OR 99 Corridor Plan

DRAFT Technical Memorandum #3
Existing Transportation Facilities Inventory and Analysis

Prepared for

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March 2011

3. EXISTING CONDITIONS ANALYSIS

This memorandum provides a summary of the existing transportation system and traffic conditions through the OR 99 corridor.

Existing Transportation System Inventory

The OR 99 corridor serves local and regional vehicular and freight traffic as well as transit, bicycles and pedestrians. Through the study area, OR 99 parallels Interstate 5 (I-5) to the west with occasional connections between the two facilities. Table 3-1 presents a summary of the corridor study area roadways and classifications. Additionally, the function of the OR 99 corridor will be influenced by the Phoenix Special Transportation Area (STA) which is bounded to the north by 5th Street, south by Oak Street, east by Bear Creek Drive, and west by Church Street.

The OR 99 corridor has four connections to I-5 in the study area:

1. **Interchange 27 (South Medford)** is an urban interchange that serves the entire southern part of Medford and connects I-5 with the city's commercial core and OR 99. The interchange is a Single Point Urban Interchange that brings the I-5 northbound and southbound ramps to a single Intersection with Highland Drive.

2. **Interchange 24 (Fern Valley)** provides access to the City of Phoenix via signalized intersections on Fern Valley Road. The interchange is a standard diamond interchange with frontage roads on both sides of the freeway. Development of an IAMP and a Draft Environmental Assessment (EA) are occurring simultaneously at the interchange. The purpose of both projects has been to "reduce congestion and improve operational conditions at the interchange."
3. **Interchange 21 (W. Valley View)** provides access to the City of Talent via STOP-controlled intersections on W. Valley View Road. The interchange has a gull wing configuration for the northbound freeway ramp terminals and a half-diamond configuration for the southbound terminals.
4. **Interchange 19 (North Ashland)** provides the main link between the I-5 corridor and the northern end of Ashland via OR-99, which intersects S. Valley View Road approximately 2,500 feet south of the interchange. Currently a two-lane facility, S. Valley View Road carries high volumes because of significant intraregional trips between Ashland and Medford. In addition to the heavy movement of intraregional trips, the interchange also serves local residents and businesses in the interchange vicinity. S. Valley View Road is planned for expansion into a five-lane facility between the interchange and the OR 99 intersection. A draft IAMP is under review by ODOT and the local jurisdictions.

Table 3-1. Roadway Inventory

Roadway/ Highway Name	ODOT[1]/Federal[2] Functional Classification	Local Functional Classification	Posted Speed (mph)	No. of Lanes
ODOT Facilties				
OR 99 - Garfield Street through S. Stage Road *(South Medford Segment)*	District Highway/ Principal Arterial	Arterial	45	5
OR 99 - /S Stage Road to Cheryl Lane *(Medford to Phoenix Transition)*	District Highway/ Principal Arterial	Arterial	45	5
OR 99 - Cheryl Lane to Bear Creek Drive/ N. Main Street Couplet *(Phoenix Segment)*	District Highway/ Principal Arterial	Arterial	40-45	4
OR 99 - Bear Creek Drive/N. Main Street Couplet *(Phoenix Segment)*	District Highway, STA/ Principal Arterial	Arterial	40/30	2/2
OR 99 - Bear Creek Drive/N. Main Street Couplet to Phoenix S. City Limits *(Phoenix Segment)*	District Highway/ Principal Arterial	Arterial	40	4
OR 99 - Phoenix S. City Limits to Colver/ Suncrest Road *(Phoenix to Talent Transition)*	District Highway/ Principal Arterial	State Highway	55	4
OR 99 - Colver/Suncrest Road to Talent S. City Limits *(Talent Segment)*	District Highway/ Principal Arterial	Major Arterial	40	5
OR 99 – Talent S. City Limits to S. Valley View Road *(Talent to Ashland Transition)*	District Highway/ Principal Arterial	State Highway	45	4
Medford City Limits[3]				
Garfield Street/Belknap Road	Minor Arterial	Arterial	NP	5
Bear Creek Corporation Drive	Local	Local	NP	2
Lowry Lane	Local	Local	NP	2
S. Stage Road	Minor Arterial/Local	Arterial/Local	45/NP	2
Phoenix City Limits[4]				
Cheryl Lane.	Local	Collector	30	2
Fern Valley Road	Minor Arterial	Arterial	NP	2
E. Bolz Road	Local	Local/Arterial	NP	2
4th Street	Urban Collector	Collector	NP	2
1st Street	Minor Arterial	Collector	NP	2
Oak Street	Urban Collector	Collector	NP	2
Talent City Limits[5]		-		
Colver/Suncrest Road	Urban Collector	Major Collector	35/25	2
W Valley View Road	Minor Arterial	Major/Minor Arterial	40/25	4/2
Rapp Road	Urban Collector	Major Collector	25	2
Arnos Road	Local	Minor Collector	25	2
Creel Road	Urban Collector	Major Collector	30	2
Jackson County[6]				
Talent Avenue/Old Pacific Highway	Rural Major Collector	Collector	NP	2
S. Valley View Rd	State Highway	Arterial	35	2-3

Acronyms: STA= Special Transportation Area, NP = Not Posted

Notes:

1. Oregon Highway Plan, 1999
2. ODOT Transportation Maps, http://www.oregon.gov/ODOT/TD/TDATA/gis/odotmaps.shtml#City_Maps
3. City of Medford Transportation System Plan, November 20, 2003
4. City of Phoenix Transportation System Plan. October 4, 1999
5. City of Talent Transportation System Plan. March 2007
6. Rogue Valley Metropolitan Planning Organization, 2009-2034 Regional Transportation Plan, April 27, 2009

Pedestrian and Bicycle Facilities Inventory

The bicycle and pedestrian facilities along OR 99 are limited throughout the corridor area. The Bear Creek Greenway trail is a regional bicycle and pedestrian facility that generally parallels I-5. With recent completion of a segment of the greenway in the vicinity of Interchange 27 as part of the South Medford Interchange project, the multi-use trail is now a continuous 21-mile path between Interchange 35 north of Central Point to Oak Street in Ashland. Table 3-2 provides more detail regarding other pedestrian and bicycle facilities along OR 99.

Table 3-2. Corridor Pedestrian and Bicycle Inventory

Segment	Pedestrian Facilities	Bicycle Facilities
All Segments	• Access to Bear Creek Greenway northeast of OR 99	• Access to Bear Creek Greenway northeast of OR 99
South Medford Segment *(Garfield Street to S. Stage Road)*	• Occasional marked crosswalks • Sidewalk on the northeastern side	• Present in both directions
Medford to Phoenix Transition *(S Stage Road to Cheryl Lane)*	• No sidewalks present	• Inadequate shoulders
Phoenix Segment *(Cheryl Lane to Phoenix S. City Limits)*	*North of Couplet:* • Continuous sidewalks on west side, sporadic sidewalks on east side of OR 99 • Crosswalks at Fern Valley Road and E. Bolz Road *Bear Creek/N. Main Couplet* • Continuous sidewalk on both sides of N. Main Street • No sidewalks along Bear Creek Drive • Crosswalk at 3rd Street and N. Main Street *South of Couplet:* • No sidewalks present	• No on-street bike facilities
Phoenix to Talent Transition *(Phoenix S. City Limits to Colver/Suncrest Road)*	• No sidewalks present	• Inadequate shoulders
Talent Segment *(Colver/Suncrest Road Talent S. City Limits)*	*Colver/Suncrest Road to Rapp Road* • Continuous sidewalks on southwest side • Sporadic sidewalks on northeast side • Crosswalks at Colver/Suncrest Road, W. Valley View Road, and Rapp Road *South of Rapp Road* • No sidewalks present	*Colver/Suncrest Road to Rapp Road* • Continuous bike lanes on both sides to south of Rapp Road *South of Rapp Road* • No on-street bike facilities
Talent to Ashland Transition *(Talent S. City Limits to S. Valley View Road)*	• No sidewalks present	• Inadequate shoulders

Transit Inventory

Rogue Valley Transportation District (RVTD) operates one transit route through the study area: Route 10. Route 10 travels the entire length of the corridor Monday through Friday, twice each hour, between the hours of 5:00 am and 6:30 pm. The route runs along OR 99 in the study area except in Talent, where it runs along Talent Avenue. More than 30 stops are located within the study area.

Highway Freight Inventory

The majority of through freight trips use I-5 through the Rogue Valley. Even shorter distance trips, such as those between Medford and Talent, are more likely to use I-5 rather than OR 99. Localized freight trips which link the agricultural lands to the manufacturing plants tend to use OR 99 and make up a relatively small percentage of the overall traffic volumes for the corridor. More information regarding the truck distribution throughout the study area can be found in the Freight Traffic discussion under the Traffic Conditions of this report.

Intelligent Transportation Systems (ITS) Inventory

The Rogue Valley region has a sizeable amount of ITS infrastructure currently in place[1]. Along the OR 99 corridor the predominant ITS systems are Automatic Traffic Recorders (ATRs) and Closed-Circuit Television (CCTV) Cameras. Additional ATRs and CCTV Cameras are planned in the next 20 years, four and two, respectively. Three of the ATRs are planned for the 6-10 year horizon, while the remaining one is planned for the 11-20 year horizon. The two new CCTV Cameras are also planned for the 11-20 year horizon.

Closed-Circuit Television Cameras

ODOT currently controls six CCTV cameras to monitor traffic on I-5 within the Corridor Plan area, concentrated primarily along the viaduct through Medford. Video signals from the cameras are transmitted to ODOT TOC. Three cameras on the viaduct communicate via wireless to the weather station site located at Jackson Street (MP 28.94). From the weather station, the video is transmitted to the TOC. The City of Medford operates two cameras that are transmitted via copper twisted-pair cable to Medford City Hall for monitoring. However, the information is not currently posted to a website. Additional cameras are planned in conjunction with the South Medford Interchange project.

Automatic Traffic Recorders

Used to collect traffic volume, speed, and occupancy data at a given location, ATRs are typically located upstream from a signalized intersection but are occasionally placed on freeway mainlines as well. Within the Corridor Plan area, ODOT operates three ATRs—one on OR 62 (MP 1.09), one on OR-99 in Talent (MP 15.82), and one on the I-5 Medford viaduct at MP 28.33.

[1] I-5 Rogue Valley Corridor Study Technical Memorandum #2 Data Collection and Review of Existing Plans Figure 9-1. David Evans and Associates, Inc. August 2009

The City of Medford, meanwhile, controls six ATRs—two are positioned on East McAndrews Road east and west of the Royal Avenue intersection, two are on Barnett Road east and west of Black Oak Drive, and two are on North Phoenix Road north and south of the Barnett Road intersection.

Rail Inventory

The Rogue Valley region is served by two railroad lines. The Central Oregon and Pacific Railroad (reporting mark "CORP") is a short line railroad owned by RailAmerica, Inc., which is based in Jacksonville, Florida. The WCTU Railway Company, a short line railroad on 14 miles of track accessing an industrial area in White City, Oregon, is part of RailService, Inc., which is based in Atlanta, Georgia. Currently, both railroad lines are exclusively freight lines with 90 percent of their delivery consisting of forest products. The CORP line runs parallel to the OR 99 corridor throughout the study area.

No passenger rail service is available in the Rogue Valley; the closest available is AMTRAK located in Eugene, Oregon. The Federal Railroad Administration (FRA) establishes nine classes of track and safety standards that prescribe the maximum speed of operation for both freight and passenger trains. CORP trackage is maintained to FRA Class 1 and 2 conditions, which limits maximum speeds to 10 mph for Class 1 or 25 mph for Class 2. Hence, improvements necessary to provide a competitive passenger rail service south to Medford and beyond would require substantial reconstruction.

Central Oregon and Pacific Railroad (CORP)

CORP, headquartered in Roseburg, Oregon, is a Class II railroad operating between Black Butte (Weed) in Northern California and Eugene, Oregon. From Eugene, the line continues west to Coos Bay, Oregon. A Class II railroad is defined as a mid-sized freight-hauling railroad with operating revenues greater than $20.5 million but less than $277.7 million for at least three consecutive years.
Traffic on the CORP consists of about 38,000 cars that primarily haul forest commodities such as lumber, logs, and plywood. Remaining shipments consist of liquid petroleum gas, corn, and grain. A large wood products operation in the Roseburg vicinity contributes the bulk of the traffic on the northern end, while shippers south of Grants Pass are the major source of business on the southern end of the line.

Although the CORP operates trackage into northern California, based on a phone conversation with John Bullion, CORP Assistant General Manager, no rail traffic currently occurs south of the City of Ashland. Therefore, all railroad traffic north of Ashland must currently go through Eugene. As a result, Oregon freight shipments destined to go south into California via rail must go north through Eugene and then divert onto the Union Pacific Railroad (UP) route from Eugene to Klamath Falls, Oregon, and the Cascade Summit.

Traffic Conditions

The assessment of traffic conditions includes development of existing traffic volumes, traffic operations evaluation, and a review of historical crash patterns.

Traffic Counts

Traffic volume data collected for this project consist of a mix of turning movement counts and detailed classification counts. Table 3-3 below provides a list of all intersection count locations and includes the type of count.

Table 3-3. Vehicle Count Locations and Types

Location	Type of Count	Count Date
Medford Segment		
1. OR 99 @ Garfield Street (Signalized)	16 hr Turning Movement Classification	7/12/2010
2. OR 99 @ Lowry Lane (Signalized)	16 hr Turning Movement Classification	7/12/2010
3. OR 99 @ Bear Creek Corp Drive (Signalized)	16 hr Turning Movement Classification	7/13/2010
4. OR 99 @ S. Stage Road (Signalized)	16 hr Turning Movement Classification	7/15/2010
Phoenix Segment		
5. OR 99 @ Fern Valley Road (Signalized)	24 hr Turning Movement	7/14/2010
6. OR 99 @ E. Bolz Road	16 hr Turning Movement Classification	7/14/2010
7. SB OR 99 (N. Main St) @ 4th Street	3 hr PM Turning Movement Classification	9/22/2010
8. NB OR 99 (Bear Creek Drive) @ 4th Street	3 hr PM Turning Movement Classification	9/23/2010
9. SB OR 99 (N. Main St) @ 1st Street	3 hr PM Turning Movement Classification	9/21/2010
10. NB OR 99 (Bear Creek Drive) @ 1st Street	3 hr PM Turning Movement Classification	9/28/2010
11. SB OR 99 (N. Main St) @ Oak Street	3 hr PM Turning Movement Classification	9/16/2010
12. NB OR 99 (Bear Creek Drive) @ Oak Street	3 hr PM Turning Movement Classification	9/16/2010
Talent Segment		
13. OR 99 @ Colver/Suncrest Road (Signalized)	16 hr Turning Movement Classification	7/15/2010
14. OR 99 @ W. Valley View Road (Signalized)	16 hr Turning Movement Classification	7/15/2010
15. OR 99 @ Rapp Road (Signalized)	16 hr Turning Movement Classification	8/2/2010
16. OR 99 @ Arnos Road	3 hr PM Turning Movement Classification	7/1/2010
17. OR 99 @ Creel Road	3 hr PM Turning Movement Classification	7/6/2010
Talent to Ashland Transition		
18. OR 99 @ Talent Avenue/Old Pacific Hwy	16 hr Turning Movement Classification	8/3/2010
19. OR 99 @ S. Valley View Road (Signalized)	16 hr Turning Movement Classification	10/6/2009

The traffic volume data were examined to determine a common peak hour among the intersections, which is the one-hour period when the sum of volumes entering at all corridor intersections is highest. The common peak hour for the corridor intersections was found to occur between 4:30 and 5:30 PM. The peak hour at each intersection may or may not correspond to the common peak hour but all peaks are generally overlap at least have of the common hour.

Design Hourly Volumes

ODOT generally requires that transportation facilities be analyzed under design hourly volumes (DHVs), known as 30th highest hour volumes. The 30th highest hour volumes are used in traffic operations analysis so that results are valid for all but a few hours of the year. The procedure for determining 30th highest hour volumes is specified in ODOT's Analysis Procedures Manual (APM)[2] and briefly described below.

The 30th highest hour traffic volumes are calculated by multiplying the peak hour volumes by a seasonal factor. The seasonal factor is determined from automatic traffic recorders (ATR), which are electronic counting sites on roadways that count vehicles continuously. It is desirable to obtain data from ATRs that (1) are within the corridor area, (2) are on similar roadway types or within similar area types, or (3) have similar seasonal trend characteristics. The seasonal factors for the corridor area use a combination of ATR and seasonal trend data. The seasonal trend data averages the commuter and summer trends to represent the travel characteristics for the area. The data used in calculating the seasonal factors is included in Appendix A.

Peak hour count data was seasonally adjusted, and volumes were balanced to achieve a uniform dataset for analysis. Because the counts were collected in 2010 (the baseline analysis year), an annual growth adjustment was not applied. Figure 3-1 shows the existing balanced PM peak hour volumes developed for this project.

Freight Traffic

Trucks are an important component of traffic for any corridor. According to the classification breakdown for ATR 15-014 (Talent), trucks comprise less than 4% of the total average annual daily traffic in the area. The intersection traffic counts also show relatively low truck percentages. However, this corridor is home to a major agricultural and manufacturing plant, Bear Creek Corporation (also known as Harry and David). Bear Creek Corporation is located between Medford and Phoenix. While it may bring in produce from a variety of sources, it also utilizes the agricultural land located in the Phoenix/Talent area. At harvest time (generally late summer/early fall) truck traffic between the crop sites and manufacturing facility peaks.

Operational Criteria

Transportation engineers have established various methods for measuring traffic operations of roadways and intersections. Most jurisdictions use either volume-to-capacity (v/c) ratio or level of service (LOS) to establish performance criteria. Both the LOS and v/c ratio concepts require consideration of factors that include traffic demand, capacity of the intersection or roadway, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort, convenience, and operating cost.

[2] Analysis Procedures Manual, Oregon Department of Transportation, Transportation Development Division Planning Section, Transportation Planning and Analysis Unit, Salem, Oregon, April, 2006, Section 4.3.

Volume-to-Capacity (V/C) Ratio

A comparison of traffic volume demand to intersection capacity is one method of evaluating how well an intersection is operating. This comparison is presented as a v/c ratio. A v/c ratio of less than 1.00 indicates that the volume is less than capacity. When it is closer to zero, traffic conditions are generally good, with little congestion and low delays for most intersection movements. As the v/c ratio approaches 1.00, traffic becomes more congested and unstable, with longer delays.

Level of Service (LOS)

Level of service is also a widely recognized and accepted measure and descriptor of traffic operations. At both stop-controlled and signalized intersections, LOS is a function of control delay, which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Six standards have been established, ranging from LOS A, where there is little or no delay, to LOS F, where there is delay of more than 50 seconds at unsignalized intersections, or more than 80 seconds at signalized intersections.

It should be noted that, although delays can sometimes be long for some movements at a STOP-controlled intersection, the v/c ratio may indicate that there is adequate capacity to process the demand for that movement. Similarly at signalized intersections, some movements, particularly side street approaches or left turns onto side streets, may experience longer delays because they receive only a small portion of the green time during a signal cycle, but their v/c ratio may be relatively low. For these reasons, it is important to examine both v/c ratio and LOS when evaluating overall intersection operations. Both are reported in the following section.

95th Percentile Queues

In addition to the operational criteria that measure intersection performance, it is also important to examine queuing and where demand may exceed available storage. Queues that spill out of storage bays and into adjacent travel lanes impair intersection performance by reducing capacity and creating potential safety concerns. Queues may also extend from one intersection through another upstream intersection which also impairs performance. The 95th percentile queue length (meaning 95 percent of all queues will be shorter) is used for this analysis.

Operational Standards

The Oregon Highway Plan (OHP)[3] has established several policies that enforce general objectives and approaches for maintaining highway mobility. Of these policies, the Highway Mobility Standards (Policy 1F) establish maximum v/c ratio standards for peak hour operating conditions for all highways in Oregon based on the location and classification of the highway

[3] Table 6: Maximum volume to capacity ratios for peak hour operating conditions, 1999 Oregon Highway Plan, Amendment 05-16, Oregon Department of Transportation.

segment being examined. The OHP policy also specifies that the v/c ratio standards be maintained for ODOT facilities through a 20-year horizon.

Both Medford and Phoenix have also established performance standards. Medford uses performance standards based on LOS while Phoenix standards are based on v/c ratio. These standards are outlined in their corresponding TSPs. Although the corridor resides within Jackson County, none of the study intersections are maintained by the county. The County TSP language states that "where one or more approaches is maintained by a city or ODOT, the more restrictive of the County's or other agency's performance standards will be applied." This same approach of applying the most restrictive standard is applicable for Medford and Phoenix. The city of Talent does not have mobility standards, but instead defers to the OHP standards. Applicable mobility standards are shown in Table 3-4, in the existing conditions section.

Traffic Operations Analysis Procedures

All operations were evaluated using the methodology outlined in the *2000 Highway Capacity Manual* (HCM) along with the procedures outlined in ODOT's Analysis Procedures Manual (APM). The Synchro/SimTraffic analysis software was selected to perform the intersection analysis since it can provide the v/c ratio and LOS output of an HCM analysis and consider the systematic interaction of the intersections with regard to queuing and delays.

Synchro is a macroscopic model similar to the Highway Capacity Software (HCS), and like the HCS, is based on the 2000 HCM. The Synchro model explicitly evaluates traffic operations under coordinated and uncoordinated systems of signalized and unsignalized intersections. The v/c ratios and LOS presented in this report are based on the Synchro model output.

SimTraffic animates traffic flow based on input volumes and signal timing and allows viewing of traffic flow under saturated traffic conditions where traffic may spill over from one intersection to another. It is particularly effective at evaluating closely spaced intersections. The SimTraffic model was run multiple times using different arrival patterns to determine how sensitive traffic operations are with subtle variations in traffic flows. The 95th percentile queues from the SimTraffic model are also considered in this report.

As noted above, the results from both Synchro and SimTraffic were considered in this document. Because these programs evaluate operations using different methodologies, the analysis results sometimes vary; however, the differences are generally minor unless saturated or congested conditions are present. Under saturated conditions, SimTraffic queuing and delays present results that reflect how congested intersections impact each other, while Synchro represents intersection performance in isolation and may reflect better performance results.

Existing Traffic Operations

Traffic operations were evaluated at the 19 corridor intersections. Operations are described in the following sections and the detailed analysis worksheets are presented in Appendix B.

Intersection Operations

Table 3-4 summarizes the results of the traffic operations analysis and Figure 3-2 presents the v/c ratios and LOS performance, delay, and queuing by lane group for the corridor intersections. These findings reflect the current signal timing plans implemented by ODOT at all signalized corridor intersections.

Table 3-4. Existing (2010) Design Hour Intersection Operations

Intersection	Critical[1] Movement	2010 PM Peak Hour			Operational Standards[3]	
		V/C Ratio[2]	LOS[2]	Delay[2] (sec.)	OHP	City
Medford Segment						
1. OR 99 @ Garfield Street (Signalized)	Overall	0.53	C	20	0.90	D
2. OR 99 @ Lowry Lane (Signalized)	Overall	0.47	A	8	0.90	D
3. OR 99 @ Bear Creek Corp Drive (Signalized)	Overall	0.35	A	6	0.90	D
4. OR 99 @ South Stage Rd (Signalized)	Overall	0.53	B	12	0.90	D
Phoenix Segment						
5. OR 99 @ Fern Valley Road (Signalized)	Overall	0.63	C	29	0.90	0.90
6. OR 99 @ Bolz Road	EB R	0.05	B	8	0.90	0.90
7. SB OR 99 (N Main Street) @ 4th Street	EB T/R	0.35	C	9	0.95	0.95
8. NB OR 99 (Bear Creek Drive) @ 4th Street	EB L	0.22	B	7	0.95	0.95
9. SB OR 99 (N Main Street) @ 1st Street	EB T/R	0.40	C	8	0.95	0.95
10. NB OR 99 (Bear Creek Drive) @ 1st Street	EB L	0.27	B	8	0.95	0.95
11. SB OR 99 (N Main Street) @ Oak Street	EB T/R	0.07	B	7	0.95	0.95
12. NB OR 99 (Bear Creek Drive) @ Oak St	NB L/T	0.22	A	2	0.95	0.95
Talent Segment						
13. OR 99 @ Colver/Suncrest Road (Signalized)	Overall	0.41	A	8	0.90	N.A.
14. OR 99 @ W Valley View Rd (Signalized)	Overall	0.56	B	17	0.90	N.A.
15. OR 99 @ Rapp Road (Signalized)	Overall	0.43	B	8	0.90	N.A.
16. OR 99 @ Arnos Road	EB L/R	0.13	B	7	0.90	N.A.
17. OR 99 @ Creel Road	EB L/R	0.08	B	7	0.90	N.A.
Talent to Ashland Transition						
18. OR 99 @ Talent Avenue/Old Pacific Hwy	EB L/R	0.12	C	8	0.90	N.A.
19. OR 99 @ S Valley View Road (Signalized)	Overall	0.66	B	25	0.80	N.A.

Acronyms: For intersection approaches NB = northbound, SB = southbound, EB = eastbound, and WB = westbound. At the intersection approach L = left-turn movement, T = through movement, and R right-turn movement. Some approaches have shared lanes where two or more travel movements may be permitted as indicated with a slash.

Notes:
1. The critical movement at a signalized intersection is the overall operation of the intersection. The critical movement at an unsignalized intersection is the stopped (or yield) movement with the worst v/c ratio.
2. The v/c ratio and LOS are provided from Synchro HCM Intersection Analysis Reports, while delay and queuing values are from SimTraffic.
3. Mobility standards are drawn from Table 6 of the 1999 OHP and corresponding TSPs. All study area intersections are within the UGB and MPO.

Shaded results indicate where mobility standards are not met

Traffic operations are acceptable under existing conditions throughout the corridor. The highest overall or critical movement v/c ratio throughout the corridor is 0.66, and the worst LOS is C. Furthermore, none of the study intersections currently exceed applicable mobility standards.

Only one intersection, OR 99 and Fern Valley Road, has queuing that either exceeds available storage or extend past the nearest upstream intersection. Table 3-5 summarizes the intersection movements these queues exist.

Table 3-5. Existing (2010) 95th Percentile Queues Exceeding Available Storage

Intersection	Approach & Movement	95th Percentile Queue (ft.)	Available Storage (ft.)	Percent Time Blocked[1]
5. OR 99 @ Fern Valley Rd (Signalized)	WB L	175	250[3]	9%
	SB L	375	300[3]	21%
	SB T/R	600	150[2]	

Acronyms: For intersection approaches NB = northbound, SB = southbound, EB = eastbound, and WB = westbound. At the intersection approach L = left-turn movement, T = through movement, and R right-turn movement. Some approaches have shared lanes where two or more travel movements may be permitted as indicated with a slash.

Notes:

1. Percent time block reflects the percentage of time when the queue either extends out of a storage bay and interferes with the adjacent through travel lane or extends past the next upstream intersection.
2. Storage distance reflects spacing to the next public access point.
3. Storage distance reflects length of travel lane or turn bay.

Crash Analysis

A crash analysis was conducted to determine whether any significant, documented safety issues exist within the corridor and to identify measures at specific locations or general strategies for improving overall safety. As part of the crash analysis, historical crash data were reviewed, intersection and segment crash rates were calculated, and the state's Safety Priority Index System (SPIS) was examined.

Crash Rates

Crash rates were calculated for the study area intersections and corridor segments. At intersections, the crash rate is calculated as the number of crashes per million vehicles entering the intersection. Intersections with a crash rate greater than 1.0 crashes per million entering vehicles (crashes/mev) generally warrant closer investigation but are not necessarily indicative of safety concern. For segments, the crash rate is calculated as the number of crashes per million vehicle miles traveled (crashes/mvm). This rate is compared with the 2009 statewide, non-freeway crash rate of 1.22[4].

[4] 2009 Oregon State Highway Crash Rate Tables, p. 5, ODOT, August 2010.

Crash History

The crash analysis included a review of crash history data supplied by the ODOT Crash Analysis and Reporting Unit for the period between January 1, 2005, and December 31, 2009, which were the five most recent full years for which crash data were available at the time of the analysis. The data is summarized in Table 3-6 and the reports are contained in Appendix C.

The ODOT database includes records for 308 crashes in the corridor. Of these crashes, approximately 5 percent resulted in a fatality or incapacitating injury (Type A), 30 percent resulted in minor injuries, and the remaining 65 percent resulted in property damage only. The majority of reported crashes (over 80 percent) occurred during the day, in dry conditions. Turning-related collisions (38 percent) and rear-end collisions (35 percent) were the most common types, followed by fixed-object (8 percent), angle (7 percent) and sideswipe (6 percent) collisions. Rear-end collisions commonly occur at signalized intersections because so many vehicles are required to stop with signalized traffic control. Turning collisions also occur at signalized intersections, even when protected left-turn phases are included.

The intersection with the greatest number of reported collisions was Fern Valley Road (29), with the roadway segment to the north (between Fern Valley Road and South Stage Rd) also showing the highest crash frequency (44) throughout the corridor. In this area (including Fern Valley and the segment to the north), there is a significant number of rear end (23) crashes reported, but more noteworthy are the number of turning related collisions (42). The estimated crash rate (0.89) for the intersection with Fern Valley Road is less than the 1.0 threshold typically used to identify intersections of concern. However, the segment north of the intersection (between Fern Valley and South Stage Roads) has an estimated crash rate of 1.40, which is above the statewide, non-freeway crash rate of 1.22.

Two other segments had a high percentage of turning-related crashes at unsignalized accesses. The first segment is between Garfield Street and Lowry Lane, and has 11 reported collisions, 8 of which are turning related, and a crash rate of 1.20, which is about the same as the statewide, non-freeway rate of 1.22. The second segment is between Talent Avenue and S Valley View Road, and has 18 reported collisions, 7 of which are turning related, with an estimated crash rate of 1.30, slightly above the statewide, non-freeway rate of 1.22.

Fatal or serious injury crashes were reported at approximately 10 different locations throughout the corridor. The highest number (5) of fatal and serious injury crashes were focused between Fern Valley Road and South Stage Road. Two other locations have more than one reported fatal or serious injury crash, which are Garfield Street (2) and Creel Road (2).

Safety Priority Index System (SPIS)

The SPIS is a method used in Oregon to identify safety problem areas along state highways. Highways are evaluated in approximately one-tenth mile increments (often grouped into larger segments). Each year these segments are ranked by assigning a SPIS score based on the frequency and severity crashes observed, while taking traffic volume into account. When a segment is ranked in the top 10% of the index, a crash analysis is typically warranted and

corrective actions are considered. There are no segments identified in the top 10% of the most recent (2010) SPIS rankings within the corridor.

Table 3-6. Summary of Collision Types (January 1, 2005 through December 31, 2009)

	Collision Type													Severity			
Study Location, Along Hwy OR 99	**Rear End**	**Fixed Object**	**Angle**	**Other**	**Backing**	**Turning**	**Sideswipe Opposite**	**Sideswipe Meeting**	**Head On**	**Non-Collision**	**Parked**	**Pedestrian**	**Total Crashes by Location**	**Fatal & Injury A**	**Injury (B-C)**	**PDO**	**Crash Rate**
Garfield Street	13	0	6	1	1	0	0	0	0	0	0	0	**21**	2	4	15	0.48
Between Garfield & Lowry	*3*	*0*	*0*	*0*	*0*	*8*	*0*	*0*	*0*	*0*	*0*	*0*	***11***	*1*	*7*	*3*	*1.20*
Lowry Lane	6	1	0	0	0	2	1	0	0	0	0	0	**10**	0	1	9	0.32
Between Lowry & Bear Creek Corp	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***	*0*	*0*	*0*	*0.00*
Bear Creek Corp Drive	2	0	0	0	0	1	0	0	0	0	0	0	**3**	0	1	2	0.11
Between Bear Creek Corp & S. Stage	*1*	*1*	*0*	*0*	*0*	*2*	*2*	*0*	*0*	*0*	*0*	*0*	***6***	*0*	*2*	*4*	*0.74*
South Stage Road	9	0	2	0	0	5	1	0	0	0	0	0	**17**	2	2	13	0.52
Between S. Stage& Fern Valley	*9*	*0*	*1*	*0*	*0*	*30*	*2*	*1*	*0*	*0*	*0*	*1*	***44***	*1*	*28*	*15*	*1.40*
Fern Valley Road	14	0	2	0	0	12	1	0	0	0	0	0	**29**	2	5	22	0.89
Between Fern Valley & Bolz	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***	*0*	*0*	*0*	*0.00*
Bolz Road	6	1	0	0	0	2	1	0	0	0	0	0	**10**	0	1	9	0.36
Between Bolz & 4th	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	***1***	*0*	*1*	*0*	*0.96*
SB OR 99 (N Main) at 4th Street	1	0	2	0	0	1	1	0	0	1	0	0	**6**	1	0	5	0.40
SB Between 4th & 1st	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***	*0*	*0*	*0*	*0.00*
NB OR 99 (Bear Creek) at 4th Street	0	0	0	0	0	4	1	0	0	0	0	1	**6**	1	0	5	0.45
NB Between 4th & 1st	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***	*0*	*0*	*0*	*0.00*
SB OR 99 (N Main) at 1st Street	3	1	3	0	0	5	1	0	0	0	0	0	**13**	0	1	12	0.86
SB Between 1st & Oak	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***	*0*	*0*	*0*	*0.00*
NB OR 99 (Bear Creek) at 1st Street	0	0	1	0	0	4	0	0	0	0	0	0	**5**	0	1	4	0.42
NB Between 1st & Oak	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***	*0*	*0*	*0*	*0.00*
SB OR 99 (N Main) at Oak Street	0	0	0	0	0	0	1	0	0	0	1	0	**2**	0	2	0	0.20
SB Between Oak & Colver/Suncrest	*3*	*1*	*0*	*0*	*0*	*1*	*1*	*0*	*0*	*0*	*2*	*0*	***8***	*0*	*0*	*8*	*0.52*
NB OR 99 (Bear Creek) at Oak Street	0	1	0	0	0	2	1	0	0	0	0	1	**5**	0	2	3	0.50
NB Between Oak & Colver Suncrest	*4*	*5*	*0*	*1*	*0*	*1*	*2*	*0*	*1*	*1*	*0*	*0*	***15***	*1*	*9*	*5*	*0.72*
Colver/Suncrest Road	5	2	1	1	0	5	0	0	0	0	0	0	**14**	0	2	12	0.60
Between Colver & W. Valley View	*1*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	***2***	*0*	*4*	*-2*	*0.76*
W Valley View Road	7	0	3	0	0	8	2	0	0	0	0	0	**20**	1	4	15	0.60
Between W. Valley View & Rapp	*0*	*0*	*0*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	***2***	*0*	*0*	*2*	*0.59*
Rapp Road	4	0	1	0	0	2	0	0	0	0	0	0	**7**	0	2	5	0.33
Between Rapp & Arnos	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***	*0*	*0*	*0*	*0.00*
Arnos Road	5	2	0	0	0	2	0	0	0	0	0	0	**9**	0	1	8	0.48
Between Arnos & Creel	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***1***	*0*	*0*	*1*	*0.24*
Creel Road	1	1	1	0	0	4	0	0	0	0	0	0	**7**	2	1	4	0.39
Between Creel & Talent/Old Pacific	*0*	*1*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***2***	*0*	*0*	*2*	*0.16*
Talent Avenue/Old Pacific Hwy	2	1	0	0	0	0	0	0	0	0	0	0	**3**	0	1	2	0.16
Between Talent & S. Valley View	*7*	*1*	*0*	*2*	*0*	*7*	*0*	*0*	*0*	*0*	*0*	*1*	***18***	*0*	*10*	*8*	*1.30*
S. Valley View Road	0	1	0	0	0	5	0	0	0	0	0	0	**6**	0	1	5	0.17
South of S. Valley View	*1*	*4*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***5***	*0*	*0*	*5*	*0.33*
Totals	**107**	**24**	**23**	**7**	**1**	**117**	**18**	**1**	**1**	**2**	**3**	**4**	**308**	**14**	**93**	**201**	
% Crashes by Type	35%	8%	7%	2%	0%	38%	6%	0%	0%	1%	1%	1%		5%	30%	65%	

Note: Crashes listed in this table include all reported collisions within 265' of the listed facility along side streets.

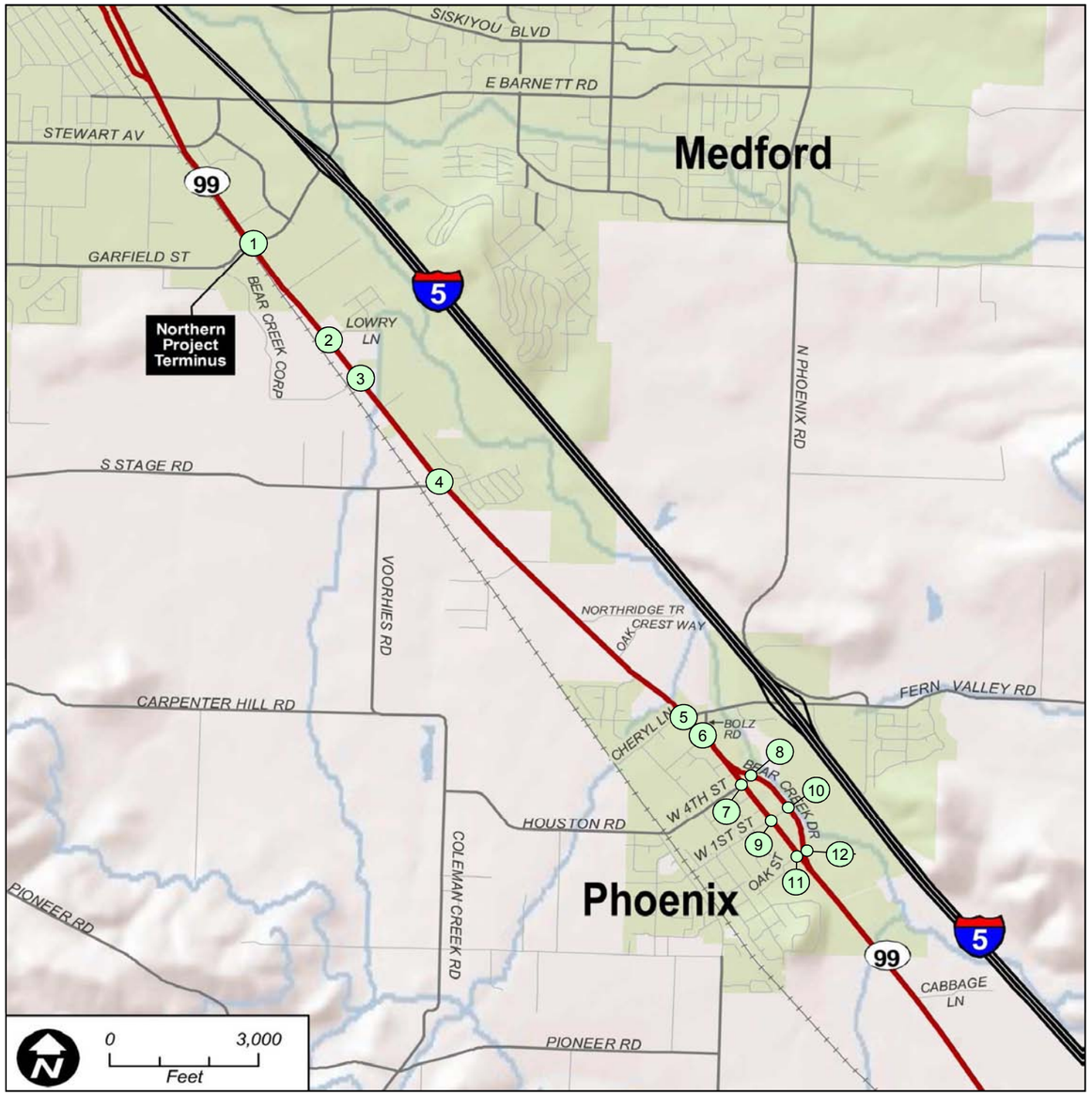
Source: ODOT Crash Analysis and Reporting Unit, January 1, 2005 through December 31, 2009.

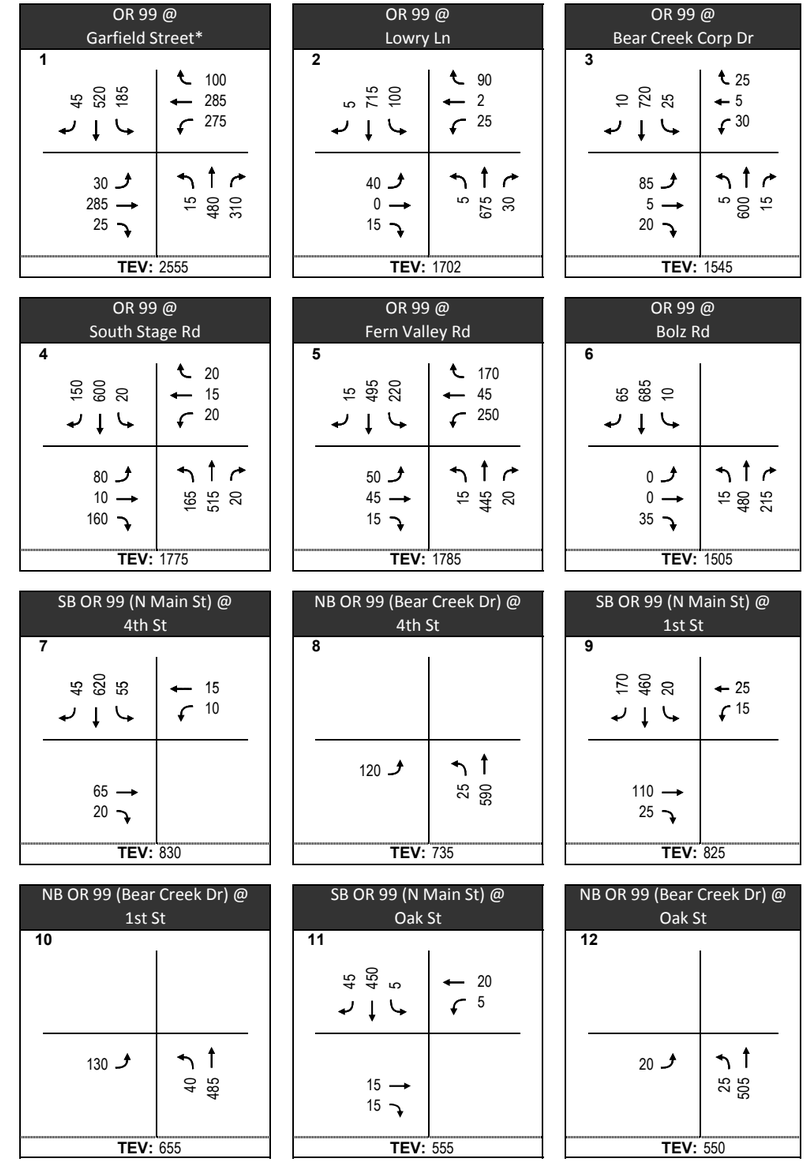
Attachments:

Figure 3-1. Existing (2010) Design Hour Traffic Volumes and Operations
Figure 3-2. Existing (2010) Conditions Lane Configurations & Traffic Operations

Appendix A. Seasonal Adjustment Factors*
Appendix B. Traffic Operations Worksheets*
Appendix C. ODOT Crash Analysis Reports (January 1, 2005 through December 31, 2009)*

*Available upon request





OR 99 Corridor Plan

Legend:

TEV: Total Entering Volume

PM Peak Hour Volume

→ Turning Movement

* Diagrams show OR 99 as the north and south legs of study intersections throughout

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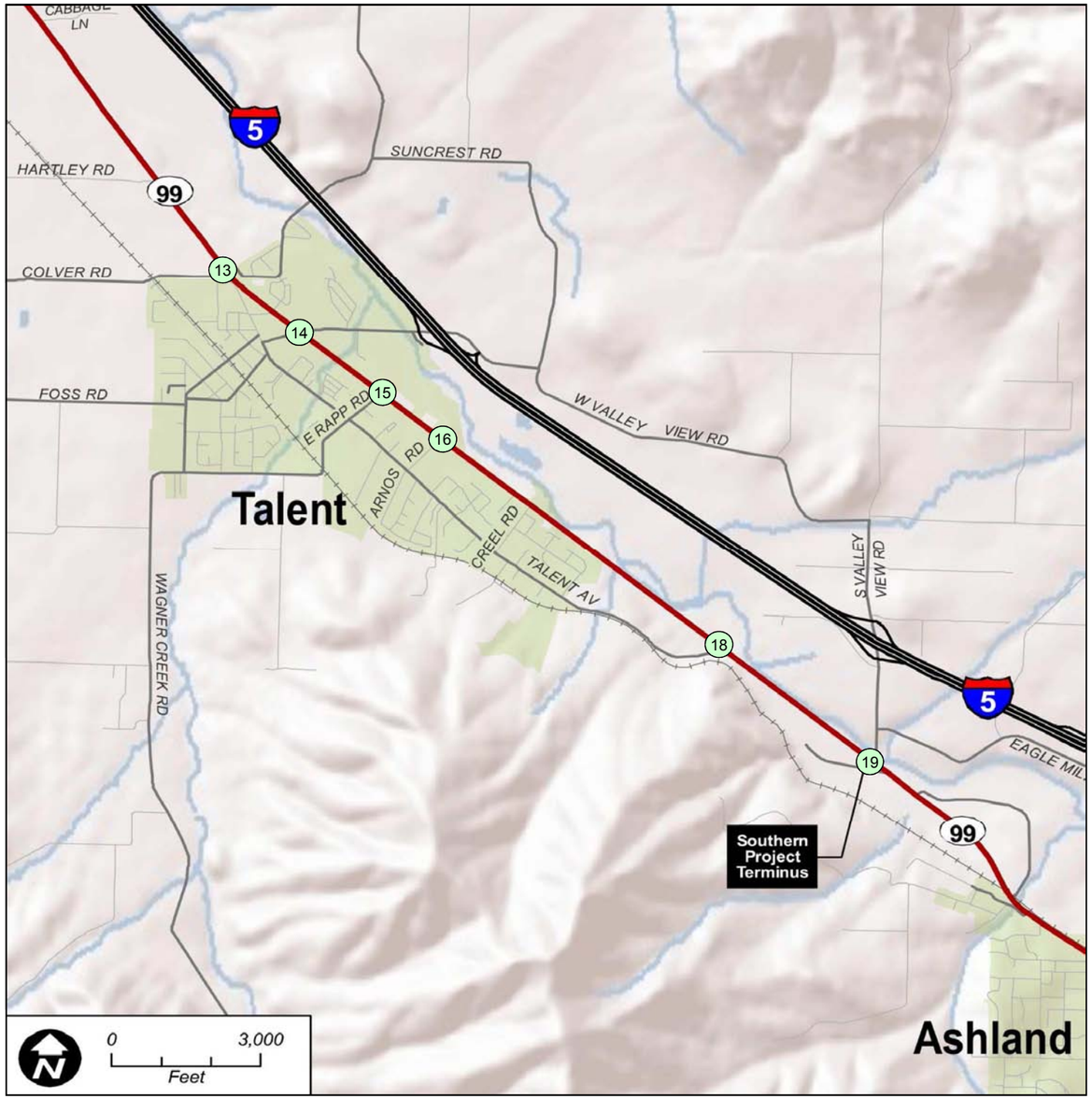
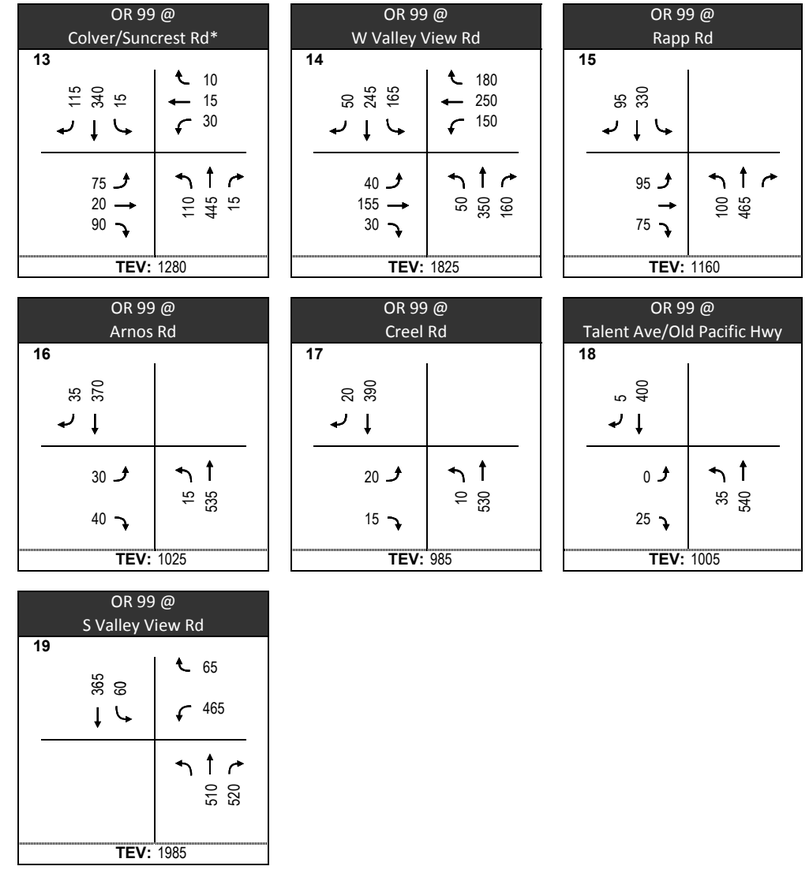
Figure 3-1 North

Existing (2010) Conditions
Turning Movement Volumes
PM Peak Hour

Printed: 3/30/2011





OR 99 Corridor Plan

Legend:

TEV:	Total Entering Volume
###	PM Peak Hour Volume
→	Turning Movement

* Diagrams show OR 99 as the north and south legs of study intersections throughout

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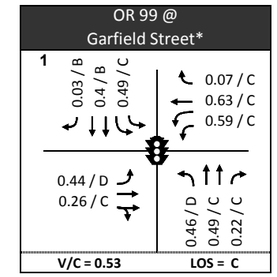
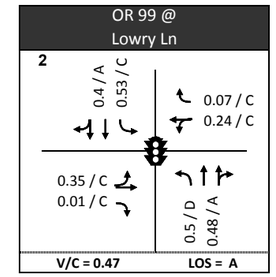
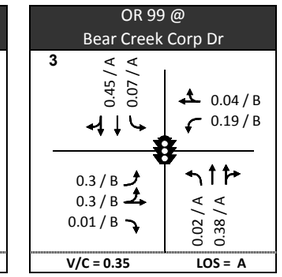
Figure 3-1 South

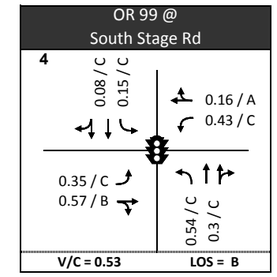
Existing (2010) Conditions
Turning Movement Volumes
PM Peak Hour

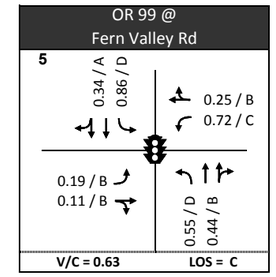
Printed: 3/30/2011

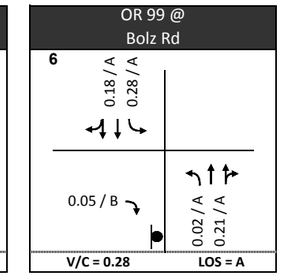


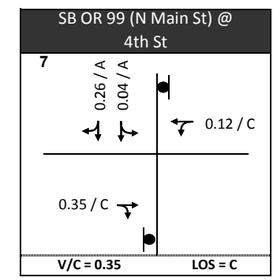


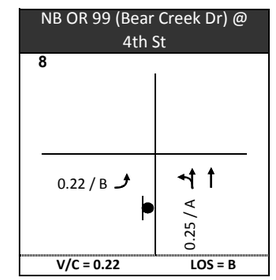


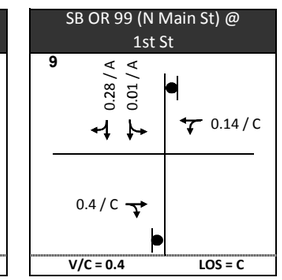


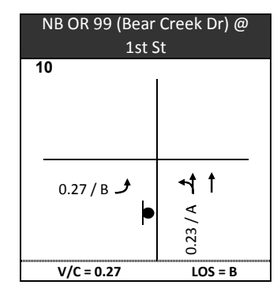


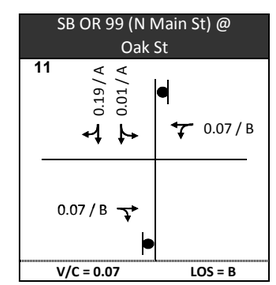


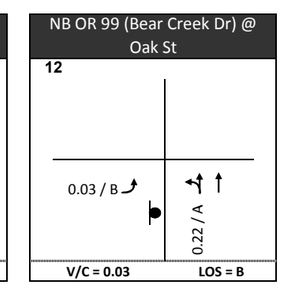












OR 99 Corridor Plan

Legend:

- Traffic Signal
- Stop Sign
- V/C: Volume to Capacity Ratio
- LOS: Level of Service
- → Existing Lane Configuration
- * Diagrams show OR 99 as the north and south legs of study intersections

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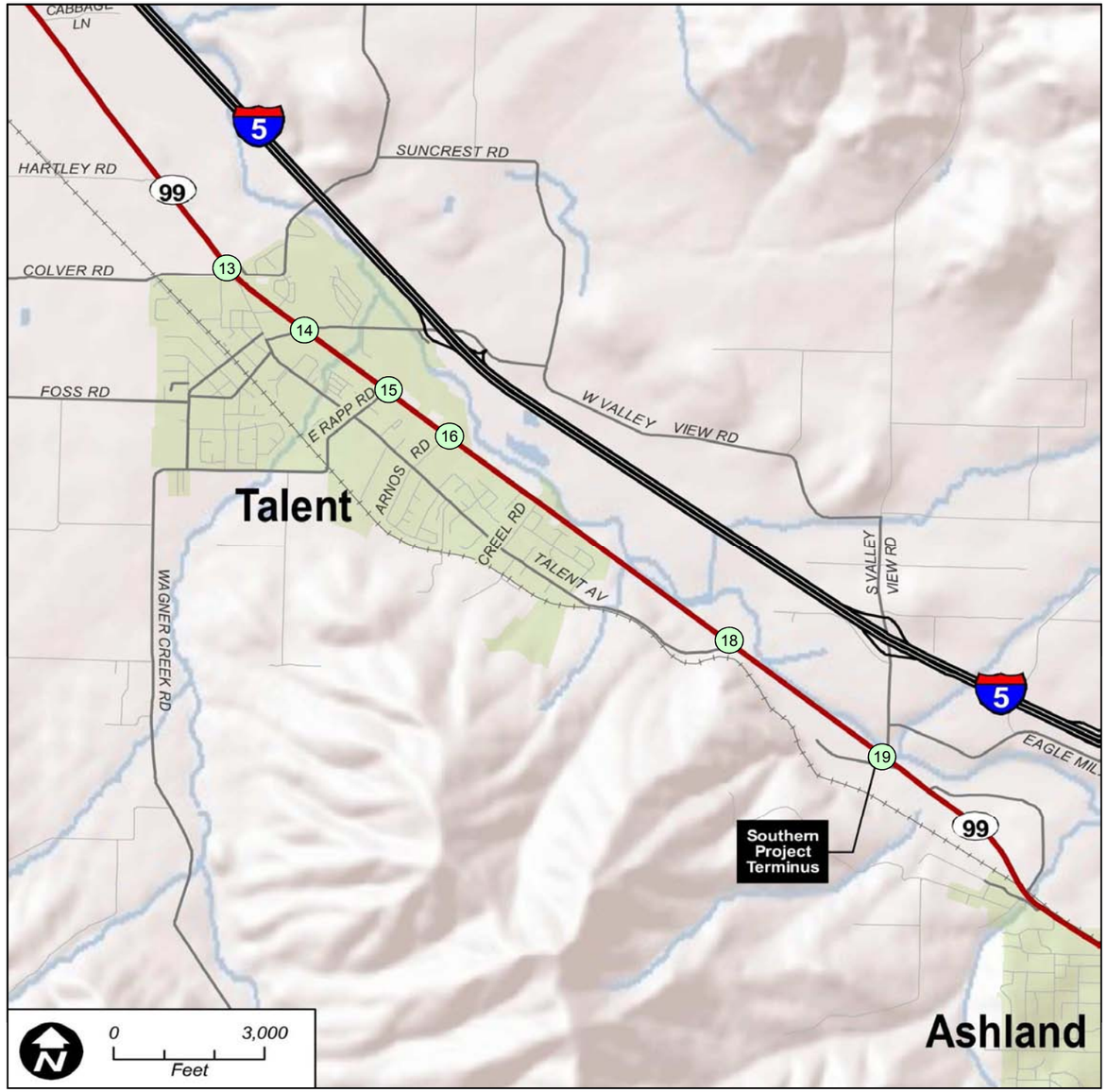
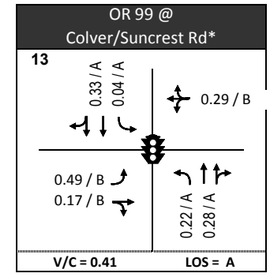
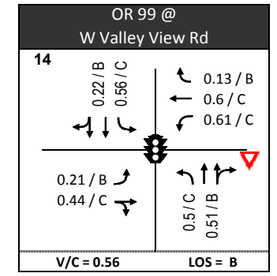
Figure 3-2 North

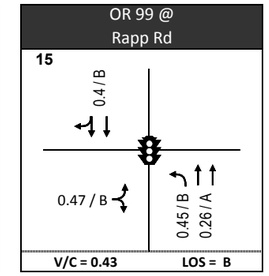
Existing Conditions (2010)
PM Peak Hour
Lane Configurations & Intersection Operations

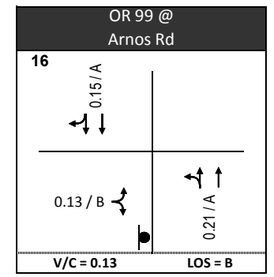
Printed: 3/30/2011

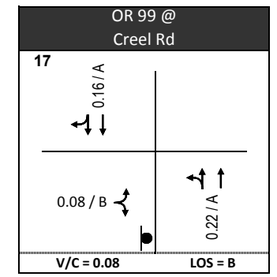


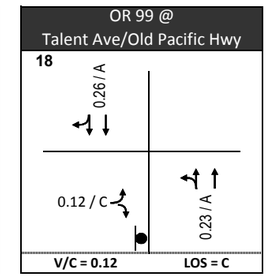


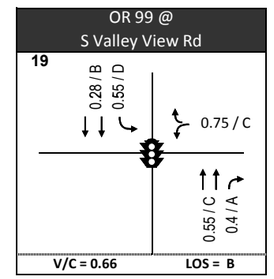












OR 99 Corridor Plan

Legend:

- Traffic Signal
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- V/C: Volume to Capacity Ratio
- LOS: Level of Service
- → Existing Lane Configuration
- * Diagrams show OR 99 as the north and south legs of study intersections

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Figure 3-2 South

Existing Conditions (2010)
PM Peak Hour
Lane Configurations &
Intersection Operations

Printed: 3/30/2011