

Technical Report

State Route 532 Existing Conditions Baseline Analysis



**Junction of North Sunrise Blvd (Terry's Corner) in Island County to the Junction of
Interstate 5 Interchange in Snohomish County**

Milepost 0.00 to 10.09

Final Report
2023

Prepared by:

John Shambaugh, Project Manager
Washington State Department of Transportation Northwest Region
Mount Baker Area Multimodal Transportation Planning Office

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Partners and Technical Team

Island Regional Transportation Planning Organization (IRTPO)

Ben Jones, Transportation Planner

Snohomish County

Steve Dickson, Transportation
Engineering Services Director

Mohammad Uddin, County Engineer

Community Transit

Scott Ritterbush, Planning Project Manager
Shawn Nakano, Transit Planner

City of Stanwood

Shawn Smith, City Manager
Kevin Hushagen, Public Works Director
Patricia Love, Planning Director

Island County

Ed Sewester, County Engineer
Nikki Davis, Traffic Engineer
Ben Jones, Transportation Planner
John Lanier, Long Range Planner

Island Transit

Todd Morrow, Executive Director

Washington State Department of Transportation

NW Region Mount Baker Area

Chris Damitio, Assistant Regional Administrator
Justin Resnick, Planning and Engineering Services Manager
John Shambaugh, Transportation Planning Manager
Madison Sehlke, Communications Specialist

NW Region Traffic, Safety & Communications

Mike Koidal, Traffic Area Eng-Snohomish & Mt Baker Area
Shane Sullivan, Traffic Operations Engineer
Jared Cassidy, Region Safety Management Engineer
Hojr Momeni, Transportation Engineer
Vivianne Tabuena, Traffic Operations Specialist
R.B. McKeon, Communications Manager

Acronyms and Abbreviations

AADT. Average Annual Daily Traffic

ADT Average Daily Traffic

AWSC All Way Stop Control

ESO. WSDOT Environmental Services Office

FHWA. Federal Highway Administration

GMA. Growth Management Act

HCM. Highway Capacity Manual

I-5. Interstate 5

IRTPO. Island Regional Transportation Planning Organization

LOS. Level of Service

MBA. WSDOT NW Region Mount Baker Area

MP. Milepost

OFM. Office of Financial Management

PSRC. Puget Sound Regional Council

RDP. Route Development Plan

SMTP. Washington State Multimodal Transportation Plan

SOV. Single Occupant Vehicle

SR. State Route

TDM. Transportation Demand Management

TSMO. Transportation System Management and Operations

TWSC Two Way Stop Control

WSDOT. Washington State Department of Transportation

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State Route 532 Existing Conditions Baseline Analysis

Junction of N Sunrise Blvd (Terry's Corner) in Island County to the Junction of Interstate 5 Interchange in Snohomish County

State Route (SR) 532 is the primary east/west corridor to Interstate 5 for the Camano Island community, the City of Stanwood, and portions of unincorporated areas of Snohomish County. Over the last several years (pre-COVID) this area has experienced increased levels of vehicular and freight traffic during peak travel periods on the corridor. This growth has led to increased congestion and crashes on the corridor. To address these concerns, the Washington State Department of Transportation (WSDOT) NW Region together with the City of Stanwood, Island Regional Transportation Planning Organization (IRTPO), Island County, Snohomish County, Island Transit and Community Transit initiated an existing conditions baseline analysis of SR 532 to determine if the corridor is meeting regional transportation performance expectations.



Exhibit 1 SR 532 from Terry's Corner (MP 0.0) to Interstate 5 (MP 10.09).

Why study the corridor?

Safety and mobility needs were identified in the Island Regional Transportation Plan and Stanwood comprehensive plans for SR 532. Additionally, the Washington State Department of Transportation (WSDOT) conducted a statewide study of state highway corridors from 2017 to 2019 to determine how well state highways were operating. During the study we found that SR 532 warranted additional review to determine where problems may exist on the corridor and if the highway is meeting regional performance objectives. This statewide study effort became known as the Corridor Sketch Initiative (CSI). CSI was a new approach to evaluate state highway facilities using high-level data driven performance criteria through engagement with local jurisdictions and multidisciplinary agencies. This partnership aided in evaluating system performance, identifying challenges, and developing complementary cost-effective strategies.

Mobility and congestion were key factors identified on SR 532. Challenges generally occurred during peak travel periods in the morning and evening. Additionally, there were several potential factors cited that may be contributing to mobility challenges on the corridor, including: high volume of traffic during the morning and evening commute periods, highway incidents and emergencies, inefficient and

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unconnected rural road network, and turning movements from uncontrolled private driveway access points onto the state highway along the corridor.

To aid in the evaluation four study objectives were identified.

Study objectives

- Identify and determine the type and rate of congestion and crashes within the corridor.
- Measure the travel time on the corridor and between key destination areas.
- Identify existing conditions of other transportation modes such as public transit, pedestrians, and bicycles using the corridor.
- Engage the public to inform them about the technical analysis and gather information on areas of concern.

Study area characteristics.

The state highway corridor, SR 532, is about 10 miles long and is located within three different jurisdictions: Camano Island in Island County, City of Stanwood in Snohomish County, and parts of unincorporated Snohomish County. The corridor is designated as a highway of regional significance and begins at the junction of Sunrise Blvd at Terry's Corner on Camano Island at Milepost (MP) 0.0. The corridor study area has an east-west alignment that extends to the junction of Pacific Hwy and the I-5 interchange at MP 10.09. About one third of the corridor is in Island County and the remaining two thirds in Snohomish County. The City of Stanwood with the urban growth area account for just under half of the corridor in Snohomish County.

According to the 2020 U.S. Census there are about 31,000 people living in the study area. About 17,000 people live on Camano Island, 7,700 people live in the City of Stanwood and another estimated 6,300 people live in rural areas located primarily east and south of Stanwood in Snohomish County.

The current transportation system is made up of vehicles, freight, bicycles, pedestrians, transit, rail, and airport facilities, all connected together with state highways and local roads and streets that join the SR 532 corridor. The corridor is a two-lane highway with 11-foot driving lanes and 4-foot minimum shoulder widths. Some segments of the corridor include truck climbing lanes to facilitate the movement of traffic on steeper portions of the corridor. Currently, there are 25 public use intersection connections to the state highway serving a variety of uses including residential, recreation, commercial, industry and agriculture. Many of these local road and street intersections are defined as stop controlled, all with channelization. Eight intersections are signalized. In addition to the existing



Exhibit 2 Stanwood, East of 98th Dr NW, 35 mph zone.

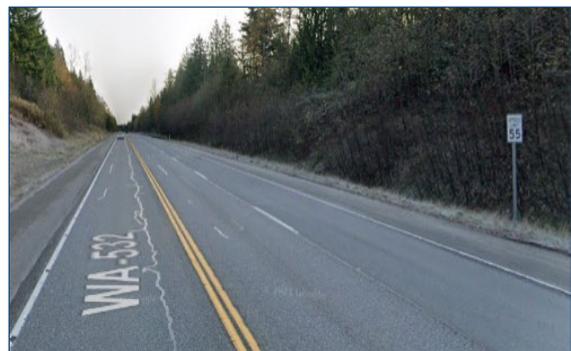


Exhibit 3 Truck Climbing Lanes, West of I-5, 55 mph zone.

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public road and street intersections there are 65 private driveways that access SR 532 for a variety of uses. Most of these private driveways are located on Camano Island and the historic (west) Stanwood downtown area. There are five private driveways located on the corridor east of Stanwood in unincorporated Snohomish County. One serves Lenz Enterprises a mineral extraction site while the other driveways serve residential parcels.

Community Transit, Island Transit, and Snow Goose Transit are active on the corridor and serve Stanwood and the surrounding area. There are three Park & Ride lots on this corridor. One is located at Terry's Corner, one in Stanwood, and one at the junction of I-5.

Average daily traffic (ADT) per day on the corridor is between 17,000 and 22,000 with about 12,000 ADT measured east of the I-5 interchange at the I-5 northbound onramp. The posted speed in the corridor varies between 35 mph in the urban area and 45 to 55 mph in rural areas.

What other actions have been taken to study the corridor?

In 2001, WSDOT adopted a corridor plan known as the SR 532 Route Development Plan. The Plan was adopted consistent with policy and objectives established in the 1996-1999 Washington State Highway System Plan (HSP) and in keeping with the Growth Management Act (GMA). The plan covered the entire length of SR 532 and addressed safety, capacity, and environmental deficiencies on the highway. Additionally, AM and PM peak hour existing conditions were analyzed on the highway along with 20 public use intersections including three signalized intersections in Stanwood. Traffic was projected to increase by 60% or an annual rate of 2.23 percent by 2022 on the corridor. The average annual daily traffic (AADT) on the corridor was between 8,000 to 17,000 vehicular trips per day with peak hour volumes of between 1,200 and 2,200 vehicles. The traffic data was adjusted for seasonal variations to represent the average annual traffic conditions at that time.

2001 study recommendations

- Implement traffic operations improvements at select intersections and eliminate left turns at others.
- Restrict side street access to right-in right-out at selected intersections.
- Eliminate access at selected low-volume side streets where feasible alternative access routes exist or can be feasibly implemented.
- Add or lengthen turn lanes as needed to accommodate traffic at intersections.
- Install new traffic signals at selected intersections once traffic warrants are satisfied. Implement coordinated signal-timing plans from 102nd to 72nd in Stanwood.
- Improve the local street system to reduce reliance on SR 532 for local circulation.
- Widen shoulders to full standards to accommodate bicycle and pedestrian traffic with a focus on west 72nd Ave NW.
- Form an interagency coordinating committee including WSDOT, Island County, Snohomish County, City of Stanwood, Community Transit, and Island Transit to review and prioritize corridor improvement needs, develop implementation strategies, seek funding, and assist in other responsibilities.

A long-term recommendation was also identified in the study to widen the highway to an ultimate cross-section of two lanes with wide shoulders in each direction throughout the corridor, including warranted turn lanes at intersections.

Implementation of improvements

Most of the recommended strategies and actions from the 2001 study have been implemented. All the local public use intersections on the corridor have been improved with channelization, some lengthened to accommodate traffic, two intersections have been restricted to right in right out, and an additional five intersections have been signalized. WSDOT's traffic office continues to work on improving signal coordination in the corridor. Shoulders have been widened in most areas along the corridor to meet minimum standards of 4 feet.

Since 2000, approximately \$121 million in current dollars has been invested in the corridor. Improvements have included safety projects, signals and channelization, park & ride lots, bridge replacement and bridge maintenance, fish barrier removal, flood mitigation, and pavement preservation.

Washington State Highway System Plan

Since the adoption of the 2001 Route Development Plan for SR 532 the State's Highway System Plan policy objectives for addressing transportation in the State of Washington have continued to evolve. The Highway System Plan adopted in 1996 and 1999 identified a range of strategies including emphasis on HOV lanes, park & ride lots and traffic operation improvements through such measures as ramp meters and optimizing traffic signal operations. At the time, the state's mobility program placed emphasis on addressing capacity by building "projects that create new roads and/or modifies the existing highways to reduce congestion and improve operational efficiencies". Today, the Highway System Plan emphasizes managing what we have by optimizing traffic operations, integrating multimodal alternatives for users, and encouraging people to carpool and use transit to maximize people throughput on highways over vehicle throughput. Emphasis is also placed on implementing compact, high density housing alternatives through adopted GMA policies to reduce infrastructure needs and improve the utilization of all modes of transportation.

A new Highway System Plan is currently under consideration with scheduled adoption in 2024. To learn more about the plan see [Highway System Plan | WSDOT](#).

Other jurisdiction plans

The Growth Management Act (GMA) adopted in 1990 requires local jurisdictions fully planning under the act to develop comprehensive land use and transportation plans in accordance with state goals. The last plan updates were completed in 2014. These plans are required to be updated every ten years with the next updates due in 2024. In 2023 the Washington State Legislature amended GMA to include measures to increase middle-level housing and better accommodate and facilitate (right-size) the improvement of transportation facilities necessary to serve proposed land uses identified in local comprehensive plans. Current plan updates are now underway and include:

- The City of Stanwood Comprehensive Plan and Transportation Element
- Island County Comprehensive Plan and Transportation Element
- Snohomish County Comprehensive Plan and Transportation Element

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In addition to local jurisdiction plans, the Puget Sound Regional Council and the Island Regional Transportation Planning Organization have also adopted regional transportation plans that have been coordinated with local jurisdiction GMA plans and state transportation planning policy goals.

What measures were taken to engage stakeholders?

Stakeholder and public engagement are essential components of transportation planning in Washington State and the region. As part of the study analysis, communication and stakeholder engagement strategies were developed to respond to community and regional transportation needs. The engagement framework outlined key outcomes to promote and encourage fair and equal opportunities for stakeholders and the public input on the SR 532 Existing Conditions Baseline Analysis. Several actions were taken to connect issues with stakeholders and the public on the analysis. These actions included:

- A community survey targeted key interest groups in the community, the public and elected leaders. Interest groups included traditionally underserved populations, Tribes, economic development interests, and freight.
- Engaging and informing elected and local jurisdictions and agencies about the technical baseline analysis progress and results during IRTPO Technical Advisory Committee and Executive Policy Board meetings, City Council meetings, project stakeholder meetings, and at community gatherings upon request.

Follow-up engagement with the public and local jurisdictions and agencies is planned to follow the conclusion of the baseline analysis to inform stakeholders on the results of the analysis and next steps.

How was the corridor analyzed and how will the analysis be used?

The initial assessment of the corridor included a high-level baseline analysis of the existing condition (pre-COVID-19 and during COVID-19) for SR 532 mainline and associated intersections to determine if the corridor was meeting regional transportation performance expectations.

The baseline analysis of the corridor included the following analysis:

Transportation Operations Analysis.

- Travel Time Reliability analysis looked at the amount of expected delay versus unexpected delay in the corridor to determine the expected travel time in the corridor. Travel speeds were used to identify the medium, average, 5th percentile and 95th percentile daytime traffic conditions along the corridor.
- A Highway Capacity Analysis looked at existing mainline traffic operations performance on SR 532 and at each public use intersection on the corridor during AM and PM peak hour mid-weekday travel periods for a 2022 analysis year. Traffic data was compiled for 15-minute intervals during a 24-hour and peak hour period for the analysis in April of 2022. The analysis was developed using the adopted Highway Capacity Manual (HCM) measures for speed, volumes, and delay as well as person throughput. The performance standard for the SR 532 corridor is LOS D. When the level of service exceeds LOS D (i.e., LOS E) it indicates that SR 532 is at or nearing capacity and may begin to lose some of its capacity to move traffic safely and efficiently.

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- Active Transportation data was collected for pedestrian, bicycle and other rolling activity together with vehicular traffic data collection using video cameras at each public use intersection on SR 532.

Transportation Safety Analysis.

The WSDOT Strategic Highway Safety Plan outlines WSDOT's safety goals and is referred to as Target Zero with a goal to eliminate all fatal and serious injury crashes by 2030. Two analyses were conducted on the corridor.

- The Safety Crash Summary Assessment looked at the historical crash data from 2016 to 2020 to help identify characteristics and patterns such as time of day, directionality, and lane location throughout the corridor.
- An Interactive Highway Safety Design Model (IHSDM) Analysis provided information on where the corridor is experiencing an excess of fatal and serious injury crashes compared to what a typical highway of similar size would experience. The analysis was conducted using the Interactive Highway Safety Design Model (IHSDM) with data from the crash summary assessment and supporting traffic operations analysis.

How will the existing conditions analysis be used?

Once the baseline analysis has been completed additional efforts may be initiated to identify strategies and solutions to address the corridor or locations on the corridor that are not meeting regional performance objectives. The following questions aided in developing informed recommended actions.

- 1) Were problems or needs identified on the SR 532 corridor; are they occurring at specific locations or segments on the corridor, and why?
- 2) What additional steps should be taken to address problems and needs on the corridor that do not meet regional transportation performance objectives?

If the analysis shows that the corridor is meeting regional transportation expectations the effort would be concluded.

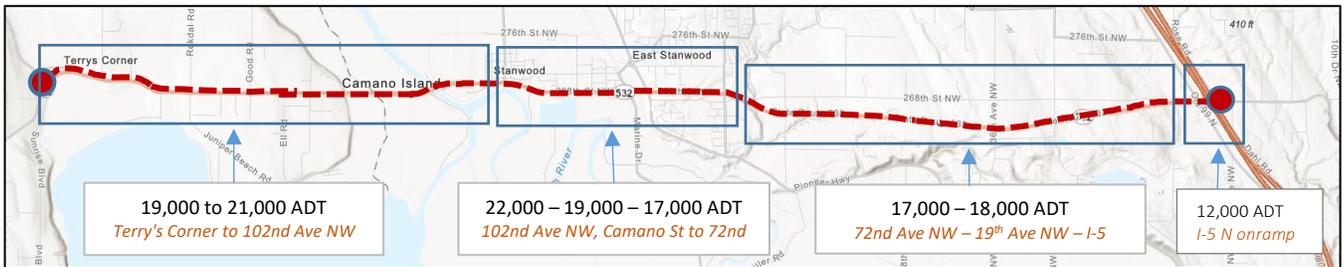
Transportation operations analysis.

The current transportation system is made up of bicycle, pedestrian, bus transit, airports and rail together with local roads and streets that connect to the SR 532 corridor. SR 532 is the primary east/west corridor from I-5 for the Camano Island community, the City of Stanwood, and portions of unincorporated areas of Snohomish County. The corridor is designated as a highway of regional significance and is a two-lane highway with one lane in each direction of travel and widening to accommodate left-turn lane channelization at intersections. Some eastbound and westbound truck climbing lanes are present on steeper grades of the corridor. The Annual Daily Traffic (ADT) varies significantly on the corridor from between 12,000 ADT at the I-5 interchange to 22,000 ADT. Freight traffic ranges from 2.8 to 5.6 percent. The corridor is classified as a T3 freight corridor.

In Island County and parts of unincorporated Snohomish County, most of the corridor is classified as a Minor Rural Arterial. It is classified as a Minor Urban Arterial in the urban area of Stanwood. Currently, there are 25 public use intersections connecting to the state highway for a variety of uses including

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residential, commercial, industrial and agricultural. Many of these local road and street intersections are stop controlled while eight intersections are signalized. Left-turn channelization is provided at both stop controlled and signalized intersections. In addition to the existing local road and street intersections, there are 65 private driveways that access SR 532. Most of these private driveways are located on Camano Island and within the historic Stanwood downtown area. There are five private driveways located in unincorporated Snohomish County with one serving Lenz sand and gravel extraction.



Public Transit

Transit service is provided by two public transit agencies and one nonprofit. The two public transit agencies include Community Transit and Island Transit. Snow Goose Transit is administered by a nonprofit organization. All transit operators have multiple routes utilizing the state highway for both



Exhibit 5 Community Transit, Route 422.

local and regional trips. There are three Park & Ride locations on SR 532 that are used at varying degrees by transit providers. Park and Ride locations are located at Terry's Corner (MP 0.00), one south of downtown Stanwood, south of SR 532 (MP 4.90) and one at the I-5 interchange with SR 532 (MP 9.94). Each agency provides a range of services and schedule options to the communities of Camano Island, City of Stanwood, and Snohomish County. See Appendix F for additional information.

Community Transit operates three routes that serve Stanwood. One route provides local service six days a week with scheduled buses about every 60 minutes. There are six stops on the route with three transfer points with Island Transit. Two routes provide commuter weekday service from Stanwood to Lynnwood and downtown Seattle. There are no transit stops provided on SR 532 or to Island County. Community Transit uses the park and ride lots at I-5 and in Stanwood.



Exhibit 6 Island Transit, Route 411C.

Island Transit operates five routes six days a week. Three routes provide local services, and two routes provide commuter service. Local routes provide service from Camano Island to Stanwood with frequency that varies between 30 and 60 minutes. Two commuter routes are provided. One provides

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service from Stanwood to Skagit Station in Mount Vernon with limited connections in Conway via Pacific Hwy. The other provides service from Camano Island to Stanwood and then to Everett Station.



Exhibit 7 Snow Goose Transit.

Saturday service is not provided for the commuter routes. Additionally, Island Transit utilizes the park and ride lot at Terry’s Corner and has eight bus stops serving both sides of SR 532 on Camano Island.

Snow Goose Transit started providing service in 2022 to Camano Island, Stanwood, Smokey Point and Arlington. They provide door-to-door service with a focus on serving people with disabilities, older adults, and low-income families. They have 14 stops identified on their route schedule.

Active Transportation

The corridor currently does not provide any designated bike lanes, and none are currently proposed. However other options are available on the local system parallel to the state highway. Sidewalks are primarily located in the City of Stanwood in the old downtown area on both sides of the street between the nursery business west of Stanwood and 98th Dr NW, and on the south side of SR 532 from Pioneer Hwy to 72nd Ave NW.

Some sidewalks are also located adjacent to the park & ride lot at I-5 and Pacific Hwy. A separated multiuse trail is partially constructed in the City of Stanwood adjacent to SR 532 from 98th Dr NW to Pioneer Hwy. When completed the multiuse trail adjacent to SR 532 will help connect downtown Stanwood to Pioneer Hwy and uptown Stanwood at 72nd Ave NW.

SR 532 / Local Intersections	AM Peak		PM Peak	
	Peds	Bike	Peds	Bike
Sunrise Blvd/NE Camano Dr	0	1	0	1
Rekdal Rd	0	12	0	0
Good Rd	0	7	0	0
102nd Ave NW	0	0	2	0
92nd Ave NW	0	0	1	0
88th Ave NW	0	0	7	0
Pioneer Hwy	0	0	6	0
72nd Ave NW	81	0	29	2
36th Ave NW	1	0	0	0
Old Hwy 99 N	0	1	0	0

Represents intersections in Stanwood.

Exhibit 8 Active Transportation (Non-motorized) Count

Active Transportation counts for bicycle and pedestrians were taken during collection of vehicular count data along the entire SR 532 corridor. Exhibit 8 represents active transportation counts collected at each intersection on the corridor. Counts were taken in the spring of 2022. Only intersections with pedestrian or bicycle data are represented in the Exhibit. Overall, active transportation activity along the corridor is low except at a few intersections such as 72nd Ave NW located in the vicinity of the High School and retail services. WSDOT rates the walkability of the corridor low due to the level of traffic stress on the entire corridor which is rated as Level of Transportation Stress (LTS) 4. LTS is rated from 1 to 4. LTS 4 is considered high stress while LTS 2 is considered low and suitable for most adults.

Vehicular traffic data collection and analysis

To assess existing vehicular conditions on SR 532, traffic data was collected, processed, and analyzed using adopted traffic operations analysis methods and principles to obtain design hour volumes for the 2022 analysis year. Traffic volume data was collected at all 25 public use intersections on the corridor between April and June of 2022. The data collection and post-processing included 24-hour traffic volume, turning movement volume, vehicle classifications and peak hour factors. Additionally, volume

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data from permanent traffic recorder locations on I-5 near the SR 532 interchange were used to determine any adjustments required to account for volume reductions stemming from COVID-19 travel restrictions. These volumes were found to be within 3% to 5% of those observed in 2019, suggesting that traffic volumes in the area have largely stabilized and returned to near pre-COVID levels, and no additional adjustments are warranted at this time.

The baseline analysis on SR 532 revealed that there are some segments of the corridor that exceed the Level of Service (LOS) standard of D adopted by the Puget Sound Regional Council (PSRC) for this corridor. LOS is a qualitative description of the operating performance of a roadway or an intersection. Intersection LOS, as defined in the Highway Capacity Manual 6th Edition (HCM) is shown in Exhibit 9. LOS is expressed as a letter score from A to F, depending on both control type and vehicle delay. For additional information on LOS and the analysis used to analyze intersections along the corridor refer to Appendix B.

Results of the traffic analysis for the existing conditions analysis are summarized in Exhibit 10.

Traffic operation results

The existing configuration analysis shows that most intersections, including all signalized intersections are currently operating at or better than the adopted LOS D minimum in both the AM and PM peak periods. Volume, delay, and queues are typically higher in the PM peak hour compared to the AM peak. Eastbound volumes are significantly higher than westbound volumes during the AM peak, and the opposite is true for the PM peak hour. Additionally, volumes remain consistent in magnitude through the corridor.

LOS	Signalized Delay (sec/veh)	AWSC Delay (sec/veh)	TWSC Delay (sec/veh)
A	≤ 10	0 - 10	0 - 10
B	> 10 - 20	> 10 - 15	> 10 - 15
C	> 20 - 35	> 15 - 25	> 15 - 25
D	> 35 - 55	> 25 - 35	> 25 - 35
E	> 55 - 80	> 35 - 50	> 35 - 50
F	> 80	> 50	> 50

Exhibit 9 HCM 6th Ed. Level of Service Thresholds for Intersections.

Existing Configuration Operational Analysis Summary								
SR 532 Corridor, MP 0.00 to 10.09 (Analysis Year 2022)								
Intersection of SR 532 &	Control	AM			PM			Meets LOS Standard?
		95th %tile Queue (ft)	Delay (sec/veh)	Level of Service	95th %tile Queue (ft)	Delay (sec/veh)	Level of Service	
N Sunrise Blvd	🚦	428 (NB)	27.0	C	435 (SB)	30.8	C	Yes
Hanstad Rd ²	🚦	-	11.9	B	-	20.3	C	Yes
Heichel Rd ²	🚦	30 (SB)	17.0	C	34 (SB)	30.4	D	Yes
Fox Trot Wy ²	🚦	40 (NB)	23.3	C	39 (NB)	43.4	E	No
Rekdal Rd ²	🚦	36 (SB)	33.9	D	38 (NB)	35.3	E	No
Good Rd ²	🚦	55 (SB)	152.7	F	70 (SB)	338.5	F	No
Smith Rd ²	🚦	49 (NB)	71.8	F	51 (NB)	130.3	F	No
104th Dr NW ²	🚦	76 (NB)	56.8	F	84 (EB)	34.8	D	No
103rd Dr NW ²	🚦	32 (SB)	48.9	E	80 (EB)	41.1	E	No
102nd Dr NW ²	🚦	100 (EB)	33.0	D	159 (EB)	22.6	C	Yes
102nd Ave NW	🚦	263 (WB)	14.5	B	506 (WB)	25.4	C	Yes
Camano St ²	🚦	61 (EB)	13.5	B	180 (WB)	20.7	C	Yes
98th Dr NW ²	🚦	42 (NB)	25.5	D	50 (NB)	27.9	D	Yes
92nd Ave NW	🚦	292 (EB)	10.9	B	362 (WB)	14.7	B	Yes
88th Ave NW	🚦	434 (EB)	18.3	B	319 (WB)	15.2	B	Yes
Pioneer Hwy	🚦	249 (WB)	18.8	B	419 (WB)	23.2	C	Yes
72nd Ave NW	🚦	398 (EB)	28.4	C	361 (WB)	24.2	C	Yes
64th Ave NW ²	🚦	67 (SB)	65.0	F	62 (SB)	94.2	F	No
36th Ave NW ²	🚦	48 (NB)	45.8	E	33 (NB)	38.3	E	No
28th Ave NW ²	🚦	51 (NB)	33.5	D	42 (NB)	62.7	F	No
19th Ave NW ²	🚦	19 (NB)	18.0	C	17 (NB)	17.8	C	Yes
12th Ave NW ²	🚦	51 (SB)	67.2	F	55 (SB)	112.4	F	No
Old 99 N	🚦	271 (EB)	11.0	B	173 (WB)	29.8	C	Yes
I5 SB Ramps ²	🚦	50 (SB)	14.4	B	63 (SB)	32.9	D	Yes
I5 NB Ramps	🚦	113 (NB)	8.6	A	207 (NB)	28.7	C	Yes

1. Intersection control delay, sec/veh

2. TWSC delay is reported for the worst (highest delay) movement, sec/veh

Exhibit 10 SR 532 Existing Configurations Analysis.

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Several intersections along the corridor meet the minimum LOS D measure but are at risk of degradation of performance if volumes increase in the future. These intersections include Heichel Rd, Rekdal Rd, 102nd Dr NW, 28th Ave NW and the I-5 Southbound ramps. These intersections should be periodically evaluated to determine if LOS standards continue to be met.

There are 10 intersections along the corridor that are currently operating below the adopted LOS D measure for this highway, including several intersections on Camano Island and portions of the Stanwood downtown core. All intersections are stop controlled (not signalized). Vehicles on minor legs of some of these intersections are experiencing a moderate-to-high delay due to heavy conflicting traffic volume along the SR 532 mainline. The resulting queues at these intersections are relatively short in length due to low traffic volumes, ranging from 2 to 4 vehicles long despite the high calculated delay. Because of the short queues, real-world driver experience at these intersections may not be perceived as severe as the calculated control delay suggests. The worst calculated intersection delay per vehicle for the worst movement of the day (AM and PM period) occurred at the Good Road intersection.

WSDOT traffic engineers noted that additional land use development/growth on local road and street segments may continue to degrade performance at intersections with SR 532 if measures are not taken to mitigate transportation impacts from new land use development. Additionally, future traffic volumes on the mainline of SR 532 are also expected to increase in conjunction with land use actions and growth occurring on Camano Island and along the 10-mile corridor between Sunrise Dr and the I-5 interchange. More information on the traffic analysis is in Appendix B - SR 532 Traffic Operations Analysis.

Origin and destination analysis

In 2019, the City of Stanwood conducted an origin and destination study to help understand the general traffic patterns on SR 532 and around the city. Traffic patterns were analyzed in 2019 and 2020 using StreetLight Data. This data is provided by a company that uses location-based services (LBS) from mobile and network user technologies such as cell phones to collect real-time information on travel characteristics and behavior. For more information on the StreetLight analysis see Appendix E.

Exhibits 11 and 12 on the following page show the origin and destination of vehicular traffic movement eastbound and westbound on SR 532. In Exhibit 11, the analysis revealed that over 40% of the eastbound weekday daily vehicular trips and almost an equal portion of the weekend daily vehicular trips traveled from Camano Island to the City of Stanwood. Vehicular trips to the downtown area were slightly higher on the weekends with 21% versus 22%. Uptown travel movement was about half with 9 to 11 percent of the total trips. About 35% of vehicles traveled on SR 532 through the City of Stanwood during the weekday versus 37% on the weekends with 3 to 5 percent headed south of the City on Pacific Hwy. About 19% of the vehicles only traveled on a very small portion of SR 532 within the City of Stanwood before turning off at 102nd Ave and travelling north to Skagit County and beyond.

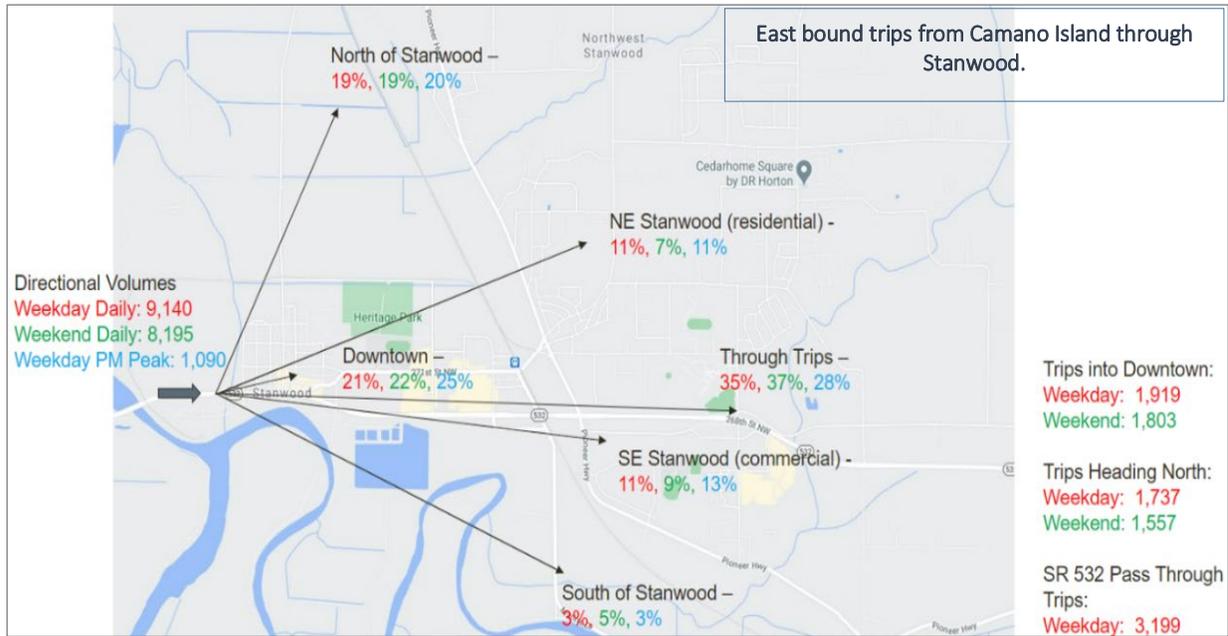


Exhibit 11 SR 532 Eastbound Travel Characteristics from Camano Island on SR 532.

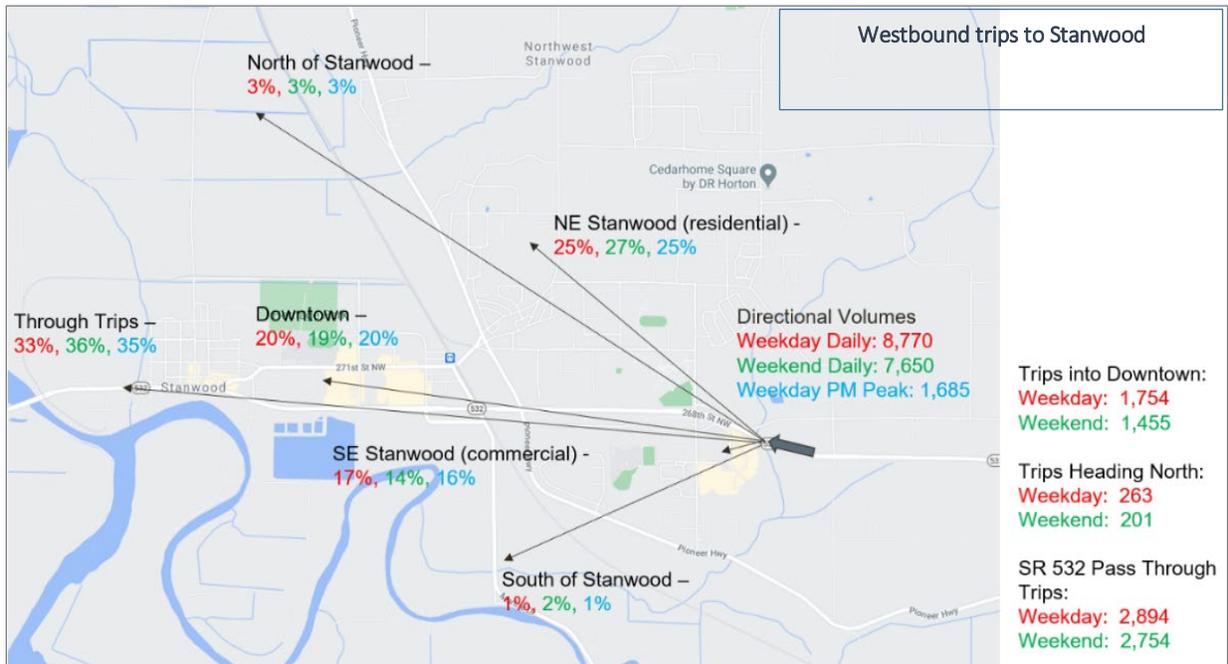


Exhibit 12 Westbound Travel Characteristic East of Stanwood on SR 532.

Exhibit 12 represents westbound vehicular traffic movement east of Stanwood on SR 532. The westbound vehicular movement has similar pass-through traffic results through Stanwood with 33% of the weekday traffic movement to Camano Island versus 36% on the weekend. About 25% of the westbound traffic movement traveled to residential areas in northeast Stanwood and another 22% traveled to downtown Stanwood with about 11 to 16 percent traveling to uptown Stanwood.

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Additionally, most trips from Camano Island are less than 20 miles long emphasizing the travel pattern between Camano Island and Stanwood. See Exhibit 13.

Top work locations include Stanwood, Mount Vernon, Everett, Paine Field, and Bellingham. Top home locations include Camano Island, Stanwood, Mount Vernon, and Marysville/Lake Stevens.

Travel time reliability analysis

A travel time reliability analysis was conducted on the SR 532 corridor in 2022. The purpose of the analysis was to better understand the magnitude of travel speed variability in the corridor as well as when and where it occurred during a typical weekday and weekend day. The data provided key insights on where congestion, accessibility, and speed were occurring along different sections of the corridor.

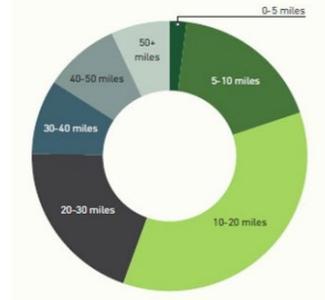


Exhibit 13 SR 532 Trip Length.

Like the origin and destination study conducted in 2019, this analysis also used GPS data from a similar time period to evaluate vehicle travel patterns by using data points collected from connected vehicles. Two data sets were used that included location data and event data. Location data provided information on travel speeds, congestion, and travel time reliability while event data showed harsh acceleration and hard breaking events on the corridor. The analysis evaluated roadway segments that were 0.25 to 1 mile in length along the corridor. Segments primarily occurred between intersections. The roadway segments were aggregated into four parts represented as A – D in Exhibit 14.

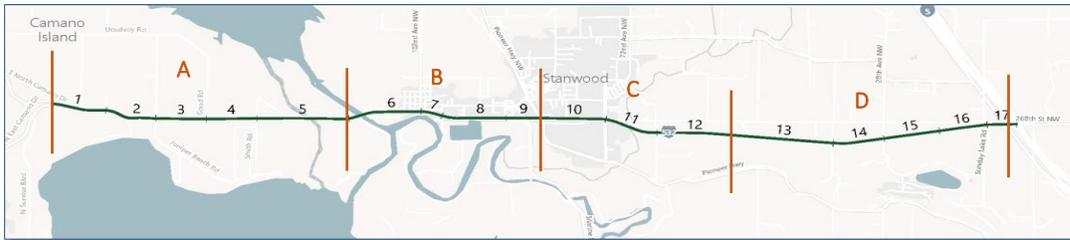


Exhibit 14 Travel time reliability analysis segment representation.

The location data provided information on travel time reliability and show minimum, average, and maximum speed information as well as the median speeds in the corridor. The standard method of showing these data is by showing the percent of throughput in the corridor observed over an hourly period. This information is generally represented as a percentile of traffic and noted as the 5th, 85th and 95th percentile representing a bandwidth of travel speeds on the highway. The 85th percentile speed is used by traffic engineers to set a safe speed, minimizing crashes, and promoting uniform traffic flow.

According to the data the average travel time between Terry’s Corner and I-5 during free flow conditions (no interruptions) is about 12 minutes with the average east bound AM travel time of 16 minutes and the average west bound PM traffic of 17 minutes.

SR 532 Corridor	Average Travel Time (min)	5th Percentile Travel Time (min)
Free Flow	12	--
AM (eastbound)	16	26
PM (westbound)	17	28
Middy	14	19

Exhibit 15 SR 532 Average Travel Time.

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During midday the average travel time is 14 minutes, 2 minutes above free flow conditions. However, when viewing travel time during the worst AM or PM peak hour conditions travel time increases about 40% to 26 minutes eastbound and 28 minutes westbound or about 12 and 14 minutes respectfully.

In general, AM and PM peak hour travel times are similar in the peak directions (eastbound in the AM peak hour and westbound in the PM peak hour), with the 5th percentile travel times representing about an 80% increase in travel time compared

Travel Time (min)	AM Peak (7 am)		Midday (12 pm)		PM Peak (4pm)	
	EB	WB	EB	WB	EB	WB
5th Percentile	26	19	18	20	19	28
Average	16	13	14	14	14	17
95th Percentile	11	11	11	11	11	12
Free Flow	12					

Exhibit 16 SR 532 5th and 95th Percentile of Travel Time.

to the average travel time. Travel time reliability shown in Exhibit 16 represents the travel time between Sunrise Blvd at Terry’s Corner and the I-5 interchange. The data does not include travel from outside the SR 532 corridor. However, according to the 2020 U.S. Census the average travel time from someone’s home on Camano Island is about 44 minutes and 30 minutes for Stanwood residents.

To visualize travel time reliability, several graphics were developed to represent the 5th percentile, average, and 95th percentile speeds across the entire day. Segments were selected to be representative of the different contextual sections of the corridor, such as on Camano Island, downtown Stanwood, and near the I-5 interchange. The average speed is represented by a solid blue line, the 5th percentile or worse conditions is represented as the bottom of the shaded profile while the 95th percentile is at the top part of the profile.

A wider gap between the average and percentile speeds (5th and 95th) indicates a higher speed variability for that location and time of day. Conversely, a smaller gap between the average and percentile speeds indicates a more uniform speed profile for that location and time of day. A narrow profile represents a more stable speed and increased reliability. A series of three segments is represented in Exhibits 17 -19. Additional information is in Appendix D.

Segment 4 – Good Road to N Smith Road

Exhibit 17 represents eastbound and westbound traffic movement on SR 532 between Good Road and N Smith Road by time of day. The posted speed limit is 45 mph.

The average travel speed in this Segment is between 52 mph and 42 mph and

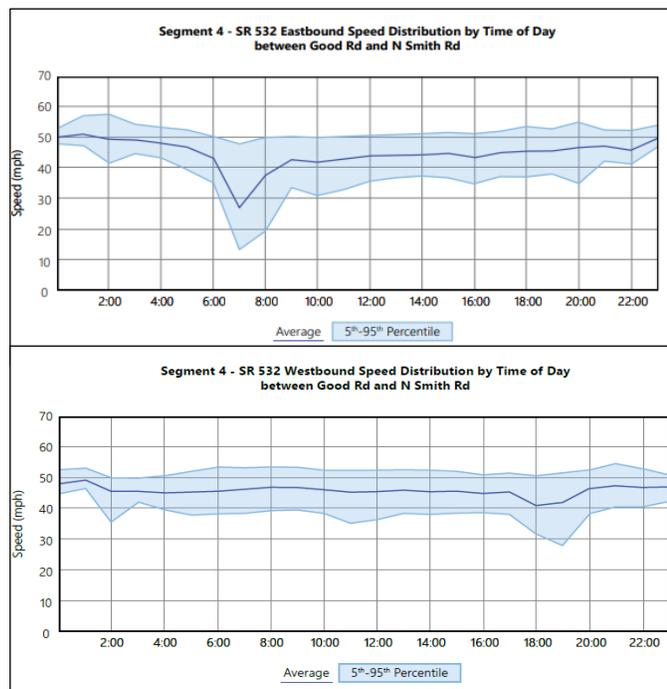


Exhibit 17 Segment 4 SR 532 AM / PM Speed Distribution, Good Rd to N Smith Rd.

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remains largely unchanged throughout the day. However, there is a noticeable decline in the average speed in the eastbound morning AM conditions between 6 am and 9 am where the average speed drops below 30 mph around 7 am before rebounding back to 42 mph and above, or the posted speed limit. The profile for Segment 4 is narrow representing a lower range of speed variability especially during the westbound daytime movement.

Segment 7 – 102nd Ave NW to 98th Dr NW

Exhibit 18 represents eastbound and westbound traffic movement on SR 532 between 102nd Ave NW and 98th Dr NW by time of day. The posted speed limit is 35 mph.

Segment 7 shows a wide variability in speed from above 40 mph to less than 20 mph eastbound. Westbound speeds can be as low as 18 mph between 2 pm and 5 pm. The wide variability in speed generally shows degradation in the travel time reliability. This could be the result of waiting multiple times between traffic signals. During uncongested times of the day motorists are traveling between 35 and 45 mph or generally at or above the posted speed limit.

Segment 16 – 19th Ave NW and E Sunday Lake

Exhibit 19 represents eastbound and westbound travel movement on SR 532 between 19th Ave NW and E Sunday Lake. The posted speed limit is 55 mph. Segment 16 shows that the average eastbound travel speeds are stable above 55 mph and westbound speeds are around 60 mph or above. However, travel time reliability is generally poor during PM peak travel times, including an eastbound morning peak at 8 am. Westbound travel slows during the morning peak (8 am), noon (12 pm) and late afternoon (3-5 pm). This is likely due to the proximity of travel on I-5.

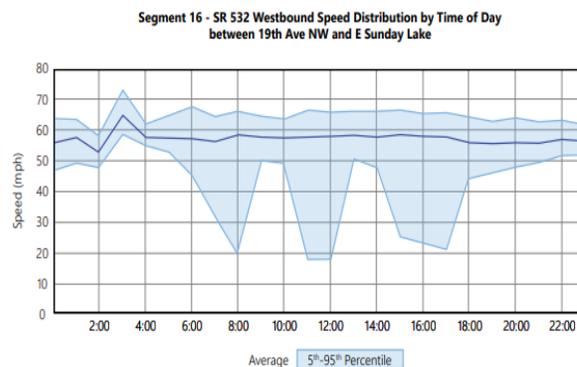
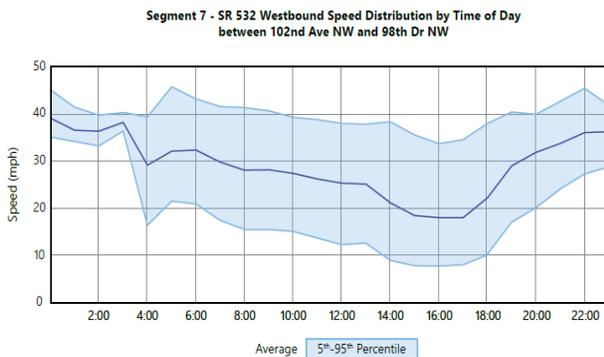
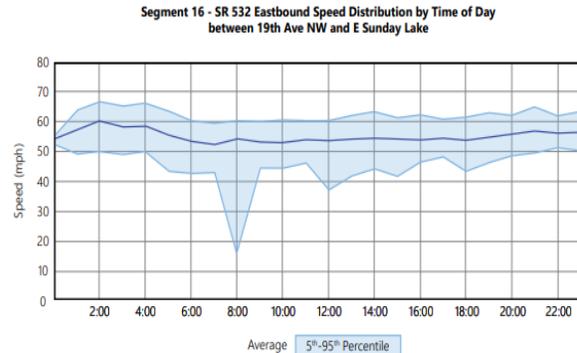
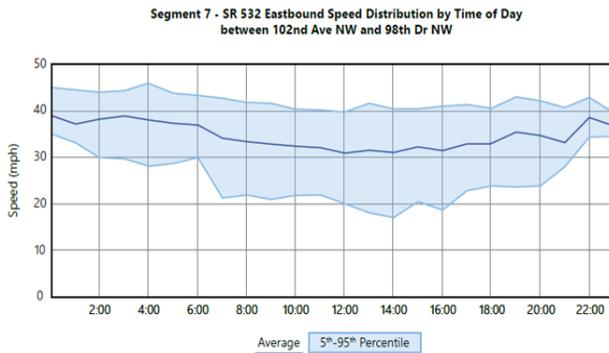


Exhibit 18 Segment 7 SR 532 AM/ PM Speed Distribution, 102nd Ave NW to 98th Dr NW.

Exhibit 19 Segment 16 SR 532 AM and PM Speed Distribution,

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Hard braking and harsh acceleration

The GPS data was used to determine where increased driving risks may be occurring on the corridor by evaluating hard braking and harsh acceleration events. However, results did not reveal additional information beyond the data observed in the safety analysis. Key observations included:

- Hard braking events on SR 532 occur mostly east of Stanwood between 72nd Ave NW and 64th Ave NW, at 36th Ave NW intersection, and at the I-5 interchange.
- Harsh acceleration events occurred between Pioneer Hwy and 72nd Ave NW, with some also occurring east and west of this segment.
- Hard braking and harsh acceleration events overlap east of Stanwood, though hard braking events occur more often as SR 532 gets closer to I-5.

For additional information on travel time reliability and hard braking/harsh acceleration analysis refer to Appendix E.

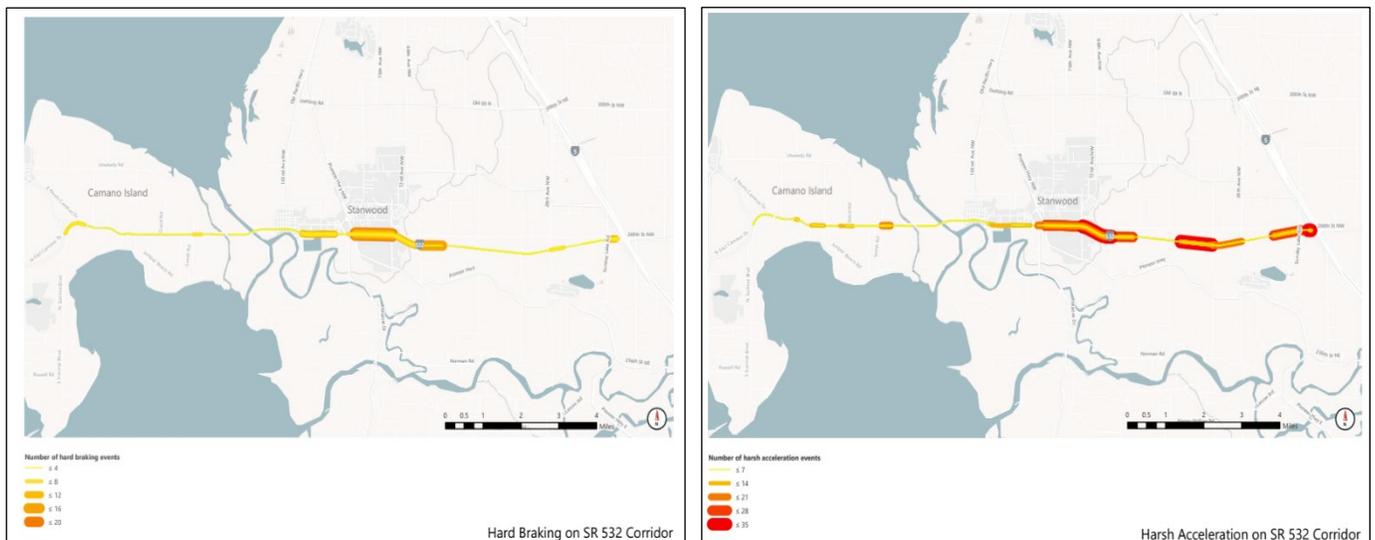


Exhibit 20 Location of Harsh Braking and Harsh Acceleration on SR 532.

Safety analysis

A safety analysis was conducted as part of the baseline traffic operations analysis on the corridor to determine if any areas or conditions on SR 532 corridor present safety issues or concerns when compared to similar corridors in the state. Two different analyses were conducted and included a Crash Analysis and an Interactive Highway Safety Design Model (IHSDM) Analysis. The Crash Analysis identifies crash severity, crash type, location, and potential trends. The IHSDM identifies sites that are performing similarly or better than a site with similar characteristics in the state, as well as sites experiencing more crashes than a site with similar characteristics.

Crash Analysis

The analysis addressed five years of data from 2016 to 2020. Data from 2021 was also collected. Between 2016 and 2020 there were 479 crashes on the corridor. During that five-year period 1 crash

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was a fatal injury with an additional fatality occurring in 2021. During the same period 3% or 12 crashes were identified as serious injury crashes. An additional serious injury occurred in 2021.

Most crashes from 2016 to 2020 were rear-end crashes or about 62% of all crashes. Entering at angle and fixed object crashes accounted for about 21 % and about 3% of the crashes were opposite direction crashes. Exhibit 21 provides a summary of crash severity by year. Exhibit 22 provides information by crash type by year.

Crash Severity	Year					Total		2021
	2016	2017	2018	2019	2020	Num.	Percentage	
Fatal		1				1	0%	1
Suspected Serious Injury	1	4	1	3	3	12	3%	1
Suspected Minor Injury	7	11	7	6	5	36	8%	10
Possible Injury	28	16	25	22	7	98	20%	16
No Apparent Injury	59	81	73	64	51	328	68%	53
Unknown	1	2			1	4	1%	
Total	96	115	106	95	67	479	100%	81

Exhibit 21 Severity of Crashes by Year on SR 532 Between Mileposts 0.00 to 10.09.

There was one fatal crash in 2017 involving a pedestrian crossing SR 532/Pioneer Highway at night and another fatal crash in 2021 from a rear-end collision east of Lenz sand and gravel in the westbound lane. The data showed that inattention accounted for 30% of crashes, while following too closely accounted for 15% of crashes. About 33 crashes or 7% of crashes were attributed to speed.

Additional information on the Safety Analysis is in Appendix C.

Crash Type	Year					Total		2021
	2016	2017	2018	2019	2020	Num.	Percentage	
Rear-end	71	64	71	57	32	295	62%	45
Entering at angle	6	22	14	11	7	60	13%	7
Fixed object	9	10	5	7	9	40	8%	7
Opp Dir 1LT-1STR	3	6	5	6	2	22	5%	8
Sideswipe	1	5	2	7	7	22	5%	6
Opposite direction	3	2	2	2	5	14	3%	3
Same Dir-Misc.	1	2	4	1	2	10	2%	3
Animal	1	2	1	3	2	9	2%	1
Misc.			1		1	2	0%	
Parking	1		1			2	0%	
Overturn				1		1	0%	1
Pedestrian		1				1	0%	
Fire		1				1	0%	
Total	96	115	106	95	67	479	100%	81

Exhibit 22 Type of Crashes by Year on SR 532 between Mileposts 0.00 to 10.09.

Some intersections experienced higher than average crash frequencies compared to other intersections and are represented in Exhibit 23.

Location	Types of Crashes and Contributing Factors
Sunrise Blvd MP 0.00	<p>There was a total of 18 crashes at this intersection, 89% with no apparent injury. Rear-end crashes accounted for most of the crashes with 78%. Crashes occurred mostly on Wednesday or Thursday. March and July had the highest crashes by months of the year.</p> <p>Contributing factors included inattention, driver distraction and following too closely.</p>
N Good Road MP 1.85	<p>There was a total of 12 crashes at this intersection, 67% with no apparent injury, however there was 33% with suspected injury or possible injury. Entering at angle crashes accounted for 75% of all crashes and rear-end crashes had 17% of crashes. Crashes occurred mostly on Thursday and Friday of the week. August had the highest crashes by month of the year.</p> <p>Contributing factors included not granting right-of-way at 42% and inattention of 17%.</p>
88th Ave NW MP 4.90	<p>There was a total of 42 crashes at this intersection, 71% with no apparent injury, however there was 29% with suspected injury or possible injury. Rear-end crashes accounted for 81% of all crashes with entering at an angle at 7%. Crashes occurred mostly on Monday, Thursday, and Friday during the week. April and May had the highest incidents of crashes by month of the year. The highest incident of crashes occurred between 1:00 pm and 5:00 pm.</p> <p>Contributing factors included inattention with 48% of all crashes and following too closely and driver distraction at 14% and 10% respectively.</p>
Pioneer Hwy MP 5.25	<p>There was a total of 54 crashes at this intersection, 67% with no apparent injury, however there was a pedestrian fatality in 2017. 32% of the crashes was suspected injury or possible injury crashes. Rear-end crashes accounted for 76% of all crashes. Crashes occurred mostly on Friday and Saturday during the week. January had the highest crashes by month of the year. The highest incident of crashes occurred between 1:00 pm and 5:00 pm.</p> <p>Contributing factors included inattention with 30% of all crashes and following too closely and driver distraction of 20% and 19% respectively.</p>
72nd Ave NW MP 5.90	<p>There was a total of 37 crashes at this intersection, 68% with no apparent injury, however 32% of the crashes had suspected or possible injury crashes. Rear-end crashes accounted for 68% of all crashes, entering at an angle had 16% and sideswipes with 8% of all crashes. Crashes occurred mostly on Monday during the week, while July and November had the highest crashes by month of the year. The highest incident of crashes occurred between 12:00 pm and 7:00 pm.</p> <p>Contributing factors included inattention with 30% of all crashes, not granting right of way and following too closely were the same with 14% each and following too closely at 11% of crashes. About 8% of the crashes were DWI (the highest percentage of identified intersections).</p>
64th Ave NW MP 6.45	<p>There was a total of 14 crashes at this intersection, 36% with no apparent injury, however 64% of all incidents had suspected injury or possible injury crashes. Rear-end crashes accounted for 50% of all crashes, entering at an angle had 21% and fixed object crashes accounted for 14%. About 7% of crashes were overturn. Crashes occurred mostly on Friday during the week. Crashes occurred almost every month equally except were lower in the months of April and June. The highest incident of crashes occurred between 11:00 am and 12:00 pm, and between 3:00 pm and 4:00 pm.</p> <p>Contributing factors included speed with 21% of all crashes, inattention at 21% of crashes and not granting right of way at 14%.</p>
Old 99 Hwy MP 9.94	<p>There was a total of 26 crashes at this intersection, 73% had no apparent injury, however 27% of the crashes had suspected injury or possible injury crashes. Rear-end crashes accounted for 54% of all crashes, opposite direction crashes had a total of 7 incidents or 27% of all crashes with entering at an angle at 12% of crashes. Crashes occurred mostly on Monday and Saturday during the week, while January had the highest crashes by month of the year. The highest incident of crashes occurred between 2:00 pm and 5:00 pm.</p> <p>Contributing factors included not granting right-of-way at 23%, inattention with 23% and following too closely with 15%. DUI's and speeding both accounted for 8% of all crashes.</p>

Exhibit 23 Select Intersection Crash Information and Contributing Factors.

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Highway Safety Manual Analysis

The Highway Safety Manual (HSM) prediction models are used to evaluate the safety of the corridor by evaluating the safety performance of individual segments and intersections along the study corridor and comparing them to sites with similar characteristics in the State. For this analysis, the Interactive Highway Safety Design Model (IHSDM) Crash Prediction Module was used to evaluate the safety performance of the study corridor. The functional classification of the corridor is also considered for rural and urban-suburban models. In addition to the rural and urban areas, the Freeway ramp-terminal model was used to analyze the I-5 southbound and SR 532 ramp terminal.

The analysis revealed that the entire study area corridor is currently experiencing fewer crashes, on average, than a facility with similar characteristics. The corridor is experiencing 33.26 fatal and injury crashes, on average per year, whereas a site with similar characteristics is predicted to experience 39.55 fatal and injury crashes per year. This means that the corridor is experiencing 6.29 fatal and injury crashes per year fewer, on average, than sites with similar characteristics. Considering property damage only (PDO) crashes, it is expected that 68.28 PDO crashes occur on the study corridor per year, whereas on similar facilities PDO crashes are predicted to be 74.75 crashes per year, which means that the study corridor is expected to have 6.47 PDO crashes, on average, less than similar highways in a year. Exhibit 24 shows the IHSDM analysis results for the entire corridor.

	Predicted Crash Frequencies (Annual Average)			Expected Crash Frequencies (Annual Average)			Excess Crash Frequencies (Annual Average)		
	Fatal + All Injury	PDO	Total	Fatal + All Injury	PDO	Total	Fatal + All Injury	PDO	Total
The Corridor Crashes	39.55	74.75	114.30	33.26	68.28	101.54	-6.29	-6.47	-12.76

Exhibit 24 Highway Safety Manual Analysis of (expected and predicted) Fatal and Serious Injury Crash Frequency.

There are three intersections and three segments on SR 532 that are experiencing higher crash frequencies of all severities than sites with similar characteristics. Sites are represented in Exhibit 25 for intersections and Exhibit 26 for corridor segments. Exhibit 25 also identifies intersection locations that had above average crash frequencies as represented in Exhibit 23.

Category	SR532 / Local Intersection	MP	Control	AM		PM		IHSDM Fatal + all injury	Higher than average Crashes
				LOS	Delay	LOS	Delay		
Urban	98 th Ave NW	4.25	Signal	D	25.5	D	27.9	0.48	
Urban	Pioneer Hwy	5.25	Signal	B	18.8	B	23.2	0.49	X
Urban	72 nd Ave NW	5.90	Signal	C	28.4	C	24.2	1.28	X

Exhibit 25 Intersection locations experiencing higher crashes.

Category	Corridor Segment	MP	IHSDM Fatal + all injury
Rural	Davis Slough	2.90 – 3.05	0.48
Urban	98th Ave NW to 72 nd Ave NW	4.25 – 5.90	1.73
Rural	Sunday Lake Rd to I-5 northbound ramp	9.79 to 10.09	0.38

Exhibit 26 Corridor segment's locations experiencing higher crashes.

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Land use characteristics

To better understand the transportation characteristics along SR 532, it is important to understand the role land use plays on the operational performance and safety of the highway. All three jurisdictions have very distinct geographies and land use characteristics, and each is responsible for managing land use along with development of the local transportation network. The type of land use, and its location in combination with the mode of transportation (vehicles, bicycles, pedestrians, rail, aircraft, freight) and configuration of roads and streets can greatly enhance or degrade the transportation network. Currently, there are 25 public use intersections and 65 private driveways on SR 532. Each serves varying intensities of land uses including commercial, industrial, agricultural and residential activities. The large number of access points has presented many challenges along the SR 532 corridor as well as on the local network. It will take innovative ideas and engaged communities to improve land use functions along with transportation network to meet future needs.

Some challenges include:

- Spread out land use patterns.
- Unconnected local roads and street patterns.
- Uncontrolled driveway access on the state highway and/or major road and street arterials.
- Unconnected public road and street intersections to the local transportation network.
- Lack of connected internal roads in designated rural commercial centers.

See Appendix G for additional information.

Community and stakeholder outreach

Public and stakeholder engagement was initiated early in the study with the development of an engagement and outreach plan. The plan identified four approaches to help achieve project expectations and minimize risks. Outreach included:

- An online project webpage provided a description of the study area, study purpose, partner agency participation, planning study news and links to resources and tools.
- Engaging and informing elected and local jurisdictions and agencies about the study progress and results through regular updates to agency stakeholders and Island Regional Transportation Planning Organization (IRTPO) Executive Board.
- Online community survey targeting key interest groups and community stakeholders that utilize the corridor for their travel needs. Interest groups and stakeholders included traditionally underrepresented populations, Tribes, economic development interests, freight, and the surrounding community.
- Follow-up of study results by WSDOT and partnering agencies with state and local agencies, economic development interests, Tribes, and other interested parties at the conclusion of the Study.

Community survey highlights

On September 16, 2022, a community survey was initiated. The survey was open for three weeks, closing on October 6, 2022. During that time, 951 persons responded to the survey. Survey respondents were primarily located within the immediate areas around the SR 532 corridor in Snohomish and Island Counties, of which 70 percent of the respondents were from Camano Island

with 17 percent from the City of Stanwood. Other represented populations were located north, south, and east of Stanwood.

Total	Camano Island	Stanwood (incorporated)	North of Stanwood	South of SR 532	East Stanwood to I-5
951	70.0%	17.4%	3.0%	3.4%	6.2%

Exhibit 27 Location of survey respondents.

The survey data revealed some interesting results and are highlighted below. Additional information on the survey responses is in Appendix A.

- 88 to 90 percent of respondents access the highway by personal vehicle across all locations. However, up to 4% of people in Stanwood walk as compared to less than 1% in other locations.
- 71% of respondents use the corridor every day with 30% traveling on the corridor multiple times a day. About 26% travel on the corridor weekly.
- When asked if SR 532 was more congested today than it was before the COVID-19 pandemic began most respondents - 61% - agreed or strongly agreed that there is more congestion now than prior to the pandemic. However, when asked if they travel less today than before the pandemic, 80% of all respondents indicated that they travel less today than before the pandemic.
- When asked what factors had impacted how they travel on the corridor since March 2020, 33% of respondents indicated that a change in personal needs was the biggest factor.
- When asked about the predictability of making a trip, 52% of respondents indicated that they could plan for a trip to take a similar amount of time on SR 532.
- When asked where respondents were traveling to on SR 532 most trips, 29% were for retail services and restaurants. Accessing I-5 and medical services was the next highest category at 16 and 14 percent, respectively.

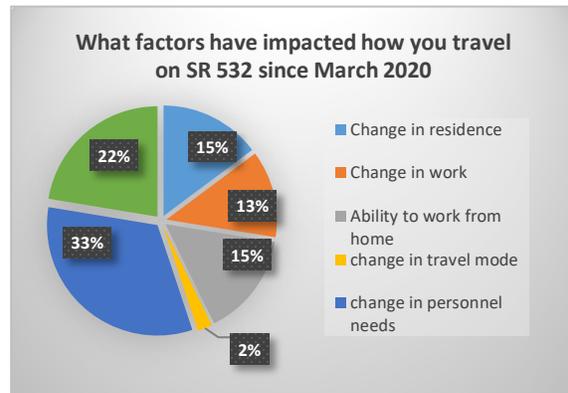


Exhibit 28 Factors impacting travel since March 2020.

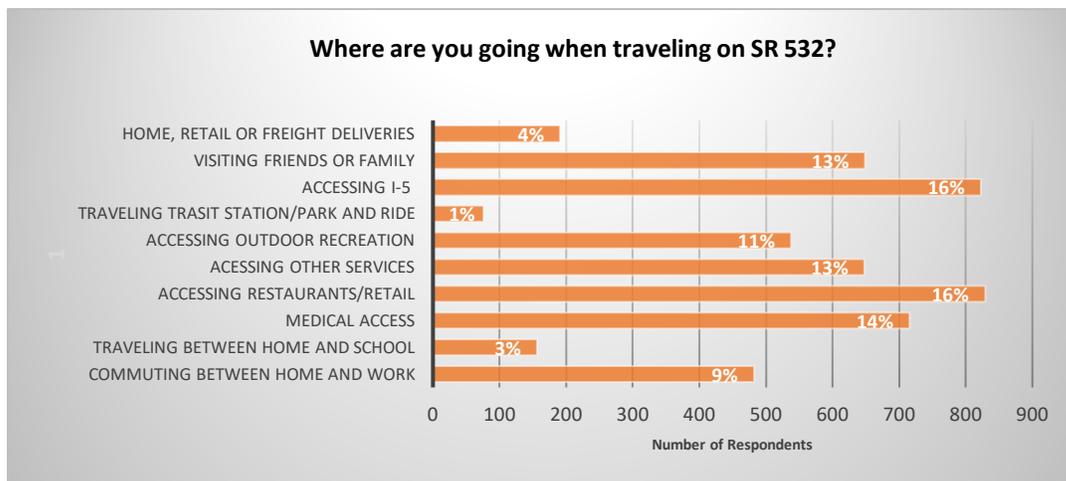


Exhibit 29 Where were respondents going when traveling on SR 532.

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To better gauge the overall experience of users on the corridor the survey asked questions specific to four sections on the corridor. Each section represented a geographical area that had similar attributes and context. These Sections are identified as follows and represented in Exhibit 30:

- ✓ Section A – located all within Camano Island from Sunrise Blvd to Davis Slough.
- ✓ Section B – located east of Davis Slough to Pioneer Hwy representing primarily Stanwood’s historic downtown area.
- ✓ Section C – located east of Pioneer Hwy to 64th Ave.
- ✓ Section D – located from 64th Ave east to the junction of I-5 and SR 532 interchange.



Exhibit 30 Survey Corridor Sections A – D.

When asked what section “do you feel most uncomfortable” – all respondents reported concerns on all segments of SR 532. However, the highest levels were reported for Section B, 28% and Section D, 29%. Section D was also highlighted in the open-ended question as the most uncomfortable driving experience while Section B was reported as the most congested. Responses closely correlated with the Section that respondents regularly traveled on the corridor.

Several open-ended questions were also asked in the survey, and respondents highlighted several areas of concern.

- Section D was highlighted most often as an area of concern due to aggressive driving, speeding, and failing to merge to the right in the westbound lane.
- Several local road intersections were also identified as problematic for merging onto the highway. 64th Ave NW received the most comments of all local road intersection on the corridor for merging and safety concerns closely followed by Sunday Lake Rd and

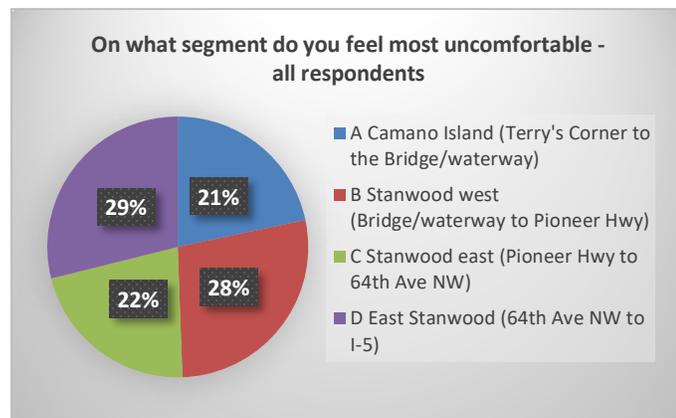


Exhibit 31 What sections of the corridor are the most uncomfortable.

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36th Ave NW intersections The Lenz gravel pit was noted for its large trucks and turning movement issues on and off SR 532.

- Section B was identified most often with congestion and slow speeds with some turning movement concerns from local intersections onto SR 532.
- Section A was identified for speeding and problems with left turn movements from local road intersections onto SR 532. Good Road and Smith Road were identified as having the most issues on Camano Island, but the number of responses were low in comparison to 64th Ave NW and 36th Ave NW. Other local intersections identified on Camano Island included Land Hill Road and Juniper Beach.
- Section C was identified most often with pedestrian safety issues near the high school/Haggen. Congestion was also identified as an issue near the intersections of 72nd Ave NW and Pioneer Hwy.

Other comments included:

- Better timing of traffic signals along the corridor.
- Limit road expansion because it only brings more growth.
- Add more lanes to reduce congestion.
- Improving transit operations and schedule.
- Provide better bike accommodations.
- Better maintenance and preservation as needed.

Additional information on the online survey is in Appendix A.

Study summary

The purpose of the study was to determine if the corridor is meeting regional mobility and safety performance expectations. Secondly, if performance was not being met, what steps or measures should be taken to address opportunities.

The two primary analyses conducted in the corridor included a traffic operations analysis and a safety analysis. These two analyses provided WSDOT with information on the operating conditions of the highway corridor and associated public use intersections. When analyzing the operating conditions of a state highway safety is the primary factor used by WSDOT. However, several other factors are also considered by traffic engineers to help better understand how the highway is functioning. These include traffic flow, frequency and density of traffic or Level of Service, delay, intersection controls, and roadway geometrics. Existing land use characteristics and future projected land uses are also significant factors that are considered and can contribute to the long term operational efficiency of the regional transportation network.

The SR 532 corridor is about 10 miles long and extends from Sunrise Blvd at Terry's Corner on Camano Island east to the junction of the I-5 interchange with SR 532. The highway is designated as regional significant in the Puget Sound 2045 Regional Transportation Plan and the Island Regional Transportation Plan. The corridor passes through three different jurisdictions: Camano Island in Island County, City of Stanwood in Snohomish County, and parts of unincorporated Snohomish County. Each jurisdiction is responsible for addressing land use and transportation issues in their jurisdiction's transportation network.

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There are between 17,000 and 22,000 vehicles on the corridor per day. The lowest vehicle volumes are on the I-5 northbound onramp with about 12,000 vehicles. The largest number of vehicles on the roadway are located between Sunrise Blvd at Terry's Corner and Pioneer Hwy in Stanwood with average daily trips of between 19,000 to 22,000 ADT. Approximately 33 to 36 percent of the eastbound weekday and weekend vehicles pass through Stanwood on a daily basis. Additionally, on average it takes 13 to 17 minutes to travel the corridor from Sunrise Blvd at Terry's Corner on Camano Island to I-5. During the AM (7 am) and PM (4 pm) peak periods, travel times increase to 26 minutes eastbound and 28 minutes westbound.

1) Was a problem or need identified on the SR 532 corridor?

The analysis revealed that most of the SR 532 corridor meets level of service and safety performance expectations. However, some locations on the corridor do not meet regional performance objectives:

- a. Traffic Operations Analysis – the traffic operations analysis revealed that some intersections and corridor segments in the study area exceed the traffic operations performance objective of LOS D set by PSRC and the IRTPO in their respective regional transportation plans. See Exhibit 10.
 - A total of 10 intersections were identified with an LOS of E or F. All intersections are stop controlled. They included:
 - Four intersections are located on Camano Island and include Fox Trot Way, Rekdal Rd/N. Juniper Beach Rd, Good Rd, and N Smith Rd.
 - Two intersections are in Stanwood and include 104th Dr NW and 103rd Dr NW.
 - Four intersections are in unincorporated Snohomish County and include 64th Ave NW (also located in urban area of Stanwood), 36th Ave NW, 12th Ave NW, and 28th Ave NW.
 - Of these intersections, 7 are affected during both the AM and PM peak periods. Fox Trot Way, Rekdal Rd/N. Juniper Beach Rd, and 28th Ave NW are only affected during the PM peak period.
 - Good Rd and N. Smith Rd on Camano Island are the only intersections with a delay of over 100 (sec/veh) in both the AM or PM peak periods with 152.7 AM and 338.5 PM on Good Road, 130 (sec/veh) on N Smith Rd and 112.4 (sec/veh) on 12th Ave NW.
- b. Safety Analysis – The Strategic Highway Safety Plan outlines the State's safety goals and is referred to as Target Zero. Target Zero has a goal to eliminate all fatal and serious injury crashes by 2030. Two analyses were conducted for the corridor. They included a crash analysis that identified the location, type, severity of the crash and trends, and an Interactive Highway Safety Design Model (IHSDM), which compares the study corridor with similar highways in the state.
 - The crash analysis revealed that between 2016 and 2020 there were crashes occurring at some intersections and corridor segments on SR 532. See Appendix C.
 - There was a total of 479 crashes on the corridor between 2019 and 2020, one crash was fatal with an additional fatality in 2021. There were 12 serious injury crashes or about 3% of the total crashes occurring during the five-year period with one additional serious injury crash in 2021.
 - The primary contributing factors for most crashes included inattention, following too closely, and driver distraction.
 - About 62 percent of all crashes were rear-end crashes and 13 percent of crashes were noted as “entering at an angle” crashes. See Exhibit 21 and 22.

- Seven intersections were identified on the corridor that experienced above average crashes when compared to other intersections on the corridor from 2016 to 2020. More information is in Exhibit 23.
 - Two intersections were on Camano Island and included Sunrise Blvd at Terry's Corner and Good Road.
 - Three intersections were in Stanwood and included 88th Ave NW, Pioneer Highway and 72nd Ave NW.
 - Two intersections were in unincorporated Snohomish County at 64th Ave NW, which is also in the urban growth boundary of Stanwood, and Old Hwy 99 near the I-5 interchange.
- The IHSDM analysis revealed that the entire study area corridor is currently experiencing fewer crashes, on average, than a facility with similar characteristics elsewhere in the state. However, there were three intersections and three corridor segments that experienced higher crashes than similar facilities across the state. See Exhibit 25 and 26 for more details.

Intersections

- All three intersections were located in the City of Stanwood at 98th Ave NW, Pioneer Hwy and 72nd Ave NW.

Corridor segments

- One corridor segment was located on Camano Island at the Davis Slough bridge.
- One corridor segment in the City of Stanwood between 98th Ave NW and 72nd Ave NW.
- One corridor segment was in unincorporated Snohomish County between Sunday Lake to the I-5 northbound ramp.

2) What additional steps should be taken to address problems and needs on the corridor that do not meet regional transportation performance objectives?

The analysis revealed that some locations on the corridor were not meeting regional performance expectations and that the location and extent of the issues varied by jurisdiction. Additionally, WSDOT traffic and safety engineers did not identify any immediate actions that needed to be taken. However, they did indicate that future development would generate additional traffic, potentially decreasing operational and safety performance of the corridor at several intersections and corridor segments. To address these concerns, it is recommended that WSDOT work with local jurisdictions to identify land use and transportation best practices to better meet regional transportation performance objectives as they update their land use and transportation plans to meet the 2024 GMA requirements.

The following specific actions addressed by jurisdictions.

A. Camano Island, Island County

Island County and WSDOT have been discussing incorporating long term transportation strategies and solutions for SR 532 on Camano Island in the current GMA land use and transportation plan update. The update should consider intersections strategic to the enhancement of the existing county road network and commercial and residential areas of more intense development designated along the corridor. Currently, with the exception of Terry's Corner, all local road intersections are improved with channelization and are stop controlled. This control sometimes makes left turn movements onto the corridor difficult during AM and PM peak travel periods. Additionally, several areas designated for

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more intense commercial development lack a basic internal road network, and the lack of alternative county road connections decreases access opportunities to scale up economic development activity over the next twenty years. The lack of internal access will put additional pressure on the performance of the corridor. It will be important for WSDOT and Island County to coordinate on transportation matters during the Island County comprehensive plan update to strategically identify the best locations to improve local road intersections with SR 532.

B. Stanwood, Snohomish County

In 2019, WSDOT began working with Stanwood to address long term transportation needs on the SR 532 corridor through the historic commercial district of Stanwood. Several options have been identified to help address congestion and safety on SR 532 and local street intersections, including constructing a new road on the west side of Stanwood north of SR 532 to facilitate traffic movement going to north Stanwood and beyond to Skagit County. This road will remove about 20 percent of the traffic from the corridor and associated local intersections at 104th Ave NW, 103rd Ave NW, and 102nd Ave NW. Several roundabouts are also proposed on the corridor to increase access to businesses, traffic throughput and safety on the corridor. Inclusion of the proposed improvements in the community's update of their comprehensive plan transportation element will address the problems and needs identified in the traffic operations and safety analysis.

In addition to proposed improvements in the historic downtown area, several large development projects are now proposed in the west Stanwood area that will increase the number of vehicles using the state and local street network. With the addition of more vehicles, further improvements are anticipated at 72nd Ave NW and 64th Ave NW as well as several local streets and intersections to accommodate new growth. It is recommended that WSDOT continue to work with the City of Stanwood to facilitate improvements identified in their early planning work for the historic downtown area and to coordinate with them on proposed new development anticipated over the next several years.

C. Snohomish County

Snohomish County and WSDOT coordinate with each other during the development of the PSRC regional transportation planning effort and through Snohomish County GMA land use and transportation plan update. Several intersections between Stanwood and the I-5 interchange were identified in the baseline analysis with poor levels of service, including a segment between Sunday Lake Road and the I-5 Interchange. It is recommended that WSDOT continue to coordinate with the County on their comprehensive plan and transportation elements plan update to address access, levels of service and safety concerns.

Appendix

Appendix A Communications and Stakeholder Outreach

- Stakeholder Engagement Summary
- Communications and Stakeholder Engagement Strategy
- Exhibit-1 Online Survey Questionnaire
- Exhibit-2 Online Survey Results – Selected Graphics
- Exhibit-3 Stakeholder Survey Data

Appendix B 532 Traffic Operations Analysis

- 532 Traffic Operations Analysis Technical Report

Appendix C 532 Safety Assessment

- 532 Safety Analysis

Appendix D Travel Time Reliability Analysis

- Travel Time Reliability Analysis - Fehr & Peers

Appendix E Stanwood Origin and Destination Analysis

- 2020 Memorandum - City of Stanwood Origin-Destination Study and Speed Study

Appendix F Public Transit Overview

- Community Transit
- Island Transit
- Snow Goose Transit

Appendix G Existing Land Use Summary

- Island County
- City of Stanwood
- Snohomish County