Lemolo Shore Drive NE Traffic Study

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List of Abbreviations

ADT	Average Daily Traffic
DHV	Design Hourly Volume
FHWA	Federal Highway Administration
MP	Mile Post
MPH	Miles Per Hour
MUTCD	Manual on Uniform Traffic Control Devices
RCW	Revised Code of Washington
SR	State Route
WSDOT	Washington State Department of Transportation

Executive Summary

The purpose of this study is to summarize the operations, function, and collision frequencies of Lemolo Shore Drive NE between SR 305/NE Totten Road and Fjord Drive NE/Poulsbo City Limits. There have been numerous citizen concerns raised pertaining to the traffic volumes, speeds, non-motorized use, and safety of this section of roadway resulting in requests for lower speeds, installing shared-lane markings, road closure, and other traffic calming measures. There is also concern that the new roundabout on SR 305 and Johnson Way NE could cause increased traffic volumes on Lemolo Shore Drive NE.

Lemolo Shore Drive NE extends in a generally east west orientation from SR 305 (MP 0.00) to Fjord Drive NE/Poulsbo City Limits (MP 2.065). Lemolo Shore Drive NE is classified as a major collector under the Federal Functional Classification (FFC) system. It serves to feed traffic from local neighborhood roads to SR 305 (a principle arterial) and Fjord Drive NE (a minor arterial) in Poulsbo as well as provide direct access to multiple properties. From SR 305 to Peterson Way NE, Lemolo Shore Drive NE has a posted speed of 35 mph. From Peterson Way NE to Fjord Drive NE, Lemolo Shore Drive NE has a posted speed of 25 mph.

A study of current traffic volumes and speeds was obtained using pneumatic tube counters. An assessment of collision frequency and contributing causes was reviewed looking at the most current complete 5-year records. Land use for the area and non-motorized usage of the corridor was looked at. This study also includes photos of existing conditions at several locations along the corridor.

Several alternatives to mitigate concerns raised pertaining to traffic volumes, speeds, non-motorized use, and safety on Lemolo Shore Drive NE were identified. The following alternatives were evaluated and a summary of each alternative's pros and cons as well as impacts associated with each alternative is included in this report.

- Alternative 1 - Lower Speed Limit
- Alternative 2 – Re-stripe Lemolo Shore Drive NE (SR 305 to Johnson Way NE)
- Alternative 3 - Re-stripe Lemolo Shore Drive NE (Johnson Way NE to Fjord Drive NE)
- Alternative 4 - Shared Lane Markings
- Alternative 5 - Road Closure or One-Way Option
- Alternative 6 - Change Functional Classification
- Alternative 7 - Speed Humps
- Alternative 8 - Enforcement and Community Education
- Alternative 9 - Reconstruct Lemolo Shore Drive NE to Current Standards
- Alternative 10- Separated Shared Use Path

1 Introduction

The purpose of this study is to summarize the operations, function, and collision frequencies of Lemolo Shore Drive NE between SR 305/NE Totten Road and Fjord Drive NE/Poulsbo City Limits (see Figure 1). There have been numerous citizen concerns raised pertaining to the traffic volumes, speeds, non-motorized use, and safety of this section of roadway resulting in requests for lower speeds, installing shared-lane markings, road closure, construction of a shared use path between Johnson Way NE and Fjord Drive NE, shoulder widening, and other traffic calming measures. There is also some concern from the residents in the Lemolo Shore Drive area that the new roundabout being built on SR 305 at Johnson Way NE could bring higher traffic volumes to the road.

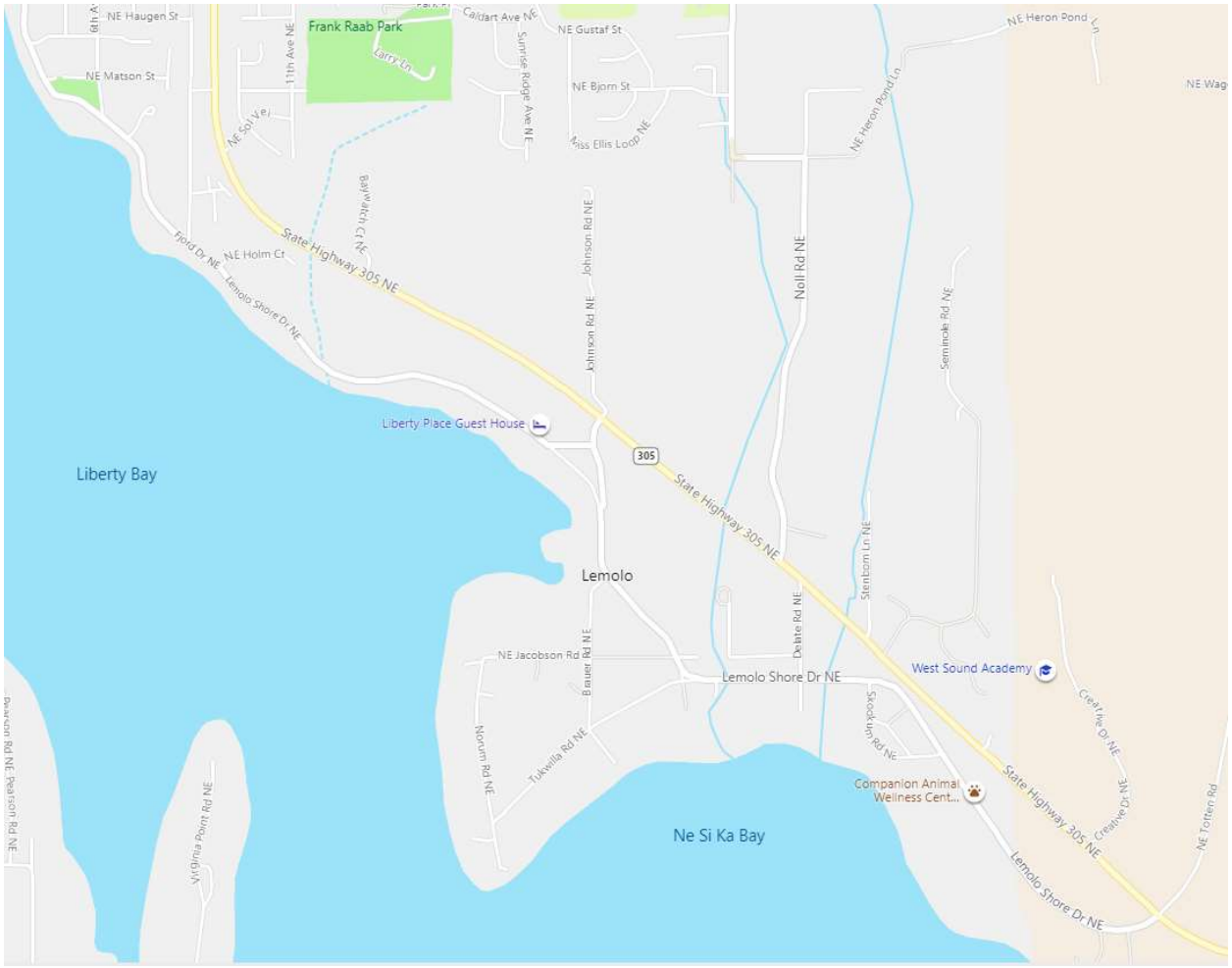


Figure 1 – Vicinity Map

2 Roadway Characteristics and Roadside Development

Lemolo Shore Drive NE extends in a generally east west orientation from SR 305 (MP 0.00) to Fjord Drive NE/Poulsbo City Limits (MP 2.065). Lemolo Shore Drive NE has a federal functional classification of rural major collector and provides access to over 300 residences within the study area bounded by SR 305 to the north, city of Poulsbo to the west, and Nesika Bay to the south (see Figure 2).

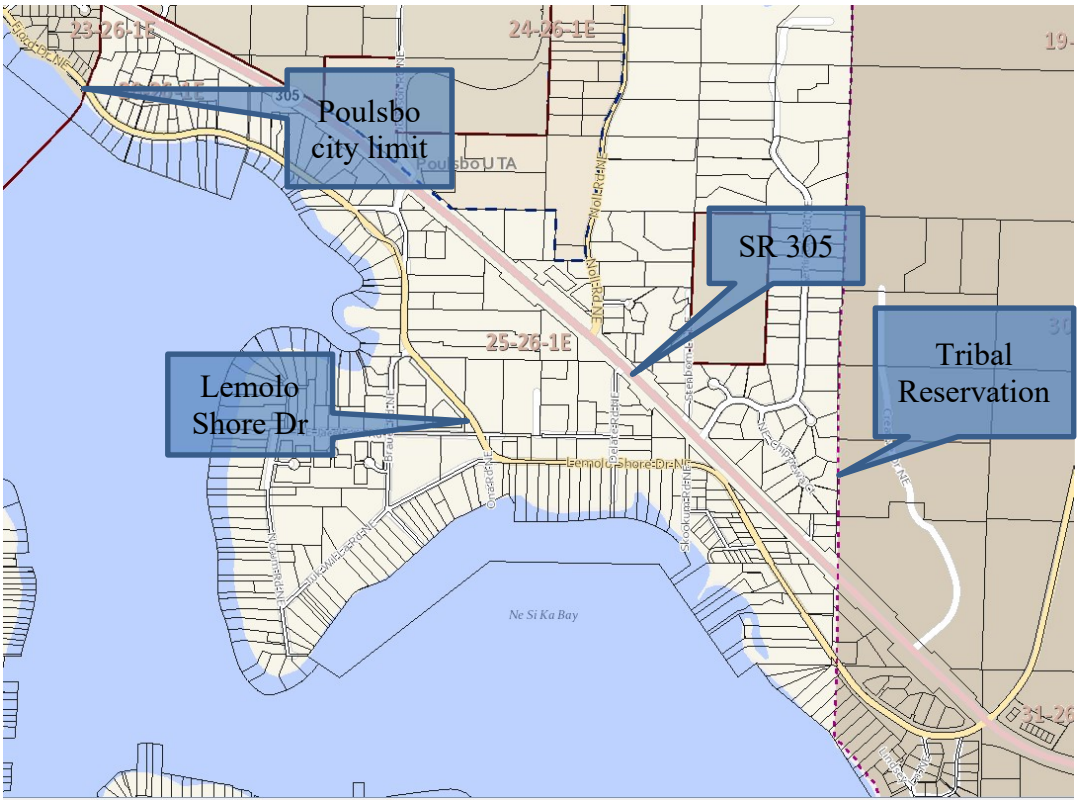


Figure 2 – Parcel Map

Lemolo Shore Drive NE is classified as a major collector under the Federal Functional Classification (FFC) system. It serves to feed traffic from local neighborhood roads to SR 305 (a principle arterial) and Fjord Drive NE (a minor arterial) in Poulsbo as well as provide direct access to multiple properties. This is consistent with how collector roads are designed to operate.

Functional classification is the grouping of highways, roads, and streets by the character of service they provide. All public roads are classified in accordance with Federal Highway Administration directives. The primary functions of roads are to provide for mobility and access and the functional classification system creates a hierarchy of classified roads (see Figure 3).

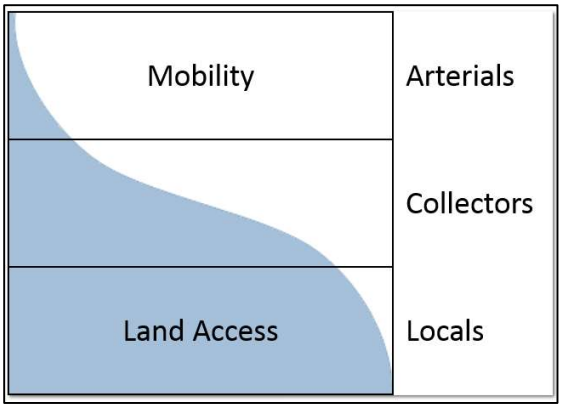


Figure 3 – Traffic Mobility Versus Access

Arterials are on the upper end of the scale and designed to provide a high degree of mobility and little direct property access for the longer trip length and are generally designed for higher speeds. On the other end of the scale are local roads which provide a high degree of access by way of numerous driveways to adjacent lots and have lower design speeds. Collectors serve a dual function by accommodating shorter trips and by feeding the arterials. Collector roads generally have more traffic on them, and the speed limits can be a little higher than local roads. Figure 4 shows the WSDOT Functional Classification Map for Lemolo Shore Drive NE.

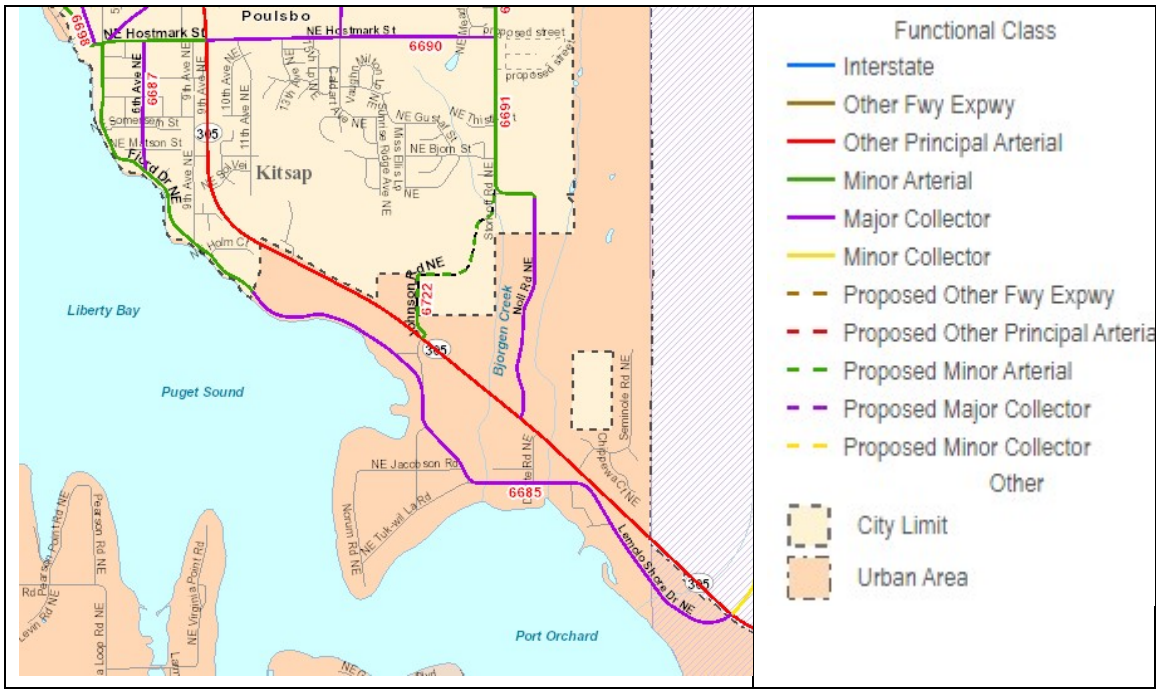


Figure 4 – WSDOT Functional Classification Map

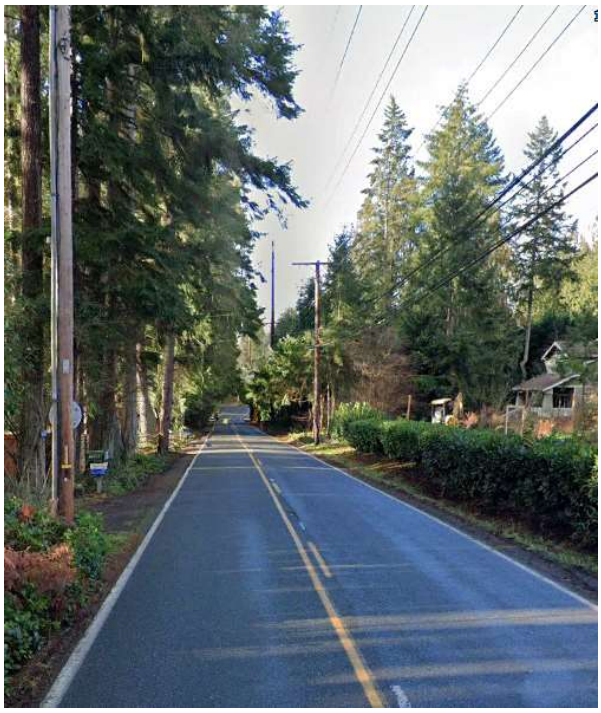
Appendix A includes additional FHWA guideline information for collectors and local roads. Specific Lemolo Shore Drive NE characteristics and development activity within the study limits are summarized in Table 1.

Table 1 – Lemolo Shore Drive NE Roadway Characteristics

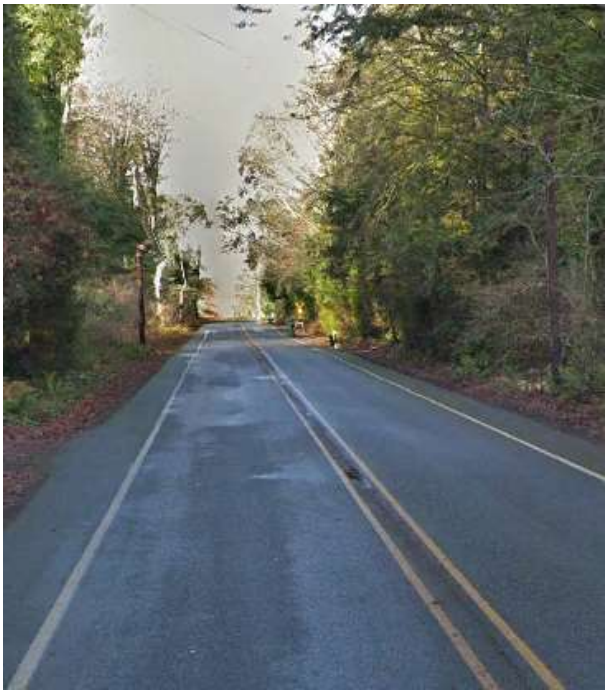
Location	MP To MP	Posted Speed MPH	Travel Lane Width	Shoulder Width	Total Number of Driveways	Number of Driveways Per Mile
East Section Totten Rd.to Tuk-Wil La	0.00 to 1.03	35	10 ft.	0 to 3 ft. Gravel	66	47.8
East Section Tuk-Wil La to Peterson Way	1.03 to 1.38	35	10 ft.	4 ft. ACP		
West Section	1.38 to 2.065	25	10 ft.	4-5 ft. ACP	28	40.87

As a collector, Lemolo Shore Drive NE is signed and striped per Manual on Uniform Traffic Control Devices (MUTCD) and county policy guidance. Kitsap County Pavement Markings Policy 33.17.01 states that all Federal Functional Classified roads will be centerline and edge line striped. Non-federally classified roads with posted speed limits of 35 mph or greater will be centerline striped only. The following pictures depict typical cross sections of Lemolo Shore Drive NE.

Picture 1 – Lemolo Shore Drive NE west of Lindsey Road NE



Picture 2 – Lemolo Shore Drive NE west of Delate Road NE

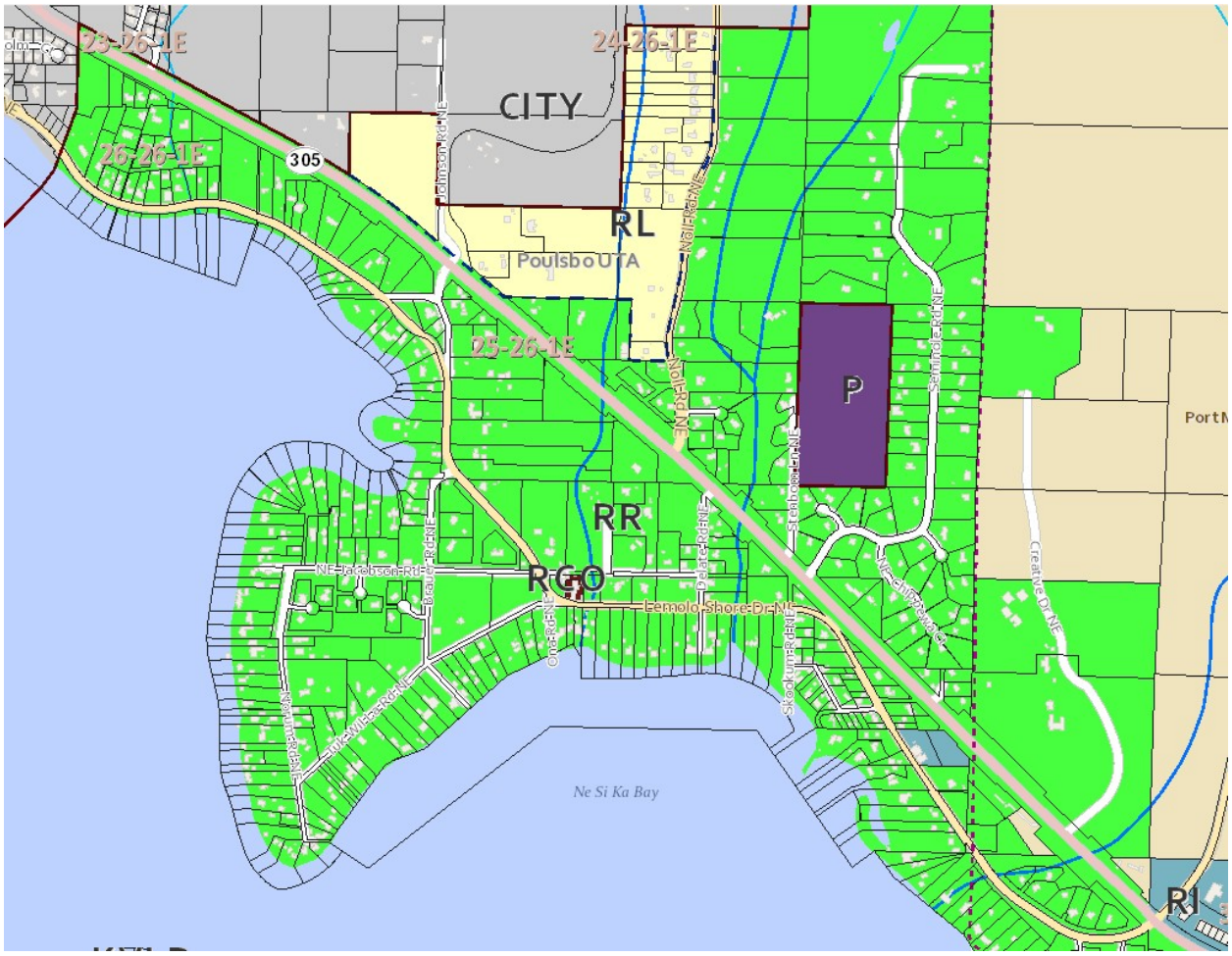


Picture 3 – Lemolo Shore Drive NE west of Tuk-Wil La Road NE

Picture 4 – Lemolo Shore Drive NE west of Peterson Way NE

Lemolo Shore Drive NE is not constructed to the center of the right of way. Right of way width varies from approximately 30 feet to 70 feet. In addition, the section of Lemolo Shore Drive NE from Fjord Drive NE to just west of Johnson Way NE is constructed adjacent to the shoreline with steep embankment on the south side of the roadway. Appendix B includes figures from the Kitsap County Parcel Map showing Lemolo Shore Drive right of way limits and a table with segment right of way widths.

The land use adjacent to Lemolo Shore Drive NE is zoned rural residential with 1 dwelling unit per 5 acres. The land use in this area is not located in an Urban Growth Area (UGA), so annexation by Poulsbo is not currently an option. Most of the parcels are occupied by single family residences and no significant growth in the area is anticipated under the current zoning. There is a small parcel on the north side of Lemolo Shore at the intersection of Tuk-Wil-La Road NE that is zoned rural commercial. The Lemolo Vintage Market/The Christmas House is located on the commercial property and operates under limited hours. There are also two parcels located south of NE Holman Road zoned Rural Industrial; one home to the Companion Animal Wellness Clinic, and the other one currently vacant. Figure 5 shows a zoning map of the area.



Legend
RR - Rural Residential (1 DU/5 Ac)
RCO - Rural Commercial
RI - Rural Industrial

Figure 5 – Zoning Map

3 Non-Motorized Use

The Kitsap County Non-Motorized Facility Plan identifies Lemolo Shore Drive NE as non-motorized route part of Sound to Olympic Trail (STO). To support the STO trail system, and as funding permits, a 10 to 12-foot separated shared use is proposed along Lemolo Shore Drive NE from NE Totten Road to Fjord Drive NE. There are no plans at this time for the completion of this section of the STO and it will require additional right of way to construct.

Lemolo Shore Drive NE is in a rural area of Kitsap County outside of the Poulsbo urban growth boundary. The Kitsap County Road Standards indicates that all new or improved rural collectors have shoulders paved for full width and the shoulder width be based on average daily traffic (ADT) volumes or design hourly volume (DHV) and range from 3 feet to 8 feet. The minimum width required for bike lanes designated by striping, signing, and/or pavement markings for the preferential or exclusive use of bicycles on roads without curbs is 4 feet. Based on traffic

volumes collected on Lemolo Shore Drive and the Kitsap County Road Standards, the minimum paved shoulder lane widths for Lemolo Shore Drive from SR 305 to Peterson Way NE is 4 feet, and from Peterson Way NE to Fjord Road NE is 6 feet.

There is no transit service along Lemolo Shore Drive NE. Pedestrian and bicycle activity in the area is estimated to be high (WSDOT considers 60 bicycles per hour or 20 pedestrians per hour high volume traffic). There are pedestrian bicycle vehicular warning signs (W11-15) at multiple locations on both sides of the roadway (see Picture 5).

Picture 5 – Bicycle Pedestrian Warning Sign (W11-15)

A supplemental warning sign reading “PEDESTRIANS MUST STAY ON SHOULDER” is located on the south shoulder of Lemolo Shore Drive NE east of Fjord Drive NE (see Picture 6). The sign was installed after complaints by motorists of pedestrians walking abreast and in the travel lanes. State law requires pedestrians to get out of the travel way when a vehicle approaches.

Picture 6 – Supplemental Pedestrian Warning Sign

4 Traffic Volumes

Traffic volumes were most recently collected on Lemolo Shore Drive NE at several count stations in 2020. The traffic volumes collected were compared to previous counts taken in 2017. The comparison indicated that the traffic volumes collected in 2020 may have been artificially low due to Covid-19 Phase 2 restrictions. The traffic count data is included in Appendix C. Table 2 summarizes the average daily traffic (ADT) and peak hour traffic volumes collected in 2017 at the traffic count stations within the study area.

Table 2 – 2017 Lemolo Shore Drive NE Traffic Volumes

Location	Date	Eastbound			Westbound			Total Two-Way ADT
		ADT	7-9 AM Peak Hour	4-6 PM Peak Hour	ADT	7-9 AM Peak Hour	4-6 PM Peak Hour	
East of 9th Avenue	9/13/17	857	43	77	793	65	77	1650
East of Delate Road	4/19/17	499	32	47	439	24	43	938
South of Holman Avenue	4/19/17	484	31	36	421	20	48	905
East of Lindsey Lane	9/13/17	562	33	54	452	27	52	1014

Review of historical traffic data collected at various count stations along Lemolo Shore Drive NE shows that traffic volumes have held steady over the past 10 years.

5 Thru Traffic

An analysis of thru traffic was performed for this report. The study area is bounded by NE Holm Court to the west, SR 305 to the north, and Nesika Bay to the south. Within the study area are approximately 312 single family residences. Based on average daily trip generation rates from the Institute of Trip Generation Manual, 10th Edition, a single-family residence generates 9.44 daily trips. Figure 6 is a comparison of expected area entering and exiting volumes based on the

ITE trip generation rates and actual area entering and exiting volumes based on 2017 traffic counts (see Appendix D for the thru traffic worksheet).

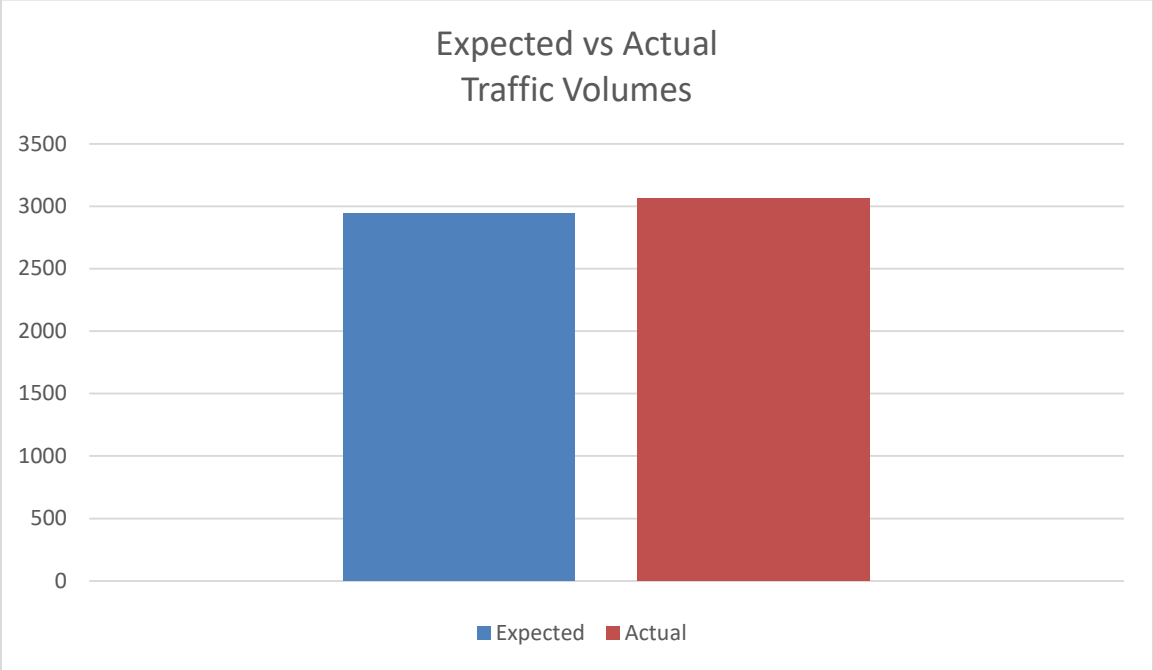


Figure 6 – Expected Versus Actual Study Thru Traffic

Figure 6 shows that Lemolo Shore Drive NE is currently used almost entirely by residents living in the area. Approximately 116 motorists a day use the road as a "cut through." The blue bar shows what we would expect the volumes of daily traffic to be based just on the number of homes in the study area served by Lemolo Shore Drive NE in accordance with average trip generation rates. The red bar shows the actual traffic count data collected with traffic counters. If there was a lot of pass through traffic, we would expect to see the red bar much taller than the blue bar.

6 Collision History

All reported motor vehicle collisions along Lemolo Shore Drive NE from January 1, 2015 to December 31, 2019 were analyzed. The collisions were analyzed for their type and frequency. Table 3 summarizes the study area collision history.

Table 3 – Lemolo Shore Drive NE 5-Year Collision History

Location	Severity			Total Collisions	Top 3 Collision Types	Total Number of Speed Related Collisions
	Fatal	Injury	PDO			
East Section MP 0.00 – 1.38	0	2	3	5	fixed object = 3 rear end = 1 overturned = 1	0
West Section MP 1.38 – 2.065	0	1	2	3	fixed object = 3	0

*PDO = Property damage only

The collision records don't indicate any specific issues with the speed limit or design of the road. Four collisions involved alcohol, drugs, illness, and inattention. Two motorists were operating defective equipment. None of the collisions on the roadway resulted in serious injuries.

Review of historical collision data collected since 1992 showed a total of 2 pedestrian or bicycle collisions occurred on Lemolo Shore Drive NE. The first collision occurred in 2011 and involved a vehicle which failed to yield right of way to a bicycle while making a U-turn. The second collision was in 2014 and involved an inattentive motorist who hit a bicycle. Neither collision resulted in serious injury.

Biennially the county performs a 5-year traffic safety review of all reported collisions on county roads. Locations with a minimum of 5 collisions during the five-year period and a collision rate higher than the county average for like locations are scored and ranked. None of the intersections or roadway segments on Lemolo Shore Drive NE had enough collisions to be included in the 2014-2018 Traffic Safety Report.

7 Advisory and Warning Signs

A separate evaluation for adequacy of existing horizontal alignment signs, intersection warning signs, intersection sight distance, and approaching stopping sight distance will be performed in conjunction with this traffic study. As a result of this evaluation, changes may occur to existing roadway signage.

Currently, an advance intersection warning sign is present in the westbound direction approaching Skookum Road NE which is supplemented with a 25 MPH speed advisory sign to warn motorists of insufficient stopping sight distance approaching the intersection at 35 MPH (see Picture 7).

Picture 7 – Advance Intersection Warning Sign

Advisory speeds for the horizontal curves are determined through ballbank readings per MUTCD guidance. Ballbanking measures the force on a vehicle as it goes around a curve. The MUTCD provides guidance on the advisory speed based on the measured force. There is a curve advisory sign present in the westbound direction approaching the horizontal curve at Brauer Road NE with a supplemental 30 MPH speed advisory sign, and curve advisory signs both directions

approaching the horizontal curve at Tuk-Wil La Road NE with supplemental 30 MPH speed advisory signs.

Picture 8 – Curve Advisory Warning Sign

It should be noted that speed limits should not be lowered to reflect isolated restrictive element. This practice tends to reduce the credibility of speed limits. When a speed lower than the speed limit is appropriate for a particular location, the use of an advisory speed plaque and associated traffic control devices should be considered per MUTCD guidance.

8 Speed Study

The speed limit study was performed at the request of a resident living in the area. The resident requested the County evaluate and reduce the speed limits on the section of Lemolo Shore Drive NE from Totten Road to Peterson Way NE. Their request states the speed limit on Lemolo Shore Drive NE should be 25 mph for the entire length of roadway based on the presence of walkers and bicyclists on the road and lack of sidewalks.

The Manual on Uniform Traffic Control Devices (MUTCD) states “Speed Limits (R2-1) signs shall display the speed limit established by statute; or, by an ordinance or regulation adopted by the authorized agency, based on the engineering study or traffic investigation required by RCW 46.61.405, 46.61.410, and 46.61.415. The speed limit shall be set in multiples of 5 mph”. When evaluating speed limits, the following factors should be considered:

- Road characteristics, shoulder condition, grade, alignment, and sight distance
- Roadside development and environment
- Parking practices and pedestrian activity
- 85th percentile speed of vehicles traveling on the roadway
- The 10-mile pace speed
- Reported crash experiences for at least a 12- month period

- Other factors such as route development or comprehensive plans

Currently there are two separate posted speed limits on the road;

- East section from SR 305 to east of Peterson Way NE (MP 0.00 – MP 1.36) has a posted speed limit of 35 MPH
- West section from east of Peterson Way NE to Fjord Drive NE/Poulsbo City Limits (MP 1.36 – MP 2.065) has a posted speed limit of 25 MPH

There have been two speed limit resolutions passed for Lemolo Shore Drive NE; Resolution 395-1976 and Resolution 395-1990. Appendix E contains copies of the resolutions and a figure showing the existing speed limits.

Observed vehicle speeds were collected using road tubes over 24-hour interval on Lemolo Shore Drive NE on September 15, 2020 (see Appendix C). Table 4 summarizes the results of the speed study.

Table 4 – 2020 Lemolo Shore Drive NE Observed Vehicle Speeds

Location	Count Date	ADT	Posted Speed MPH	85% Speed MPH	Pace Speed MPH	% in 10 Mile Pace	% 10 MPH Over Posted Speed
East Section							
South of Holman Rd	9/15/20	794	35	40.1	30-39	63.1	2.9
West of Delate Rd	9/15/20	838	35	37.0	25-34	65.7	1.1
East of Brauer Rd	9/15/20	797	35	38.9	30-39	74.3	1.6
West Section							
East of City Limits	9/15/20	1133	25	33.3	25-34	75.2	6.5

Table 5 shows speeds collected at multiple locations on Lemolo Shore Drive NE in 2017. Traffic speeds have remained relatively constant over the past few years.

Table 5 – 2017 Lemolo Shore Drive NE Observed Vehicle Speeds

Location	Count Date	ADT	Posted Speed MPH	85% Speed MPH	Pace Speed MPH	% in 10 Mile Pace	% 10 MPH Over Posted Speed
East Section							
South of Holman Rd	4/19/17	905	35	39.2	30-39	66.5	2.8
East of Delate Rd	4/19/17	938	35	38.3	30-39	62.0	1.5
West Section							
East of 9th Ave NE	9/13/17	1650	25	28.2	20-29	82.8	0.5

The County sets roadway speed limits based on both the 85th percentile speed and a knowledge-based expert system (USLIMITS2) developed by FHWA. The 85th percentile speed is the speed

at which 85% of vehicles are traveling at or below. We also consider the 10-mile pace speed and the percentage of motorists in that range. The pace speed is the 10 MPH range of speeds that captures the highest percentage of motorists. Typically, the 85th percentile speed should be within 5 to 10 miles per hour of the posted speed and it is desirable to have a high percentage of the total number of vehicles in the 10-mile pace. Studies have shown that setting the posted speed at or near these values creates a safe travel way.

USLIMITS2 is a FHWA web-based tool designed to help practitioners set reasonable, safe, and consistent speed limits for specific segments of roads. USLIMITS2 is applicable to all types of roads ranging from rural local roads and residential streets to urban freeways. Based on Lemolo Shore Drive NE geometry, ADT, speeds, and crash history, the recommended speed limit from USLIMITS2 is 35 MPH for the east section from SR 305/NE Totten Road to Peterson Way NE and 35 MPH for the west section from Peterson Way NE to Fjord Drive NE(see Appendix F).

FHWA guidance suggests that a percent reduction in speed could be applied based on primary factors used to establish posted speed limits. Primary factors include 85th percentile speed, roadside development, accident experience, and roadway geometrics. Based on this guidance the following percent reductions were applied to the 85th percentile speeds on the east section of Lemolo Shore Drive NE from SR 305/NE Totten Road to Peterson Way NE.

- 10% reduction for number of driveways and intersections per mile
- 5% reduction for roadway crash rates
- 5% for roadway geometry

Applying the total 20% reduction to the average 85th percentile speeds for this section of Lemolo Shore Drive NE results in an adjusted prevailing speed of 30.94 MPH. With a weighted mean speed of 32.95 mph, the recommended posted speed is 35 MPH (see Appendix G).

9 Conclusion

Several alternatives to mitigate concerns raised pertaining to traffic volumes, speeds, non-motorized use, and safety on Lemolo Shore Drive NE were evaluated. The following describes the alternatives evaluated and provides a summary of the pros and cons of each mitigation measure as well as impacts associated with the mitigation:

Alternative 1- Lower Speed Limit
Description: Lemolo Shore Drive NE between SR 305 and Peterson Way NE has a posted speed of 35 MPH. This alternative would lower the speed limit to 25 MPH to match the posted speed of 25 MPH west of Peterson Way NE.

Pro: Studies have shown that crash severity increases with individual vehicle speed[5]. A direct relationship has been found between speed and severity of pedestrian injury in vehicle-pedestrian crashes.

Con: Research studies show that speed limits set below the reasonable speed of the majority do not have significant effects on a reduction in the number of accidents on a road[7]. Studies have also shown that lower speed limits do not appreciably alter traffic speeds and changing the speed limits alone, without additional enforcement, educational programs, or other engineering measures has only a minor effect on driver behavior[5]. In addition, artificially low speed limits can create frustrated drivers and result in aggressive driver behaviors (honking and dangerous passing).

Alternative Impacts: Cost and environmental impacts of Alternative 1 would be low. However, roadway characteristics, shoulder conditions, pedestrian and bicycle activity, collision history, 85th

percentile speeds and USLIMITS2 analysis support retaining the 35 MPH speed limit on Lemolo Shore Drive NE between SR 305 and Peterson Way NE.

Alternative 2 - Re-stripe Lemolo Shore Drive NE from SR 305 to Johnson Way NE
Description: Restripe Lemolo Shore Drive NE from SR 305 to Johnson Way NE and utilize excess pavement to provide pedestrians a paved shoulder to walk on.

Pro: Providing narrower travel lanes could provide excess pavement for pedestrian use on one side of the roadway. Based on Kitsap County Road Standards, the minimum lane width for Lemolo Shore Drive NE from SR 305 to Johnson Way NE (a county rural collector with 751 to 1000 ADT) is 10 feet with 4-foot paved shoulders (total asphalt width of 28 feet). Lemolo Shore Drive NE from Tuk-Wil La Road NE to Johnson Way NE as a total asphalt width of 28 feet and can support this option. Figure 7 shows the typical existing cross section for Lemolo Shore Drive NE from Tuk-Wil La Road NE to Johnson Way NE.

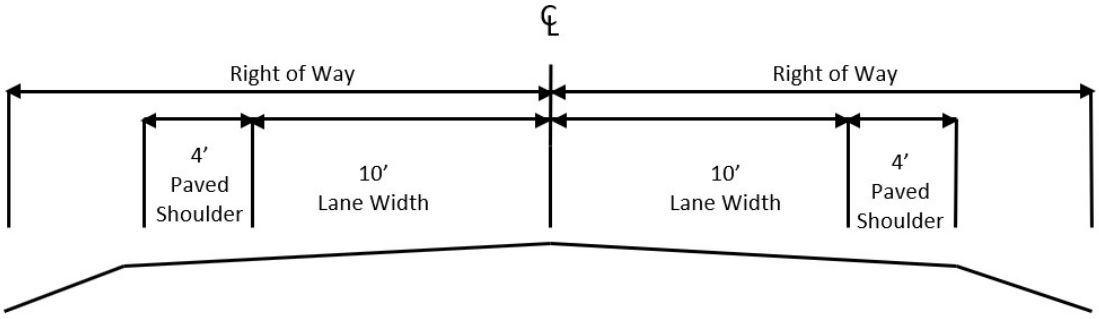


Figure 7 – Existing Typical Cross Section Tuk-Wil La Road to Johnson Way

Con: Lemolo Shore Drive NE, from SR 305 to Tuk-Wil La Road NE, consists of 20 feet of asphalt surface from edge to edge. Based on Kitsap County Road Standards, the minimum lane width for Lemolo Shore Drive NE (a county rural collector with 751 to 1000 ADT) is 10 feet with 4-foot paved shoulders (total asphalt width of 28 feet). This section of Lemolo Shore Drive NE does not currently support Alternative 2. Figure 8 shows the typical existing cross section for Lemolo Shore Drive NE from SR 305 to Tuk-Wil La Road NE.

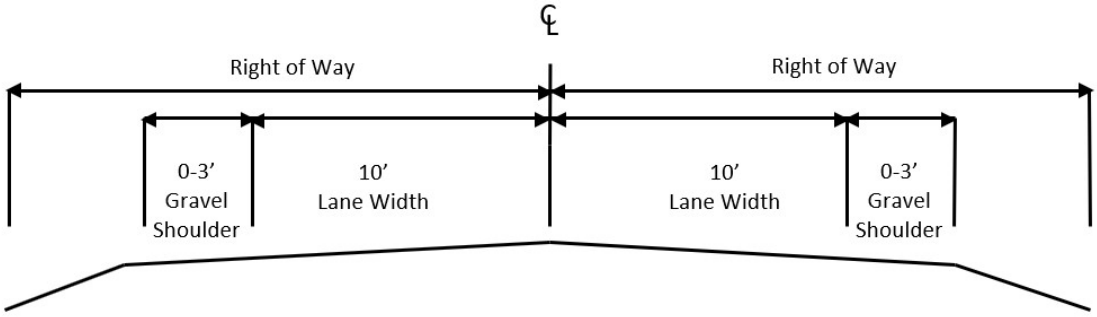


Figure 8 – Existing Typical Cross Section SR 305 to Tuk-Wil La Road

Alternative Impacts: Cost to restripe Lemolo Shore Drive NE Tuk-Wil La Road NE to Johnson Way NE would be low to moderate depending on the structural condition of the shoulders. Environmental costs would be low.

Cost to widen Lemolo Shore Drive NE from SR 305 to Tuk-Wil La Road NE would be high. Environmental impacts of widening would also be high as addition right of way may be necessary

and driveway accesses would require reconstruction. Lemolo Shore Drive NE right of way from SR 305 to Tuk-Wil La Road NE ranges between 30 to 60 feet and roadway appears to be relatively centered in the right of way. A deep culvert under this segment of roadway makes the shoulder widening in this area extremely expensive.

Alternative 3 - Re-stripe Lemolo Shore Drive NE from Johnson Way NE to Fjord Drive NE/Poulsbo City Limits

Description: Beginning at Johnson Way NE, shift travel lanes or narrow travel lanes to provide shared use pathway along the south side of the roadway. Based on Kitsap County Road Standards, the minimum lane width for this section of Lemolo Shore Drive NE (a county rural collector with DHV between 100 to 200) is 11 feet with 4-foot paved shoulders (total asphalt width of 30 feet). Desired width of shared use path is 10 feet (8 feet minimum). This alternative aligns with a re-striping concept the City of Poulsbo is exploring for Fjord Drive from 6th Avenue to the city limits.

Pro: This alternative would serve to connect the pathway along the new Johnson Parkway to city of Poulsbo's pedestrian improvements at Fjord Drive NE/6th Avenue.

Con: Existing roadway asphalt width along this section of Lemolo Shore Drive NE ranges from 28 to 32 feet. Shifting the roadway may require reconstruction of the shoulder to support vehicular loads. This alternative would result in mixture of pedestrians and bicycles immediately adjacent to a travel lane.

Alternative Impacts: Costs of this alternative would be moderate to high depending on structural condition of shoulders. Environmental costs would be low. Figure 8 shows the typical cross section under Alternative 3. To eliminate the potential conflicts associated with mixing pedestrian and bicycles in shared use path adjacent to a travel lane, the concept of using shared lane markings (sharrows) should be considered for Alternative 3. Shared use lanes with bicycles and cars may not be the safest configuration for young and inexperienced bicyclists. Since this area is all no passing, there may be some motorist frustration if caught behind a slow bicyclist. Use of candlesticks to separate the shoulder walkway and travel lane would result in issues such as sweeping, brush cutting, and general ditch maintenance.

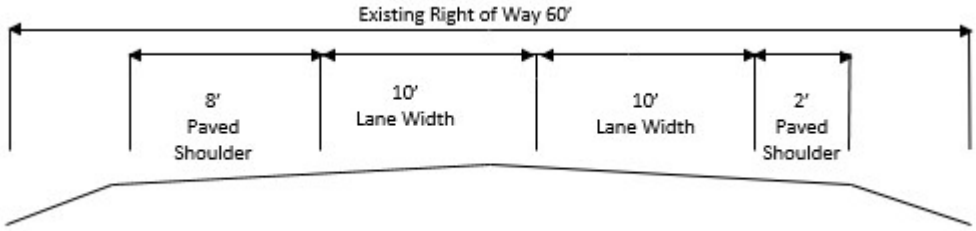


Figure 9 - Alternative 3 Typical Cross Section

Alternative 4 - Shared Lane Markings

Description: Install shared use markings on sections of Lemolo Shore Drive NE where applicable.

Pro: Shared Lane Markings (SLMs), or "sharrows," are road markings used to indicate a shared lane environment for bicycles and automobiles. Shared lanes encourage bicyclists to position

themselves in lanes too narrow for a motor vehicle and a bicycle to comfortably travel side by side within the same traffic lane.

Con: Sharrows should only be used where travel speed differential between motorist and bicycle is very little and on roads where motorists have good visibility of cyclists. Questionable safety for young and inexperienced riders, especially with higher speeds and traffic volumes. Since this area is all no passing, there may be some motorist frustration if caught behind a slow bicyclist.

Alternative Impacts: Cost of this alternative would be moderate. Sharrow markings require a maximum 250 foot spacing and require a high level of maintenance. Environmental impacts would be low.

Alternative 5 - Road Closure or One-Way Options

Description: Close or convert a section of Lemolo Shore Drive NE to one-way operations. Figure 10 shows out of direction travel resulting from a full road closure at the east end of Lemolo Shore Drive NE and one-way eastbound travel from 6th Avenue to Johnson Way NE.

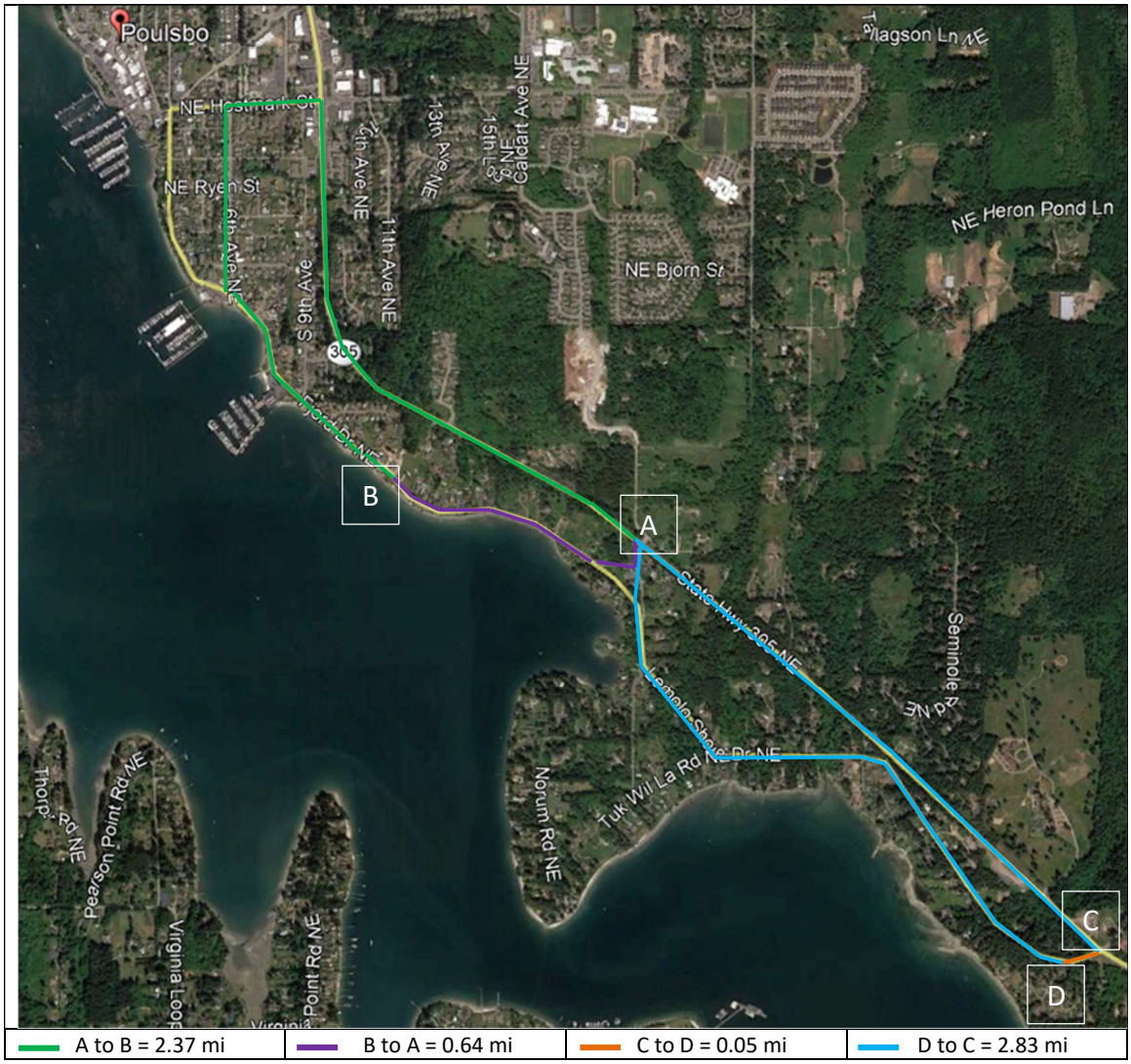


Figure 10 – Out of Direction Travel

Pro: Closing Lemolo Shore Drive NE at the east end may reduce the volume of cut-thru traffic. Converting Lemolo Shore Drive NE to one-way eastbound travel from 6th Avenue NE to Johnson Way NE would provide room to accommodate non-motorized traffic within the existing roadway pavement width.

Con: Lemolo Shore Drive NE is in a rural section of Kitsap County with no parallel roads (other than SR 305) and limited connecting segment roads to reroute the restricted direction of travel to. Lemolo Shore Drive NE provides access to over 300 single family residences. Traffic counts collected verified that Lemolo Shore Drive NE serves very little thru traffic. Closing or converting sections of Lemolo Shore Drive NE to one-way traffic would result in significant out of direction travel for local residences.

Traffic counts collected verified that Lemolo Shore Drive NE serves very little thru traffic. Closing Lemolo Shore Drive NE at the eastern end would result in significant out of direction for local residents. A motorist traveling westbound at the SR 305/Lemolo Shore Drive NE intersection to Lindsey Lane NE would have to travel 2.78 mile out of direction (difference between the blue route and the orange route in Figure 10) under the road closure option.

Converting Lemolo Shore Drive NE to one-way eastbound travel from 6th Avenue NE to Johnson Way NE would result in significant out of direction travel for local residents. A motorist traveling westbound at the SR 305/Johnson Way NE intersection to the western end of Lemolo Shore Drive NE (Poulsbo City Limits) would have to travel 1.73 miles out of direction (difference between the green route and the purple route in Figure 10) under the one-way option.

Alternative Impacts: Cost of this alternative would be low. Environmental cost of this alternative would be high. Closing or restricting the section of Lemolo Shore Drive NE to one-way traffic from Fjord Drive to Johnson Way NE would result in out of direction travel. This alternative is likely considered infeasible from an emergency access perspective

Alternative 6 - Change Functional Classification
Description:

Pro: Reclassifying Lemolo Shore Drive NE from collector to local road would allow it to be evaluated for traffic calming measures. However, Lemolo Shore Drive NE must meet eligibility requirements (posted speed 30 MPH or less, 25% of traffic traveling at least 10-MPH over the posted speed limit, average ADT between 200-3000, and 70% of affected property owners support countermeasures) to be eligible for traffic calming measure applicable for local roadways.

Con: Assigning a local road classification to Lemolo Shore Drive NE may result in reduced roadway signing and striping. In addition, as a local road it would no longer be eligible for federal funding. The recommended 35 MPH speed limit would make Lemolo Shore Drive NE ineligible for neighborhood traffic calming measures.

Alternative Impacts: Cost of this alternative could be high if you consider the potential loss of federal funding for future roadway improvements. Cost of environmental impacts would be low. Changing the functional classification would result in an artificial roadway classification to simply support neighborhood traffic calming options.

Alternative 7 - Speed Humps
Description: Install speed humps in sections of Lemolo Shore Drive NE as traffic calming measure.

Pro: Speed humps are intended to reduce driver speeds down to 10–15 miles per hour over the hump, and 25–30 miles per hour between humps in a series.

Cons: Lemolo Shore Drive NE is currently classified as a rural major collector and does not qualify for speed humps. Adding speed humps to Lemolo Shore Drive NE would be outside of the Kitsap County Road Standards for a rural collector roadway. Some critics claim that they can cause damage to vehicles, increase emergency response time, and increase traffic noise. Speed humps should be installed in succession to be most effective. For local roads, speed humps are usually installed 150–250 yards apart.

Alternative Impacts: Cost of this alternative would be moderate. Environmental impacts would be low.

Alternative 8 – Enforcement and Community Education
Description: This alternative would engage the community and law enforcement in an effort to encourage posted speed limit compliance.

Pro: Educated community that majority of traffic is local and traveling 37-40 MPH on Lemolo Shore Drive NE between SR 305 and Peterson Way NE. A community outreach program may bring awareness to the need to slow down.

Con: Requires outreach to approximately 300 residences. Due to current funding issues, local speed enforcement is not currently a high priority.

Alternative Impacts: Cost of this alternative would be low. Environment cost would be low.

Alternative 9 – Reconstruct Lemolo Shore Drive NE to Current Road Standards
Description: Reconstruct entire length of Lemolo Shore Drive NE to current Kitsap County Standards for a rural collector.

Pro: Reconstructing Lemolo Shore Drive NE would result in 10-foot travel lanes with 4-foot paved shoulders from SR 305 to Johnson Way NE and 11-foot travel lanes with 6-foot paved shoulders from Johnson Way NE to Fjord Drive NE. This alternative would accommodate pedestrian and bicycle activity within the paved shoulders.

Con: Provision of 4 to 6-foot paved shoulders may not provide enough room to accommodate pedestrians walking abreast along within the shoulder area. Shoreline restrictions on the south side of Lemolo Shore Drive NE between Fjord Drive NE and Johnson Way NE could present design issues. Additional right of way may be required along portions of Lemolo Shore Drive NE to accommodate roadway reconstruction to current road standards.

Alternative Impacts: Cost of this alternative would be high and require replacement of deep culverts. Environment cost would be high. Figures 11 and 12 show the typical cross sections of Alternative 9. This alternative would likely cost over 10 million dollars and would take 5 to 6 years of permitting and design prior to construction.

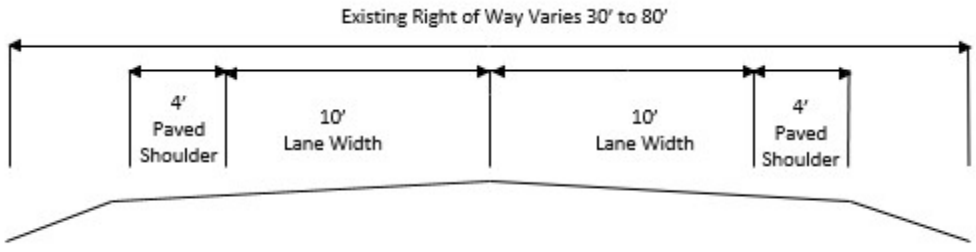


Figure 11 - Alternative 9 Typical Cross Section SR 305 to Johnson Way

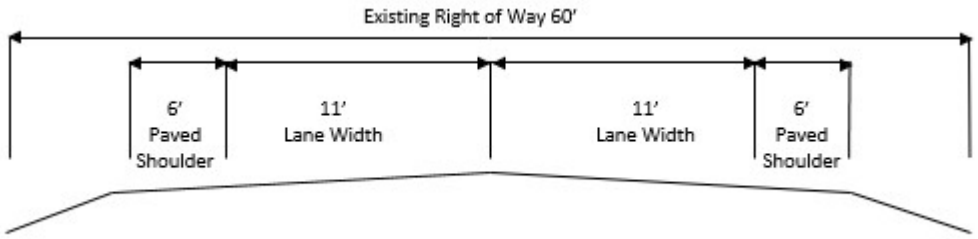


Figure 12 - Alternative 9 Typical Cross Section Johnson Way to Fjord Drive

Alternative 10 – Separated Shared Use Path (STO Trail)
Description: Incorporate a separated 10-foot shared use path along entire length of Lemolo Shore Drive NE to support the future connection of the Sound to Olympic Trail.

Pro: The STO is progressively becoming a reality. Completing this section of the STO would provide a protected, multi-use regional trail for people of all ages and abilities.

Con: Would require extensive right of way purchases to complete a separated 10 to 12-foot shared use path along Lemolo Shore Drive NE from NE Totten Road to Fjord Drive NE. City of Poulsbo conceptual plans for Fjord Drive NE do not address a 10 to 12-foot separated shared use path at this time.

Alternative Impacts: Cost of this alternative would be high due to amount of additional right of way required to construct a separated 10-foot shared use path adjacent to Lemolo Shore Drive NE from Totten Road NE to Fjord Drive NE. Environment cost would also be high.

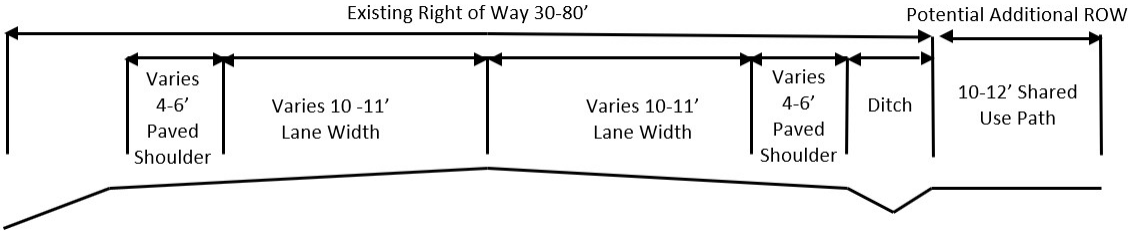


Figure 13 - Alternative 10 Typical Cross Section Totten Road to Fjord Drive

10 References

1. *Kitsap County Non-Motorized Facility Plan*. Kitsap County Public Works, Port Orchard, Washington, April 2015.
2. *Kitsap County Road Standards*. Kitsap County Public Works, 2020 edition. http://www.kitsapgov.com/pw/pdf/Final%20Road%20Standards.pdf
3. *Manual on Uniform Traffic Control Devices*. Federal Highway Administration, 2009 edition.
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5. FHWA-SA-10-001, *Speed Concepts: Informational Guide*, September 2009.
6. USLIMITS2, https://safety.fhwa.dot.gov/uslimits/
7. TxDOT, Speed Limits – Safety: Primary Concern, https://www.txdot.gov/government/enforcement/speed-limits/safety.html
8. Revised Code of Washington 46.61.205. Olympia, Washington, 1990.
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11. *Roundabouts: An Informational Guide, 2nd Edition,* TRB, NCHRP Report 672.
12. *Small Town and Rural Multimodal Networks,* FHWA, December 2016. *file:///C:/Users/cdegeus.KITSAP/AppData/Local/Microsoft/Windows/INetCache/Content.Outlook/4CHF6NZF/FHWA%20Bike%20Rural%20%20Small%20Town.pdf*

Appendix A. FHWA Guidelines for Collector and Local Roads

Table 3-6: VMT and Mileage Guidelines by Functional Classifications – Collectors and Locals

	Collectors		Local
	Major Collector[3]	Minor Collector[3]	
Typical Characteristics			
Lane Width	10 feet - 12 feet	10 - 11 feet	8 feet - 10 feet
Inside Shoulder Width	0 feet	0 feet	0 feet
Outside Shoulder Width	1 feet - 6 feet	1 feet - 4 feet	0 feet - 2 feet
AADT[1] (Rural)	300 - 2,600	150 - 1,110	15 - 400
AADT[1] (Urban)	1,100 - 6,300[2]		80 - 700
Divided/Undivided	Undivided	Undivided	Undivided
Access	Uncontrolled	Uncontrolled	Uncontrolled
Mileage/VMT Extent (Percentage Ranges)[1]			
Rural System			
Mileage Extent for Rural States[3]	8% - 19%	3% - 15%	62% - 74%
Mileage Extent for Urban States	10% - 17%	5% - 13%	66% - 74%
Mileage Extent for All States	9% - 19%	4% - 15%	64% - 75%
VMT Extent for Rural States[3]	10% - 23%	1% - 8%	8% - 23%
VMT Extent for Urban States	12% - 24%	3% - 10%	7% - 20%
VMT Extent for All States	12% - 23%	2% - 9%	8% - 23%
Urban System			
Mileage Extent for Rural States[3]	3% - 16%	3% - 16%[2]	62% - 74%
Mileage Extent for Urban States	7% - 13%	7% - 13%[2]	67% - 76%
Mileage Extent for All States	7% - 15%	7% - 15%[2]	63% - 75%
VMT Extent for Rural States[3]	2% - 13%	2% - 12%[2]	9% - 25%
VMT Extent for Urban States	7% - 13%	7% - 13%[2]	6% - 24%
VMT Extent for All States	5% - 13%	5% - 13%[2]	6% - 25%
Qualitative Description (Urban)	• Serve both land access and traffic circulation in higher density residential, and commercial/industrial areas • Penetrate residential neighborhoods, often for significant distances • Distribute and channel trips between local streets and arterials, usually over a distance of greater than three-quarters of a mile	• Serve both land access and traffic circulation in lower density residential, and commercial/industrial areas • Penetrate residential neighborhoods, often only for a short distance • Distribute and channel trips between local streets and arterials, usually over a distance of less than three-quarters of a mile	• Provide direct access to adjacent land • Provide access to higher systems • Carry no through traffic movement
Qualitative Description (Rural)	• Provide service to any county seat not on an arterial route, to the larger towns not directly served by the higher systems, and to other traffic generators of equivalent intra-county importance such as consolidated schools, shipping points, county parks, important mining and agricultural areas • Link these places with nearby larger towns and cities or with arterial routes • Serve the most important intra-county travel corridors	• Be spaced at intervals, consistent with population density, to collect traffic from local roads and bring all developed areas within reasonable distance of a minor collector • Provide service to smaller communities not served by a higher class facility • Link locally important traffic generators with their rural hinterlands	• Serve primarily to provide access to adjacent land • Provide service to travel over short distances as compared to higher classification categories • Constitute the mileage not classified as part of the arterial and collectors systems

1- *Ranges in this table are derived from 2011 HPMS data.*

2- *Information for Urban Major and Minor Collectors is approximate, based on a small number of States reporting.*

3- *For this table, Rural States are defined as those with a maximum of 75 percent of their population in urban centers.*

Appendix B. Lemolo Shore Right of Way Figures

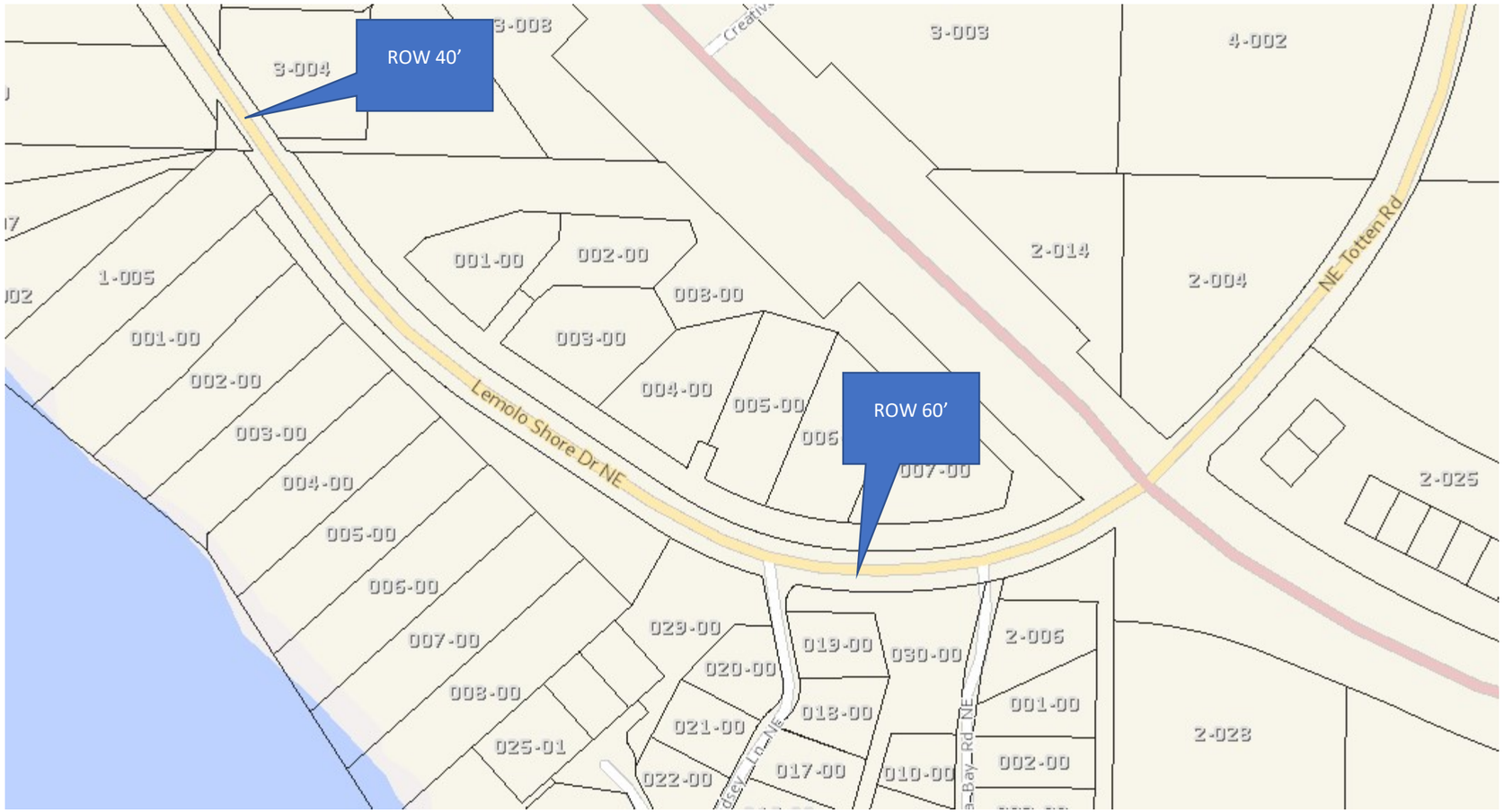

Fjord Dr NE
ROW 60’
Lemolo Shore Dr NE
ROW 60’
305
Johnson Rd NE
Johnson Way NE
1-001
1-003
1-005
1-006
1-007
1-008
1-009
1-010
1-011
1-012
1-013
1-014
1-015
1-017
1-018
1-019
1-021
1-023
1-025
1-026
1-029
1-030
1-031
1-034
1-035
2-005
2-008
2-011
2-013
2-014
2-025
2-026
2-027
2-030
2-031
2-034
2-044
2-045
2-051
2-053
020-01

2-030
2-031
2-001
Johnson Way NE
020-01
020-02
2-033
ROW 80’
ROW 40’
023-00
Peterson Way NE
005-00
2-024
2-023
2-020
008-00
010-00
012-00
2-019
013-00
Lemolo Shore Dr NE
ROW 60’
014-00
2-018
016-00
2-040
017-00
2-015
2-042
Brauer Rd NE
3-045
3-001
3-040


ROW 60’
ROW 30’
2-041
2-042
1-011
1-017
1-045
1-057
3-040
3-001
001-02
003-00
004-02
3-041
3-044
001-01
002-00
001-01
003-00
004-00
305
3-042
3-043
001-00
002-02
002-03
003-03
002-01
003-01
004-01
003-02
003-03
003-01
003-02
003-00
012-00
010-01
009-00
010-00
004-00
005-00
002-00
004-00
006-01
005-00
003-00
006-00
NE Jacobson Rd
NE Jacobson Rd E
Brauer Rd NE
Jacobson Rd NE
Delate Rd NE
Stenbom Ln NE
Lemolo Shore Dr NE
Tokaloo Creek Rd NE
Ona Rd NE
Skookum Rd NE


ROW 30’
ROW 40’
ROW 60’
Seminole Rd NE
Lemolo Shore Dr NE
Skookum Rd NE
NE Laurel Grove Ave
NE Holman Ave
NE Chippewa Ct
Stewart Rd NE
305
004-01
045-00
043-00
032-00
033-00
034-00
008-05
042-00
008-02
008-06
041-00
023-02
006-01
023-01
025-00
040-00
020-00
014-00
039-00
038-00
003-00
022-00
001-01
006-02
020-00
024-00
001-00
014-03
025-00
004-00
017-01
027-00
028-00
006-00
032-00
029-00
008-01
010-02
010-00
031-00
009-00
4-017
4-021
4-016
4-005


ROW 60’
ROW 40’
ROW 60’
ROW 40’
ROW 60’
Laurel Grove Ave
NE Holman Ave
Stewart Rd NE
Lemolo Shore Dr NE
Creative Dr NE
305
022-00
020-00
024-00
025-00
017-01
027-00
028-00
029-00
031-00
010-00
006-00
014-03
019-02
021-00
023-00
3-003
4-017
4-016
4-005
4-021
4-022
4-002
4-006
4-012
4-007
4-018
4-009
4-008
4-014
4-010
1-006
1-007
1-002
1-005
001-00
3-005
4-019
3-008
3-004
008-00
001-00
002-00
2-014


ROW 40’
ROW 60’
3-004
3-008
3-003
4-002
1-005
001-00
002-00
003-00
004-00
005-00
006-00
007-00
008-00
2-014
2-004
2-025
NE Totten Rd
Lemolo Shore Dr NE
029-00
020-00
021-00
022-00
025-01
019-00
030-00
018-00
017-00
010-00
2-006
001-00
002-00
2-028

Appendix C. Count Data

Kitsap County Traffic Engineering

Daily Vehicle Volume Report

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020
Unit ID: 23
Location: 16392 Lemolo Shore Dr.

	Eastbound Volume	Westbound Volume	Total Volume
10:00 - 10:59	38	28	66
11:00 - 11:59	32	26	58
12:00 - 12:59	40	23	63
13:00 - 13:59	36	29	65
14:00 - 14:59	33	30	63
15:00 - 15:59	49	34	83
16:00 - 16:59	47	31	78
17:00 - 17:59	38	17	55
18:00 - 18:59	35	21	56
19:00 - 19:59	16	9	25
20:00 - 20:59	9	9	18
21:00 - 21:59	3	3	6
22:00 - 22:59	4	1	5
23:00 - 23:59	1	2	3
00:00 - 00:59	0	0	0
01:00 - 01:59	0	0	0
02:00 - 02:59	0	0	0
03:00 - 03:59	0	0	0
04:00 - 04:59	2	0	2
05:00 - 05:59	4	1	5
06:00 - 06:59	5	8	13
07:00 - 07:59	18	11	29
08:00 - 08:59	21	26	47
09:00 - 09:59	27	27	54
Totals	458	336	794
AM Peak Time	10:28 - 11:27	10:18 - 11:17	10:42 - 11:41
AM Peak Volume	45	31	70
PM Peak Time	15:17 - 16:16	15:06 - 16:05	15:28 - 16:27
PM Peak Volume	56	36	91

Kitsap County Traffic Engineering

Daily Total Speeds (MPH)

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020
Unit ID: 23
Location: 16392 Lemolo Shore Dr.
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
10:00 - 10:59	1	1	4	9	21	21	7	1	1	0	0	0	0	0	0	66
11:00 - 11:59	3	1	4	10	15	18	5	2	0	0	0	0	0	0	0	58
12:00 - 12:59	0	5	3	4	21	20	8	2	0	0	0	0	0	0	0	63
13:00 - 13:59	0	2	2	9	17	20	11	3	1	0	0	0	0	0	0	65
14:00 - 14:59	1	2	7	8	21	12	11	1	0	0	0	0	0	0	0	63
15:00 - 15:59	0	1	6	14	26	21	13	2	0	0	0	0	0	0	0	83
16:00 - 16:59	0	0	2	6	27	35	7	1	0	0	0	0	0	0	0	78
17:00 - 17:59	0	3	1	5	23	18	3	2	0	0	0	0	0	0	0	55
18:00 - 18:59	1	3	4	7	18	12	8	2	1	0	0	0	0	0	0	56
19:00 - 19:59	0	0	0	3	11	8	2	1	0	0	0	0	0	0	0	25
20:00 - 20:59	0	2	0	1	8	4	3	0	0	0	0	0	0	0	0	18
21:00 - 21:59	0	0	0	0	2	3	1	0	0	0	0	0	0	0	0	6
22:00 - 22:59	0	0	0	1	2	1	0	0	0	1	0	0	0	0	0	5
23:00 - 23:59	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3
00:00 - 00:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 - 02:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 - 03:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 - 04:59	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:00 - 05:59	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	5
06:00 - 06:59	0	0	0	2	7	1	3	0	0	0	0	0	0	0	0	13
07:00 - 07:59	0	2	0	3	9	7	7	1	0	0	0	0	0	0	0	29
08:00 - 08:59	0	3	2	7	16	15	3	1	0	0	0	0	0	0	0	47
09:00 - 09:59	0	1	5	10	16	16	6	0	0	0	0	0	0	0	0	54
Totals	6	26	40	100	265	236	98	19	3	1	0	0	0	0	0	794
Percent of Total	0.8	3.3	5.0	12.6	33.4	29.7	12.3	2.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	100
Percent of AM	1.5	2.9	5.5	15.0	32.1	29.6	11.3	1.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of PM	0.4	3.5	4.8	11.3	34.0	29.8	12.9	2.7	0.4	0.2	0.0	0.0	0.0	0.0	0.0	100

Standard Deviation: 6.9 MPH
Mean Speed: 33.9 MPH
Median Speed: 34.2 MPH
Modal Speed: 32.5 MPH

Ten Mile Pace: 30 to 39 MPH
Percent in Ten Mile Pace: 63.1%

85th Percentile: 40.1 MPH
15th Percentile: 27.3 MPH
90th Percentile: 42.1 MPH
95th Percentile: 44.1 MPH

Kitsap County Traffic Engineering

Daily Vehicle Volume Report

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020
Unit ID: 17
Location: Lemolo Shore Dr. W. of Delate Rd. 331.3

	Eastbound Volume	Westbound Volume	Total Volume
10:00 - 10:59	43	30	73
11:00 - 11:59	28	23	51
12:00 - 12:59	43	35	78
13:00 - 13:59	34	31	65
14:00 - 14:59	32	31	63
15:00 - 15:59	49	38	87
16:00 - 16:59	52	36	88
17:00 - 17:59	42	22	64
18:00 - 18:59	29	24	53
19:00 - 19:59	14	8	22
20:00 - 20:59	7	8	15
21:00 - 21:59	4	3	7
22:00 - 22:59	6	2	8
23:00 - 23:59	1	2	3
00:00 - 00:59	0	0	0
01:00 - 01:59	0	0	0
02:00 - 02:59	0	0	0
03:00 - 03:59	0	1	1
04:00 - 04:59	2	0	2
05:00 - 05:59	4	1	5
06:00 - 06:59	7	10	17
07:00 - 07:59	15	12	27
08:00 - 08:59	24	27	51
09:00 - 09:59	30	28	58
Totals	466	372	838
AM Peak Time	10:00 - 10:59	10:01 - 11:00	10:00 - 10:59
AM Peak Volume	43	31	73
PM Peak Time	15:18 - 16:17	14:26 - 15:25	15:07 - 16:06
PM Peak Volume	61	40	95

Kitsap County Traffic Engineering

Daily Total Speeds (MPH)

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020

Unit ID: 17

Location: Lemolo Shore Dr. W. of Delate Rd. 331.3

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
10:00 - 10:59	0	5	4	15	34	11	3	1	0	0	0	0	0	0	0	73
11:00 - 11:59	0	1	2	13	24	8	3	0	0	0	0	0	0	0	0	51
12:00 - 12:59	1	3	8	19	27	15	4	0	1	0	0	0	0	0	0	78
13:00 - 13:59	0	1	10	14	26	11	3	0	0	0	0	0	0	0	0	65
14:00 - 14:59	0	2	10	16	18	12	5	0	0	0	0	0	0	0	0	63
15:00 - 15:59	0	2	10	29	27	17	2	0	0	0	0	0	0	0	0	87
16:00 - 16:59	0	0	7	17	49	12	2	1	0	0	0	0	0	0	0	88
17:00 - 17:59	0	0	5	20	28	8	1	2	0	0	0	0	0	0	0	64
18:00 - 18:59	0	1	6	14	18	10	2	0	1	0	0	0	0	0	0	52
19:00 - 19:59	0	0	2	6	8	4	2	0	0	0	0	0	0	0	0	22
20:00 - 20:59	0	0	0	1	11	3	0	0	0	0	0	0	0	0	0	15
21:00 - 21:59	0	0	0	2	3	1	0	1	0	0	0	0	0	0	0	7
22:00 - 22:59	0	0	2	2	1	2	0	1	0	0	0	0	0	0	0	8
23:00 - 23:59	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3
00:00 - 00:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 - 02:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 - 03:59	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00 - 04:59	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
05:00 - 05:59	0	0	1	2	1	0	1	0	0	0	0	0	0	0	0	5
06:00 - 06:59	0	2	3	7	2	3	0	0	0	0	0	0	0	0	0	17
07:00 - 07:59	0	0	4	5	9	9	0	0	0	0	0	0	0	0	0	27
08:00 - 08:59	0	0	5	15	20	10	0	1	0	0	0	0	0	0	0	51
09:00 - 09:59	0	0	4	21	23	8	2	0	0	0	0	0	0	0	0	58
Totals	1	17	85	220	330	145	30	7	2	0	0	0	0	0	0	837
Percent of Total	0.1	2.0	10.2	26.3	39.4	17.3	3.6	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of AM	0.0	2.8	8.8	27.7	39.6	17.2	3.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of PM	0.2	1.6	10.9	25.5	39.3	17.4	3.8	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	100

Standard Deviation: 5.8 MPH

Mean Speed: 31.2 MPH

Median Speed: 31.4 MPH

Modal Speed: 32.5 MPH

Ten Mile Pace: 25 to 34 MPH

Percent in Ten Mile Pace: 65.7%

85th Percentile: 37.0 MPH

15th Percentile: 25.5 MPH

90th Percentile: 38.4 MPH

95th Percentile: 39.9 MPH

Kitsap County Traffic Engineering

Daily Vehicle Volume Report

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020
Unit ID: 22
Location: Lemolo Shore Dr. E. of Brauer rd.

	Eastbound Volume	Westbound Volume	Total Volume
10:00 - 10:59	36	27	63
11:00 - 11:59	25	18	43
12:00 - 12:59	35	32	67
13:00 - 13:59	32	33	65
14:00 - 14:59	34	24	58
15:00 - 15:59	47	34	81
16:00 - 16:59	52	37	89
17:00 - 17:59	42	20	62
18:00 - 18:59	31	19	50
19:00 - 19:59	18	9	27
20:00 - 20:59	10	7	17
21:00 - 21:59	3	3	6
22:00 - 22:59	6	1	7
23:00 - 23:59	1	2	3
00:00 - 00:59	0	0	0
01:00 - 01:59	0	0	0
02:00 - 02:59	0	0	0
03:00 - 03:59	0	1	1
04:00 - 04:59	1	0	1
05:00 - 05:59	2	1	3
06:00 - 06:59	5	11	16
07:00 - 07:59	18	7	25
08:00 - 08:59	23	28	51
09:00 - 09:59	29	33	62
Totals	450	347	797
AM Peak Time	10:00 - 10:59	08:56 - 09:55	08:56 - 09:55
AM Peak Volume	36	36	65
PM Peak Time	15:45 - 16:44	12:20 - 13:19	15:45 - 16:44
PM Peak Volume	60	38	94

Kitsap County Traffic Engineering

Daily Total Speeds (MPH)

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020

Unit ID: 22

Location: Lemolo Shore Dr. E. of Brauer rd.

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
10:00 - 10:59	0	0	1	6	30	20	6	0	0	0	0	0	0	0	0	63
11:00 - 11:59	0	0	1	10	14	10	7	0	0	0	0	1	0	0	0	43
12:00 - 12:59	0	0	0	8	29	22	6	1	1	0	0	0	0	0	0	67
13:00 - 13:59	0	0	1	10	26	20	6	2	0	0	0	0	0	0	0	65
14:00 - 14:59	0	0	2	9	21	19	6	1	0	0	0	0	0	0	0	58
15:00 - 15:59	0	0	1	15	42	20	3	0	0	0	0	0	0	0	0	81
16:00 - 16:59	2	0	0	9	43	28	7	0	0	0	0	0	0	0	0	89
17:00 - 17:59	0	0	1	5	34	18	3	1	0	0	0	0	0	0	0	62
18:00 - 18:59	0	0	0	9	20	17	3	0	1	0	0	0	0	0	0	50
19:00 - 19:59	0	0	1	6	11	7	1	0	0	1	0	0	0	0	0	27
20:00 - 20:59	0	0	1	3	5	6	1	1	0	0	0	0	0	0	0	17
21:00 - 21:59	0	0	0	1	2	1	2	0	0	0	0	0	0	0	0	6
22:00 - 22:59	0	0	0	0	5	1	1	0	0	0	0	0	0	0	0	7
23:00 - 23:59	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	3
00:00 - 00:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 - 02:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 - 03:59	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00 - 04:59	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00 - 05:59	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	3
06:00 - 06:59	0	0	0	5	9	2	0	0	0	0	0	0	0	0	0	16
07:00 - 07:59	0	0	0	5	11	8	1	0	0	0	0	0	0	0	0	25
08:00 - 08:59	0	0	2	7	24	16	1	0	1	0	0	0	0	0	0	51
09:00 - 09:59	1	0	1	9	28	19	2	2	0	0	0	0	0	0	0	62
Totals	3	0	13	120	354	238	56	8	3	1	0	1	0	0	0	797
Percent of Total	0.4	0.0	1.6	15.1	44.4	29.9	7.0	1.0	0.4	0.1	0.0	0.1	0.0	0.0	0.0	100
Percent of AM	0.4	0.0	1.9	17.0	43.8	29.1	6.4	0.8	0.4	0.0	0.0	0.4	0.0	0.0	0.0	100
Percent of PM	0.4	0.0	1.5	14.1	44.7	30.3	7.3	1.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	100

Standard Deviation: 5.3 MPH

Mean Speed: 34.0 MPH

Median Speed: 33.7 MPH

Modal Speed: 32.5 MPH

Ten Mile Pace: 30 to 39 MPH

Percent in Ten Mile Pace: 74.3%

85th Percentile: 38.9 MPH

15th Percentile: 29.3 MPH

90th Percentile: 39.8 MPH

95th Percentile: 42.6 MPH

Kitsap County Traffic Engineering

Daily Vehicle Volume Report

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020

Unit ID: 3

Location: Lemolo Shore Dr E. of City limits 331.0

	Eastbound Volume	Westbound Volume	Total Volume
10:00 - 10:59	36	49	85
11:00 - 11:59	42	30	72
12:00 - 12:59	44	44	88
13:00 - 13:59	47	45	92
14:00 - 14:59	46	39	85
15:00 - 15:59	75	49	124
16:00 - 16:59	64	55	119
17:00 - 17:59	66	42	108
18:00 - 18:59	40	28	68
19:00 - 19:59	27	17	44
20:00 - 20:59	13	5	18
21:00 - 21:59	9	2	11
22:00 - 22:59	8	2	10
23:00 - 23:59	2	3	5
00:00 - 00:59	2	0	2
01:00 - 01:59	0	0	0
02:00 - 02:59	0	0	0
03:00 - 03:59	0	1	1
04:00 - 04:59	2	1	3
05:00 - 05:59	3	3	6
06:00 - 06:59	10	17	27
07:00 - 07:59	19	15	34
08:00 - 08:59	22	36	58
09:00 - 09:59	30	43	73
Totals	607	526	1133
AM Peak Time	10:34 - 11:33	10:05 - 11:04	10:20 - 11:19
AM Peak Volume	44	50	89
PM Peak Time	15:24 - 16:23	15:15 - 16:14	15:15 - 16:14
PM Peak Volume	80	60	138

Kitsap County Traffic Engineering

Daily Total Speeds (MPH)

Study Date: Tuesday, 09/15/2020 / Wednesday, 09/16/2020
Unit ID: 3
Location: Lemolo Shore Dr E. of City limits 331.0 Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
10:00 - 10:59	0	2	13	44	19	7	0	0	0	0	0	0	0	0	0	85
11:00 - 11:59	1	4	12	26	25	4	0	0	0	0	0	0	0	0	0	72
12:00 - 12:59	0	2	17	34	27	6	2	0	0	0	0	0	0	0	0	88
13:00 - 13:59	1	4	17	43	22	4	1	0	0	0	0	0	0	0	0	92
14:00 - 14:59	0	2	10	48	19	6	0	0	0	0	0	0	0	0	0	85
15:00 - 15:59	0	1	18	66	34	4	1	0	0	0	0	0	0	0	0	124
16:00 - 16:59	0	4	18	65	24	8	0	0	0	0	0	0	0	0	0	119
17:00 - 17:59	0	0	13	60	30	4	1	0	0	0	0	0	0	0	0	108
18:00 - 18:59	0	0	12	35	15	5	1	0	0	0	0	0	0	0	0	68
19:00 - 19:59	0	0	11	22	9	2	0	0	0	0	0	0	0	0	0	44
20:00 - 20:59	0	0	2	8	6	2	0	0	0	0	0	0	0	0	0	18
21:00 - 21:59	0	0	2	4	3	1	1	0	0	0	0	0	0	0	0	11
22:00 - 22:59	0	0	0	6	3	1	0	0	0	0	0	0	0	0	0	10
23:00 - 23:59	0	0	1	0	1	3	0	0	0	0	0	0	0	0	0	5
00:00 - 00:59	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
01:00 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 - 02:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 - 03:59	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00 - 04:59	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
05:00 - 05:59	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	6
06:00 - 06:59	0	2	3	17	3	2	0	0	0	0	0	0	0	0	0	27
07:00 - 07:59	0	0	5	17	12	0	0	0	0	0	0	0	0	0	0	34
08:00 - 08:59	0	0	10	23	21	3	1	0	0	0	0	0	0	0	0	58
09:00 - 09:59	0	3	16	35	16	3	0	0	0	0	0	0	0	0	0	73
Totals	2	24	181	560	292	66	8	0	0	0	0	0	0	0	0	1133
Percent of Total	0.2	2.1	16.0	49.4	25.8	5.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of AM	0.3	3.0	16.6	46.8	27.4	5.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of PM	0.1	1.7	15.7	50.6	25.0	6.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100

Standard Deviation: 4.7 MPH
Mean Speed: 28.4 MPH
Median Speed: 28.2 MPH
Modal Speed: 27.5 MPH

Ten Mile Pace: 25 to 34 MPH
Percent in Ten Mile Pace: 75.2%

85th Percentile: 33.3 MPH
15th Percentile: 24.0 MPH
90th Percentile: 34.3 MPH
95th Percentile: 36.3 MPH

Daily Vehicle Volume Report

Study Date: Wednesday, 09/13/2017 / Thursday, 09/14/2017
Unit ID: 18
Location: Lemolo Shore Dr. E. of 9th Ave. NE

	Eastbound Volume	Westbound Volume	Total Volume
12:00 - 12:59	54	71	125
13:00 - 13:59	73	51	124
14:00 - 14:59	72	53	125
15:00 - 15:59	87	61	148
16:00 - 16:59	77	77	154
17:00 - 17:59	69	61	130
18:00 - 18:59	54	35	89
19:00 - 19:59	46	27	73
20:00 - 20:59	38	15	53
21:00 - 21:59	17	12	29
22:00 - 22:59	12	3	15
23:00 - 23:59	5	2	7
00:00 - 00:59	2	0	2
01:00 - 01:59	1	1	2
02:00 - 02:59	1	1	2
03:00 - 03:59	2	2	4
04:00 - 04:59	1	3	4
05:00 - 05:59	3	6	9
06:00 - 06:59	10	23	33
07:00 - 07:59	30	55	85
08:00 - 08:59	43	65	108
09:00 - 09:59	46	63	109
10:00 - 10:59	55	57	112
11:00 - 11:59	59	49	108
Totals	857	793	1650
AM Peak Time	10:43 - 11:42	09:35 - 10:34	09:54 - 10:53
AM Peak Volume	65	71	122
PM Peak Time	14:59 - 15:58	16:12 - 17:11	16:14 - 17:13
PM Peak Volume	88	82	167

Daily Total Speeds (MPH)

Study Date: Wednesday, 09/13/2017 / Thursday, 09/14/2017
Unit ID: 18
Location: Lemolo Shore Dr. E. of 9th Ave. NE

Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:00 - 12:59	3	15	71	29	6	1	0	0	0	0	0	0	0	0	0	125
13:00 - 13:59	2	20	66	35	1	0	0	0	0	0	0	0	0	0	0	124
14:00 - 14:59	2	19	65	34	3	2	0	0	0	0	0	0	0	0	0	125
15:00 - 15:59	1	15	79	47	6	0	0	0	0	0	0	0	0	0	0	148
16:00 - 16:59	4	16	77	47	9	0	1	0	0	0	0	0	0	0	0	154
17:00 - 17:59	0	10	70	47	3	0	0	0	0	0	0	0	0	0	0	130
18:00 - 18:59	0	8	45	31	5	0	0	0	0	0	0	0	0	0	0	89
19:00 - 19:59	2	11	44	15	1	0	0	0	0	0	0	0	0	0	0	73
20:00 - 20:59	0	4	29	15	3	2	0	0	0	0	0	0	0	0	0	53
21:00 - 21:59	0	2	11	14	2	0	0	0	0	0	0	0	0	0	0	29
22:00 - 22:59	0	1	5	8	1	0	0	0	0	0	0	0	0	0	0	15
23:00 - 23:59	0	0	4	2	1	0	0	0	0	0	0	0	0	0	0	7
00:00 - 00:59	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
01:00 - 01:59	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00 - 02:59	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
03:00 - 03:59	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	4
04:00 - 04:59	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
05:00 - 05:59	1	1	2	3	2	0	0	0	0	0	0	0	0	0	0	9
06:00 - 06:59	1	3	15	11	2	1	0	0	0	0	0	0	0	0	0	33
07:00 - 07:59	3	10	41	28	3	0	0	0	0	0	0	0	0	0	0	85
08:00 - 08:59	1	14	58	32	3	0	0	0	0	0	0	0	0	0	0	108
09:00 - 09:59	0	16	52	39	1	1	0	0	0	0	0	0	0	0	0	109
10:00 - 10:59	0	10	71	29	2	0	0	0	0	0	0	0	0	0	0	112
11:00 - 11:59	3	19	57	27	2	0	0	0	0	0	0	0	0	0	0	108
Totals	23	195	870	496	58	7	1	0	0	0	0	0	0	0	0	1650
'ercent of Total	1.4	11.8	52.7	30.1	3.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of AM	1.6	12.8	52.6	29.8	2.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of PM	1.3	11.3	52.8	30.2	3.8	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100

Standard Deviation: 4.3 MPH
Mean Speed: 23.7 MPH
Median Speed: 23.5 MPH
Modal Speed: 22.5 MPH

Ten Mile Pace: 20 to 29 MPH
Percent in Ten Mile Pace: 82.8%

85th Percentile: 28.2 MPH
15th Percentile: 20.2 MPH
90th Percentile: 29.0 MPH
95th Percentile: 29.8 MPH

Daily Vehicle Volume Report

Study Date: Wednesday, 04/19/2017 / Thursday, 04/20/2017
Unit ID: 22
Location: Lemolo Shore Dr. E. of Delate Rd.

	Eastbound Volume	Westbound Volume	Total Volume
11:00 - 11:59	30	28	58
12:00 - 12:59	37	18	55
13:00 - 13:59	35	34	69
14:00 - 14:59	49	38	87
15:00 - 15:59	43	36	79
16:00 - 16:59	47	43	90
17:00 - 17:59	40	48	88
18:00 - 18:59	43	43	86
19:00 - 19:59	21	19	40
20:00 - 20:59	31	16	47
21:00 - 21:59	6	11	17
22:00 - 22:59	3	2	5
23:00 - 23:59	3	3	6
00:00 - 00:59	0	0	0
01:00 - 01:59	3	1	4
02:00 - 02:59	3	2	5
03:00 - 03:59	0	1	1
04:00 - 04:59	2	0	2
05:00 - 05:59	8	4	12
06:00 - 06:59	8	8	16
07:00 - 07:59	32	24	56
08:00 - 08:59	28	25	53
09:00 - 09:59	22	31	53
10:00 - 10:59	5	4	9
Totals	499	439	938
AM Peak Time	07:35 - 08:34	07:33 - 08:32	07:35 - 08:34
AM Peak Volume	41	33	73
PM Peak Time	15:26 - 16:25	16:52 - 17:51	15:26 - 16:24
PM Peak Volume	54	51	98

Daily Total Speeds (MPH)

Study Date: Wednesday, 04/19/2017 / Thursday, 04/20/2017
Unit ID: 22
Location: Lemolo Shore Dr. E. of Delate Rd.
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
11:00 - 11:59	0	2	3	11	24	12	6	0	0	0	0	0	0	0	0	58
12:00 - 12:59	0	1	1	14	20	16	3	0	0	0	0	0	0	0	0	55
13:00 - 13:59	0	1	10	19	24	13	2	0	0	0	0	0	0	0	0	69
14:00 - 14:59	0	3	11	23	27	21	2	0	0	0	0	0	0	0	0	87
15:00 - 15:59	0	3	8	20	28	17	1	2	0	0	0	0	0	0	0	79
16:00 - 16:59	0	0	3	16	37	25	7	1	0	0	0	1	0	0	0	90
17:00 - 17:59	0	2	3	18	35	27	3	0	0	0	0	0	0	0	0	88
18:00 - 18:59	0	1	8	14	36	22	1	3	0	1	0	0	0	0	0	86
19:00 - 19:59	0	0	4	5	16	10	4	1	0	0	0	0	0	0	0	40
20:00 - 20:59	0	0	4	15	18	8	2	0	0	0	0	0	0	0	0	47
21:00 - 21:59	0	0	1	5	5	3	3	0	0	0	0	0	0	0	0	17
22:00 - 22:59	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	5
23:00 - 23:59	0	0	0	1	1	3	1	0	0	0	0	0	0	0	0	6
00:00 - 00:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 - 01:59	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	4
02:00 - 02:59	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	5
03:00 - 03:59	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
04:00 - 04:59	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:00 - 05:59	0	2	1	1	4	4	0	0	0	0	0	0	0	0	0	12
06:00 - 06:59	0	0	0	5	5	4	1	1	0	0	0	0	0	0	0	16
07:00 - 07:59	0	1	2	10	20	17	5	1	0	0	0	0	0	0	0	56
08:00 - 08:59	0	2	2	12	16	13	6	2	0	0	0	0	0	0	0	53
09:00 - 09:59	0	0	4	12	25	11	1	0	0	0	0	0	0	0	0	53
10:00 - 10:59	0	0	1	2	4	2	0	0	0	0	0	0	0	0	0	9
Totals	0	18	66	209	349	233	49	11	0	1	1	1	0	0	0	938
Percent of Total	0.0	1.9	7.0	22.3	37.2	24.8	5.2	1.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	100
Percent of AM	0.0	2.6	4.8	21.6	36.8	24.9	7.4	1.5	0.0	0.0	0.4	0.0	0.0	0.0	0.0	100
Percent of PM	0.0	1.6	7.9	22.6	37.4	24.8	4.3	1.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	100

Standard Deviation: 6.0 MPH
Mean Speed: 32.4 MPH
Median Speed: 32.5 MPH
Modal Speed: 32.5 MPH

Ten Mile Pace: 30 to 39 MPH
Percent in Ten Mile Pace: 62.0%

85th Percentile: 38.3 MPH
15th Percentile: 26.3 MPH
90th Percentile: 39.3 MPH
95th Percentile: 41.6 MPH

Daily Vehicle Volume Report

Study Date: Wednesday, 04/19/2017 / Thursday, 04/20/2017
Unit ID: 5
Location: Lemolo Shore Dr. S. of Holman Ave.

	Southbound Volume	Northbound Volume	Total Volume
10:00 - 10:59	23	23	46
11:00 - 11:59	30	26	56
12:00 - 12:59	31	16	47
13:00 - 13:59	35	35	70
14:00 - 14:59	38	34	72
15:00 - 15:59	43	34	77
16:00 - 16:59	40	38	78
17:00 - 17:59	36	48	84
18:00 - 18:59	37	44	81
19:00 - 19:59	21	19	40
20:00 - 20:59	28	10	38
21:00 - 21:59	7	10	17
22:00 - 22:59	3	2	5
23:00 - 23:59	2	3	5
00:00 - 00:59	0	0	0
01:00 - 01:59	3	1	4
02:00 - 02:59	3	1	4
03:00 - 03:59	0	1	1
04:00 - 04:59	2	0	2
05:00 - 05:59	8	3	11
06:00 - 06:59	11	4	15
07:00 - 07:59	31	20	51
08:00 - 08:59	26	23	49
09:00 - 09:59	26	26	52
Totals	484	421	905
AM Peak Time	07:09 - 08:08	10:24 - 11:23	07:31 - 08:30
AM Peak Volume	36	32	61
PM Peak Time	15:26 - 16:25	16:58 - 17:57	15:25 - 16:24
PM Peak Volume	51	49	93

Daily Total Speeds (MPH)

Study Date: Wednesday, 04/19/2017 / Thursday, 04/20/2017
Unit ID: 5
Location: Lemolo Shore Dr. S. of Holman Ave.

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
10:00 - 10:59	1	0	2	10	21	8	3	1	0	0	0	0	0	0	0	46
11:00 - 11:59	0	0	5	14	18	16	3	0	0	0	0	0	0	0	0	56
12:00 - 12:59	0	1	0	5	14	20	6	1	0	0	0	0	0	0	0	47
13:00 - 13:59	1	1	2	13	28	22	3	0	0	0	0	0	0	0	0	70
14:00 - 14:59	0	2	4	16	25	22	2	1	0	0	0	0	0	0	0	72
15:00 - 15:59	1	1	9	17	20	25	3	1	0	0	0	0	0	0	0	77
16:00 - 16:59	0	0	2	4	36	28	4	4	0	0	0	0	0	0	0	78
17:00 - 17:59	0	2	5	13	34	24	5	0	1	0	0	0	0	0	0	84
18:00 - 18:59	1	3	4	13	25	22	11	2	0	0	0	0	0	0	0	81
19:00 - 19:59	0	1	1	6	13	11	7	1	0	0	0	0	0	0	0	40
20:00 - 20:59	0	0	3	3	16	10	3	3	0	0	0	0	0	0	0	38
21:00 - 21:59	0	0	0	2	9	3	3	0	0	0	0	0	0	0	0	17
22:00 - 22:59	0	0	1	0	2	2	0	0	0	0	0	0	0	0	0	5
23:00 - 23:59	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	5
00:00 - 00:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 - 01:59	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	4
02:00 - 02:59	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	4
03:00 - 03:59	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
04:00 - 04:59	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:00 - 05:59	0	0	1	1	2	3	2	2	0	0	0	0	0	0	0	11
06:00 - 06:59	0	0	1	5	3	2	2	2	0	0	0	0	0	0	0	15
07:00 - 07:59	0	0	2	8	19	16	4	2	0	0	0	0	0	0	0	51
08:00 - 08:59	0	1	3	5	18	17	3	2	0	0	0	0	0	0	0	49
09:00 - 09:59	0	1	1	11	26	11	2	0	0	0	0	0	0	0	0	52
Totals	4	13	46	148	335	267	67	23	1	0	0	0	0	1	0	905
'ercent of Total	0.4	1.4	5.1	16.4	37.0	29.5	7.4	2.5	0.1	0.0	0.0	0.0	0.0	0.1	0.0	100
Percent of AM	0.3	0.7	5.2	18.9	38.1	26.1	6.9	3.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	100
Percent of PM	0.5	1.8	5.0	15.1	36.5	31.1	7.7	2.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	100

Standard Deviation: 6.2 MPH
Mean Speed: 33.5 MPH
Median Speed: 33.6 MPH
Modal Speed: 32.5 MPH

Ten Mile Pace: 30 to 39 MPH
Percent in Ten Mile Pace: 66.5%

85th Percentile: 39.2 MPH
15th Percentile: 27.4 MPH
90th Percentile: 40.1 MPH
95th Percentile: 43.5 MPH

Daily Vehicle Volume Report

Study Date: Wednesday, 09/13/2017 / Thursday, 09/14/2017

Unit ID: 23

Location: Lemolo Shore Dr. E. of Lindsey Ln.

	Eastbound Volume	Westbound Volume	Total Volume
12:00 - 12:59	37	32	69
13:00 - 13:59	45	25	70
14:00 - 14:59	51	31	82
15:00 - 15:59	49	40	89
16:00 - 16:59	54	52	106
17:00 - 17:59	41	46	87
18:00 - 18:59	22	29	51
19:00 - 19:59	26	14	40
20:00 - 20:59	19	16	35
21:00 - 21:59	6	14	20
22:00 - 22:59	8	5	13
23:00 - 23:59	1	2	3
00:00 - 00:59	0	0	0
01:00 - 01:59	0	1	1
02:00 - 02:59	1	0	1
03:00 - 03:59	1	1	2
04:00 - 04:59	5	1	6
05:00 - 05:59	5	2	7
06:00 - 06:59	25	10	35
07:00 - 07:59	30	14	44
08:00 - 08:59	33	27	60
09:00 - 09:59	25	29	54
10:00 - 10:59	39	26	65
11:00 - 11:59	39	35	74
Totals	562	452	1014
AM Peak Time	10:38 - 11:37	10:25 - 11:24	10:44 - 11:43
AM Peak Volume	50	37	87
PM Peak Time	15:34 - 16:33	16:09 - 17:08	16:18 - 17:17
PM Peak Volume	64	56	109

Daily Total Speeds (MPH)

Study Date: Wednesday, 09/13/2017 / Thursday, 09/14/2017
Unit ID: 23
Location: Lemolo Shore Dr. E. of Lindsey Ln.
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:00 - 12:59	5	1	1	11	29	21	1	0	0	0	0	0	0	0	0	69
13:00 - 13:59	1	1	1	10	32	20	5	0	0	0	0	0	0	0	0	70
14:00 - 14:59	2	3	6	10	31	24	4	2	0	0	0	0	0	0	0	82
15:00 - 15:59	1	0	3	14	40	27	4	0	0	0	0	0	0	0	0	89
16:00 - 16:59	1	1	2	16	48	27	11	0	0	0	0	0	0	0	0	106
17:00 - 17:59	0	0	3	10	41	22	10	1	0	0	0	0	0	0	0	87
18:00 - 18:59	3	0	1	6	27	11	3	0	0	0	0	0	0	0	0	51
19:00 - 19:59	0	0	0	13	15	8	3	0	1	0	0	0	0	0	0	40
20:00 - 20:59	0	0	0	6	18	10	0	0	1	0	0	0	0	0	0	35
21:00 - 21:59	1	1	0	2	10	6	0	0	0	0	0	0	0	0	0	20
22:00 - 22:59	0	0	0	3	4	5	1	0	0	0	0	0	0	0	0	13
23:00 - 23:59	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
00:00 - 00:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 - 01:59	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00 - 02:59	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00 - 03:59	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00 - 04:59	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0	6
05:00 - 05:59	0	0	0	0	3	3	0	0	1	0	0	0	0	0	0	7
06:00 - 06:59	0	0	2	6	12	9	3	2	1	0	0	0	0	0	0	35
07:00 - 07:59	1	1	4	7	17	10	4	0	0	0	0	0	0	0	0	44
08:00 - 08:59	1	1	4	14	27	12	1	0	0	0	0	0	0	0	0	60
09:00 - 09:59	1	1	2	11	26	11	2	0	0	0	0	0	0	0	0	54
10:00 - 10:59	2	1	2	13	25	19	3	0	0	0	0	0	0	0	0	65
11:00 - 11:59	2	1	8	16	33	10	3	1	0	0	0	0	0	0	0	74
Totals	21	12	41	171	442	259	58	6	4	0	0	0	0	0	0	1014
Percent of Total	2.1	1.2	4.0	16.9	43.6	25.5	5.7	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of AM	2.0	1.4	6.9	20.1	41.8	21.8	4.6	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.0	100
Percent of PM	2.1	1.1	2.6	15.2	44.5	27.5	6.3	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	100

Standard Deviation: 6.2 MPH
Mean Speed: 32.6 MPH
Median Speed: 33.0 MPH
Modal Speed: 32.5 MPH

Ten Mile Pace: 30 to 39 MPH
Percent in Ten Mile Pace: 69.1%

85th Percentile: 38.4 MPH
15th Percentile: 27.3 MPH
90th Percentile: 39.3 MPH
95th Percentile: 41.4 MPH

Appendix D. Thru Traffic Worksheet

Lemolo Shore Thru Traffic Worksheet

	Expected Study ADT			Actual Study ADT			
	Area Entering Volume	Area Exiting Volume	Total	Area Entering Volume	Area Exiting Volume	Total	Thur Traffic
East of 9th				857	793		
East of Lindsey				452	562		
Johnson				100	100		
Delate				100	100		
Total				1509	1555	3064	118
ITE Trip Generation							
312 single family at 10 trips/home							
50/50 Split	1473	1473	2946				

Appendix E. Speed Resolutions

35 MILES PER HOUR

Augusta Avenue (Pebble Beach to Geneva Street)
Bond Road (SR #305 to 1/10 mi. N. E. of Big Valley Road)
N. E. Cliffside Road
Columbia Street (Middle Street to Brockton Avenue)
Finn Hill Road (Rude Road to Poulsbo City Limits)
Hood Canal Drive
Jefferson Road
Jefferson Beach Road
Jefferson Point Road
Lakeness Road (Clear Creek Road to Loma Street)
Lemolo Shore Drive
Lincoln Road (City Limits to Pugh Road)
Little Boston Road (Boston Lane to Hansville Road)
Noll Road
Ogle Road
Old Military Road North
Parcells Road
Port Gamble-Suquamish Road
Serwold Road (Noll Road to Poulsbo City Limits)
Sherman Hill Road
South Keyport Road
South Kingston Road (Indianola Road to Jefferson Point Road)
Twin Spits Road
Virginia Loop Road
Widme Road

40 MILES PER HOUR

Big Valley Road
Eglon Road (Hansville Road to Pilot Point Road)
Indianola Road
Little Boston Road (Bond Road to Gamble Place)
Pioneer Hill Road
Rude Road
South Kingston Road (Jefferson Point Road to W. Kingston Road)
Stottlemeyer Road (Gunderson Road to Lincoln Road)
Totten Road
West Kingston Road

50 MILES PER HOUR

Central Valley Road (SR #303 to Bucklin Hill Road)
Clear Creek Road (Aldo Road to Luoto Road)
Finn Hill Road (Rude Road to Clear Creek Road)
Gunderson Road
Hansville Road (SR #104 to Miller Bay Road)
Hansville Road (SR #104 to Point No Point Road)
Lincoln Road (Pugh Road to Port Gamble -Suquamish Road)
Luoto Road
Miller Bay Road
Pioneer Way
Suquamish Way (SR #305 to Division Avenue)

55 MILES PER HOUR

Bond Road 1/10 Mi. N. E. of Big Valley Road to SR #104
Hansville Road (SR #104 to Gust Halvor Road)

RESOLUTION NO. 185-1990

BE IT HEREBY RESOLVED by the Board of Kitsap County Commissioners, in regular session assembled, that it is the intention of said Board, in the interest of public safety, to have posted certain regulatory speed signs as follows:

COMMISSIONER DISCTRICT ONE:

Lemolo Shore Drive N.E. beginning at the Poulsbo City limits and running southerly to N.E. Johnson Way for a total distance of 0.51 miles, located in Sections 25 and 26, Township 26 North, Range 1 East, W.M., speed limit shall be 25 miles per hour.

BE IT FURTHER RESOLVED that this order shall supercede any resolutions to the contrary which may have been passed previously and shall take effect immediately.

PASSED this 23rd day of April, 1990.

BOARD OF COUNTY COMMISSIONERS
KITSAP COUNTY, WASHINGTON

Chairman John Horsley

Commissioner Billie Eder

Commissioner Win Granlund

ATTEST:

HOLLY ANDERSON
Clerk of the Board

Appendix F. USLIMITS2 Speed Zoning Reports

USLIMITS2 Speed Zoning Report

Project Name: Lemolo Shore

Analyst: Christy DeGeus

Date: 09-29-2020

Basic Project Information
Project Number: Developed
Route Name: Lemolo Shore
From: MP 0.00
To: MP 1.38
State: Washington
County: Kitsap County
City: Rural
Route Type: Road Section in Developed Area
Route Status: Existing

Roadway Information
Section Length: 1.38 mile(s)
Statutory Speed Limit: None
Existing Speed Limit: 35 mph
Adverse Alignment: Yes
One-Way Street: No
Divided/Undivided: Undivided
Number of Through Lanes: 2
Area Type: Residential-Collector/Arterial
Number of Driveways: 74
Number of Signals: 0

Crash Data Information
Crash Data Years: 5.00
Crash AADT: 840 veh/day
Total Number of Crashes: 5
Total Number of Injury Crashes: 2
Section Crash Rate: 236 per 100 MVM
Section Injury Crash Rate: 95 per 100 MVM
Crash Rate Average for Similar Roads: 292
Injury Rate Average for Similar Roads: 72

Traffic Information
85th Percentile Speed: 37 mph
50th Percentile Speed: 31 mph
AADT: 840 veh/day
On Street Parking and Usage: Not High
Pedestrian / Bicyclist Activity: Not High

Recommended Speed Limit:

Note: Sections with adverse alignments may need specific 'advisory speed warnings' which may be different from the general speed limit for the section. See Procedures for Setting Advisory Speeds on Curves, Publication No. FHWA-SA-11-22, June 2011, for more guidance.

Note: The injury crash rate for the section of 95 per 100 MVM is more than 30 percent above the average for similar roads (72) but below the critical rate (192). A comprehensive crash study should be undertaken to identify engineering and traffic control deficiencies and appropriate corrective actions. The speed limit should only be reduced as a last measure after all other treatments have either been tried or ruled out.

Equations Used in Crash Data Calculations

Exposure (M)
M = (Section AADT * 365 * Section Length * Duration of Crash Data) / (100000000)
M = (840 * 365 * 1.38 * 5.00) / (100000000)
M = 0.0212

Crash Rate (Rc)
Rc = (Section Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Rc = (1.00 * 100000000) / (840 * 365 * 1.38)

Rc = 236.35 crashes per 100 MVM

Injury Rate (Ri)
Ri = (Section Injury Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Ri = (0.40 * 100000000) / (840 * 365 * 1.38)
Ri = 94.54 injuries per 100 MVM

Critical Crash Rate (Cc)
Cc = Crash Average of Similar Sections + 1.645 * (Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Cc = 292.23 + 1.645 * (292.23 / 0.0212) ^ (1/2) + (1 / (2 * 0.0212))
Cc = 509.20 crashes per 100 MVM

Critical Injury Rate (Ic)
Ic = Injury Crash Average of Similar Sections + 1.645 * (Injury Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Ic = 72.30 + 1.645 * (72.30 / 0.0212) ^ (1/2) + (1 / (2 * 0.0212))
Ic = 192.10 injuries per 100 MVM

USLIMITS2 Speed Zoning Report

Project Name: Lemolo Shore Drive

Analyst: Christy DeGeus

Date: 09-29-2020

Basic Project Information
Project Number: Undeveloped
Route Name: Lemolo Shore Dr
From: MP 0.00
To: MP 1.38
State: Washington
County: Kitsap County
City: Rural
Route Type: Road Section in Undeveloped Area
Route Status: Existing

Roadway Information
Section Length: 1.38 mile(s)
Statutory Speed Limit: None
Existing Speed Limit: 35 mph
Adverse Alignment: Yes
Divided/Undivided: Undivided
Number of Lanes: 2
Roadside Hazard Rating: 5
Transition Zone: Yes

Crash Data Information
Crash Data Years: 5.00
Crash AADT: 840 veh/day
Total Number of Crashes: 5
Total Number of Injury Crashes: 2
Section Crash Rate: 236 per 100 MVM
Section Injury Crash Rate: 95 per 100 MVM
Crash Rate Average for Similar Roads: 207
Injury Rate Average for Similar Roads: 64

Traffic Information
85th Percentile Speed: 37 mph
50th Percentile Speed: 31 mph
AADT: 840 veh/day

Recommended Speed Limit:

Note: Sections with adverse alignments may need specific 'advisory speed warnings' which may be different from the general speed limit for the section. See Procedures for Setting Advisory Speeds on Curves, Publication No. FHWA-SA-11-22, June 2011, for more guidance.

Note: The injury crash rate for the section of 95 per 100 MVM is more than 30 percent above the average for similar roads (64) but below the critical rate (178). A comprehensive crash study should be undertaken to identify engineering and traffic control deficiencies and appropriate corrective actions. The speed limit should only be reduced as a last measure after all other treatments have either been tried or ruled out.

Disclaimer: The U.S. Government assumes no liability for the use of the information contained in this report. This report does not constitute a standard, specification, or regulation.

Equations Used in Crash Data Calculations

Exposure (M)
M = (Section AADT * 365 * Section Length * Duration of Crash Data) / (100000000)
M = (840 * 365 * 1.38 * 5.00) / (100000000)
M = 0.0212

Crash Rate (Rc)
Rc = (Section Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Rc = (1.00 * 100000000) / (840 * 365 * 1.38)
Rc = 236.35 crashes per 100 MVM

Injury Rate (Ri)

Ri = (Section Injury Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Ri = (0.40 * 100000000) / (840 * 365 * 1.38)
Ri = 94.54 injuries per 100 MVM

Critical Crash Rate (Cc)
Cc = Crash Average of Similar Sections + 1.645 * (Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Cc = 206.70 + 1.645 * (206.70 / 0.0212) ^ (1/2) + (1 / (2 * 0.0212))
Cc = 392.94 crashes per 100 MVM

Critical Injury Rate (Ic)
Ic = Injury Crash Average of Similar Sections + 1.645 * (Injury Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Ic = 64.10 + 1.645 * (64.10 / 0.0212) ^ (1/2) + (1 / (2 * 0.0212))
Ic = 178.29 injuries per 100 MVM

USLIMITS2 Speed Zoning Report

Project Overview

Project Name: Lemolo Shore West

Analyst: Degeus

Date: 10-12-2020

Basic Project Information
Route Name: Lemolo Shore West
From: MP 1_380
To: MP 2_065
State: Washington
County: Kitsap County
City: Rural
Route Type: Road Section in Developed Area
Route Status: Existing

Crash Data Information
Crash Data Years: 5.00
Crash AADT: 1650 veh/day
Total Number of Crashes: 3
Total Number of Injury Crashes: 1
Section Crash Rate: 145 per 100 MVM
Section Injury Crash Rate: 48 per 100 MVM
Crash Rate Average for Similar Roads: 292
Injury Rate Average for Similar Roads: 72

Roadway Information
Section Length: 0.685 mile(s)
Statutory Speed Limit: None
Existing Speed Limit: 25 mph
Adverse Alignment: Yes
One-Way Street: Yes
Number of Through Lanes: 2
Area Type: Residential-Collector/Arterial
Number of Driveways: 23
Number of Signals: 0

Traffic Information
85th Percentile Speed: 33 mph
50th Percentile Speed: 28 mph
AADT: 1650 veh/day
On Street Parking and Usage: Not High
Pedestrian / Bicyclist Activity: Not High

Recommended Speed Limit: 35

Note: Sections with adverse alignments may need specific 'advisory speed warnings' which may be different from the general speed limit for the section. See Procedures for Setting Advisory Speeds on Curves, Publication No. FHWA-SA-11-22, June 2011, for more guidance.

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How the Recommended Speed Limit was Calculated

The questions and responses below, and the referenced page numbers, correspond to the flowcharts found in the Decision Rules Flowchart document.

Terms Used in Calculations

- **Closest 85th**: This is the 5 mph increment that is closest to the 85th percentile speed (e.g., if the 85th percentile speed is 63 mph, the Closest 85th will be 65 mph).
- **Rounded-down 85th**: This is the 5 mph increment obtained by rounding down the 85th percentile to the nearest 5 mph increment (e.g., if the 85th percentile speed is 63 mph, the Rounded-down 85th will be 60 mph).
- **Closest 50th**: This is the 5 mph increment that is closest to the 50th percentile speed (e.g., if the 50th percentile speed is 58 mph, the Closest 50th will be 60 mph).
- **SL_1**: Speed limit calculated using site characteristics (e.g., AADT, interchange spacing, roadside hazard rating, ped/bike activity, number of traffic signals, etc.).
- **SL_2**: Speed limit calculated using crash data from the crash module.
- **SL**: Recommended Speed Limit.

The Recommended Speed Limit (SL) is the lower of the speed limit calculated without crash data (SL_1) and the speed limit calculated with crash data (SL_2).

Calculate SL_1 Using Site Characteristics (pg. K-23)

Note: The number of signals per mile is being calculated as 0.00 signals per mile.

Note: The number of driveways per mile is being calculated as 33.58 driveways per mile.

Question 1: Are any of the following true: there are more than four signals per mile, pedestrian or bicyclist activity is high, parking activity is high, or there are more than 60 driveways per mile?

Results: No. There are 0.00 signals per mile, 33.58 driveways per mile, not high pedestrian/bicyclist activity, and not high parking activity.

Question 2: Are there between 40 and 60 driways per mile, more than 3 signals per mile, and the area type is commercial or residential-collector?

Results: No. There are 33.58 driveways per mile, 0.00 signals per mile, and the area type is residential-collector/arterial. **The SL_1 is set to the closest 85th speed (35 mph).**

Question 3: Are crash data available?

Results: Yes, so use these data to calculate SL_2.

Calculate SL_2 Using Crash Data (pg. K-24)

Question 4: Is more than one year of crash data available?

Results: Yes, at least one year of crash data is available.

Note: The crash rate is calculated to be 145 crashes per 100M VMT, and the injury rate is calculated to be 48 crashes per 100M VMT.

Note: The critical crash rate is calculated as 512 crashes per 100M VMT.

Question 5: Is the crash rate (145 per 100M VMT) greater than the critical crash rate (512 crashes per 100M VMT)?

Results: No, **so the crash level is classified as low.**

Question 6: Is the injury crash rate (48 per 100M VMT) greater than the critical injury rate (194 crashes per 100M VMT)?

Results: No, **so the injury crash level is classified as low.**

Question 7: Are either of the crash level (low) or injury crash level (low) classified as medium or high?

Results: No, **so the total crash level is classified low.**

Question 8: Is the total crash level (low) classified as medium or high?

Results: No, so **SL_2 is set as the closest 85th speed (35 mph).**

Determine SL (pg. K-22)

Note: SL is set as the lower of SL_1 (35 mph) and SL_2 (35 mph). **The SL is set to 35 mph.**

Determine the Final Recommended Speed Limit (pg. K-28)

Question 9: Is the SL less than 20 mph or greater than 50 mph?

Results: The SL (35 mph) is between 20 mph and 50 mph. **The SL remains the same.**

Final Recommendation: The recommended speed limit is 35 mph.

Equations Used in the Crash Data Calculations

Exposure (M)
M = (Section AADT * 365 * Section Length * Duration of Crash Data) / (100000000)
M = (1650 * 365 * 0.685 * 5.00) / (100000000)
M = 0.0206

Crash Rate (Rc)
Rc = (Section Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Rc = (0.60 * 100000000) / (1650 * 365 * 0.685)
Rc = 145.44 crashes per 100 MVM

Injury Rate (Ri)
Ri = (Section Injury Crash Average * 100000000) / (Section AADT * 365 * Section Length)
Ri = (0.20 * 100000000) / (1650 * 365 * 0.685)
Ri = 48.48 injuries per 100 MVM

Critical Crash Rate (Cc)
Cc = Crash Average of Similar Sections + 1.645 * (Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Cc = 292.23 + 1.645 * (292.23 / 0.0206) ^ (1/2) + (1 / (2 * 0.0206))
Cc = 512.26 crashes per 100 MVM

Critical Injury Rate (Ic)
Ic = Injury Crash Average of Similar Sections + 1.645 * (Injury Crash Average of Similar Sections / Exposure) ^ (1/2) + (1 / (2 * Exposure))
Ic = 72.30 + 1.645 * (72.30 / 0.0206) ^ (1/2) + (1 / (2 * 0.0206))
Ic = 193.93 injuries per 100 MVM

Appendix G. Speed Limit Calculation Worksheet

LEMOLO SHORE DRIVE NE MP 0.00-1.38

Location	Road Characteristics						Speed Factors										Speed							
	BMP	EMP	Segment Length	Segment to Total Length	Pedestrian Activity	Designated Bike Route	# Driveways	# Intersections	# Access conflicts per mile	Illinois Access Points Speed Reduction	Crash Rate to Ave. Crash Rate	Injury Crash Rate to Ave. Injury Crash Rate	Above Ave. Crash Rate?	Crash Rate Speed Reduction	Substandard KSRS lane width or shoulder width?	Reduction of 5% if lane and/or shoulders less than KCRS	85th Percentile Speed (MPH)	Mean Speed (MPH)	USLIMITS2 Speed	Total Speed Reduction	Adusted 85th Percentile Speed	Adjusted USLIMITS2 Speed	Posted Speed	Recommended Speed
SR 305 - Holman	0	0.53	0.53	0.384058													40.1	33.9	35	8.02	32.08	33.25	35	
Holman to Tuk-Wil La	0.53	1.03	0.5	0.362319	low	yes	66	9	98.6087	0.1	0.85	1.38	yes	0.05	yes	0.05	37	31.2	35	7.40	29.60	33.25	35	
Tuk-Wil La to Peterson	1.03	1.38	0.35	0.253623													38.9	34	35	7.78	31.12	33.25	35	
Total			1.38																					
																weighted=	38.67	32.95			30.94			35

Adjusted 85th applies reductions to 85th percentile speed of 0-10% for access, 0-10% for crash (USLIMITS), 0-5% for KCRS deficiency
Recommended Speed is equal to weighted adjusted 85th percentile speeds rounded to nearest 5 mph but not below weighted mean speed
weighted =sum of all: (segement length/total length)*speed for segement

Illinois Access Adjustments:	
Access Conflicts Per Mile	Percent Reduction
40 of less	0
41-60	5
61 or more	10

Crash Rate Reduction	
Crash Rate to Ave Crash Rate	Percent Reduction
less than 1.00	0
1.0 to 2.0	5
greater than 2.0	10

Shoulder and Lane Width Reduction	
Less than standard?	Percent Reduction
Yes	5