

MEMORANDUM

DATE: September 29, 2022

TO: Chris Comeau
City of Bellingham

FROM: Curtis Chin, P.E.
TENW

SUBJECT: Jones - Edgemoor Residential Plat
Traffic Impact Analysis
TENW Project No. 2020-157

This memorandum documents the traffic impact analysis (TIA) completed for the Jones-Edgemoor Residential Plat project. The project is located in the Edgemoor neighborhood between Viewcrest Drive and Chuckanut Bay. A project vicinity map is presented in **Figure 1**.

Executive Summary

Project Proposal. The project would include the development of up to 38 single-family lots on a currently vacant site. Primary vehicular access to the site would be provided via two proposed roads intersecting with Viewcrest Road. One single-family lot is proposed to have access via Sea Pines Road. The anticipated year of occupancy is 2025.

Trip Generation. The proposed project is estimated to generate 427 new weekday daily trips, with 32 new trips occurring during the weekday AM peak hour (8 entering, 24 exiting) and 40 new trips occurring during the weekday PM peak hour (25 entering, 15 exiting).

Operations Analysis

Level of Service. The individual movements at the unsignalized intersection of Chuckanut Dr N/Viewcrest Road are estimated to operate at LOS B or better during the weekday AM and PM peak hours in 2025 without or with the proposed project.

Sight Distance. Intersection sight distances (ISD) and stopping sight distance (SSD) assessments were conducted at the off-site study intersection of Chuckanut Dr N/Viewcrest Road in September 2020. The available ISD was verified to meet WSDOT/Whatcom County standards. The available SSD for vehicles approaching Viewcrest Dr both from the north and south direction on Chuckanut Dr N were determined to exceed City of Bellingham standards.

Mitigation

Off-Site Improvements. Based on the results of the LOS analysis at the study intersection of Chuckanut Drive/Viewcrest Road, no off-site mitigation is proposed.

Multimodal Transportation Impact Fees. To mitigate long-term transportation impacts, the City administers a Transportation Impact Fee (TIF) to new developments to improve the transportation system to accommodate the higher travel demand added by new

developments. The City of Bellingham's currently adopted 2021 Multimodal Transportation Impact Fee (TIF) = \$2,186 per PM peak person trip. The resulting transportation impact fee is \$3,138 per single family residential unit. The preliminary estimated transportation impact fee for the proposed project totals **\$119,244** (\$3,138 X 38 dwelling units). The actual impact fees will be calculated and assessed at the time of building permit issuance.

Introduction

This memorandum documents a limited scope traffic impact analysis (TIA) completed for the proposed Jones-Edgemoor Residential Plat. A full TIA was determined to not be required given the project generates less than the City's traffic study threshold of 50 vehicle trips during any peak hour. The following items were addressed in this traffic impact analysis:

- Project Description
- Collision History
- Planned Transportation Improvements
- Trip Generation
- Trip Distribution and Assignment
- Traffic Volume Forecasts
- Operations analysis at Chuckanut Dr N / Viewcrest Road including:
 - AM and PM peak hour level of service (LOS)
 - Intersection and stopping sight distance
- Mitigation

Project Description

The proposed Jones-Edgemoor Residential Plat project would be located in the Edgemoor neighborhood between Viewcrest Drive and Chuckanut Bay in Bellingham, WA. The project would include the development of up to 38 single-family lots on a site that is currently vacant. Primary vehicular access to the site would be provided via two proposed roads intersecting with Viewcrest Road. One single-family lot is proposed to have access via Sea Pines Road. The anticipated year of occupancy is 2025. A preliminary site plan can be seen on **Figure 2**.

Collision History

Collision records in the study area provided by the Washington State Department of Transportation (WSDOT) were reviewed for the 5-year period from January 1, 2015 to December 31, 2019. No collisions at the intersection of Chuckanut Dr N / Viewcrest Rd were found based on the most recent 5 years of collision history provided by WSDOT.



Figure 1: Project Site Vicinity



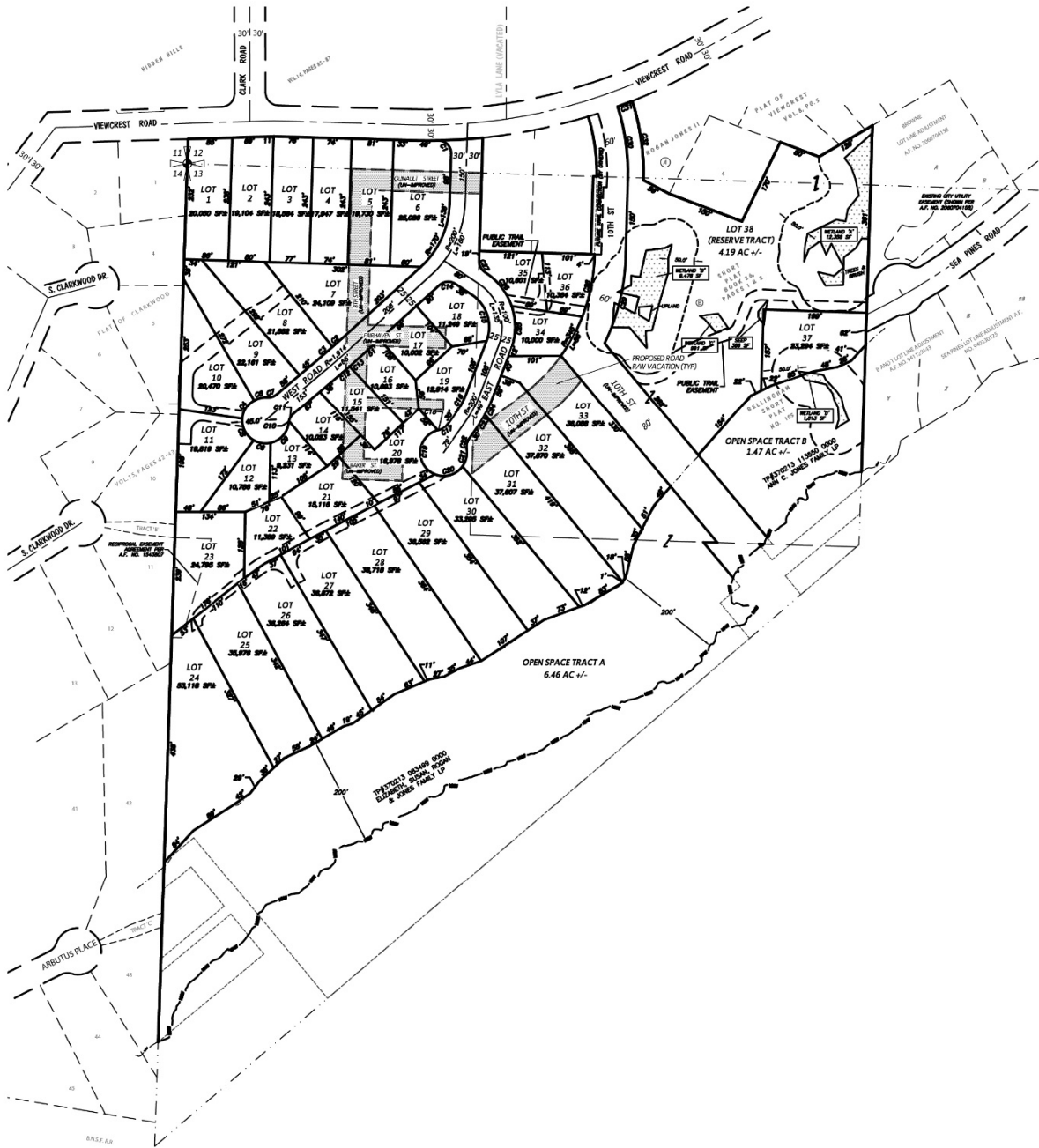


Figure 2: Preliminary Site Plan



Planned Transportation Improvements

This section documents the known transportation improvements planned in the study area. Based on a review of the current City of Bellingham Six Year 2021-2026 Transportation Improvement Program (TIP), there are no planned transportation improvements in the project vicinity.

Trip Generation

The weekday daily, AM and PM peak hour trip generation estimates for the proposed cottages were based on trip rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition (2017). The resulting weekday daily, AM and PM peak hour trips are summarized in **Table 2**. A detailed trip generation estimate is included in **Attachment A**.

Table 2
Jones-Edgemoor Residential Plat - Trip Generation Summary

Time Period	Trips Generated		
	In	Out	Total
Weekday Daily	213	214	427
Weekday AM Peak Hour	8	24	32
Weekday PM Peak Hour	25	15	40

As shown in **Table 2**, the Jones-Edgemoor Residential Plat project is estimated to generate 427 weekday daily trips with 32 trips occurring during the weekday AM peak hour (8 in, 24 out) and 40 trips during the weekday PM peak hour (25 in, 15 out).

Trip Distribution and Assignment

The distribution and assignment of the weekday AM and PM peak hour project trips in the study area were based on existing travel patterns and recent traffic counts. Approximately 20 percent of the project trips were estimated to be destined to/from the south on Chuckanut Dr N and 80 percent of the project trips were estimated to be destined to/from the north on Chuckanut Dr N. The assignment of the weekday AM and PM peak hour project trips at Chuckanut Dr N / Viewcrest Rd are shown in **Figure 3**.

Traffic Volumes Forecasts

Existing weekday AM and PM peak hour traffic counts at the intersection of Chuckanut Dr N / Viewcrest Rd were conducted on in August 2020 (see **Attachment B**). An annual growth of 3 percent was applied to estimate year 2021 existing AM and PM peak hour traffic volumes. The 2021 existing AM and PM traffic volumes are summarized in **Figure 3**.

To estimate the year 2025 No Action (without-project) traffic volumes at the study intersection of Chuckanut Dr N / Viewcrest Rd, a 3 percent annual growth rate was applied to the existing traffic volumes. Per City of Bellingham, the 3 percent annual growth rate accounts for both the pipeline projects in Bellingham as well as background traffic growth. The resulting 2025 weekday AM and PM peak hour without-project traffic volumes and 2025 with-project volumes at the Chuckanut Dr N / Viewcrest Rd study intersection are shown in **Figure 3**.

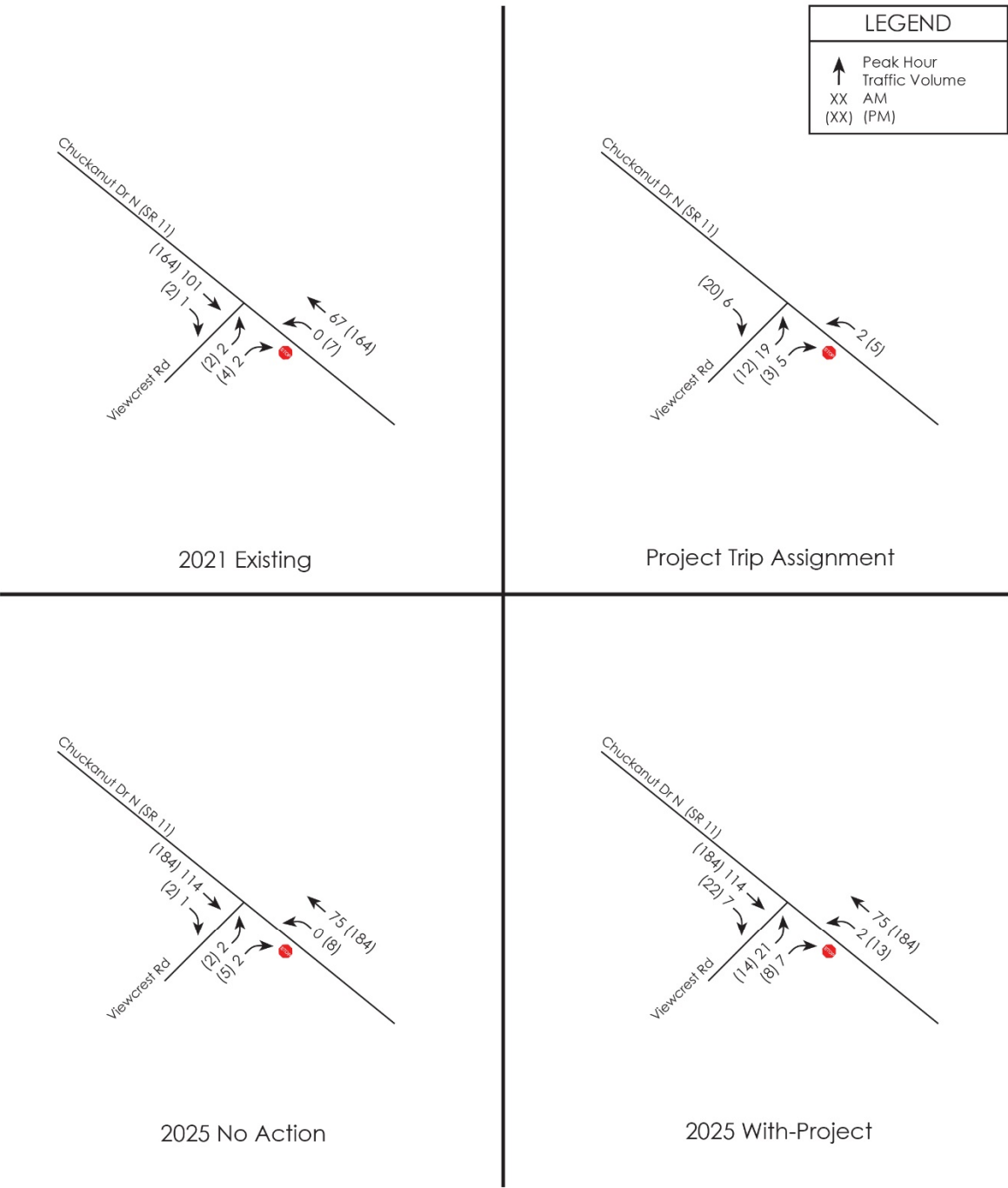


Figure 3: Peak Hour Traffic Volumes



Site Access Analysis

Level of Service and Queue Analysis

A 2021 Existing, 2025 No Action, and 2025 With-Project level of service (LOS) and queue analysis were completed at the Chuckanut Dr N / Viewcrest Rd intersection which would serve as primary access to the proposed project. The LOS and queue analyses were conducted using the methodologies and procedures outlined in the latest edition of the *Highway Capacity Manual* (6th Edition). LOS serves as an indicator of the quality of traffic flow and degree of congestion at an intersection or roadway segment. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. The LOS methodology is described in **Attachment C**. The *Synchro Version 10* software package was used to determine LOS and estimate vehicle queues. **Tables 3 and 4** summarize the 2021 existing and 2025 future AM and PM peak hour LOS results. The LOS calculation sheets are included in **Attachment C**.

Table 3
2021 Existing AM and PM Peak Hour LOS and Queue Summary

Study Intersection	LOS ¹	2021 Existing Delay (sec/veh) ²	95 th % Queue (ft) ³
AM PEAK HOUR			
Chuckanut Dr N / Viewcrest Rd			
Eastbound Shared Left- Right	A	9.2	0'
Northbound Shared Left-Thru	A	0.0	0'
PM PEAK HOUR			
Chuckanut Dr N / Viewcrest Rd			
Eastbound Shared Left- Right	A	9.4	0'
Northbound Shared Left-Thru	A	7.6	0'

1. LOS = Level of Service

2. Delay refers to average control delay expressed in seconds per vehicle.

3. Queues are 95th Percentile queues. <25' indicates 95th Percentile queue statistically less than 1 veh.

Table 4
2025 AM and PM Peak Hour LOS Summary

Study Intersection	2025 No Action			2025 With-Project		
	LOS ¹	Delay (sec/veh) ²	95 th % Queue (ft) ³	LOS ¹	Delay (sec/veh) ²	95 th % Queue (ft) ³
AM PEAK HOUR						
Chuckanut Dr N / Viewcrest Rd						
Eastbound Shared Left- Right	A	9.3	0'	A	9.6	<25'
Northbound Shared Left-Thru	A	0.0	0'	A	7.6	0'
PM PEAK HOUR						
Chuckanut Dr N / Viewcrest Rd						
Eastbound Shared Left- Right	A	9.5	0'	B	10.2	<25'
Northbound Shared Left-Thru	A	7.6	0'	A	7.7	0'

1. LOS = Level of Service

2. Delay refers to average control delay expressed in seconds per vehicle.

3. Queues are 95th Percentile queues. <25' indicates 95th Percentile queue statistically less than 1 veh.

As shown in **Tables 3 and 4**, the individual movements at the unsignalized intersection of Chuckanut Dr N / Viewcrest Rd currently operate at LOS A during the weekday AM and PM peak hours and are expected to operate at LOS B or better in 2025 without or with the proposed project with minimal vehicle queues.

Sight Distance

Intersection (entering) sight distances and stopping sight distance assessments were conducted at the off-site study intersection of Chuckanut Dr N/Viewcrest Road in September 2020. Intersection (entering) sight distance was measured based on the *Whatcom County Development Standards Chapter 5-Roads and Related Works (October 2019)* and the *WSDOT Design Manual (December 2019)*. Stopping sight distance was measured based on *City of Bellingham Development Guidelines & Improvement Standards (Version 2.0, Updated 13 June 2018)*.

The posted speed limit on Chuckanut Dr N in the vicinity of Viewcrest Rd is 35 mph. In accordance with *City of Bellingham Development Guidelines & Improvement Standards*, a design speed of 45 mph (posted speed + 10 mph) was used for the stopping sight distance (SSD) assessment. For a 45-mph design speed on Chuckanut Dr N, the recommended minimum value for stopping sight distance at a 4% upgrade is 340 feet.

Based on *Whatcom County Development Standards*, a design speed of 40 mph (posted speed + 5 mph) was used for the intersection (entering) sight distances (ISD) assessment. For a 40-mph design speed on Chuckanut Dr N, the recommended intersection sight distance (ISD) is 445 feet.

Intersection Sight Distance (ISD)

Per WSDOT and Whatcom County standards, ISD is measured from a setback point on the minor street approach that is 18 feet back from the edge of the traveled way and 3.5 feet above the road surface, looking at an object height of 3.5 above the road surface. Based on field observations, ISD looking to would meet the required distance of 445 feet. However, the minimum sight distance looking to the south was not met due to overgrown vegetation in the southwest corner of the intersection which obstructs the driver's view looking south.

WSDOT standards allow for a reduction of the setback distance to 10 feet behind the edge of the traveled way when sight obstructions within the sight triangle cannot be removed due to limited right of way. When measured from this point, the available ISD looking south was verified to be in excess of 445 feet, therefore meeting WSDOT standards.

Photos looking to the north and to the south from Viewcrest Rd are shown below.

Stopping Sight Distance (SSD)

Per City of Bellingham standards, SSD was measured based on an object height of 0.5 feet and a driver's eye height of 3.5 feet. Approaching Viewcrest Rd from the north and south on Chuckanut Dr N, the available SSD was measured and verified to exceed (meet) the applicable standards.

Photos looking northbound and southbound on Chuckanut Dr N approaching Viewcrest Rd are shown below.



View looking North from Viewcrest Rd



View looking South from Viewcrest Rd



View looking South approaching
Viewcrest Rd



View looking North approaching
Viewcrest Rd

Mitigation

Off-Site Improvements

Based on the results of the LOS analysis at the study intersection of Chuckanut Drive/Viewcrest Road, no off-site mitigation is proposed.

Transportation Impact Fees

To mitigate long-term transportation impacts, the City administers a Transportation Impact Fee (TIF) to new developments to improve the transportation system to accommodate the higher travel demand added by new developments. The City of Bellingham's currently adopted 2021 Multimodal Transportation Impact Fee (TIF) = \$2,186 per PM peak person trip. The resulting transportation impact fee is \$3,138 per single family residential unit. The preliminary estimated transportation impact fee for the proposed project totals **\$119,244** (\$3,138 X 38 dwelling units). The actual impact fees will be calculated and assessed at the time of building permit issuance.

If you have any questions regarding the information presented in this analysis, please call me at 425-250-5003 or email at chin@tenw.com.

cc: Adam Morrow, Principal – PSE, Inc.
Jeff Schramm, Principal - TENW

Attachments:

- A – Trip Generation Summary
- B – 2020 Peak Hour Turning Movement Counts
- C – Level of Service Worksheets

ATTACHMENT A

Trip Generation

**Edgemoor Residential - Bellingham
Trip Generation Estimate**

Land Use	Size	Units ¹	ITE LUC ²	Trip Rate or Equation	Directional Split		Vehicle Trip Generation		
					Enter	Exit	Enter	Exit	Total
DAILY									
<u>Proposed Use:</u>									
Single Family (Detached Housing)	38	DU	210	$\ln(T) = 0.92\ln(X) + 2.71$	50%	50%	213	214	427
NEW DAILY TRIP GENERATION =							213	214	427
AM PEAK HOUR									
<u>Proposed Use:</u>									
Single Family (Detached Housing)	38	DU	210	$T = 0.71(X) + 4.80$	25%	75%	8	24	32
NEW AM PEAK HOUR TRIP GENERATION =							8	24	32
PM PEAK HOUR									
<u>Proposed Use:</u>									
Single Family (Detached Housing)	38	DU	210	$\ln(T) = 0.96\ln(X) + 0.20$	63%	37%	25	15	40
NEW PM PEAK HOUR TRIP GENERATION =							25	15	40

¹ DU = Dwelling Units

² Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017 Land Use Codes.

ATTACHMENT B

2020 Peak Hour Turning Movement Counts



ALL TRAFFIC DATA SERVICES

(303) 216-2439

www.alltrafficdata.net

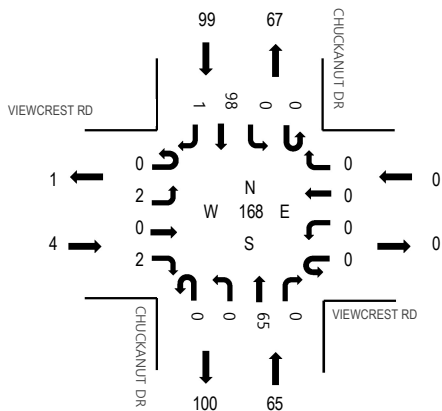
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Date: Wednesday, August 26, 2020

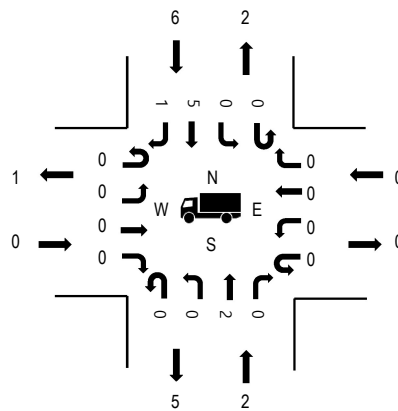
Peak Hour: 08:00 AM - 09:00 AM

Peak Hour

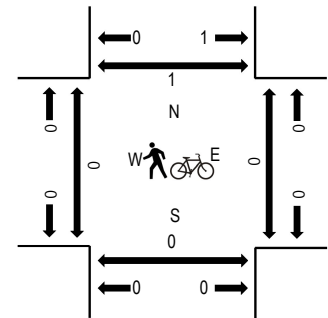
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.0%	0.50
WB	0.0%	0.00
NB	3.1%	0.68
SB	6.1%	0.83
All	4.8%	0.75

Traffic Counts - Motorized Vehicles

Interval Start Time	VIEWCREST RD Eastbound				VIEWCREST RD Westbound				CHUCKANUT DR N Northbound				CHUCKANUT DR N Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	1	0	0	0	0	0	0	8	0	0	0	15	0	24	88
7:15 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	13	0	20	94
7:30 AM	0	0	0	2	0	0	0	0	0	0	10	0	0	0	14	0	26	109
7:45 AM	0	0	0	0	0	0	0	0	0	0	11	0	0	0	7	0	18	130
8:00 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	19	1	30	168
8:15 AM	0	0	0	1	0	0	0	0	0	0	12	0	0	0	22	0	35	
8:30 AM	0	1	0	0	0	0	0	0	0	0	19	0	0	0	27	0	47	
8:45 AM	0	1	0	1	0	0	0	0	0	0	24	0	0	0	30	0	56	
Count Total	0	2	0	5	0	0	0	0	0	0	101	0	0	0	147	1	256	
Peak Hour	0	2	0	2	0	0	0	0	0	0	65	0	0	0	98	1	168	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	1	1	7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	2	2	7:15 AM	1	0	0	0	1
7:30 AM	0	0	0	1	1	7:30 AM	0	0	0	2	2
7:45 AM	0	1	0	1	2	7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	2	2	8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	1	1	8:15 AM	0	0	0	0	0
8:30 AM	0	1	0	1	2	8:30 AM	0	0	0	0	0
8:45 AM	0	1	0	2	3	8:45 AM	0	0	0	1	1
Count Total	0	3	0	11	14	Count Total	1	0	0	3	4
Peak Hour	0	2	0	6	8	Peak Hour	0	0	0	1	1



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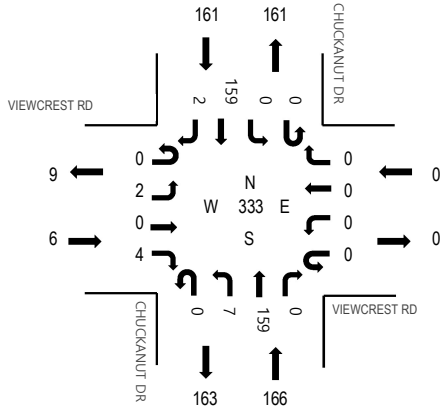
Location: 1 CHUCKANUT DR N & VIEWCREST RD PM

Date: Wednesday, August 26, 2020

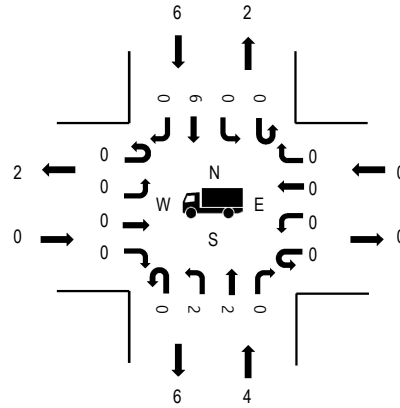
Peak Hour: 05:00 PM - 06:00 PM

Peak Hour

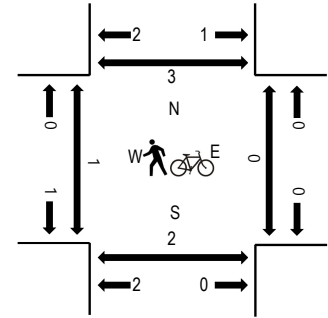
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	0.0%	0.75
WB	0.0%	0.00
NB	2.4%	0.88
SB	3.7%	0.94
All	3.0%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	VIEWCREST RD Eastbound				VIEWCREST RD Westbound				CHUCKANUT DR N Northbound				CHUCKANUT DR N Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	0	0	0	0	0	49	0	0	0	34	0	83	294
4:15 PM	0	0	0	2	0	0	0	0	0	2	24	0	0	0	35	1	64	299
4:30 PM	0	0	0	1	0	0	0	0	0	1	37	0	0	0	35	1	75	319
4:45 PM	0	0	0	2	0	0	0	0	0	2	32	0	0	0	35	1	72	323
5:00 PM	0	0	0	1	0	0	0	0	0	1	46	0	0	0	39	1	88	333
5:15 PM	0	0	0	2	0	0	0	0	0	0	45	0	0	0	37	0	84	
5:30 PM	0	0	0	1	0	0	0	0	0	4	33	0	0	0	40	1	79	
5:45 PM	0	2	0	0	0	0	0	0	0	2	35	0	0	0	43	0	82	
Count Total	0	2	0	9	0	0	0	0	0	12	301	0	0	0	298	5	627	
Peak Hour	0	2	0	4	0	0	0	0	0	7	159	0	0	0	159	2	333	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	3	0	1	4	4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	1	1
4:30 PM	0	1	0	0	1	4:30 PM	1	0	0	0	1
4:45 PM	1	0	0	1	2	4:45 PM	2	0	0	2	4
5:00 PM	0	1	0	2	3	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	2	0	0	2
5:30 PM	0	1	0	3	4	5:30 PM	1	0	0	1	2
5:45 PM	0	2	0	1	3	5:45 PM	0	0	0	2	2
Count Total	1	8	0	8	17	Count Total	4	2	0	6	12
Peak Hour	0	4	0	6	10	Peak Hour	1	2	0	3	6

ATTACHMENT C

Level of Service Worksheets

Level of Service Methodology

Level of service calculations for intersections were based on methodology and procedures outlined in the 2016 update of the *Highway Capacity Manual*, Transportation Research Board (6th Edition) using *Synchro 10* traffic analysis software.

LOS generally refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes intersection LOS. At signalized intersections, LOS A represents free-flow conditions (motorists experience little or no delays), and LOS F represents forced-flow conditions where motorists experience an average delay in excess of 80 seconds per vehicle.

The LOS reported for signalized intersections represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only).

The LOS reported at stop-controlled intersections is based on the average control delay and can be reported for each controlled minor approach, controlled minor lane group, and controlled major-street movement (and for the overall intersection at all-way stop controlled intersections. Additional v/c ratio criteria apply to lane group or movement LOS only).

Table C1 outlines the current HCM (6th Edition) LOS criteria for signalized and stop-controlled intersections based on these methodologies.

Table C1
LOS Criteria for Signalized and Stop Controlled Intersections¹

<u>SIGNALIZED INTERSECTIONS</u>			<u>STOP-CONTROLLED INTERSECTIONS</u>		
<u>Control Delay (sec/veh)</u>	<u>LOS by Volume-to Capacity (V/C) Ratio²</u>		<u>Control Delay (sec/veh)</u>	<u>LOS by Volume-to Capacity (V/C) Ratio³</u>	
	≤ 1.0	> 1.0		≤ 1.0	> 1.0
≤ 10	A	F	≤ 10	A	F
> 10 to ≤ 20	B	F	> 10 to ≤ 15	B	F
> 20 to ≤ 35	C	F	> 15 to ≤ 25	C	F
> 35 to ≤ 55	D	F	> 25 to ≤ 35	D	F
> 55 to ≤ 80	E	F	> 35 to ≤ 50	E	F
> 80	F	F	> 50	F	F

¹ Source: Highway Capacity Manual (6th Edition), Transportation Research Board, 2016.

² For approach-based and intersection-wide assessments at signals, LOS is defined solely by control delay.

³ For two-way stop controlled intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole at two-way stop controlled intersections. For approach-based and intersection-wide assessments at all-way stop controlled intersections, LOS is solely defined by control delay.

Lanes, Volumes, Timings
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	2	0	67	101	1
Future Volume (vph)	2	2	0	67	101	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-5%			5%	5%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	460			662	553	
Travel Time (s)	12.5			12.9	10.8	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	3%	3%	6%	6%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	2	0	67	101	1
Future Vol, veh/h	2	2	0	67	101	1
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, %	-5	-	-	5	5	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	3	3	0	89	135	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	225	136	136	0	-	0
Stage 1	136	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Critical Hdwy	5.4	5.7	4.13	-	-	-
Critical Hdwy Stg 1	4.4	-	-	-	-	-
Critical Hdwy Stg 2	4.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	817	936	1442	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	817	936	1442	-	-	-
Mov Cap-2 Maneuver	817	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.2	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1442	-	872	-	-	
HCM Lane V/C Ratio	-	-	0.006	-	-	
HCM Control Delay (s)	0	-	9.2	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Lanes, Volumes, Timings
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	4	7	164	164	2
Future Volume (vph)	2	4	7	164	164	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-5%			5%	5%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	460			662	553	
Travel Time (s)	12.5			12.9	10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	4	7	164	164	2
Future Vol, veh/h	2	4	7	164	164	2
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, %	-5	-	-	5	5	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	4	4
Mvmt Flow	2	4	7	173	173	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	361	174	175	0	-	0
Stage 1	174	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Critical Hdwy	5.4	5.7	4.12	-	-	-
Critical Hdwy Stg 1	4.4	-	-	-	-	-
Critical Hdwy Stg 2	4.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	710	896	1401	-	-	-
Stage 1	904	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	706	896	1401	-	-	-
Mov Cap-2 Maneuver	706	-	-	-	-	-
Stage 1	899	-	-	-	-	-
Stage 2	895	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.4	0.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1401	-	822	-	-	
HCM Lane V/C Ratio	0.005	-	0.008	-	-	
HCM Control Delay (s)	7.6	0	9.4	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Lanes, Volumes, Timings
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	2	0	75	114	1
Future Volume (vph)	2	2	0	75	114	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-5%			5%	5%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	460			662	553	
Travel Time (s)	12.5			12.9	10.8	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	3%	3%	6%	6%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	2	0	75	114	1
Future Vol, veh/h	2	2	0	75	114	1
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, %	-5	-	-	5	5	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	3	3	0	100	152	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	253	153	153	0	-	0
Stage 1	153	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	5.4	5.7	4.13	-	-	-
Critical Hdwy Stg 1	4.4	-	-	-	-	-
Critical Hdwy Stg 2	4.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	794	918	1421	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	794	918	1421	-	-	-
Mov Cap-2 Maneuver	794	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.3	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1421	-	852	-	-	
HCM Lane V/C Ratio	-	-	0.006	-	-	
HCM Control Delay (s)	0	-	9.3	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Lanes, Volumes, Timings
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	5	8	184	184	2
Future Volume (vph)	2	5	8	184	184	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-5%			5%	5%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	460			662	553	
Travel Time (s)	12.5			12.9	10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
1: Chuckanut Dr & Viewcrest Rd

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Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	5	8	184	184	2
Future Vol, veh/h	2	5	8	184	184	2
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, %	-5	-	-	5	5	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	4	4
Mvmt Flow	2	5	8	194	194	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	405	195	196	0	-	0
Stage 1	195	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	5.4	5.7	4.12	-	-	-
Critical Hdwy Stg 1	4.4	-	-	-	-	-
Critical Hdwy Stg 2	4.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	678	875	1377	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	673	875	1377	-	-	-
Mov Cap-2 Maneuver	673	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.5	0.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1377	-	806	-	-	
HCM Lane V/C Ratio	0.006	-	0.009	-	-	
HCM Control Delay (s)	7.6	0	9.5	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Lanes, Volumes, Timings
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	7	2	75	114	7
Future Volume (vph)	21	7	2	75	114	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-5%			5%	5%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	460			662	553	
Travel Time (s)	12.5			12.9	10.8	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	3%	3%	6%	6%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	7	2	75	114	7
Future Vol, veh/h	21	7	2	75	114	7
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, %	-5	-	-	5	5	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	28	9	3	100	152	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	263	157	161	0	-	0
Stage 1	157	-	-	-	-	-
Stage 2	106	-	-	-	-	-
Critical Hdwy	5.4	5.7	4.13	-	-	-
Critical Hdwy Stg 1	4.4	-	-	-	-	-
Critical Hdwy Stg 2	4.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	786	913	1412	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	784	913	1412	-	-	-
Mov Cap-2 Maneuver	784	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.6	0.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1412	-	813	-	-	
HCM Lane V/C Ratio	0.002	-	0.046	-	-	
HCM Control Delay (s)	7.6	0	9.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Lanes, Volumes, Timings
1: Chuckanut Dr & Viewcrest Rd

07/30/2021

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	14	8	13	184	184	22
Future Volume (vph)	14	8	13	184	184	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	-5%			5%	5%	
Link Speed (mph)	25			35	35	
Link Distance (ft)	460			662	553	
Travel Time (s)	12.5			12.9	10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	2%	2%	4%	4%
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	8	13	184	184	22
Future Vol, veh/h	14	8	13	184	184	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, %	-5	-	-	5	5	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	4	4
Mvmt Flow	15	8	14	194	194	23
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	428	206	217	0	-	0
Stage 1	206	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Critical Hdwy	5.4	5.7	4.12	-	-	-
Critical Hdwy Stg 1	4.4	-	-	-	-	-
Critical Hdwy Stg 2	4.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	662	864	1353	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	654	864	1353	-	-	-
Mov Cap-2 Maneuver	654	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.2	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1353	-	717	-	-	
HCM Lane V/C Ratio	0.01	-	0.032	-	-	
HCM Control Delay (s)	7.7	0	10.2	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	