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# DRAFT MEMORANDUM

**DATE:** January 21, 2013  
**TO:** John McDonald, ODOT Region 3  
**FROM:** Bob Schulte, PTP

**SUBJECT: US 101 Corridor Plan**  
Task 3 and 4 – Inventory and Existing Conditions

P#09042-024

The purpose of this memorandum is to document the inventory and analysis of existing conditions for the US 101 Corridor Plan. The findings of the analysis will be used in the development of proposed improvements to address transportation needs in the study area.

## INTRODUCTION

The study area extends from the southern end of the Brookings, Oregon City limits (MP 357.98) to the Oregon-California border (MP 363.11) along US 101, as shown in Figure 1. Several factors have contributed to the need for the study. First, the California Department of Transportation (Caltrans), together with the Smith River Rancheria Tribe, has recently completed a Road Safety Audit for the section of US 101 just south of the Oregon-California border. One of the objectives of this study is to ensure consistency of the roadway conditions with the expectations of drivers going to and from Oregon and California. In addition, there have been two Safety Priority Index (SPIS) locations identified over the past two years. Improvement options to address safety needs at the SPIS sites and other problem locations are investigated in the study.

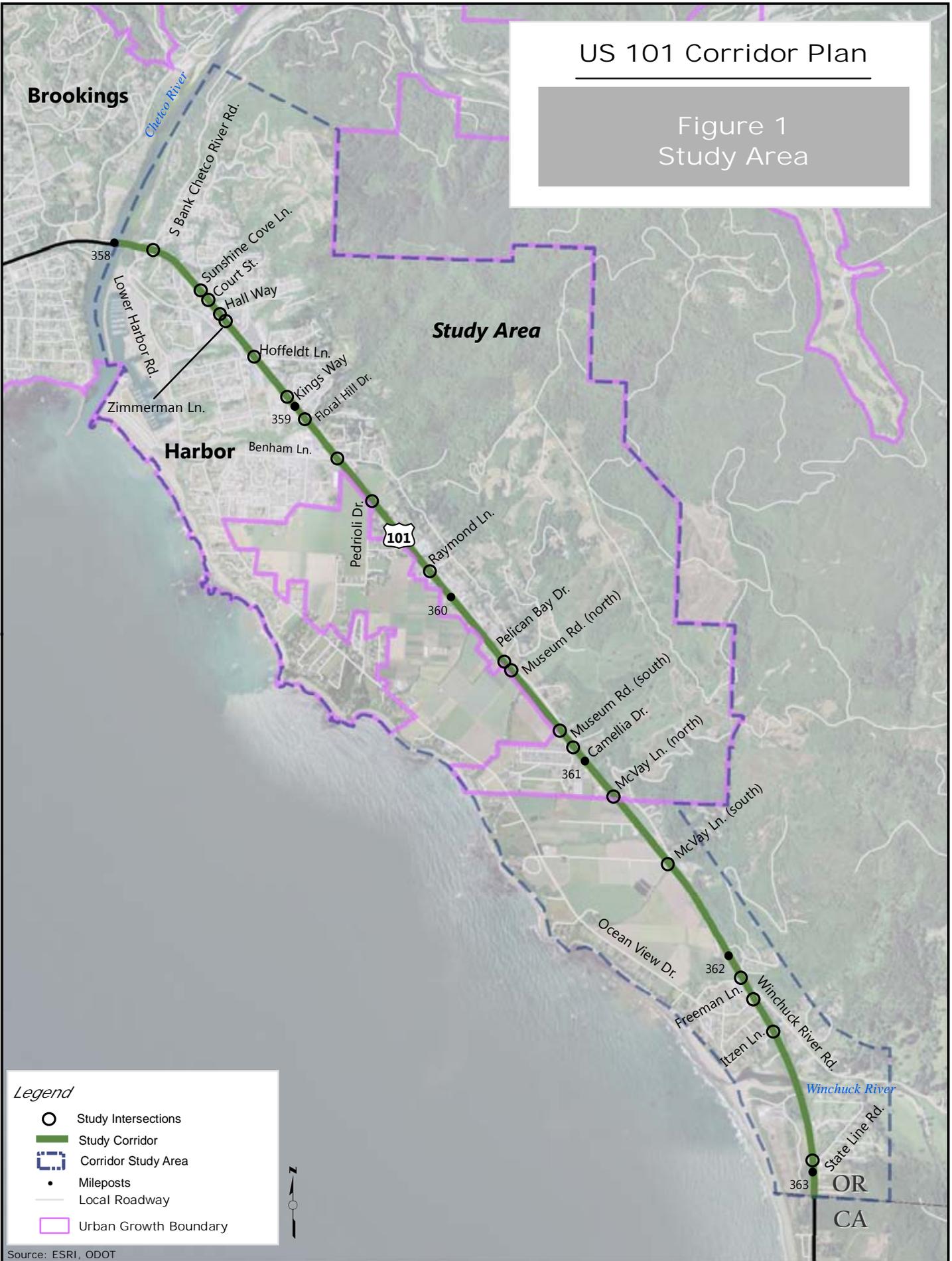
## TRANSPORTATION CONDITIONS

To serve as the basis for the existing conditions analysis, an inventory of the transportation infrastructure was conducted for base year (2012) conditions. The inventory included the 21 study intersections shown in Figure 1.

Two approaches were used in the analysis of existing transportation conditions. With the first approach, transportation data including traffic volumes and roadway characteristics were collected and analyzed. The results of the analysis were compared to standards, and for locations that did not meet the standards, a need was identified. The second approach was to gather information on existing transportation needs from agency staff and members of the Transportation Advisory Committee (TAC).

# US 101 Corridor Plan

Figure 1  
Study Area



## Legend

- Study Intersections
- Study Corridor
- ▭ Corridor Study Area
- Mileposts
- Local Roadway
- ▭ Urban Growth Boundary



The reported needs were inventoried and field work was conducted at the reported need locations to investigate the nature of the identified problems.

A multi-modal approach was taken for the evaluation of corridor needs that included the motor vehicle, transit, bicycle, and pedestrian modes. Bridge conditions, along with an overall measure of corridor health, were also identified.

## **MOTOR VEHICLE**

### **Facilities**

The motor vehicle system within the study area comprises US 101 and county roadways.

#### **US 101**

The *Oregon Highway Plan (OHP)*<sup>1</sup> classifies all state highways according to their intended function. The state classification system designates US 101 as a statewide highway that is part of the National Highway System (NHS). The Curry County TSP defines US 101 as a principal arterial. It is the main transportation facility in the study area and also functions as the primary transportation facility along the entire Oregon Coast. Figure 2 shows the functional classification of US 101 and county roadways within the study area.

Statewide highways typically provide interurban and interregional mobility and connections to larger urban areas, ports, and major recreation areas that are not directly served by interstate highways. A secondary function is to provide connections for intraurban and intraregional trips. The management objective for statewide highways is to provide safe and efficient, high-speed, continuous flow operation.

US 101 is also defined as a scenic byway and priority 1 seismic lifeline route by ODOT. The scenic byway designation recognizes the need to preserve and enhance the scenic value while accommodating critical safety and performance needs. Thus, the impacts of plans and projects on the scenic qualities of US 101 must be considered. The priority 1 seismic lifeline designation means that US 101 is essential for emergency responses in the first 72 hours after incidences.

US 101 has four through lanes in the north section of the study area that transition to two through lanes at the north access of McVay Ln. There is a two-way center turn lane with a standard width of 14 feet between Lower Harbor Drive-South Bank Chetco River Road and Raymond Lane (see Figure 3),

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<sup>1</sup> Oregon Department of Transportation, [Oregon Highway Plan](#), (1999).

# US 101 Corridor Plan

Figure 2  
Functional Classification



# US 101 Corridor Plan

Figure 3  
Number of Lanes  
and Turn Lanes



### Legend

#### Number of Travel Lanes

- Two-Lanes
- Four-Lanes

#### Turn Lanes

- Two-Way Center Turn Lane
- Left Turn Lane
- Both Right and Left Turn Lanes

Corridor Study Area

- Mileposts
- Local Roadway

Urban Growth Boundary

Source: ESRI, ODOT



except for a short 12-foot wide section near South Bank Chetco River Rd.<sup>2</sup> Parking is not prohibited along US 101.

US 101 is located on a relatively straight and level alignment within the study area, with only one large-radius curve on the north end of the corridor. As shown in Figure 4, the right-of-way width generally ranges between 90 and 120 feet on each side of the roadway centerline. There are a few short sections where it narrows to as little as 60 feet or widens to 300 feet. Operationally, the speed limit changes from 45 mph on the north end of the corridor to 55 mph just south of Benham Lane. There is no continuous lighting along the corridor.

An ODOT fixed scale weigh station is located between the north and south access points to McVay Lane on US 101.<sup>3</sup> The weigh station was relocated in 2009 from the north side of the Chetco River Bridge in Brookings.

### **Other Roads**

The other roads in the study area are under Curry County jurisdiction, because they are outside of the City of Brookings' city limits and are not ODOT facilities. The main county facilities include Lower Harbor Drive, South Bank Chetco River Road, Benham Lane, and Winchuck River Road, which are designated as major collectors, and Ocean View Drive, which is designated as a minor collector (see Figure 2). The other roads within the study area are classified as local roadways. All of the county roads are two-lane facilities, providing a majority of the local access to residents living in the study area.

### **Intersections**

Twenty-one intersections were analyzed within the study area (see Figure 1). These include the signalized intersections at Zimmerman Lane, Hoffeldt Lane, and Benham Lane.

As shown in Figure 3, right-turn and/or left-turn lanes exist at the following intersections:

- US 101/Zimmerman Lane
- US 101/Hoffeldt Lane
- US 101/Benham Lane
- US 101/Ocean View Drive/Winchuck River Road
- US 101/State Line Road

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<sup>2</sup> ODOT FACS (Features, Attributes & Conditions Survey) Data To Go, data obtained on October 9, 2012.

<sup>3</sup> Oregon Department of Transportation, Motor Carrier Transportation Branch website, [http://www.odot.state.or.us/forms/motcarr/MCE\\_Dist\\_Bounds\\_Truck\\_Scales.pdf](http://www.odot.state.or.us/forms/motcarr/MCE_Dist_Bounds_Truck_Scales.pdf), accessed November 21, 2012.

# US 101 Corridor Plan

## Figure 4 Right-of-Way





Crosswalks are available only at the signalized intersections. Roadway lighting is limited to the following intersections:

- US 101/ Lower Harbor Drive-South Bank Chetco River Road
- US 101/Floral Hill Drive
- US 101/Pelican Bay Drive

Detailed intersection diagrams are shown in Appendix A.

### Traffic Volumes

Traffic volumes were obtained from ODOT’s databases and intersection turning movement counts conducted in March 2008 and June 2012. The volume data was used to identify annual average daily traffic volumes (AADTs) along US 101, as well as seasonal and hourly traffic variation. The design hour volumes used in the existing conditions analysis were also estimated based on the volume data.

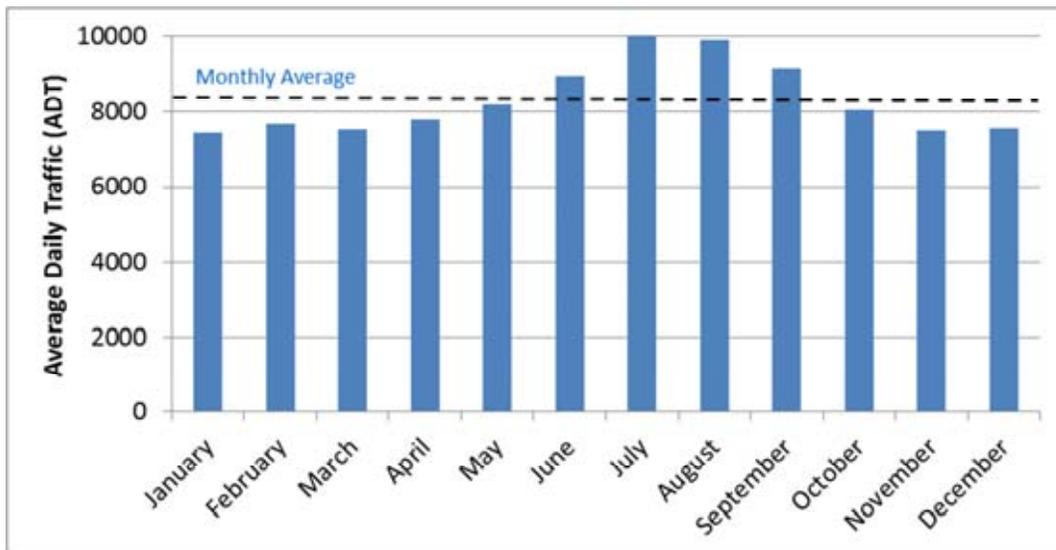
### Annual Average Daily Traffic

As shown in Figure 5, the 2011 AADT along US 101 range from more than 15,000 vehicles per day on the north end of the corridor between the Chetco River Bridge and Zimmerman Lane to roughly half this volume on the south end of the corridor near the Oregon-California state line. The volumes are closely correlated with local development, with the highest volumes in the urbanized Harbor area to the north and the lowest volumes in the largely rural area to the south.

### Seasonal Volumes

Average daily traffic (ADT) by month for 2010 is shown in Figure 6. The volume data was obtained

**Figure 6. Monthly Average Daily Traffic - Winchuck River Rd. ATR**



# US 101 Corridor Plan

Figure 5  
Annual Average  
Daily Traffic





from the Winchuck River Road Automatic Traffic Recorder (ATR)<sup>4</sup> located on the south end of the corridor. The highest volumes occurred during the months of July and August, with traffic approaching 10,000 vehicles per day. The lowest volumes occurred in November, December, and January, with traffic dropping about 25% from the summer peak to roughly 7,500 vehicles per day. This seasonal variation is typical for a coastal route with tourist traffic in the summer months; however, it is less than at locations further north on US 101, where the difference ranges from 35-40%.

### **Hourly Volumes**

The distribution of traffic volumes along US 101 by hour of the day for three representative locations are shown in Figure 7. The volumes were obtained from 16-hour traffic counts.

At the intersection of US 101/Hoffeldt Lane in the northern part of the corridor, the highest volumes occurred between noon and 6:00 PM. The distribution is bell-shaped, with no significant peaking in the AM and PM periods. Instead, traffic tends to build consistently throughout the AM period, and then levels-off during the midday period before decreasing in the late afternoon.

The intersection of US 101/Pedrioli Drive has a similar hourly distribution to US 101/Hoffeldt Lane, but with lower overall volumes. Also, traffic begins to decrease earlier in the afternoon, at about 4:00 PM, compared to 6:00 PM for Hoffeldt Lane.

The US 101/Winchuck River Road intersection, located in the more rural southern part of the corridor, generally has the lowest volumes. The hourly distribution of traffic is also somewhat flatter than those for the other locations.

By direction, the southbound volumes are slightly higher at all of the locations between 6:00 AM and 9:00 AM, suggesting a somewhat stronger commute travel pattern in this direction. US 101 is typical of corridors in low-density or rural areas, in which traffic is characterized by little or no morning or afternoon peaking and relatively balanced directional splits. This reflects the higher proportion of non-work trips compared to urban areas, which have pronounced work trip peak periods.

### **Design Hour Traffic Volumes**

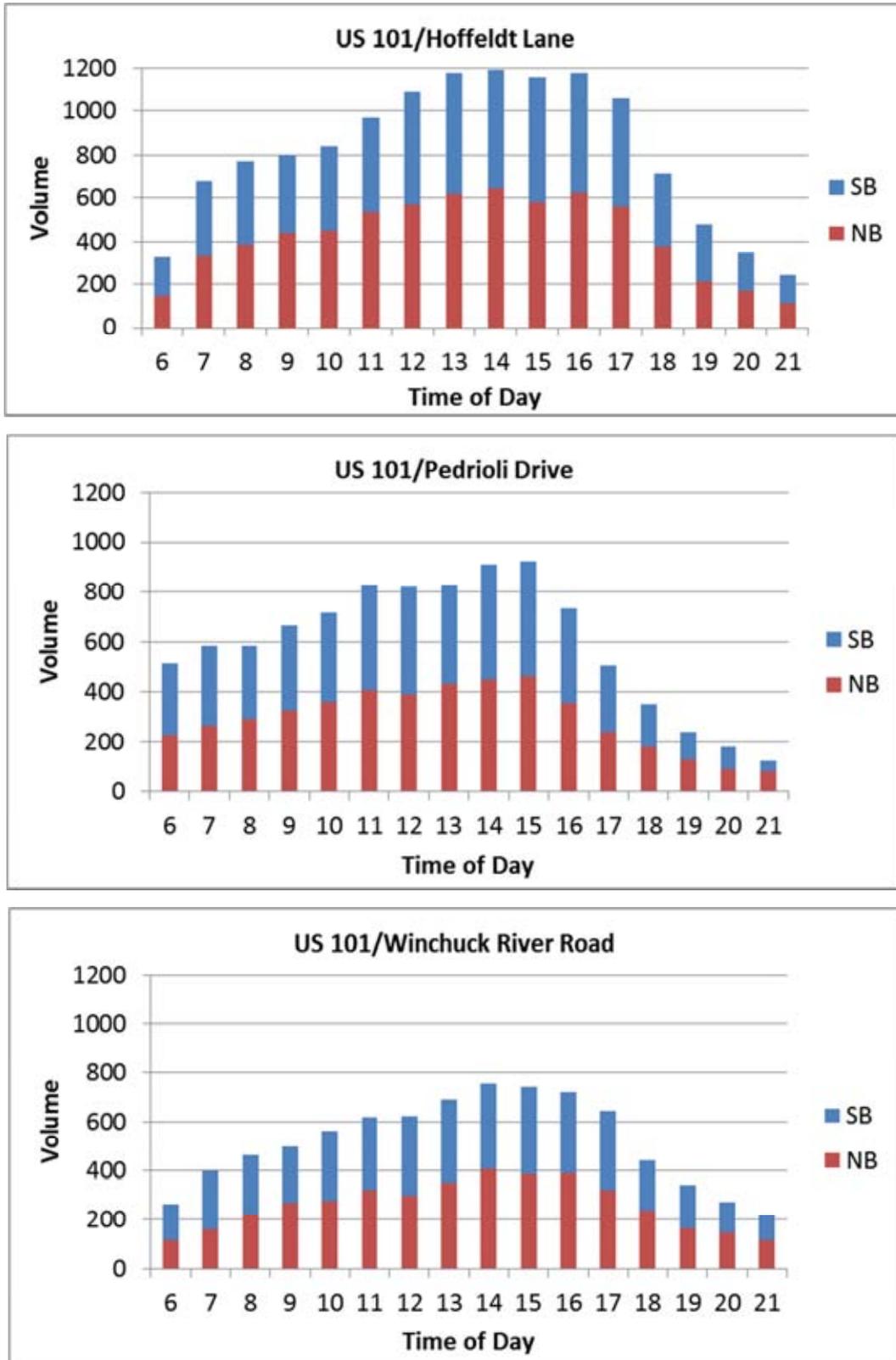
Design hour traffic volumes are used to measure system performance and are the basis for determining improvement needs. Annual 30<sup>th</sup> highest hour traffic volumes (30 HVs) were developed for the corridor analysis because it is a commonly used design period for transportation improvements

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<sup>4</sup> Oregon Department of Transportation, [Summary of Trends at Automatic Traffic Recorder Stations](#), 2011.



Figure 7. Hourly Traffic Variation





and is also the basis for ODOT's mobility targets. The 30 HVs were developed for the 2012 base year using the count data and following the procedures contained in the ODOT's Analysis Procedures Manual (*APM*).<sup>5</sup>

Because some of the counts were from 2008, growth factors were applied to estimate equivalent 2012 counts. The growth rates were developed using data from ODOT's traffic volume tables for 2008 and 2011.<sup>6</sup> A system peak hour was then selected, representing the single hour in which the highest volumes of the day occur. Along the US 101 within the study area, this was determined to be from 3:00 PM to 4:00 PM.

The counts for the system peak hour were converted to 30 HVs by applying a seasonal factor. The seasonal factors were identified using three different methods described in the *APM*. For the intersections south of Raymond Lane, the On-Site ATR Method was applied using data from the Winchuck ATR,<sup>7</sup> since the volumes in this area fall within 10% of the ATR volume. For the US 101/Hoffeldt Lane intersection only, a seasonal factor was developed using the ATR Characteristic Table Method. Traffic volumes at this location have characteristics similar to those at the ATR near Gearhart<sup>8</sup> and are within 10% of the Gearhart volumes. For the remainder of the intersections, the Seasonal Trend Table Method was used in which the Coastal Destination Trend was selected. ATRs within this trend group are located on state highways to/within larger coastal city destinations having summer peaks, as well as routes that are favorable for travel between the Willamette Valley and the Coast.

The estimated 30 HVs were balanced and then rounded to the nearest five vehicles. The balancing process considered adjacent land uses and accesses between the intersections. When balancing between intersections with different count years, priority was given to the volumes derived from the 2012 counts. The design hour volumes are shown Figure 8.

## Roadway Needs

Existing roadway needs were analyzed in the areas of mobility, traffic operations, safety, and geometrics.

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<sup>5</sup> Oregon Department of Transportation, [Analysis Procedures Manual](#), 2006.

<sup>6</sup> Oregon Department of Transportation, [Traffic Volume Tables](#), 2008-2011.

<sup>7</sup> Oregon Department of Transportation, [Summary of Trends at Automatic Traffic Recorder Stations](#), 2001-2010.

<sup>8</sup> Oregon Department of Transportation, [Summary of Trends at Automatic Traffic Recorder Stations](#), 2001-2010.

# US 101 Corridor Plan

## Figure 8 Design Hour Volumes





## Mobility

Existing mobility needs were identified by comparing volume-to-capacity (v/c) ratio estimates for roadway segments and intersections to the applicable v/c ratio standards. The standards for statewide highways are shown in Table 1. The standards reflect the proposed revisions to the OHP Policy 1F that went into effect in January, 2012.

**Table 1. ODOT Mobility Standards**

Criteria	Segments/Signalized Intersections (V/C Ratio)	Unsignalized Intersections (V/C Ratio)*
<b>Inside UGB</b>		
Non-MPO where non-freeway speed limit $\geq$ 45 mph	0.80	0.90
<b>Outside UGB</b>		
Rural lands	0.70	0.75

Source: Table 6 of OHP Policy 1F Revisions adopted by Oregon Transportation Commission on December 21, 2011.

\* V/C ratio is for the uncontrolled approach at unsignalized intersections.

## Segment Mobility

For analysis purposes, roadway segments were defined by grouping together lengths of roadway that shared similar characteristics. Segment endpoints were defined by where there were changes in traffic control, posted speed, the presence of two-way center turn lanes, or the number of travel lanes. Table 2 shows the segments and the roadway characteristics considered for the segmentation.

**Table 2. Analysis Segments**

Analysis Segment	From/To	Milepost	Distance (miles)	AADT	Traffic Control	Speed Limit	TWCTL	Number of Lanes
1	Chetco River Br. - Zimmerman Ln.	358.02 – 358.57	0.55	17,600	Signal	45	Yes	4
2	Zimmerman Ln. - Hoffeldt Ln.	358.57 – 358.76	0.19	13,700	Signal	45	Yes	4
3	Hoffeldt Ln. – Benham Ln.	358.76 – 359.32	0.56	14,100	Signal	45	Yes	4
4	Benham Ln. – Raymond Ln.	359.32 – 359.94	0.62	10,400	--	55	Yes	4
5	Raymond Ln. – McVay Ln. (north)	359.94 – 361.16	1.22	10,100	--	55	No	4
6	McVay Ln. (north) – OR/CA Border	361.16 – 363.11	1.95	8,300	--	55	No	2



The segment capacity analysis was performed according to the methodologies for multi-lane and two-lane highways outlined in the *2000 Highway Capacity Manual (HCM2000)*<sup>9</sup> and the *APM*. For the multi-lane segments, a capacity of 1,900 passenger cars per hour per lane (pcphpl) was assumed for the 45 mph segments (Segments 1-3) and a capacity of 2,100 pcphpl was assumed for the 55 mph segments (Segments 4-5). The capacities represent the maximum service flow rates at level-of-service (LOS) E for the two speeds. For the two-lane segment (Segment 6), a directional capacity of 1,700 pcphpl was assumed, consistent with *APM*.

The results of the segment capacity analysis are shown in Table 3 and Figure 9. The reported v/c ratios are for the highest direction. All of the segments are operating well within the mobility standard.

**Table 3. Mobility Summary – Roadway Segments**

Analysis Segment	From/To	Mobility Standard (V/C Ratio)	V/C Ratio
1	Chetco River Bridge - Zimmerman Ln	0.80	0.28
2	Zimmerman Ln - Hoffeldt Ln	0.80	0.27
3	Hoffeldt Ln – Benham Ln	0.80	0.22
4	Benham Ln – Raymond Ln	0.80	0.15
5	Raymond Ln – McVay Ln (north)	0.80	0.12
6	McVay Ln (north) – OR/CA Border	0.70	0.27

**Intersection Mobility**

V/C ratio and LOS estimates were developed based on the 30 HVs for the intersections shown in Figure 9 using the *HCM* methodologies for signalized and unsignalized intersections. Synchro 8<sup>TM</sup> was also used to simulate the existing traffic conditions and to report intersection performance measures.

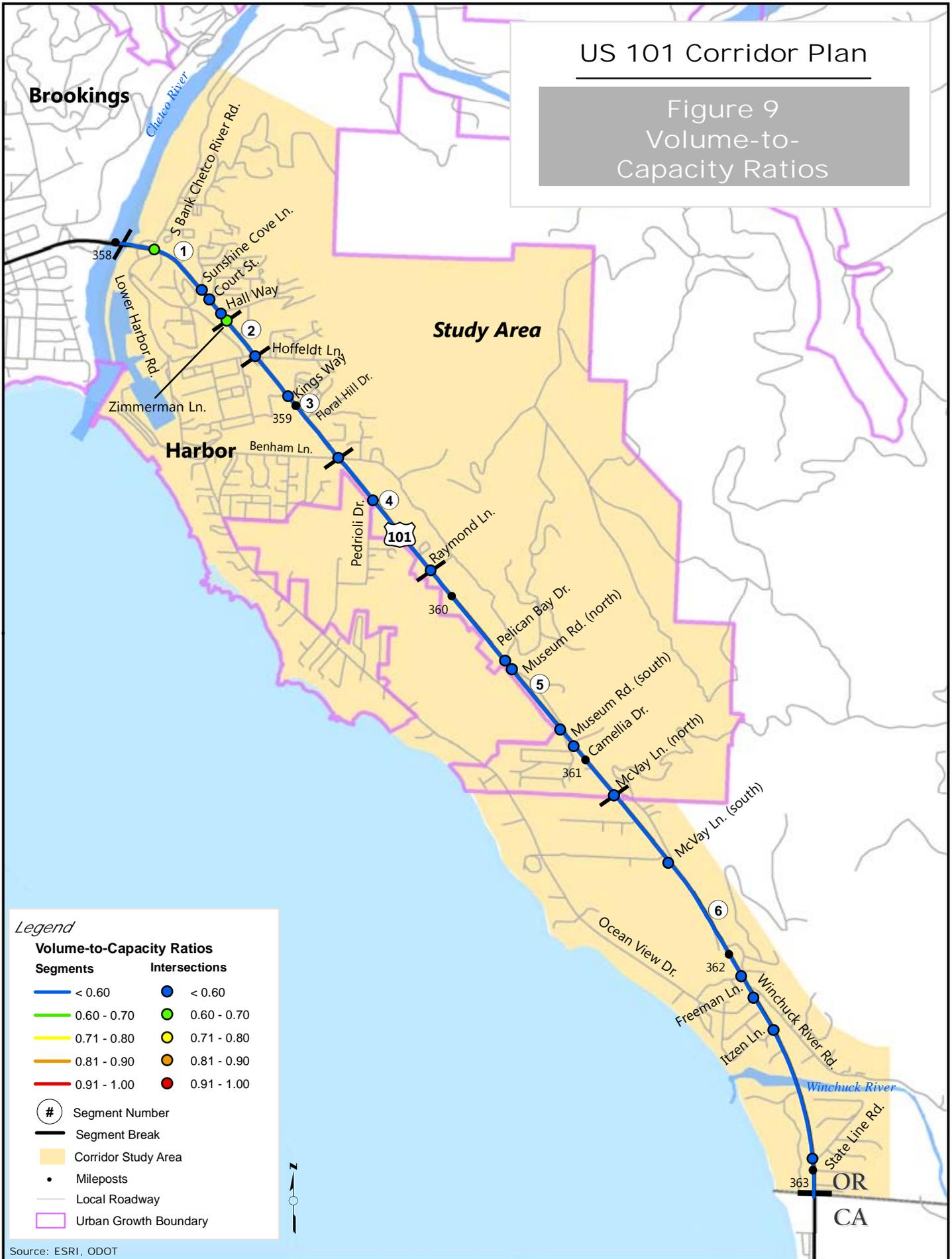
The *HCM2000* methodology was applied for signalized intersections because the *2010 Highway Capacity Analysis Manual (HCM2010)*<sup>10</sup> procedure does not produce estimates of the V/C ratio, which is the basis of the OHP mobility standards. The LOS for signalized intersections is based on the amount of average control delay per vehicle for the intersection.

<sup>9</sup> Transportation Research Board, *Highway Capacity Manual, Special Report 209*, (2000).

<sup>10</sup> Transportation Research Board, *Highway Capacity Manual*, (2010).

# US 101 Corridor Plan

Figure 9  
Volume-to-Capacity Ratios



## Legend

Volume-to-Capacity Ratios	
Segments	Intersections
<span style="color: blue;">—</span> < 0.60	<span style="color: blue;">●</span> < 0.60
<span style="color: green;">—</span> 0.60 - 0.70	<span style="color: green;">●</span> 0.60 - 0.70
<span style="color: yellow;">—</span> 0.71 - 0.80	<span style="color: yellow;">●</span> 0.71 - 0.80
<span style="color: orange;">—</span> 0.81 - 0.90	<span style="color: orange;">●</span> 0.81 - 0.90
<span style="color: red;">—</span> 0.91 - 1.00	<span style="color: red;">●</span> 0.91 - 1.00

- # Segment Number
- Segment Break
- Corridor Study Area
- Mileposts
- Local Roadway
- Urban Growth Boundary



OR  
CA



For unsignalized intersections, the *HCM2010* procedure was used to calculate the V/C ratio and LOS for the worst movements on the minor road and US 101 approaches. Typically, the left turn movements incur the most delay.

The intersection level capacity analysis results are shown in Table 4 and Figure 9.

**Table 4. Mobility Summary - Intersections**

Intersection	Mobility Standard	US 101		Minor Road	
		V/C Ratio	LOS	V/C Ratio	LOS
US 101/Lower Harbor Dr-S Bank Chetco River Rd	0.90	--*	--	0.63	C
US 101/Sunshine Cove Ln	0.90	0.05	B	0.15	D
US 101/Court St	0.90	0.05	B	0.33	D
US 101/Hall Way	0.90	0.02	B	0.10	C
US 101/Zimmerman Ln	0.80	0.64	B	--**	--
US 101/Hoffeldt Ln	0.80	0.53	B	--**	--
US 101/Kings Way	0.90	0.01	A	0.04	C
US 101/Benham Ln	0.80	0.50	B	--**	--
US 101/Pedrioli Dr	0.90	0.01	A	0.17	C
US 101/Raymond Ln	0.90	0.01	A	0.03	B
US 101/Pelican Bay Dr	0.90	0.01	A	0.02	B
US 101/Museum Rd (North)	0.90	0.01	A	0.01	A
US 101/Museum Rd (South)	0.90	0.01	A	0.02	B
US 101/Camellia Dr	0.90	0.01	A	0.06	B
US 101/McVay Ln (North)	0.90	--*	--	0.01	B
US 101/McVay Ln (South)	0.75	0.01	A	0.00***	A
US 101/Freeman Ln	0.75	0.01	A	0.02	C
US 101/Ocean View Dr-Winchuck River Rd	0.75	0.03	A	0.09	C
US 101/Itzen Dr	0.75	--*	--	0.02	C
US 101/State Line Rd	0.75	0.01	A	0.06	B

\* Unsignalized intersection with no left-turn movement available on US 101 approaches.

\*\* For signalized intersections, the V/C ratio and LOS are reported for the entire intersection.

\*\*\* Zero volume on the minor road approach.

The V/C ratios are less than the mobility standards for all of the intersections, indicating that there are no existing mobility needs at these locations. All of the ratios are less than 0.70, and there are only two locations that exceed 0.60.



SimTraffic 8<sup>TM</sup> was used to estimate the 95<sup>th</sup> percentile queues at the study area intersections. These as shown in Appendix B, rounded to the nearest 25-foot increment. They represent the queues that would occur with the 95<sup>th</sup> percentile volumes for the 30 HVs, and are used determine required storage lengths. The queues do not exceed the available storage on any the US 101 or minor road approaches, indicating that there is not a queuing problem. Most of the queues are 50 feet or less.

### ***Preliminary Traffic Signal Warrants***

Preliminary traffic signal warrant analysis was conducted for all unsignalized intersections following the procedures in the *APM* and *Manual on Uniform Traffic Control Devices (MUTCD)*.<sup>11</sup> Warrant 1 was applied, in which the eighth-highest volumes for an average day were compared to the warrants for two cases. Case A evaluates whether the minor road volumes are high enough to consider a signal, while Case B determines whether the major road volumes result in excessive delays and hazards to vehicles on the minor road trying to access or cross the major road. Consistent with the *APM* guidelines, only 70% of the standard warrant volumes were used for the comparison, since the 85<sup>th</sup> percentile speeds along US 101 are over 40 mph.

The results of the analysis indicated that none of the intersections met the warrant requirements.<sup>12</sup> This is consistent with the results of the intersection capacity analysis, which showed low V/C ratios for all of the intersections.

### ***Reported Mobility Needs***

There were no mobility needs identified by the TAC.<sup>13</sup> This is consistent with the analysis results, which indicated low V/C ratios, short queues, and no unsignalized intersections meeting the preliminary signal warrants.

## **Traffic Operations**

### ***Turn Lanes***

Traffic operations needs were analyzed for unsignalized intersections where left-turn lanes or right-turn lanes may be needed.<sup>14</sup> Left-turn lanes may be needed to reduce the possibility of rear-end collisions or improve traffic flow by preventing left-turning vehicles from blocking the flow of through traffic. Right-turn lanes may be needed to reduce the delay of through vehicles behind right-turning traffic and to ease right-turns for drivers from the higher-speed through traffic stream.

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<sup>11</sup> Federal Highway Administration, *Manual on Uniform Traffic Control Devices*, (2009).

<sup>12</sup> The minor approach right turn volumes were not included as part of the warrant volumes since they were less than 85% of the right turn capacity.

<sup>13</sup> TAC meeting held on September 20<sup>th</sup>, 2012.

<sup>14</sup> The need for turn lanes at signalized intersections is typically determined by mobility requirements.



Turn lane needs were determined using Criterion 1 – Vehicular Volume contained in the *APM*. The volume criterion for left-turn lanes is based on the hourly opposing plus advancing volume per lane, hourly turning volume, and posted speed limit at an intersection. Thus, as the opposing plus advancing volume and/or turning volume increases, or as the speed limit increases, the volume threshold at which a turn lane should be considered decreases. The volume criterion for right turn lanes is based on the hourly approaching volume in the outside lane (through plus right-turn volume), hourly turning volume, and speed limit. As any of these factors increases, the volume threshold for a right-turn lane decreases.

The results of the analysis are shown in Table 5 and Figure 10.

**Table 5. Turn Lane Needs**

Intersection	Northbound		Southbound	
	Left Turn	Right Turn	Left Turn	Right Turn
Sunshine Cove Ln	*	No	<b>Yes</b>	*
Court St	*	<b>Yes</b>	<b>Yes</b>	*
Hall Way	*	No	<b>Yes</b>	*
Kings Way	*	No	<b>Yes</b>	*
Pedroli Dr	No	No	No	<b>Yes</b>
Raymond Ln	*	No	No	*
Pelican Bay Dr	*	No	No	*
Museum Rd (north)	*	No	No	*
Museum Rd (south)	*	No	No	*
Camellia Dr	No	No	No	No
McVay Ln (north)	*	No	No	*
McVay Ln (south)	*	No	<b>Consider</b>	*
Freeman Ln	<b>Consider</b>	No	No	No
Ocean View Dr/Winchuck River Rd	N/A**	No	N/A	No
Itzen Dr	No	*	*	No
State Line Rd	N/A	No	N/A	No

\* These are three-legged intersections where not all turning movements are possible.

\*\* Turn lane already exists.

The warrants are met for a northbound right-turn lane at Court Street and a southbound right-turn lane at Pedrioli Drive. Southbound left-turn lanes are warranted on the north end of the corridor at Sunshine Cove Ln, Court St, Hall Way, and Kings Way. Although a two-way center turn lane exists at these intersections that provides refuge for left-turning vehicles, left-turn lanes are still needed because the operational characteristics of a left-turn lane are different than those of a two-way center turn lane. This is primarily because left-turn lanes are for the exclusive use of left-turning vehicles in the direction of the intersection approach, while a two-way center lane can be used by vehicles traveling in either direction.

# US 101 Corridor Plan

Figure 10  
Turn Lane Needs





The warrant analysis also indicated that left-turn lanes should be considered for the southbound approach of US 101/McVay Lane (south) and the northbound approach at US 101/Freeman Lane. Although the warrants are not met at these locations, the *APM* states that consideration should be given to left-turn lanes at intersections like these because of the high advancing and opposing volumes.

### ***Reported Traffic Operations Needs***

Traffic operations needs were reported at various locations within the study area (see Figure 11 and Appendix C). Most of the comments were related to problems with traffic conflicts caused by closely spaced accesses and intersections at several locations. The need for signage to increase driver awareness and understanding of the two-way center turn lane was identified, as well as the need to extend the two-way center turn lane from Raymond Lane to the Oregon-California state line. Other comments were:

- Between Pedrioli Drive and Freeman Lane, slow-moving buses carrying agricultural workers turning onto/off of highway cause traffic operations problems.
- Driver confusion with the loop road configuration of Museum Rd.
- High seasonal traffic volumes from Crissey Field State Park turning onto/off of highway at State Line Rd. cause traffic operations problems and potential safety problems. Many of these vehicles are RVs.

### **Safety**

Crash data for the five-year period between 2007 and 2011 was obtained from ODOT's Crash Analysis and Reporting Unit<sup>15</sup> for use in analyzing existing safety conditions. The crash database comprises crash reports filed by drivers involved in crashes that result in death, bodily injury, or vehicle damage over \$1,500.

### ***Corridorwide Crashes***

Over the five-year period, there were a total of 77 crashes along the corridor. These were split almost evenly between fatal/injury-type crashes and property damage only (PDO) crashes. Six of the crashes involved fatalities.

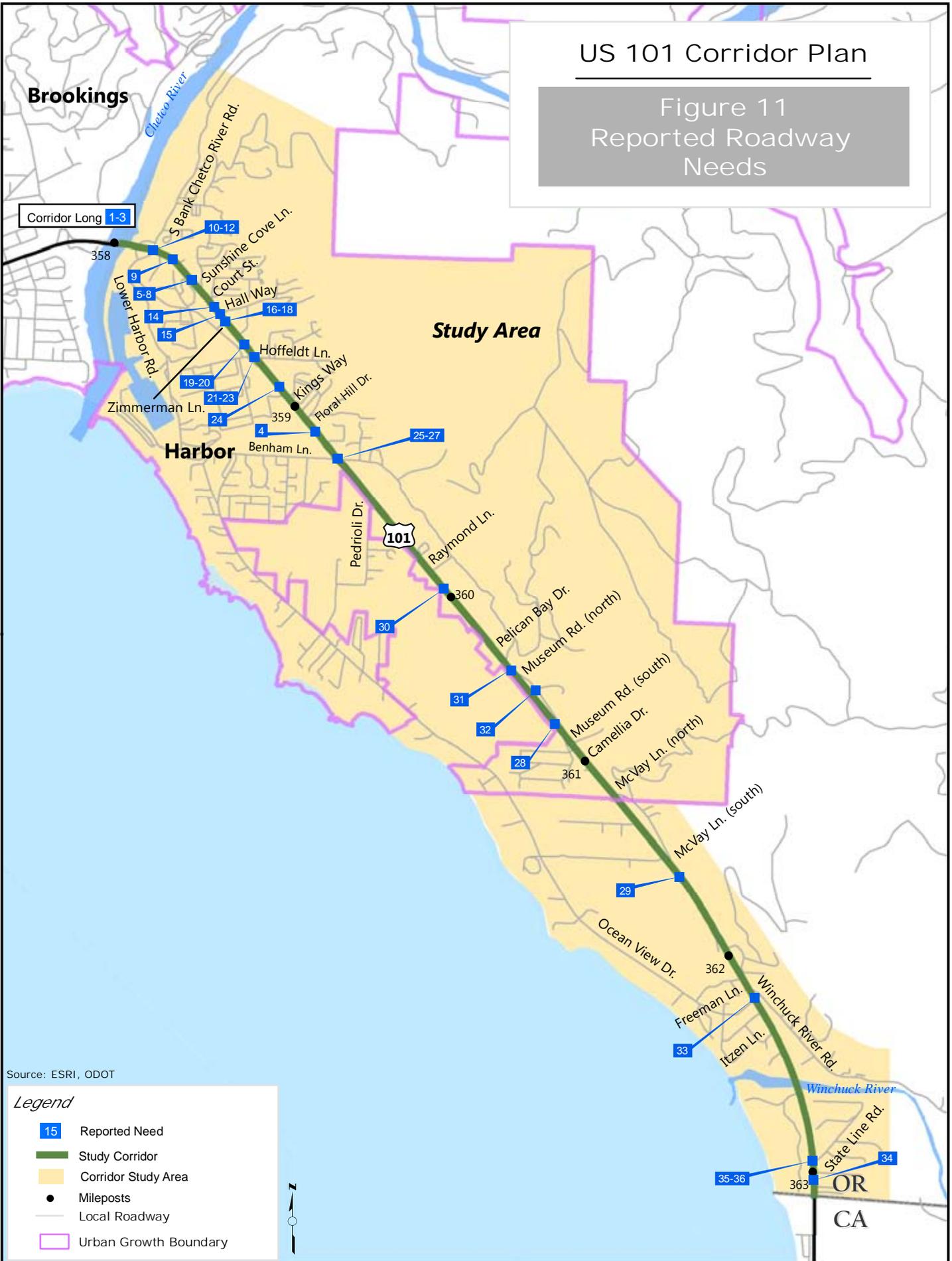
Figure 12 shows the crash frequency broken down by severity for each segment in the corridor.

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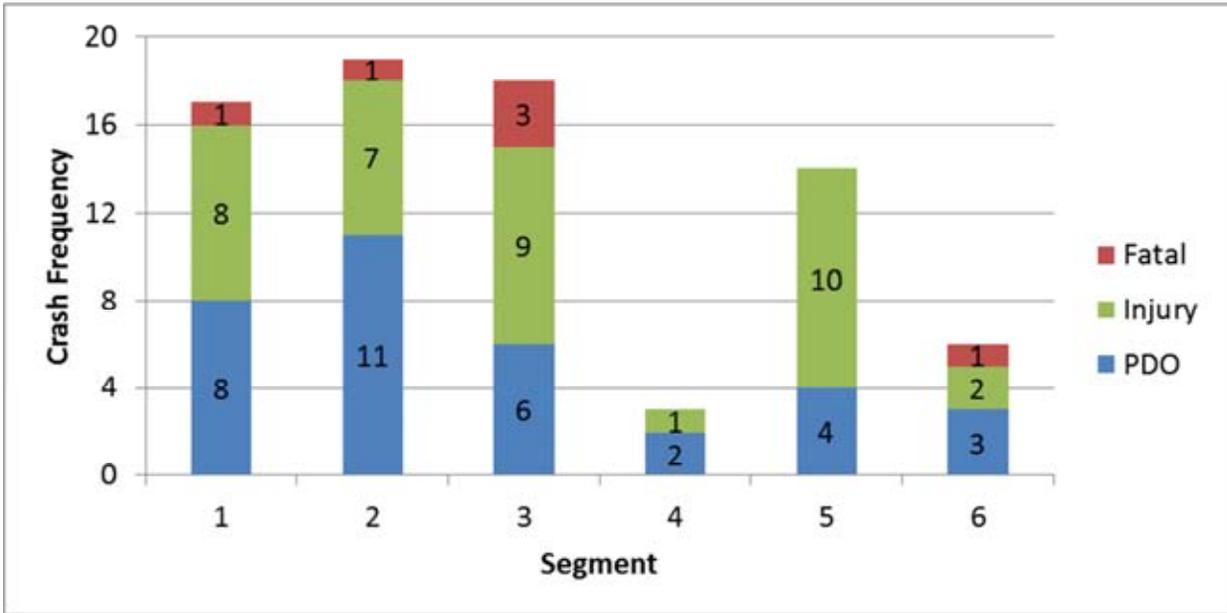
<sup>15</sup> ODOT Crash Data System, data obtained on October 19, 2012.

# US 101 Corridor Plan

Figure 11  
Reported Roadway Needs



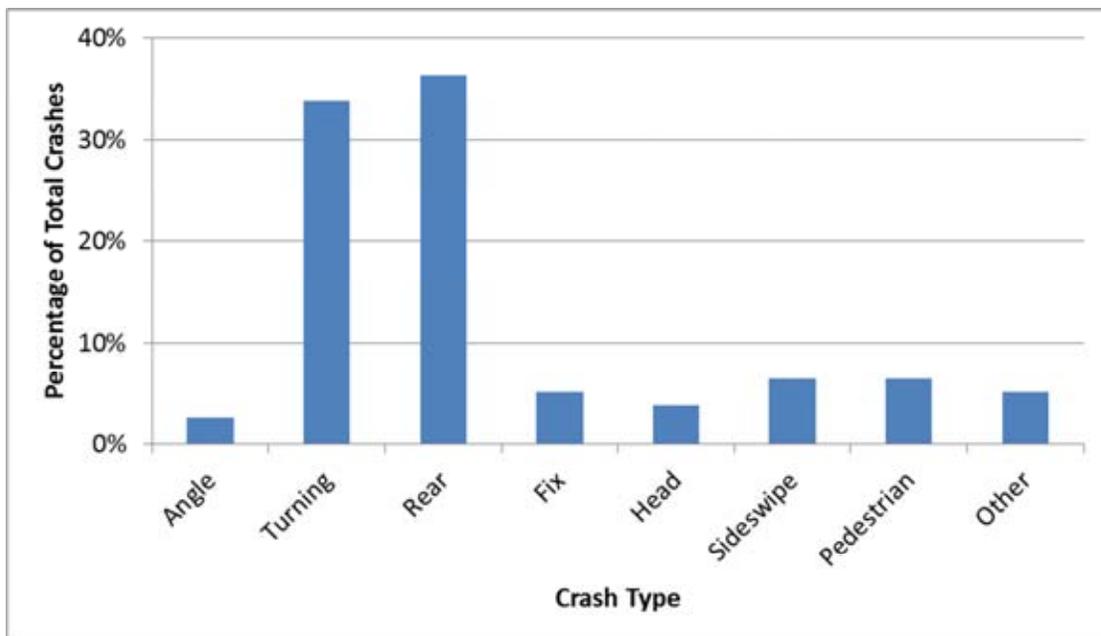
**Figure 12. Crash Frequency by Segment**



Segment 2 had the highest total crash frequency, while Segment 3 had the largest number of fatal crashes. Segments 4 and 6 had very few crashes relative to the other segments.

Corridorwide crashes are broken down by type in Figure 13. Turning and rear end crashes accounted for roughly 35% each of the total number of collisions. There were no more than 10% of the crashes in any of the other categories.

**Figure 13. Crash Frequency by Type**





The majority of the turning crashes occurred in Segments 2 and 3, while the majority of the rear end crashes occurred in Segment 1 and 5. There were a total of five pedestrian collisions occurring in the northern end of the corridor.

**Segment Crashes**

To provide an indication of safety conditions by segment along the corridor, crash rates were calculated as the number of crashes per million vehicle miles traveled (MVMT) for each segment (see Figure 14). The rates were compared to the statewide average crash rate<sup>16</sup> for other principal arterials in rural areas. As shown in Table 6, four of the segments exceed the statewide average, with the rate for Segment 2 over four times higher than the average.

**Table 6. Crash Rates - Segments**

Analysis Segment	From/To	Milepost	Crash Frequency	Crash Rate (MVMT)*	Statewide Avg. Rate
1	Chetco River Bridge - Zimmerman Ln	358.02 – 358.57	17	<b>0.75</b>	0.69
2	<b>Zimmerman Ln - Hoffeldt Ln</b>	358.57 – 358.76	19	<b>3.17</b>	0.69
3	<b>Hoffeldt Ln – Benham Ln</b>	358.76 – 359.32	18	<b>1.34</b>	0.69
4	Benham Ln – Raymond Ln	359.32 – 359.94	3	0.27	0.69
5	<b>Raymond Ln – McVay Ln (north)</b>	359.94 – 361.16	14	<b>0.80</b>	0.69
6	McVay Ln (north) – OR/Calif. Border	361.16 – 363.11	6	0.24	0.69

\* Values in bold exceed statewide average crash rate.

The crash history for each of the segments is described below. To provide a better understanding of the crashes for the segments exceeding the statewide average crash rate, crash diagrams are also included in Appendix D.

*Segment 1 – Chetco River Bridge to Zimmerman Lane*

There were 17 crashes in the past five years within this segment. The majority of the collisions occurred at the intersections of US 101/Lower Harbor Drive/South Bank Chetco River Road and US 101/Zimmerman Lane (see crash diagram). Most of the crashes at the Lower Harbor Drive/South Bank Chetco River Road intersection were northbound rear-end collisions. At Zimmerman Lane, there were

<sup>16</sup> Oregon Department of Transportation, 2011 Statewide Highway Crash Rate Tables, (2011).

# US 101 Corridor Plan

## Figure 14 Segment Crash Rates





three southbound rear-end collisions and three turning collisions involving left-turning vehicles from Zimmerman Lane and southbound vehicles on US 101. In addition, there was a pedestrian fatality north of Sunshine Cove Lane near the Sea Bird RV Park entrance. About half of the collisions were property damage only and half were injury.

#### *Segment 2 – Zimmerman Lane to Hoffeldt Lane*

Most of the 19 crashes within this segment occurred at Hoffeldt Lane or near the two driveways providing access to the South Coast Center on the east side of US 101 (see crash diagram). There were also two pedestrian collisions, one resulting in a fatality. In both cases, the pedestrians were crossing US 101 at the south entrance to the South Coast Center. There is no crosswalk at this location; however, there are crosswalks at the signalized intersection of US 101/Hoffeldt Lane 300 feet to the south, with a sidewalk available on the east side of US 101.

#### *Segment 3 – Hoffeldt Lane to Benham Lane*

Nearly all of the 18 crashes within this segment occurred at or in the vicinity of the US 101/Benham Lane intersection (see crash diagram). Many crashes involved left turning vehicles from eastbound and westbound Benham Lane onto US 101. There were also two pedestrian collisions within the crosswalk on the north side of the intersection.

#### *Segment 4 – Benham Lane to Raymond Lane*

There were only three crashes within this segment in the past five years, two with fixed objects and another with a wild animal. In the wild animal crash, the conditions were dark and the visibility was poor. For the fixed object collisions, the contributing factors were excessive speed and reckless driver behavior. Thus, there was no pattern to the crashes, and the crash causes were unrelated to the roadway environment.

#### *Segment 5 – Raymond Lane to McVay Lane (north)*

There were a total of 14 collisions within this segment within the past five years. Most were rear-end collisions, with no major concentrations of crashes (see crash diagram). Two animal collisions occurred north of Pelican Bay Drive. There was not a strong pattern to the crashes in this segment.

#### *Segment 6 – McVay Lane (north) to Oregon/California Border*

Similar to Segment 4, this segment had a relatively low crash frequency and crash rate compared to the other parts of the corridor. There were a total of six collisions spread out along the segment that included head-on, turning, parking, and rear-end crashes. The head-on collision occurred north of Freeman Lane in the two-way left turn lane and resulted in a fatality. Three collisions took place near State Line Road, two of them northbound rear end crashes and the other involving a parked vehicle in the southbound direction. There was no crash pattern within this segment.



### ***Intersection Crashes***

The critical crash rate described in the Highway Safety Manual (HSM) was used as a performance measure for screening the study intersections to determine where existing safety conditions need to be investigated. With this method, the observed crash rate at each intersection is compared to a calculated critical crash rate that is unique to each intersection. Intersections that exceed their respective critical rate are flagged for further review. The critical crash rate depends on the average crash rate at similar intersections, traffic volume, and a statistical constant that represents a desired confidence level.

The application steps are:

- Calculate the crash rate for each intersection as crashes per million entering vehicles (MEV)
- Divide the intersections into reference populations based on operational or geometric characteristics. The study intersections were divided into signalized, unsignalized - urban, and unsignalized – rural groups.
- Calculate a weighted average crash rate for each group. Because the signalized group had less than five intersections, a statewide average crash rate was used for this group.<sup>17</sup>
- Calculate a critical crash rate for each intersection based on the weighted average crash rate for the group, the traffic volume for the intersection, and a statistical constant representing the desired confidence level of the results.
- Compare the intersection crash rate to the critical crash rate. Intersections with a crash rate higher than the critical rate are flagged for further review.

Based on the results of the analysis, the intersections of US 101/Lower Harbor Drive/South Bank Chetco River Road, US 101/Benham Lane, and US 101/State Line Road were identified for further review (see Table 7). Although the observed crash rates for the Benham Lane and State Line Road intersections are slightly less or equal to the critical rate, they were flagged based on guidance received from ODOT's Transportation Planning Analysis Unit.<sup>18</sup>

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<sup>17</sup> Oregon Department of Transportation, Analysis Procedures Manual - Chapter 4 Review Draft, (2012).

<sup>18</sup> Per conversation with Peter Schuytema on December, 5, 2012, intersections with crash rates close to the critical rate should be identified for further review.



**Table 7. Crash Rates – Intersections**

<b>Intersection</b>	<b>Crashes</b>	<b>MEV</b>	<b>Crashes/ MEV</b>	<b>Critical Crash Rate</b>
<b>Lower Harbor Dr/S. Bank Chetco River Rd*</b>	5	43.72	<b>0.11</b>	0.10
Sunshine Cove Ln	0	33.26	0.00	0.11
Court St	1	34.26	0.03	0.11
Hall Way	1	33.26	0.03	0.11
Zimmerman Ln	9	35.26	0.26	0.58
Hoffeldt Ln	11	28.79	0.38	0.58
Kings Way	0	24.06	0.00	0.13
<b>Benham Ln</b>	12	24.14	<b>0.50</b>	0.58
Pedroli Dr	0	18.91	0.00	0.13
Raymond Ln	0	16.09	0.00	0.15
Pelican Bay Dr	0	14.09	0.00	0.16
Museum Rd (north)	0	13.61	0.00	0.16
Museum Rd (south)	1	13.44	0.07	0.16
Camellia Dr	1	13.44	0.07	0.16
McVay Ln (north)	1	12.79	0.08	0.16
McVay Ln (south)	0	12.79	0.00	0.16
Freeman Ln	0	12.79	0.00	0.16
Ocean View Dr/Winchuck River Rd	1	13.69	0.07	0.16
Itzen Dr	0	12.06	0.00	0.17
<b>State Line Rd</b>	2	11.98	<b>0.17</b>	0.17

\* Identified for further review.

***SPIS Locations***

ODOT maintains the Safety Priority Index System (SPIS)<sup>19</sup> for the identification and analysis of locations on the state highway system with potential safety needs. Each year, the system is used to produce reports of sites within each ODOT region that are ranked within the top 10% of all SPIS sites statewide. The SPIS score is based on three years of crash data and considers crash frequency, crash rate, and crash severity. A roadway location is defined as a SPIS site if it has three or more crashes or one or more fatal crash over the three-year period. SPIS sites are defined as 0.10 mile sections on the state highway system.

<sup>19</sup> Oregon Department of Transportation, Safety Priority Index System (SPIS), <http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/Pages/spis.aspx>.



One top 10% SPIS location was identified within the study area at the intersection of US 101/Benham Lane (M.P. 359.23 – M.P. 359.40). Eight crashes occurred at this location, with two fatalities in 2010. Potential safety issues list within the SPIS report were:

- Drivers disregard the signal and do not yield the right-of-way
- Skewed intersection
- Driveways on northeast side of intersection is too close to intersection
- Short southbound slip lane
- Poor pedestrian access
- Narrow lanes on Benham Lane

### ***Crash Analysis***

Detailed crash analysis was conducted for the following locations (see Figure 15):

- Intersections identified in the critical crash rate analysis
- High-frequency crash locations within segments exceeding the statewide crash rate
- SPIS sites

Collision diagrams were constructed for these locations (see Appendix D), and potential countermeasures were identified where crash patterns and crash causality could be established.

#### ***US 101/Lower Harbor Drive/South Bank Chetco River Road***

There were a total of five crashes at this intersection over the five-year period, four of them rear end collisions in the northbound direction on US 101. All of the crashes occurred during the day, with wet pavement conditions in four of the collisions.

The intersection has an unusual configuration, in which northbound drivers trying to reach Lower Harbor Dr. are prohibited from turning left by a traffic separator, but instead must turn right onto South Bank Chetco River Road and then left onto Underpass Rd., which travels under the Chetco River River Bridge and joins Lower Harbor Rd. on the west side of US 101. This may be confusing for drivers unfamiliar with the area, such as tourists, causing them to slow on US 101 as they attempt to navigate this route. This driver action could result in rear-end collisions, because drivers following behind do not expect slowing.

To reduce driver confusion, guide signs could be placed prior to the intersections showing the intersection's configuration and directions to Lower Harbor Road and Southbank Chetco River Road. In addition, a reduction in the existing 45-mph speed limit could be considered to provide drivers more

# US 101 Corridor Plan

## Figure 15 Crash Analysis Locations



Source: ESRI, ODOT

time to navigate the intersection and to react to slower-moving vehicles as they approach the intersection.

#### *US 101/Sea Bird RV Park Driveway*

The driveway for the Sea Bird RV Park is located north of Sunshine Cove Lane along US 101. A pedestrian was fatally injured while was crossing US 101 at this location in dark conditions. The pedestrian was not visible to the driver.

Safety could be improved by lowering the 45-mph speed limit, which would provide drivers more time to recognize and react to pedestrians in the roadway and make it easier for pedestrians to judge gaps in the traffic stream. The addition of lighting would provide drivers with increased reaction time by making pedestrians more visible.

#### *US 101/Zimmerman Lane*

US 101/Zimmerman Lane is a signalized intersection where there were ten crashes, consisting of four rear end, four turning, and two sideswipe collisions.

Four of the rear-end collisions occurred in the southbound direction on US 101. The intersection is the first location where drivers may need stop within the 45-mph segment south of the Chetco River. This could be one of the causes of the rear-end crashes, since drivers may not be expecting to stop. There is an existing intersection ahead sign in the southbound direction, but it is placed roughly 635 feet in advance of the intersection, so that drivers may forget the warning by the time they approach the intersection. Therefore, this sign should be relocated to 175 feet from the intersection, as recommended in the *MUTCD*.

The four turning crashes involved drivers on either US 101 or the minor road approaches failing to yield the right-of-way. Typically, failure-to-yield collisions result from drivers not recognizing the intersection and the need to stop. A countermeasure to improve drivers' awareness of the intersection would be to repaint the stop bars on all of the approaches, because these are in worn condition.

A reduction in the speed limit on US 101 may also help address these problems by providing drivers with more time to recognize the need to stop.

#### *US 101/South Coast Center Driveways*

The two South Coast Center driveways are located 300 and 600 feet north of Hoffeldt Lane on the east side of US 101 . There have been nine crashes over the past five years in this vicinity. Six of these



occurred at the driveways in the northbound direction, two were pedestrian collisions (one fatal), and the remaining crash was a rear-end that may or may not have been related to the driveways.

The proximity of the driveways to the intersection may have been a significant factor in the turning crashes. Northbound drivers on US 101 may not anticipate turning vehicles so close to the intersection and drivers at the driveways attempting to enter the traffic stream may have difficulty judging gaps in the traffic platoons formed by the intersection. These crashes could be decreased by access modifications, such as driveway consolidation, the restriction of the turning movements to right-in/right out, or the rerouting of the shopping center traffic to the Hoffeldt Road driveway.

Both of the pedestrian crashes occurred at night at the nearest driveway to the intersection, which lies roughly 300 feet to the south. Between the intersection and the driveway, there is a sidewalk on the east side of US 101, but not the west side. Provision of a sidewalk on the west side may encourage pedestrians to use the crosswalk at the intersection rather than attempting to cross US 101 away from the intersection. Because both crashes occurred at night, an additional improvement would be the installation of lighting to increase pedestrian visibility.

#### *US 101/Hoffeldt Lane*

Most of the crashes at the US 101/Hoffeldt Lane intersection were turning or rear-end collisions. Three of the four rear-end collisions were on US 101. The turning crashes involved vehicles turning onto US 101 from Hoffeldt Lane and being struck by vehicles on US 101 because of the failure to yield by drivers on Hoffeldt Lane or US 101.

To increase the likelihood of stopping on US 101, signal ahead signs could be placed in advance of the intersection. On Hoffeldt Lane, the distance from the stop bars to the signal heads on the opposite side of the intersection is greater than 150 feet, the maximum recommended distance in the *MUTCD*. This is due to the wide intersection cross-section and the skewed angle of the intersection. In this case, supplemental signals should be provided on the nearside approaches to increase the visibility of the signal to drivers on Hoffeldt Lane.

The stop bars on all of the approaches are worn and should be repainted to better delineate the intersection. In addition, a reduction in the speed limit on US 101 should be considered to provide drivers more time to recognize the signal and react to stopped vehicles.

#### *US 101/Benham Lane*

At this intersection, there was a pattern of failure to yield crashes similar to that at US 101/Hoffeldt Lane. A total of six of these collisions occurred, five of them involving vehicles turning onto US 101 from Benham Lane. As at Hoffeldt Lane, a distance of roughly 175 feet separates the stop bars on the Benham Lane approaches and the signal heads on the opposite side of the intersection, exceeding the



recommended maximum distance of 150 feet. This is due to the wide intersection cross-section and the skewed intersection angle. Therefore, supplemental signal heads should be placed on the nearside approaches of Benham Lane to increase the visibility of the signal. In addition, signal ahead signs could be placed along US 101 in advance of the intersection to increase the awareness of drivers on US 101.

There were two pedestrian crashes in the crosswalk on US 101, one of them a fatal collision that occurred at night. In one crash, the pedestrian was struck by a vehicle turning left from Benham Lane onto northbound US 101 and the other involved a southbound vehicle on US 101. Roadway lighting would improve the visibility of pedestrians at night, and the nearside signals on Benham Lane would increase driver awareness of the signal.

Four additional crashes occurred just to the north of the intersection. On the east side of the highway, there are three closely spaced driveways within 225 feet of the intersection, where there was a rear-end crash and a turning crash. Access modifications at this location would decrease the likelihood of these types of crashes. On the west side of the intersection, two rear-end crashes occurred between southbound vehicles and vehicles parked in the shoulder area. Parking along US 101 is not prohibited within the study area. Because there is not an actual right-turn lane at this location, but only a short flare at the intersection, the shoulder area is used as a de facto right turn lane. This is encouraged by the 45-mph speed limit on US 101. A potential countermeasure for this problem would be to install a right-turn lane. Alternatively, a reduction the speed limit would lessen the need to use the shoulder area as a deceleration lane.

#### *Raymond Lane to McVay Lane (north access)*

A total of 14 crashes occurred within this segment over the five year period. The collisions were spread out over the segment. Eight of the crashes were rear-end collisions, likely related to vehicles slowing to turn off the highway. There are numerous accesses along this segment, with a speed limit of 55 mph. Given these conditions, the likelihood of some of these crashes could be reduced with the installation of a two-way center turn lane.

The remaining crashes were a combination of fixed-object, sideswipe, and animal collisions that did not appear to be related to the roadway environment.

#### *US 101/State Line Road*

There were two crashes at the US 101/State Line Road intersection; both were rear-end collisions in the northbound direction. In both crashes, the leading driver stopped or slowed unexpectedly in the travel lane, causing the vehicle following behind to collide. Neither of the crashes appeared to be related to the roadway environment.



### ***Reported Safety Needs***

The primary safety need mentioned by the TAC was the installation of roadway lighting (see Figure 11 and Appendix C). The benefits of roadway lighting would be increased conspicuity of conflicting traffic and pedestrians, particularly in rainy or foggy conditions. The specific locations where this is needed are:

- Chetco River Bridge to Benham Lane (both sides of highway)
- US 101/Zimmerman Lane
- US 101/Hoffeldt Lane
- US 101/Benham Lane
- US 101/State Line Road

Between the Chetco River Bridge and Benham Lane, the lighting could be pedestrian scale, similar to that in Brookings. This would also create a greater sense of community between the Harbor area and Brookings.

Another safety problem is the excessive speeds from the Chetco Bridge to Benham Lane caused by the lack of traffic enforcement. A particular problem area within this segment is near Hall Way. Potential methods for reducing speeds would be the lowering of the speed limit and the use of driver feedback signs.

### **Geometrics**

Geometric needs were identified for roadway segments and intersections by comparing existing geometric features to roadway standards. The standards contained in ODOT's *Highway Design Manual (HDM)*<sup>20</sup> for the rural principal arterial – other classification were used for the comparison. The segment features analyzed were lane width and left and right shoulder widths. The intersection features included intersection angle and the approach width, approach grade, and intersection sight distance on the minor road approaches.

### ***Segment Geometrics***

According to the standards for 3R rural roadway projects, the travel lane width for US 101 should be 11 feet and the shoulder width should be 4 feet. Table 8 shows a comparison between the inventoried lane and shoulder widths and the standards. The existing lane widths vary between 12 feet and 20

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<sup>20</sup> Oregon Department of Transportation, [Highway Design Manual](#), (2012).



feet, while the shoulder widths vary from 5 to 15 feet. All of the lane and shoulder widths meet the standards.

**Table 3. Lane and Shoulder Widths**

Analysis Segment	From/To	Milepost	Lane Width (ft.)	Left Shoulder Width (ft.)	Right Shoulder Width (ft.)
Standard <sup>21</sup>			11	4	4
1	Chetco River Bridge - Zimmerman Ln	358.02 – 358.57	12	10	9
2	Zimmerman Ln - Hoffeldt Ln	358.57 – 358.76	12	10	9
3	Hoffeldt Ln – Benham Ln	358.76 – 359.32	12	10	9 – 10
4	Benham Ln – Raymond Ln	359.32 – 359.94	12	5 – 10	6 – 11
5	Raymond Ln – McVay Ln (north)	359.94 – 361.16	12	11	11
6	McVay Ln (north) – OR/CA Border	361.16 – 363.11	12 - 20	8 – 13	5 – 15

**Intersection Geometrics**

Existing intersection geometrics are shown in the intersection diagrams in Appendix A and summarized in Table 9 below.

**Table 9. Existing Intersection Turn Lanes**

Intersection	Northbound		Southbound	
	LT	RT	LT	RT
Lower Harbor Dr/S. Bank Chetco River Rd				
Sunshine Cove Ln				
Court St				
Hall Way				
Zimmerman Ln	√		√	
Hoffeldt Ln	√		√	
Kings Way				
Benham Ln	√		√	
Pedroli Dr				
Raymond Ln				

<sup>21</sup> Oregon Department of Transportation, Highway Design Manual, (2012).



**Table 9. Intersection Turn Lanes (cont.)**

Intersection	Northbound		Southbound	
	LT	RT	LT	RT
Pelican Bay Dr				
Museum Rd (north)				
Museum Rd (south)				
Camellia Dr				
McVay Ln (north)				
McVay Ln (south)				
Freeman Ln				
Ocean View Dr/Winchuck River Rd	√		√	
Itzen Dr				
State Line Rd	√		√	√

Barriers exist at two of the intersections to limit traffic movements. At the US 101/Lower Harbor Drive/South Bank Chetco River Road intersection, a median traffic separator restricts through movements on Lower Harbor Drive/South Bank Chetco River Road. A concrete barrier at US 101/McVay Lane (north) prohibits left-turns out of McVay Lane, so that the only permitted movement is right-turns onto northbound US 101.

The following geometric standards from the *AASHTO Green Book*<sup>22</sup> apply to the intersections along the corridor:

- Minor road approach width – 22 feet
- Minor road approach grade – 3 percent or lower
- Intersection angle – 60 degrees or higher

In addition, adequate intersection sight distance is required for drivers turning from the minor road to clearly see oncoming traffic, turn into the traffic stream, and safely accelerate. The largest sight distance requirements are for drivers turning left from the minor road. Longer sight distances are required for trucks than cars to account for the slower acceleration rate of trucks. The required intersection sight distance depends on the speed of the major roadway. Along US 101, the required sight distance is 500 feet within the 45 mph segments and 610 feet within the 55 mph segment<sup>23</sup>. Table 9 summarizes the comparison of the intersection geometrics to the standards.

<sup>22</sup> AASHTO, *A Policy on the Geometric Design of Highways and Streets*, (2011).

<sup>23</sup> AASHTO, *A Policy on the Geometric Design of Highways and Streets*, (2011).



**Table 4. Intersection Geometrics**

<b>Intersection</b>	<b>Approach Width (ft.)</b>	<b>Approach Grade Sufficient?</b>	<b>Intersection Angle <math>\geq</math> 60 Degrees?</b>	<b>Intersection Sight Distance Sufficient?</b>
Standard	22	$\leq$ 3%	$\geq$ 60 Degrees	500 ft. (45 mph) 610 ft. (55 mph)
Lower Harbor Dr/S Bank Chetco River Rd	28/25*	<b>No/Yes*</b>	<b>No/Yes*</b>	Yes
Sunshine Cove Ln	43	Yes	<b>No</b>	Yes
Court St	60	Yes	<b>No</b>	Yes
Hall Way	24	<b>No</b>	Yes	Yes
Zimmerman Ln**	--	Yes	Yes	--
Hoffeldt Ln**	--	Yes	<b>No</b>	--
Kings Way	30	Yes	Yes	Yes
Floral Hill Dr	35	Yes	Yes	Yes
Benham Ln**	--	Yes	<b>No</b>	--
Pedroli Dr	40	Yes	Yes	Yes
Raymond Ln	<b>18</b>	Yes	Yes	Yes
Pelican Bay Dr	28	Yes	Yes	Yes
Museum Rd (north)	67	Yes	<b>No</b>	Yes
Museum Rd (south)	48	Yes	<b>No</b>	Yes
Camellia Dr	52/22	Yes	Yes	Yes
McVay Ln (north)	60	Yes	<b>No</b>	Yes
McVay Ln (south)	50	Yes	Yes	Yes
Freeman Ln	<b>50/20</b>	Yes	Yes	Yes
Ocean View Dr/Winchuck River Rd	42/47	Yes	<b>No</b>	Yes
Itzen Dr	26	Yes	Yes	Yes
State Line Rd	76/32	Yes	Yes	<b>No</b>

\* Westbound/eastbound.

\*\* Approach width and intersection sight distance standards are not applicable for signalized intersections.

The approach width standard is not met at US 101/Raymond Lane and on the eastbound approach of US 101/Freeman Lane. There are two approaches with greater than 3 percent grade, at Lower Harbor Road and Hall Way. Several intersections do not meet the intersection angle standard, including Lower Harbor Drive, Sunshine Cove Lane, Court Street, and the north and south accesses at Museum Road. The only intersection where the sight distance standard is not met is at US 101/State Line Rd.



### ***Reported Geometric Needs***

Geometric needs were identified by the TAC at three locations (see Figure 11 and Appendix C). At the US 101/Hoffeldt Lane and US 101/Benham Lane intersections, the pork chop islands are difficult to see. Also, the scale of the islands is reduced by the pedestrian cut-throughs. The visibility could possibly be improved by repainting. Access to the Sea View Senior Living facility via US 101/Gerlach Lane is poor.

## **PUBLIC TRANSPORTATION**

Curry Public Transit, formed in 1997, serves Curry County through the Dial-A-Ride and Coastal Express services. Dial-A-Ride provides door-to-door on-demand service within Brookings and Harbor. To use the service, a reservation must be made for a pickup. It is most commonly used by seniors and people with disabilities. The buses accommodate riders with special needs, such as wheelchairs and walkers. Within the Brookings area, this service is available between 8:30 AM to 4:00 PM, Monday through Friday. In 2011-2012, Dial-A-Ride provided 13,390 one-way trips.

The Coastal Express travels from Coos Bay/North Bend to Smith River, California along US 101. The Brookings stop is located at Ray's Food Place at US 101/5<sup>th</sup> Street. Within the study area, the northbound stop is at the Umpqua Bank at US 101/Court Street and the southbound stop is across US 101 at the Chevron gas station/Apple Peddler restaurant. The Coastal Express operates Monday through Friday three times per day. In 2011-2012, it carried 14,590 one-way trips.<sup>24</sup>

The transit needs identified by the TAC included more transit service, lower fares to accommodate the transportation needs of lower-income and elderly residents, particularly in the Harbor area, and a bus shelter at the South Coast Center.

## **BICYCLE/PEDESTRIAN**

The bicycle and pedestrian system in the study area consists of shoulder bikeways, sidewalks, and crosswalks. The existing facilities and volumes were inventoried. Bicycle and pedestrian needs were analyzed based on a comparison of the facility characteristics to the standards and the needs identified by the TAC.

### **Facilities**

The location of the shoulder bikeways, sidewalks, and intersections with crosswalks are shown in Figure 16. The shoulders on US 101 are used by bicyclists as shoulder bikeways. The shoulder widths range from five to fifteen feet. There are six foot wide sidewalks within certain areas of the northern part of the corridor, but none available to the south of Benham Lane. All of the crosswalks are located

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<sup>24</sup> Curry Public Transit website, <http://www.currypublictransit.org/index.html>, accessed November 1, 2012.

# US 101 Corridor Plan

Figure 16  
Bicycle and Pedestrian Facilities





at the signalized intersections at Zimmerman Lane, Hoffeldt Lane, and Benham Lane. More detailed crosswalk information is included in the intersection diagrams in Appendix A.

### Bicycle and Pedestrian Volumes

Pedestrian and bicyclist counts were collected as as part of the 16-hour traffic counts conducted for selected study area intersections in March, 2008. Pedestrian and bicycle demand is highest near Lower Harbor Drive and South Bank Chetco River Road, just south of the Chetco River Bridge. This area is nearest to the Brookings City Limit and has bicyclist/pedestrian characteristics more similar to those of an urban area than the rest of the study area, which is more rural.

**Table 5. 16-Hour Bicycle and Pedestrian Volumes**

Intersection	Pedestrians	Bicyclists
Lower Harbor Dr/Underpass Rd	42	21
South Bank Chetco River Rd/Underpass Rd	34	2
Hoffeldt Ln/US 101	25	4
Benham Ln/US 101*	--	19
Pedroli Dr/US 101	7	11

\* Pedestrians were not counted at this location.

Note: Bicycle/pedestrian counts were not conducted at the other 16-hour count locations.

### Pedestrian and Bicycle Needs

Within the study area, US 101 is classified as a rural principal arterial – other facility in the *HDM*. The *Oregon Bicycle and Pedestrian Design Guide*<sup>25</sup> indicates that for rural facilities, shoulders should be provided that are wide enough (six feet) to accommodate pedestrian and bicycle traffic. According to this guideline, the only portion of the corridor that is not adequate for bicycle and pedestrian travel is the section of US 101 between Pedroli Lane and Raymond Lane, where shoulder widths are five feet.

As described above, however, the volume and pattern of bicycle and pedestrian travel along US 101 in the northern part of the study area are more characteristic of those in an urban environment, because of the density and mix of commercial and residential development. Therefore, urban-type pedestrian and bicycle facilities are needed in this part of the corridor. This need is also evidenced by the frequency of pedestrian collisions in this area over the past five years:

- One pedestrian crash between Lower Harbor Road/Southbank Chetco River Road and Sunshine Cove Lane near the entrance to Sea Bird RV Park on January 21, 2011 at 5:00 PM, resulting in a

<sup>25</sup> Oregon Department of Transportation, Oregon Bicycle and Pedestrian Design Guide, (2011).

fatality. The pedestrian was crossing US 101 in the westbound direction and was struck by a northbound vehicle (see collision diagram in Appendix D).

- Two pedestrian collisions 200 feet north of Hoffeldt Lane, near the South Coast Center access. The first collision occurred on February 2, 2007 at 6:00 PM between a pedestrian crossing US 101 in the eastbound direction and a northbound vehicle, resulting in an injury. The other collision was on February 3, 2010 at 8:00 PM and involved a pedestrian crossing US 101 in the eastbound direction and a southbound vehicle. This crash resulted in a fatality.
- Two pedestrian collisions at US 101/Benham Lane in the crosswalk on the north side of the intersection. The injury crash occurred on April 23, 2007 at 11:00 AM involving a vehicle turning left onto US 101 from eastbound Benham Lane and a westbound pedestrian. The second crash was on September 3, 2008 at 11:00 PM in which an eastbound pedestrian was fatally struck by a southbound vehicle on US 101.

A common feature in four out of the five crashes is that they occurred at night at locations where there was no lighting.

The comments received from the TAC regarding bicycle and pedestrian conditions were consistent with the findings of the needs analysis (see Figure 11 and Appendix C). Corridor-long deficiencies are the lack of sidewalks and ADA-compliant curb ramps. Between the Chetco River Bridge and Benham Lane, there are needs for sidewalks and roadway lighting along both sides of US 101 and crosswalks near high-density residential areas.

Specific areas of concern were:

- Between the Chetco River Bridge and Sunshine Cove Lane there are high pedestrian volumes and a lack of sidewalks, as well as a large transient population near South Bank Chetco River Road/Lower Harbor Road.
- At the intersections of Zimmerman Lane, Hoffeldt Lane, and Benham Lane, the signal timing does not accommodate pedestrians well, the pedestrian push buttons need to be accessible, and lighting is needed.
- Near Zimmerman Lane, a better pedestrian connection is needed between the shopping areas on the east and west sides of US 101.

A corridor-long need mentioned for bicyclists is better maintenance of the shoulder areas, because glass and debris in the shoulders cause bicyclists to ride in the travel lanes. Also, way-finding signage is needed at the north and south ends of the corridor to inform bicyclists of the change in the designated bike route from US 101 to Ocean View Dr.



Based on the analysis of existing pedestrian and bicycle conditions and the input received from the TAC, the following general needs were identified for Segments 1 – 3 between the Chetco River Bridge and Benham Lane (see Figure 17):

- Continuous sidewalks along both sides of US 101.
- Continuous lighting along both sides of US 101.
- Safe crossing areas between origins and destinations on either side of the highway with high pedestrian demand.<sup>26</sup>

To the south of Benham Lane, there is an additional need for wider (6 foot) shoulders between Pedrioli Lane and Raymond Lane to accommodate bicyclists and pedestrians.

The pedestrian network was also analyzed for Americans with Disabilities Act (ADA) deficiencies. Accessible routes are identified by walking surfaces with a running slope not steeper than 1:20 and curb ramps meeting the ADA standards<sup>27</sup>. On US 101 within the study area, there are sidewalks intermittently between the Chetco River Bridge and Benham Lane. Within this area, there are three intersections with marked crosswalks at Zimmerman Lane, Hoffeldt Lane, and Benham Lane. Along the sections of US 101 that have sidewalk, ADA deficiencies exist at two locations where there are no ramps to allow for access from the sidewalk to the street:

- North driveway of the South Coast Center
- End of sidewalk north of Hall Way on the east side of US 101

The following additional ADA needs were also identified:

- Overgrown vegetation reduces the usable width of the sidewalk south of Lower Harbor Road on the west side of US 101.
- Curb ramps at the signalized intersections (Zimmerman Lane, Hoffeldt Lane, and Benham Lane) are not compliant with the latest design standard, which requires curb ramps on both sides of the corner instead of just one in the center.

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<sup>26</sup> The specific locations for the crossing improvements would need to be determined in a more detailed study.

<sup>27</sup> 2010 ADA Standards for Accessible Design. Chapter 4: Accessible Routes, 406 Curb Ramps. Department of Justice. September 15, 2010.

# US 101 Corridor Plan

## Figure 17 Pedestrian and Bicycle Needs



Source: ESRI, ODOT



## **BRIDGES**

There are two bridges in the study area, one at the Chetco River on the north end of the study area (M.P. 357.98) and the other on south end at the Winchuck River (M.P. 362.61). The Chetco River Bridge (#01143D) was built in 1972, while the Winchuck River Bridge (#09091A) was built in 1965.

### **Bridge Conditions**

The condition of the bridges was assessed using three measures: the bridge sufficiency rating, bridge feature ratings, and bridge restrictions. The bridge sufficiency rating is the most general, while the other measures describe in more detail the condition of specific features of the bridge.

#### **Bridge Sufficiency Rating**

The sufficiency rating for bridges is determined by periodic inspections performed by ODOT. The rating is a numeric value indicative of the sufficiency of a bridge to remain in service. A score of 100% would represent an entirely sufficient bridge, while a score 0% would indicate a completely deficient bridge. The rating is calculated using a formula comprising the following factors:

- Structural adequacy and safety (maximum of 55%)
- Serviceability and functional obsolescence (maximum of 30%)
- Essentiality for public use (maximum of 15%)
- Special reductions (maximum of -13%)

The Federal Highway Administration uses this index in evaluating the nation's bridges for funding distribution and eligibility. Those bridges with a sufficiency rating of 80 or less are eligible for rehabilitation. Bridges with a rating of 50 or less are eligible for replacement.

The Chetco River Bridge has a sufficiency rating of 74,<sup>28</sup> meaning that it is eligible for rehabilitation. The Winchuck River Bridge received a score of 37.3, making it eligible for replacement.

#### **Bridge Feature Ratings and Restrictions**

As part of ODOT's bridge inspection program, various bridge components are evaluated on a scale of zero-to-nine according to the National Bridge Inventory (NBI) system, including the bridge deck, superstructure, and substructure. The highest rating of very good is for scores of 8 or 9, 7 is good, 5 or 6 is fair, 4 is poor, and 3 or less is very poor. Bridges with the lowest ratings of poor or very poor are considered to be structurally deficient.

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<sup>28</sup> Oregon Department of Transportation, [Bridge Condition Report](#), 2012.



As shown in Table 11, the ratings for both bridges range from fair to good. The lowest rating for the Chetco River Bridge is for the bridge deck, while the superstructure has the lowest rating for the Winchuck River Bridge.

There are no weight or height restrictions on either bridge. The Winchuck River Bridge has a narrow horizontal clearance, which is one of the reasons for its lower sufficiency rating.

**Table 6. Bridge Feature Ratings and Restrictions**

	<b>Chetco River Bridge</b>	<b>Winchuck River Bridge</b>
<b>Bridge Feature</b>		
Bridge deck	6	7
Superstructure	7	5
Substructure	7	7
<b>Bridge Restrictions</b>		
Weight	None	None
Height	None	None

## **CORRIDOR HEALTH**

The U.S. Department of Transportation recommends the use of a multiple criteria to analyze needs and prioritize transportation projects and investments in rural areas.<sup>29</sup> Following this guidance, a Corridor Health Tool was applied to US 101 within the study area. The corridor health concept is based on the idea of measuring the “health” of the corridor within several different categories of performance, and then combining the measurements to provide a picture of overall corridor health.

### **Development of Factors, Weights, and Formulas**

The Corridor Health Tool comprises a set of factors, weights, and formulas that are used to calculate a composite health score for each corridor segment. The factors correspond to the same areas of need described in the previous sections, i.e., mobility, traffic operations, safety, geometrics, and bicycle and pedestrian facilities.

A set of weights was developed for the factors, with the sum of the weights equal to 100. The weights were determined based on an assessment of the relative importance placed on each of the need areas by the TAC members.

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<sup>29</sup> U.S. Department of Transportation, Planning for Transportation in Rural Areas, (2001).



Formulas were developed to calculate scores for the factors. The formulas were set up to produce scores ranging from zero to one, with a score of one representing “perfect” health and a score of zero indicating very poor conditions or performance. The weights and formulas for each factor are shown in Table 12.

**Table 7. Corridor Health Score Weights and Formulas**

Factor	Weight	Scoring Formula
Safety	30	=0.5/X if $X \geq 0.5$ ; else 1 Where: $X = 0.7*(\text{Fatal + Injury Crash Rate for Segment/ Average for Facility Category}) + 0.3*(\text{Total Crash Rate for Segment/ Average for Facility Category})$
Traffic Operations	20	=No. of Locations with Turn Lanes/No. of Locations with Turn Lane Needs
Geometrics	20	=0.2*min(Lane Width/Lane Width Standard,1)+0.8*min(Shoulder Width/Shoulder Width Standard,1)
Bicycle/Pedestrian Facilities	20	=(0.33*% of Segment with Adequate Sidewalks+0.33*% of Segment with Adequate Bike Facilities+0.33*% of Segment with Adequate Lighting)/100*
Capacity	10	=min((1-VC)/(1-VC Standard),1)

\* For the segments in the rural portion of the corridor, sidewalks and lighting were excluded, so the formula was: % of Segment with Adequate Bike Facilities/100.

The factor scores were multiplied by the weights to produce an overall corridor health score for each segment ranging between 0 and 100, with 100 representing the best score attainable and 0 being the worst score.

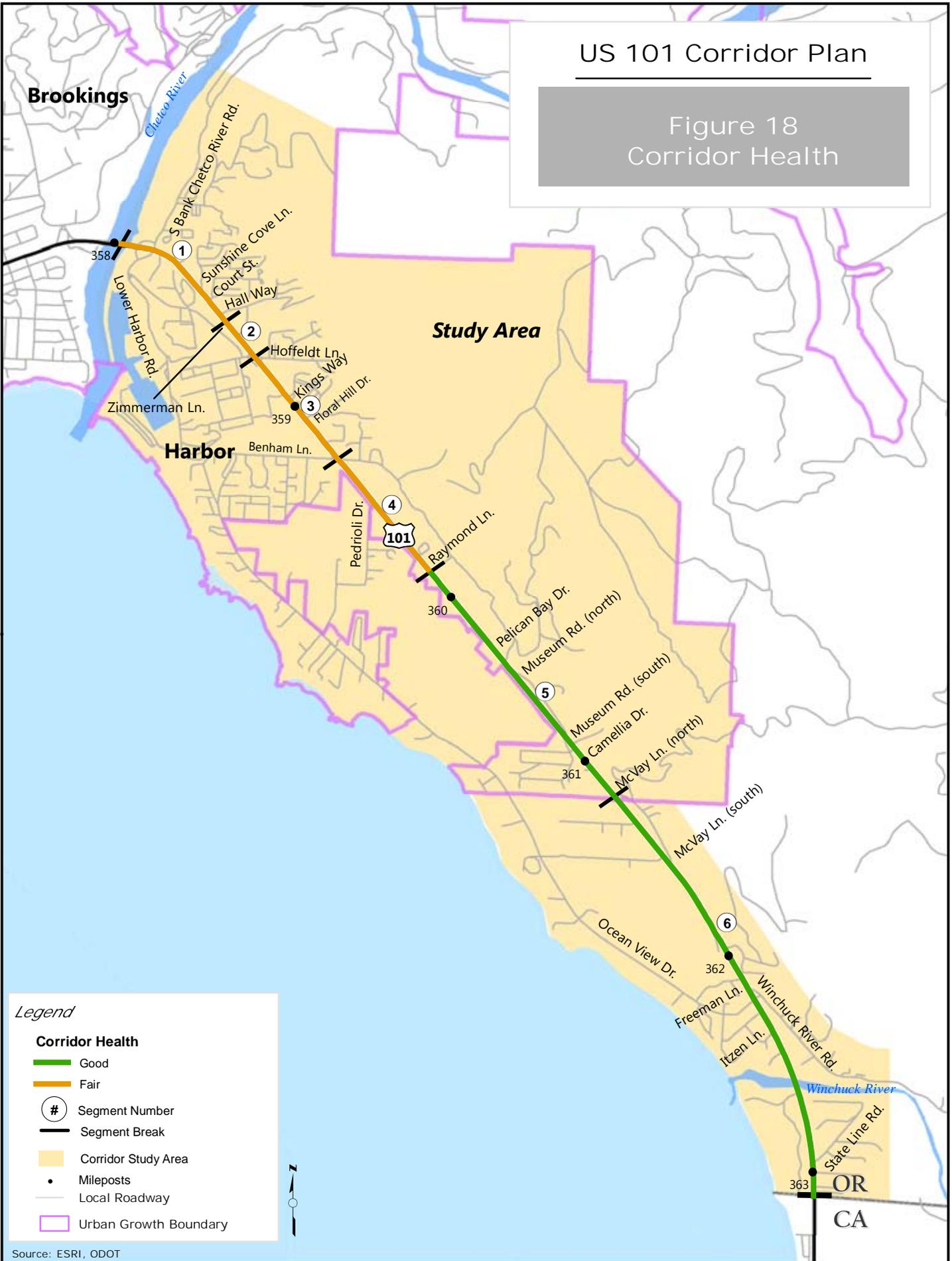
## Results

The corridor health scores are shown in Table 13 and Figure 18. For ease of understanding, the segments were assigned to good, fair, and poor categories of corridor health based on the scores. The scores corresponding to each category are the following:

- Good – 75 – 100
- Fair – 50 – 74
- Poor - < 50

# US 101 Corridor Plan

## Figure 18 Corridor Health



### Legend

#### Corridor Health

Good

Fair



Segment Number



Segment Break



Corridor Study Area



Mileposts



Local Roadway



Urban Growth Boundary



**Table 8. Corridor Health Scores**

Analysis Segment	From/To	Health Score					
		Safety	Traffic Ops.	Geom.	Bike/Ped.	Mobility	Total Score
1	Chetco River Bridge - Zimmerman Ln	1.00	0.00	1.00	0.51	1.00	70.12
2	Zimmerman Ln - Hoffeldt Ln	0.35	1.00	1.00	0.50	1.00	70.40
3	Hoffeldt Ln – Benham Ln	0.82	0.00	1.00	0.42	1.00	62.97
4	Benham Ln – Raymond Ln	1.00	0.00	1.00	0.38	1.00	67.54
5	Raymond Ln – McVay Ln (north)	1.00	1.00	1.00	1.00	1.00	100.00
6	McVay Ln (north) – OR/CA Border	1.00	0.00	1.00	0.97	1.00	79.36

Segments 1-3 in the more urban part of the corridor have fair corridor health, in addition to Segment 4. Segments 5 and 6 at the south end of the corridor have good corridor health.

Segment 1 is lacking in the areas of traffic operations and bicycle/pedestrian facilities. There are turn lane needs, and a sidewalk exists only on one side of US 101. In addition, there is no continuous roadway lighting. Although the crash rate for this segment is higher than the statewide average, it received a good safety score because of the relatively low severity of the crashes.

Segment 2 also received low scores for the safety and bicycle/pedestrian factors, because of the high crash rate and the lack of sidewalks and lighting. Segment 3 has the lowest total corridor health score, with needs in the areas of safety, traffic operations, and bicycle/pedestrian facilities. This segment had three fatal crashes over the most recent five-year period. The corridor health score for Segment 4 was similar, because of missing turn lanes and shoulder widths that are too narrow for bicyclists and pedestrians over a portion of the segment.

Segment 5 had a perfect score of 100, representing no needs within any of the categories. Segment 6 also received a good total score, with a low score for the traffic operations area only.

Overall, the existing corridor health for US 101 within the study area is fair/good.



## LAND USE CONDITIONS

The study area, shown in Figure 19, contains land along US 101 from the southern border of the City of Brookings to the Oregon - California border. While this includes land that is inside the Brookings urban growth boundary (UGB), the study area lies entirely outside of the city limits, and, as such, is subject to the land use planning regulations of Curry County. The unincorporated area within the UGB represents the community of Harbor.

The documentation of existing land use conditions includes a land use and population element as well as information on Title VI populations and environmental justice within the study area. Information on land use and population is provided for:

- Existing land uses
- Current and planned zoning
- Parks and recreation areas (Federal Section 4(f) and 6(f) resources)
- Community destinations such as schools, community centers, and commercial centers

Information related to Title VI and Environmental Justice is presented on concentrations of federally recognized populations in the study area, including minorities, low-income, and elderly people. It incorporates observations from representatives of the Curry County Public Health Department who were interviewed in September 2012.

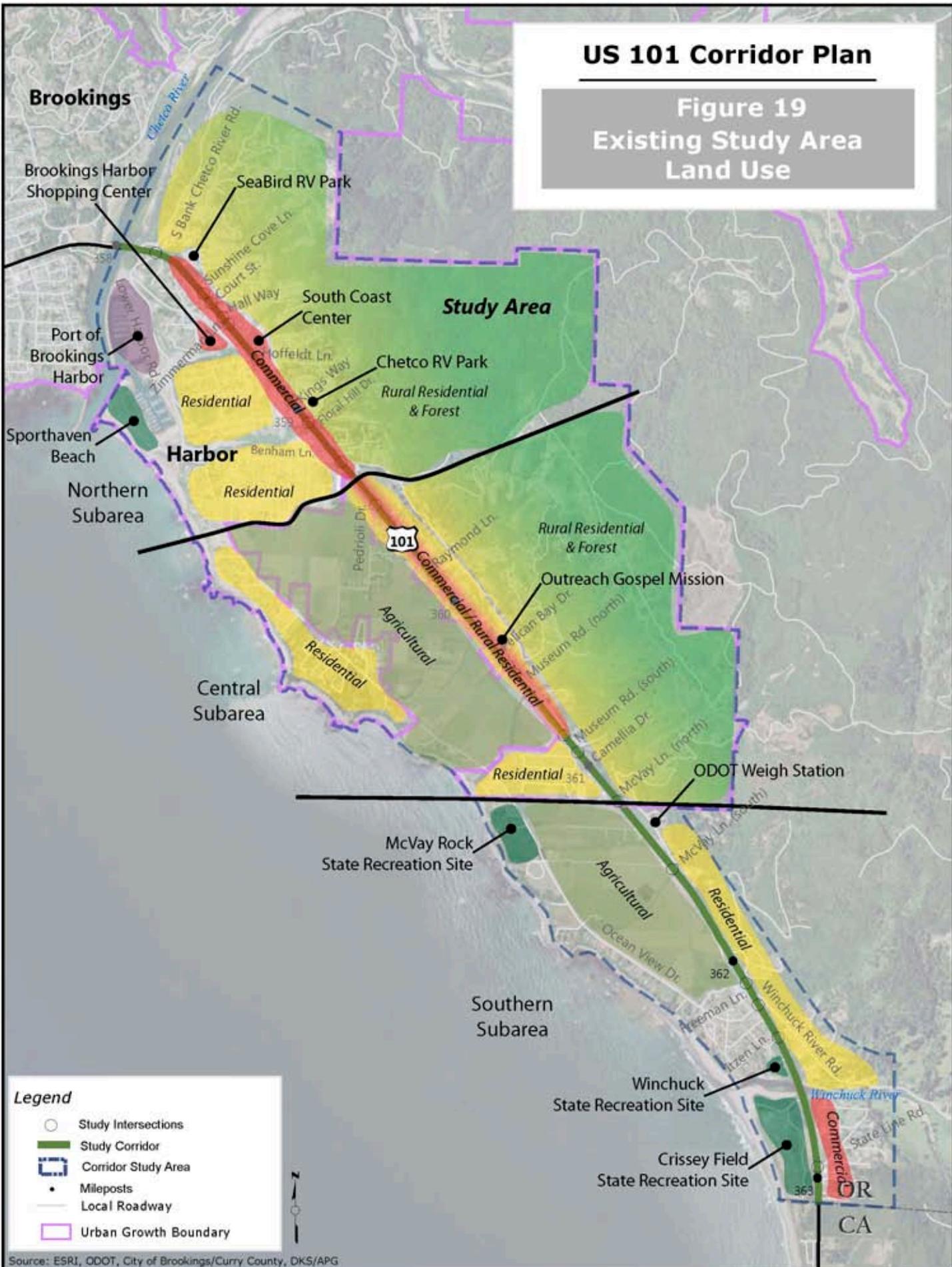
## EXISTING LAND USES

Existing land uses in the study area were surveyed on a field visit in September 2012. While not every existing land use was identified, those that may have a significant impact on US are included here. To help identify the location of these uses, the descriptions are organized under three subareas: northern, central, and southern. These sections are generally divided by the UGB just south of Benham Lane and the UGB that coincides with McVay Lane (north), as shown in Figure 19. A specific use that appears at least once in all of the subareas is mini storage. While providing a storage service, this use is also a common “placeholder” as landowners consider other development possibilities.

The northern subarea is the densest, most populated, and most developed part of the study area. It lies directly south of Brookings and includes the community of Harbor. There are high concentrations of residential uses as well as clusters of commercial uses. In addition to neighborhoods/subdivisions of single-family detached housing, there are two RV parks abutting the highway – Sea Bird RV Park and Chetco RV Park – as well as Seaview Assisted Living to the east of the highway. Commercial uses include the Brookings Harbor Shopping Center, with a Shop Smart and Sears, and the South Coast

# US 101 Corridor Plan

Figure 19  
Existing Study Area  
Land Use



Source: ESRI, ODOT, City of Brookings/Curry County, DKS/APG



Center, with Rite Aid, Grocery Outlet, and Dollar Tree stores. A vacant large-format retail space is located directly south of the South Coast Center. Commercial uses at the south end of this subarea are two gas stations, Gold Beach Lumber, and the Harbor Inn Hotel.

The central subarea is split between land inside the UGB on the east side of US 101 and land mostly outside the UGB on the west side. Development in this subarea is characterized by a few commercial uses directly adjacent to the highway – framing, marine supply, veterinary services, and vehicle supplies and services – and residential uses, mostly to the east side of the highway and one section/subdivision on the west side of the highway inside the UGB at the south end of this subarea. As in the northern subarea, these residential uses include both stick-built and manufactured housing. As can be seen in the aerial photo in Figure 19, land uses west of the highway are predominantly large-lot rural and agricultural uses, and uses on the east side of the highway become limited due to forest and hillsides. Of note in this subarea are institutional and social service oriented uses such as churches, the Outreach Gospel Mission, and the Advance Sleep Disorders Clinic.

The uses in the southern subarea are all outside the UGB. Therefore, development is sparse, with the exception of the subdivisions and low-density housing at the south end of the study area near the ocean, Winchuck River, and state line. Development along the highway is minimal. Public uses include the ODOT weigh station directly adjacent to the highway and McVay State Wayside, Crissey Field State Park, and Winchuck State Recreation Area, which are all located just off of the highway. There are a few commercial uses near the state line, including a market and a home/farm/garden supplies store.

### **Significant Land Uses**

Based on information received from the TAC, the following tend to be areas of high use and important uses in the study area.<sup>30</sup> They are labeled in Figure 19.

In the northern subarea, the South Coast Shopping Center and Harbor Shopping Center, located across the highway from each other, draw traffic from Brookings and Harbor, as well as shoppers from California who come to Oregon to avoid sales tax.

Within the central subarea, the Outreach Rescue Mission for men is located on the east side of the highway at US 101/Robin Lane, and a women's mission is going to be opened on the west side of the highway. Other community destinations and resources in this subarea include the Town & Country Animal Clinic Soccer Field and the Chetco Valley Historical Society Museum.

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<sup>30</sup> TAC meeting on September 20, 2012



The only significant use in the southern subarea is the Crissey Field State Park.

## **CURRENT AND PLANNED ZONING**

The community of Harbor is made up of unincorporated county land inside the UGB, directly south of the Brookings city limits. Both the land inside and outside of the UGB is subject to the land use planning regulations of Curry County. Land use regulations are implemented through zoning designations, which are shown in Figure 20.

For the northern and central subareas of the study area, there is a general pattern of commercial land use designations along the highway (e.g., C-1, C-2, and RC zoning), with residential land use designations (e.g., R-1, R-2, R-3, and RR zoning) behind those zones. To the west of the highway in the central and southern subareas – the parts of the study area outside the UGB – there is a mixture of resource and rural residential designations.

Table 14 provides an overview of the types of uses permitted outright in the zones found in the study area. A detailed table of uses permitted outright and conditionally as well as lot size and setback standards is provided in Appendix E.

Based on a high-level analysis of the land use map and the survey of existing uses, it appears that existing uses in the study area are consistent with those permitted by applicable zoning and land use designations in the study area.

## **SECTION 4(f) AND SECTION 6(f) LAND USES**

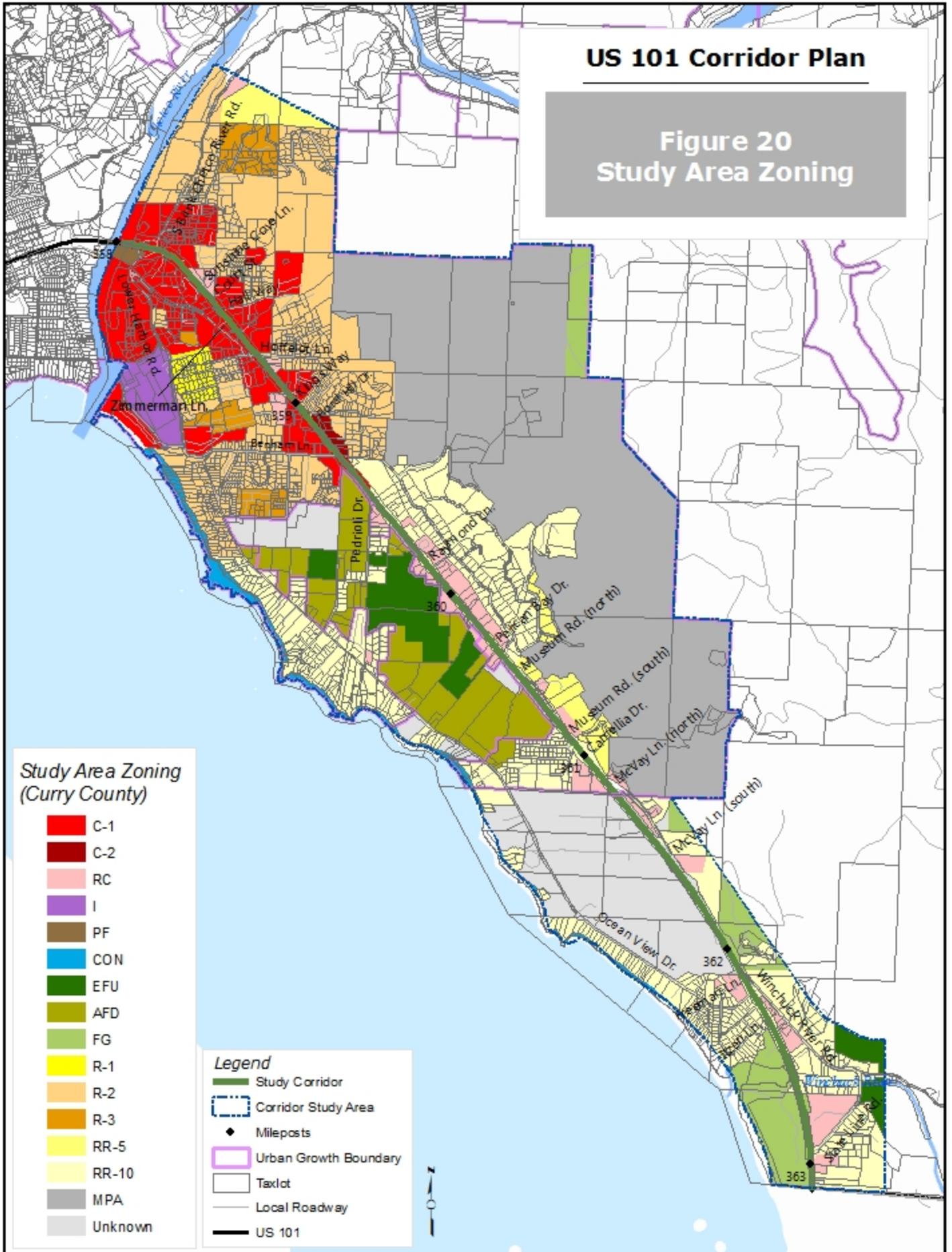
Section 4(f) of the Department of Transportation Act of 1966 prohibits the Federal Highway Administration and other transportation agencies from approving the use of land in publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless there is “no feasible and prudent alternative to the use of land” and the proposed use incorporates “all possible planning to minimize harm to the property resulting from use.” Section 4(f) resources relevant to the study area are publicly owned parks, recreational areas, and historical sites.

Section 6(f) of the Land and Water Conservation Fund Act of 1965 created a fund to assist local, state, and federal agencies in meeting the demand for outdoor recreation sites. This is done through grants for land acquisition, site amenities, and other site development costs. Once an agency has used these funds, the land or access to it can be acquired or its use changed only in coordination with the National Park Service and with mitigation. Section 6(f) resources relevant to the study area are public recreation sites.

Parks, recreation areas, and historical sites were surveyed in the preparation of the 2011 Brookings Parks Master Plan, as well as during a site visit in September 2012. The following is a list of the Section 4(f) and 6(f) resources in the study area (see Figure 21).

# US 101 Corridor Plan

## Figure 20 Study Area Zoning





**Table 14. Overview of County Zoning**

<b>Curry County Zoning Designation</b>	<b>Permitted Uses</b>	<b>Curry County Zoning Designation</b>	<b>Permitted Uses</b>
Light Commercial (C-1)	<ul style="list-style-type: none"> <li>• Retail and services</li> <li>• Multi-family housing</li> <li>• Church, school or community building</li> </ul>	Residential One (R-1)	Single-family dwelling
Heavy Commercial (C-2)	<ul style="list-style-type: none"> <li>• Retail and services</li> <li>• Industrial shops and services</li> <li>• Church, school or community building</li> </ul>	Residential Two (R-2)	<ul style="list-style-type: none"> <li>• Single-family dwelling</li> <li>• Mobile or manufactured home</li> </ul>
Rural Commercial (RC)	<ul style="list-style-type: none"> <li>• Existing single-family dwelling</li> <li>• Existing retail, professional or service establishments, and expansions up to 2,500 total square feet</li> </ul>	Residential Three (R-3)	<ul style="list-style-type: none"> <li>• Single-family dwelling</li> <li>• Mobile or manufactured home</li> <li>• Multiple-family dwelling</li> </ul>
Industrial (I)	<ul style="list-style-type: none"> <li>• Retail and services</li> <li>• Vehicle services, repair, and storage</li> <li>• Manufacturing and industrial shops</li> </ul>	Rural Residential, 5-acre Lot (RR-5) Rural Residential, 10-acre Lot (RR-10)	<ul style="list-style-type: none"> <li>• Single-family dwelling or mobile home</li> <li>• Farm or forestry use</li> </ul>
Exclusive Farm Use (EFU)	<ul style="list-style-type: none"> <li>• Farm and related uses</li> <li>• Rural and natural resource uses</li> <li>• Climbing and passing lanes</li> <li>• Reconstruction or modification of public roads and highways</li> <li>• Temporary public road and highway detours</li> <li>• Minor improvement of existing public road and highway related facilities</li> </ul>	Forestry Grazing (FG)	<ul style="list-style-type: none"> <li>• Forest, farm and related uses</li> <li>• Rural uses</li> <li>• Widening of roads</li> <li>• Climbing and passing lanes</li> <li>• Reconstruction or modification of public roads and highways</li> <li>• Temporary public road and highway detours</li> <li>• Minor improvements of existing public roads and highway related facilities</li> </ul>
Agricultural Zone (AFD)	<ul style="list-style-type: none"> <li>• (Same farm, rural and transportation uses as permitted outright in the EFU zone)</li> </ul>	Public Facility (PF)	<ul style="list-style-type: none"> <li>• Public uses, services, and parks</li> <li>• Transportation improvements and maintenance storage</li> </ul>

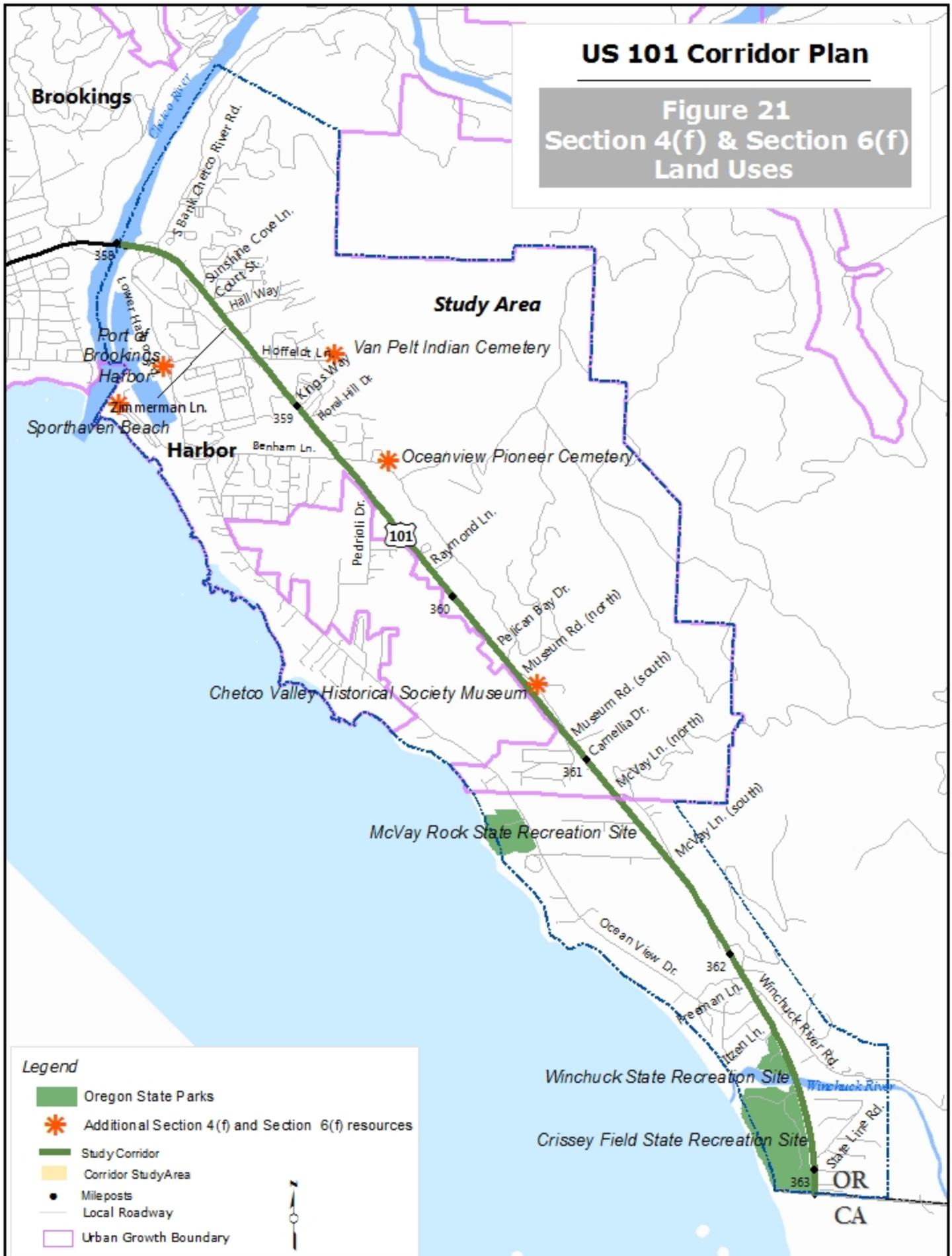


**Table 14. Overview of County Zoning (cont.)**

Curry County Zoning Designation	Permitted Uses	Curry County Zoning Designation	Permitted Uses
Master Plan Area (MPA)	<p>City of Brookings (Brookings Municipal Code, Chapter 17.70, Master Plan Development (MPD) District):</p> <p>All uses allowed outright and conditionally in the underlying R-1, R-2, R-3, C-1, C-2, C-3, C-4, I-P, and M-2 zones. Site plan must show any interior lots/parcels related to proposed development phases or land divisions, and residential uses shall be identified indicating the type of residential use, the number of units and resulting density</p> <p>Curry County (Curry County Zoning Ordinance, Article VI, Planned Unit Development):</p> <p>Applicants propose land uses, building locations and housing unit densities that are consistent with the objectives of the comprehensive plan or zoning provisions of the area and are substantially compatible with the land use of the surrounding area.</p>		

# US 101 Corridor Plan

Figure 21  
Section 4(f) & Section 6(f)  
Land Uses



Source: City of Brookings Parks Master Plan, State of Oregon, ESRI, ODOT



### *Northern Subarea*

- Sporthaven Beach – regional park owned by Curry County
- Port of Brookings-Harbor – recreational boating, fishing, camping, RV park, and visitor facilities; owned by the Port of Brookings-Harbor
- Van Pelt Indian Cemetery

### *Central Subarea*

- Ocean View Pioneer Cemetery – maintained by Southern Curry Cemetery Maintenance District

### *Southern Subarea*

- McVay Rock State Recreation Site
- Winchuck State Recreation Site
- Crissey Field State Recreation Site.

## **TITLE VI AND ENVIRONMENTAL JUSTICE POPULATIONS**

Economically challenged groups and protected classes are the focus of federal and state Environmental Justice and Title VI regulations and, as such, are a special focus within ODOT long-range transportation planning processes. Title VI of the Civil Rights Act of 1964 and associated policies and regulations prohibit discrimination on the basis of race, color, national origin, gender, age, and disability. Because the ODOT receives federal funding for its projects and programs, it established a Title VI program to address nondiscrimination regulations related to decisions about transportation investments. ODOT's 2002 Title VI Plan commits the agency to:

- Make special efforts to contact and involve minority and low income groups in conducting planning studies and formal hearings held on transportation improvement plans and programs.
- Collect and analyze data on the impact of plans on minority and low income populations.

These kinds of efforts and analysis are also related to the federal Executive Order on Environmental Justice. The three guiding principles for environmental justice are as follows:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.



- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

In order to involve and equitably serve these target populations in the study area, they first must be identified. The mapping of 2010 Census data by census block group and input from Curry County Public Health Department staff helped identify these populations. The study area contains two entire census block groups and two partial groups. For the partial groups, the data was mapped for only those areas within the study area.

### **Minority Population**

Executive Order 12898 and DOT and FHWA Orders on Environmental Justice identify Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, and Pacific Islander as Environmental Justice populations. In more general terms, the 2010 Census data can be used to show where non-white populations are concentrated in the study area. These concentrations are shown by census block group – the smallest available geography for race data – in Figure 22.

The highest concentration of minority populations – just over 20% of the total population – is in the northeast portion of the study area. The remainder of the study area has between seven and 12% minority populations. Overall, roughly 87% of the study area population is non-Hispanic white. The largest minority groups are Hispanic and American Indian/Alaska Native.

Representatives from the Curry County Health Department reported that trailer parks between South Bank Chetco River Road and Hall Way have concentrations of low-income Native American, Latino, and elderly populations, as do apartment complexes and trailer parks along Benham Lane west of US 101. There is also a significant seasonal migrant population associated with the local lily industry.

### **Low-Income Population**

Executive Order 12898 and DOT and FHWA Orders on Environmental Justice define low-income as a person with a median household income at or below the U.S. Department of Health and Human Services poverty guidelines. Low-income population in the study area is shown in Figure 23.<sup>31</sup>

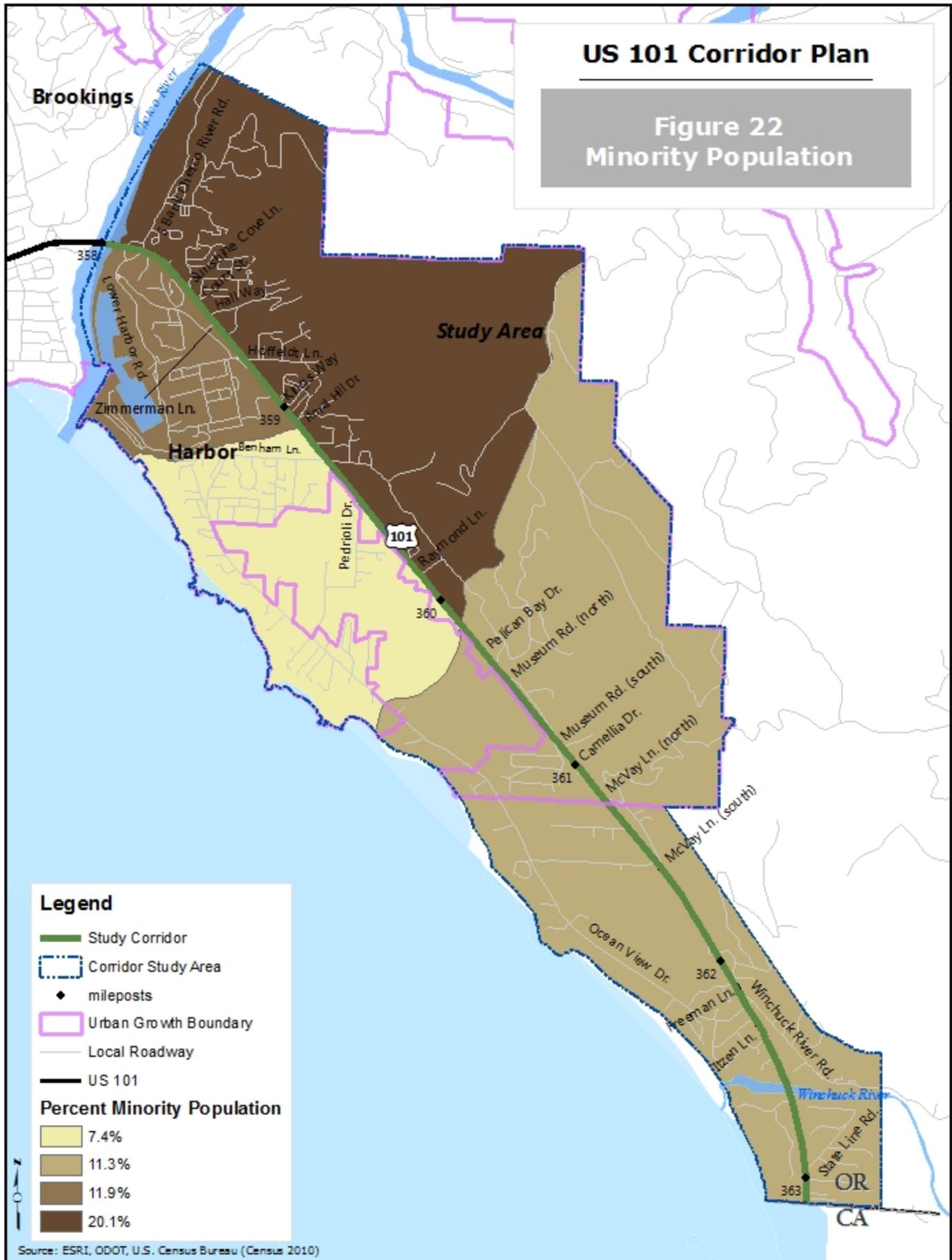
As seen in Figure 23, concentrations of low-income residents are spread relatively evenly throughout the study area; however, slightly higher concentrations are found in the northern portion. For the census tract that encompasses the entire study area plus areas further east, more recent

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<sup>31</sup> Based on 2000 Census data, the most recent data available that provides information at the block group level.

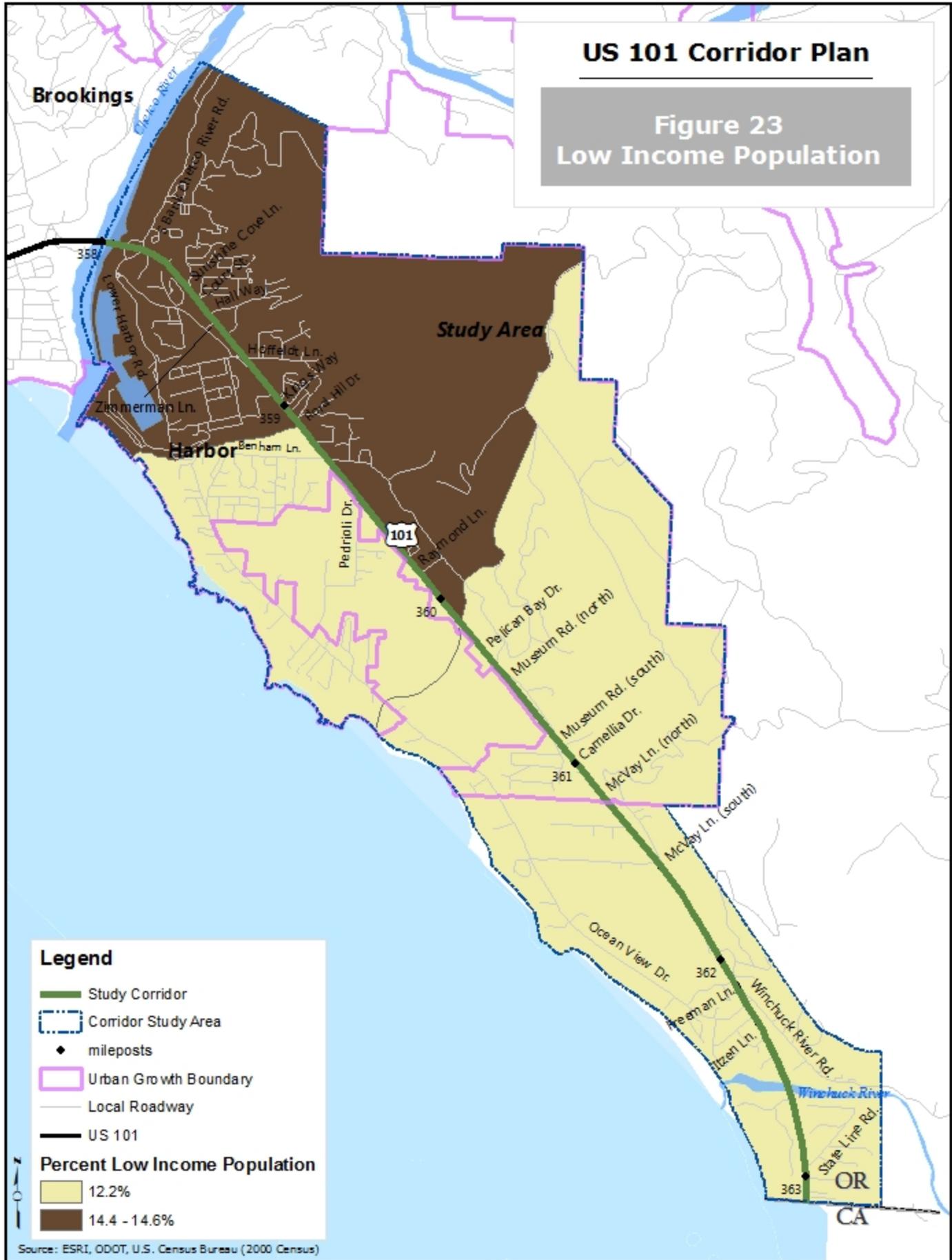
# US 101 Corridor Plan

## Figure 22 Minority Population



# US 101 Corridor Plan

## Figure 23 Low Income Population





data indicates that the poverty rate is 15.3%, based on a five-year average from 2007-2011. This data also shows that many of those in poverty are families with young children.

The geographic distribution of poverty is generally consistent with the information obtained from county officials who work with low income populations. According to Curry County Health Department staff, most low-income residents live in the Harbor area. County staff reported that property taxes are significantly lower in Harbor than in Brookings, and that this is reflected in the level of County expenditures on facilities or services in this area. In addition, there is no funding available from urban renewal monies.

The County identified concentrations of people that fall within the low-income category, as well as the minority and elderly categories, in the manufactured home parks between South Bank Chetco River Road and Hall Way and the apartments and manufactured home parks along Benham Lane west of US 101. It was also reported that people live in storage units at various locations in the study area, such as along Seashore Lane.

Another location of low-income residents is the Union Gospel Outreach Mission along US 101 near Robin Lane, just south of Raymond Lane on US 101.

### **Senior Population**

Executive Order 12898 and DOT and FHWA Orders on Environmental Justice do not include senior and elderly people in its regulations. However, they are important to consider in long range planning because this group is growing and requires specialized services, and, because senior and elderly people are often on fixed-incomes, they can be considered economically challenged. For analysis purposes, the senior population is made up of those 65 years and older at the time of the 2010 Census. As shown in Figure 24, the highest concentrations of senior residents are found in the northwest portion of the study area. Overall, just over a third of the study area population is 65 or older.

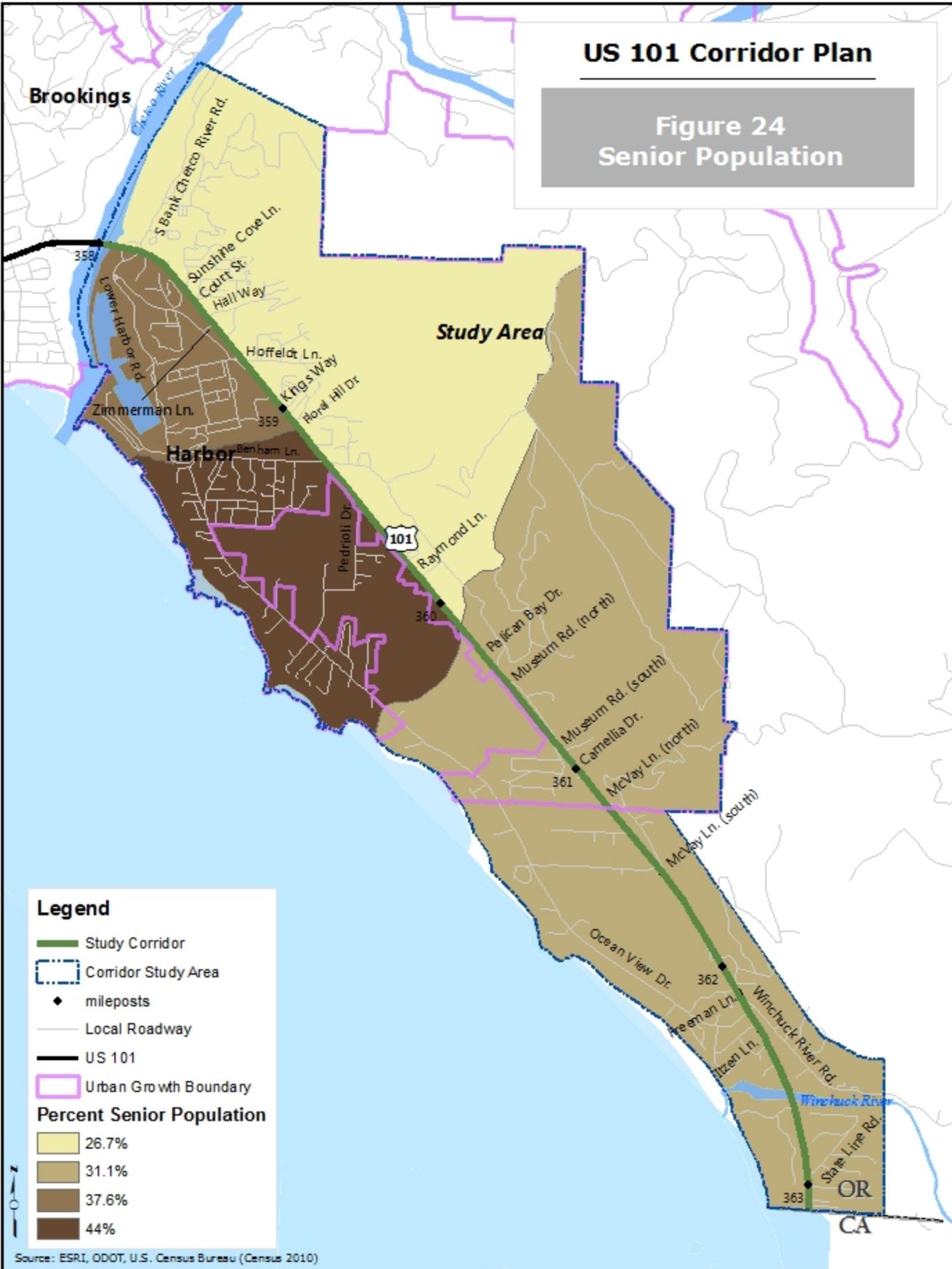
The high concentration of senior population in the northwest portion of the study area corresponds with the location of the Seaview Assisted Living facility west of US 101 near Benham Lane. This is also consistent with information received from Curry County Public Health Department staff, who indicated that seniors are a significant percentage of the population in Harbor.

### **Transportation Barriers to Title VI Populations**

Curry County Health Department staff provided feedback on the transportation needs of federally recognized populations within the study area. Many of these are also needs of the general population, but have greater significance for these groups because of their special circumstances, such as the lack of an automobile. This includes the need for safe and adequate pedestrian, bicycle and

# US 101 Corridor Plan

## Figure 24 Senior Population





transit facilities described previously and the challenges this creates in traveling between origins and destinations within the study area and to/from the Brookings.

The following general needs were identified that should be addressed as the study goes forward:

- Improvement of the pedestrian environment, including filling gaps in the sidewalk network, rebuilding uneven sidewalks, providing ADA-compliant curb ramps, and adding lighting.
- Increasing bus service and lowering fares for low-income riders.
- Lowering speed limits along US 101, particularly in the more populous northern part of the study area.
- More enforcement of speed limits. Currently there are only two deputies for the entire county, so there is little enforcement within the study area.

Specific examples of these needs are:

- The Brookings Harbor Shopping Center and the South Coast Center are popular destinations within the study area, particularly for Title VI populations because they are close by and feature discount retailers. Non-auto access to these shopping centers is difficult, however, because of the lack of sidewalks and lighting, the need for a crosswalk between the shopping centers, traffic conflicts at the driveways, and the need for improved transit service.
- For residents of the men's Union Gospel Mission near Robin Lane, there is a lack of sidewalks and lighting in the vicinity, as well as no crosswalk to reach the new women's mission to be opened on the west side of US 101. There are also limited transportation options for the residents to travel to the addiction treatment center in Brookings.
- There are no medical facilities in Harbor and the county health department is located in Gold Beach. Limited transportation options make it difficult for Title VI populations to access medical services at the health department, such as immunizations.
- Lack of lighting and difficult pedestrian access for the large transient population near the Chetco River Bridge.
- Poor access to the Seaview Senior Living Community to the west of US 101.

## **ENVIRONMENTAL CONDITIONS**

Information on existing environmental conditions was inventoried and mapped for use in the development and analysis of improvement alternatives to be done later in the study. The environmental data was obtained primarily through publically available publications and on-line databases.



## Goal 5 Resources

Statewide Planning Goal 5 requires local jurisdictions to inventory natural resources, such as riparian corridors, wetlands, wildlife habitat, and wilderness areas, and determine whether measures need to be taken to protect them from conflicting land uses.

The Curry County Comprehensive Plan identifies the following Goal 5 resource categories within the county:

- Open space lands
- Mineral and aggregate resources
- Energy recovery sites
- Fish and wildlife resource
- Ecologically and scientifically significant natural areas
- Scenic views
- Water resources
- Wilderness
- Cultural resources

Curry County completed an inventory in 1983 of all Goal 5 resources in the county.<sup>32</sup> Based on this inventory, there is one natural area and three cultural resources within the study area. It appears that none of these are identified as Protected Resources. The four Goal 5 resources are (see Figure 25):

- Hastings Rock
- Chetco Indian Village
- Harrison Blake Home
- Chetco Logging Railroad

Hastings Rock is located approximately one-half mile west of US 101 in the vicinity of McVay Rock State Recreation Site. It is described in the Curry County Comprehensive Plan Natural Resources Inventory as a “Pleistocene-age sea stack on elevated marine terrace” and is identified as a significant geological feature.

The area around the mouth of the Chetco River is identified by the Curry County Comprehensive Plan Natural Resources Inventory as the Chetco Indian Village, an area of archaeological significance. This area is near the northern boundary of the study area and is not adjacent to US 101.

---

<sup>32</sup> Curry County, [Curry County Comprehensive Plan Natural Resources Inventory Document](http://www.co.curry.or.us/publicservices/Comp%20Plan%20-%20Natural%20Resources%201983pdf.pdf), <http://www.co.curry.or.us/publicservices/Comp%20Plan%20-%20Natural%20Resources%201983pdf.pdf>

# US 101 Corridor Plan

Figure 25  
Goal 5 Resources





The Harrison Blake Home is located approximately 300 feet east of US 101 at 15461 Museum Road, near Emigrant Hill Road. It is identified in the Curry County Comprehensive Plan Natural Resources Inventory as a cultural resource. It is also defined as historically significant in the Oregon State Historic Preservation Office's Historic Sites database. Built in 1890, the Harrison Blake Home is the oldest surviving structure between the Chetco River and the California border. It is currently in use as the Chetco Valley Historical Society Museum.

The Chetco Logging Railroad is identified in the Curry County Comprehensive Plan Natural Resources Inventory as a cultural resource. No longer extant, the railroad once ran between the Brookings lumber mill and Del Norte, California. It appears that it ran along an alignment in the approximate vicinity of Ocean View Drive.

### **Floodplains and Floodways**

FEMA, acting through the local planning agencies, regulates development within floodplains. FEMA-designated floodplains and floodways in the study area are shown in Figure 26. The study corridor is intersected by 100-year floodplains at the Chetco River (MP 358) and at the Winchuck River (MP 362.5 to MP 363). There are also small strips of 500 year floodplain along the western edge of the Chetco River and at MP 363, south of the Winchuck River. The 500 year floodplain on the west side of the Chetco River is outside the study area.

### **Tsunami Inundation Zones**

Because the study area is on the Oregon Coast, it is important to identify the location of the Tsunami Inundation Zone, which is defined and mapped by the Oregon Department of Geology and Mineral Industries. As shown in the Figure 27, the study area crosses the Tsunami Inundation Zone at the Chetco River and the Winchuck River. At the Chetco River, it narrows and only a short segment of the study corridor is within it. At the south end of the study area, US 101 lies within the Tsunami Inundation Zone from north of the Winchuck River to just north of the Oregon - California state line. North of this area, the corridor is also close to the Tsunami Inundation Zone between approximately Milepost 362 and 362.5.

### **Natural Heritage Database**

The Oregon Biodiversity Information Center's database (previously known as the Oregon Natural Heritage database) was queried for records of documented occurrences of rare, threatened, and endangered plant and wildlife. Table 15 shows all of the species records for occurrences within a two-mile radius of the study area that were evaluated for applicability. Note that many records are historical and the species may no longer be present.

# US 101 Corridor Plan

## Figure 26 Floodplains



# US 101 Corridor Plan

## Figure 27 Tsunami Inundation Zone





**Table 15. ORBIC Species Occurrence Records**

<b>Species Common Name (Scientific Name) ESU*/DPS**</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Record Comments</b>
<b>Fish</b>			
Coho Salmon ( <i>Oncorhynchus kitsuch</i> ) S. Oregon/N. California Coast ESU	Threatened	Sensitive Vulnerable	Rearing and migration habitat in Chetco and Winchuck Rivers
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) S. Oregon/N. California Coast ESU	Not Warranted	Sensitive Vulnerable	Rearing and migration habitat in Chetco and Winchuck Rivers
<b>Reptiles/Amphibians</b>			
Foothill Yellow-Legged Frog ( <i>Rana boylei</i> )	Species of Concern	Sensitive Critical/ Sensitive Vulnerable	Last observed in 1911, in Tuttle Creek
<b>Birds</b>			
Purple Martin ( <i>Progne subis</i> )	Species of Concern	Sensitive Critical	Last observed in 1998, nesting in Hwy 101 bridge over Chetco River
California Brown Pelican ( <i>Pelecanus occidentalis californicus</i> )	De-listed	Endangered	Within Chetco River estuary
<b>Plants</b>			
Pink Sandverbena ( <i>Abronia umbellata ssp. breviflora</i> )		Endangered	Last observed in 1919
Seaside Gilia ( <i>Gilia millefoliata</i> )	Species of Concern		Last observed in 1884
Silvery Phacelia ( <i>Phacelia argentea</i> )	Species of Concern	Threatened	Last observed in 1998 south of Winchuck River estuary

\* ESU = Evolutionarily Significant Unit is a distinct local population within a species that has very different behavioral and phenological traits and thus harbors enough genetic uniqueness to warrant its own management and conservation agenda. NMFS uses the ESU as the smallest management unit warranting listing under the ESA for anadromous salmonids, excluding steelhead, which employs the DPS terminology.

\*\* DPS = Distinct Population Segment is the smallest management unit warranting listing under the ESA. Species, as defined in the ESA for listing purposes, is a taxonomic species or subspecies of plant or animal, or in the case of vertebrate species, a distinct population segment (DPS).

### Historic and Archaeological Resources

The Oregon State Historic Preservation Office database was searched for any potentially historic properties within the boundaries of the study area. This search revealed the Harrison Blake Home,



described above under Goal 5 resources. No other potentially historic properties have been identified within the study area.

There is a high probability of archaeological resources at the mouths of the Chetco and Winchuck Rivers. These would be located near the ocean beach and so would not be in close proximity to US 101.<sup>33</sup>

### **Threatened and Endangered Species**

The study area was evaluated for the potential presence of species designated under the Endangered Species Act (ESA) as Threatened, Endangered, or proposed for such designation. Additionally, locations were evaluated for the presence of designated critical habitat for ESA-listed species which might be present. This information was established by querying the following resources:

- The Oregon Biodiversity Information Center database of documented occurrences of rare, threatened, and endangered plant and wildlife records. All species records occurring within a two-mile radius of the proposed study area were evaluated for applicability.
- The National Marine Fisheries Service (NMFS) on-line resources for ESA-listed species occurring in Oregon.
- The U.S. Fish and Wildlife Service's (USFWS) federally-listed threatened, endangered, proposed, and candidate species, as well as Species of Concern which may occur within Curry County.
- StreamNet's database of fish distribution within the Chetco River, Winchuck River, and coastal streams discharging to the Pacific Ocean between Brookings and the Oregon-California state line.

Species listed under the ESA with the potential to occur in the vicinity of the study area are shown in Table 16. Of these, only the Southern Oregon/Northern California Coast Evolutionarily Significant Unit (ESU) coho salmon (*Oncorhynchus kitsuch*) is documented as occurring in the study area. Coho salmon are known to use both the Chetco and Winchuck Rivers for migration and rearing life stages. Both rivers are designated as critical habitat for this species. It is possible that coho salmon also use one or more of the creeks in the study area, though no record of this is documented.

Steller sea lions (*Eumetopias jubatus*) and any of the four identified sea turtles may occur in the estuaries of the Chetco and Winchuck Rivers or along the beaches within the study area. However, there are no documented haul-outs, rookeries, or areas of special use.

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<sup>33</sup> Per e-mail correspondence with ODOT archaeologist, 11/27/12.



**Table 16. Potential Threatened, Endangered, and Proposed Species**

<b>Species Common Name (Scientific Name) ESU*/DPS**</b>	<b>Status</b>	<b>Listing Agency</b>	<b>Designated Critical Habitat within Study Area?</b>	<b>Documented Occurrence within Study Area?</b>
<b>Mammals</b>				
Steller Sea Lion ( <i>Eumetopias jubatus</i> ) Eastern DPS	Threatened	NMFS	No	Yes
<b>Fish</b>				
Coho Salmon ( <i>Oncorhynchus kitsuch</i> ) S. Oregon/N. California Coast ESU	Threatened	NMFS	Yes	Yes
<b>Reptiles/Amphibians</b>				
Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	Endangered	NMFS, USFWS	No	Yes
Green sea turtle ( <i>Chelonia mydas</i> )	Threatened	NMFS, USFWS	No	Yes
Leatherback Sea Turtle ( <i>Dermochelys coriacea</i> )	Endangered	NMFS, USFWS	No	Yes
Olive (Pacific) Ridley Sea Turtle ( <i>Lepidochelys olivacea</i> )	Threatened	NMFS, USFWS	No	Yes
<b>Birds</b>				
Marbled Murrelet ( <i>Brachyramphus marmoratus marmoratus</i> )	Threatened	USFWS	No	No
Northern Spotted Owl ( <i>Strix occidentalis caurina</i> )	Threatened	USFWS	No	No
Short-Tailed Albatross ( <i>Phoebastria albatrus</i> )	Endangered	USFWS	No	No
Western Snowy Plover ( <i>Charadrius alexandrinus nivosus</i> )	Threatened	USFWS	No	
<b>Plants</b>				
McDonald's Rockcress ( <i>Arabis macdonaldiana</i> )	Endangered	USFWS	No	No
Western Lily ( <i>Lilium occidentale</i> )	Endangered	USFWS	No	No

\* ESU = Evolutionarily Significant Unit is a distinct local population within a species that has very different behavioral and phenological traits and thus harbors enough genetic uniqueness to warrant its own management and conservation agenda. NMFS uses the ESU as the smallest management unit warranting listing under the ESA for anadromous salmonids, excluding steelhead, which employs the DPS terminology.



\*\* DPS = Distinct Population Segment is the smallest management unit warranting listing under the ESA. Species, as defined in the ESA for listing purposes, is a taxonomic species or subspecies of plant or animal, or in the case of vertebrate species, a distinct population segment (DPS).

## Wetlands

Figure 28 shows the wetlands within the study area identified in the National Wetlands Inventory data maintained by the U.S. Fish and Wildlife Service. It also shows data from ODOT's Salmon Resources and Sensitive Area Mapping, a separate survey that ODOT conducted of wetlands near state highway facilities in 2004.

The most extensive area of wetlands is south of the Winchuck River, extending for approximately one-half mile between the river and MP 363. Other large wetland areas exist at MP 362 and west of US 101, just south of Benham Lane. It appears that this wetland is far enough from US 101 that it is not likely to be a concern.

There are smaller wetland areas close to the corridor near Museum Road (on the west side of US 101), between Hoffeldt Lane and Kings Way (west of US 101), and stream crossings near South Bank Chetco River Road.

## Hazardous Materials Sites

Soils contaminated by hazardous materials would need to be cleaned up if construction were to occur on contaminated sites. Therefore, it is important to identify any potentially contaminated sites in the study area. Records of hazardous material contamination are available from several databases. The following databases were searched:

- EPA – National Priorities List<sup>34</sup>
- EPA – Resource Conservation and Recovery Act Regulated Handlers<sup>35</sup>
- Oregon DEQ – Leaking Underground Storage Tank Cleanup Site Database<sup>36</sup>
- Oregon DEQ – Environmental Cleanup Site Information Database<sup>37</sup>
- Oregon DEQ – Oregon's Solid Waste Active Permitted Facilities<sup>38</sup>

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<sup>34</sup> Environmental Protection Agency, National Priorities List, <http://www.epa.gov/superfund/sites/npl/>

<sup>35</sup> Environmental Protection Agency, EPA in Oregon, <http://www.epa.gov/aboutepa/states/or.html>

<sup>36</sup> Oregon Department of Environmental Quality, Lust Cleanup Site Database, <http://www.deq.state.or.us/lq/tanks/lust/lustpubliclookup.asp>

<sup>37</sup> Oregon Department of Environmental Quality, Environmental Cleanup Site Information, <http://www.deq.state.or.us/lq/ecsi/ecsi.htm>

<sup>38</sup> Oregon Department of Environmental Quality, Active Permitted Facilities in Oregon, <http://www.deq.state.or.us/lq/sw/disposal/permittedfacilities.htm>

# US 101 Corridor Plan

## Figure 28 Wetlands





- Oregon Office of State Fire Marshal – Hazardous Materials Incident Searchable Database<sup>39</sup>

The research revealed seven sites with recorded incidents of hazardous material spills, shown in Table 17 and Figure 29.

**Table 17. Potential Hazardous Materials Sites**

Site Name	Location	Data Source	Status
Port of Brookings Harbor Boat Yard	16060 Lower Harbor Road	Oregon DEQ ECSI	Contamination suspected
Tidewater Contractors, Inc.	16156 Hwy 101 S.	Oregon DEQ LUST	Diesel release from underground tank in 1992. No further action required.
		EPA RCRA	Conditionally exempt small quantity generator.
Port of Brookings	Lower Harbor Road	Oregon DEQ LUST	Waste oil release from 2 underground tanks in 1999. No further action required.
US Coast Guard Station – Chetco River	Boat Basin Road	Oregon DEQ LUST	Diesel release from underground tank in 1996. No further action required.
Harbor Shell	16021 Hwy 101 S.	Oregon DEQ LUST	Miscellaneous gas release from underground tank in 2002. No further action required.
Harbor BP & Mini Mart	16258 Hwy 101 S.	Oregon DEQ LUST	Miscellaneous gas release from underground tank in 1996. No further action required.

<sup>39</sup> [http://www.oregon.gov/OSP/SFM/Pages/CR2K\\_Incident\\_Database.aspx](http://www.oregon.gov/OSP/SFM/Pages/CR2K_Incident_Database.aspx)

# US 101 Corridor Plan

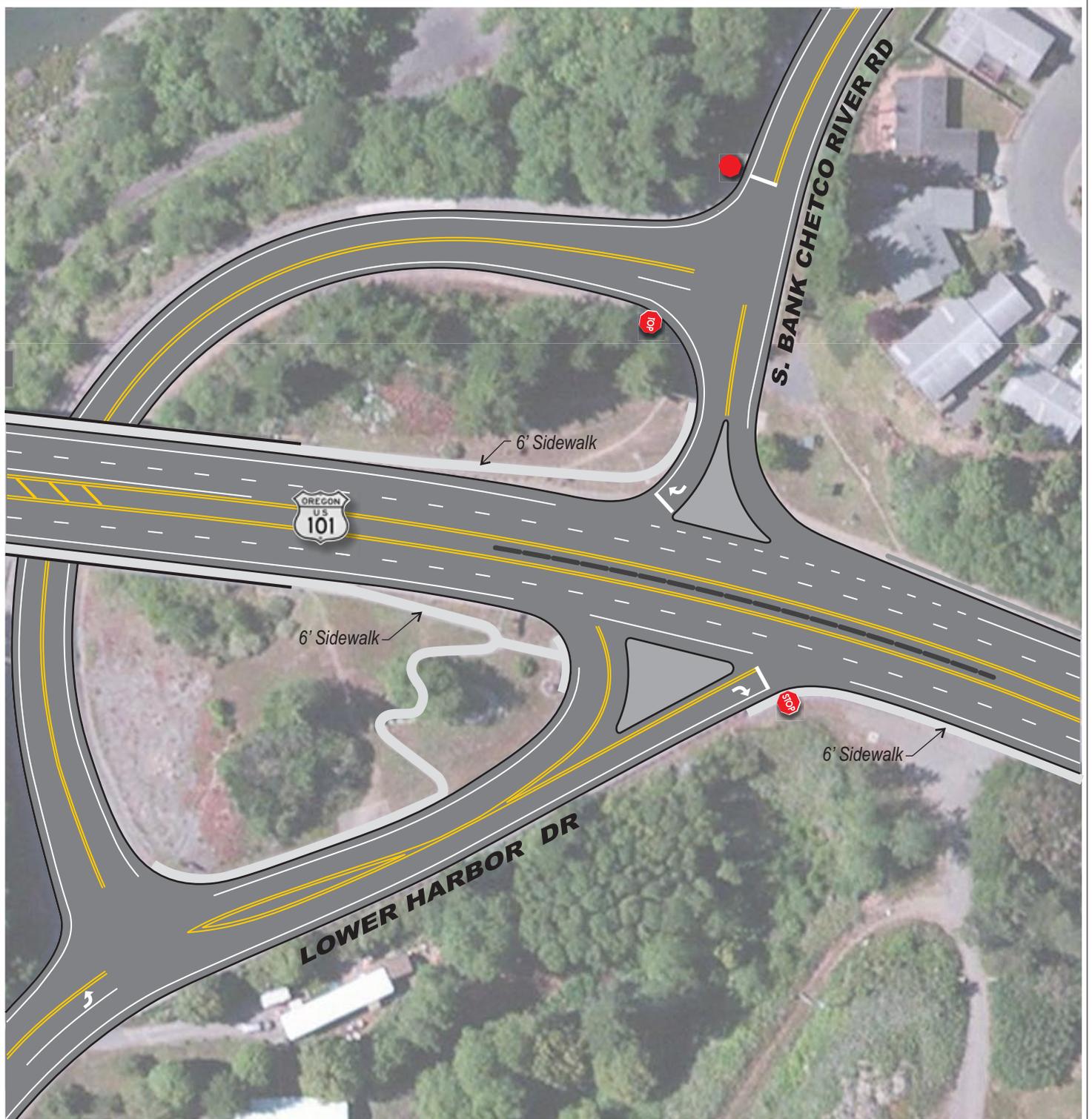
## Figure 29 Potential HazMat Sites





## **Appendix A**

### Intersection Diagrams



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

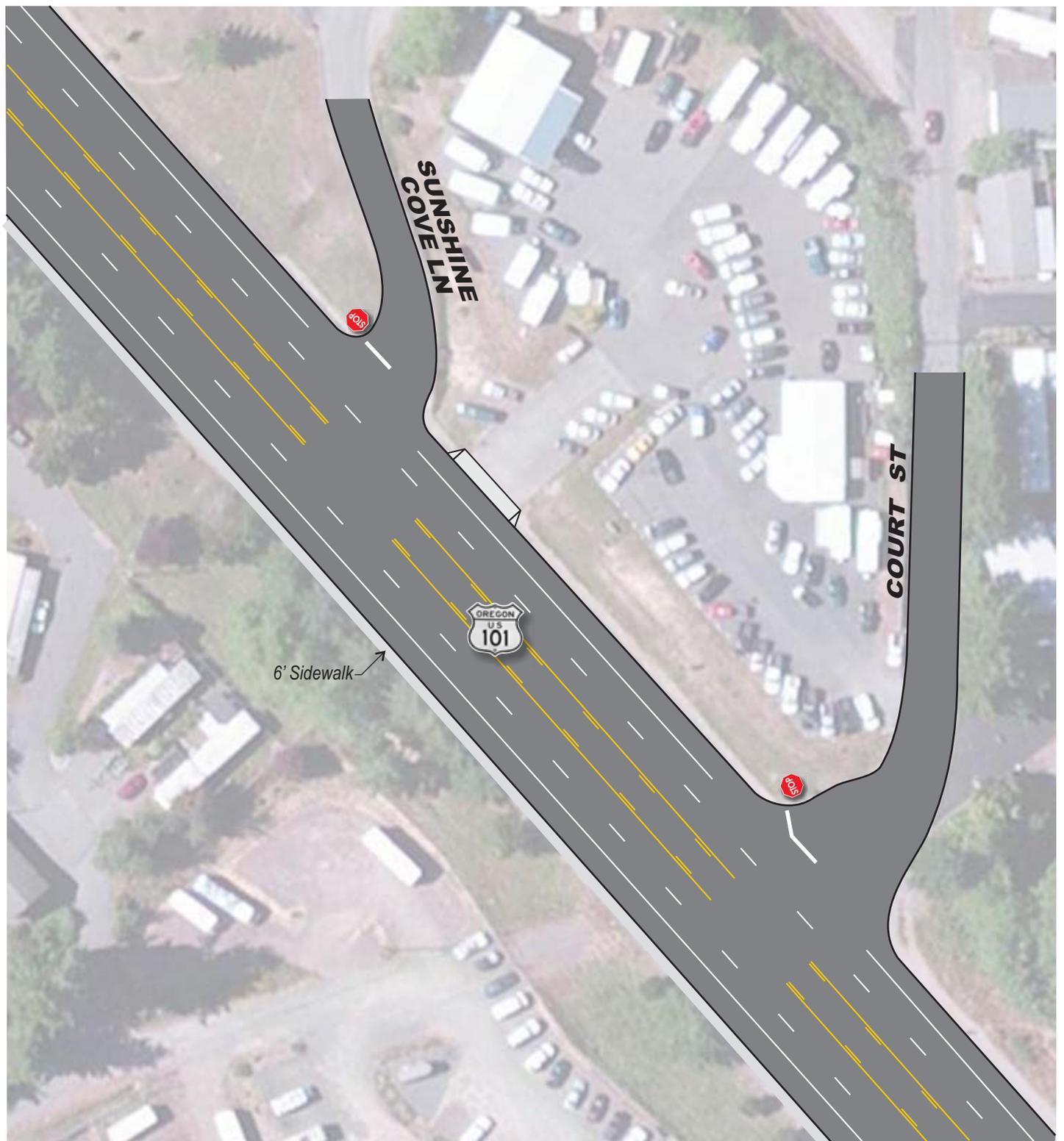
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-  - Driveway
-  - Guardrail
-  - Traffic Separator

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ South Bank Chetco River**  
**Road/Lower Harbor Drive**  
 US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**Sunshine Cove Lane & Court Street**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**ZIMMERMAN  
LN**

**LEGEND**

-  - Stop Sign
-  - Driveway
-  - Traffic Signal Pole with Mast Arm & Signal Heads

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Hall Way**  
 US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

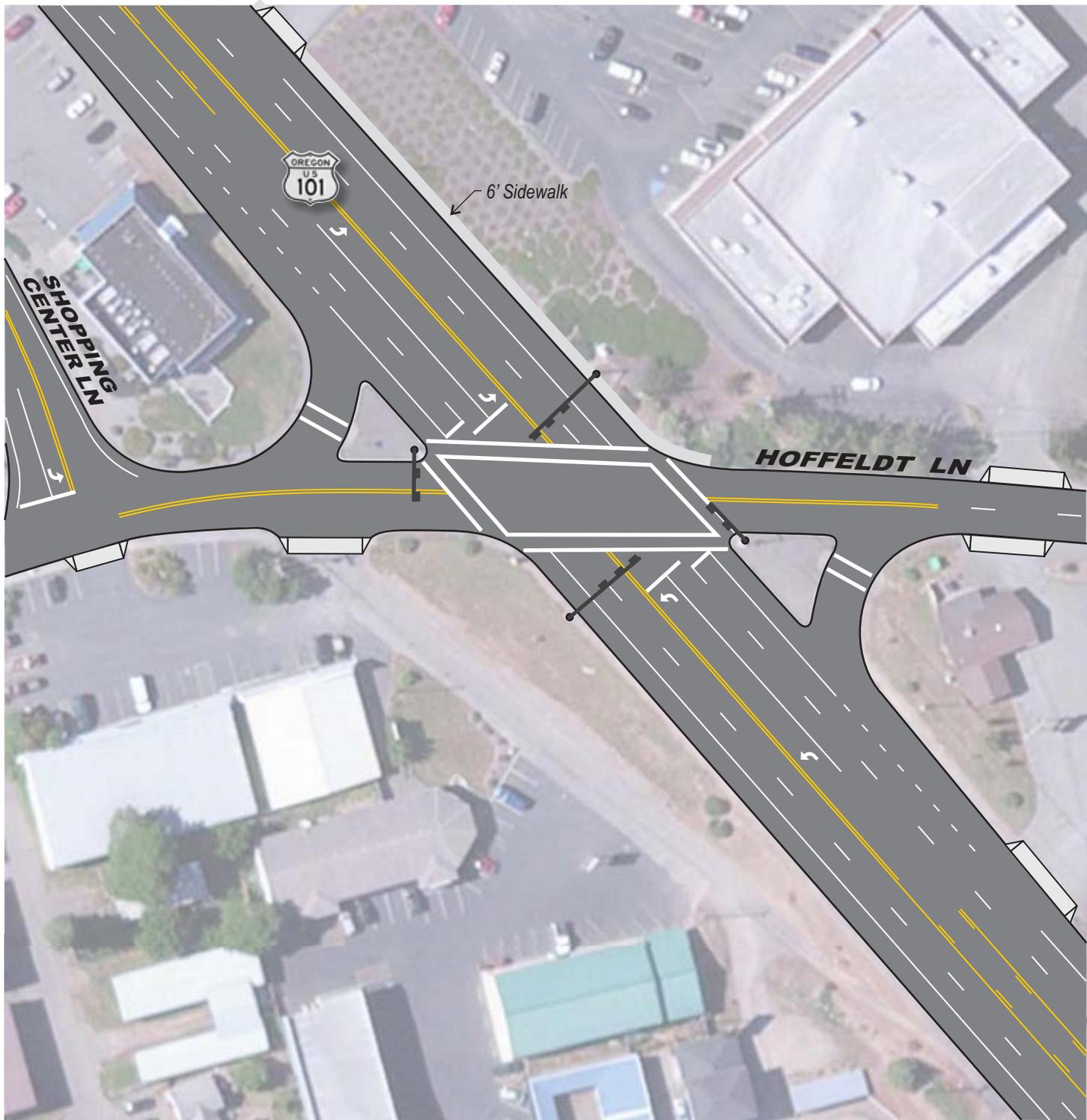
-  - Stop Sign
-  - Driveway
-  - Traffic Signal Pole with Mast Arm & Signal Heads

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Zimmerman Lane**  
 US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Driveway
-  - Traffic Signal Pole with Mast Arm & Signal Heads

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Hofffeldt Lane**  
 US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Kings Way**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

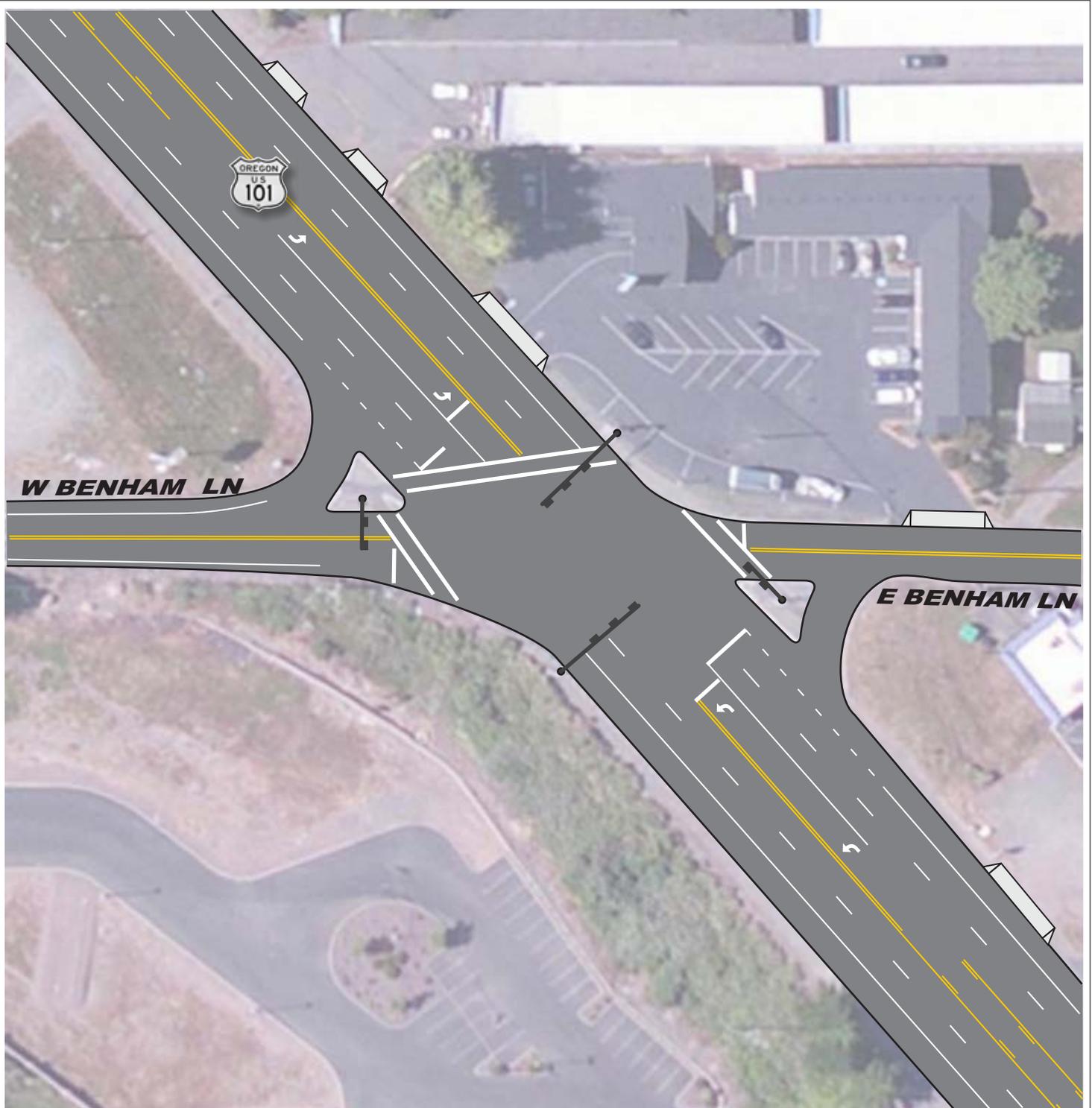
-  - Stop Sign
-  - Driveway

**DKS**



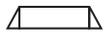
No Scale

**INTERSECTION DETAIL**  
**US 101 @ Floral Hill Drive**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Traffic Signal Pole with Mast Arm & Signal Heads
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Benham Lane**  
 US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Pedroli Lane**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Raymond Lane**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Pelican Bay Drive**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Museum Road (North)**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

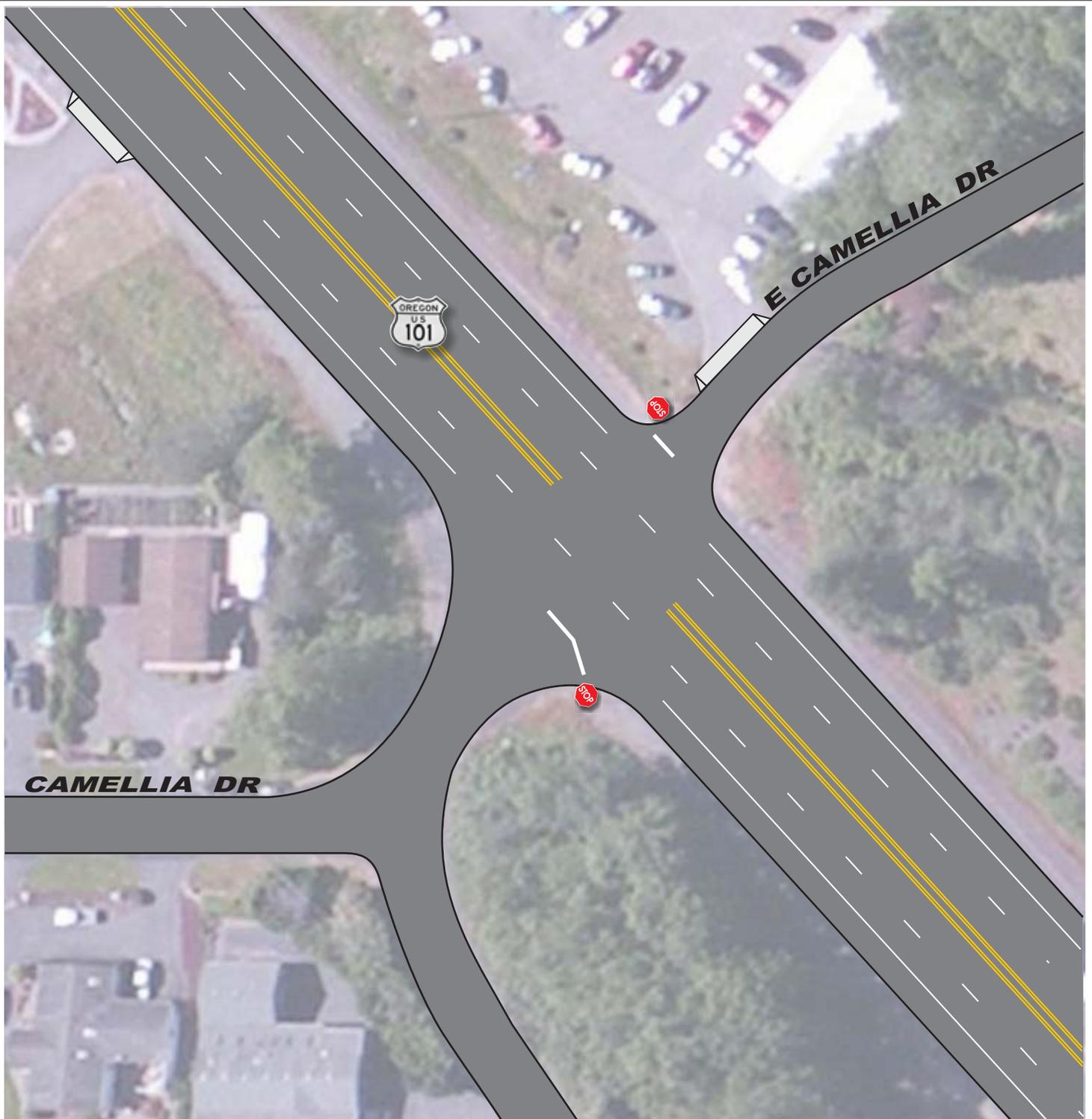
-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Museum Road (South)**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**

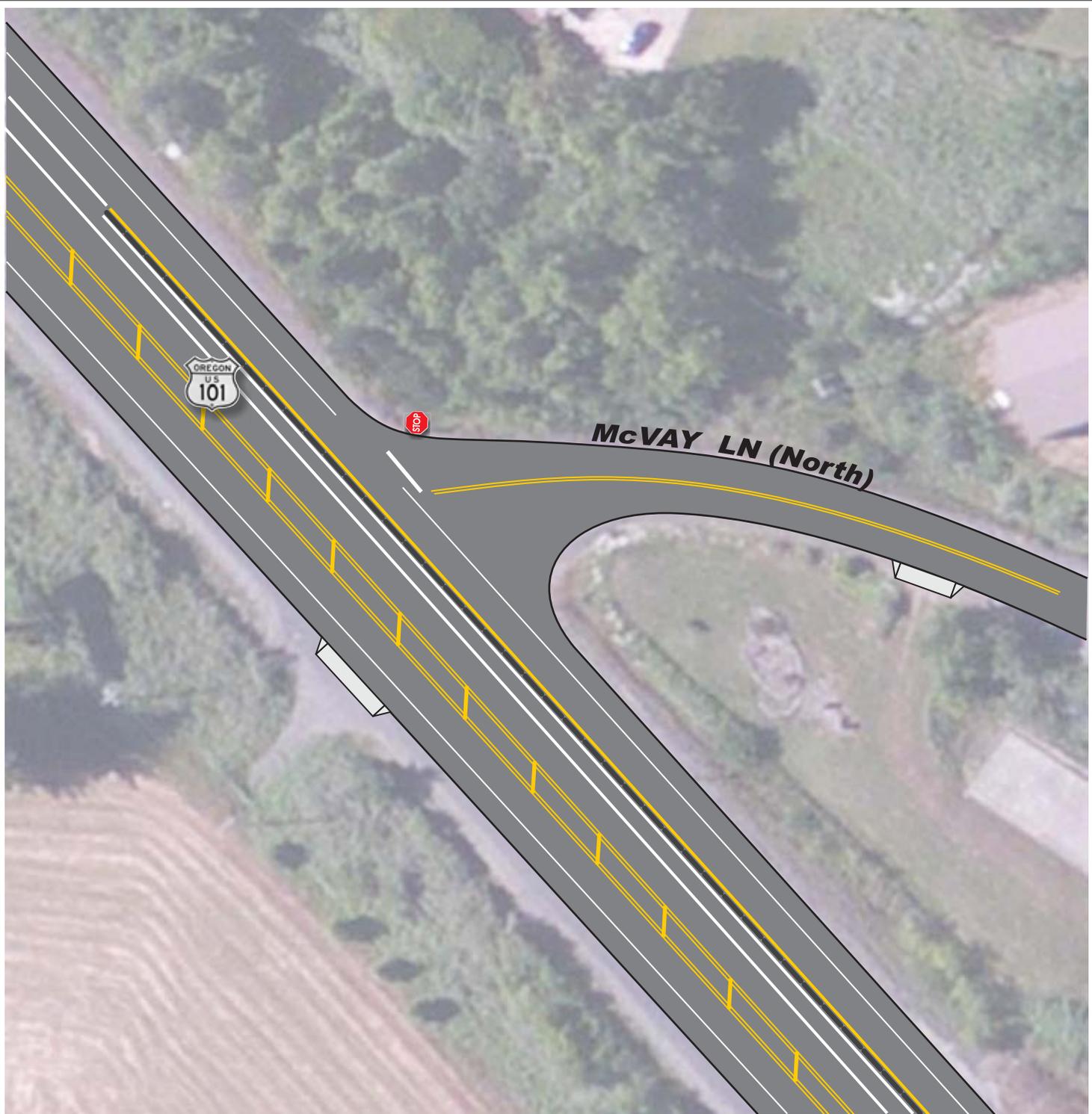


No Scale

**INTERSECTION DETAIL**

**US 101 @ Camellia Drive/E Camellia Drive**

US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway
-  - Traffic Separator

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ McVay Lane (North)**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway
-  - Guard Rail

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ McVay Lane (South)**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

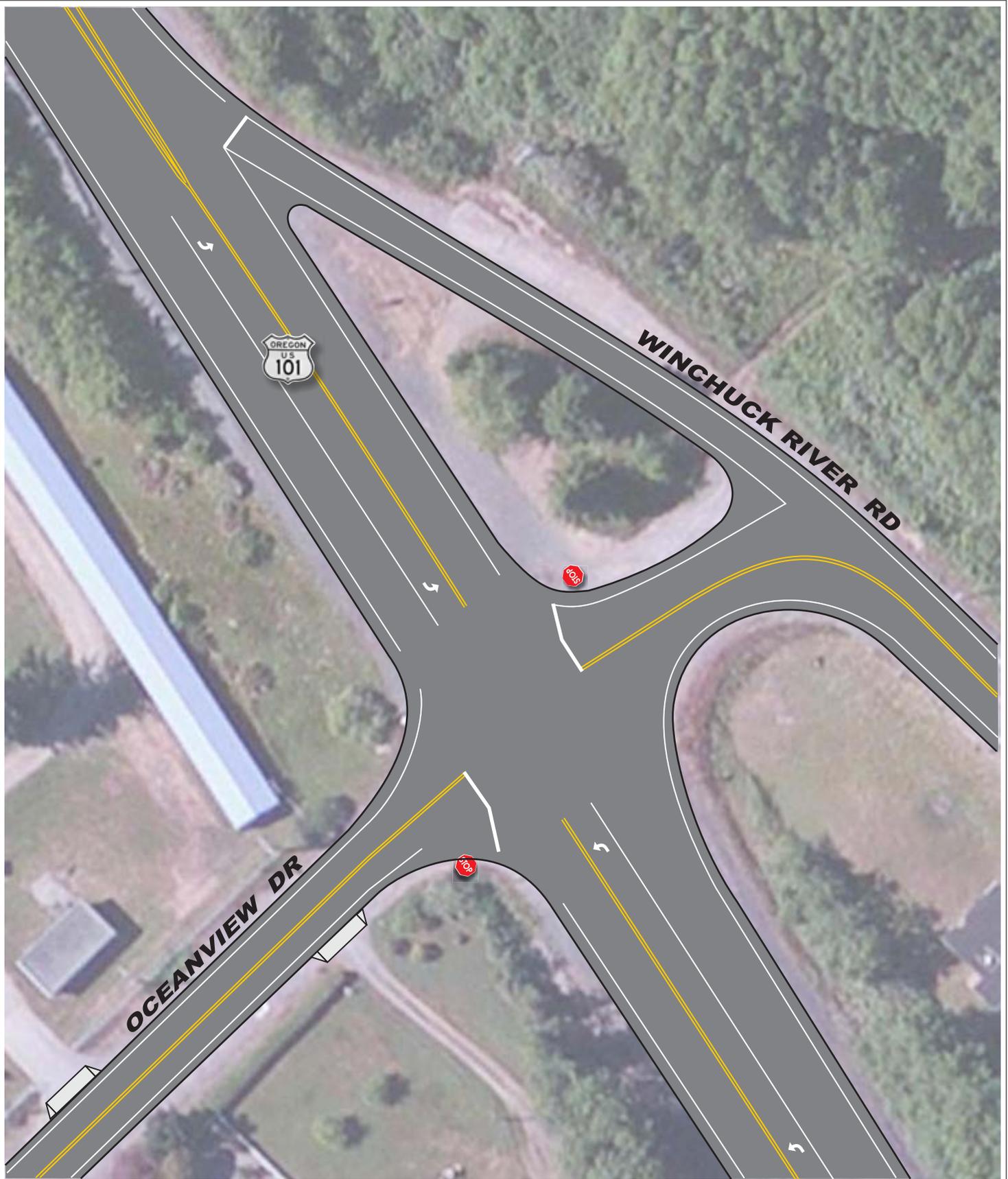
**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



**INTERSECTION DETAIL**  
**US 101 @ Freeman Lane**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Oceanview Drive/Winchuck River Road**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ Itzen Road**  
US 101 Corridor Plan



Map Source: © 2012 Microsoft Corporation Available Exclusively by Digital Globe

**LEGEND**

-  - Stop Sign
-  - Driveway

**DKS**



No Scale

**INTERSECTION DETAIL**  
**US 101 @ State Line Road**  
US 101 Corridor Plan



## **Appendix B**

### 95<sup>th</sup> Percentile Queuing

**Existing Conditions Queuing**

<i>Intersection</i>	<i>Direction</i>	<i>Movement</i>	<i>US 101</i>	<i>Minor Road</i>
Lower Harbor Dr/S Bank Chetco River Rd	EB	TH/RT	200	
	NB	RT		50
	SB	RT		125
Sunshine Cove Ln	SB	LT	50	
	NB	TH/RT	25	
	WB	LT/RT		50
Court St	SB	LT	50	
		TH	25	
	WB	LT/RT		75
Hall Way	WB	LT/RT		50
	SB	LT	50	
		TH	25	
Zimmerman Ln	NB	TH/RT	200	
		LT	100	
		TH	125	
Zimmerman Ln	EB	TH/RT	150	
		LT/TH		150
		RT		75
Zimmerman Ln	WB	LT/TH		50
		RT		50
Hoffeldt Ln	SB	LT	50	
		TH	125	
		RT	150	
	NB	LT	75	
		TH	125	
		RT	25	
Hoffeldt Ln	EB	LT/TH/RT		175
	WB	LT/TH/RT		75
Kings Wy	SB	LT	25	
	WB	LT/RT		50
Benham Ln	SB	LT	25	
		TH	100	
		RT	75	
	NB	LT	50	
		TH	100	
Benham Ln	EB	LT/TH/RT		125
	WB	LT/TH/RT		50
Pedrioli Dr	SB	LT/TH	25	
	NB	LT/TH	25	
	EB	LT/RT		50
	WB	RT		25

Raymond Ln	SB WB	LT LT/RT	25	50
Pelican Bay Dr	SB EB	LT/TH LT/RT	25	50
Museum Rd (north)	SB WB	LT/TH LT/RT	25	25
Museum Rd (south)	SB NB WB	LT/TH TH/RT LT/RT	25 25	50
Camellia Dr	NB EB WB	LT/TH LT/TH/RT LT/TH/RT	25	50 50
McVay Ln (north)	WB	RT		25
McVay Ln (south)	SB	LT/TH	25	
Freeman Ln	NB EB	LT/TH LT/RT	25	25
Oceanview Dr/Winchuck River Rd	SB NB EB WB	LT LT LT/TH/RT LT/TH RT	50 25	50 25 50
Itzen Dr	SB EB	TH/RT LT/RT	25	25
Stateline Rd	SB NB EB WB	LT LT LT/TH/RT LT/TH/RT	25 25	50 50



## **Appendix C**

### Reported Needs

**US 101 Corridor Plan  
Reported Needs  
TAC Meeting #1 - September 20, 2012**

Location	Milepost(s)	Reported Need				
		No. <sup>1</sup>	Description	Type <sup>2</sup>	Frequency <sup>3</sup>	Notes
Corridor-long	358.02-363.11	1	Glass and other debris in shoulder areas cause bicyclists to ride in travel lanes.	B	3	Provision of maintenance services should be investigated.
Corridor-long	358.02-363.11	2	Lack of sidewalks, no ADA curb ramps.	P	1	Sidewalk that does exist is uneven.
Corridor-long	358.02-363.11	3	More transit service, lower fares needed to serve transportation needs of lower-income and elderly residents, particularly in Harbor area.	T	2	
Chetco River Bridge to Raymond Ln.	358.02-359.94	4	Provide signage for two-way center turn lane.	O	1	Some drivers not properly using two-way center turn lane or are unfamiliar with its function.
Chetco River Bridge to Benham Ln.	358.02-359.32	5	Crosswalks needed near high-density residential areas.	P	3	
Chetco River Bridge to Benham Ln.	358.02-359.32	6	Sidewalks needed on both sides of US 101.	P	5	
Chetco River Bridge to Benham Ln.	358.02-359.32	7	Roadway lighting needed on both sides of US 101.	S, P	8	1. TAC members would like pedestrian-scale lighting, similar to that in Brookings, to extend somewhat south of Benham Ln. 2. Harbor area should feel like part of Brookings community.
Chetco River Bridge to Benham Ln.	358.02-359.32	8	Lack of traffic law enforcement contributes to safety problems.	S	1	
Chetco River Bridge to Sunshine Cove Ln.	358.02-358.39	9	High pedestrian volumes with lack of sidewalks.	P	1	
Lower Harbor Rd.	358.13	10	Provide way-finding signage for change in designated bike route from US 101 to Ocean View Dr.	B	1	
S. Bank Chetco River Rd./ Lower Harbor Rd.	358.13	11	Difficult, unsafe pedestrian access in vicinity of intersections.	P	1	
S. Bank Chetco River Rd./ Lower Harbor Rd.	358.13	12	Large transient population near highway with no street lighting.	P	1	
Court St. to Zimmerman Ln.	358.45-358.57	14	Closely spaced accesses cause traffic conflicts with turning vehicles.	O	1	
Hall Way	358.52	15	Speeds too high.	S, P	1	Potential measures are lower speed zone or driver feedback signs.
Zimmerman Ln.	358.57	16	Signal timing doesn't accommodate pedestrians well; push buttons need to be accessible.	P	2	
Zimmerman Ln.	358.57	17	Intersection lighting needed.	S, P	3	Currently no lighting.
Zimmerman Ln.	358.57	18	Provide better pedestrian connection between shopping areas on east and west sides of US 101.	P	2	Shopping centers are often origins/destinations for one another.
South Coast Center	358.68	19	Accesses to shopping center should be consolidated.	O	1	Two accesses on east side of US 101 should be combined into one at south end of shopping center. People leaving shopping center would return to US 101 via Hoffeldt Ln.
South Coast Center	358.68	20	Provide bus shelter for Curry Public Transit.	T	1	Recommendation was made to locate shelter in front of Dollar Tree store or Grocery Outlet store near south end of shopping center.
Hoffeldt Ln.	358.76	21	Signal timing doesn't accommodate pedestrians well; push buttons need to be accessible.	P	2	
Hoffeldt Ln.	358.76	22	Intersection lighting needed.	S, P	3	Currently no lighting.

<sup>1</sup> "Number" refers to the location the need, as shown on the associated map.

<sup>2</sup> G = Geometric, O = Traffic Operations, S = Safety, B = Bike, P = Pedestrian, T = Transit

<sup>3</sup> "Frequency" refers to the number of TAC members that identified the need.

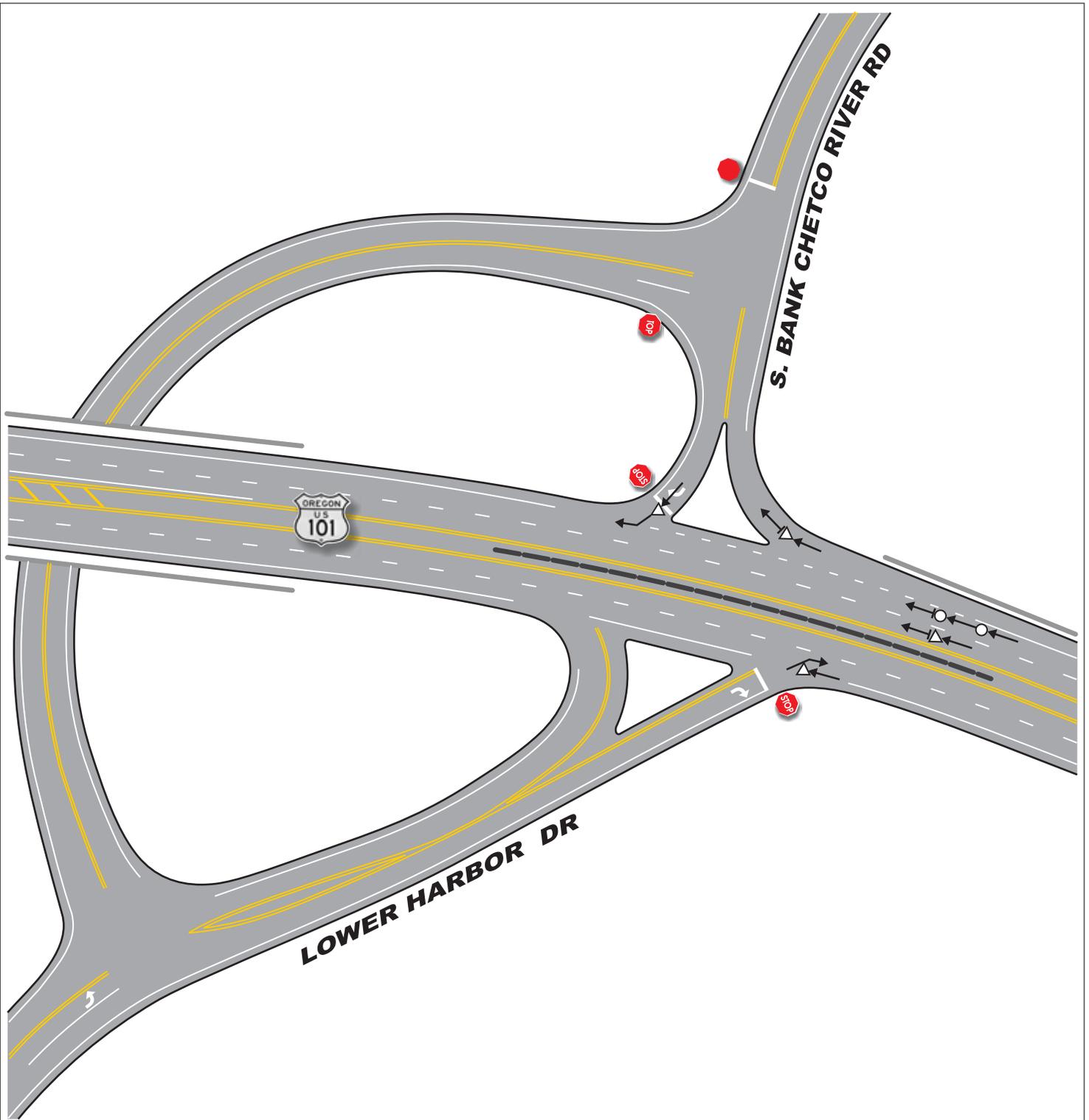
**US 101 Corridor Plan  
Reported Needs  
TAC Meeting #1 - September 20, 2012**

Location	Milepost(s)	Reported Need				
		No. <sup>1</sup>	Description	Type <sup>2</sup>	Frequency <sup>3</sup>	Notes
Hoffeldt Ln.	358.76	23	Pork chop island is difficult to see.	G, S	2	1. Scale of island is reduced by pedestrian cut-throughs in island. 2. Possibly repaint island to provide more visibility.
Gerlach Ln.	358.94	24	Poor access to Sea View Senior Living facility via Gerlach Ln.	G	5	
Benham Ln.	359.32	25	Signal timing doesn't accommodate pedestrians well; push buttons need to be accessible.	P	2	
Benham Ln.	359.32	26	Intersection lighting needed.	S, P	3	Currently no lighting.
Benham Ln.	359.32	27	Pork chop island is difficult to see.	G, S	2	1. Scale of island is reduced by pedestrian cut-throughs in island. 2. Could possibly repaint island to provide more visibility.
Pedrioli Dr. to Freeman Ln.	359.56-362.10	28	Slow-moving buses carrying agricultural workers turn onto/off of highway causing traffic operations problems.	O	1	Seasonal – mainly in fall.
Raymond Ln. to OR/Calif. State Line	359.94-363.11	29	Two-way center turn lane needs to be extended to south.	O, S	3	Several TAC members would like the two-way center turn lane to be extended as far south as the California border.
Robin Ln.	359.99	30	No crosswalk or lighting on US 101 between men's mission on east side of highway and women's mission (to be opened) on west side of highway.	P	1	This may become a problem once women's mission is opened.
Pelican Bay Dr. to Museum Rd. (n.)	360.40-360.48	31	Conflicts between northbound vehicles entering highway at Museum Rd. and northbound vehicles exiting highway at Pelican Bay Dr.	O	1	
Museum Rd.	360.48	32	Driver confusion with loop road configuration.	O	1	
Ocean View Dr.	362.13	33	Provide way-finding signage for change in designated bike route from Ocean View Dr. to US 101.	B	1	
State Line Rd. to OR/Calif. State Line	362.95-363.11	34	Closely spaced accesses on east side of highway cause traffic conflicts.	O, S	2	
Stateline Rd.	362.95	35	High seasonal traffic volumes from Crissey Field State Park turning onto/off of highway at Stateline Rd. cause traffic operations problems and potential safety problems. Many of these vehicles are RVs.	O, S	1	
Stateline Rd.	362.95	36	Street lighting needed.	S	1	



## **Appendix D**

### Collision Diagrams



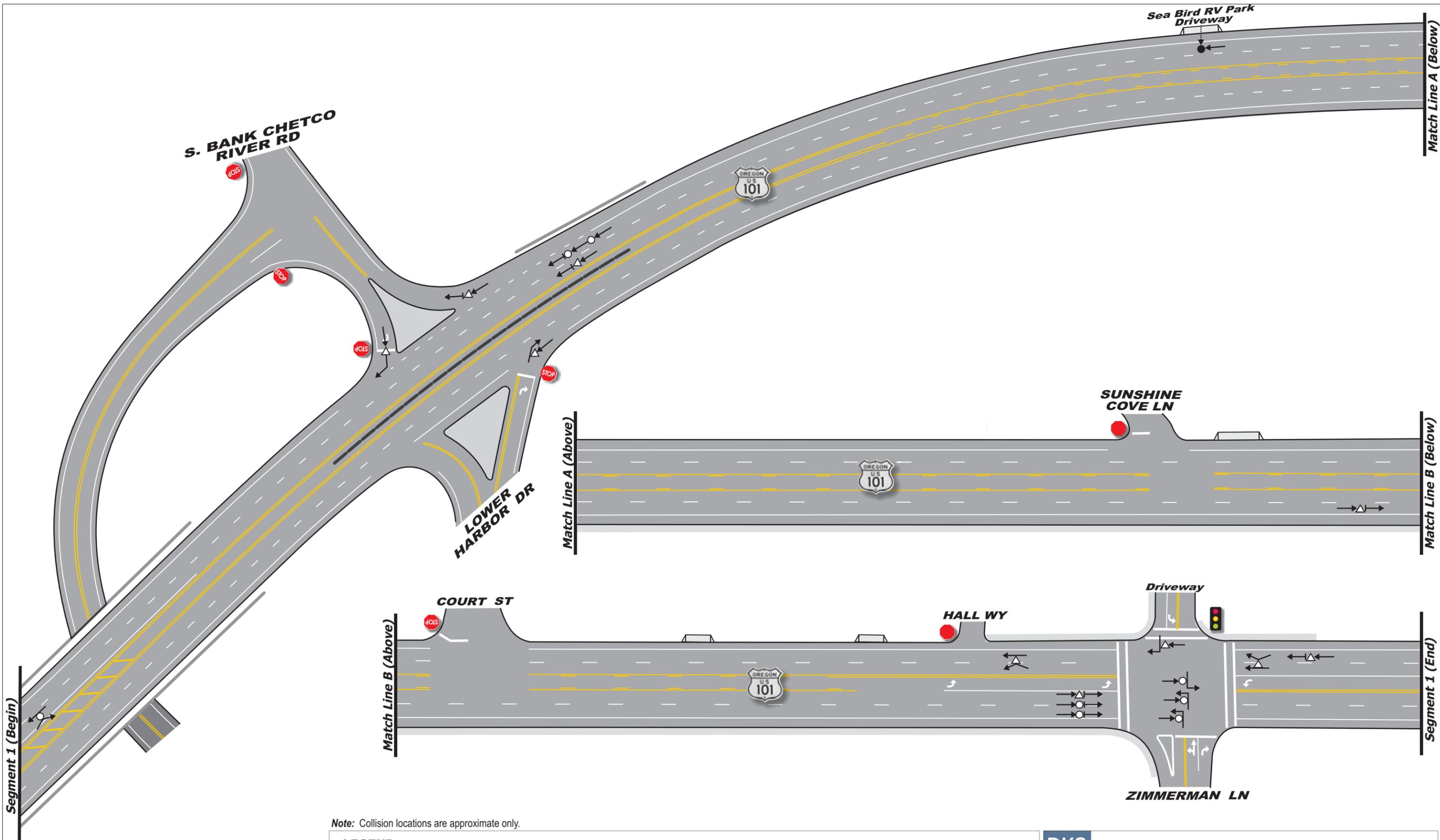
**Note:** Collision locations are approximate only.

<b>LEGEND</b>		- Signalized Intersection	- Traffic Separator	- Driveway
		- Guardrail		
<b>Collision Type</b>		<b>Collision Severity</b>		
- Motor Vehicle	- Turning	- PDO (Property Damage Only)		
- Pedestrian	- Angle	- Injury		
- Fixed Object	- Parked Car	- Fatality		
- Rear End				

**DKS**

No Scale

**COLLISION DIAGRAM**  
**US 101 @ Lower Harbor Drive/**  
**S. Bank Chetco River Road**  
 US 101 Corridor Plan

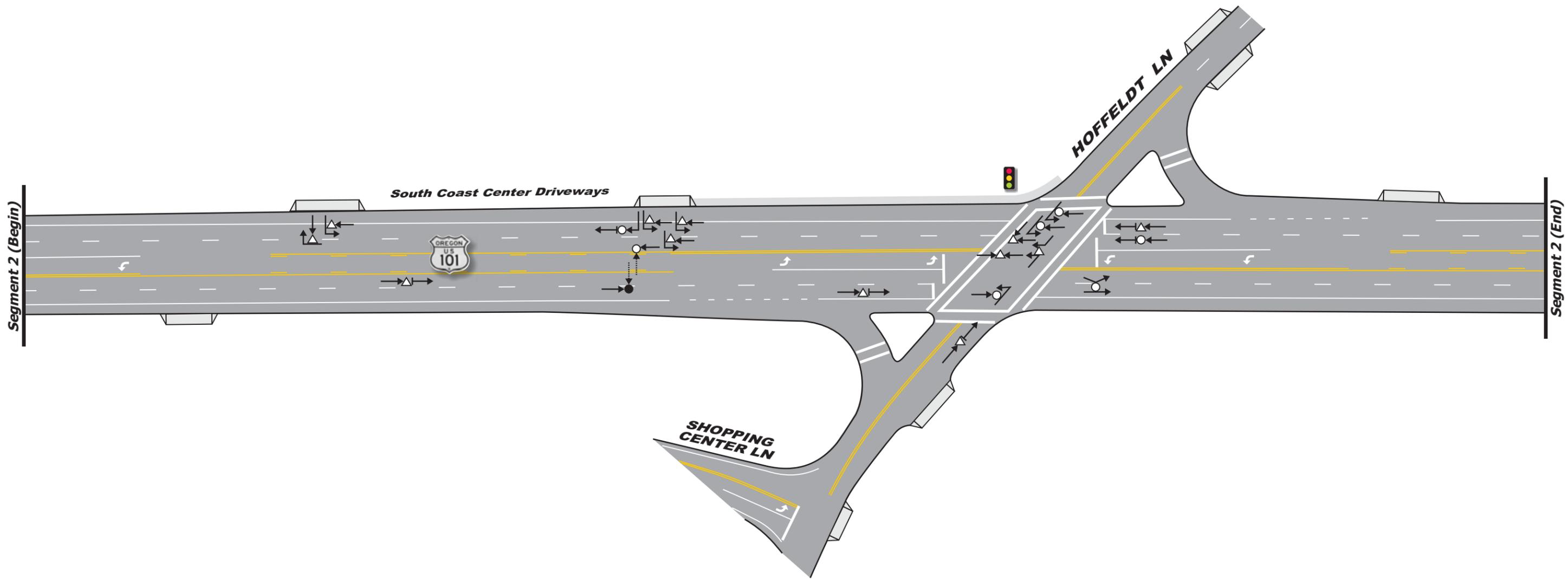


Note: Collision locations are approximate only.

<b>LEGEND</b>		<b>Collision Type</b>		<b>Collision Severity</b>	
- Driveway	- Signalized Intersection	- Motor Vehicle	- Turning	- PDO (Property Damage Only)	  <b>COLLISION DIAGRAM - Segment 1</b> <b>Chetco River Bridge to South of Zimmerman Ln.</b> US 101 Corridor Plan
- Guardrail	- Stop Sign	- Pedestrian	- Angle	- Injury	
- Traffic Separator		- Fixed Object	- U-Turn	- Fatality	
- Sidewalk		- Rear End	- Parked Car		
		- Head On			
			- Sideswipe (Same Direction)		
			- Sideswipe (Opposite Direction)		



**COLLISION DIAGRAM - Segment 1**  
**Chetco River Bridge to South of Zimmerman Ln.**  
 US 101 Corridor Plan

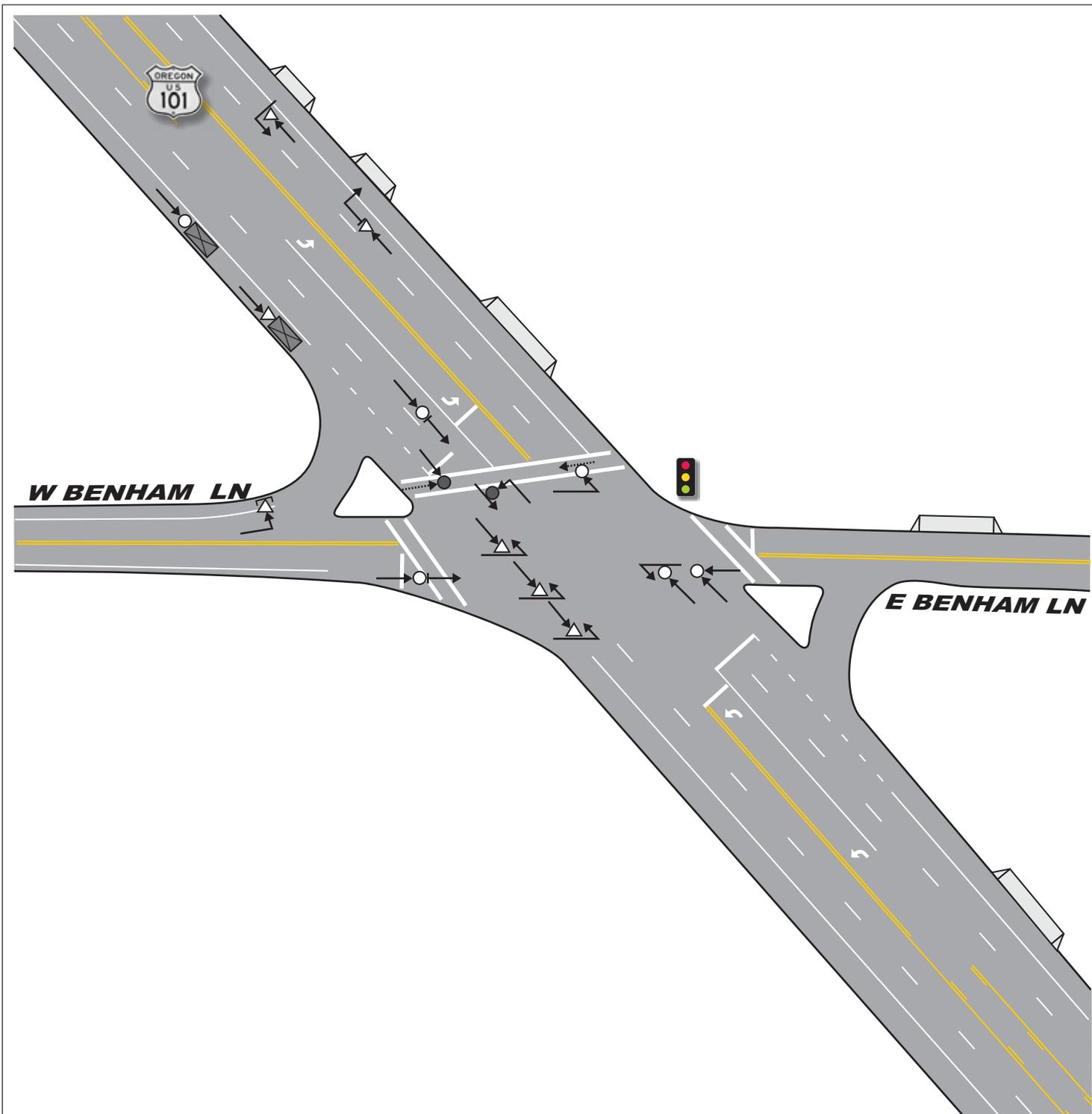


**Note:** Collision locations are approximate only.

<b>LEGEND</b>		<b>Collision Type</b>		<b>Collision Severity</b>	
- Driveway	- Signalized Intersection	- Motor Vehicle	- Turning	- Sideswipe (Same Direction)	- PDO (Property Damage Only)
- Guardrail	- Stop Sign	- Pedestrian	- Angle	- Sideswipe (Opposite Direction)	- Injury
- Traffic Separator		- Fixed Object	- U-Turn	- Fatality	
- Sidewalk		- Rear End	- Parked Car		
		- Head On			



**COLLISION DIAGRAM - Segment 2**  
 South of Zimmerman Ln. to South of Hofffeldt Ln.  
 US 101 Corridor Plan



**Note:** Collision locations are approximate only.

**LEGEND**

- Signalized Intersection - Driveway

**Collision Type**

- Motor Vehicle  
 - Pedestrian  
 - Fixed Object  
 - Rear End  
 - Turning  
 - Angle  
 - Parked Car

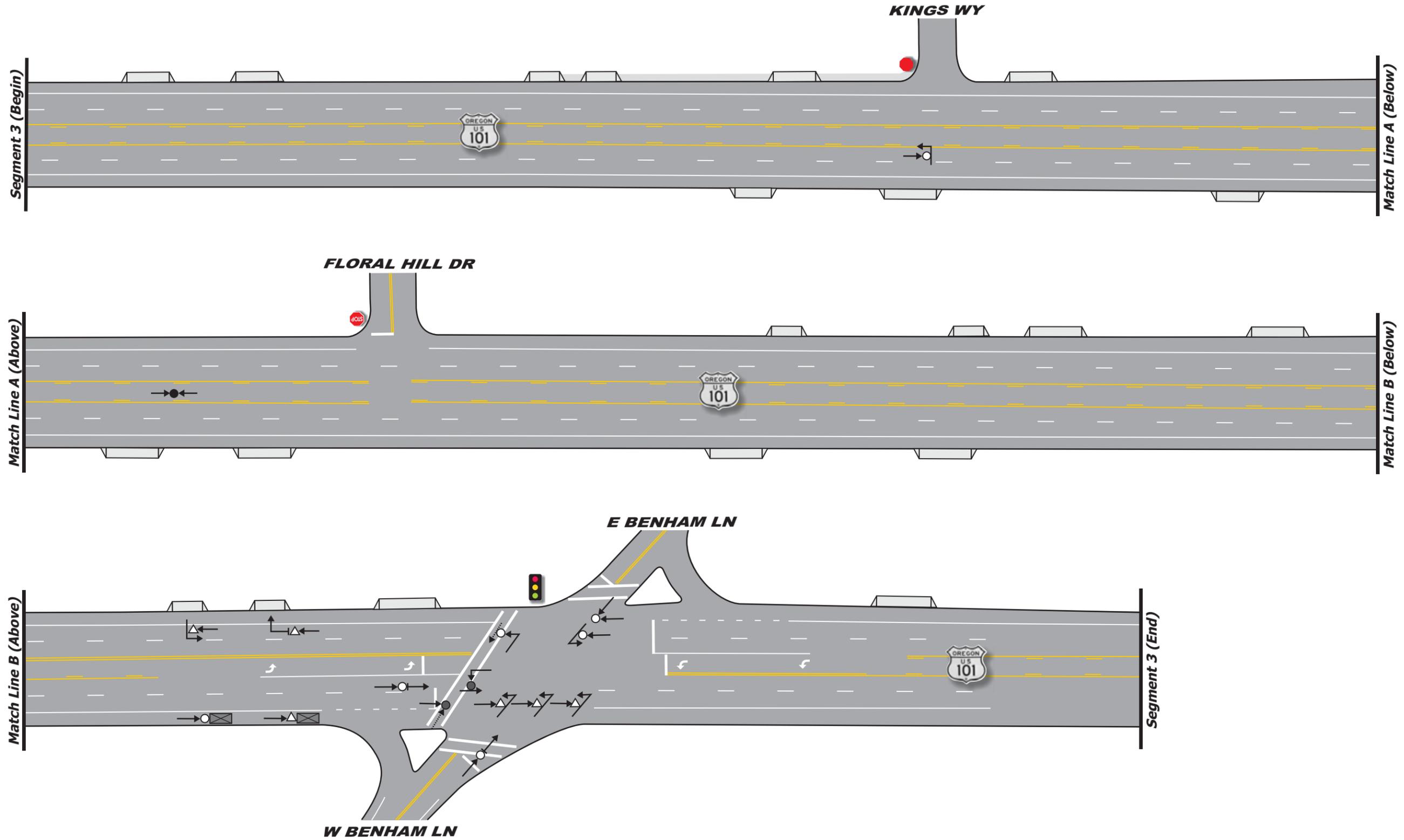
**Collision Severity**

- PDO (Property Damage Only)  
 - Injury  
 - Fatality

**DKS**

No Scale

**COLLISION DIAGRAM**  
**US 101 @ Benham Lane**  
 US 101 Corridor Plan

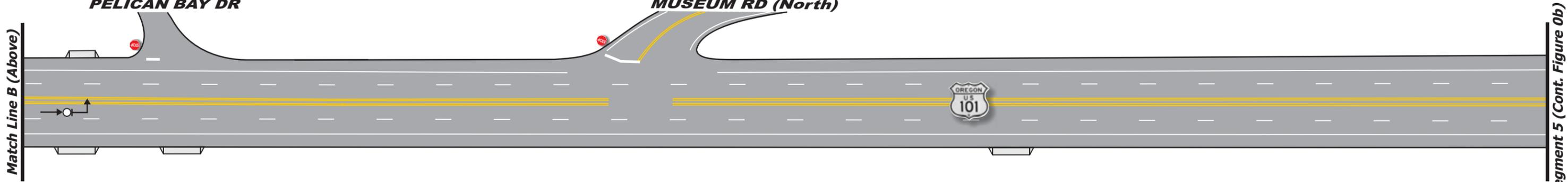
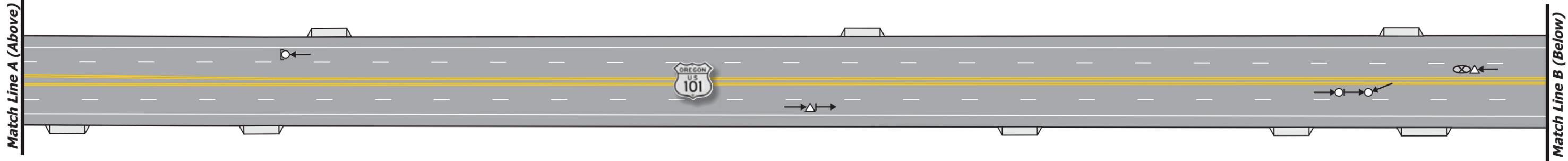
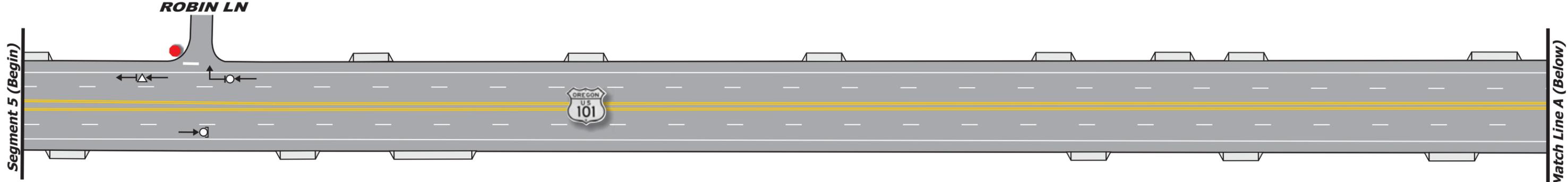


Note: Collision locations are approximate only.

<b>LEGEND</b>		<b>Collision Type</b>		<b>Collision Severity</b>	
- Driveway	- Signalized Intersection	- Motor Vehicle	- Turning	- Sideswipe (Same Direction)	- PDO (Property Damage Only)
- Guardrail	- Stop Sign	- Pedestrian	- Angle	- Sideswipe (Opposite Direction)	- Injury
- Traffic Separator		- Fixed Object	- U-Turn	- Fatality	
- Sidewalk		- Rear End	- Parked Car		
		- Head On			



**COLLISION DIAGRAM - Segment 3**  
 South of Hoffeldt Ln. to South of Benham Ln.  
 US 101 Corridor Plan



Note: Collision locations are approximate only.

<b>LEGEND</b>		<b>Collision Type</b>		<b>Collision Severity</b>	
- Driveway	- Signalized Intersection	- Motor Vehicle	- Turning	- Sideswipe (Same Direction)	- PDO (Property Damage Only)
- Guardrail	- Stop Sign	- Pedestrian	- Angle	- Sideswipe (Opposite Direction)	- Injury
- Traffic Separator		- Fixed Object	- U-Turn	- Wild Animal	- Fatality
		- Rear End	- Parked Car		
		- Head On			



Segment 5 (Cont.)

Match Line A (Below)

MUSEUM RD (South)

Match Line A (Above)

Match Line B (Below)

Match Line B (Above)

Segment 5 (End)

McVAY LN (North)

Note: Collision locations are approximate only.

**LEGEND**

-  - Driveway
-  - Guardrail
-  - Traffic Separator

-  - Signalized Intersection
-  - Stop Sign

**Collision Type**

-  - Motor Vehicle
-  - Pedestrian
-  - Fixed Object
-  - Rear End
-  - Head On
-  - Turning
-  - Angle
-  - U-Turn
-  - Parked Car

-  - Sideswipe (Same Direction)
-  - Sideswipe (Opposite Direction)

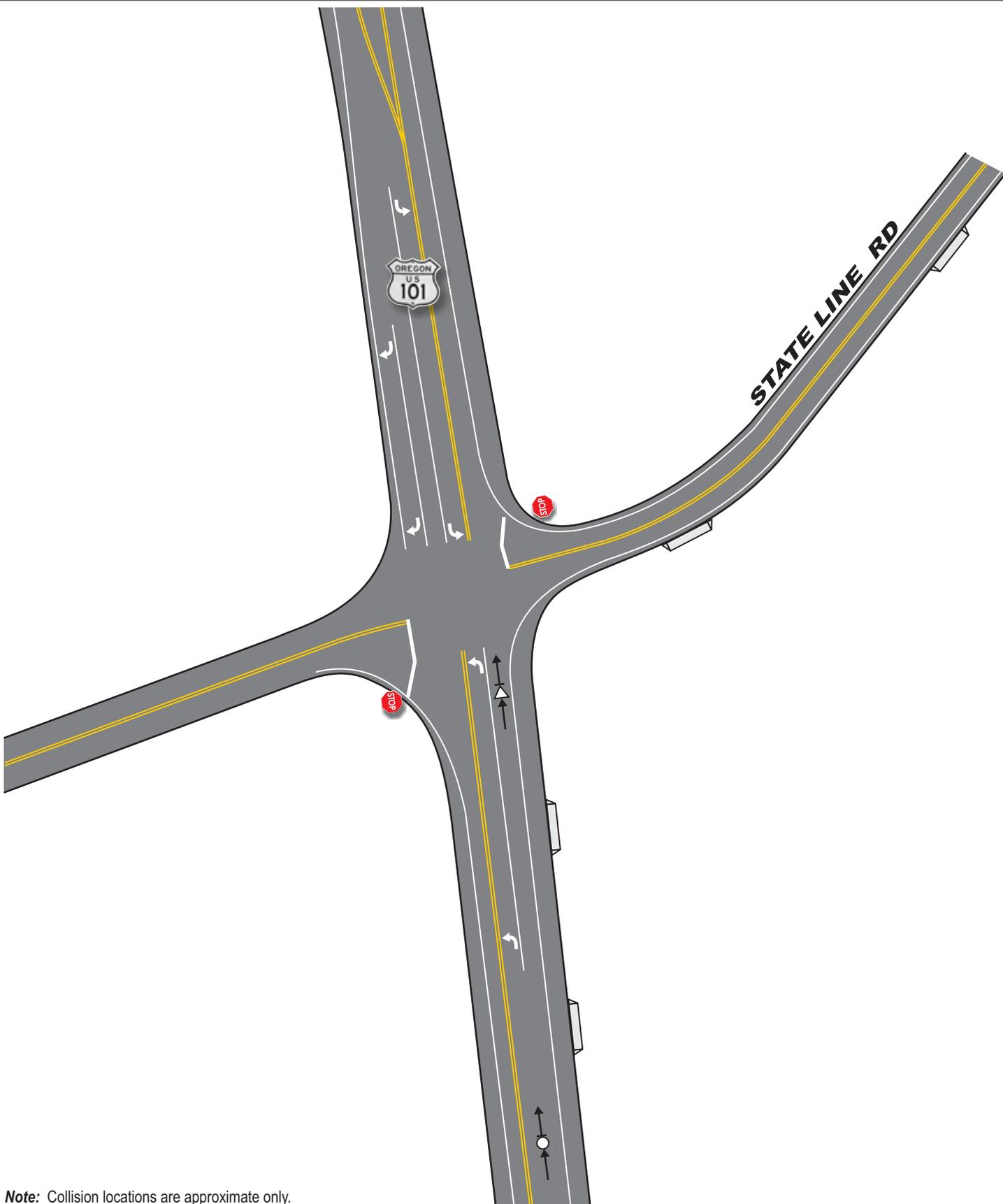
**Collision Severity**

-  - PDO (Property Damage Only)
-  - Injury
-  - Fatality

DKS



No Scale



**Note:** Collision locations are approximate only.

**LEGEND**

- Stop Sign    - Driveway

**Collision Type**

- Motor Vehicle
- Pedestrian
- Fixed Object
- Rear End
- Turning
- Angle
- Parked Car

**Collision Severity**

- PDO (Property Damage Only)
- Injury
- Fatality

**DKS**

**COLLISION DIAGRAM**  
**US 101 @ State Line Road**  
 US 101 Corridor Plan

*No Scale*



## **Appendix E**

### County Zoning



**County Zoning in the US 101 Corridor Plan Study Area**

<b>Curry County Zoning Designation</b>	<b>Uses Permitted</b>	<b>Development Standards</b>
Light Commercial (C-1)	<p>Permitted outright:</p> <ul style="list-style-type: none"> <li>• Multiple-family dwelling</li> <li>• Hotel or motel</li> <li>• Dinner-entertainment club, lounge or tavern</li> <li>• Hospitals and clinics</li> <li>• Retail or service establishment, conducted within a building which will not be detrimental or obnoxious to the neighborhood</li> <li>• RV trailer park or campground</li> <li>• Church, school or community building for public or non-profit organization use</li> </ul> <p>Permitted conditionally:</p> <ul style="list-style-type: none"> <li>• Single-family dwelling</li> <li>• Trailer or RV for temporary residence during construction of a permitted use or for security quarters</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Telecommunication facilities and towers</li> <li>• Public utility and services facilities</li> </ul>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• Single-family dwelling: 12,000 square feet in areas served by community water supply system <b>or</b> by community sewage system (one dwelling per lot)</li> <li>• Single-family dwelling: 6,000 square feet in areas which are served by both community water supply system and community sewer system (one dwelling per lot)</li> <li>• Mobile home park: 6,000 square feet per lot or 3,000 square feet per space (whichever is greater) in areas which are served by both community water supply and community sewer system</li> <li>• Multiple-family dwelling: 6,000 square feet per lot or 1,000 square feet per unit (whichever is greater) in areas served by community water supply and community sewer system</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Planned Unit Development restricted to the uses and dwelling density allowed by the zone</li> <li>• Automobile service station</li> <li>• Repair garage provided (no outside storage or repair)</li> <li>• Marine or automotive sales, service, or storage</li> </ul>	<p>No setback standards are established for the C-1, C-2, and I zones.</p>
<p>Heavy Commercial (C-2)</p>	<p>Permitted outright:</p> <ul style="list-style-type: none"> <li>• Hotel or motel</li> <li>• Dinner-entertainment club, lounge or tavern</li> <li>• Hospitals and clinics</li> <li>• Retail or service establishment, including outside storage</li> <li>• Wholesale trucking and storage</li> <li>• Automobile service station</li> <li>• Machinery, farm equipment, marine, or automotive sales, service, storage, or repair</li> <li>• Plumbing, electrical, paint or contractor's storage, repair, or sales shop</li> <li>• Church, school or community building for public or non-profit organization use</li> </ul> <p>Permitted conditionally:</p> <ul style="list-style-type: none"> <li>• Single family dwelling</li> </ul>	<p>(Same as C-1 zone)</p> <p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• Single-family dwelling: 12,000 square feet in areas served by community water supply system <b>or</b> by community sewage system (one dwelling per lot)</li> <li>• Single-family dwelling: 6,000 square feet in areas which are served by both community water supply system and community sewer system (one dwelling per lot)</li> <li>• Mobile home park: 6,000 square feet per lot or 3,000 square feet per space (whichever is greater) in areas which are served by both community water supply and community sewer system</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Multiple-family dwelling</li> <li>• Trailer or RV for temporary residence during construction of a permitted use or for security quarters</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Telecommunication facilities and towers</li> <li>• Public utility and services facilities</li> <li>• Park, playground, library or museum</li> <li>• RV park or campground</li> <li>• Airport or heliport</li> <li>• Intensive commercial recreational uses such as automotive race tracks</li> <li>• Manufacturing, processing, assembling, or fabricating plants with exceptions</li> <li>• Rock or gravel removal and screening</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple-family dwelling: 6,000 square feet per lot or 1,000 square feet per unit (whichever is greater) in areas served by community water supply and community sewer system</li> </ul> <p>No setback standards are established for the C-1, C-2, and I zones.</p>
Rural Commercial (RC)	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• Existing single-family dwelling</li> <li>• Existing retail, professional or service establishments and expansions up to 2,500 square feet</li> </ul> <p>Permitted conditionally</p>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• Have the minimum impact on any adjacent resource lands</li> <li>• The minimum size necessary to fulfill the need</li> <li>• Lot size requirements determined</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• New retail, professional, or service establishment, or expansions resulting in more than 2,500 square feet of floor area</li> <li>• Home occupation</li> <li>• Trailer or RV for temporary residence during construction of a permitted use or for security quarters</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Telecommunication facilities and towers</li> <li>• Public utility and services facilities</li> <li>• Land division</li> <li>• Church, school or community building for public or non-profit organizational use</li> <li>• Repair garage (no outside storage)</li> <li>• RV park or campground</li> <li>• Automobile service station</li> <li>• Mini storage facility</li> <li>• Medical, dental, or veterinary clinic</li> </ul>	<p>for proper installation and operation of water supply and sewage disposal systems</p> <ul style="list-style-type: none"> <li>• No land division creating a vacant parcel of less than five acres unless the County has approved a Goal exception</li> </ul> <p>Setbacks</p> <ul style="list-style-type: none"> <li>• Minimum setback from a road (not an alley) – 10 feet, with at least a 35-foot setback from the roadway or easement centerline</li> <li>• Minimum setback from lot lines – 5 feet for structures up to 15 feet in height. Setback increases 1/2 foot for every foot the structure exceeds 15 feet in height.</li> <li>• Minimum setback for lots in UGB adjacent to EFU and AFD zones – 30 feet; in addition, a solid fence at least 6 feet high or a fence that is not solid but is screened with a hedge of sufficient density to provide reasonable buffering for</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
		sound and dust
Industrial (I)	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• Retail or service establishment including outside storage</li> <li>• Wholesale trucking and storage</li> <li>• Automobile or truck service station</li> <li>• Plumbing, electrical, or paint contractor's storage, repair, or sales shop</li> <li>• Machine and other industrial shops                             <ul style="list-style-type: none"> <li>• Manufacturing, processing, assembling or fabricating plants, with exceptions</li> </ul> </li> </ul> <p>Permitted conditionally</p> <ul style="list-style-type: none"> <li>• Accessory single-family dwelling</li> <li>• Trailer or RV for temporary residence during construction of a permitted use or for security quarters</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Telecommunication facilities and towers</li> <li>• Public utility and services facilities</li> <li>• Junkyard, wrecking yard, or scrap metal yard</li> </ul>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• As large as necessary for proper installation and operation of a water supply and a sewage disposal system</li> <li>• No minimum lot size if both a community water supply and community sewage disposal system are available.</li> </ul> <p>No setback standards are established for the C-1, C-2, and I zones.</p>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Rendering plant or slaughterhouse</li> <li>• Pulp or paper mill</li> <li>• Quarry, gravel pit, subsurface or surface mining</li> <li>• Commercial feed lot or stock yard</li> <li>• Cement or asphalt plant.</li> <li>• Airport or heliport</li> </ul>	
Public Facility (PF)	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• Public schools and nursery or day care centers within an urban growth boundary (UGB)</li> <li>• Public parks or recreational facilities</li> <li>• Public utilities and facilities</li> <li>• Government structures, offices or uses</li> <li>• Accessory public parking lots or parking buildings</li> <li>• Community centers</li> <li>• Cemeteries</li> <li>• Expansion of existing airport hangars and related buildings</li> <li>• Repair or modification of an existing use listed above outside of a UGB</li> <li>• Transportation improvements and maintenance storage</li> </ul> <p>Permitted conditionally</p>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• Make the minimum impact on the surrounding agricultural or forest use</li> <li>• The minimum parcel size or number of dwellings necessary to fulfill the need</li> <li>• As large as necessary for proper installation and operation of water supply and sewage disposal systems</li> </ul> <p>The same setback and fencing/screening requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Accessory single-family dwelling</li> <li>• Trailer or RV for temporary residence during construction of a permitted use or for security quarters</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Telecommunication facilities and towers</li> <li>• Temporary or modular office</li> <li>• Accessory structures</li> <li>• Transportation improvements not in the TSP or not designed and constructed as part of subdivision or planned development</li> <li>• Rest areas, weigh stations</li> <li>• Temporary storage yards</li> <li>• Material processing sites</li> </ul>	
Exclusive Farm Use (EFU)	Permitted outright <ul style="list-style-type: none"> <li>• Farm uses</li> <li>• Accessory buildings use in conjunction with farm use</li> <li>• Alteration, restoration or replacement of a lawfully established dwelling</li> <li>• Propagation and harvesting of a forest product</li> <li>• Wineries</li> </ul>	Minimum lot size <ul style="list-style-type: none"> <li>• 80 acres</li> <li>• Less than 80 acres for non-farm uses and dwellings not used in conjunction with farm uses under certain conditions</li> </ul> The same setback and fencing/screening



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Operations for the exploration and/or production of geothermal resources and minerals</li> <li>• Climbing and passing lanes (within the right-of-way as of July 1, 1987)</li> <li>• Reconstruction or modification of public roads and highways</li> <li>• Temporary public road and highway detours</li> <li>• Minor improvement of existing public road and highway related facilities within right-of-way as of July 1, 1987, and contiguous property for operation and maintenance</li> </ul> <p>Permitted conditionally</p> <ul style="list-style-type: none"> <li>• Dwellings, accessory farm dwellings, replacement dwelling to be used in conjunction with farm use</li> <li>• Seasonal farm-worker housing</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Trailer or RV used as a temporary residence during construction of a permitted use or as temporary security quarters</li> <li>• Home occupations</li> <li>• Primary processing of forest products</li> </ul>	<p>requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Operations for the mining and processing of geothermal resources, or for the mining, crushing or stockpiling of aggregate or other mineral resources</li> <li>• A destination resort (except on high-value farm land)</li> <li>• Horse stabling and training</li> <li>• Dog kennels (except on high-value farm land)</li> <li>• Public utility and service facilities</li> <li>• Transmission towers over 200 feet high</li> <li>• Commercial utility facilities</li> <li>• Solid waste disposal (except on high-value farm land)</li> <li>• Public or private schools (except on high-value farm land and not within three miles of a UGB)</li> <li>• Churches and cemeteries (except on high-value farm land and not within three miles of a UGB)</li> <li>• Private parks, playgrounds, hunting and fishing preserves, and campgrounds (except on high-value farm land)</li> <li>• Parks, playgrounds or community centers (public or non-profit owned)</li> <li>• Golf courses (except on high-value farm land)</li> <li>• Personal-use airports</li> <li>• Construction of additional passing and travel lanes requiring the acquisition of right-of-way but not</li> </ul>	



Curry County Zoning Designation	Uses Permitted	Development Standards
	<p>resulting in the creation of new land parcels</p> <ul style="list-style-type: none"> <li>• Reconstruction or modification of public roads and highways involving the removal or displacement of buildings but not resulting in the creation of new land parcels</li> <li>• Improvement of public road and highway related facilities where additional property or right of way is required but not resulting in the creation of new land parcels</li> </ul>	
Agricultural Zone (AFD)	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• (Same farm, rural and transportation uses as permitted outright in the EFU zone)</li> </ul> <p>Permitted conditionally</p> <ul style="list-style-type: none"> <li>• (Same or similar agricultural, associated and rural uses and same transportation uses as permitted conditionally in the EFU zone)</li> </ul>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• 80 acres</li> <li>• Less than 80 acres for non-farm uses and dwellings not used in conjunction with farm uses under certain conditions</li> </ul> <p>The same setback and fencing/screening requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>
Forestry Grazing (FG)	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• Forest operations or forest practices</li> <li>• Farm use</li> <li>• Temporary portable facility for the primary processing</li> </ul>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• 80 acres</li> <li>• Land divisions of less than 80 acres</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<p>of forest products</p> <ul style="list-style-type: none"> <li>• Temporary forest labor camps</li> <li>• Temporary on-site structures for forest management operation</li> <li>• Alteration, restoration or replacement of a lawfully established dwelling</li> <li>• Soil, air and water quality conservation for wildlife and fisheries resources</li> <li>• Private hunting and fishing operations without lodging</li> <li>• Additional local public utility distribution lines and accessory equipment</li> <li>• Land-based exploration for mineral, aggregate, geothermal, gas, oil, and other associated hydrocarbon resources</li> <li>• Destination resorts</li> <li>• Widening of roads within existing rights-of- way</li> <li>• Climbing and passing lanes within the right-of-way as of July 1, 1987</li> <li>• Reconstruction or modification of public roads and highways with no removal or displacement of buildings</li> <li>• Temporary public road and highway detours</li> <li>• Minor improvement of existing public roads and highway related facilities</li> </ul>	<p>for specified uses and conditions</p> <p>The same setback and fencing/screening requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<p>Permitted conditionally</p> <ul style="list-style-type: none"> <li>• Permanent logging equipment repair and storage facilities</li> <li>• Forest management research and experimentation facilities</li> <li>• Log scaling and truck weigh stations</li> <li>• Permanent facility for the processing of forest products</li> <li>• Commercial activities associated with farm use</li> <li>• Home occupations</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Trailer or RV used as a temporary residence during construction of a permitted use or as temporary security quarters</li> <li>• Private seasonal accommodations for fee hunting operations and for fishing occupied on a temporary basis</li> <li>• Telecommunication facilities</li> <li>• Public utility and services facilities</li> <li>• Cemeteries</li> <li>• Park and campground</li> </ul>	



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Solid waste disposal site or transfer station</li> <li>• Land-based mining and processing of oil, gas, or other subsurface resources</li> <li>• Expansion of an existing airport</li> <li>• Construction of additional passing and travel lanes requiring the acquisition of right-of-way but not resulting in the creation of new land parcels</li> <li>• Reconstruction or modification of public roads and highways involving the removal or displacement of buildings but not resulting in the creation of new land parcels.</li> <li>• Improvement of public road and highway related facilities where additional property or right-of-way is required but not resulting in the creation of new land parcels</li> <li>• Other roads, highways and transportation facilities and improvement subject to a forest land or other Goal exception or ORS 215.296</li> <li>• Portable asphalt and concrete batch plants as a temporary use for a specific highway/road construction or maintenance project</li> </ul>	
Residential One (R-1)	Permitted outright <ul style="list-style-type: none"> <li>• Single-family dwelling</li> </ul>	Minimum lot size <ul style="list-style-type: none"> <li>• One acre: in areas not served by a</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<p>Permitted conditionally</p> <ul style="list-style-type: none"> <li>• Home occupation</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Trailer or RV used as a temporary residence during construction of a permitted use or as temporary security quarters</li> <li>• Telecommunication facilities</li> <li>• Public utility and services facilities</li> <li>• Private stabling and keeping of horses and farm animals</li> <li>• Church, school, or community building for public or non-profit organization use</li> <li>• Planned Unit Development restricted to the uses and dwelling density allowed by the zone and limited to single family dwellings</li> </ul>	<p>community water supply system or a community sewage system</p> <ul style="list-style-type: none"> <li>• 12,000 square feet: in areas served by community water supply system <b>or</b> by community sewage system</li> <li>• 6,000 square feet: in areas served by both community water supply system and community sewer system</li> </ul> <p>The same setback and fencing/screening requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>
Residential Two (R-2)	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• Single-family dwelling</li> <li>• Mobile or manufacture home</li> </ul> <p>Permitted conditionally</p> <ul style="list-style-type: none"> <li>• (Same uses as permitted conditionally in the R-1 zone)</li> </ul>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• One acre: in areas not served by a community water supply system or a community sewage system</li> <li>• 12,000 square feet: in areas served by community water supply system</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
		<p>or by community sewage system</p> <ul style="list-style-type: none"> <li>• 6,000 square feet: in areas served by both community water supply system and community sewer system</li> <li>• Mobile home park: 6,000 square feet per lot or 3,000 square feet per space (whichever is greater) in areas which are served by both community water supply and community sewer system</li> </ul> <p>The same setback and fencing/screening requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>
Residential Three (R-3)	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• Single-family dwelling</li> <li>• Mobile or manufacture home</li> <li>• Multiple-family dwelling</li> </ul> <p>Permitted conditionally</p> <ul style="list-style-type: none"> <li>• Mobile home park</li> <li>• Home occupation</li> </ul>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• One acre: in areas not served by a community water supply system or a community sewage system</li> <li>• 12,000 square feet: in areas served by community water supply system or by community sewage system</li> <li>• 6,000 square feet: in areas served by both community water supply system and community sewer</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Trailer or RV used as a temporary residence during construction of a permitted use or as temporary security quarters</li> <li>• Telecommunication facilities</li> <li>• Public utility and services facilities</li> <li>• Hospitals and clinics</li> <li>• Church, school, or community building for public or non-profit organization use</li> <li>• Planned Unit Development restricted to the uses and dwelling density allowed by the zone and limited to single family dwellings</li> </ul>	<p>system</p> <ul style="list-style-type: none"> <li>• Mobile home park: 6,000 square feet per lot or 3,000 square feet per space (whichever is greater) in areas which are served by both community water supply and community sewer system</li> <li>• Multiple-family dwelling: 6,000 square feet per lot or 2,000 square feet per unit (whichever is greater) in areas served by community water supply and community sewer system</li> </ul> <p>The same setback and fencing/screening requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>
<p>Rural Residential, 5-acre Lot (RR-5)</p> <p>Rural Residential, 10-acre Lot (RR-10)</p>	<p>Permitted outright</p> <ul style="list-style-type: none"> <li>• Single-family dwelling or mobile home (on a lot approved prior to August 12, 1986 or a lot subsequently approved at the minimum lot size, subject to approval of on-site sewage disposal and domestic water source)</li> <li>• Farm or forestry use</li> </ul> <p>Permitted conditionally</p>	<p>Minimum lot size</p> <ul style="list-style-type: none"> <li>• 2, 5, or 10 acres according to RR designation</li> <li>• Changes from 10 acres to 5 acres can be approved when change complies with urbanization policies and proposed lots are adequate for proper sewage disposal and have a</li> </ul>



Curry County Zoning Designation	Uses Permitted	Development Standards
	<ul style="list-style-type: none"> <li>• Home occupation</li> <li>• One manufactured home in conjunction with an existing dwelling as a temporary use for a term of a hardship</li> <li>• Trailer or RV used as a temporary residence during construction of a permitted use or as temporary security quarters</li> <li>• Telecommunication facilities</li> <li>• Public utility and services facilities</li> <li>• Church, school, or community building for public or non-profit organization use</li> <li>• Animal hospital or kennel</li> <li>• Horse stabling and training</li> </ul>	<p>suitable water source</p> <ul style="list-style-type: none"> <li>• Changes from 10 or 5 acres to 2 acres can be approved under a set of conditions detailed in the zoning code</li> </ul> <p>The same setback and fencing/screening requirements apply to the RC, PF, EFU, AFD, R-1, R-2, R-3, and RR zones.</p>
Master Plan Area (MPA)	<p>City of Brookings                      Brookings Municipal Code, Chapter 17.70, Master Plan Development (MPD) District                      All uses allowed outright and conditionally in the underlying R-1, R-2, R-3, C-1, C-2, C-3, C-4, I-P, and M-2 zones. Site plan must show any interior lots/parcels related to proposed development phases or land divisions, and residential uses shall be identified indicating the type of residential use, the number of units and resulting density</p> <p>Curry County                      Curry County Zoning Ordinance, Article VI, Planned Unit Development                      Applicants propose land uses, building locations and housing unit densities that are consistent with the objectives of the comprehensive plan or zoning provisions of the area and are substantially compatible</p>	



<b>Curry County Zoning Designation</b>	<b>Uses Permitted</b>	<b>Development Standards</b>
	with the land use of the surrounding area.	

Source: Curry County Zoning Ordinance (CCZO), Article III (Use Zones), Section 3.005-3.200, Article IV (Supplementary Provisions), and Article VI (Planned Unit Development), <http://www.co.curry.or.us/publicservices/ZoneOrd/Zoning%20Ordinance.htm>