23077M_03P

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

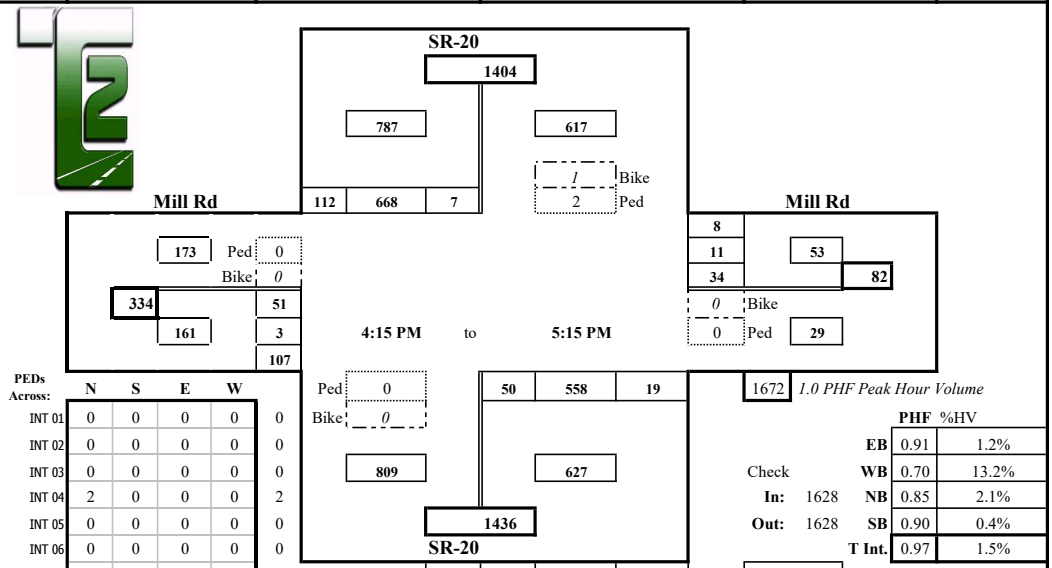
Phone: (253) 770-1407 FAX: (253) 770-1411 E-Mail: Team@TC2inc.com

WBE/DBE

Intersection: SR-20 & Mill Rd **Date of Count:** Tue 09/26/2023

Location: Port Townsend, Washington **Checked By:** Jen

Time Interval	From North on (SB) SR-20				From South on (NB) SR-20				From East on (WB) Mill Rd				From West on (EB) Mill Rd				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	2	161	24	4	11	105	8	2	11	4	2	0	15	1	21	365
4:30 P	1	3	149	31	3	17	164	4	3	9	1	1	1	17	1	21	418
4:45 P	1	1	147	29	3	5	149	9	1	6	3	3	0	12	1	28	393
5:00 P	1	1	185	22	4	14	124	4	1	6	3	2	0	18	1	25	405
5:15 P	0	2	187	30	3	14	121	2	2	13	4	2	1	4	0	33	412
5:30 P	5	0	169	22	1	13	125	2	2	7	3	2	0	10	1	36	390
5:45 P	2	0	156	19	1	14	108	1	2	11	0	1	1	11	1	29	351
6:00 P	2	0	117	20	1	12	102	1	1	5	0	2	0	7	0	20	286
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	13	9	1271	197	20	100	998	31	14	68	18	15	3	94	6	213	3020
	Peak Hour: 4:15 PM to 5:15 PM																
Total	3	7	668	112	13	50	558	19	7	34	11	8	2	51	3	107	1628
Approach	787				627				53				161				1628
%HV	0.4%				2.1%				13.2%				1.2%				1.5%
PHF	0.90				0.85				0.70				0.91				0.97



1672 *1.0 PHF Peak Hour Volume*

	PHF	%HV
EB	0.91	1.2%
WB	0.70	13.2%
NB	0.85	2.1%
SB	0.90	0.4%
T Int.	0.97	1.5%

Check In: 1628 Out: 1628

Conditions:

PEDs Across:

	N	S	E	W	
INT 01	0	0	0	0	0
INT 02	0	0	0	0	0
INT 03	0	0	0	0	0
INT 04	2	0	0	0	2
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	0	0	0	2

Bicycles From:

	N	S	E	W	
INT 01	0	1	0	0	1
INT 02	0	0	0	0	0
INT 03	1	0	0	0	1
INT 04	0	0	0	0	0
INT 05	0	0	0	0	0
INT 06	0	0	0	0	0
INT 07	1	0	0	0	1
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	1	0	0	3

Special Notes

SCJ23077M_02P

Prepared for: **SCJ Alliance**

Traffic Count Consultants, Inc.

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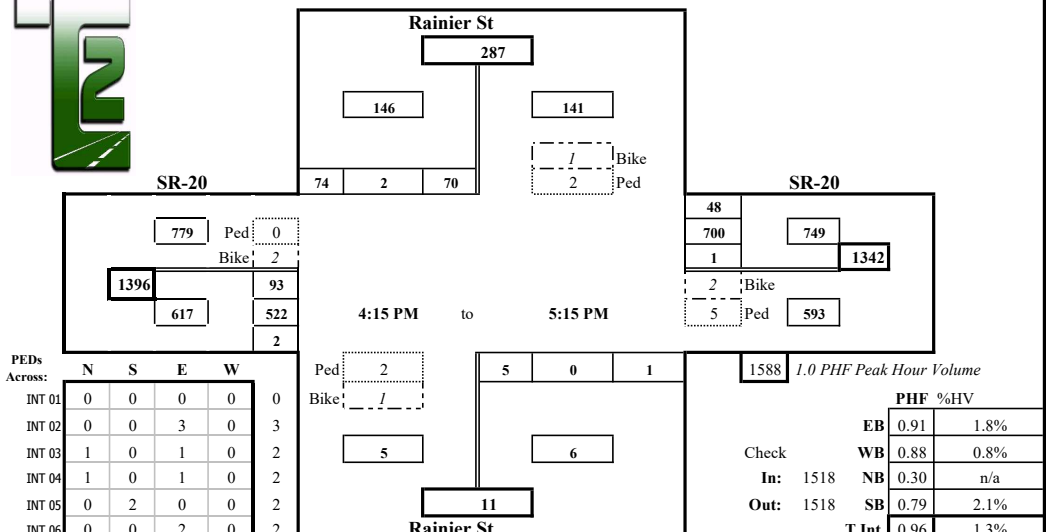
WBE/DBE

Intersection: Rainier St & SR-20 **Date of Count:** Tue 09/26/2023

Location: Port Townsend, Washington **Checked By:** Jen

Time Interval	From North on (SB) Rainier St				From South on (NB) Rainier St				From East on (WB) SR-20				From West on (EB) SR-20				Interval Total
Ending at	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	12	0	18	0	0	0	0	1	0	175	14	2	23	109	0	351
4:30 P	0	16	0	16	0	0	0	0	1	0	165	13	2	25	141	0	376
4:45 P	2	21	1	24	0	0	0	0	2	0	148	11	3	26	142	1	374
5:00 P	0	17	1	15	0	0	0	1	1	1	194	17	3	24	127	0	397
5:15 P	1	16	0	19	0	5	0	0	2	0	193	7	3	18	112	1	371
5:30 P	0	6	0	21	0	0	0	0	4	0	167	12	0	22	108	0	336
5:45 P	1	7	0	11	0	0	1	0	1	0	158	5	0	25	109	0	316
6:00 P	0	15	0	9	0	0	0	0	3	0	130	7	0	22	94	0	277
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	5	110	2	133	0	5	1	1	15	1	1330	86	13	185	942	2	2798
	Peak Hour: 4:15 PM to 5:15 PM																
Total	3	70	2	74	0	5	0	1	6	1	700	48	11	93	522	2	1518
Approach	146				6				749				617				1518
%HV	2.1%				n/a				0.8%				1.8%				1.3%
PHF	0.79				0.30				0.88				0.91				0.96



PEDs Across:	N	S	E	W	
INT 01	0	0	0	0	0
INT 02	0	0	3	0	3
INT 03	1	0	1	0	2
INT 04	1	0	1	0	2
INT 05	0	2	0	0	2
INT 06	0	0	2	0	2
INT 07	0	0	0	0	0
INT 08	0	0	0	0	0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	2	2	7	0	11

	PHF	%HV
EB	0.91	1.8%
WB	0.88	0.8%
NB	0.30	n/a
SB	0.79	2.1%
T Int.	0.96	1.3%

Check In: 1518 Out: 1518

Bicycles From:	N	S	E	W	
INT 01	1	0	1	1	3
INT 02	0	0	0	0	0
INT 03	0	0	1	1	2
INT 04	0	1	0	0	1
INT 05	1	0	1	1	3
INT 06	1	0	0	0	1
INT 07	0	0	0	0	0
INT 08	0	0	1	0	1
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	3	1	4	3	11

N U's	S U's	E U's	W U's
		13	1
1		11	
		11	
		11	
1		10	
		5	
		7	
		11	
2	0	79	1

Special Notes

SCJ23077M_04P

Appendix B
Crash Data

OFFICER REPORTED CRASHES THAT OCCURRED *at* OR *in the vicinity of* THE FOLLOWING INTERSECTIONS IN THE CITY OF PORT TOWNSEND

MILL RD @ DISCOVERY RD

SR 20 (aka Sims Way, MP 9.78 - 9.84) @ DISCOVERY RD / MILL RD

SR 20 (aka Sims Way, MP 10.22 - 10.26) @ HOWARD ST / RAINIER ST

01/01/2018 - 12/31/2022

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to

JURISDICTION	COUNTY	CITY	PRIMARY TRAFFIC WAY	MILE POST	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FAT	# VEH	# PEDS	# BIKES	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION
SR 20 at Mill Rd																			
State Route	Jefferson	Port Townsend	020	9.81	E785164	04/02/2018	12:40	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Truck Tractor & Semi-Trailer	At Intersection and Related	Overcast	Dry	Daylight
State Route	Jefferson	Port Townsend	020	9.81	E997985	12/23/2019	15:18	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Overcast	Wet	Daylight
State Route	Jefferson	Port Townsend	020	9.81	EC06844	12/30/2021	09:52	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Overcast	Snow/Slush	Daylight
State Route	Jefferson	Port Townsend	020	9.81	E793057	04/25/2018	17:41	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	9.81	EC67194	07/18/2022	17:22	No Apparent Injury	0	0	2	0	0	Truck (Flatbad,Van,etc)	Passenger Car	At Intersection and Related	Clear	Dry	Daylight
State Route	Jefferson	Port Townsend	020	9.79	E909007	04/05/2019	08:04	Possible Injury	2	0	3	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Intersection Related but Not at Intersection	Overcast	Dry	Daylight
State Route	Jefferson	Port Townsend	020	9.81	E988710	11/16/2019	17:09	Possible Injury	1	0	1	0	1	Passenger Car		At Intersection and Related	Raining	Wet	Dark-Street Lights On
State Route	Jefferson	Port Townsend	020	9.81	EC04687	12/25/2021	18:43	Possible Injury	3	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Snowing	Snow/Slush	Dark-Street Lights On
State Route	Jefferson	Port Townsend	020	9.81	EA94377	12/22/2020	12:50	Possible Injury	1	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	9.81	E824147	08/01/2018	09:17	Possible Injury	1	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	9.84	EA46902	07/01/2020	16:20	Possible Injury	2	0	3	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Driveway Related but Not at Driveway	Raining	Wet	Daylight
SR 20 at Rainier																			
State Route	Jefferson	Port Townsend	020	10.22	E933756	06/18/2019	08:55	No Apparent Injury	0	0	3	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Roundabout Related but not at Roundabout	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	10.23	E892551	01/29/2019	09:08	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Entering Roundabout	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	10.23	EA78064	11/04/2020	08:00	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Entering Roundabout	Overcast	Wet	Daylight
State Route	Jefferson	Port Townsend	020	10.23	E980894	10/18/2019	09:38	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Exiting Roundabout	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	10.23	E837643	09/07/2018	12:10	No Apparent Injury	0	0	1	0	0	Truck Tractor & Semi-Trailer		Circulating Roundabout	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	10.23	E919107	04/29/2019	16:06	No Apparent Injury	0	0	1	0	0	Truck Tractor & Semi-Trailer		Exiting Roundabout	Clear or Partly Cloudy	Dry	Daylight
State Route	Jefferson	Port Townsend	020	10.24	E897341	02/19/2019	18:20	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Roundabout but not Related	Raining	Wet	Dark-Street Lights On
State Route	Jefferson	Port Townsend	020	10.25	E931617	06/17/2019	22:42	No Apparent Injury	0	0	1	0	0	Passenger Car		Circulating Roundabout	Clear or Partly Cloudy	Dry	Dark-Street Lights On
State Route	Jefferson	Port Townsend	020	10.25	EB50208	07/11/2021	12:20	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	Exiting Roundabout	Clear	Dry	Daylight
State Route	Jefferson	Port Townsend	020	10.25	EC79261	08/24/2022	20:56	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Motorcycle	Entering Roundabout	Clear	Dry	Dark-Street Lights On
State Route	Jefferson	Port Townsend	020	10.26	EA22360	02/10/2020	16:04	No Apparent Injury	0	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Roundabout Related but not at Roundabout	Clear	Dry	Daylight
State Route	Jefferson	Port Townsend	020	10.26	E913696	04/19/2019	08:25	Possible Injury	1	0	1	1	0	Passenger Car		Exiting Roundabout	Raining	Wet	Daylight
Discovery Rd at Rainier St																			
City Street	Jefferson	Port Townsend	DISCOVERY RD		EC59232	06/16/2022	12:28	Suspected Minor Injur	2	0	2	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Entering Roundabout	Clear	Dry	Daylight

FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)
Entering at angle	Stopped at Signal or Stop Sign	Making Left Turn	Vehicle Stopped	Vehicle Stopped	East	South	Other Contributing Circ Not Listed		Improper Turn/Merge		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	East	West	East	Vehicle Stopped	Inattention	Follow Too Closely	None		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	West	East	West	Vehicle Stopped	Exceeding Reas. Safe Speed		None		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	East	West	Vehicle Stopped	Vehicle Stopped	Other Driver Distractions Inside Vehicle		None		
From same direction - both going straight - one stopped - rear-end	Slowing	Stopped at Signal or Stop Sign	North	South	Vehicle Stopped	Vehicle Stopped	None		None		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	West	East	West	Vehicle Stopped	Inattention	Follow Too Closely	None		
Pedalcyclist Strikes Moving Vehicle	Making Left Turn		North	East			None			Did Not Grant RW to Vehicle	
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	East	West	East	Vehicle Stopped	Under Influence of Alcohol	Exceeding Reas. Safe Speed	None		
Entering at angle	Going Straight Ahead	Making Right Turn	East	West	North	West	Disregard Traffic Sign and Signals		None		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	South	North	South	Vehicle Stopped	Inattention		None		
From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	South	North	South	North	None		None		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	West	East	Vehicle Stopped	Vehicle Stopped	Follow Too Closely		None		
Entering at angle	Making Right Turn	Going Straight Ahead	North	West	East	West	Driver Not Distracted		None		
From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	West	East	West	East	Exceeding Reas. Safe Speed		None		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	East	West	Vehicle Stopped	Vehicle Stopped	Follow Too Closely		None		
Other Objects	Making Right Turn		West	South			Inattention				
Concrete Barrier/Jersey Barrier - Face	Making Right Turn		West	South			Improper Turn/Merge				
From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	West	East	West	East	Follow Too Closely		None		
Linear Curb	Going Straight Ahead		North	West			Under Influence of Alcohol				
From same direction - both going straight - both moving - rear-end	Slowing	Slowing	West	East	West	East	None		Follow Too Closely		
From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	East	West	East	West	Under Influence of Alcohol	Follow Too Closely	None		
From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	East	West	East	West	Follow Too Closely		None		
Vehicle going straight hits pedestrian	Other*		West	East			Inattention				Inattention
From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Going Straight Ahead	South	North	Southeast	Northeast	Exceeding Reas. Safe Speed	Did Not Grant RW to Vehicl	None		

Appendix C

Traffic Volume Calculation Worksheets

Evans Vista Neighborhood

PM Peak Hour Volumes

Growth Rate: **2.00%**

Intersection	Movement		Existing 2023 Volumes	Background 2027 Growth	Contractor Pipeline Volumes	Baseline 2027 Volumes	Site Generated Pass-By	Site Generated Primary	Site Generated Total	Projected 2027 Volumes
		L	**0**	0	0	**0**	0	0	0	**0**
	EB	T	**89**	7	0	**96**	0	0	0	**96**
		R	**23**	2	0	**25**	0	0	0	**25**
1		L	**36**	3	1	**40**	0	23	23	**63**
Rainier St	WB	T	**198**	16	0	**214**	0	0	0	**214**
Discovery Rd		R	**1**	0	0	**1**	0	0	0	**1**
		L	**19**	2	0	**21**	0	0	0	**21**
TMC Date: 09/26/2023	NB	T	**1**	0	0	**1**	0	0	0	**1**
		R	**144**	12	2	**158**	0	17	17	**175**
4:30 - 5:30		L	**2**	0	0	**2**	0	0	0	**2**
PHF: 0.96	SB	T	**0**	0	0	**0**	0	0	0	**0**
		R	**0**	0	0	**0**	0	0	0	**0**
			513			**558**				**598**
		L	**50**	4	0	**54**	0	0	0	**54**
	EB	T	**558**	45	1	**604**	-4	0	-4	**600**
		R	**19**	2	0	**21**	4	23	27	**48**
2		L	**7**	1	0	**8**	0	0	0	**8**
Mill Rd	WB	T	**668**	53	2	**723**	0	0	0	**723**
W Sims Way/SR 20		R	**112**	9	0	**121**	0	0	0	**121**
		L	**34**	3	0	**37**	5	17	22	**59**
TMC Date: 09/26/2023	NB	T	**11**	1	0	**12**	0	0	0	**12**
		R	**8**	1	0	**9**	0	0	0	**9**
4:15 - 5:5		L	**51**	4	0	**55**	0	0	0	**55**
PHF: 0.97	SB	T	**3**	0	0	**3**	0	0	0	**3**
		R	**107**	9	0	**116**	0	0	0	**116**
			1,628			**1,763**				**1,808**
		U	**0**	0	0	**0**	0	0	0	**0**
	EB	L	**93**	7	1	**101**	0	0	0	**101**
		T	**522**	42	0	**564**	0	0	0	**564**
		R	**2**	0	0	**2**	0	0	0	**2**
		U	**43**	3	0	**46**	0	0	0	**46**
3	WB	L	**1**	0	0	**1**	5	46	51	**52**
Rainier Way		T	**700**	56	0	**756**	-5	0	-5	**751**
W Sims Way/SR 20		R	**48**	4	2	**54**	0	0	0	**54**
		U	**0**	0	0	**0**	0	0	0	**0**
	NB	L	**5**	0	0	**5**	0	0	0	**5**
TMC Date: 09/26/2023		T	**0**	0	0	**0**	0	17	17	**17**
		R	**1**	0	0	**1**	4	35	39	**40**
		U	**2**	0	0	**2**	0	0	0	**2**
4:15 - 5:5	SB	L	**70**	6	3	**79**	0	0	0	**79**
PHF: 0.96		T	**2**	0	0	**2**	0	23	23	**25**
		R	**74**	6	2	**82**	0	0	0	**82**
			1,563			**1,695**				**1,820**
		L	**0**	0	0	**0**	0	0	0	**0**
	EB	T	**0**	0	0	**0**	0	0	0	**0**
		R	**0**	0	0	**0**	0	0	0	**0**
4		L	**0**	0	0	**0**	0	0	0	**0**
Site Driveway	WB	T	**0**	0	0	**0**	0	0	0	**0**
Mill Rd		R	**0**	0	0	**0**	5	17	22	**22**
		L	**0**	0	0	**0**	0	0	0	**0**
	NB	T	**53**	**4**	0	**57**	0	0	0	**57**
		R	**0**	0	0	**0**	0	0	0	**0**
		L	**0**	0	0	**0**	4	23	27	**27**
	SB	T	**29**	**2**	0	**31**	0	0	0	**31**
		R	**0**	0	0	**0**	0	0	0	**0**
			82			**88**				**137**

Appendix D

Operations Analysis Worksheets

MOVEMENT SUMMARY

Site: 2 [Existing 2023 (Site Folder: General)]

Discovery Rd at Rainier St
PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

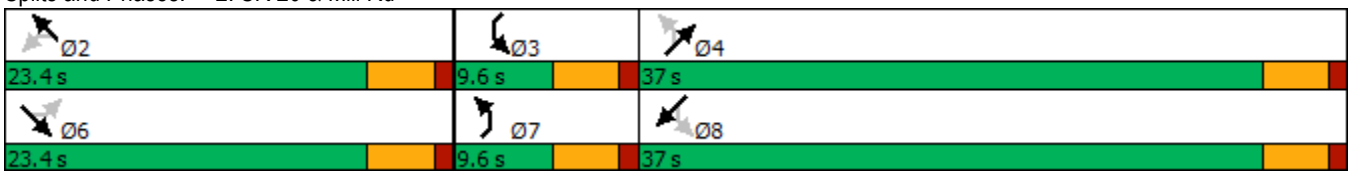
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Rainier St														
3b	L3	20	1.0	21	1.0	0.128	11.3	LOS B	0.6	14.6	0.22	0.45	0.22	37.6
8	T1	1	1.0	1	1.0	0.128	4.2	LOS A	0.6	14.6	0.22	0.45	0.22	37.1
18a	R1	145	1.0	151	1.0	0.128	3.9	LOS A	0.6	14.6	0.22	0.45	0.22	36.7
Approach		166	1.0	173	1.0	0.128	4.8	LOS A	0.6	14.6	0.22	0.45	0.22	36.8
NorthEast: SWB Discovery Rd														
1ax	L1	35	1.0	36	1.0	0.174	8.6	LOS A	0.8	21.3	0.10	0.42	0.10	37.0
6x	T1	200	1.0	208	1.0	0.174	3.9	LOS A	0.8	21.3	0.10	0.42	0.10	37.4
16bx	R3	1	1.0	1	1.0	0.174	4.1	LOS A	0.8	21.3	0.10	0.42	0.10	35.8
Approach		236	1.0	246	1.0	0.174	4.6	LOS A	0.8	21.3	0.10	0.42	0.10	37.3
North: SB Rainier St														
7b	L3	5	1.0	5	1.0	0.006	11.8	LOS B	0.0	0.6	0.34	0.59	0.34	35.0
4	T1	1	1.0	1	1.0	0.006	4.7	LOS A	0.0	0.6	0.34	0.59	0.34	34.6
14a	R1	1	1.0	1	1.0	0.006	4.4	LOS A	0.0	0.6	0.34	0.59	0.34	34.3
Approach		7	1.0	7	1.0	0.006	9.7	LOS A	0.0	0.6	0.34	0.59	0.34	34.9
SouthWest: NEB Discovery Rd														
5ax	L1	1	1.0	1	1.0	0.087	8.7	LOS A	0.4	9.3	0.13	0.40	0.13	37.3
2x	T1	90	1.0	94	1.0	0.087	4.0	LOS A	0.4	9.3	0.13	0.40	0.13	37.6
12bx	R3	25	1.0	26	1.0	0.087	4.2	LOS A	0.4	9.3	0.13	0.40	0.13	36.1
Approach		116	1.0	121	1.0	0.087	4.1	LOS A	0.4	9.3	0.13	0.40	0.13	37.3
All Vehicles		525	1.0	547	1.0	0.174	4.6	LOS A	0.8	21.3	0.15	0.43	0.15	37.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	50	5	105	35	10	10	50	560	20	5	670	110
Future Volume (vph)	50	5	105	35	10	10	50	560	20	5	670	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		132			431			318			271	
Travel Time (s)		3.0			9.8			7.2			6.2	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	23.4	23.4		23.4	23.4		9.6	37.0		9.6	37.0	
Total Split (%)	33.4%	33.4%		33.4%	33.4%		13.7%	52.9%		13.7%	52.9%	
Maximum Green (s)	18.9	18.9		18.9	18.9		5.1	32.5		5.1	32.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0				
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0				
Pedestrian Calls (#/hr)	2	2		0	0			0				

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 55.9	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 2: SR 20 & Mill Rd



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	50	5	105	35	10	10	50	560	20	5	670	110
Future Volume (veh/h)	50	5	105	35	10	10	50	560	20	5	670	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1707	1707	1707	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	52	5	56	36	10	10	52	577	21	5	691	108
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	1	13	13	13	2	2	2	1	1	1
Cap, veh/h	191	19	89	221	54	31	370	1028	37	482	838	131
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.05	0.57	0.57	0.01	0.53	0.53
Sat Flow, veh/h	629	167	782	761	478	269	1781	1793	65	1795	1592	249
Grp Volume(v), veh/h	113	0	0	56	0	0	52	0	598	5	0	799
Grp Sat Flow(s),veh/h/ln	1579	0	0	1508	0	0	1781	0	1858	1795	0	1840
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	0.6	0.0	8.9	0.1	0.0	16.0
Cycle Q Clear(g_c), s	2.9	0.0	0.0	1.4	0.0	0.0	0.6	0.0	8.9	0.1	0.0	16.0
Prop In Lane	0.46		0.50	0.64		0.18	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	298	0	0	305	0	0	370	0	1065	482	0	969
V/C Ratio(X)	0.38	0.00	0.00	0.18	0.00	0.00	0.14	0.00	0.56	0.01	0.00	0.82
Avail Cap(c_a), veh/h	772	0	0	721	0	0	481	0	1372	678	0	1359
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	0.0	17.9	0.0	0.0	7.1	0.0	5.9	5.3	0.0	8.7
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.5	0.0	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	2.2	0.0	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	0.0	18.2	0.0	0.0	7.3	0.0	6.4	5.4	0.0	11.7
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	B
Approach Vol, veh/h		113			56			650			804	
Approach Delay, s/veh		19.3			18.2			6.5			11.7	
Approach LOS		B			B			A			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.5	4.8	29.7		9.5	6.9	27.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.9	5.1	32.5		18.9	5.1	32.5				
Max Q Clear Time (g_c+I1), s		3.4	2.1	10.9		4.9	2.6	18.0				
Green Ext Time (p_c), s		0.2	0.0	4.1		0.4	0.0	5.2				

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

MOVEMENT SUMMARY

Site: 3 [Existing 2023 (Site Folder: General)]

W Sims Way (SR 20) at Rainier St/Evans Vista
PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Evans Vista														
3	L2	5	1.0	5	1.0	0.014	13.3	LOS B	0.1	2.1	0.68	0.64	0.68	34.5
8	T1	1	1.0	1	1.0	0.014	7.5	LOS A	0.1	2.1	0.68	0.64	0.68	34.5
18	R2	5	1.0	5	1.0	0.014	7.5	LOS A	0.1	2.1	0.68	0.64	0.68	33.5
Approach		11	1.0	11	1.0	0.014	10.1	LOS B	0.1	2.1	0.68	0.64	0.68	34.0
East: WB W Sims Way														
1u	U	45	1.0	47	1.0	0.633	13.0	LOS B	5.8	145.8	0.48	0.49	0.48	37.1
1	L2	5	1.0	5	1.0	0.633	10.6	LOS B	5.8	145.8	0.48	0.49	0.48	36.2
6	T1	700	1.0	729	1.0	0.633	4.8	LOS A	5.8	145.8	0.48	0.49	0.48	36.1
16	R2	50	1.0	52	1.0	0.633	4.9	LOS A	5.8	145.8	0.48	0.49	0.48	35.1
Approach		800	1.0	833	1.0	0.633	5.3	LOS A	5.8	145.8	0.48	0.49	0.48	36.1
North: SB Rainier St														
7u	U	5	2.0	5	2.0	0.215	16.5	LOS B	1.4	35.1	0.77	0.81	0.77	34.7
7	L2	70	2.0	73	2.0	0.215	14.1	LOS B	1.4	35.1	0.77	0.81	0.77	34.0
4	T1	5	2.0	5	2.0	0.215	8.3	LOS A	1.4	35.1	0.77	0.81	0.77	33.9
14	R2	75	2.0	78	2.0	0.215	8.4	LOS A	1.4	35.1	0.77	0.81	0.77	33.0
Approach		155	2.0	161	2.0	0.215	11.2	LOS B	1.4	35.1	0.77	0.81	0.77	33.5
West: EB W Sims Way														
5u	U	5	2.0	5	2.0	0.509	13.0	LOS B	3.9	97.8	0.44	0.51	0.44	37.0
5	L2	95	2.0	99	2.0	0.509	10.6	LOS B	3.9	97.8	0.44	0.51	0.44	36.1
2	T1	520	2.0	542	2.0	0.509	4.8	LOS A	3.9	97.8	0.44	0.51	0.44	36.0
12	R2	5	2.0	5	2.0	0.509	4.8	LOS A	3.9	97.8	0.44	0.51	0.44	35.0
Approach		625	2.0	651	2.0	0.509	5.7	LOS A	3.9	97.8	0.44	0.51	0.44	36.1
All Vehicles		1591	1.5	1657	1.5	0.633	6.1	LOS A	5.8	145.8	0.49	0.53	0.49	35.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [Projected 2027 without project (Site Folder: General)]

Discovery Rd at Rainier St
PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

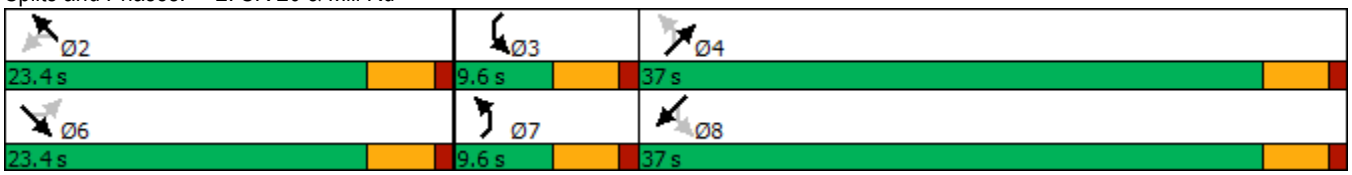
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Rainier St														
3b	L3	20	1.0	21	1.0	0.141	11.3	LOS B	0.6	16.3	0.23	0.45	0.23	37.7
8	T1	1	1.0	1	1.0	0.141	4.2	LOS A	0.6	16.3	0.23	0.45	0.23	37.1
18a	R1	160	1.0	167	1.0	0.141	3.9	LOS A	0.6	16.3	0.23	0.45	0.23	36.7
Approach		181	1.0	189	1.0	0.141	4.8	LOS A	0.6	16.3	0.23	0.45	0.23	36.8
NorthEast: SWB Discovery Rd														
1ax	L1	40	1.0	42	1.0	0.189	8.6	LOS A	0.9	23.5	0.11	0.42	0.11	37.0
6x	T1	215	1.0	224	1.0	0.189	3.9	LOS A	0.9	23.5	0.11	0.42	0.11	37.3
16bx	R3	1	1.0	1	1.0	0.189	4.1	LOS A	0.9	23.5	0.11	0.42	0.11	35.8
Approach		256	1.0	267	1.0	0.189	4.7	LOS A	0.9	23.5	0.11	0.42	0.11	37.3
North: SB Rainier St														
7b	L3	5	1.0	5	1.0	0.006	11.8	LOS B	0.0	0.7	0.35	0.59	0.35	35.0
4	T1	1	1.0	1	1.0	0.006	4.8	LOS A	0.0	0.7	0.35	0.59	0.35	34.6
14a	R1	1	1.0	1	1.0	0.006	4.5	LOS A	0.0	0.7	0.35	0.59	0.35	34.2
Approach		7	1.0	7	1.0	0.006	9.8	LOS A	0.0	0.7	0.35	0.59	0.35	34.8
SouthWest: NEB Discovery Rd														
5ax	L1	1	1.0	1	1.0	0.091	8.7	LOS A	0.4	9.8	0.14	0.40	0.14	37.3
2x	T1	95	1.0	99	1.0	0.091	4.0	LOS A	0.4	9.8	0.14	0.40	0.14	37.6
12bx	R3	25	1.0	26	1.0	0.091	4.2	LOS A	0.4	9.8	0.14	0.40	0.14	36.0
Approach		121	1.0	126	1.0	0.091	4.1	LOS A	0.4	9.8	0.14	0.40	0.14	37.3
All Vehicles		565	1.0	589	1.0	0.189	4.6	LOS A	0.9	23.5	0.16	0.43	0.16	37.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	55	5	115	35	10	10	55	605	20	10	725	120
Future Volume (vph)	55	5	115	35	10	10	55	605	20	10	725	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		132			431			318			271	
Travel Time (s)		3.0			9.8			7.2			6.2	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	23.4	23.4		23.4	23.4		9.6	37.0		9.6	37.0	
Total Split (%)	33.4%	33.4%		33.4%	33.4%		13.7%	52.9%		13.7%	52.9%	
Maximum Green (s)	18.9	18.9		18.9	18.9		5.1	32.5		5.1	32.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0				
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0				
Pedestrian Calls (#/hr)	2	2		0	0			0				

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 60.1	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 2: SR 20 & Mill Rd



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	55	5	115	35	10	10	55	605	20	10	725	120
Future Volume (veh/h)	55	5	115	35	10	10	55	605	20	10	725	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1707	1707	1707	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	57	5	67	36	10	10	57	624	21	10	747	119
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	1	13	13	13	2	2	2	1	1	1
Cap, veh/h	178	22	101	219	57	34	334	1055	36	461	864	138
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.06	0.59	0.59	0.01	0.54	0.54
Sat Flow, veh/h	578	176	814	790	456	271	1781	1799	61	1795	1587	253
Grp Volume(v), veh/h	129	0	0	56	0	0	57	0	645	10	0	866
Grp Sat Flow(s),veh/h/ln	1568	0	0	1516	0	0	1781	0	1859	1795	0	1840
Q Serve(g_s), s	2.2	0.0	0.0	0.0	0.0	0.0	0.6	0.0	10.7	0.1	0.0	19.8
Cycle Q Clear(g_c), s	3.7	0.0	0.0	1.5	0.0	0.0	0.6	0.0	10.7	0.1	0.0	19.8
Prop In Lane	0.44		0.52	0.64		0.18	1.00		0.03	1.00		0.14
Lane Grp Cap(c), veh/h	301	0	0	309	0	0	334	0	1090	461	0	1001
V/C Ratio(X)	0.43	0.00	0.00	0.18	0.00	0.00	0.17	0.00	0.59	0.02	0.00	0.86
Avail Cap(c_a), veh/h	696	0	0	653	0	0	422	0	1237	625	0	1224
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	0.0	19.4	0.0	0.0	8.5	0.0	6.4	5.6	0.0	9.6
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.6	0.0	0.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.5	0.0	0.0	0.2	0.0	2.9	0.0	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.3	0.0	0.0	19.7	0.0	0.0	8.7	0.0	7.0	5.6	0.0	15.3
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	B
Approach Vol, veh/h		129			56			702			876	
Approach Delay, s/veh		21.3			19.7			7.1			15.2	
Approach LOS		C			B			A			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		10.6	5.1	33.1		10.6	7.2	31.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.9	5.1	32.5		18.9	5.1	32.5				
Max Q Clear Time (g_c+I1), s		3.5	2.1	12.7		5.7	2.6	21.8				
Green Ext Time (p_c), s		0.2	0.0	4.4		0.5	0.0	4.8				

Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

MOVEMENT SUMMARY

Site: 3 [Projected 2027 without Project (Site Folder: General)]

W Sims Way (SR 20) at Rainier St/Evans Vista
PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Evans Vista														
3	L2	5	1.0	5	1.0	0.015	13.8	LOS B	0.1	2.3	0.73	0.65	0.73	34.2
8	T1	1	1.0	1	1.0	0.015	8.1	LOS A	0.1	2.3	0.73	0.65	0.73	34.2
18	R2	5	1.0	5	1.0	0.015	8.1	LOS A	0.1	2.3	0.73	0.65	0.73	33.2
Approach		11	1.0	11	1.0	0.015	10.7	LOS B	0.1	2.3	0.73	0.65	0.73	33.8
East: WB W Sims Way														
1u	U	45	1.0	47	1.0	0.684	13.2	LOS B	6.9	174.6	0.54	0.51	0.54	36.9
1	L2	5	1.0	5	1.0	0.684	10.8	LOS B	6.9	174.6	0.54	0.51	0.54	36.0
6	T1	755	1.0	786	1.0	0.684	5.0	LOS A	6.9	174.6	0.54	0.51	0.54	35.9
16	R2	55	1.0	57	1.0	0.684	5.0	LOS A	6.9	174.6	0.54	0.51	0.54	34.9
Approach		860	1.0	896	1.0	0.684	5.5	LOS A	6.9	174.6	0.54	0.51	0.54	35.9
North: SB Rainier St														
7u	U	5	2.0	5	2.0	0.256	17.2	LOS B	1.7	44.0	0.83	0.85	0.83	34.3
7	L2	80	2.0	83	2.0	0.256	14.8	LOS B	1.7	44.0	0.83	0.85	0.83	33.6
4	T1	5	2.0	5	2.0	0.256	9.0	LOS A	1.7	44.0	0.83	0.85	0.83	33.5
14	R2	80	2.0	83	2.0	0.256	9.1	LOS A	1.7	44.0	0.83	0.85	0.83	32.6
Approach		170	2.0	177	2.0	0.256	12.0	LOS B	1.7	44.0	0.83	0.85	0.83	33.1
West: EB W Sims Way														
5u	U	5	2.0	5	2.0	0.555	13.1	LOS B	4.5	114.8	0.49	0.52	0.49	36.8
5	L2	100	2.0	104	2.0	0.555	10.7	LOS B	4.5	114.8	0.49	0.52	0.49	36.0
2	T1	565	2.0	589	2.0	0.555	4.9	LOS A	4.5	114.8	0.49	0.52	0.49	35.9
12	R2	5	2.0	5	2.0	0.555	4.9	LOS A	4.5	114.8	0.49	0.52	0.49	34.8
Approach		675	2.0	703	2.0	0.555	5.8	LOS A	4.5	114.8	0.49	0.52	0.49	35.9
All Vehicles		1716	1.5	1788	1.5	0.684	6.3	LOS A	6.9	174.6	0.55	0.55	0.55	35.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [Projected 2027 with project (Site Folder: General)]

Discovery Rd at Rainier St
PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

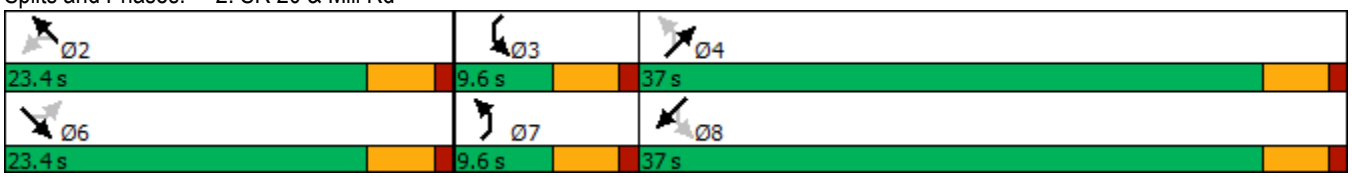
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Rainier St														
3b	L3	20	1.0	21	1.0	0.152	11.3	LOS B	0.7	18.0	0.24	0.45	0.24	37.7
8	T1	1	1.0	1	1.0	0.152	4.3	LOS A	0.7	18.0	0.24	0.45	0.24	37.1
18a	R1	175	1.0	182	1.0	0.152	3.9	LOS A	0.7	18.0	0.24	0.45	0.24	36.8
Approach		196	1.0	204	1.0	0.152	4.7	LOS A	0.7	18.0	0.24	0.45	0.24	36.9
NorthEast: SWB Discovery Rd														
1ax	L1	65	1.0	68	1.0	0.207	8.6	LOS A	1.0	26.4	0.11	0.44	0.11	36.8
6x	T1	215	1.0	224	1.0	0.207	3.9	LOS A	1.0	26.4	0.11	0.44	0.11	37.1
16bx	R3	1	1.0	1	1.0	0.207	4.1	LOS A	1.0	26.4	0.11	0.44	0.11	35.6
Approach		281	1.0	293	1.0	0.207	5.0	LOS A	1.0	26.4	0.11	0.44	0.11	37.1
North: SB Rainier St														
7b	L3	5	1.0	5	1.0	0.006	11.9	LOS B	0.0	0.7	0.37	0.59	0.37	35.0
4	T1	1	1.0	1	1.0	0.006	4.9	LOS A	0.0	0.7	0.37	0.59	0.37	34.5
14a	R1	1	1.0	1	1.0	0.006	4.6	LOS A	0.0	0.7	0.37	0.59	0.37	34.2
Approach		7	1.0	7	1.0	0.006	9.9	LOS A	0.0	0.7	0.37	0.59	0.37	34.8
SouthWest: NEB Discovery Rd														
5ax	L1	1	1.0	1	1.0	0.093	8.8	LOS A	0.4	10.1	0.18	0.41	0.18	37.1
2x	T1	95	1.0	99	1.0	0.093	4.1	LOS A	0.4	10.1	0.18	0.41	0.18	37.5
12bx	R3	25	1.0	26	1.0	0.093	4.3	LOS A	0.4	10.1	0.18	0.41	0.18	35.9
Approach		121	1.0	126	1.0	0.093	4.2	LOS A	0.4	10.1	0.18	0.41	0.18	37.1
All Vehicles		605	1.0	630	1.0	0.207	4.8	LOS A	1.0	26.4	0.17	0.44	0.17	37.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	55	5	115	60	10	10	55	600	50	10	725	120
Future Volume (vph)	55	5	115	60	10	10	55	600	50	10	725	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	100		0	100		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		132			224			318			271	
Travel Time (s)		3.0			5.1			7.2			6.2	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	23.4	23.4		23.4	23.4		9.6	37.0		9.6	37.0	
Total Split (%)	33.4%	33.4%		33.4%	33.4%		13.7%	52.9%		13.7%	52.9%	
Maximum Green (s)	18.9	18.9		18.9	18.9		5.1	32.5		5.1	32.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	4.5		4.5	4.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0				
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0				
Pedestrian Calls (#/hr)	2	2		0	0			0				

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 60.2	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 2: SR 20 & Mill Rd



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	55	5	115	60	10	10	55	600	50	10	725	120
Future Volume (veh/h)	55	5	115	60	10	10	55	600	50	10	725	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1707	1707	1707	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	57	5	67	62	10	10	57	619	52	10	747	119
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	1	13	13	13	2	2	2	1	1	1
Cap, veh/h	180	22	104	253	39	23	335	998	84	441	864	138
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.06	0.59	0.59	0.01	0.54	0.54
Sat Flow, veh/h	597	176	836	995	314	182	1781	1701	143	1795	1587	253
Grp Volume(v), veh/h	129	0	0	82	0	0	57	0	671	10	0	866
Grp Sat Flow(s),veh/h/ln	1609	0	0	1490	0	0	1781	0	1844	1795	0	1840
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	0.0	0.6	0.0	11.5	0.1	0.0	19.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	2.2	0.0	0.0	0.6	0.0	11.5	0.1	0.0	19.8
Prop In Lane	0.44		0.52	0.76		0.12	1.00		0.08	1.00		0.14
Lane Grp Cap(c), veh/h	306	0	0	314	0	0	335	0	1082	441	0	1002
V/C Ratio(X)	0.42	0.00	0.00	0.26	0.00	0.00	0.17	0.00	0.62	0.02	0.00	0.86
Avail Cap(c_a), veh/h	701	0	0	649	0	0	423	0	1228	606	0	1225
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	0.0	19.7	0.0	0.0	8.4	0.0	6.6	5.7	0.0	9.6
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.8	0.0	0.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.8	0.0	0.0	0.2	0.0	3.1	0.0	0.0	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	0.0	0.0	20.2	0.0	0.0	8.7	0.0	7.3	5.8	0.0	15.2
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	B
Approach Vol, veh/h		129			82			728			876	
Approach Delay, s/veh		21.2			20.2			7.4			15.1	
Approach LOS		C			C			A			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		10.5	5.1	33.1		10.5	7.2	31.1				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.9	5.1	32.5		18.9	5.1	32.5				
Max Q Clear Time (g_c+I1), s		4.2	2.1	13.5		5.5	2.6	21.8				
Green Ext Time (p_c), s		0.3	0.0	4.6		0.5	0.0	4.8				

Intersection Summary	
HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

MOVEMENT SUMMARY

Site: 3 [Projected 2027 with Project (Site Folder: General)]

W Sims Way (SR 20) at Rainier St/Evans Vista
PM Peak Hour
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Evans Vista														
3	L2	5	1.0	5	1.0	0.087	14.2	LOS B	0.5	13.7	0.76	0.73	0.76	35.1
8	T1	15	1.0	16	1.0	0.087	8.4	LOS A	0.5	13.7	0.76	0.73	0.76	35.1
18	R2	40	1.0	42	1.0	0.087	8.4	LOS A	0.5	13.7	0.76	0.73	0.76	34.1
Approach		60	1.0	63	1.0	0.087	8.9	LOS A	0.5	13.7	0.76	0.73	0.76	34.4
East: WB W Sims Way														
1u	U	45	1.0	47	1.0	0.724	13.4	LOS B	7.9	198.4	0.61	0.54	0.61	36.5
1	L2	50	1.0	52	1.0	0.724	11.0	LOS B	7.9	198.4	0.61	0.54	0.61	35.7
6	T1	750	1.0	781	1.0	0.724	5.2	LOS A	7.9	198.4	0.61	0.54	0.61	35.6
16	R2	55	1.0	57	1.0	0.724	5.2	LOS A	7.9	198.4	0.61	0.54	0.61	34.6
Approach		900	1.0	938	1.0	0.724	6.0	LOS A	7.9	198.4	0.61	0.54	0.61	35.6
North: SB Rainier St														
7u	U	5	2.0	5	2.0	0.308	17.8	LOS B	2.2	55.9	0.88	0.89	0.88	34.2
7	L2	80	2.0	83	2.0	0.308	15.4	LOS B	2.2	55.9	0.88	0.89	0.88	33.4
4	T1	25	2.0	26	2.0	0.308	9.7	LOS A	2.2	55.9	0.88	0.89	0.88	33.4
14	R2	80	2.0	83	2.0	0.308	9.7	LOS A	2.2	55.9	0.88	0.89	0.88	32.5
Approach		190	2.0	198	2.0	0.308	12.3	LOS B	2.2	55.9	0.88	0.89	0.88	33.0
West: EB W Sims Way														
5u	U	5	2.0	5	2.0	0.582	13.6	LOS B	4.7	118.7	0.58	0.57	0.58	36.5
5	L2	100	2.0	104	2.0	0.582	11.2	LOS B	4.7	118.7	0.58	0.57	0.58	35.7
2	T1	565	2.0	589	2.0	0.582	5.4	LOS A	4.7	118.7	0.58	0.57	0.58	35.6
12	R2	5	2.0	5	2.0	0.582	5.4	LOS A	4.7	118.7	0.58	0.57	0.58	34.6
Approach		675	2.0	703	2.0	0.582	6.3	LOS A	4.7	118.7	0.58	0.57	0.58	35.6
All Vehicles		1825	1.5	1901	1.5	0.724	6.8	LOS A	7.9	198.4	0.63	0.59	0.63	35.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Int Delay, s/veh	2.8

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	25	30	55	1	1	20
Future Vol, veh/h	25	30	55	1	1	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	13	2	2
Mvmt Flow	27	33	60	1	1	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	61	0	-	0	148	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	87	-
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	1542	-	-	-	844	1004
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	936	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1542	-	-	-	829	1004
Mov Cap-2 Maneuver	-	-	-	-	829	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	936	-

Approach	SE	NW	SW
HCM Control Delay, s	3.4	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1542	-	994
HCM Lane V/C Ratio	-	-	0.018	-	0.023
HCM Control Delay (s)	-	-	7.4	0	8.7
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.1