OR 39 South Sixth Street Facility Plan

TM#3.2 – Land Use and Transportation System Inventory

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Oregon Department of Transportation

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Introduction

This memorandum provides an inventory of transportation-related infrastructure and environmental resources in support of the OR 39: South Sixth Street Facility Plan. This information provides a baseline understanding of the corridor conditions, informs the development countermeasures, and serves as a foundation for later work to develop the Facility Plan.

The study area for the Facility Plan is OR 39 from the border of Klamath Falls to the intersection of OR 39/OR 140 (Figure 1). The corridor project limits are approximately 3 miles long.

Figure 1: Project Area Map

OR 39: South Sixth Street Facility Plan
Klamath County, Oregon

Oregon Department of Transportation

Project Limits

OR 39 MP 2.5 to 5.5
Klamath Falls City Limits to OR 39/140 intersection

0 0.25 0.5 1 Miles

Project Goals

Vision

OR 39 will be an organized, safe, and modern corridor that provides adequate access for the local community and acts as a commercial corridor for the county.

Draft Goals

The following goals reflect local goals expressed in the Klamath County TSP, ideas from the project team, and feedback from the Participant Advisory Committee.

1. Improve safety for people walking, bicycling, and driving in the corridor through proven safety countermeasures.
2. Create a corridor that facilitates a thriving economy through easy to access economic opportunities and accommodates freight movement.
3. Improve travel time reliability in the corridor.
4. Reduce transportation-related disparities and barriers along the OR 39 corridor.
5. Focus on realistic, practical design solutions.
6. Improve visual conditions of the corridor through landscaping and reducing overhead utility impacts.
7. Improve access spacing and access management to reduce conflicts
8. Support Basin Transit infrastructure and route development.

Existing Conditions System Inventory

Roadway

The Klamath Falls-Lakeview Highway #020 (OR39) runs through the Project study limits (MP 2.5 to 5.5), is an Urban Minor Arterial from MP 2.5 to MP 3.28 and an Urban Other Principal Arterial and part of the National Highway System (NHS) from MP 3.28 to 5.5. This section of highway is not an Expressway. It is primarily a flat, five-lane section with 2-12' lanes each direction with a 14'center turn lane present (either a left turn lane or a TWLTL). There is a highway to highway connection at MP 3.28 where the Klamath Falls-Malin Hwy #050 (Crater Lake Parkway) joins our highway (OR39).

Shoulders are ACP and 6' or wider from MP 2.3 to MP 3.28, and are only 4'-5' from MP 3.28 to MP 5.5, and are striped as bike lanes. Shoulders have drainage inlets throughout as curb or curb/gutter also persist throughout the study limits. Figure 2 and Figure 3 show general cross sections on OR 39 east and west of the Crater Lake Parkway intersection.

Figure 2: OR 39 General Cross Section: West of Crater Lake Parkway

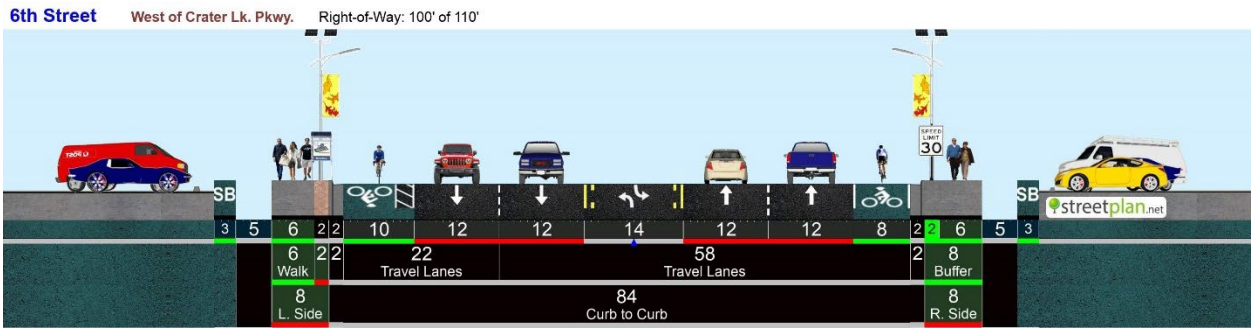
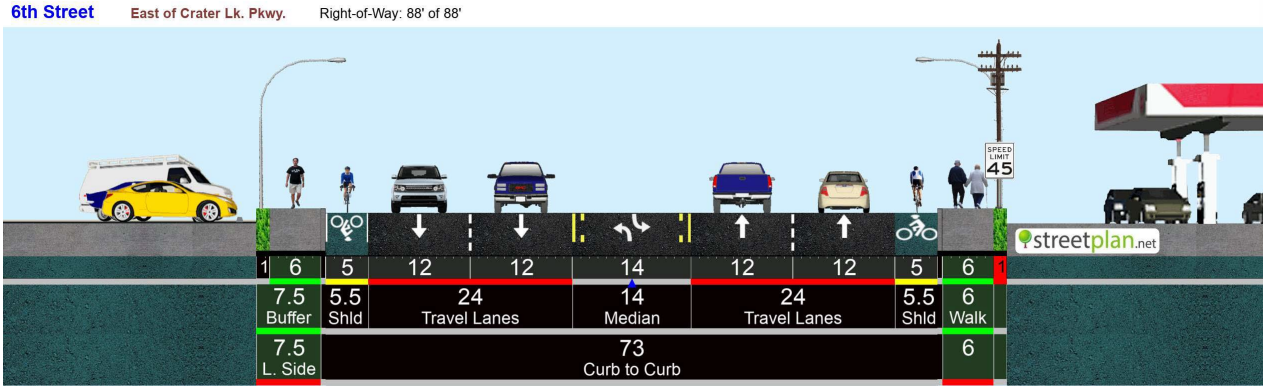


Figure 3 OR 39 General Cross Section: East of Crater Lake Parkway



Asset Condition

Below is a discussion of relative asset condition for ODOT-owned transportation infrastructure in the project limits:

Signals: Most of the signals in the project limits are in Fair condition with an above 70% rating. The signal at 6th/Hope street is the one signal in the project limits that is in poor condition. However, many of the signals are not coordinated and several are span wire signals. Span wire signals offer little flexibility for improvement and it is generally recommended that traditional span wire signals are replaced. Improved signal coordination would promote better operations in the corridor and allows for improved timing of vehicular movements.

Pavement Condition: Pavement condition is rated "Poor" for the majority of the project limits. The OR 39/OR140 intersection is rated "Good" condition for the southern and eastern approach.

ADA Ramps: There are 118 curb ramps in the study area. The majority of the ramps have recently been improved by the ADA program. 26 ramp locations still need to be addressed and are in poor condition.

Bicycle Lanes: Bicycle lanes in the corridor are substandard and do not meet the current minimum standard in the Highway Design Manual. Pavement condition in the bike lane is Poor. More information on bicycle facilities can be found in the Public and Active Transportation section.

Sidewalks: Most sidewalks are either missing or substandard in the corridor with Poor condition rating. Utility poles are often in the sidewalk. The Crest to Madison project upgraded the sidewalks on the north side of OR 39 between MP's 2.99 to 4.26. More information on pedestrian facilities can be found in the Public and Active Transportation section.

Right of Way

The main commercial corridor of this community is South 6th Street/Hwy 39, which traverses the neighborhood from roughly east to west, and extends into Klamath Falls to the northwest. According to the Klamath County Land Development Code, S. 6th Street is considered an "Arterial Street" with a total right-of-way of 88'. It is a five-lane, two-way street. Most of the cross streets along the 6th Street corridor are considered "local streets," two-lane, two-way streets typically with a total dedicated right of

way of 60'. All properties that have access from S. 6th Street are in possession of deeded access reservations that grant the right of access from S. 6th at specific points along the property's frontage. Typically these reservations are 35' in width The commercial uses along South 6th Street are predominantly single-story free standing commercial buildings housing a mix of uses including restaurants, general retail, auto related uses, and offices. As the street extends further east from the main retail core, the land parcels and building formats become larger. The average age of the commercial building stock appears to be about 30 to 50 years old. Aside from typical fast-food restaurants, there are few national chains located in this area; the bulk of businesses appear to be locally owned. There has been very little new construction in the 6th Street corridor. Lastly, there are a few areas within this corridor that are controlled by the US Bureau of Reclamation and local irrigation districts that require significant coordination to acquire permanent right of way.

Bridges

There are 4 structures located with the project limits (Hwy 20 from MP 2.5-5.5)

- BR01491A – HWY 20 at MP 3.25
    - Bridge BR01491a (Altamont) carries Hwy 20 over the USRS irrigation canal.
    - Structure is located just west of the intersection of Hwy 20 and Hwy 50.
    - Originally built in 1930, then widened in 1945 and 1963.
    - Bridge consists of 3 spans of Reinforced Concrete Deck Girders, for a total bridge length of 90ft. Bridge width is 88'. Roadway is 76' wide and carries 6 lanes of traffic with shoulders. 5' sidewalks are present on both sides of bridge.
    - Bridge railing is the Standard Two Pipe Parapet Rail (1963 DWG19478). Rail height is 3'-4.5" and consists of reinforced concrete and 2-tube aluminum railing. Railing is substandard.
    - Due to the presence of 2-tube aluminum railing, this bridge rail is a priority for rail retrofit per BDM 1.13.6.2.
    - 4" of ACP covers the bridge deck. As of 1/25, ACP is showing signs of deterioration with potholing, rutting and cracking.
    - Settlement of the sidewalk and travel lanes at the SE corner of the bridge have been noted in past inspections. No approach panels present.

Figure 4: Bridge Structure BR01491A

    - The bridge is not posted for load, but is near the limit for posting, with a substandard rating for EV3 vehicles.

- There is a risk that the structure does not have excess capacity for adding additional weight.

- BR23742 – HWY 20 at MP 3.29
  - Existing sign structure is located on the NE corner of the intersection of Hwy 20 and Hwy 50.
  - No data on existing sign cantilever. Sign structure is most likely 30+ years old.
  - There are signs of impact damage to the sign cantilever support from an over height vehicle.
  - Being an older style sign structure, there is a risk that the foundation does not meet modern design standards.
  - There is a risk that the sign structure foundation will encroach on proposed sidewalk enhancements.

Figure 5: Bridge Structure BR23742

- BR13579 – HWY 20 at MP 5.13
  - Structure is located just west of the intersection of Hwy 20 and Hwy 50.
  - The culvert carries a frontage road over the Enterprise Irrigation Canal.
  - The culvert was built in 1972.
  - This is culvert is a cast in place reinforced concrete box culvert, that consists of two- 8’ spans that are 4’ tall and an estimated 40’ in length.
  - The road going over the canal appears to lead to a private property.
  - There are no observed issues with the culvert.

Figure 6: Bridge Structure BR 13579

- BR13587 – HWY 20 at MP 5.19
    - Structure is located just west of the intersection of Hwy 20 and Hwy 50.
    - The culvert carries Hwy 20 over the Enterprise Irrigation Canal.
    - The culvert was built in 1972.
    - This is culvert is a cast in place reinforced concrete box culvert, that consists of two-8' spans that are 4' tall and an estimated 140' in length.
    - There are no observed issues with the culvert.

Figure 7: Bridge Structure BR13587

Accesses

The Oregon Department of Transportation (ODOT) has the responsibility of providing the traveling public with a safe and efficient transportation facility, and therefore is expected to manage highways in the best interest of the public for the protection of the highway or road and the traveling public. Access management is balancing access to developed land while ensuring movement of traffic in a safe and efficient manner.

ODOT refers to a permitted private driveway or public road connection to a state highway as a "highway approach." Access management spacing standards for highway approaches are based on the classification of the highway defined in the Oregon Highway Plan and the type of area (urban or rural), the posted speed and the average daily traffic (ADT). The spacing standards for OR 39 within the study area are set forth in Oregon Administrative Rule (OAR) 734-051-4020 and are shown in Table 1 below. The ODOT Region Access Management Engineer (RAME) may approve or deny requests for deviations from the spacing standards.

Based on the highway's classification as a Regional Highway in an urban area, posted speed of 35 mph between Mile Point 2.50 and Mile Point 4.58, and 45 mph between Mile Point 4.58 and Mile Point 5.50, and ADT of approximately 10,000 to 20,000 vehicles per day (vpd), the access management spacing standard is 350 feet in the 35 mph segment, and 500 feet in the 45 mph segment, as shown in Table 1 below. Ideally, in this three-mile segment, there should be no more than 31 approaches on the north side of the highway and no more than 31 approaches on the south side of the highway, for a total of 62 approaches in the 35 mph segment between Mile Point 2.50 and Mile Point 4.58, and no more than 10 approaches on the north side of the highway and no more than 10 approaches on the south side of the highway, for a total of 20 approaches in the 45 mph segment between Mile Point 4.58 and Mile Point 5.50, for a grand total of 82 approaches in the three-mile study segment, based on the spacing standards. In actuality, there are approximately 240 existing approaches in the study segment, with

approximately 180 existing approaches within the 35 mph segment and approximately 60 approaches within the 45 mph segment. This total includes both public and private approaches.

Table 1: Access Spacing Standards

Access Management Spacing Standards for Regional Highways with Annual Average Daily Traffic > 5,000				
	Expressway	Expressway		
	Rural Areas	Urban Areas	Rural Areas	Urban Areas
Speed (mph)	Spacing (ft)			
55 or higher	5,280	2,640	990	990
50	5,280	2,640	830	830
40 & 45	5,280	2,640	750	500
30 & 35	-	-	600	350
25 & lower	-	-	450	250

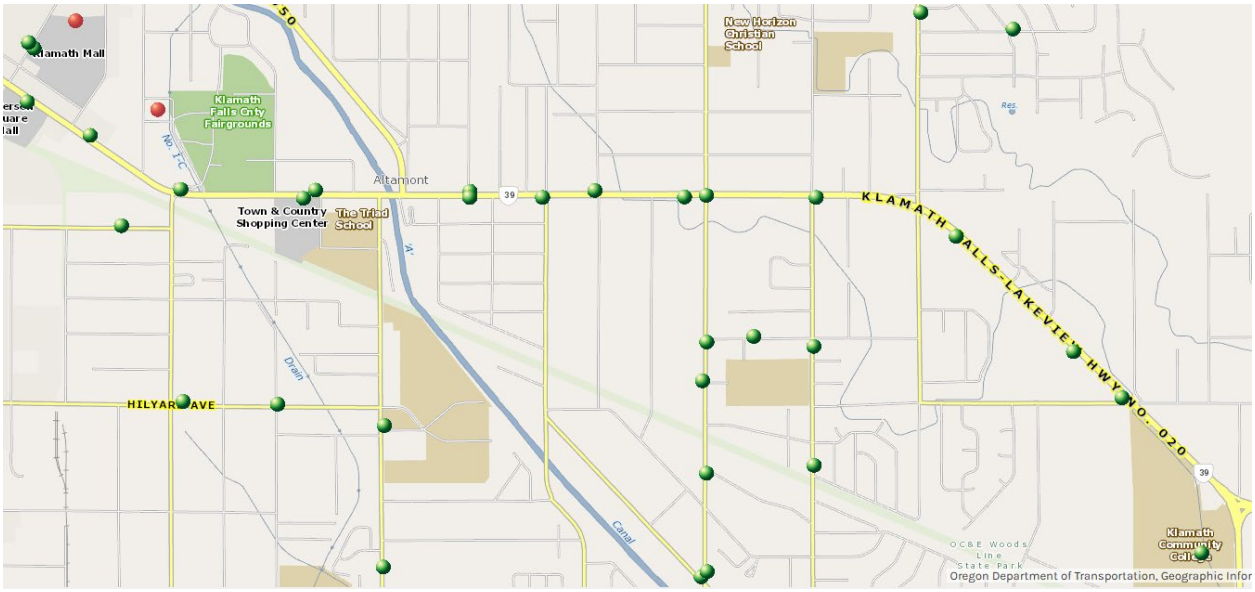
Public and Active Transportation

Public Transportation

The project area has several fixed transit routes passing through with service provided by the Modoc County Sage Stage, Klamath Tribes Quail Trail Bus service, and regular service by Basin Transit Service. The Sage Stage Klamath Falls – Alturas bus service operates one deviated fixed-route service in each direction once-a-week on Thursdays, with no fixed stops along the project corridor (but pickups/drop-offs within one mile of the route are allowed if scheduled in advance). The Klamath Tribes Quail Trail Bus service also operates along ODOT's OR39/S Sixth St corridor as a fixed-route service. There are no Quail Trail stops directly on the corridor but there are stops at the Klamath Falls Senior Center ~850' from OR39/S Sixth St north on Arthur St (at the west end of the segment) and Sherm's Thunderbird Market, a quarter mile west of the project segment. Figure 8 shows all transit stops in and near the OR 39 corridor.

Basin Transit Service is the local Transportation District that provides fixed route service to the Klamath Falls area, with Route 1 and Route 2 running along the project corridor and fixed paired stops spaced roughly 2,000' apart along both sides of the highway. Basin Transit has a large stop at the Fairground Transit Center/Altamont station near the Altamont Dr intersection and, similar to the Quail Trail service, Basin Transit also has a fixed stop at the Klamath Falls Senior Center ~850' north of the project.

Figure 8: Transit Stop Locations on OR 39



Pedestrian and Bicycle Facilities

Travel by people walking, biking, and rolling is frequent, with many bicycle of pedestrian involved fatal and serious crashes as described in the Safety Analysis. The following section provides an overview of current bicycle and pedestrian facilities along the US97 study corridor.

Pedestrian Facilities

OR39/S Sixth Street is classified as an Urban Minor Arterial west and Urban Principal Arterial east of the Crater Lake Parkway intersection with a variety of pedestrian facilities ranging from sidewalk gaps, 5' curb-tight sidewalks, to 8' buffered sidewalks.

Most of the pedestrian facilities to the west of Crater Lake Parkway are present and meet ODOT Standards, with some small gaps near Summers Lane. The central section between Crater Lake Parkway and Patterson Street is largely classified as a gap, with most sidewalks either missing or being having patchwork substandard 5' curb-tight sidewalks with many obstructions in the limited pedestrian space. The eastern project segment east of Patterson Street is largely present but substandard as 5' or 6' curb-tight sidewalks, mostly in failing condition. Utility poles are frequently inside of the sidewalk and pose barriers to people utilizing the sidewalk.

Bicycle Facilities

The bicycle facilities are classified as substandard in the ATNI, with 4'/5' bicycle lanes/shoulders along most of the project corridor. A few segments on west end (near MP 3.02 and 3.15) have wider bicycle lanes with a buffer that meet ODOT standards.

Regional and Local Trails

The A Canal Trail runs north/south along Crater Lake Parkway and crossings OR39/S Sixth St at a signalized crossing at Summers Lane, where it connects to the Oregon State Parks OC&E Trail roughly 1200' ft south of the intersection.

The OC&E Trail runs east-west diagonally roughly parallel to but varying in distance from OR39/S

Sixth St by ~150' at Altamont Drive, ~4,000' at Patterson Street, and 2,000' at OR140.

Figure 9: OC&E Trail

ODOT Active Transportation Needs Inventory Data

The entire project is one of ODOT's Statewide Bike/Ped Priority Corridors, which are prioritized for funding and used for the measurement of the ODOT Key Performance Measure of *percent of miles of ODOT priority pedestrian and bicycle corridors in fair or better condition and percent of ODOT priority pedestrian and bicycle corridors that meet target crossing spacing*.

Bicycle Prioritization Results

The entire project corridor scores in the top 70% for the ATNI Bicycle Prioritization scores, with the central segment between Crater Lake Parkway and Homedale Road scoring in the top 99th percentile. The Bike Crash Risk Factor screening shows almost all of it scoring in the top 20% quintile Bike Crash Risk, with a few small segments scoring in the top 40%.

Pedestrian Prioritization Results

The segment from MP 3.00 to 4.50 scores as a Top Region 4 Urban Corridor in ATNI Pedestrian Prioritization scoring, with segment from MP 3.2 to 3.3 as a Top Scoring Segment in the State of Oregon. The Pedestrian Crash Risk Factor screening shows the entire corridor scoring in the top 20% quintile.

Freight

ODOT is committed to keeping freight moving safely and efficiently throughout Oregon in support of the State's economy. OR39 is an important business, commuting, and agricultural route between Klamath Falls and California for the supply of goods and services. This section of OR39 is classified as a Regional Highway and is part of the National Highway System (NHS). Within the project limits, freight traffic accounts for

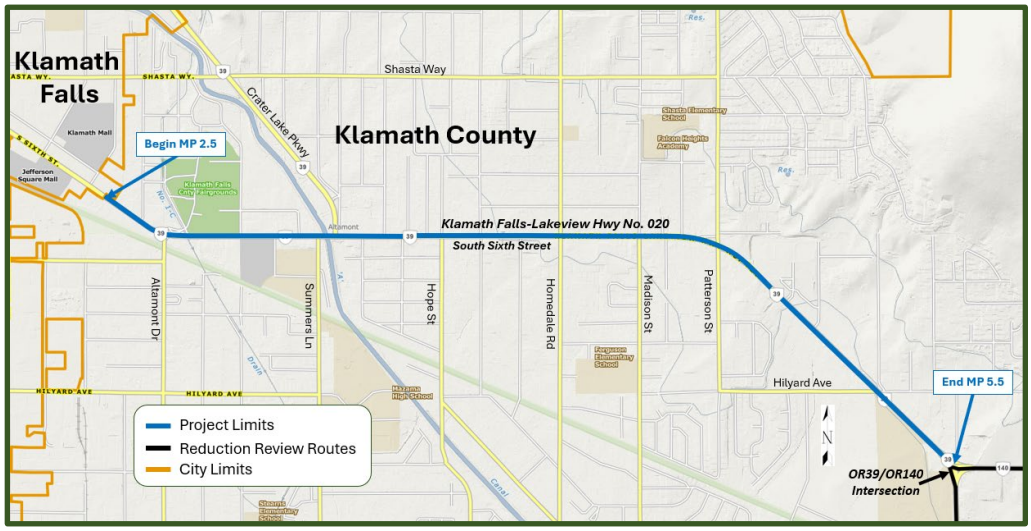
approximately 13.8% of the average annual daily traffic (AADT) according to the *2023 State Highway Inventory Reports Traffic Volumes and Vehicle Classification*.

OR39 from Klamath Falls city limits (MP 2.5) east to OR140/OR39 intersection (MP 5.5) is not classified as a federally designated truck route, Oregon freight route, nor a reduction review route (RRR). At the OR39/OR140 intersection, OR39 south and OR140 are classified as Statewide Highways, Oregon freight routes and reduction review routes on the NHS. Figure 10 shows the project limits on OR39 and where the highways become RRRs.

Although the project section of OR39 is a NON – Reduction Review Route (NON - ORS366.215), if permanent features, such as raised medians/barriers/curbs or structures over the highway are proposed as new or modify existing features that reduce the width or height across/over the highway, ODOT policy is to share the proposed design impacts with the Mobility Advisory Committee (MAC) for feedback. Depending on level of impact in reducing vehicle carrying capacity or 'hole in the air,' the action may be shared and documented via email (low/moderate) or presented and shared at a MAC meeting (high). The *Mobility Advisory Committee Charter Appendix C* provides criteria in determining level of impact.

The intersection of OR39/OR140 (eastern project limit) is subject to ORS366.215 – Reduction of Vehicle Carrying Capacity as an identified reduction review route. If permanent features, such as raised medians/barriers/curbs or structures over the highway are proposed as new or modify existing features that reduce the width or height across/over the highway, will require presenting proposed design to the MAC Stakeholder Forum for record of support to ensure compliance with the ORS366.215 statute.

Figure 10: OR 39 Project Limits and Location of Reduction Review Routes



Even though the project section of OR39 is not classified as a freight route, OR39 is identified as an "Orange Route" on the *ODOT Freight Mobility Map*, indicating that the route is generally unrestricted for oversized/overweight freight and is one of the most heavily used truck routes in the state.

There are two types of freight permits issued by ODOT's Commerce and Compliance Division (CCD) for loads over legal size (8.5ft wide, up to 14ft high and up to lengths allowed on Group Map 1) before movement in Oregon. The first type are Annual Trip Permits, which are valid for one year and authorize unlimited trips. Below are the dimensions allowed along this section of OR39 for an Annual Permit.

- 14' wide daytime/10' wide nighttime
- Up to 14'-6" in height
- Overall length allowed on the following
  - Long logs/poles/piling permit, without steerable axles up to 75'
  - Mobile/modular unit permit up to 95'
  - Unladen heavy haul combination permit up to 105'
  - ½ wheelbase rear overhang permit for truck tractor and semitrailer combinations up to 80'

The other type is for Single Trip Permits (STPs) that are issued for loads typically much greater in size than what is authorized on an Annual Trip Permit. Mobility Services Team provided 5-year Single Trip Permit summary from 2020 - 2024 for loads over 12' wide to get a sense of design and accommodation vehicles along this section of OR39. Table 2 provides a summary of this data.

Table 2: OR39 – 5year Single Trip Permit Summary (2020 – 2024)

Permits	Southbound Ramps
# Issued	**347** (including trips) • 124 Truck-Tractor + Semitrailer/Tow-Away Unit • 74 Heavy Haul Combination (Truck-Tractor/Booster) • 137 Toter + Mobile Home • 12 Pickup Truck + Trailer
Widest Load	Majority 12' to 14' wide with 31 loads over 14' wide Potato Harvester at 15'11" wide, 14'6" tall and 75' overall length
Highest Load	All under 17' tall with 3 tallest loads at 16'4" tall Mobile Unit 14' wide/98'long; 2 Rock Drills at 13'6" wide and 105' long
Longest Load	Majority under 120' overall length with 4 loads over 120' overall length Unladen Heavy Haul Combination at 14'6" wide, 14' tall and 140' long
Heaviest Load	151 over legal weight (80,000 lbs); 5 heaviest permits at 243,000 lbs 3 Loaders 13' wide, 15'6" tall, 116' long 2 Excavators 12'6" wide, 14'6" tall and 116' long

In addition, the Southbound Bridge structure #08343 at MP 272.8 (Hwy 50 SB over Hwy 4 NB – aka Shilo Bridge) on the north end of Klamath Falls has a height restriction for loads over 15'9" travelling Northbound on US97. CCD policy is to re-route over-dimension loads by keeping on State highways as much as possible. Therefore NB US97 loads over 15'9" re-route to OR140 Southside Bypass/OR39/Crater Lake Pkwy and back to US97 Northbound. Figure 11 shows the location of the bridge and the northbound re-route. Mobility Services Team provided a 5-year permit summary from 2020 – 2024 which found a total of 3 permits (modular unit, rock drill and loader) that used this OR140/OR39 re-route due to the height restriction.

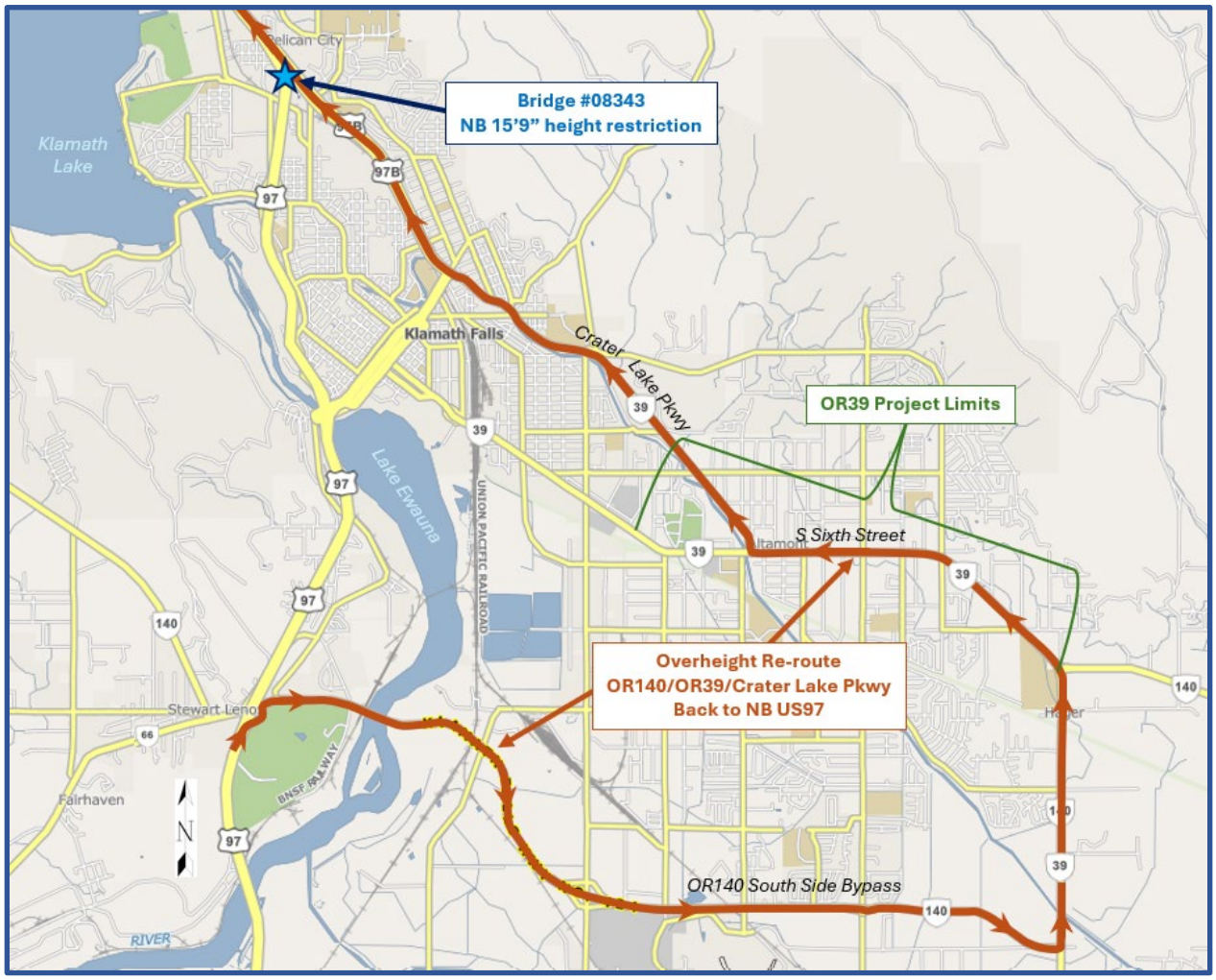


***Figure 11**. Location of Bridge Height Restriction and NB Overheight Re-Route*

Rail and Air

Rail and air services are a critical element of the transportation system in Klamath Falls and Klamath County. Rail passenger and freight services exist and air freight exists as well. As a regional highway, OR 39 South Sixth street provides access to these services but is not designated as an intermodal connector within the 1999 OHP. Below is a discussion of relevant rail and air services near the Facility Plan project limits, figure 12 shows the regional rail and air transportation services near the project limits.

Central Oregon Trunkline

The Central Oregon Trunkline provides intra- and inter-state freight movement within and through Oregon from Washington to California. The trunkline is to the west of the OR 39 S. Sixth Street corridor. The trunkline is a Class 1 Railroad corridor and connects to the national rail network. No rail crossings exist on OR 39 within the project limits. The trunkline is operated by BNSF and Union Pacific Railroad.

Two track transitions from the main trunkline connect to rail yards owned by BNSF (to the southeast) and Union Pacific Railroad (to the west). Amtrak also operates on the Central Oregon Trunkline.

The north-south trunkline is part of the Strategic Rail Corridor Network (STRACNET), which provides rail access to military operations and installations across Oregon. It is also identified in the Oregon Resilience Plan as critical infrastructure for the movement of goods and people in support of emergency and recovery activities in the aftermath of a major seismic event.

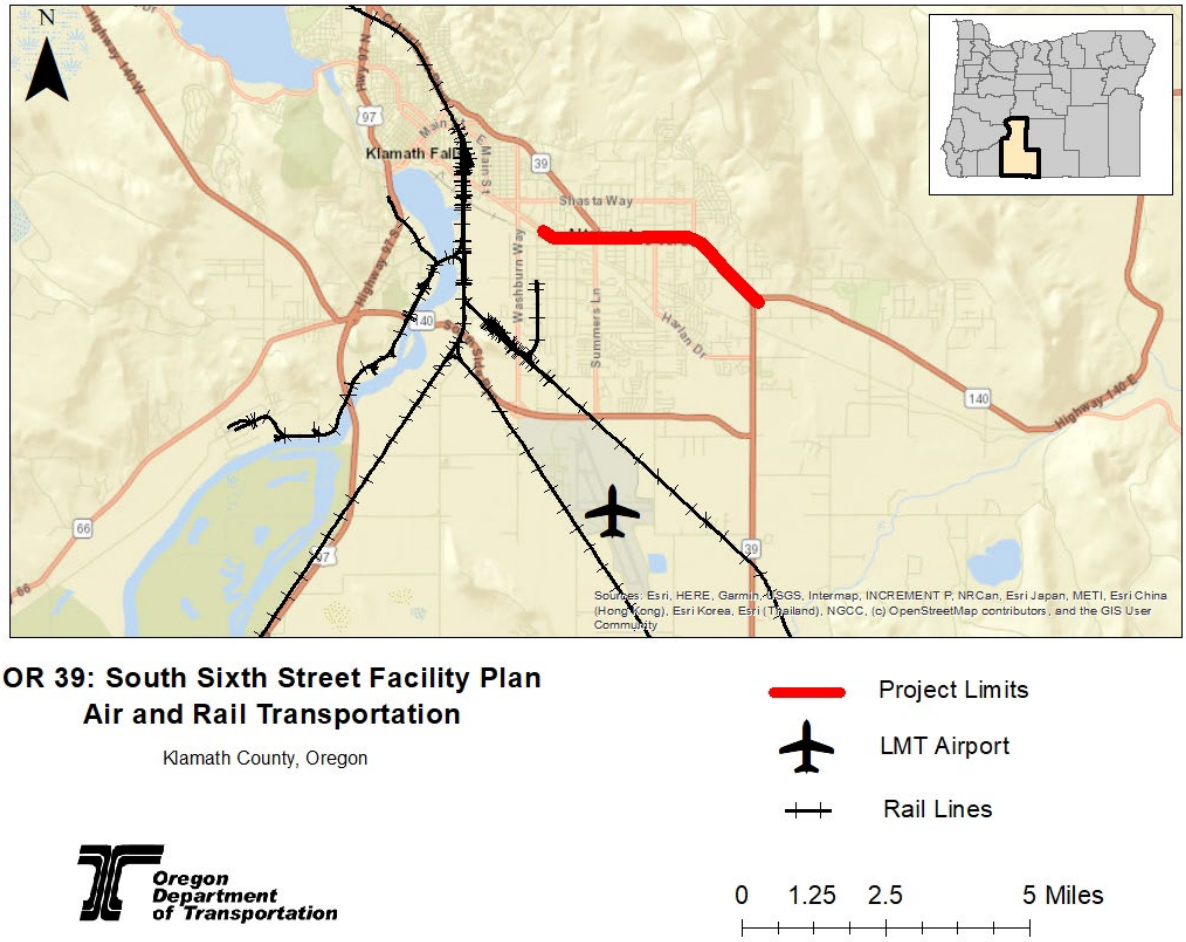
Amtrak

Amtrak's Coast Starlight Train is a long-distance passenger train with daily service between Los Angeles and Seattle, passing through several major cities between southern California and its northern terminus with a stop in Klamath Falls. Amtrak operates on the Central Oregon Trunkline, which is operated by BNSF and Union Pacific Railroad. The Klamath Falls Amtrak station is located on the east side of Downtown Klamath Falls on Oak Avenue near S Spring Street, which is to the west of the OR 39 S. Sixth Street corridor. While the Amtrak line is not within the project limits of the Facility Plan, OR 39 does provide access for motorists, bicyclists, pedestrians, and transit users that would utilize Amtrak services.

Crater Lake – Klamath Regional Airport (LMT)

The Crater Lake-Klamath Regional Airport is located at the southern end of the Klamath Falls UGB and is south of the OR 39 S. Sixth Street corridor. The airport is classified as a Category 1 Commercial Service Airport by the Oregon Aviation Plan, which means that LMT can support commercial airline service as well as general aviation aircraft activities. While commercial airline service does not currently exist, LMT provides air freight services to both FedEx and UPS. The US Forest Service also operates aerial firefighting support at LMT. Local freight from the LMT airport travels OR 39 S. Sixth St. to both regional and local destinations along the corridor.

Figure 12 Air and Rail Transportation



Utilities

The following utility companies are expected to operate facilities in the footprint of this project:

Figure 13 Utility Providers in OR 39 Project Limits

OR39: South 6th Street Facility Plan

Utility Providers in Corridor

High Importance*	Utility Company
	Charter Communications
Yes	**City of Klamath Falls**
	Hunter Communications
Yes	**Klamath County PWD**

Yes	**Pacific Power**
	Lumen Technologies
Yes	**South Suburban Sanitary District**
	Avista Utilities
	Cal-Ore Telephone Company
Yes	**Enterprise Irrigation District**
	Klamath County School District
	Zayo Networks
	LS Networks
Yes	**Klamath Irrigation District**

* High Importance signifies that there is a high possibility of significant facilities, long lead time materials or reimbursable status that could present a risk to project scope, schedule and budget.

Pacific Power operates a significant aerial network in this corridor, including both distribution and transmission level conductors. Local officials and ODOT have both expressed interest in converting this aerial network to underground in order to increase driver safety, pedestrian compatibility, and power system resiliency. The effort to convert the aerial system to underground is proposed to take part in conjunction with this ODOT project, and it will represent a significant cost and impact to both ODOT and Pacific Power, as well as the multiple communications providers currently installed as joint users on the Pacific Power infrastructure and the customers who will need to hire an electrician to connect between the new underground service meter and their home or business. There are currently 78 customers in this corridor and 50 existing aerial services, all of which would require new underground services. Pacific Power has indicated that they have a reimbursable right for their aerial facilities between Hope Street and Kane Street and therefore ODOT will be responsible to reimburse Pacific Power for their entire cost of relocation in that corridor. Pacific Power will be responsible for the cost in all other areas. Additionally, underground electrical equipment (vaults, transformers, etc.) are currently experiencing very long material lead times, up to and sometimes exceeding 18 months. This corridor is in an urban, mixed-use environment and is already incredibly crowded, and therefore special consideration should be given to allowing Pacific Power to relocate underground in areas that may not otherwise be preferred. The District 11 office in Klamath Falls has expressed tentative support for allowing Pacific Power to relocate their facilities underground beneath a proposed center median.

There are several municipal utilities that operate facilities in this corridor. In accordance with ORS 366.321, the City of Klamath Falls, Klamath County PWD and South Suburban Sanitary District will all qualify for reimbursement if relocations of their facilities are required outside of the State ROW.

Klamath Irrigation District and Enterprise Irrigation District are both operators of facilities that are still owned by the US Bureau of Reclamation. Any impacts to these facilities will require coordination with both the irrigation districts and BOR, and are expected to be reimbursable.

Equity

The ODOT Social Equity Index is a data tool created by the Oregon Department of Transportation (ODOT) to identify areas within the state where communities are disproportionately affected by transportation disparities, allowing them to target resources and projects towards those communities with higher social vulnerability factors, like low income and minority populations, based on census data at the block group level; essentially acting as a map to highlight areas where equity considerations are most needed in transportation planning and project development. Figure 14 shows census block groups within the project area vicinity that are consider high, medium-high, low-medium, and low disparity. Notably, several areas within the project limits are consider areas of high disparity.

Figure 14: Social Equity Index

Demographic Report

Data from the 2022 American Community Survey (ACS 5 year estimates demographic, ACS 1 year estimates income) was analyzed for both Klamath County and the State of Oregon (DP05 data). These five-year estimates provide an overview of demographic information to information the PIP of targeted

needs for public outreach. Data is provided in the table below and summarized in comparison between Klamath County and the State of Oregon. Notable trends include:

- Klamath County has a higher population over 65 and under 18. Special consideration should be given to engage the elderly population and youth which are defined as vulnerable road user groups by FHWA.
- Klamath County has a higher percent of tribal members than the state of Oregon. Involvement with the Klamath Tribes should occur at the Participant Advisory Committee level and advertisements to the tribe for community outreach milestones.
- Klamath County has a notable Hispanic population. Outreach materials should be translated into Spanish when possible.
- Klamath county has a considerably lower mean and median household income than the state of Oregon, including higher percentages of households that make below the poverty level ($27,000). Engagement should target low-income populations.
- Unhoused populations are not estimated in the ACS data. This area has had persons living unhoused and feedback from those populations, either by direct communication or PAC representatives, should be considered.

Figure 15 American Community Survey Data

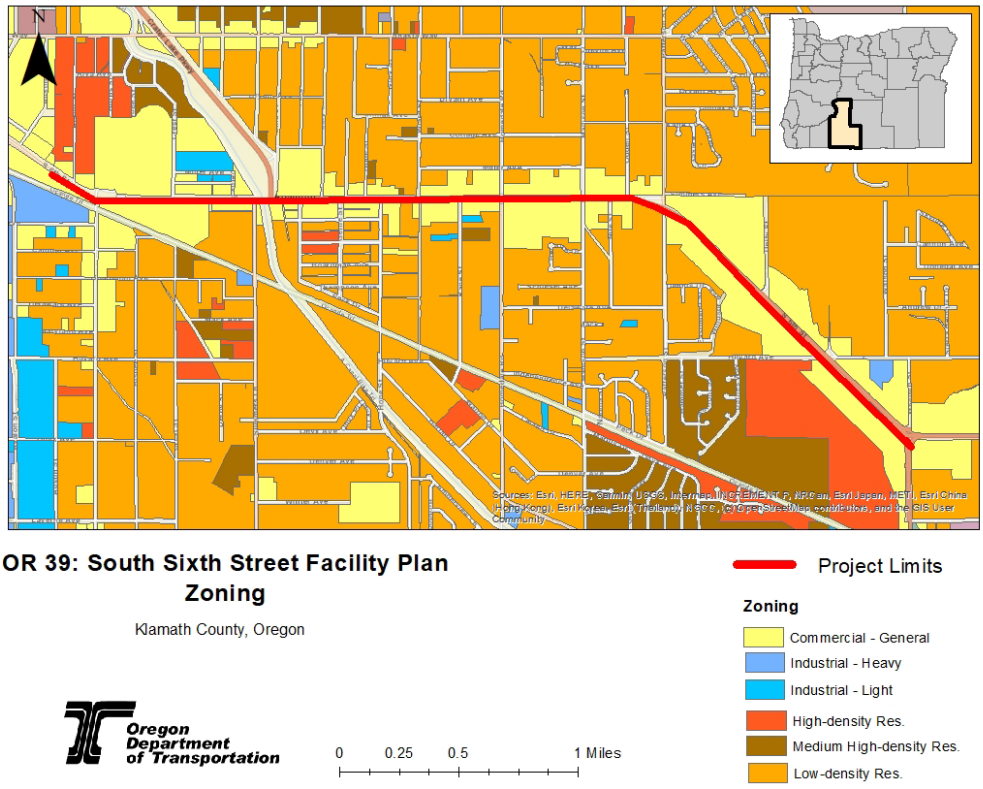
ACS 5 Year - 2022 Data - DP05	**Klamath County, Oregon**		**Oregon**	
Label	**Estimate**	**Percent**	**Estimate**	**Percent**
Total population	69,506	(X)	4,229,374	(X)
Median age (years)	41.1	(X)	39.9	(X)
Under 18 years	15,116	21.7%	855,978	20.20%
65 years and over	14,909	21.4%	773,258	18.30%
RACE				
One race	62,799	90.4%	3,840,093	90.80%
Two or More Races	6,707	9.6%	389,281	9.20%
White	56,303	81.0%	3,328,095	78.70%
Black or African American	447	0.6%	79,593	1.90%
American Indian and Alaska Native	2,451	3.5%	46,880	1.10%
Asian	611	0.9%	187,852	4.40%
Native Hawaiian and Other Pacific Islander	201	0.3%	17,139	0.40%

Some Other Race	2,786	4.0%	180,534	4.30%
Two or More Races	6,707	9.6%	389,281	9.20%
Hispanic or Latino (of any race)	9,900	14.2%	583,066	13.80%
Total housing units	32,864	(X)	1,818,599	(X)

Zoning

The map below depicts the zoning from Klamath County and the City of Klamath Falls. Parcels adjacent to the corridor are primarily zoned Commercial, although two low-density residential properties do abut the highway. The general area to the north and south of the project limits is primarily zoned low-density residential. Denser housing zoning and development exists to the east of the corridor project limits between Washburn Way and the OR 39/OR 140 intersection.

Figure 16 Zoning



Statewide Transportation Improvement Program (STIP):

The Statewide Transportation Improvement Program, also known as the STIP, is the Oregon Department of Transportation's capital improvement plan for state and federally-funded projects. The Oregon Transportation Commission and ODOT develop the STIP in coordination with a wide range of people. Relevant TSP projects are included in TM#3.1 for reference purposes.

The following projects are currently funded in the 2024-2027 STIP:

- K22852 OR 39 at Gettle: Fire signal rebuild, design only funding
- K22922 OR 39 at Homedale: Signal Replacement

In December of 2024, ODOT scoped two potential projects that may be considered for inclusion in the 2027-2030 STIP:

- OR 39: Klamath Great Streets: Urban upgrades including paving, sidewalk infill, bicycle lanes, pedestrian crossings, transit improvements, and a signal rebuild at OR 39/Hope St. Project limits are between Hope and Patterson on OR 39.
- OR 39 Illumination: illumination at 10 intersections from Homedale to Depot St. MP 2.72 to 4.79

Environmental Summary

Air Quality

Klamath Falls is in a DEQ nonattainment area of the state for air quality, specifically PM 2.5, aka fine particulate matter. Therefore, should be coordinated with an ODOT Air Quality Specialist to make sure the project conforms with the Air Quality State Implementation Plan.

Archaeology

This facility plan is not considered to be in a high probability area for archaeological resources. However, the project will need to have archaeological review to determine what level of effort is needed and if field surveys are needed. Specifically in the areas where we propose construction of new turning lanes, if there are previously undisturbed grounds.

If field or pedestrian surveys are determined to be required resources will be documented in a Phase 1 archaeology report and sent to the State Historic Preservation Office (SHPO). If no resources are found the project is cleared for archaeology and SHPO issues a letter of concurrence. If resources are found, a phase 2 survey is scheduled, which included sub surface investigations. Once again is no resources are found the project can move forward. If resources are found a site boundary is determined and a determination of eligibility is prepared. Options for avoiding impacts to resources include realignment of the project area, reducing footprint and if those aren't possible then a data recovery plan and budget for Phase 3 is prepared.

Historic

In checking the Oregon State Historic Preservation Office Historic Sites Database, there appears to be one site listed as eligible within the project limits, there was no data available for this site.

The historian will identify the resource and prepare a Determination Of Eligibility for the National Register Of Historic Places which SHPO must approve. If impacts are unavoidable to the resource the historian will prepare a Finding OF Effect to document impacts and if there will be an adverse effect on the resource.

Biology

The project has the potential to impact endangered species from stormwater runoff, if the project changes drainage patterns or discharges stormwater into nearby water bodies a FAHP will be required to address Section 7 of the Endangered Species Act.

Plant surveys will also be conducted to make sure there are no listed plants impacted by the construction of the project and to document and noxious weeds present.

Energy

Energy will be used in the construction of the projects and for the operation of vehicles on a proposed project. For projects that significantly affect operational energy consumption, an energy analysis is required according to Oregon Transportation Planning Rule, National Environmental Protection Act (NEPA), and/or the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). However, impacts from projects that may develop from the safety study are not anticipated to be significant enough to warrant an energy analysis.

Hazardous Materials

The main hazardous materials concerns/ issues through the project area are contaminated roadside soils suspected to have high levels of lead. There are several former gas station areas within the project vicinity, but none are anticipated to be impacted by the construction of this project.

There are no known hazmat concerns above and beyond a level 1 hazmat corridor assessment that would be required.

Land Use/Planning

The project is consistent with City/County Comprehensive Plans and the Statewide Planning Goals. Goal compliance and consistency will be evaluated throughout project.

Noise

A noise study was not required as the project will not add or widen lanes, nor will there be a horizontal or vertical shift in alignment. No noise abatement measures beyond those included in the standard specifications will be required and no nighttime work is proposed.

Section 4(f)

If the historic resource within the API is eligible for listing on the national historic register and we have any impacts to the property, there could be a 4(f)-evaluation required. However, at the time of writing impacts are not anticipated to this property.

Therefore, there are no Section 4(f) publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private owned historical sites listed or eligible for listing on the National Register of Historic Places within the API. Therefore, the project would not create a Section 4 (f) use or temporary occupancy.

Socioeconomics/Environmental Justice

This safety improvement project will be a net benefit to socioeconomics, providing improved safety and connectivity in the local area. No minority or low-income populations have been identified that would

be adversely impacted by projects. Therefore, the determination is that projects identified in the safety study will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of E.O. 12898. No further EJ analysis is anticipated

Visual

These safety improvements will have minimal visual impacts and a visual impact assessment would not be required for this project as described at time of writing.

Waterways/Water Quality/Wetlands

There are no waterways or wetlands in this urban environment within the project footprint. There is the potential for roadway stormwater runoff which could require water quality mitigation depending on project final design. Adding new impervious surface can be a trigger for stormwater quality treatment and associate paperwork to address ESA and stormwater.

The contractor (as ODOT's agent) will be required to meet or exceed the Department of Environmental Quality (DEQ) requirements for the National Pollution Discharge Elimination System (NPDES) 1200-CA permit. No toxicants, including "green" (plastic) concrete will be allowed to enter any aquatic resource. In addition, dust control measures, such as watering, will be used as needed during construction.

An Erosion Control Plan (ECP) will be prepared and implemented during construction. If soil erosion and sediment resulting from construction activities is not effectively controlled, the amount of disturbed area will be limited to that which can be adequately controlled.

Permits/Clearances

There are several permits and/or clearances required from various agencies prior to construction of this safety project:

- Threatened and Endangered Species Clearance, No Effect document and FAHP
- Local Land Use Permits
- ODOT erosion Control Plan
- DEQ Hazmat Clearance
- Historic SHPO
- Archaeology SHPO
- If a material source is needed DOGAMI

Existing Systems Analysis

Traffic Data and Operational Analysis

The following presents traffic data and analysis for the project corridor, including traffic counts, volume adjustment factors, existing year intersection operation analysis, and speed and travel time data.

Traffic Volume Data

Traffic counts were collected in 2022 at the following locations on the following dates:

1. South 6th Street/Altamont Drive (October 19)
2. South 6th Street/Crest Street (May 17)
3. South 6th Street/Summers Lane (October 19)
4. South 6th Street/Crater Lake Parkway (October 19)
5. South 6th Street/Gettle Street West (May 4)
6. South 6th Street/Gettle Street East (May 4)
7. South 6th Street/Hope Street (June 22)
8. South 6th Street/Homedale Road (October 19)
9. South 6th Street/Madison Street (October 19)
10. South 6th Street/Patterson Street (October 19)
11. South 6th Street/Home Depot (May 25)
12. South 6th Street/Hillyard Avenue (October 26)
13. South 6th Street/OR 39/OR 140 (June 11)

Factors were developed to estimate average annual daily traffic (AADT) and peak hour 30th highest hour volumes (30HV), consistent with guidance in the ODOT Analysis Procedures Manual for developing existing year volumes. These factors were based on the characteristic method, which happened to be the nearby ATR on OR 39 Crater Lake Parkway south of Main Street (ATR 18-018). Based on the ATR data, October was the peak month. The following presents the resulting factors:

- May: 1.03 (30HV), 0.87 (AWD)
- June: 1.03 (30HV), 0.87 (AWD)
- October: 1.00 (30HV), 0.84 (AWD)

Figure 17 presents 2022 Average Daily Traffic for ATR 18-018. While the ATR is on Crater Lake Parkway, it is reasonable to assume that South 6th Street would have a similar volume profile due to similar roadway origin/destination travel patterns.

Figure 17 Average Daily Traffic in 2022

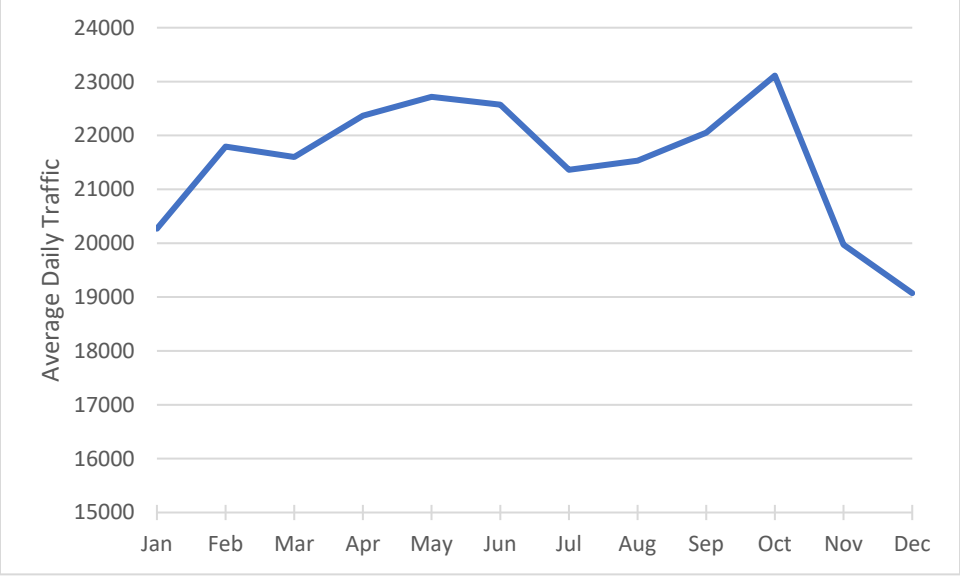
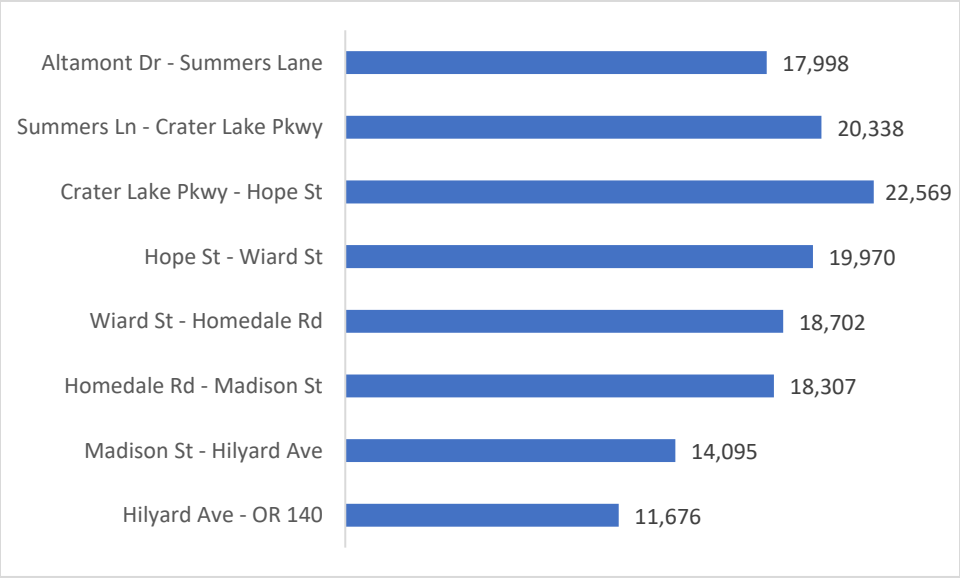


Figure 18 presents 2023 AADT along the corridor from the ODOT TransGIS database, which shows that the segment between Crater Lake Parkway and Hope is the busiest section of the facility with an AADT of 22,569.

Figure 18 South 6th Street AADT (2023)



Traffic counts were adjusted by the 30HV factors and balanced to generate design hour volumes for operational analysis. Table 2 presents AM peak hour turning movement counts (7:30 PM) and Table 3 presents PM peak hour turning movements counts (4:30 PM).

Table 2 South 6th Street 2022 AM Peak House Design Volumes (7:30AM)

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TEV
Altamont Dr	144	2	126	6	7	5	3	305	79	193	674	1	1545
Crest St	20	3	1	9	4	20	18	411	2	1	872	15	1376
Summers Ln	137	1	280		3			359	54	202	760	4	1800
Crater Lake Pkwy				195		151	192	447			815	364	2164
Gettle St (West)	22		4					537	16	14	1157		1750
Gettle St (East)				3		8	1	540			1163	11	1726
Hope St	123	3	23	1		2	4	501	38	25	1049	1	1770
Homedale Rd	249	143	67	56	129	58	37	401	87	70	768	40	2105
Madison St	131	39	19	38	19	91	58	363	44	16	640	53	1511
Patterson St	36	25	4	130	10	62	35	374	11	1	610	159	1457
Home Depot[1]				54		22	43	400	2	1	680	68	1270
Hillyard Ave[1]	3	1	38	22	3	80	20	368	1	19	587	7	1149
OR 140	327	0	50	0	0	0	0	132	274	102	341	0	1226

Notes:

1. All approaches along South 6th Street are considered Eastbound/Westbound approaches for consistency along the corridor.

Table 3 South 6th Street 2022 PM Peak Hour Design Volume (4:30PM)

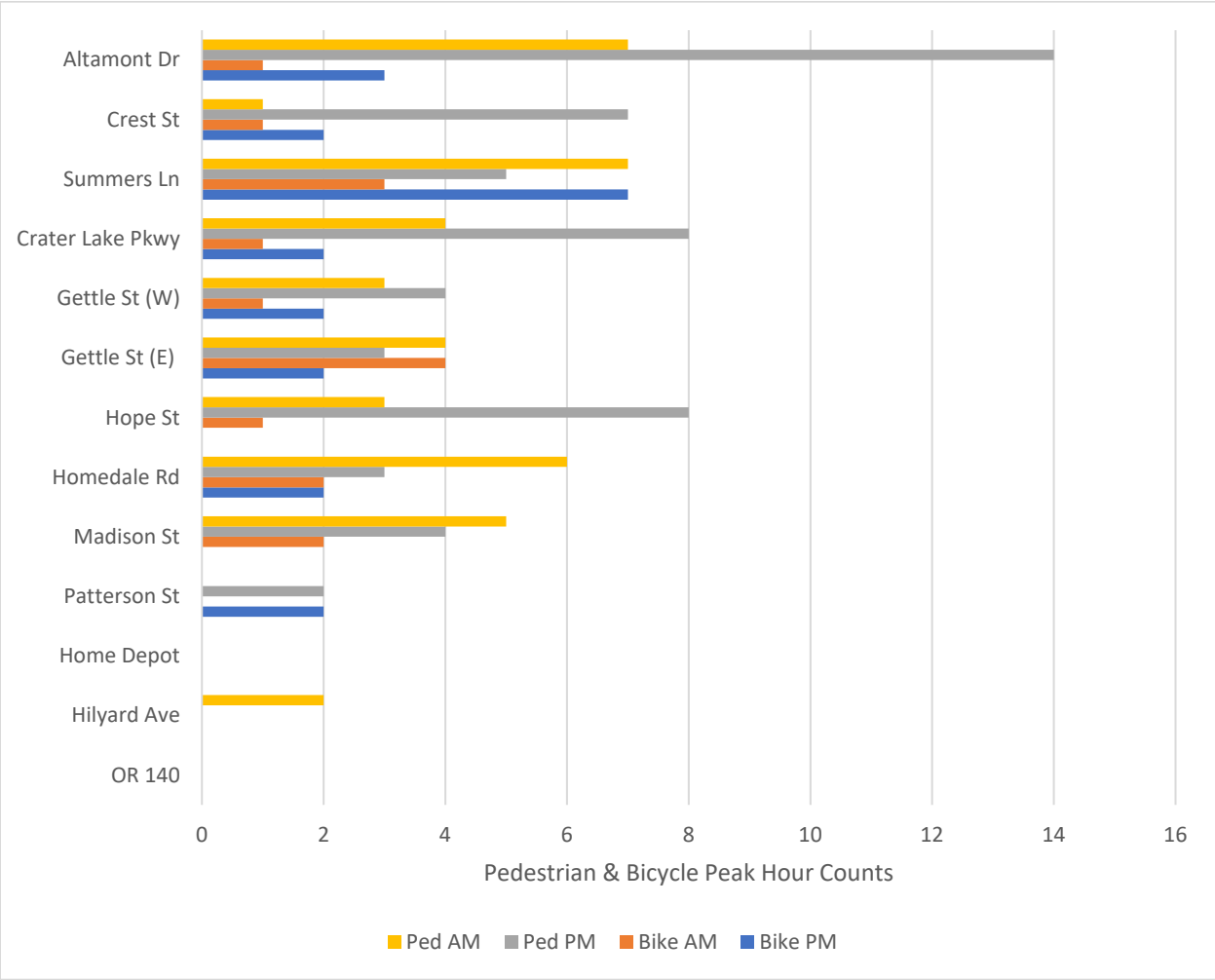
Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TEV
Altamont Dr	157	4	224	7	10	4	1	835	171	207	550		2170
Crest St	13	3	3	39	16	29	36	1024	6	2	735	20	1926
Summers Ln	121	1	225	17	5	1	1	901	136	251	635	2	2296
Crater Lake Pkwy	-	-	-	433	-	226	164	979	-	-	662	221	2685
Gettle St (West)	31	-	7	-	-	-	-	1256	62	21	851		2228
Gettle St (East)	-	-	-	12	-	27	8	1255	-	-	845	3	2150
Hope St	91	0	36	4	2	9	7	1148	93	22	748	2	2162
Homedale Rd	165	134	75	55	122	35	47	881	172	69	538	44	2337
Madison St	106	47	29	45	64	51	55	741	145	30	494	29	1836
Patterson St	27	29	9	191	44	53	110	626	42	7	425	167	1730
Home Depot[1]	0	0	1	141	0	48	43	690	1	1	463	141	1529
Hillyard Ave[1]	8	3	24	9	2	42	70	661	9	30	468	36	1362
OR 140	263	0	71	0	0	0	0	392	397	77	185	0	1385

Notes:

1. All approaches along South 6th Street are considered Eastbound/Westbound approaches for consistency along the corridor.

Figure 19 presents pedestrian and bicycle counts for the AM and PM peak hours, which demonstrates moderate pedestrian and bicycle activity along the corridor in both the AM and PM peak hours.

Figure 19 AM and PM Peak Hour Pedestrian and Bicycle Counts



Capacity Analysis

Table 4 presents existing year AM peak hour and Table 4 presents existing year PM peak hour intersection operations for study intersections along the corridor (see Appendix for detailed Synchro reports). Mobility targets, which were identified based on the Oregon Highway Plan, presented in the table reflect overall intersection v/c ratio targets for signals and worst movement v/c ratio targets for side-street stop-controlled intersections. As shown, all intersections operate well within their v/c mobility targets in both the AM and PM peak hours.

Table 4 South 6th Street 2022 Peak Hour Intersection Operations

Intersection	Intersection Control	Mobility Target	Peak Hour	V/C	Delay (s/veh)	LOS
Altamont Dr	Signal	0.90	AM PM	0.44 0.54	8.2 61.7	A E
Crest St	Signal	0.90	AM PM	0.43 0.44	1.8 2.3	A A
Summers Ln	Signal	0.90	AM PM	0.48 0.61	4.9 5.1	A A
Crater Lake Pkwy	Signal	0.90	AM PM	0.63 0.55	21.1 15.2	C B
Gettle St (West)[1]	Side-Street Stop-Control	0.95	AM PM	0.11 0.42	19.1 33.0	C D
Gettle St (East)[1]	Side-Street Stop-Control	0.95	AM PM	0.05 0.12	19.0 16.3	C C
Hope St	Signal	0.90	AM PM	0.59 0.55	3.9 3.2	A A
Homedale Rd	Signal	0.90	AM PM	0.79 0.76	42.8 63.7	D E
Madison St	Signal	0.90	AM PM	0.49 0.49	12.7 12.6	B B
Patterson St	Signal	0.90	AM PM	0.43 0.43	6.3 7.3	A A
Home Depot	Signal	0.85	AM PM	0.37 0.41	5.5 7.4	A A
Hillyard Ave[1]	Side-Street Stop-Control	0.90	AM PM	0.35 0.15	19.7 21.0	C C
OR 140	Signal	0.85	AM PM	0.55 0.68	8.4 8.4	A A

Notes:
1. Mobility targets and operations reported for the worst movement for side-street stop-controlled intersections.

Speed and Travel Time

South 6th Street has a posted speed of 35 mph from Altamont Drive to Patterson Street; the posted speed for Home Depot to OR 140 is 45 mph.

The following presents a summary of travel time and travel time reliability for varying segments of the study corridor across the most recent three years of data Three unique sections of S 6th Street were identified for travel time evaluation based on roadway characteristics of the sections and observed travel pattern and operational context. The three sections of South 6th Street are as follows:

- Austin Street to Crater Lake Parkway
- Crater Lake Parkway to Homedale Avenue
- Homedale Avenue to OR 140

Data was collected using the probe-based data aggregation tool Regional Integrated Transportation Information System or RITIS., RITIS aggregates vehicle probe data provided by the data collection company INRIX into an automated data sharing, dissemination, and archiving system that provides visual analytics and performance measurement of elements such as vehicle speed and travel time. ODOT has an agreement with the University of Maryland to access RITIS with access to archived data back to 2016. Further information of what data sources are ingested into the RITIS platform can be found here.

To align with the peak hour field data captured and traffic operations analysis periods, probe-data travel time was captured for the 2nd week in October, Tuesday through Thursday for the PM peak hour operations periods of 4 PM to 6 PM for three successive years: 2022, 2023, and 2024. This matches the identified highest peak in collected traffic volumes. Average travel time captured for each of the analyzed operation years is captured in Table 5 below. Note that the exact in proliferation of probe-data for all vehicles typically is around 10% or less, so this type of data is typical used to inform operations analysis. Use of the RITIS tool followed best practice guidelines in the ODOT RITIS Best Practices Handbook.

Table 5 RITIS Travel Time Summary

Year	Entire Corridor (3.21 mi)		Austin St to Crater Lake Pkwy (0.83 mi)		Crater Lake Pkwy to Homedale Rd (1.08 mi)		Homedale Rd to OR 140 (1.30 mi)	
	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
2022	6.71	6.82	2.12	1.83	2.35	2.69	2.24	2.30
2023	6.21	6.67	1.94	1.89	2.06	2.56	2.21	2.22
2024	6.77	7.03	2.14	1.97	2.34	2.72	2.29	2.33

The table demonstrates the signal delay (especially at Crater Lake Parkway and Homedale Road) is a significant factor in corridor travel time, which results in longer travel times with respect to corridor length for eastbound and westbound traffic between Austin Street and Crater Lake Parkway. The section of South 6th Street east of Homedale Road has a much faster travel time with respect to corridor length, which is a result of lower signal delays and a higher posted speed (the posted speed changes from 35 mph to 45 mph east of Patterson Street).

Safety Analysis

The following presents crash data and analysis for the project corridor, including identification of SPIS sites, a corridor summary of the crash data, critical crash rate analysis and review, review of vulnerable road user crashes, and review of fatal and severe injury crashes.

SPIS Sites

The ODOT Safety Priority Index System (SPIS) identifies top crash locations on the state highways system that are weighted by severity (i.e., these are generally locations with high concentrations of fatal and severe injury crashes). Each year, a SPIS report is generated based on the previous three years of available data. For example, the most recent 2022 SPIS report includes crash data for 2019 through 2021. SPIS sites are categorized by percentiles (a 95% site corresponds to a location that experienced more severe crashes than 95% of other state facilities). Region 4 Traffic conducts an annual review of 90% and 95% SPIS sites to identify crash trends and potential safety improvements, while 85% SPIS sites are considered for further review if the location is a repeat SPIS site, is adjacent to a 90% or 95% SPIS site, or if there are any concerns identified. The following is a list of sites identified in the most recent SPIS reports:

- 95th percentile for 2021-2022 from MP 3.13 to MP 3.45 (west of Derby St to east of Gary St)
- 90th percentile for 2021 from MP 3.46 to 3.53 (east of Gary St to east of Gettle St)
- 95th percentile for 2022 from MP 3.53 to 3.70 (east of Gettle St to west of Wiard St)
- 90th percentile for 2022 from MP 4.42 to 4.59 (east of Ogden St to east of Patterson St)

Figure 20: State Safety Priority Index Locations

OR 39: South Sixth Street Facility Plan
Safety Priority Index Locations

Oregon Department of Transportation

2022 SPIS Sites
90% - 94.99%
95% - 100%
Data: 2022 SPIS

0 0.35 0.7 1.4 Miles

Corridor Summary of Crash Data

Crash data was reviewed of OR 39 South 6th Street from mile point 2.5 (0.22 miles west of Altamont Drive) to mile point 5.55 (the intersection of OR 39 and OR 140) for the five-year period of 1/1/2018 – 12/31/2022. During this five-year period, there were 431 reported crashes along the corridor, including five fatal and twenty severe injury crashes. These 25 fatal and severe injury (FSI) crashes made up approximately 6% of all crashes. Statewide Crash Rate Tables are published that document FSI crash rates (fatal and severe injury crashes per 100 million vehicle miles travelled). Table 6 compares 2022 statewide FSI crash rates to the five-year average of the corridor. As shown, the FSI crash rates of the corridor greatly exceed the statewide averages.

Table 6 Fatal and Severe Injury crash Rates

Segment of South 6th Street	Classification	2022 Statewide Average	South 6th Street 5-year average	South 6th Street FSI Crashes
Altamont Dr to Crater Lake Pkwy (MP 2.50 to 3.27)	Urban Minor Arterial	11.09	23.49	6

Crater Lake Pkwy to OR 140 (MP 3.28 to 5.55)	Urban Other Principal Arterial	11.66	28.17	19

Figure 21 provides an overview of crashes by crash type for the corridor, comparing the distribution of crash type by all crashes and by FSI crashes. As shown, turning movement crashes were the most common crash type along the corridor for both all crashes (45%) and FSI crashes (52%). Rear-end crashes were the second most common crash type for all crashes (32%) but made up only 12% of FSI crashes. Pedestrian crashes were 2% of all crashes but were the second most common FSI crash type (20%). Angle, sideswipe-overtaking, and fixed object crashes were present along the corridor, but were significantly overshadowed by rear-end, turning, and pedestrian crashes. Head-on, sideswipe-meeting, non-collision, and other crashes were infrequent crash types.

Figure 21 Crashes by Crash Type

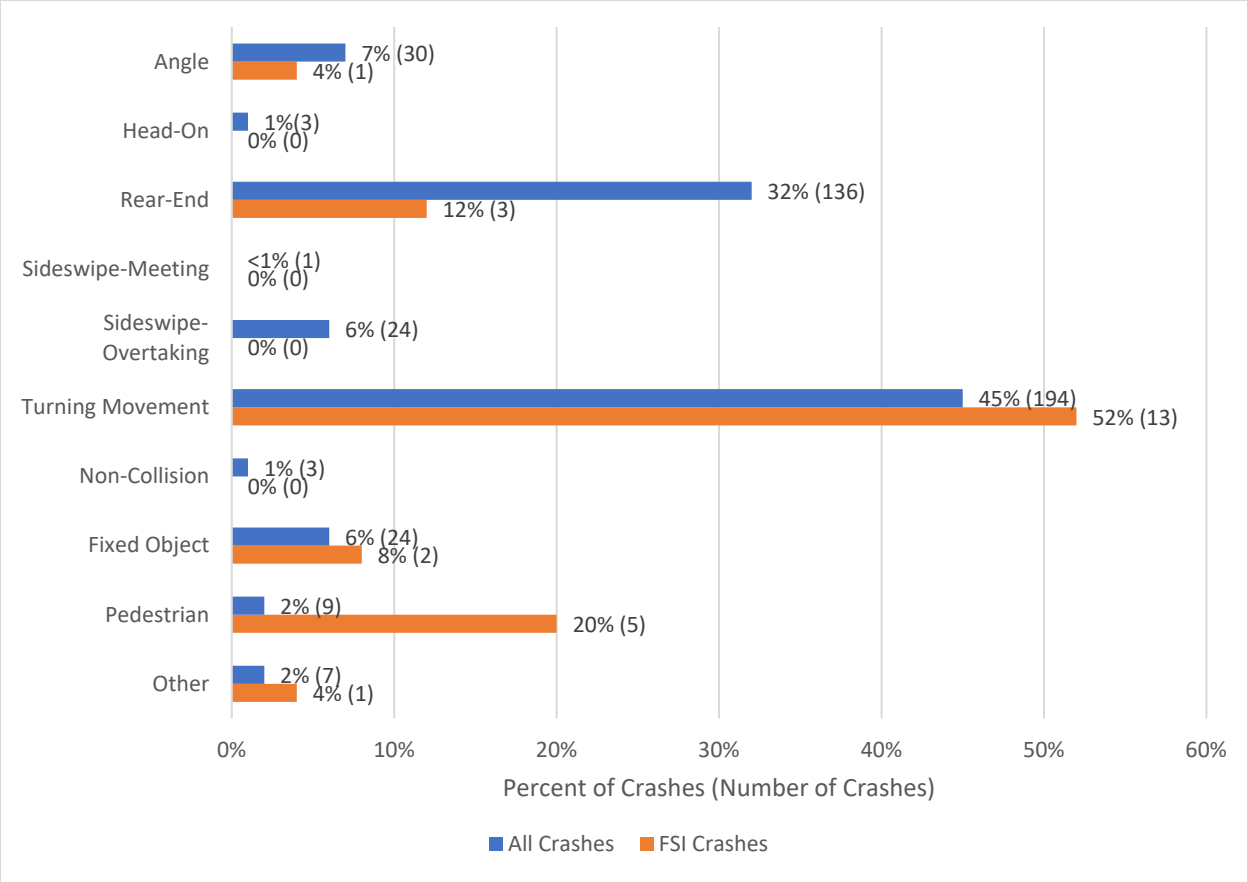


Table 7 presents crashes by severity and mode. As shown, there were nine pedestrian crashes, five of which were fatal crashes. These five fatal pedestrian crashes made up 100% of all fatal crashes on the corridor. There were four bicycle crashes and seven motorcycle crashes, which each included one severe injury crash. There were only five truck crashes, none of which included a fatality or severe injury. Eighteen of the twenty severe injury crashes were passenger vehicle crashes.

Table 7 Crashes by Severity and Mode

Mode	Fatal	Injury A	Injury B	Injury C	PDO	*Total*
Pedestrian	5	0	2	2	0	*9*
Bicycle	0	1	1	2	0	*4*
Motorcycle	0	1	4	2	0	*7*
Truck	0	0	2	0	3	*5*
Passenger Vehicle	0	18	67	149	172	*406*
Total	*5*	*20*	*76*	*155*	*175*	*431*

Notes: Injury A = Severe Injury; Injury B = Moderate Injury; Injury C = Minor Injury; PDO = Property Damage Only.

There are often multiple crash causes identified for a crash event (e.g., driving too fast for conditions and driver sleepy). While reviewing the primary crash causes does not paint a full picture of crash events, it provides insight into some themes. The following is a summary of the most common primary crash causes by number of total crashes:

- Failed to yield right-of-way: 127 (29%)
- Followed too closely: 60 (14%)
- Inattention: 49 (11%)
- Disregard traffic signal: 36 (8%)
- Improper turn: 34 (8%)
- Failed to avoid vehicle ahead: 32 (7%)
- Improper lane change: 21 (5%)

There were 24 crashes that involved alcohol and/or drugs (6% of all crashes), which resulted in four fatal crashes and three severe injury crashes (28% of FSI crashes).

Of the 431 crashes, 244 occurred at intersections (57% of all crashes) with 17 FSI crashes (68% of FSI crashes. The remaining 187 crashes occurred at driveways or midblock (43% of all crashes) with eight FSI crashes (32% of all FSI crashes).

Figure 22 presents crashes by year, which shows that 2022 was the worst year for both all crashes and FSI crashes. Years 2018 through 2021 experienced three to five FSI crashes a year; Year 2022 experienced 10 FSI crashes.

Figure 22 Crashes by Year

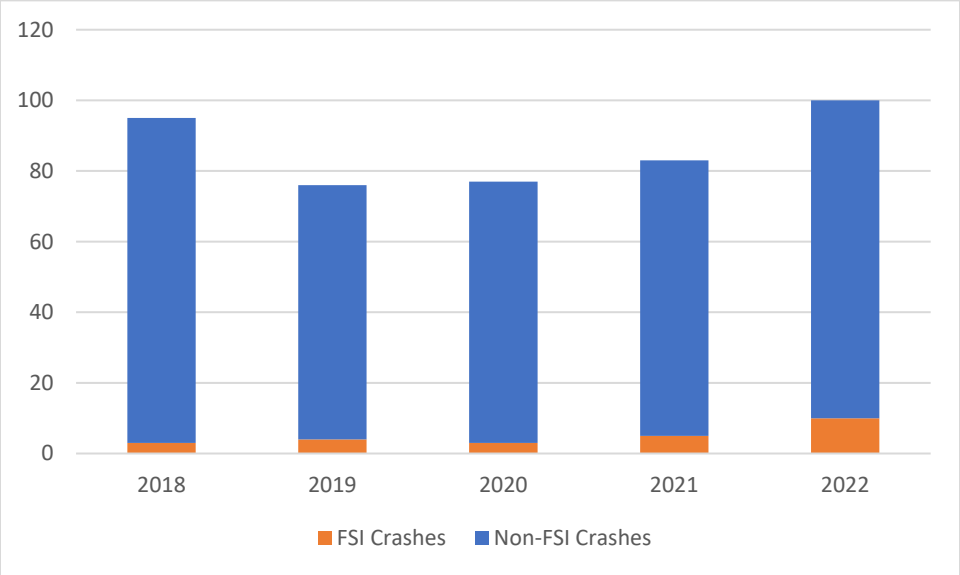


Figure 23 presents crashes by month with ADT overlayed, which shows that there is not a correlation between traffic volume and crashes by time of year given high volumes months such as May and June were among the lowest crash months while high crash months such as November and December were among the lowest volume months. Given January was also a low crash month, its unlikely there's a correlation between crashes and either weather or sunlight. The following presents a summary of roadway conditions and lighting conditions:

Roadway Conditions:

- Wet: 26 (6%); 3 FSI crashes
- Snowy/Icy: 25 (6%); 2 FSI crashes
- Dry/Unknown: 380 (88%); 20 FSI crashes

Lighting Conditions:

- Dark: 87 (20%); 8 FSI crashes
- Dawn/Dusk: 22 (5%); 2 FSI crashes
- Daylight: 322 (75%); 15 FSI crashes

The magnitude of wet, snowy, and icy crashes aligns with general expectations; we know that these conditions can contribute to crashes and the resulting severity, but this profile does not suggest an apparently safety concern related to crashes that occur during inclement weather. Lighting, however, seems to play a more significant role in crashes, with 40% of FSI crashes occurring in non-daylight hours. This correlates with annual SPIS reviews, which note a need for illumination at signalized intersections; Region 4 has scoped a 27-30 ARTS project to install illumination at signalized intersections to address this apparent need.

Figure 23 Crashes by Month

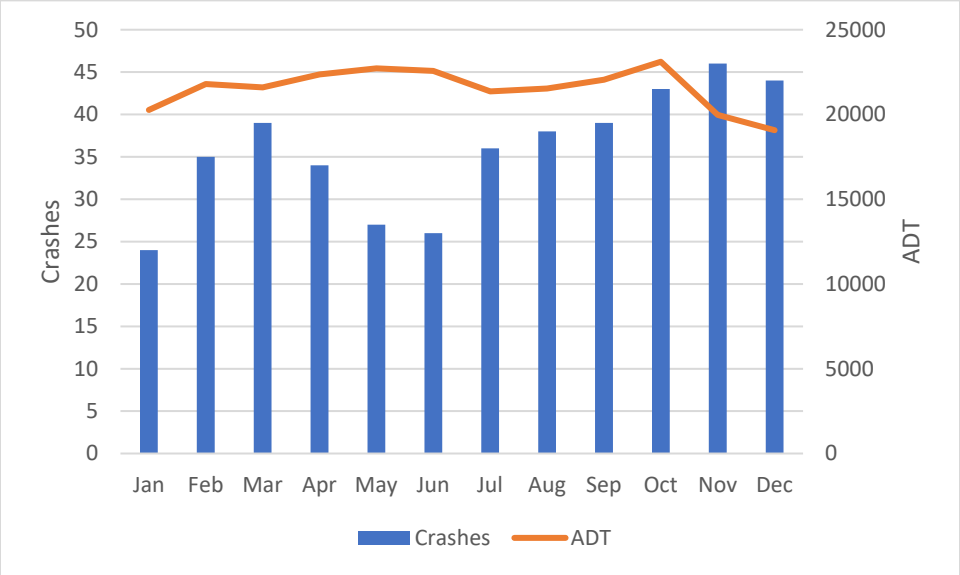
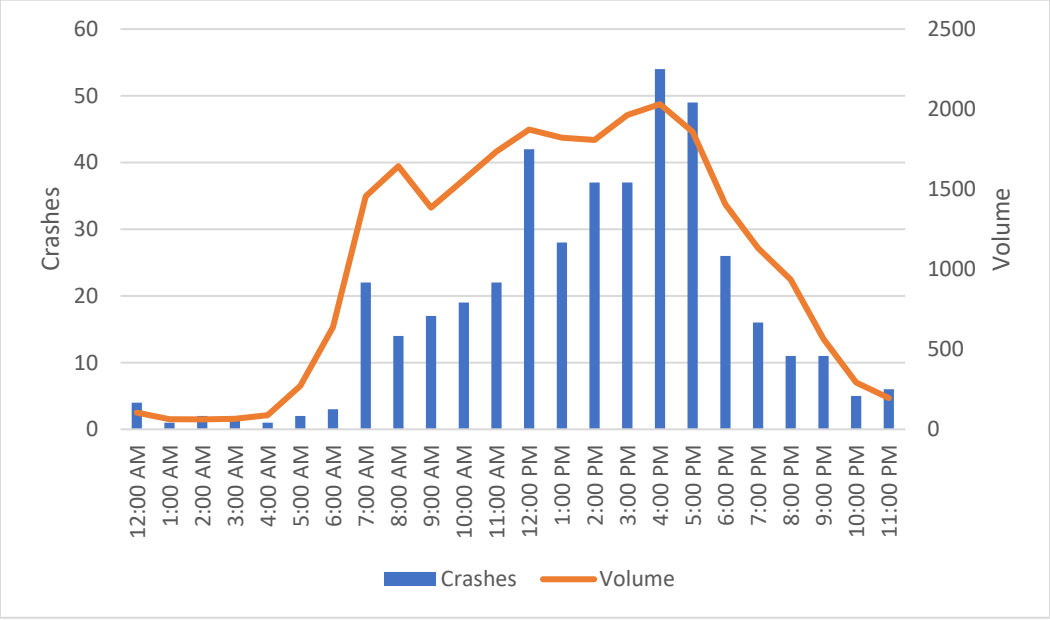


Figure 24 presents crashes by time of day overlayed with a sample of traffic volumes. Both crash and volume profiles share a similar pattern, suggesting that crashes are correlated with traffic volumes by time of day.

Figure 24 Crashes by Time of Day



Critical Crash Rate

The critical crash rate analysis method compares crash rates of a given site to an average crash rate of a reference population. This method is useful in screening a network for locations with potentially higher than expected crashes. Note that this method does not consider crash severity and should therefore only be used as a supplemental tool for network screening (in addition to a screening tool that considers

collision severity, such as the SPIS program). Table 8 presents the critical crash rate analysis for intersections and Table 9 presents the critical crash rate analysis for roadway segments.

Table 8 Intersection Critical Crash Rate

South 6th Street Intersection	AADT Entering Intersection	Crash Total	FSI Crashes	Intersection Crash Rate	Critical Rate	Over Critical
Arthur St[1]	N/A	3	0	N/A	N/A	N/A
Altamont Dr	21,700	17	1	0.43	0.71	Under
Crest St	19,260	7	0	0.20	0.72	Under
Derbey St[1]	N/A	0	0	N/A	N/A	N/A
Summers Ln	22,960	34	3	0.81	0.70	**Over**
Crater Lake Pkwy	26,850	34	2	0.69	0.69	**Over**
Fargo St[1]	N/A	8	0	N/A	N/A	N/A
Gary St[1]	N/A	5	1	N/A	N/A	N/A
Gettle St (W)	22,280	5	0	0.12	0.64	Under
Gettle St (E)	21,500	2	0	0.05	0.64	Under
Hope St (W)[1]	N/A	6	1	N/A	N/A	N/A
Hope St (E)	21,620	12	2	0.30	0.71	Under
Wiard St[1]	N/A	12	1	N/A	N/A	N/A
Kane St[1]	N/A	5	0	N/A	N/A	N/A
Homedale Rd	23,370	27	1	0.63	0.70	Under
Madison St	18,360	26	1	0.78	0.72	**Over**
Nile St[1]	N/A	0	0	N/A	N/A	N/A
Ogden St[1]	N/A	1	0	N/A	N/A	N/A
Patterson St	17,300	21	1	0.67	0.73	Under
Home Depot	15,290	4	2	0.14	0.75	Under
Unity St[1]	N/A	1	0	N/A	N/A	N/A
Hilyard Ave	13,620	7	0	0.28	0.64	Under
OR 140	13,850	7	1	0.28	0.76	Under

Notes:

1. Intersection turning movement counts are not available at these intersections. However, these locations were included in the table to document the number of all crashes and FSI crashes.

Table 9 Roadway Segment Critical Crash Rate

South 6th Street Segment	AADT	Crash Total	FSI Crashes	Segment Length (mi)	Segment Crash Rate	Critical Rate	Over Critical
City Limits to Arthur St	17,180	6	0	0.14	1.37	3.32	Under
Arthur St to Altamont Dr	17,180	1	0	0.08	0.40	3.77	Under
Altamont Dr to Crest St	18,430	11	1	0.25	1.31	2.95	Under
Crest St to Derbey St	18,230	8	0	0.18	1.34	3.12	Under
Derbey St to Summers Ln	17,950	4	1	0.07	1.74	3.85	Under
Summers Ln to Crater Lake Pkwy	20,310	5	0	0.06	2.25	3.88	Under
Crater Lake Pkwy to Fargo St	22,950	23	0	0.08	6.86	3.51	**Over**
Fargo St to Gary St	22,480	22	2	0.07	7.66	3.64	**Over**
Gary St to Gettle St (W)	22,000	1	0	0.06	0.42	3.81	Under
Gettle St (W) to Gettle St (E)	21,350	0	0	0.02	0.00	5.40	Under
Gettle St (E) Hope St (W)	21,150	8	0	0.06	3.45	3.84	Under
Hope St (W) to Hope St (E)	20,960	4	1	0.05	2.09	4.05	Under
Hope St (E) to Wiard St	19,600	7	0	0.12	1.63	3.33	Under
Wiard St to Kane St	18,990	9	0	0.13	2.00	3.30	Under
Kane St to Homedale Rd	18,380	9	0	0.13	2.06	3.32	Under
Homedale Rd to Madison St	15,920	26	0	0.25	3.58	3.02	**Over**
Madison St to Nile St	13,680	8	0	0.08	4.01	4.00	**Over**
Nile St to Ogden St	13,260	1	0	0.05	0.83	4.64	Under
Ogden St to Patterson St	12,830	1	0	0.12	0.36	3.66	Under
Patterson St to Home Depot	12,450	5	0	0.28	0.79	3.09	Under
Home Depot to Unity St	14,370	6	1	0.16	1.43	3.35	Under
Unity St to Hilyard Ave	12,580	8	0	0.25	1.39	3.15	Under
Hilyard Ave to OR 140	12,280	14	2	0.36	1.74	2.97	Under

As shown in Table 6, crash rates for the following four intersections are flagged for further review:

- South 6th Street/Summers Lane: There were 34 crashes at this intersection including three severe injury crashes. This location is also a 95th percentile SPIS site. Of the 34 crashes, there were 25 turning movement, five rear-end, three fixed object, and one angle crashes. Thirteen of the 34 crashes were in non-daylight hours (38% of all crashes). The three severe injury crashes included two turning movement crashes (both involved a motorist making a permissive westbound left in front of opposing eastbound through traffic) and one fixed object crash (motorist making an

eastbound right took a wide turn and hit a pole). Of the 25 turning movement crashes, 18 were a result of making an improper turn and 7 were a result of disregarding the traffic signal. Of the 18 improper turns, the most common crash involved a motorist making a westbound left in front of eastbound traffic (10 crashes); there were also three illegal maneuvers including an eastbound left, and eastbound U-turn, and a westbound U-turn.

- South 6th Street/Crater Lake Parkway: There were 34 crashes at this intersection including two severe injury crashes. This location is also a 95th percentile SPIS site. Of the 34 crashes, there were 17 rear-end, 14 turning movement, two sideswipe-overtaking, and one pedestrian crashes. Ten of the 34 crashes were in non-daylight hours (29% of all crashes). The two severe injury crashes involved a turning movement crash (a motorist making a southbound right turn while fatigued and under the influence of drugs drove left of the center lane) and a rear-end crash (a motorist speeding and under the influence of drugs). The pedestrian crash (Injury B) involved a motorist making an eastbound left turn and not yielding right-of-way to the pedestrian in the north crosswalk Of the 17 rear-end crashes, 11 were westbound crashes, five were eastbound crashes, and one was a southbound crash. Of the 14 turning movement crashes, 11 were a result of making an improper turn, two were a result of disregarding the traffic signal, and one was the severe injury crash were the motorist crossed the center lane. Of the 11 improper turns, eight involved motorists making an eastbound left in front of westbound through traffic and three involved motorists making a southbound right in front of westbound through traffic.
- South 6th Street/Madison Street: There were 26 crashes at this intersection including one severe injury crash. Of the 26 crashes, there were 11 turning movement, eight angle, six rear-end, and one pedestrian crashes. Four of the 26 crashes were in non-daylight hours (15% of all crashes). The severe injury crash involved a motorist who disregarding the traffic signal and made an eastbound left in front of westbound traffic. The pedestrian crash (Injury C) involved a pedestrian crossing on red at night and was hit by a motorist making a southbound left (presumably the pedestrian was crossing in the north crosswalk). Of the 11 turning movement crashes, seven were a result of making an improper turn, three were a result of disregarding the traffic signal, and one would be better categorized as a rear-end. Of the seven improper turns, six involved a motorist making a northbound left in front of southbound traffic. All eight angle crashes were crossing crashes involving motorists disregarding the traffic signal.

As shown in Table 7, crash rates for the following four roadway segments are flagged for further review:

- Crater Lake Parkway to Fargo Street: There were 23 crashes along this section of roadway, none of which resulted in a fatality or severe injury. This location is also a 95th percentile SPIS site. Of the 23 crashes, there were 13 turning movement, five rear-end, three sideswipe-overtaking, one fixed object, and one pedestrian crashes. One of the 23 crashes were in non-daylight hours (4% of all crashes). The pedestrian crash (Injury C) involved a motorist making a westbound right turn into the Grocery Outlet shopping center and striking a pedestrian in the sidewalk. All 13 turning movement crashes involve access to the Grocery Outlet shopping center, including ten left turning crashes and three right turning crashes.
- Fargo Street to Gary Street: There were 22 crashes along this section of roadway, including one fatal crash and one severe injury crash. This location is also a 95th percentile SPIS site. Of the 22 crashes, there were ten turning movement, five rear-end, two fixed object, two sideswipe-overtaking, one sideswipe-meeting, one other (animal), and one pedestrian crashes. Four of the 22 crashes were in non-daylight hours (18% of all crashes). The fatal crash was a pedestrian crash just east of Fargo Street where a pedestrian was crossing in between intersections at night. The severe injury crash involved a motorist making a southbound left out of the Grocery Outlet shopping center's easternmost access. There was also a bike crash (Injury C) involving a motorist making a westbound right and not yielding right-of-way. Only one of the ten turning movement crashes involved an access on the south side of South 6th Street.

- Homedale Road to Madison Street: There were 26 crashes along this section of roadway, none of which resulted in a fatality or severe injury. Of the 26 crashes, there were 13 turning movement, nine rear-end, two fixed object, one angle, and one sideswipe-overtaking crashes. Five of the 26 crashes were in non-daylight hours (19% of all crashes). Of the 13 turning movement crashes, eight involved accesses on the south side of South 6th Street and five involved accesses on the north side. The turning movement crashes occurred at various accesses along this section of roadway, with the highest concentration being four crashes at the primary Albertsons access. There are no discernable crash trends among the nine rear-end crashes.
- Madison Street to Nile Street: There were eight crashes along this section of roadway, none of which resulted in a fatality or severe injury. Of the eight crashes, there were seven turning movement and one rear-end crashes. There were no crashes during non-daylight hours. There are no discernable crash trends beyond turning movement crashes occurring at several accesses within this short section of roadway.

Vulnerable Road User Crashes

As previously noted, there were nine pedestrian crashes and four bicycle crashes. Of the nine pedestrian crashes there were five fatalities and of the four bicycle crashes there was one severe injury. These six FSI crashes make up 24% of all FSI crashes, including 100% of fatal crashes. Eight of the nine pedestrian crashes occurred at night (between 6:00 PM and 6:00 AM). The following is a summary of all 13 vulnerable road user crashes:

Pedestrian Crashes:

- Mile point 3.20 (between Derby Street and Summers Lane): Pedestrian was killed crossing the roadway midblock at night.
- Mile point 3.28 (at Crater Lake Parkway): Pedestrian struck in the north crosswalk by motorist who failed to yield right-of-way while making an eastbound left turn (Injury B).
- Mile point 3.34 (between Crater Lake Parkway and Fargo Street): Pedestrian struck in the sidewalk on the north side of the roadway by motorist who failed to yield right-of-way while making a westbound right turn (Injury C).
- Mile point 3.37 (between Fargo Street and Gary Street): Pedestrian killed crossing the roadway midblock at night.
- Mile point 3.43 (at Gary Street): Pedestrian killed crossing the roadway by motorist who failed to yield right-of-way at 3:00 AM. Note that an enhanced crossing with an RRFB has since been installed.
- Mile point 3.52 (between Gettle Street and Hope Street): Pedestrian struck crossing the roadway midblock at night in. It was noted that there was a work zone at this location; therefore, it's possible the work zone influenced the pedestrian to cross midblock (Injury B).
- Mile point 3.59 (between Hope Street intersections): Pedestrian was killed while standing or lying down in the travel lane at night.
- Mile point 3.61 (between Hope Street intersections): Pedestrian was killed crossing the roadway midblock at night.
- Mile point 4.25 (at Madison Street): Pedestrian crossed at the signal against a red indication at night(presumably in the north crosswalk) and was struck by a motorist making a southbound left turn (Injury C).

Bicycle Crashes:

- Mile point 2.72 (at Altamont Drive): Bicyclist was struck by a motorist travelling eastbound who disregarding the traffic signal; it is unclear from the crash data where the bicyclist was in the intersection (Injury B).
- Mile point 2.72 (at Altamont Drive): Bicyclist was struck by a motorist who failed to yield right-of-way to the bicyclist. The motorist was making a northbound left and presumably the bicyclist was travelling southbound (Injury A).
- Mile point 3.37 (between Fargo Street and Gary Street): Bicyclist travelling westbound was struck by a motorist making a southbound right turn who failed to yield right-of-way to the bicyclist (Injury C).
- Mile point 3.57 (at Hope Street West): Bicyclist travelling westbound was struck by a motorist making a southbound right turn who failed to yield right-of-way to the bicyclist (Injury C).

Severe Injury Motorist Crashes

Given all fatal crashes were pedestrian crashes and are discussed above, this section focuses on severe injury crashes, which there were 19 of (including one bicycle crash and one motorcycle crash). The following is a summary of the severe injury crashes by crash type:

- Turning movement: 12 crashes
- Rear-end: 3 crashes
- Fixed object: 2 crashes
- Angle: 1 crash
- Other (animal): 1 crash

Of the 12 severe injury turning movement crashes, seven occurred at signalized intersections, one occurred at an unsignalized intersection, and four occurred midblock. The seven signalized turning movement crashes included five crashes were a motorist turned left in front of oncoming traffic, one crash were a motorist disregarded the traffic signal, and crash where the motorist crossed over the center lane; the remaining five severe turning movement crashes included four crashes where the motorist did not have right-of-way, and one crash where the motorist made an illegal U-turn midblock. Of the three severe injury rear-end crashes, two occurred at signalized intersections and one occurred at an unsignalized intersection. Of the two severe injury fixed object crashes, one occurred at a signal due to a wide turn and one occurred midblock because of a physical illness. The one severe injury angle crash occurred at a signal resulting from a motorist disregarding the traffic signal. The one severe injury animal crash was a motorcycle crash. Five of the 19 severe injury crashes were in non-daylight hours (26% of all crashes).

Pedestrian and Bicycle Level of Traffic Stress

Existing pedestrian and bicyclist facilities were inventoried and evaluated using the Pedestrian Level of Traffic Stress (PLTS) and Bicycle Level of Traffic Stress (BLTS) methodologies. These methodologies classify roadway segments according to the pressure or strain experienced by bicyclists, pedestrians, and other sidewalk users. The methodology that was followed in outlined in APM Chapter 14, and results can be between 1 and 4 with a score of 1 indicating little to no traffic stress and with a 4 representing high

traffic stress. A 4 would indicate that only able-bodied adults and brave bicyclists with limited route choices would choose to use the facility.

Partial sidewalks are provided on both sides of OR 39. Long sections of full sidewalks are broken apart infrequently by the presence of Utility/Telephone poles, signs, or hydrants that sometimes remove the hard surface and limit the available space for individuals to maneuver safely on the sidewalks. Due to the abundance of obstacles in the sidewalk and the limited availability of lighting along the facility the average rating of PTLS 3 was determined to be appropriate. Where sidewalks are absent, a PLTS of 4 is appropriate. Several crossings both marked and unmarked are present for individuals to cross OR 39. There are two mid-block unsignalized crossings that are available as well. These were rated as PLTS 4 due to a combination of crossing distance, facility speed, and traffic volume. Existing sidewalks appear to be in fair condition but were rated as poor in segments that had an obstruction present. Sidewalks range between 4 and 8 feet in width along the study area.

Striped bike lanes are provided on OR 39. The bicycle facilities appear to be in fair to good condition, there is no marked parking along the facility, and the bike lanes are between 5 and 10 feet in width along the study area. Figure 25 shows the BLTS scores for sections of the study area. For the majority of the study area the BLTS rating is a 3, it does become a BLTS 4 when the speed of the facility increases to 45 mph.

Figure 25 Bicycle Level of Traffic Stress