

# Interchange Area Management Plan



## Interchanges 119 and 120 Douglas County





**I-5 Interchanges 119 and 120  
Douglas County Oregon**

**Interchange Area Management Plan**

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*Prepared for*

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## LIST OF ACRONYMS

AMP	Access management plan
ATMS	Active Traffic Management System
CORP	Central Oregon & Pacific Railroad
I-5	Interstate 5
IAMP	Interchange Area Management Plan
IGA	Inter-Governmental Agreement
ITS	Intelligent Transportation Systems
HCM	Highway Capacity Manual (Transportation Research Board)
HDM	Highway Design Manual (ODOT)
OAR	Oregon Administrative Rule
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
OR	Oregon Route
OTC	Oregon Transportation Commission
SFR	Single-family residential
STIP	State Transportation Improvement Program (ODOT)
TAC	Transportation Advisory Committee (Sutherlin)
TDM	Transportation Demand Management
TMA	Transportation Management Association
TPAU	Transportation Planning and Analysis Unit (ODOT)
TSM	Transportation System Management
TSP	Transportation System Plan
UGB	Urban growth boundary

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## **Executive Summary**

As outlined in Oregon Administrative Rule (OAR) 734-051, an Interchange Area Management Plan (IAMP) is required for new or substantially modified interchanges. New interchanges are very costly and it is in the interest of the State, local governments and the citizens to ensure that the interchange functions as it was designed for as long a time period as possible.

### ***Problem Statement***

The Green Unincorporated Urban Area (UUA), an unincorporated urban area south of Roseburg and under the jurisdiction of Douglas County, is underserved by the existing interchanges and roadway system. The interchanges and roadways in the immediate area have significant operational, geometric, access, and structural deficiencies. The existing deficiencies will be exacerbated by development in the area and could hinder the implementation of the adopted land use and transportation plans for the Green Area.

### ***Goals***

The goals of this IAMP are to develop a plan for improvements that can be implemented over time to:

- Improve safety and operations of Interchanges 119 and 120 and the I-5 mainline in the vicinity of these two intersections;
- Protect the investment in I-5 and its interchanges and maintain the function of the interchanges;
- Provide better accessibility to Roseburg, Winston, and the Green Area consistent with the adopted local comprehensive land use and transportation plans; and
- Maintain a system interchange between OR 42 and I-5 that allows free movements for all directions of travel.

### ***Objectives***

During development of the IAMP three objectives were established. This IAMP has accomplished the objectives as follows:

- Developed concepts to improve safety and increase capacity of the interchanges and roadways to address existing and future needs, and recognizing the importance of maintaining a system interchange between OR 42 and I-5.
- Evaluated the need for capacity improvements based on the adopted, comprehensive land use plans of Roseburg, Winston and the Green Area and the mobility standards prescribed in the Oregon Highway Plan (OHP) and the level-of-service standards in the Douglas County Transportation System Plan (TSP).
- Developed an access management plan that provides for safe and acceptable operations on the transportation network and that meet the access spacing standards prescribed in the OHP.

### ***Preferred Alternative***

A Preferred Alternative was developed that consists of targeted improvements to improve capacity, balance lane use, improve geometry and maximize the use of the local street network without significant roadway or interchange realignments. The individual projects could be implemented concurrently or in phases. The improvements are described in Table ES-1 below.

**Table ES-1. Preferred Alternative Projects**

	<b>Project</b>	<b>New Project</b>	<b>Estimated Cost (1000 Dollars)</b>	<b>Roadway Jurisdiction</b>	<b>Funding Partners<sup>3</sup></b>
1	Interchange 120: Signalize ramp terminal intersection; widen ramp to accommodate a two-lane approach consisting of one left-turn lane and one shared left/right-turn lane from the exit ramp.	1	\$445	ODOT	ODOT, Developers
2	Old Highway 99: Widen from the Interchange 120 ramp terminal to Happy Valley Road to two southbound lanes to accommodate the dual left-turn lanes from the ramp terminal.	1	\$2,165	County	ODOT, County, Developers
3	OR 42 at Interchange 119: Provide two eastbound lanes on the new OR 42 bridge over I-5.	2	\$1,345	ODOT	ODOT
4	I-5 Mainline: When warranted by traffic volumes, provide an additional northbound through lane on I-5 beginning at Interchange 119.	2	Varies	ODOT	ODOT
5	Kelly's Corner (OR 42 at Carnes Road): Construct dual left-turn lanes on the southbound, eastbound and westbound approaches.	2	\$2,900	ODOT, County	ODOT, County, Developers
6	OR 42 Expressway Upgrade (2008-2011 STIP, KN 15006): Construct a signal on OR 42 at Rolling Hills Road; Construct a Necessary Local street; Close two street connections and eliminate private access.	2	\$1,200	ODOT, County	County, ODOT
7	Complete collector/arterial street network as specified in the Green TSP.	2	Varies	County	County, Developers
8	Speedway Road: Widen to accommodate a three-lane section between Old Highway 99 and Ingram Road; construct southbound left-turn lane on Old Highway 99	2	\$900	County	County, Developers
9	Speedway Road at Old Highway 99: Install traffic signal as warranted by future traffic volumes	2	\$445	County	County, Developers

**Notes:**

1. Project not currently referenced in Douglas County TSP.
2. Project currently referenced in Douglas County TSP. The Preferred Alternative project descriptions contained in the IAMP provide updated cost estimates or more detailed description compared to TSP projects.
3. Potential funding partners lists possible participants and does not represent a commitment to participate. Funding arrangements will need to be negotiated when more is known about project costs and benefits and the sources of funds that may become available.

**Management Measures**

Management actions, as applied to Interchange Area Management Plans (IAMPs) are intended to preserve the capacity of an interchange for as long as possible. The primary management measures for the Interchanges 119 and 120 management area are an access management plan, local street network enhancements, transportation system management strategies and transportation demand management strategies.

### ***Access Management Plan***

The access management plan addresses the segment of Old Highway 99 in the vicinity of the Interchange 120 ramp terminals.

General actions throughout the planning area include:

- Encourage redevelopment opportunities that consolidate access points.
- Encourage sharing of access points between adjacent properties.
- Offset driveways at proper distances to minimize the number of conflict points between traffic using the driveways and through-traffic.
- Provide driveway access via local roads where possible.
- Enforce access management spacing standards to the extent possible.
- Minimize driveway widths.
- When traffic signals are installed, interconnect them with adjacent signals to create a coordinated timing system.

The specific actions for the access management plan largely consist of consolidating existing approaches in connection with future redevelopment. A long-term objective consists of the development of a local street network to provide alternate access to parcels that currently obtain direct access to Old Highway 99.

Because Old Highway 99, the Interchange 120 crossroad, is owned by Douglas County, adoption and implementation of the Access Management Plan is a County responsibility, although ODOT retains access permitting authority for the segment of Old Highway 99 within 900-feet of the Interchange 120 ramp terminals.

### ***Implementation***

The final section of this IAMP describes the responsibilities of Douglas County and ODOT and modifications to state and local plans and policies that are required for implementation of the IAMP. Implementation requirements include adoption of the IAMP as a facility plan in the Oregon Highway Plan; adoption of the Access Management Plan by Douglas County; and amendments to the Douglas County TSP project list and Goals and Objectives.

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# 1 IAMP Goals and Objectives

As outlined in Oregon Administrative Rule (OAR) 734-051, an Interchange Area Management Plan (IAMP) is required for new or substantially modified interchanges. New interchanges are very costly and it is in the interest of the State, local governments and the citizens to ensure that the interchange functions as it was designed for as long a time period as possible.

Development of this IAMP began with a detailed analysis of existing conditions and identification of long-range transportation needs associated with planned development in the vicinity of I-5 Interchanges 119 and 120. These analyses were documented in the Interchanges 119 and 120 Transportation Conditions Report, dated October 2005, prepared by David Evans and Associates, Inc. The analyses summarized in the Conditions Report were used to gain a better understanding of both the current and the future deficiencies of the two interchanges. The Conditions Report summarized traffic, land use, and environmental information from a variety of sources and provides the basis for the IAMP.

Building upon the information contained in the Conditions Report, this IAMP provides information on the analysis of alternatives to address predicted long-range needs, the selection of a preferred alternative, and the identification of management actions needed to preserve and maintain the function of Interchanges 119 and 120.

## 1.1 Problem Statement

The Green Area, an unincorporated part of the Roseburg urban area under the jurisdiction of Douglas County, is underserved by the existing interchanges and roadway system. The interchanges and roadways in the immediate area have significant operational, geometric, access, and structural deficiencies. The existing deficiencies will be exacerbated by development in the area and could hinder the implementation of the adopted land use and transportation plans for the Green Area.

The following section provides a review of the specific deficiencies, as identified and documented in the Conditions Report.

## 1.2 Operational and Safety Deficiencies

The Conditions Report provided traffic operations analyses at key intersections and freeway facilities in the planning area. The traffic analyses address both existing (2005) and future (2025) no-build conditions. The analyses showed that several intersections are approaching or exceeding ODOT mobility standards:

- Traffic demand at the intersection of the I-5 southbound ramps at Old Highway 99 South currently exceeds capacity and future conditions are expected to worsen by year 2025. The ramp does not have adequate storage length to accommodate vehicular queues, which often back up onto the freeway.
- The intersection of OR 42 with Old Highway 99 South / Grant Smith Road has operational problems and excessive vehicular queuing resulting from high peak hour traffic volumes and lane imbalance on the eastbound approach. The lane imbalance is caused by the intersection's close proximity to the Interchange 119 ramp split, which is located less than 1,000 feet downstream from the intersection. With 85 percent of vehicles subsequently heading to the northbound I-5 ramps from the left lane, most vehicles queue in the left approach lane at the intersection.
- Traffic operations at the intersection of OR 42 at Carnes Road / Roberts Creek Road currently exceed the ODOT mobility standards. Conditions are expected to worsen, with the intersection approaching capacity under year 2025 traffic volume conditions.

- Stakeholders identified the merge/diverge condition created by the close proximity of the northbound Interchange 119 entrance ramp to the Interchange 120 exit ramp as problematic. A significant amount of northbound ramp-to-ramp traffic exists between these two ramps, which creates turbulence in the mainline traffic flow. The Conditions Report provided an analysis of the existing freeway ramps and tested the benefits of adding a northbound auxiliary lane between the two interchanges. Results of this analysis showed that an auxiliary lane could improve operations over existing conditions. Additional analysis performed as part of the IAMP project indicated that an auxiliary lane should extend beyond Interchange 120.
- Some stakeholders identified the lack of northbound freeway access at Interchange 120 as a deficiency at the interchange. This places limitations on access to Roseburg and points north from the Green Area. It also places additional demands on the intersection of OR 42 with Old Highway 99 / Grant Smith Road and Interchange 119, facilities that are already experiencing operational problems.
- A safety analysis indicated few existing safety problems within the planning and management area other than those already noted. The intersection of OR 42 at Carnes Road does have a somewhat elevated crash rate when compared to the surrounding area.

### **1.3 Structural and Geometric Deficiencies**

The Conditions Report noted that the overcrossing that carries OR 42 over I-5 at Interchange 119 (Bridge No. 07806) was structurally deficient. However, the bridge has since been replaced with a new structure that is able to accommodate widening of both I-5 and OR 42.

The Conditions Report notes the following geometric deficiencies:

- Interchange spacing between Interchanges 119 and 120 does not meet spacing standards specified in OAR 734-051.
- Inadequate acceleration and deceleration lengths at entrance and exit ramps, including a tight 15 mph curve on the southbound exit ramp at Interchange 120, which does not meet the standard of 25 mph minimum.
- Several private access points to Old Highway 99 South within 1,320 feet of the Interchange 120 ramp terminals, which does not meet Oregon Highway Plan access spacing requirements.
- Sub-standard mainline shoulder widths on I-5.

## 1.4 IAMP Goals and Objectives

### **Goals**

The goals of this IAMP are to develop a plan for improvements that can be implemented over time to:

- Improve safety and operations of Interchanges 119 and 120 and the I-5 mainline in the vicinity of these two intersections;
- Protect the investment in I-5 and its interchanges and maintain the function of the interchanges;
- Provide better accessibility to Roseburg, Winston, and the Green Area consistent with the adopted local comprehensive land use and transportation plans; and
- Maintain a system interchange between OR 42 and I-5 that allows free movements for all directions of travel.

### **Objectives**

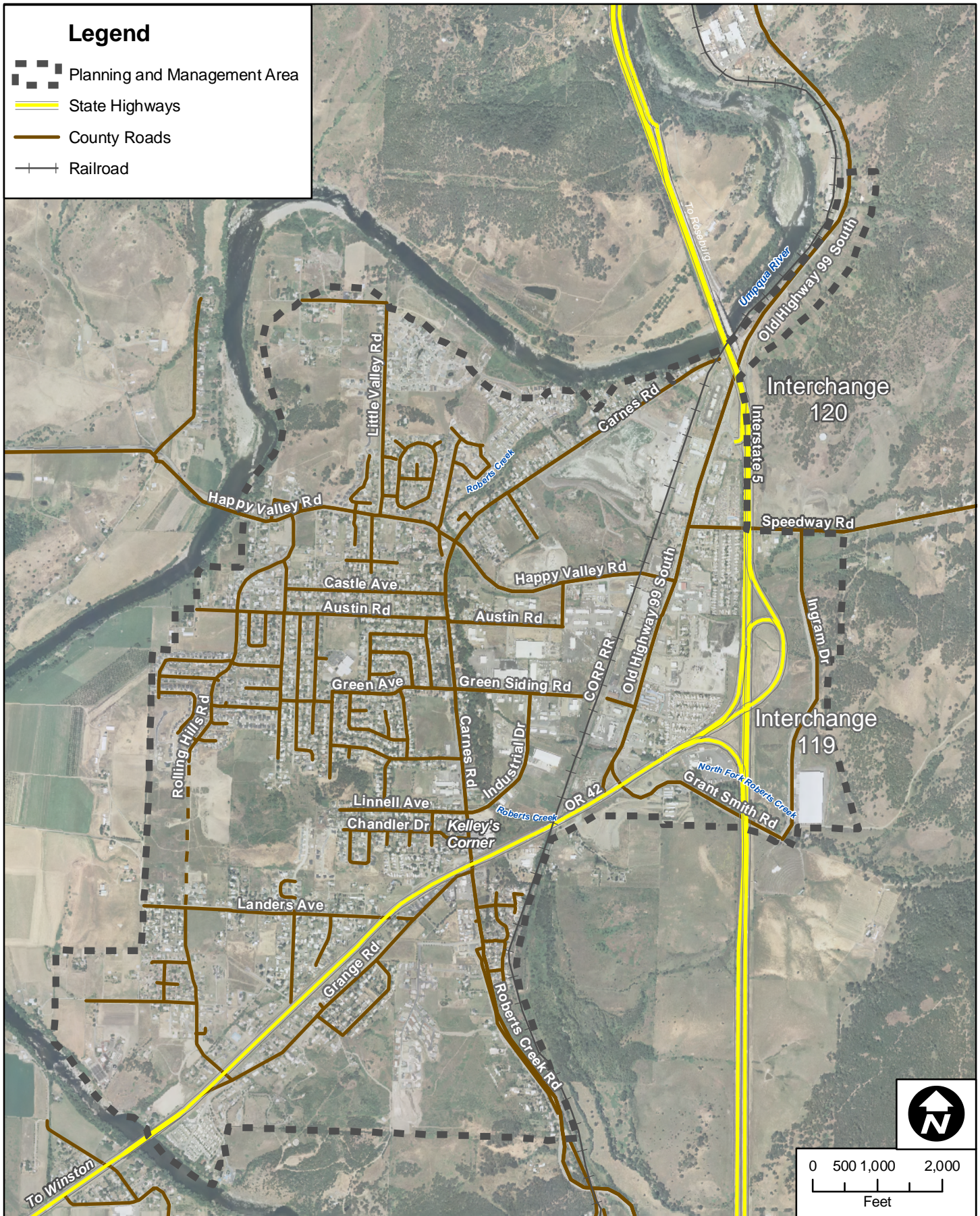
The objectives of the IAMP are to:

- Develop concepts to improve safety and increase capacity of the interchanges and roadways to address existing and future needs. The concepts should be developed recognizing the importance of maintaining a system interchange between OR 42 and I-5.
- Evaluate the need for capacity improvements based on the adopted, comprehensive land use plans of Roseburg, Winston and the Green Area and the mobility standards prescribed in the Oregon Highway Plan (OHP) and the level-of-service standards in the Douglas County Transportation System Plan (TSP).
- Develop an access management plan that provides for safe and acceptable operations on the transportation network and that meet the access spacing standards prescribed in the OHP.

## 1.5 Planning and Management Area

The boundaries of the Interchange Area Planning and Management Area (planning area) largely coincide with the boundaries of the Green Urban Unincorporated Area (UUA), which is under the planning jurisdiction of Douglas County. A small portion of the planning area, consisting of a narrow section of land along Old Highway 99 north of Interchange 120 that is zoned for commercial and residential uses, lies outside of the Green UUA

The planning area is shown in Figure 1-1. The planning area includes land where existing and future development has the potential to significantly affect the interchange function. It also encompasses key roadways in the vicinity that relate to traffic operations at the interchanges.



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**Figure 1-1**  
 I-5 Interchanges 119 and 120  
 IAMP Planning and Management Area

## **1.6 Interchange Function**

Interchanges 119 and 120 serve multiple users. They provide access to and from the Green area, serving local trips by residential and commercial/industrial users. They also serve non-local traffic, such as traffic connecting from distant locations along OR 42 with I-5 and commuter traffic between Winston, Roseburg, and the Green area.

Interchange 119 connects I-5 with OR 42, which is classified by ODOT as a Statewide Highway and Expressway. Interchange 120 provides a partial connection with Old Highway 99 South, a Douglas County arterial. The primary function of interstate freeways is to serve inter-regional and interstate passenger and freight traffic. The function of Statewide-level highways is to provide inter-regional and inter-urban mobility (connecting larger urban areas, ports, and other locations that are not served by the Interstate system). The function of Douglas County arterials is to provide through traffic movement between major communities in Douglas County, and distribute traffic between the State Highway system and the local streets network.

The intended function of Interchanges 119 and 120 is to safely and efficiently accommodate future traffic demands generated by inter-regional passenger and freight traffic as well as population and employment growth in the region.

## **1.7 IAMP Development Process**

### ***Technical Advisory Committee***

A Technical Advisory Committee (TAC) was formed to guide the development of the IAMP. The TAC was comprised of technical staff from ODOT, Douglas County, the cities of Roseburg and Winston. The TAC provided review and oversight of the development of eight technical memoranda from which this IAMP document is largely comprised.

### ***Public Involvement***

During the development of the 2005 Conditions Report, interviews were conducted with key project stakeholders. The stakeholders included business property owners, homeowners, representatives of distribution and manufacturing interests, visitor or traveler service providers, and economic development representatives. These individuals were then interviewed via telephone during the last two weeks of June 2004 to identify issues associated with the 119/120 Interchange area.

Staff from ODOT and David Evans and Associates attended two public open houses in which members of the community were provided opportunities to view and comment on the status and findings of the IAMP. The first public meeting was held near the beginning of the process in August of 2006. Project staff presented the preliminary concepts and solicited citizen comments. The second public meeting is expected to take place summer of 2008, during which project staff will present the preferred alternative, access management plan and other management measures as recommended in Section 4 of the IAMP document.

Project staff also briefed Douglas County Commissioners on the status and findings of the IAMP in June 2006. A second meeting with the County Commissioners is expected to occur in summer of 2008.

### ***Technical Memoranda***

This IAMP document is based on eight technical memoranda that were prepared by David Evans and Associates. Each technical memorandum was presented to the members of the TAC for review and comments, and they are listed below.

1. IAMP Definition and Background, May 2006
2. Preliminary Interchange and Local Circulation Concept Development and Preliminary Evaluation Criteria Development, August 2006
3. Preliminary Evaluation Matrix and Selection of Intermediate Interchange and Local Circulation Concepts, September 2006
4. Analysis of Conceptual Alignments, March 2007
5. Preferred Alternative, August 2007
6. Access Management Plan, August 2007
7. Potential Management Actions, October 2007
8. Proposed IMA Overlay District and Code Amendments, November 2007

## 2 Development and Analysis of Interchange Area Concepts

### 2.1 Preliminary Evaluation Criteria

The IAMP process involved the development of twelve interchange area concepts as well as preliminary evaluation criteria that were used to assess and screen the concepts. This section documents the evaluation criteria and provides detailed descriptions of the two concepts that remained after preliminary screening.

The criteria were designed to provide a qualitative filter for the interchange area concepts, as it was not practicable to do a detailed analysis on all twelve concepts. The criteria were meant to address specific transportation problems or deficiencies, and they helped filter the alternatives down to those that best met the project goals and objectives. This process created a more manageable list of concepts to develop more fully for analysis.

The preliminary list of criteria was developed from stakeholder interviews and the Phase I Conditions Report and are divided into seven main criteria headings: Transportation Operations, Geometry, Accessibility: Green Area East/West of I-5, Accessibility: Retention of I-5/OR 42 System Interchange, Cost, Land Use Impacts, Environmental Impacts, and Social Impacts.

#### Transportation Operations

- Solves the queuing problem on the I-5 southbound exit ramp at Interchange 120
- Eliminates the need to merge/diverge on northbound I-5 between the interchanges
- Reduces the lane imbalance caused by the close proximity of Interchange 119 to OR 42/Old Highway 99 South/Grant Smith Rd intersection
- Improves operations of the intersection of OR 42 and Carnes Rd/Roberts Creek Rd
- Improves operations of the intersection of OR 42 and Old Highway 99/Grant Smith Road

#### Geometry

- Addresses all geometric deficiencies identified in the Interchanges 119/120 Transportation Conditions Report
- Brings interchange spacing up to standard between Interchanges 119 and 120

#### Accessibility

- Maintains or improves access to the Green area west of I-5
- Maintains or improves access to the industrial area east of I-5 along Ingram Drive
- Retains system interchange
- Maintains or improves access to Winston via OR 42

#### Cost

- Provides appropriate cost and implementation strategies

#### Land Use

- Minimizes right-of-way impacts
- Supports the adopted land use plans of Roseburg, Winston and the Green Area

### Environmental/Social Impacts

- Minimizes environmental impacts

### Social Impacts

- Minimizes significant social impacts (displacements of residences or businesses)

## **2.2 Interchange Area Concept Alternatives**

Twelve interchange area concepts were developed with input from the TAC. After preliminary screening, two modified concepts remained and are described below. These concepts were subjected to detailed analysis that is described below. Concepts that were considered but dismissed are provided in the Appendix A.

### **Modified Concept 10**

Modified Concept 10, shown in Figure 2-1, consists of a modified composite of two previous concepts. This concept lends itself to a phased implementation, as many elements could be stand-alone projects. Taken together, the various features satisfy many of the evaluation criteria. A disadvantage of the concept is that it does not directly improve access between I-5 and the Green area; it simply improves traffic operations on the existing roadways. The concept also does not modify the interchange access points, and therefore does not address the sub-standard interchange spacing. The individual elements of this concept are described below.

#### Interchange 120 Improvements

Modified Concept 10 retains the existing exit and entrance ramp at Interchange 120, but improves the ramp geometry, realigns Old Highway 99 to provide additional deceleration and vehicle storage lengths, and adds a traffic signal at the ramp terminal intersection. The northbound I-5 exit to Old Highway 99 is retained with no modifications.

#### OR 42 Jug-Handle Interchanges

This concept replaces the existing traffic signals with jug-handle interchanges at two intersections: Kelly's Corner (OR 42 at Carnes Road/Roberts Creek Road); and OR 42 with Old Highway 99/Grant Smith Road. The jug-handle interchanges would prohibit left-turning and crossing movements, thereby eliminating conflicts that result from these traffic movements. Full access between OR 42 and the intersecting roadways are retained, but all turns to and from OR 42 consist of right turns. Through traffic on OR 42 is provided with a free movement.

#### Northbound I-5 Auxiliary Lane

Modified Concept 10 also could include a northbound auxiliary lane between Interchange 119 and Interchange 120. The existing pavement section has adequate width to accommodate an auxiliary lane. Restriping the existing pavement section would be the only necessary modification to implement this improvement.

Figure 2-1 shows an overview of Modified Concept 10. The roadway alignments shown in the figure account for roadway design standards and are drawn roughly to scale.

### **Modified Concept 11**

Modified Concept 11, shown in Figure 2-2, contains a complete relocation of the system interchange between the OR 42 expressway and I-5 to a new location more than one mile to the south. This

relocation provides improved spacing to allow for a new full-access interchange at Speedway Road. This concept also includes a grade-separated interchange at Kelly's Corner. The former OR 42 alignment is extended to meet Ingram Road at a "T" intersection. The extension of Old Highway 42 combined with the interchange at Speedway Road represents a significant improvement of access to the industrial land located along Ingram Road east of I-5.

This concept addresses four key criteria: (1) maintaining the system interchange between I-5 and OR 42, (2) improving freeway interchange access to industrial lands east of I-5, (3) improving multi-directional freeway access to and from the Green Area, and (4) eliminating or reducing the geometric deficiencies related to interchange and ramp spacing.

The individual elements of Modified Concept 11 are discussed below.

#### *New Full Interchange at Speedway Road*

Modified Concept 11 replaces the partial Interchange at milepost 120 with a full-access diamond interchange at Speedway Road. Speedway Road crosses under I-5 with a three-lane cross-section that accommodates back-to-back left turn lanes. The ramp terminals are stop controlled on the ramp approaches.

#### *Shift Interchange 119 to the South*

This concept abandons the existing Interchange 119. The new alignment of OR 42 takes it further south, meeting I-5 more than one mile south of its existing location. The new interchange will retain its system interchange status, providing free-flowing, full connectivity between the OR 42 expressway and I-5. The new interchange is a trumpet type that mirrors the existing Interchange 119. Each entrance and exit ramp is a single-lane roadway.

#### *New OR 42 Alignment*

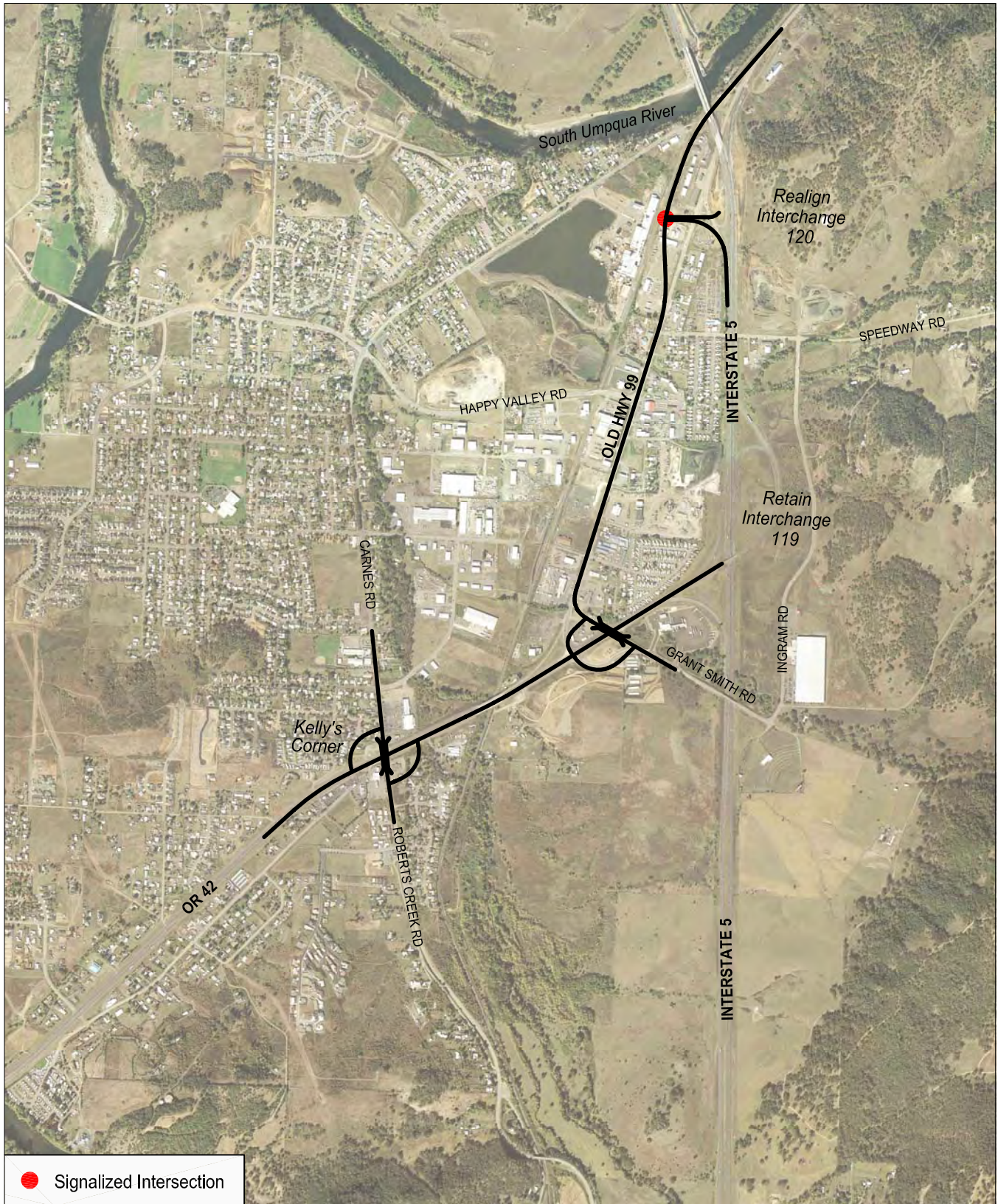
The new alignment of OR 42 removes the signalized intersections at Kelly's Corner and Old Highway 99/Grant Smith Road. These are currently the only signalized intersections between Winston and I-5. South of the intersection of OR 42 with Old Highway 99, a knoll rises approximately 100 feet above the surrounding land. The alignment of OR 42 curves southward, skirting the southern edge of the knoll while maintaining a 65 mph design speed.

#### *Kelly's Corner Interchange (OR 42 at Carnes Road/Roberts Creek Road)*

A new grade-separated interchange replaces the signalized intersection. Carnes Road/Roberts Creek Road cross over OR 42 on a three-lane structure to accommodate back-to-back left-turn lanes at the ramp terminal intersections, which are both signalized. The interchange itself is a partial cloverleaf, with a single loop ramp in the northwest quadrant. The loop ramp is necessary because of the realigned Old Highway 99, which brings it to the west where it intersects Carnes Road directly opposite the ramp terminals. This configuration would require a design exception because it does not conform to the Division 51 prohibition of approaches aligned opposite a freeway or expressway ramp terminal.

Traffic on Old Highway 99 and Grant Smith Road is diverted to the Carnes Road/Roberts Creek Road interchange. Grant Smith Road intersects Old Highway 99 at a 'T' intersection. Old Highway 42 intersects Grant Smith Road at a 'T' intersection and extends connects with Ingram Road.

Figure 2-2. Overview of Modified Concept 11. The roadway alignments shown in the figure account for roadway design standards and are drawn roughly to scale.

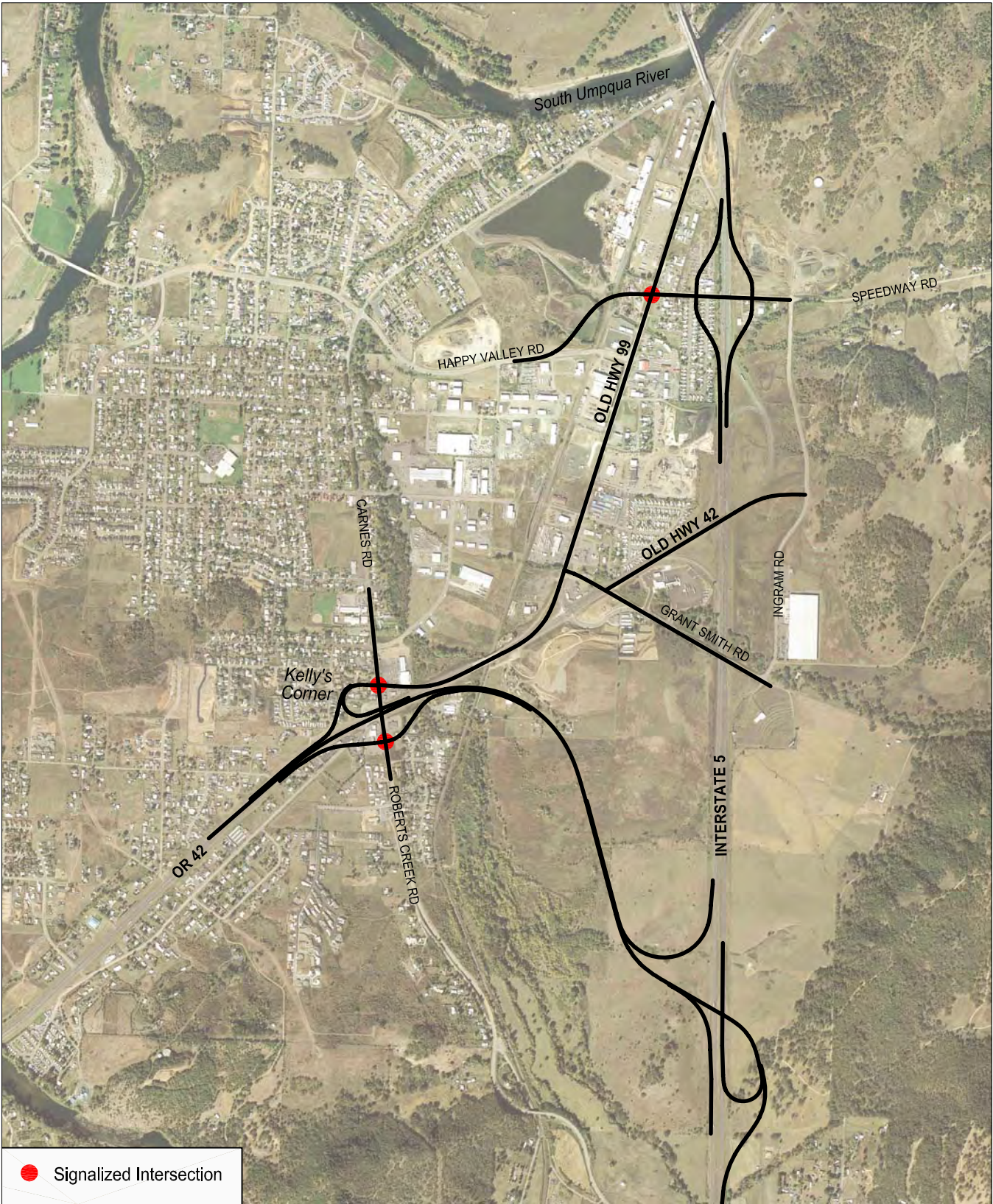


Douglas County Aerial, 2004

**Figure 2-1**  
**I-5 Interchanges 119 and 120 IAMP**  
*Modified Conceptual Alignment 10a*



Not to Scale



Douglas County Aerial, 2004

**Figure 2-2**  
**I-5 Interchanges 119 and 120 IAMP**  
*Modified Conceptual Alignment 11*

## 2.3 Analysis of Concepts

This section summarizes the evaluation of Modified Concept 10 and Modified Concept 11, including year 2025 traffic operations analysis, planning-level cost estimates and assessments of potential geometric, constructability and environmental considerations.

Future year traffic volumes for both concepts were derived from the application of a post processing methodology of data from the Roseburg Travel Demand Model, which was prepared by ODOT Transportation Planning Analysis Unit (TPAU). The future traffic volumes were then input into traffic analysis software and year 2025 traffic analysis was performed on each of the concepts. The purpose of the analysis was to provide a general overview of traffic operations and needs related to each concept.

Scaled conceptual layouts that took into account roadway geometric standards were prepared using CAD software to illustrate the approximate footprint of each of the concepts (see Figures 2-1 and 2-2). These layouts enabled a relatively accurate assessment of the potential impacts to the surrounding landscape.

A detailed discussion of the analysis of each concept follows.

### ***Analysis of Modified Concept 10***

#### ***Interchange 120***

Interchange improvements that are currently planned as a part of the Shady Bridge project will increase the exit ramp radius to carry traffic at a 25 mph design speed. Modified Concept 10 shifts the alignment of Old Highway 99 to the west by approximately 360 feet and adds a signal at the ramp terminal intersection. The extended ramp length accommodates approximately 300 feet of vehicle storage. The realigned Old Highway 99 takes it under the Shady Bridge next to the CORP railroad tracks.

The proposed geometry provides 740 feet of deceleration length for southbound exiting vehicles, which meets ODOT standards. Three hundred feet of queue storage is provided at the southbound exit ramp terminal. Simulation modeling of projected queues indicated that the queue storage provided by the realignment of Old Highway 99 would be adequate to accommodate anticipated queues.

Provision of dual left-turn lanes on the southbound exit-ramp approach to Old Highway 99 would improve the intersection efficiency and significantly reduce the queuing on the approach. The reduced queue may also reduce the extent of realignment required on Old Highway 99.

An additional southbound lane on Old Highway 99 between Interchange 120 and Happy Valley Road would be required to accommodate the dual left-turn lanes. An additional southbound lane would also handle the higher relative traffic volumes between the interchange and Happy Valley Road and would provide sufficient vehicle storage for the southbound right turn at Happy Valley Road.

#### ***Old Highway 99 at Happy Valley Road***

Modified Concept 10 does not include extensive modifications to this intersection. Operations analysis of future conditions indicates that the present configuration can adequately accommodate the projected future year traffic. Vehicle queuing is expected to exceed the available queue storage length for the existing southbound right turn lane. However, an additional southbound lane on Old Highway 99, as recommended above, would address this deficiency.

#### ***Jug-Handle Interchanges***

While jug-handle interchanges would provide improved mobility on OR 42, analysis of operational and geometric issues revealed a potential fatal flaw. Initially it was assumed that the right-out ramp junctions

with OR 42 would operate as yield-controlled approaches, with motorists required to yield to traffic on OR 42. The results of this analysis showed this configuration would result in unacceptable operations. To operate adequately, these junctions would need to operate freely, with acceleration lanes provided on OR 42. However, there are significant geometric problems associated with acceleration lanes on OR 42 at the jug-handles.

According to ODOT highway design standards, the length required for acceleration lanes (assuming a turning speed of 25 mph and a highway design speed of 65 mph) is over 1200 feet. An additional 300 feet would be required for taper distance. Due to the close spacing between the two intersections and Interchange 119, provision of adequate acceleration lanes would effectively require an additional lane in both directions for the entire highway segment between Interchange 119 and Kelly's Corner. This would create weaving sections between the two intersections and the interchange and would not meet expressway interchange spacing requirements. Furthermore, the distance between Old Highway 99/Grant Smith Road and the eastbound Interchange 119 split is about 1000 feet, which is not sufficient to provide an eastbound acceleration lane.

#### Northbound I-5 Auxiliary Lane

A northbound auxiliary lane on I-5 could be accommodated between Interchange 119 and Interchange 120 by restriping the existing pavement section. The analysis results showed moderately improved overall performance with an auxiliary lane than with the current merge/diverge configuration. A detailed discussion on auxiliary lane options is provided in Section 3 of this report.

In the southbound direction, there is a relatively small volume of ramp-to-ramp traffic. A southbound auxiliary lane is not recommended.

### **Analysis of Modified Concept 11**

#### New Speedway Road Interchange

It was assumed that this interchange would be designed to accommodate projected future volumes. Build assumptions for analysis consisted of single-lane entrance ramps and exit ramp approaches. Operations analysis indicated that the ramp terminal intersections would operate adequately under stop control. The intersection of Old Highway 99 at Speedway Road would likely require signal control if a new interchange was constructed at Speedway Road.

#### New OR 42 Alignment

Traffic operations on the realigned expressway and the new interchange are expected to be adequate and signal delays will be eliminated. However, there will be a significant increase in travel time over what currently exists. The realignment of OR 42 under Modified Concept 11 will add nearly two miles, or about two minutes of travel time, to a trip between Roseburg and Winston. Assuming that this additional travel time is equivalent to vehicle delay, the average motorist will experience more delay on the realigned OR 42 than on the existing alignment through the two existing signalized intersections. Traffic operations analysis has shown that the year 2025 peak hour average control delay at Kelly's Corner and Old Highway 99 are 70 seconds and 31 seconds respectively, or about 101 seconds total. The additional travel time resulting from a realignment of OR 42 is approximately two minutes, or 20 seconds longer.

#### Kelly's Corner Interchange

Year 2025 operational analysis indicates that the interchange westbound and eastbound ramp terminals would require signalization to meet mobility standards.

## 2.4 Concept Cost Estimates

Planning-level cost estimates were developed for each concept. The cost estimates were based on assumed unit prices and approximated quantity take-offs. The cost estimates considered mobilization and traffic control, permanent traffic control, roadwork, materials and right of way costs. The estimates make no distinction between undeveloped and developed land values, but instead assumed a flat cost of \$50 per square foot of right of way. Actual costs for right of way acquisition can be expected to vary considerably. Additionally, the estimates do not consider preliminary engineering work.

Many factors can affect the actual cost or price of labor and materials. These factors may include unknown or latent conditions of existing equipment or structures that may affect operation or maintenance costs, competitive bidding procedures or market conditions; time or quality of performance by operating personnel or third parties; and other economic and operational factors that may materially affect the ultimate project cost.

In 2007 dollars, it is estimated that Concept 10 would have a cost of about \$55.9 million, and Modified Concept 11 would have a cost of \$87.2 million. Assuming a 5% per year inflation rate, the 2017 costs of each are estimated to be approximately \$83.9 million and \$130.9 million, respectively. A summary of the estimated component costs are provided in Table 2-1. Detailed cost estimate worksheets are provided in Appendix B.

**Table 2-1. Cost Estimate Summary**

Interchange Area Concept	Project Component	2007 Estimated Cost (Millions)	2017 Estimated Cost (Millions)
Modified 10	<b>Total Cost</b>	<b>\$55.9</b>	<b>\$83.9</b>
	99E Realignment at Interchange 120	\$28.0	\$41.9
	Grant Smith Jug Handle	\$14.0	\$21.0
	Kelly's Corner Jug Handle	\$14.0	\$21.0
Modified 11	<b>Total Cost</b>	<b>\$87.2</b>	<b>\$130.9</b>
	North Interchange Area Standard Diamond	\$43.6	\$65.4
	Kelly's Corner Folded Diamond	\$21.8	\$32.7
	System Interchange 118	\$21.8	\$32.7

## 2.5 Environmental Constraints “Red-Flag” Analysis

This section identifies environmental constraints specific to each of the two interchange area concepts. The intent of this review is to identify any “red flags,” which may represent fatal flaws or the need for further analysis or significant mitigation. The constraints identified in this section are based on review of the information provided in the “Existing Soils, Agriculture, and Natural Resources Narrative” found in Phase I Conditions Report.

### Goal 5 Resources

As indicated in the “Existing Soils, Agriculture, and Natural Resources Narrative” (Appendix E of the Conditions Report), there are no Goal 5 resources identified within the vicinity of the *existing* Interchanges 119/120. However, due to the substantial proposed diversion of OR 42 to the south as shown in Modified Concept 11, the new interchange and OR 42 alignment may impact Goal 5 resources in the land south of the existing interchange, which is zoned for farm/forest/grazing use.

### Floodplains

The “Existing Soils, Agriculture, and Natural Resources Narrative” report identifies 100-year and 500-year flood zones near Interchanges 119 and 120. The report states that Interchange 119 appears to be

located outside of the floodplain. Neither concept is expected to require special mitigation due to floodplains.

The report identifies a stream with a floodplain constrained by terraces a quarter mile south of the existing Interchange 120. Preliminary analysis indicates that the northbound entrance ramp at the proposed Speedway Road Interchange (Modified Concept 11) may impact this floodplain.

### Endangered Species

The “Existing Soils, Agriculture, and Natural Resources Narrative” report contains a list of threatened or endangered species that may occur in the planning area. Threatened species potentially located in the Interchange 119/120 area include the bald eagle, Coho salmon, and Kincaid’s lupine flower. Potential endangered species in the area include the rough popcorn flower. An analysis determining impacts to the species listed in the report will be required for whichever concept is advanced.

### Wetlands

The “Existing Soils, Agriculture, and Natural Resources Narrative” report includes National Wetland Inventory (NWI) maps covering the 119 and 120 Interchange Areas. Several wetlands have been identified both east and west of I-5. Review of the maps in the report, along with preliminary analysis of the concepts shows the following potential wetland impacts:

- Modified Concept 11, south end – I-5 Southbound On/Off Ramps to OR 42
- Modified Concept 11, north end – Northbound Entrance Ramp at proposed Speedway Road Interchange

### Hazardous Materials

The “Existing Soils, Agriculture, and Natural Resources Narrative” contains an evaluation of potential hazardous materials sites performed through 1) review of computer databases, historical topographical maps, historical photographs, historical Sanborn maps; and 2) a drive-by reconnaissance of the area surrounding the two interchanges. The review found four sites located near Interchange 119; three of the sites are listed on the underground storage tank (UST) and one site is listed on the leaking UST (LUST) databases. These sites are all recognized as environmental concerns.

Each concept features potential improvements to the Interchange 119 area; therefore, on-site environmental assessment work may be required where any right-of-way/easement acquisition or construction activities are anticipated at or near the three UST sites and one LUST site. The four sites of environmental concern include:

- Harrington Petroleum Inc. – 144 M Street
- Love’s Travel Shop #312 – 280 Grant Smith Road
- Texaco Gas Station – 4446 Old Highway 99
- 3 separate companies located at 186 Beaver State Road – Roseburg Paving Company, Teeco Corporation, and Beaver State Ready Mix

For the Interchange 120 area, the Narrative report recognized one facility as an environmental concern based on site reconnaissance: Roseburg Auto Parts and Recyclers located at 220 and 224 Speedway Road. Auto wrecking facilities such as this “commonly spill vehicle fluids (e.g., oil, gas, ethylene, glycol)”, but no additional information regarding this site was found during a DEQ database search (Ibid.).

### Cultural and Historic Resources

For the 2005 Conditions Report, a literature review was conducted at the State Historic Preservation Office (SHPO) to identify previously documented sites located near Interchanges 119 and 120. The search found no mapped National Historic Register sites or Douglas County historical sites in the planning area. A surface examination was conducted in July 2003 of both interchange areas. No archaeological sites were identified during these examinations. The existing bridge structures at Interchange 119 (which has since been replaced) and Interchange 120 were found to be ineligible for inclusion in the National Register of Historic Places (NRHP).

### Other Impacts

Preliminary analysis indicates that various features of both concepts may have impacts to the community. Potential community impacts are identified in the list that follows.

- Kelly's Corner Interchange

Both of the concepts include grade-separated interchanges at this location. All quadrants of the intersection are zoned commercial and all but the northwest quadrant are built and currently used for commercial purposes, including Green's only grocery store. Beyond the commercial development in the northwest quadrant, there is a residential subdivision and a trailer park. The interchanges of both concepts would impact some homes in this area and would require rerouting of local streets such as Chandler Drive and Rose Garden Lane.

Additionally, accesses to Carnes Road/Roberts Creek Road would be impacted because the grades would need to be raised to achieve sufficient height for the overcrossing structure.

- Modified Concept 11 Interchange 120

Under Modified Concept 11, the trailer park located on Speedway Road between Old Highway 99 and I-5 would be directly impacted by the I-5 southbound entrance and exit ramps of the proposed Speedway Road Interchange. Further investigation will be required to determine if this impact constitutes an environmental justice issue.

- Old Highway 99/Roberts Creek Jug-Handle

The jug-handle interchange proposed at this intersection under Modified Concept 10 would impact industrial and commercial-zoned land, some of which is in use by existing businesses. Additionally, accesses to Old Highway 99/Grant Smith Road would be impacted because the grades would need to be raised to achieve sufficient height for the overcrossing structure.

## **2.6 Conclusion/summary of analysis**

Based on a detailed analysis, both concepts have significant problems. For Modified Concept 10, there is insufficient spacing on OR 42 between the two proposed jug-handle interchanges and the existing Interchange 119 to provide the acceleration lanes that are needed at each jug-handle entrance ramp. For Modified Concept 11, the additional travel time resulting from the proposed realignment of OR 42 exceeds the peak hour delay at each of the at-grade intersections that the alignment proposes to replace.

Additionally, the footprints associated with the new interchanges and roadway alignments of both concepts would have significant community impacts because many impacted areas have existing homes and businesses.

### 3 Preferred Alternative

As described in the previous section, an alternatives analysis was performed that included an evaluation of geometric layouts, planning-level cost estimates, an environmental “red flag” analysis, and traffic operations analysis of key existing and new intersections. Based on this analysis, both concepts were found to have significant problems and were subsequently dismissed by the TAC.

Based on previous analysis, discussions of the TAC and a review of the Green TSP, a number of recommended improvements were developed that now constitute the Preferred Alternative. The Preferred Alternative contains some components of Modified Concept 10, but the recommended improvements largely consist of targeted improvements to improve capacity, balance lane use, improve geometry and maximize use of the local street network without significant roadway or interchange realignments. The individual projects could be implemented concurrently or in phases. The Preferred Alternative addresses most of the evaluation criteria used to screen the initial alternatives and is consistent with Policy 1G, Action 1G.1 of the OHP. This policy places priority on improving efficiency and capacity of existing highway facilities over adding new facilities to the system. The improvements are described below and the locations are shown graphically on Figure 3-1. Detailed cost estimates for each project element are provided in Appendix B.

#### 1. Interchange 120 Improvements

- Improve the exit ramp geometry. This will be completed as a part of the Shady Bridge construction project, which is currently underway.
- Signalize Interchange 120 ramp terminal intersection. Widen the ramp to accommodate a two-lane approach consisting of one left-turn lane and one shared left/right-turn lane from the exit ramp.

*Estimated cost: \$445,000.*

- Widen Old Highway 99 from the Interchange 120 ramp terminal to Happy Valley Road to two southbound lanes to accommodate the dual left-turn lanes from the ramp terminal.

*Estimated cost: \$2.2 million.*

The Transportation Conditions Report noted that ODOT Preliminary Traffic Signal Warrants are met at this location under existing traffic volume conditions. It should be noted that meeting one or more traffic signal warrants does not guarantee that a traffic signal shall be approved by the State Traffic Engineer. A comprehensive engineering investigation will need to be conducted prior to approval and installation of a traffic signal at this location.

The southbound ramp improvements that are to be constructed as part of the Shady Bridge project will increase the exit curve radius from a 15-mph design speed to a 25 mph design speed. A preliminary geometric evaluation of the ramp showed that an additional lane could be added to the ramp without compromising geometric standards. Signalization plus two lanes for left-turning traffic would substantially shorten the queue storage requirements on the exit ramp to approximately 100 feet under 2025 traffic volume conditions. If only 100 feet of queue storage were required, the exit ramp could provide sufficient deceleration distance without a realignment or extension of the ramp beyond what is currently planned. The recommended improvements would represent a substantial improvement to interchange operations and nominal safety.

Signal timing plans that give priority to the southbound exiting movement should be implemented. Additionally, signal controlling features like advanced detection should be considered. Advanced detection could provide additional green time on the ramp terminal approach if queues ever extend beyond the available storage area and into the deceleration area.

Incremental improvements to the Interchange 120 ramp terminals are possible. The first phase could consist of signal installation with little or no modifications to the ramp geometry or lane configurations. As traffic volumes increase, the second phase could consist of signal modifications and widening the ramp and Old Highway 99 to accommodate dual left-turn lanes.

Modified Concept 10, which was dismissed by the TAC, included a realignment of Old Highway 99 to the west to provide additional queue storage on the exit ramp. However, as noted above, if the recommended improvements are constructed the exit ramp could provide adequate deceleration length plus queue storage at the ramp terminal. In addition, an Old Highway 99 realignment would have a large cost due to the property takes and road construction that would be required. Therefore, a realignment of Old Highway 99 is not recommended.

## **2. Improved Use of New OR 42 Bridge at Interchange 119**

Recommendation: Provide two eastbound lanes on the new OR 42 bridge over I-5.

Estimated cost: \$1.4 million

The new OR 42 bridge at Interchange 119 can accommodate two lanes for eastbound OR 42 to northbound I-5. To provide two continuous eastbound lanes on OR 42 between the Old Highway 99/Grant Smith intersection and I-5, restriping and widening of the ramp roadway would be required on both sides of the bridge.

This configuration could reduce or eliminate the eastbound lane imbalance currently found on OR 42 at Old Highway 99/Grant Smith Road by providing significantly more distance for motorists to sort out their preferred lanes. East of the bridge the two lanes would merge into a single lane that then would merge into the northbound I-5 lanes. This improvement could be implemented independently or in combination with the auxiliary lane described in Recommendation #3 below.

## **3. Northbound I-5 Auxiliary Lane**

Recommendation: When warranted by traffic volumes, provide an additional northbound through lane on I-5 beginning at Interchange 119.

A northbound auxiliary lane on I-5 between Interchange 119 and Interchange 120 has been studied a number of times in recent years. Analysis prepared for the 2005 Transportation Conditions Report showed that an auxiliary lane would result in improved operations by eliminating the merge/diverge maneuver for the large number of vehicles that enter from Interchange 119 and exit I-5 at Interchange 120. However, detailed analysis performed in support of this report indicated that a northbound auxiliary lane would need to continue beyond Interchange 120 to provide adequate operations<sup>1</sup>. Installation of an

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<sup>1</sup> The existing northbound I-5 roadway section between Interchanges 119 and 120 is wide enough to accommodate three northbound lanes with no additional widening. In addition, the Shady Bridges, currently under construction, are located just to the north of Interchange 120 and will be wide enough to accommodate three travel lanes in each direction. Therefore, upon completion of the Shady Bridges, little or no additional road construction would be required for a three-lane northbound section that could extend from Interchange 119 to the north end of the Shady Bridge. A six-lane section may ultimately be needed for the entire segment of I-5 between Interchange 119 and Roseburg, so improvements in this section of I-5 are being planned for this ultimate configuration of I-5.

auxiliary lane that begins at Interchange 119 and ends at Interchange 120 is not recommended, as discussed under Condition B below.

Analysis was performed under year 2025 traffic volumes according to the methodology described in the ODOT TPAU Analysis Procedures Manual for four conditions. Each condition, plus the analysis results, are shown in Figure 3-2 and are described below.

- Condition A shows the existing configuration with a single northbound entrance ramp at Interchange 119 and an exit ramp at Interchange 120. Using year 2025 traffic volumes, the merge is calculated to operate at an acceptable v/c ratio of 0.68.
- Condition B shows an auxiliary lane between the two interchanges. The lane begins at Interchange 119 and ends at Interchange 120. Analysis shows that the weaving section would operate at an acceptable v/c ratio of 0.54 under 2025 traffic conditions. However, two other analysis results indicate that this configuration would not provide safe operations. First, the Highway Capacity Manual (HCM) advises against auxiliary lanes when the weave ratio, or the ratio of weaving vehicles to total vehicles, is greater than 0.45. The calculated weave ratio under condition B is 0.43, which is just below the threshold. Second, the calculated speeds for weaving and non-weaving vehicles are 40.3 mph and 61.5 mph, respectively. The large speed differential of more than 20 mph represents a potentially unsafe situation. This condition is not recommended.
- Condition C is identical to Condition B except that the northbound lane continues beyond Interchange 120. For the large volume of vehicles entering northbound I-5 at Interchange 119, no merge or lane change would be required. This configuration results in a calculated 2025 v/c ratio of 0.52, a weave ratio of 0.05, and a speed differential between weaving and non-weaving vehicles of about six miles per hour. The low weave ratio and calculated speed differential mean that Condition C could be expected to provide safe and efficient operations.
- Condition D, like Condition C, provides an additional northbound lane that continues beyond Interchange 120. However, the lane begins at a point to the south of the northbound Interchange 119 entrance ramp. This condition retains the existing merge and diverge configuration with a three-lane section, and results in an acceptable calculated merge v/c ratio of 0.53 under year 2025 traffic conditions.

As noted above, Condition A, or an I-5 no-build condition, is expected to operate adequately under year 2025 traffic conditions. Condition B, or a true auxiliary lane between the two interchanges, would not provide safe operations and is not recommended. A northbound auxiliary lane should only be constructed when a third northbound lane to the north of Interchange 120 is also provided. A cost estimate is not provided due to the undefined extent of a potential future I-5 widening project.

#### **4. Kelly's Corner (OR 42 at Carnes Road/Roberts Creek Road)**

Recommendation: Construct dual left-turn lanes on the southbound, eastbound and westbound approaches.

Estimated cost: \$2.9 million

Providing dual eastbound and westbound left-turn lanes on OR 42 in addition to dual southbound left-turn lanes on Carnes would reduce the intersection v/c to 0.87 under 2025 conditions and all movement v/c ratios will be less than 1.00. Note that dual left-turn lanes on OR 42 would require roadway widening to accommodate two receiving lanes on both Carnes Road and Roberts Creek Road. The widened sections would need to extend for at least several hundred feet beyond the intersection to decrease the likelihood of lane imbalance in the dual left-turn lanes.

This recommendation is based on the assumption that no improvements will be made to the local street network, as recommended in Item #5 below. It is likely that construction of a more robust, interconnected local street network would reduce traffic volumes at the intersection thereby increasing its lifespan and reducing the need for intersection improvements.

## **5. Improvements to the Local Street Network**

Recommendation: Complete collector/arterial street network as specified in the Green TSP.

Because much of the anticipated residential growth in the Green area is expected to occur on the north side of OR 42 in the vicinity of Rolling Hills Road, measures to direct more trips to Rolling Hills Road may divert existing and future trips from the intersection of OR 42 with Carnes Road/Roberts Creek Road, thereby improving operations and extending its life.

The TSP identifies several east-west minor collector routes between Carnes Road and Rolling Hills Road, many of which are not yet complete. Additionally, the TSP identifies Rolling Hills Road as minor collector, for the entire section between Happy Valley Road and OR 42. The roadway is not yet complete but is anticipated to be within two to five years.

A project to install a traffic signal at the intersection of Rolling Hills Road and OR 42 is identified in the draft 2011 STIP (KN 15006). In addition to the signal, the modernization project will close the Jackie Lane/Melody Lane approach and a private church approach to OR 42. The traffic from the closed approaches will be rerouted to the signalized Rolling Hills Road intersection. The project summary report states that the project has been in plans for many years. It is included in the Green TSP, Douglas County TSP and the OR 42 Corridor Plan. The purpose for the project is to improve operations on OR 42 and improve local circulation in Green. The project prospectus is provided in Appendix C

An analysis was performed using a travel demand model run provided by TPAU to evaluate the impacts of a better-connected local street system on the intersection of OR 42 with Carnes Road/Roberts Creek Road. Model links were modified to reflect the following: 1) an unbroken roadway connection between OR 42 and Happy Valley Road (Rolling Hills Road); 2) a continuous east-west connection between Carnes Road and Rolling Hills Road (representing a composite of planned east-west minor collectors); and 3) a traffic signal at the intersection of Rolling Hills Road and OR 42. The results of the model run showed a reduction of total entering volumes at the intersection of OR 42/Carnes Road/Roberts Creek Road of about 6%. Additionally, the model showed a reduction of greater than 12% on the eastbound approach. The results suggest that improvements to the local street system consistent with those identified in the TSP would improve operations at the intersection.

## **6. Speedway Road Improvements**

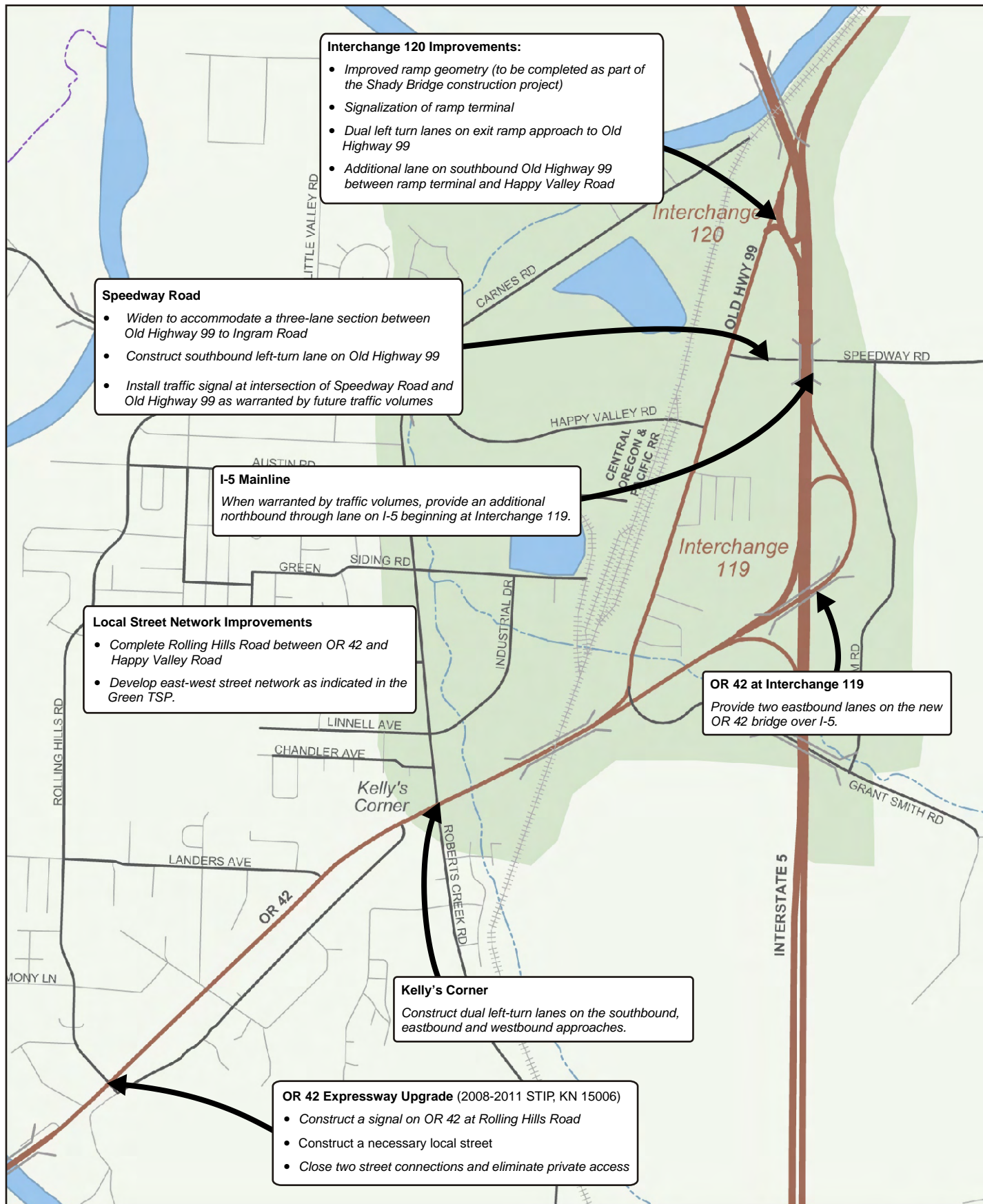
Recommendations: Widen Speedway Road to accommodate a three-lane section between Old Highway 99 and Ingram Road, construct southbound left-turn lane on Old Highway 99 and consider future signalization if traffic volumes cause signal warrants to be met.

Estimated cost: \$900,000 (does not include possible bridge modification/replacement)

A widening of Speedway Road between Happy Valley Road and Ingram Road, combined with improved vertical clearance through the I-5 underpass would enhance freight access to industrial areas adjacent to Ingram Road. An improved Speedway Road would provide a desirable alternative to Grant Smith Road and would allow traffic to avoid the intersection of OR 42 at Old Highway 99/Grant Smith Road. Analysis based upon the original employment assumptions for the industrial areas adjacent to Ingram Road indicated that projected traffic volumes are not expected to be high enough to warrant a traffic signal at the intersection of Speedway Road and Old Highway 99. The traffic volumes on

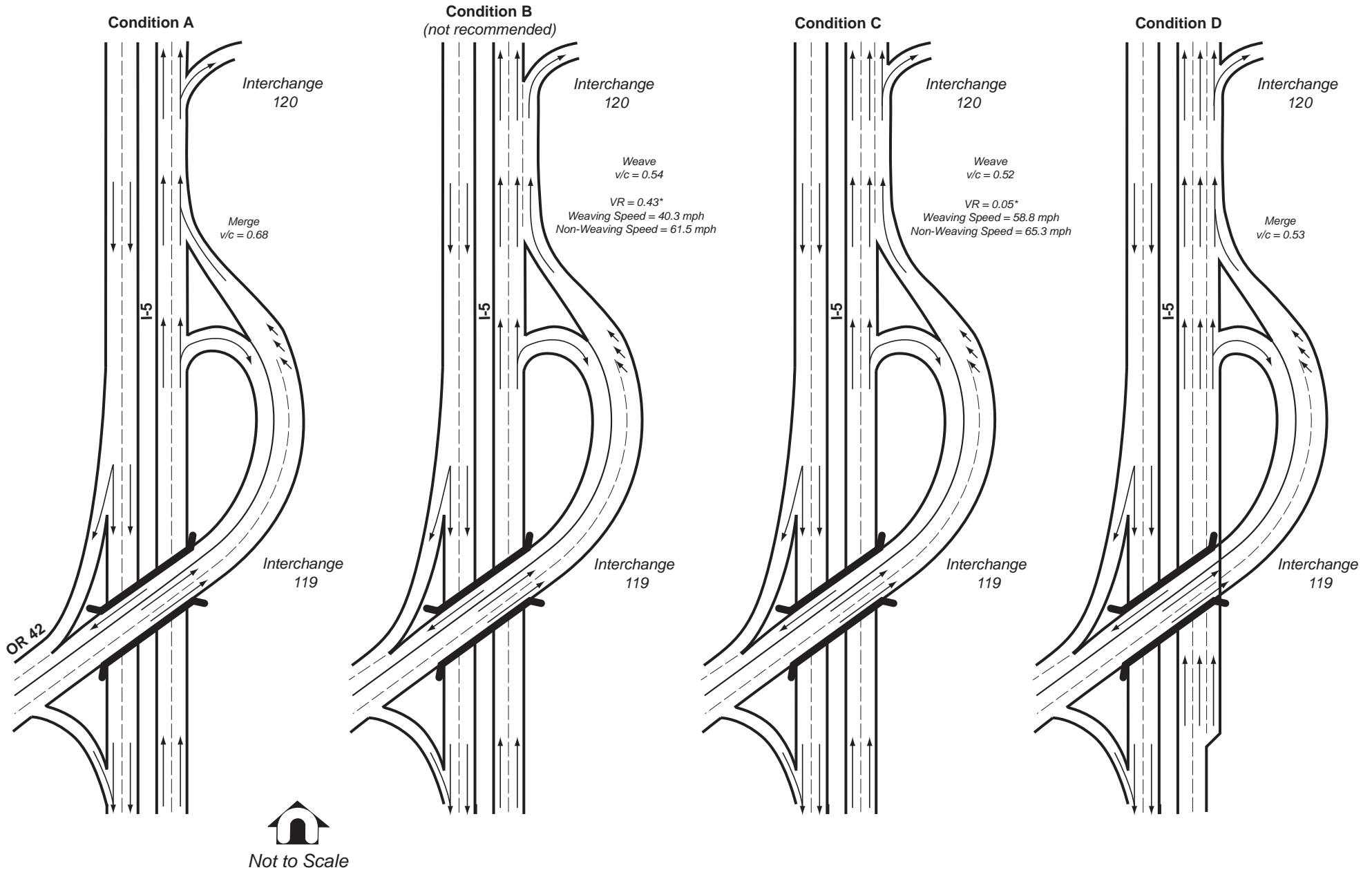
Speedway Road are highly dependent on the developments along Ingram Road. Depending on the type of development and size, one or more large employment centers along Ingram Road could cause signal warrants to be met. Thus, the potential for signalization of the intersection of Speedway Road and Old Highway 99 should be retained.

Speedway Road lies outside of the Division 51 access spacing standard (1320-foot access spacing from the Interchange 120 ramp terminals) and is not subject to Division 51. However, queues from a potential future signalized intersection may spill into the interchange influence area. A future signal at the Speedway/Old Highway 99 intersection should be coordinated with the signals at OR 42, Happy Valley Road and the Interchange 120 ramp terminals to enhance efficiency and safety along the corridor.



IAMP Management Area

**Figure 3-1**  
**I-5 Interchanges 119 and 120 IAMP**  
*Preferred Alternative Improvements*



\* VR = Weave Ratio, or ratio of weaving vehicles to total vehicles

**Figure 3-2**  
**I-5 Interchanges 119 and 120 IAMP**  
*Interchange Lane Configuration Options*

### 3.1 Consistency with Evaluation Criteria

Section 2 of this report presented evaluation criteria that were used to screen the initial alternatives. Each criterion is listed below accompanied by a short discussion on the consistency, or lack thereof, for the Preferred Alternative.

#### **Transportation Operations**

Criterion: Solves the queuing problem on the I-5 southbound exit ramp at Interchange 120.

Signalization of the ramp terminals plus dual left turn lanes would provide a significant improvement to operations and safety at this intersection. Analysis shows a significant decrease in queuing under signalization. Realignment of the exit ramp would eliminate the tight 15 mph radius curve and replace it with a standard 25 mph curve.

Criterion: Eliminates the need to merge/diverge on northbound I-5 between the interchanges.

An auxiliary lane would eliminate the merge maneuver for the northbound movement between Interchange 119 and 120. There is currently sufficient pavement width to accommodate an auxiliary lane between Interchange 119 and Interchange 120. However, an auxiliary lane should only be provided if it extends at beyond Interchange 120. At a minimum, the auxiliary lane should continue over the new northbound Shady Bridge, which is currently under construction.

Criterion: Reduces the lane imbalance caused by the close proximity of Interchange 119 to OR 42/Old Highway 99 South/Grant Smith Rd intersection.

Providing two eastbound lanes across the OR 42 bridge over I-5, as shown in Figure 3-2, would reduce or eliminate the lane imbalance by allowing motorists more time to merge prior to entering the mainline. Some pavement widening would be necessary on either end of the bridge.

Criterion: Improves operations of the intersection of OR 42 and Carnes Rd/Roberts Creek Rd.

Provision of dual left-turn lanes for the southbound, eastbound and westbound approaches would provide sufficient capacity to accommodate projected future traffic volumes. A more robust, interconnected local street network, including completion of Rolling Hills Road and a new signalized intersection at OR 42 and Rolling Hills Road, may reduce traffic demand at the Kelly's Corner intersection.

Criterion: Improves operations of the intersection of OR 42 and Old Highway 99/Grant Smith Road.

The primary operational problem at this intersection is related to the lane imbalance on the eastbound approach, which effectively reduces capacity and results in long queuing and delays. Therefore, as noted above, providing two eastbound lanes on the OR 42 bridge over I-5 would reduce or eliminate the lane imbalance and improve operations at this intersection.

#### **Geometry**

Criterion: Addresses all geometric deficiencies identified in the Interchanges 119/120 Transportation Conditions Report.

Many of the alternatives consisted of extensive interchange modifications or realignments and would likely address most or all of the geometric deficiencies. Most of the identified deficiencies are related to substandard acceleration and deceleration lengths on entrance and exit ramps. The Preferred Alternative proposes little to no modification to the geometry of the interchanges and therefore only addresses the major geometric deficiencies that compromise nominal safety or traffic operations, such as those found

at Interchange 120. However, the improvements specified in the Preferred Alternative would not preclude future projects that to improve sub-standard features.

Criterion: Bring interchange spacing up to standard between Interchanges 119 and 120.

The Preferred Alternative does not propose any interchange relocation or closure. Therefore the existing spacing will not change and this criterion is not met.

### **Accessibility**

Criterion: Maintains or improves access to the Green area west of I-5.

The safety and operational improvements to the Interchange 120 ramp terminal will improve access to the Green area by reducing queuing and delays for traffic exiting I-5 at the interchange.

Criterion: Maintains or improves access to the industrial area east of I-5 along Ingram Drive.

The Preferred Alternative recommends upgrades to Speedway Road, including improved vertical and horizontal clearances, which will enhance truck access to the Ingram Road industrial area.

Criterion: Retains system interchange.

The Preferred Alternative would retain the free-flow movements between OR 42 and I-5.

Criterion: Maintains or improves access to Winston via OR 42.

The Preferred Alternative includes (1) capacity improvements at the Kelly's Corner intersection, which would improve operations and efficiency on the OR 42 expressway, and (2) improvements to the local street network, which would help direct local trips onto the local street network rather than onto OR 42.

### **Cost**

Criterion: Provides appropriate cost and implementation strategies.

The estimated cost for the Preferred Alternative is substantially lower than any of the original concepts and is more aligned with the mobility and access needs within the planning area and the region.

### **Land Use**

Criterion: Minimizes right-of-way impacts.

Implementation of the Preferred Alternative would require much less right of way than any of the dismissed alternatives. However, some right of way acquisition would be necessary. Preferred Alternative components that may have potential right of way impacts are listed below:

- Widening of Old Highway 99 between the Interchange 120 ramp terminals and Happy Valley Road.
- Widening of Speedway Road.
- Kelly's Corner intersection improvements

### **Environmental/Social Impacts**

Criterion: Minimizes environmental impacts

Because the Preferred Alternative roadway alignments largely lie within existing right of way, the environmental impacts will be minimal.

## **Social Impacts**

*Criterion: Minimize significant social impacts (displacements of residences or businesses)*

As with the right of way impacts listed above, components of the Preferred Alternative that may impact some businesses or residences include the widening of Old Highway 99, Kelly's Corner intersection improvements and widening of Speedway Road. It should be noted that the impacts associated with the Preferred Alternative are far less than any of the dismissed alternatives.

### **3.2 Consistency with 1999 Oregon Highway Plan**

The Preferred Alternative is consistent with Policy 1G of the 1999 Oregon Highway Plan, which states, "It is the policy of the State of Oregon to maintain highway performance and improve safety by improving system efficiency and management before adding capacity." Action 1G.1 further outlines a hierarchy of priorities for addressing highway needs:

1. Protect the existing system.
2. Improve efficiency and capacity of existing highway facilities.
3. Add capacity to the existing system.
4. Add new facilities to the system.

Action 1G.1 states:

Implement higher priority measures first unless a lower priority measure is clearly more cost-effective or unless It clearly better supports safety, growth management, or other livability and economic viability considerations. Plans must document the findings which support using lower priority measures before higher priority measures.

Statewide policy places the highest priority on protecting the existing system. Section 4 of this IAMP describes various potential management actions that could be used to protect the future function of the planning area facilities. Potential management actions include many of the operational, safety and capacity improvements recommended as part of the Preferred Alternative. Other management actions include transportation system management actions, such as traffic control, lane striping and signing; transportation demand management actions, such as transit services and multi-modal facilities; and other land use strategies such as zone changes, density controls or trip budget/allocation ordinances.

Most of the dismissed alternatives consisted of new facilities, which are the lowest priority measures under OHP policy. The Preferred Alternative addresses many of the area needs while largely retaining the existing system. The Preferred Alternative does this through targeted, cost-effective capacity and safety improvements.

## 4 Management Actions

Management actions, as applied to Interchange Area Management Plans (IAMPs) are intended to preserve the capacity of an interchange for as long as possible. The toolkit of potential management actions includes four overarching strategies:

- **Local System Improvements** that enhance the local street network to disperse trips and reduce congestion near an interchange;
- **Transportation Demand Management Actions** that provide travel options to reduce the number of trips or vehicles on the road;
- **Transportation System Management Actions** that improve system efficiency and reduce delays;
- **Land Use and Development Actions** that guide land use development to result in fewer trips in the interchange area.

Many management actions are most applicable in when applied throughout a region or in a large urban area. A positive impact may be produced by some even if applied only in the unincorporated area of Green. The management tools with potential to preserve capacity at Interchanges 119 and 120 are described below. The discussion includes a brief description, a qualitative assessment of applicability and potential benefits, a summary of the issues that would be required to implement them, and a qualitative assessment of potential adverse impacts.

### 4.1 Benefits of Management Actions at Interchanges 119 and 120

Management actions have the potential of reducing the number of trips at the interchange area and, in effect, slowing the growth of traffic. As a result, management actions can extend the life of the interchanges and provide for incremental implementation of the Preferred Alternative, allowing individual components to be funded and built when needed. Given the funding constraints and statewide demand for interchange improvements, it could take several years to develop a funding package and construct improvements that constitute the Preferred Alternative.

### 4.2 Local System Improvements

Local system improvements relate to enhancing the effectiveness of the local street network to provide circulation and access for the community near the interchange without relying solely on the interchange or its approach roadways.

#### ***Enhancing the Local Street Network***

Currently, the roadway network in Green is insufficient to support the current and future development provided for in the Comprehensive Plan. The TSP includes recommendations for the completion and development of additional east-west and north-south roadways. As development occurs, some of these roads are being completed. New roads and connections identified in the TSP are needed to accommodate future growth in Green.

#### ***Access Management***

Access management is a set of techniques that state and local governments can use to control access to highways, major arterials, and other roadways. Access management strategies are designed to extend the operational life of highways and interchanges by reducing congestion, improving improve traffic flow, reducing crashes, and reducing conflicting vehicle movements. Access management techniques include:

### Access Spacing

By increasing the distance between traffic signals, flow of traffic on major arterials can be improved. This also reduces congestion and improves air quality for heavily traveled corridors.

### Driveway Spacing

Fewer driveways spaced further apart could allow for more orderly merging of traffic and present fewer challenges to motorists.

### Turning Lanes

Dedicated left- and right-turn lanes, and indirect left-turns and U-turns could be considered to keep through-traffic flowing.

### Median Treatments

Two-way left-turn lanes and non-traversable, raised medians are examples of some of the most effective means to regulate access and reduce accidents.

## **Applicable Strategies, Benefits, and Implementation Issues**

Local system improvements are critical to providing access to property and sufficient capacity for development to occur. Currently, the local street system is disconnected and incomplete, resulting in fewer roads carrying a significant amount of the traffic. Once additional roads and connections are in place, the operations at the existing facilities will improve. As the roadway network is developed to support property development, access management measures should be considered because of their ability to reduce conflicts on roads. For example, there may be opportunities to create shared driveways and shared parking for adjacent businesses. These seemingly small measures can have a dramatic impact on congestion within a corridor.

The access management recommendations for the Interchange 120 area detailed in Section 5 of this report are expected to be sufficient, and further access management measures are not needed. The actions near the interchange consist primarily of the development of a local street network to provide alternative access to parcels that currently obtain direct access to Old Highway 99.

## **4.3 Transportation Demand Management Strategies**

Transportation Demand Management (TDM) strategies are designed to reduce vehicle demand, especially for commute trips in the peak periods. Typically, TDM strategies include provision of services or facilities intended to shift travelers to different modes, to non-peak times, or by trip elimination choices, such as telecommuting. TDM strategies are most effective in areas with high concentrations of employment and where a robust transit system exists. Generally, the strategies are easiest to implement where there are large employers or where a transportation management association (TMA) has been established to pool the efforts of many smaller employers.

### **TDM Strategies that Shift Modes**

The following strategies are designed to offer choices and encourage people to commute in a way other than driving alone, resulting in fewer vehicles on the road during the peak periods.

#### Carpool Programs

This strategy encourages and supports commuters to share the ride with other commuters who live and work in the same general area. Carpools may receive preferential parking, or incentives such as a small

stipend, reduced parking rate or coupons. Carpools enjoy the benefit of a reduced commute cost because the price of gasoline and parking is typically shared.

### Vanpool Programs

This strategy involves providing vans for groups to use for commuting. These can be employer sponsored vans, private vans, or agency sponsored vans. Vanpools can be arranged for large employers, or for locations where several employers are located in close proximity.

### Transit

Transit can be a cost saving and stress-reducing alternative to commuting by personal automobile. For transit to be a reliable alternative to personal automobiles, transit service should be offered approximately every 30 minutes and extend beyond the peak periods. Transit commuters need to have confidence that they will be able to get home if they need to leave work early or stay late.

### Bicycling

Many people choose to commute by bicycle for health, stress-reduction, and environmental reasons. The provision of safe and convenient bicycle facilities have long been recognized as one of the key prerequisites for increased bicycling for transportation purposes. Conversely, the absence of good, safe bicycle facilities discourages all but the most dedicated cyclists from using this mode for transportation. In addition, the provision of showers, clothing storage, and safe, secure bicycle parking is important.

### Walking

When people live close to work, they may have the option to walk. Some do so for health, stress reduction, and for the connection they feel with their community when they do so. Most transit riders are also walkers for some portion of their commute. Safe walking facilities such as sidewalks and separated paths are important features to incorporate in projects to encourage walking.

## ***TDM Strategies that Shift Trips to Non-Peak Periods***

Employers can have a significant impact on reducing peak hour trips by reducing the number of employees who are expected to arrive during the morning peak (approximately 7 am to 9 am) and depart during the evening peak (approximately 4 pm to 6 pm). Methods to reduce peak hour arrivals and departures include offering flexible work schedules, and shifting work schedules.

### Flexible Work Schedules

An example of a flexible work schedule might require employees to be present during core hours of 9:30 to 3:30, and allowing arrivals and departures around that time while maintaining an 8 hour work day. Another example involves working fewer days per week, such as working 4-10s (four ten-hour days), with one day off.

### Off-Peak Shifts

An example of an off-peak shift might be having a work day start at 6 am and end at 2 pm. Another shift might start at 2 pm and end at 10 pm. This is a common practice in industry because it allows for multiple shifts in a 24-hour period.

## ***TDM Strategy that Eliminates Trips***

### Telecommuting

This strategy allows employees to work from home for some portion of or all of their work. Telecommuting is gaining popularity and acceptance and is available to more professions as a result of

improvements in technology. Various office functions including technical support, call center operations, and order processing are increasingly being conducted using telecommuting and dispersed workers. Employers who offer telecommuting are able to market it as a benefit, and telecommuting often results in cost savings to the employer because of reduced office space and equipment requirements.

### ***Applicable Strategies, Benefits, and Implementation Issues***

According to the Douglas County Comprehensive Plan, a significant portion of the undeveloped land in Green is reserved for industrial use. The availability of large parcels could make the area attractive to a few large employers or a collection of industrial employers of varying sizes. TDM strategies that have proven successful with this type of land use include carpool and vanpool, transit (if the transit frequency and routing is increased), flexible work schedules, and telecommuting. Because of the nearby residential areas, bicycle riding and walking may also be reasonable commute options.

Implementing TDM strategies is most successful when there are incentives and when making the switch to a non-personal-auto mode of travel is relatively simple. Establishment of a Transportation Management Association (TMA) for the Green industrial area may be useful because a TMA typically takes on the responsibility of promoting TDM programs, organizing carpool and vanpool programs, obtaining grants, distributing incentives, and working with transit agencies to provide additional transit service and/or reduced cost transit passes.

Green residents who work in Roseburg might benefit from TDM programs instituted in Roseburg designed to affect commute trips. This might result in a modest reduction of trips using the interchanges. Green could partner with Roseburg on TDM strategies, or participate in a TMA that seeks to reduce commute trips to and from Roseburg.

Transit service, provided by Umpqua Transit, is infrequent during the day, providing five (5) commute trips during the AM and PM peak periods, and one mid-day trip. In order for transit service to be attractive and used effectively as a TDM measure, transit service must be frequent enough during the day to provide commuters confidence that they can adjust to varying needs throughout the day, such as getting home if a bus is missed, or getting home to a sick child. As Green grows and becomes more congested, and as Umpqua Transit funding becomes more stable, an increase transit service – either in frequency or route distribution – may be justified in Green.

## **4.4 Transportation System Management Strategies**

Transportation System Management (TSM) strategies are designed to make maximum use of existing transportation facilities, and include:

- Traffic engineering measures that improve the operations and efficiency of streets and intersections
- System monitoring and traveler information systems (e.g., ITS systems, variable message signs, etc.),
- Facility management systems (e.g., ramp meters, special use lanes, signal priority for special users such as transit), and
- Incident management systems (e.g., incident response and recovery teams).

These strategies are described below.

### ***Traffic Engineering Measures***

Traffic engineering measures such as signal timing changes, provision of turn lanes, turn restrictions, and restricting on-street parking to increase the number of travel lanes without road widening are included in this category. These traffic engineering measures are routinely included as part of the traffic analyses used in conjunction with the design process for intersection and roadway projects. Optimizing traffic signal operations, for example, is performed by the traffic engineer before specifying the number of lanes and queue storage requirements for the intersection design.

Such measures must consider all movements at an intersection, including side street traffic, main street traffic, transit, bicycles, and pedestrians. Competing priorities can arise between modes and directions of traffic and both county and state policy and objectives must be considered when setting priorities. For example, additional turn lanes may reduce delay at intersections for automobiles, but increase the crossing distance for pedestrians, making their crossing less safe. Or, turn movement restrictions may increase throughput on a roadway, but reduce access to business. Decisions regarding access restrictions especially require involvement and input from the community.

### ***System Monitoring and Traveler Information Systems***

System monitoring employs Intelligent Transportation Systems (ITS) technologies that enable jurisdictions to monitor traffic, respond to traffic crashes and vehicle breakdowns more quickly, and communicate with the motoring public in real time. System monitoring requires deployment of infrastructure like a Traffic Operations Center (TOC) with video and closed circuit TV, and surveillance cameras, detection cameras and traffic sensors on highways to improve the capability of agencies to keep track of the transportation system on a real time basis. This system monitoring capability allows the operators in a TOC to dynamically adjust signal timing, dispatch emergency vehicles, and provide information to the motorists.

The real time traffic information can be shared with travelers in a variety of ways, by variable message signs, highway advisory radio, 5-1-1 Traveler Phone Information, web sites, and specialized warning systems (such as fog warnings), to let them make their own decisions about when to drive and what route to choose.

### ***Facility Management Systems***

Various system elements can be used to improve the performance the street and highway system or provide operational advantages for specific users. Facility management systems are tied into the system

monitoring and traveler information systems discussed above and can be used to benefit users of alternative modes of transportation and TDM programs discussed in the previous section of this memorandum.

### Ramp Meters

Ramp meters, which are used on the on-ramps to freeways and other limited access highways, can be used for two different purposes. First, ramp meters can discourage motorists from using freeways to bypass congestion on local roads. Second, when traffic demand is high, ramp metering can adjust the metering rate such that the density on the freeway remains below the critical value, thereby increasing flow or preventing traffic breakdown of the freeway mainline. Its benefits can be reaped when the traffic flows are neither too light (in which case metering is not needed) nor too high (in which breakdown will happen anyway). Ramp meters increase travel times and meter the rate of flow entering the highway. In its simplest application, ramp meters set minimum intervals between vehicles entering the freeway from the ramp with a fixed time signal.

### Preferential lanes

This strategy involves the reservation of a travel lane for a preferred group such as high occupancy vehicles and transit. This strategy is often used at ramp meter locations, allowing transit to bypass waiting vehicles and providing travel time savings and reliability for transit.

### Traffic Signal Priority

This strategy is used primarily for transit in regions that experience significant congestion and delay at intersections. In general, the strategy allows transit to receive a green light for a few seconds before other vehicles so that it can advance ahead of a queue, or it can hold a light green for a few seconds longer to allow a bus to get through a signal before it turns red.

## **Applicable Strategies, Benefits, and Implementation Issues**

Traffic system management strategies, including optimization of traffic signal timing, are routinely practiced by ODOT for facilities under its jurisdiction. It was assumed in the analyses performed for the IAMP that the signals in the OR 42 and Old Highway 99 corridors would be interconnected and the signal timing would be coordinated to optimize traffic operations. This includes the new signals at the Interchange 120 ramp terminal with Old Highway 99, and at the intersection of OR 42 and Rolling Hills Road. These improvements are described in more detail in Section 3 of this report. In the future, as new corridor and signals are implemented, Douglas County could consider interconnecting new signals with existing signals and coordinating signal timing with the state for enhanced operations.

System monitoring and facility monitoring systems are expensive and are typically employed in large, congested metro areas where freeways and major arterial roads offer a variety of routes for motorists. When one route is congested due to an incident or event, motorists receive information and can make choices about other routes. This is not the case at Interchanges 119 and 120. Implementation of an ITS system for Green is not appropriate in isolation, but might be considered as part of a system for the greater Roseburg area.

Facility monitoring strategies, such as ramp meters, preferential lanes, and signal priority, are not likely to be needed at Interchanges 119 and 120. Freeway congestion is not expected to be a concern at these interchanges in 2025. If I-5 should become congested in the future, metering of interchange ramp terminals throughout the Roseburg area might include those in Green. Depending on transit volumes and ramp congestion resulting from metering, bypass lanes may be appropriate.

## 4.5 Land Use and Development Actions

Several potential land use and development actions are available with potential for directly or indirectly influencing the transportation impacts of future development. Some potential actions include:

- Using trip allocations or trip budgets (a trip budget has been considered by Douglas County but rejected at this time) to directly manage traffic impacts of developments;
- Retaining the current Comprehensive Plan designations and land use zoning
- Modifying the land use zoning to retain trips in Green

### ***Retain Current Comprehensive Plan Designations and Land Use Zoning***

This strategy would confirm that Douglas County would commit to the current Comprehensive Plan and zoning for the Green area. The Douglas County Comprehensive Plan provides for significant industrial development in Green. Currently, there is vacant and underutilized industrial land, with residential development being the most active at this time. The Comprehensive Plan also provides for freeway oriented commercial development.

Transportation modeling draws guidance from comprehensive plans, but requires making assumptions about the type, intensity and location of development that can occur within each zone. Trip generation modeling was performed by TPAU for Green assuming two different scenarios – in the first, the growth was confined to only one zone; in the second, the growth was dispersed among several zones. In reality, land use development and intensities will occur in a way that is unique from these scenarios, but the scenarios provide examples for evaluation. In both scenarios, under the Preferred Alternative, some of the intersections along Old Highway 99 and OR 42 are expected to exceed HDM mobility standards by 2025, and some will exceed capacity.

Changes to the current land use zoning could dramatically affect the number of trips generated by the land use, trip patterns, and traffic volumes at intersections and interchanges.

### ***Modifying Land Use to Retain Trips in Green***

As part of this project, modeling was performed that replaced industrial land use with commercial land use near Interchange 120. The model estimated 200 retail employees and 200 service employees, a medium size development. The objective of this effort was to evaluate whether trips originating in Green with a commercial purpose were using the interchange to go to Roseburg, and if including commercial development in Green would reduce the need for those trips to use the interchange. The analysis showed that trips were not reduced at the interchange, but trips were redistributed in Green. This suggested that a similar commercial development would not have a significant impact on reducing interchange trips.

## ***Applicable Strategies, Benefits, and Implementation Issues***

### ***Trip Budgets***

Although considered but later dropped as a management action, implementing a trip budget program for the entirety of Green could be a specific solution that would help protect the function of the interchanges and keep intersections operating at an acceptable level of service. By limiting the total traffic in Green to the quantity assumed in the TSP, the community could be reasonably assured that the improvements associated with the Preferred Alternative would operate well for a period of at least 20 years.

Implementing a trip budget program could also be tied to various intermediate phases of the interchange and other infrastructure improvements. Under this approach, transportation improvements would be tied with the development necessitating them.

Implementation of trip budgets is typically controversial and viewed as anti-development. However, as proposed here, the objective is to simply ensure that transportation infrastructure keeps pace with and supports development, which in turn supports the useful life of the interchange. A trip budget was considered but rejected by Douglas County.

#### Retain Current Comprehensive Plan Designations and Zoning

This management action is essentially a reaffirmation by Douglas County that the Comprehensive Plan and TSP remain valid or, if changes are needed, the Transportation Planning Rule (TPR) requirements will be met. The TPR provides specifications on what must be addressed by agencies when seeking a comprehensive plan amendment or rezoning.

## **4.6 Recommended Management Measures**

Under the land use and trip generation associated with the TSP, several of the intersections in the Preferred Alternative for Interchanges 119 and 120 will fail to meet ODOT operational standards for the year 2025. Additionally, the intensity, timing and location of actual development may result in more congestion than is estimated by the TSP. Therefore, several measures are recommended that will bolster the surrounding transportation system and aid in supporting additional traffic and travel patterns in the area to maintain and preserve the capacity of the interchange and key area intersections.

This section presents a brief summary of the strategies that are recommended. A broader description of each strategy is provided in the previous section.

1. Implement the **Access Management Strategy for Interchanges 119 and 120**, summarized in Section 5 of this report;
2. Apply **Transportation System Management** strategies when implementing traffic signal system, including signal interconnect, coordination, and optimization.
3. Enhance the local street network as described in the TSP.
4. Implement **Transportation Demand Management** strategies in cooperation with the City of Roseburg.
5. Consider inclusion of interchanges 119 and 120 if **Roseburg ITS/ATMS or ramp metering** system is employed.

## **4.7 Candidate Measure for Possible Future Implementation**

After careful consideration, Douglas County rejected a trip budget overlay zone. As noted in Section 7.1, future investments by the State to increase capacity or improve operations to Interchange 120 will require the County to adopt local policies and/or ordinances that limit land use consistent with the trip generation assumptions in the IAMP.

Although Douglas County is not adopting a trip budget overlay zone, the rationale and approach ODOT believes support this type of management measure are contained in Appendix E. Appendix E contains information on potential overlay district adoption and identifies possible code amendments, because implementing an overlay district would involve amending the Douglas County Code.

## 5 Access Management Plan

Section 3 of this IAMP presents the Preferred Alternative for Interchanges 119/120, which consists of targeted improvements to capacity, lane use, geometry and the local street network without significant roadway or interchange alignments. Currently, the Preferred Alternative is a concept, therefore design details may change. An integral part of the IAMP process is providing a strategy and plan to protect the function of the interchange and its influence area.

This access management plan (AMP) addresses only the Interchange 120 area and contains no access management recommendations for OR 42 in the vicinity of Interchange 119. The nearest approach to the Interchange 119 ramp terminals along OR 42 is the Old Highway 99/Grant Smith Road intersection. This intersection is approximately one quarter-mile from the ramp terminals, which is equivalent to the access management spacing standard. Access management along OR 42 will be addressed in future expressway planning.

One of the goals of the IAMP is to develop an access management plan that helps preserve the functionality of the interchange, protecting its ability to accommodate traffic volumes safely and efficiently into the future. Access to the roads connecting to the interstate system is vital to the adjacent property owners who need access for their businesses and residences. However, it has also been shown that a proliferation of driveways and minor street intersections near a ramp terminal can drastically increase conflicts, causing operational problems, reducing the capacity of the intersections, and generally degrading service for all system users.

A comprehensive access management plan will help to maintain easy access for properties by improving traffic circulation, mobility, and freeway access, thereby protecting these properties' locational advantage. In addition, access management actions in this plan do not prevent the properties from being used or developed to be used in a manner consistent with their adopted comprehensive planning designations. Properties designated for a certain type of use will still have adequate access to be developed for that purpose.

The recommendations for access management actions in this plan are based on current property ownership and existing property boundaries and access points. Should the property boundaries change in the future due to consolidation, land use changes, redevelopment or specific design decisions related to roadway improvement projects, the access management plan may need to be modified. Where modifications are necessary, they must move in the direction of the adopted access management spacing standards in OAR 734-051 (Division 51): Highway Approaches, Access Control, Spacing Standards and Medians<sup>2</sup>. A future land partition or subdivision is not sufficient justification to create an additional access point beyond what is currently allowed or is provided for in this plan.

The Division 51 access spacing standard along Old Highway 99 in the Interchange 120 area is a distance equal to one quarter mile (1320 feet) from the Interchange 120 ramp terminals measured on the crossroad away from the mainline. This region, which also includes the segment of Old Highway 99 located between the northbound and southbound ramp terminals, is referred to as the interchange influence area. Within the interchange influence area ODOT has final authority to implement an access management plan, though Douglas County may be consulted about such changes. The actions listed in

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<sup>2</sup> A complete copy of Division 51 can be found online at:  
[http://www.oregon.gov/ODOT/HWY/ACCESSMGT/docs/DIVISION\\_51.pdf](http://www.oregon.gov/ODOT/HWY/ACCESSMGT/docs/DIVISION_51.pdf)

this plan shall not prevent the reconstruction of approaches as necessary to meet County or ODOT standards.

The implementation of the access management plan will occur over a long period of time. To provide a timeline for the plan, actions are categorized into short-, medium-, and long-term. The timeline is not absolute or indicative of a specific sequence of the actions, but can be thought of in these terms:

Short-term actions are associated with an access management strategy. In contrast to an access management plan, a strategy is developed and implemented in association with an interchange or roadway improvement project. Because no interchange project is currently planned, this IAMP does not present short-term actions. The access management strategy shall be consistent with the findings and recommendations of the access management plan.

Medium-term actions are provided in the access management plan and are likely to occur in association with either 1) a future interchange improvement project, or 2) development or redevelopment of parcels prior to an interchange improvement project. When an improvement project is planned, medium-term actions in this access management plan shall be implemented as part of the access management strategy.

Long-term actions are principally based on the need to change access control to reduce safety problems resulting from traffic growth in the interchange area in general. The most likely reason for implementing these actions will be the development or redevelopment of the parcels. A change of use, with or without rezoning, may be sufficient to trigger a change in access. Another possible reason for undertaking the long-term actions include a roadway improvement project initiated by the County or by ODOT, including projects that have not been identified previously, such as a safety improvement.

Depending upon the rate of growth in the community and how much traffic growth occurs before a planned interchange improvement project is constructed, some or all of the projects listed in the long-term category may need to be implemented prior to or concurrently with a future interchange project.

The rate of development and redevelopment activities are subject to economic conditions and the decisions of property owners, investors and developers, making it hard to predict the timing of needed improvements.

General actions throughout the planning area include:

- Encourage redevelopment opportunities that consolidate access points.
- Encourage sharing of access points between adjacent properties.
- Offset driveways at proper distances to minimize the number of conflict points between traffic using the driveways and through-traffic.
- Provide driveway access via local roads where possible.
- Enforce access management spacing standards to the extent possible.
- Minimize driveway widths.
- When traffic signals are installed, interconnect them with adjacent signals to create a coordinated timing system.

### ***Access Standards and Objectives***

Access management must balance the competing needs of traffic capacity and safety for I-5 and local access needs. The OHP devotes an entire section to the discussion of access management. More detailed requirements, action definitions, and the access spacing standards for state highways are specified in

Division 51. Ideally, a project will include provisions by which access within the project limits can be made fully compliant with Division 51. In many instances, however, access needed for existing development will not allow these standards to be met. When the requirements and standards cannot be met, progress toward meeting the applicable standards must be demonstrated.

Division 51<sup>3</sup> and the OHP<sup>4</sup> contain standards for private driveway and public road approach spacing based on highway classifications and speeds. Access spacing standards are measured from the center of one access to the center of the next access on the same side of the road. These standards were used in the preparation of this access management plan. The standard applicable to this project and the objectives of this plan are as follows:

- The distance along a two-lane crossroad from a ramp terminal to the first right-in/right-out approach should be no closer than 750 feet for an urban interchange in a fully developed urban area.
- The distance along a two-lane crossroad from a ramp terminal to the first full intersection should be no closer than 1320 feet for an urban interchange in a fully developed urban area.
- Restrict all access from abutting properties to the interchange and interchange ramps.
- In attempting to meet access management spacing standards, exceptions may be allowed to take advantage of existing property boundaries and existing or planned public streets, and to accommodate environmental constraints.
- Replace private approaches with public streets, where feasible, to provide consolidated access to multiple properties.
- Ensure all properties impacted by the project are provided reasonable access to the transportation system.
- Align approaches on opposite sides of roadways where feasible to reduce turning conflicts.
- Requests for deviations from these standards can be made, and the process is outlined in OAR 734-051-0135.

OAR 734-51-0115 (1)(c)(C) and 734-051-0125 (1)(c)(C) require that “for a highway or interchange construction or modernization project...the project will improve spacing and safety factors by moving in the direction of the access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards.” In attempting to meet the standards or move in the direction of them, notification will be sent, when appropriate, to nearby properties as outlined in Oregon Revised Statutes (ORS) 734-312 (5): Rules regarding permits for approach roads; intergovernmental agreements.

### **Existing Accesses**

The jurisdiction of Old Highway 99 was officially transferred from ODOT to Douglas County in 1996. However, the transfer agreement specified that ODOT shall retain permitting authority for accesses within 900 feet of interchange ramp terminals.

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<sup>3</sup> Many sections of Division 51 discuss approach spacing including, but not limited to 734-051-0115, 734-051-0125, 734-051-0135, and 734-051-0275

<sup>4</sup> The applicable tables include Table 16 for a two-lane crossroad and Table 17 for a multi-lane crossroad.

An inventory was conducted of public street intersections and public/private approaches to Old Highway 99 within the Interchange 120 influence area. Numerous access points do not meet ODOT's standards for access near the interchange. Figure 5-1 lists the public and private approaches along Old Highway 99 in the vicinity of the Interchange 120 ramp terminals. Although ODOT has approach permitting authority along Old Highway 99 within 900 feet of the interchange ramp terminals, many driveways and public streets predate the permitting process or have come into existence without permits.

### ***Future Access Management Strategy***

It is anticipated that an access management strategy will be developed and implemented in connection with a future Interchange 120 improvement project such as one that signalizes the ramp terminal, provides dual left-turn lanes on the southbound exit ramp terminal and widens Old Highway 99 between Interchange 120 and Happy Valley Road. The access management strategy should be consistent with the findings and recommendations of the access management plan.

### ***Access Management Plan***

This access management plan includes medium- and long-term actions. Medium-term actions are likely to occur in association with an interchange improvement project, or as a result of development or redevelopment of parcels prior to an interchange improvement project. Implementation of long-term actions are recommended as development or redevelopment of parcels occur, or in association with future roadway improvement projects not yet identified.

Access management is intended to improve highway conditions by moving towards maintaining reasonable access to existing properties, addressing safety priorities, and meeting the appropriate ODOT access management standards. The access management strategy (to be developed with the final design of a future improvement project) will rely upon changes that will occur as part of future construction projects. When a property is developed, redeveloped or a change-of-use occurs, an application for an approach road will be required if access is proposed from the state highway system. At that time, any existing approach and any new proposed approach will be evaluated. The AMP will guide ODOT when completing a change-of-use assessment.

As discussed above, construction projects and land use changes for properties that abut Old Highway 99 within 900 feet of the Interchange 120 ramp terminals will require approach permits from ODOT. As part of the approach permit approval process, deviation findings will be prepared if necessary to explain why the approach can not meet the standards as required by OAR 734-051-0135 (Deviations from Access Management Spacing Standards). As per OAR 734-051-0135 (7), the Region Access Management Engineer may require that a plan identifies measures to reduce the number of approaches to the highway in order to approve a deviation for a public approach. This IAMP identifies measures to reduce the number of approaches near Interchange 120, and therefore fulfills this potential requirement.

The overall goal of this access management plan is to protect traffic operations and safety within the interchange influence area. This will have the effect of protecting the state's investment in the interchange facilities while ensuring circulation necessary for good access to the highway. This will be accomplished using medium-, and long-term actions in the area.

### ***Recommended Medium- and Long-Term Actions***

The recommended medium- and long-term actions, shown in Table 5-1, Development of a local street network would address sub-standard access spacing, protect the function of the interchange, enhance mobility, and provide safe and efficient access to businesses. The local street network could take a number of forms. Figure 5-2 shows several options, including a possible frontage road on the west side

of Old Highway 99. Three potential access points are shown and are designated on the figure as W1, W3 and W4. Additionally, possible service road alignments are shown on the east and west side of Old Highway 99 (E1, E2 and W2). It should be noted that Figure 5-2 is highly conceptual and only shows a few of the many possible configurations for local roads.

Recommended medium-, and long-term actions associated with individual approaches on both sides of Interchange 120 are shown in Table 1 below. For ease of understanding, numbers were assigned to all the approaches within the interchange influence area. The “access numbers” are not the same as the legal tax lot numbers. These assigned access numbers are used in the figures and within the text of this document for simplicity. The legal tax lot numbers associated with the assigned access numbers are included in the access inventory table contained in Figure 5-1.

**Table 5-1: Recommended Access Actions**

<b>Approach #</b>	<b>Medium-term Action</b>	<b>Long-term Action</b>
1	Consider alternate location if feasible	Same as Medium-term
2	To be closed. See note 1	No action
3	To be closed. See note 2	No action
4	No action	No action
5	Reconfigure existing approach as needed opposite Interchange 120 ramp terminal, or consider relocation to an alternate location.	Close approach, provide access via local street/service road.
6	Consolidate in connection with development/redevelopment, restrict to right-in/right-out.	Close approach, provide access via local street/service road.
7	Consolidate in connection with development/redevelopment.	Close approach, provide access via local street/service road.
8		
9		
10		
11		
12		
13		
14		
15 (Speedway Rd)	No action	No action
16 (Pippin Ave)	No action	No action
17	No action	No action

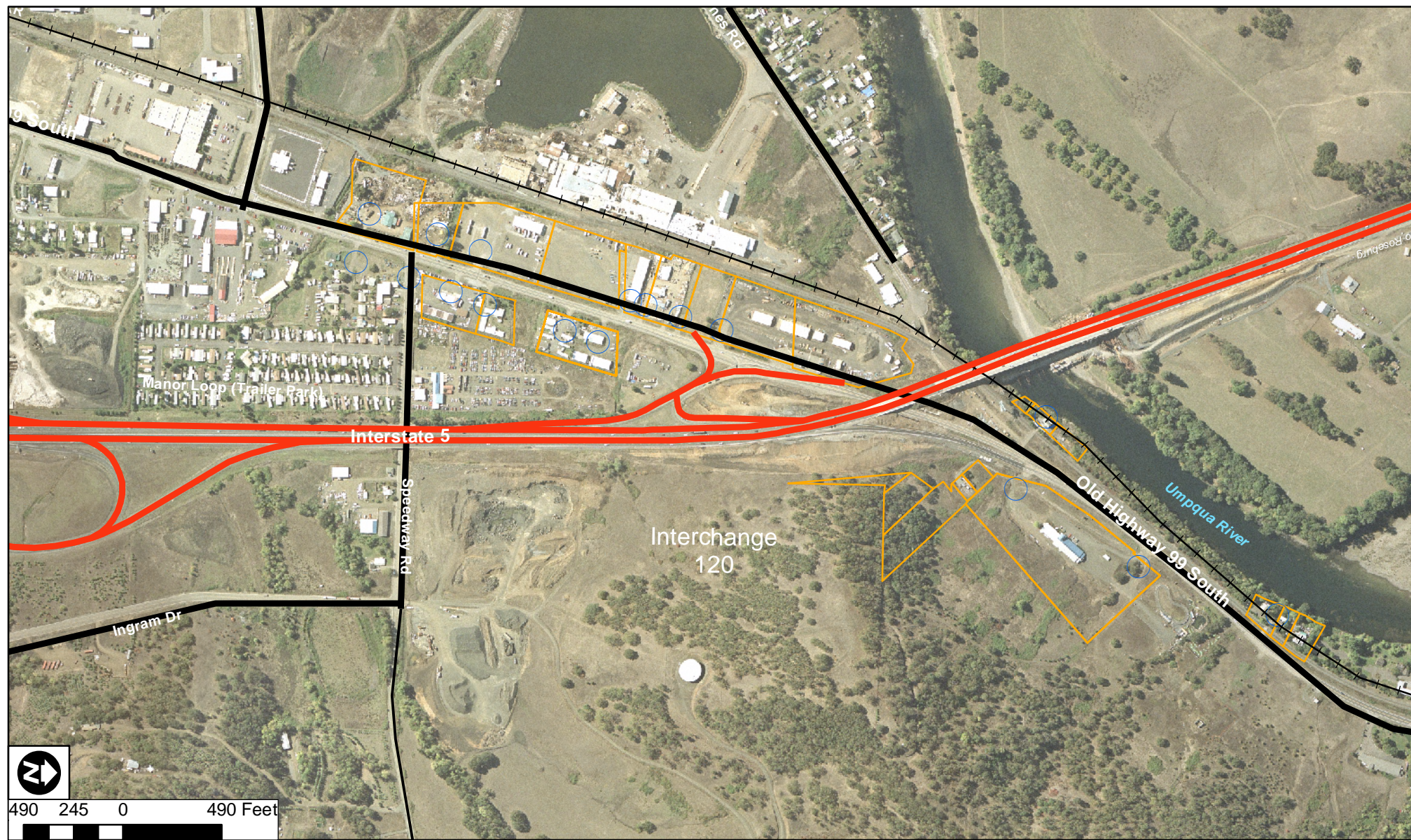
Notes:

Approach is planned to be relocated to a point outside of interchange influence area, approximately 1500 feet from ramp terminal. The site may accommodate a large retail development, which would likely trigger the need for a signal at the southbound Interchange 120 ramp terminal and other improvements to Old Highway 99.

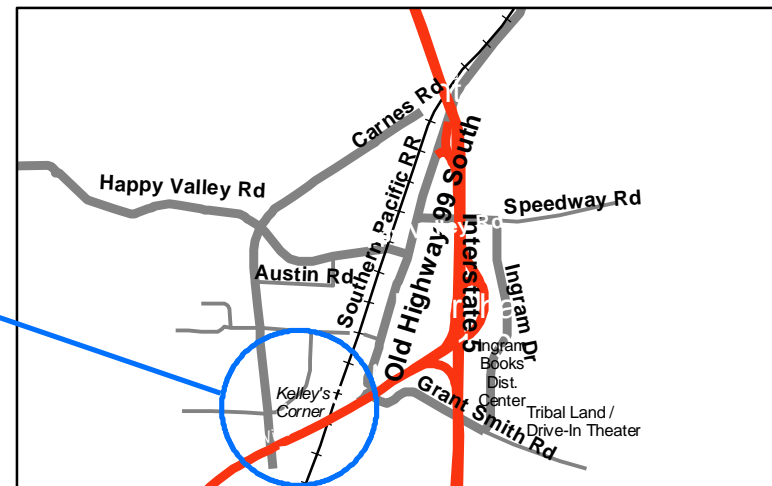
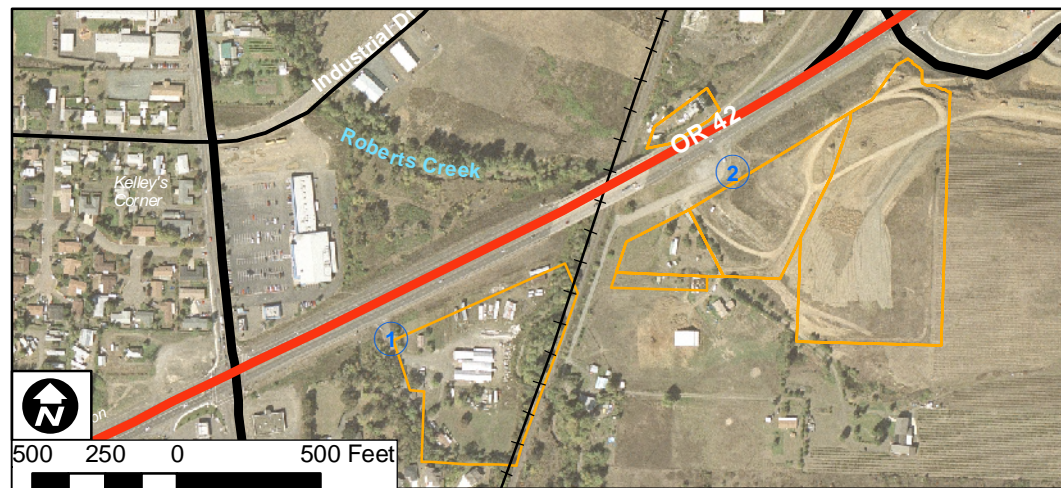
Property is currently vacant. Approach planned to be closed, and access to property will be provided via relocated Approach #2.

Actions shown in Table 5-1 are for the ideal access management plan. These actions require many changes to properties along Old Highway 99. Several factors need to be considered before an access is altered, including: access rights, safety concerns, existing and potential land use, existing site development including access use and function, parking, and circulation. Other factors that should be considered are whether or not the property has more than one approach road to the state highway and if the property had available or potential access to a local street.





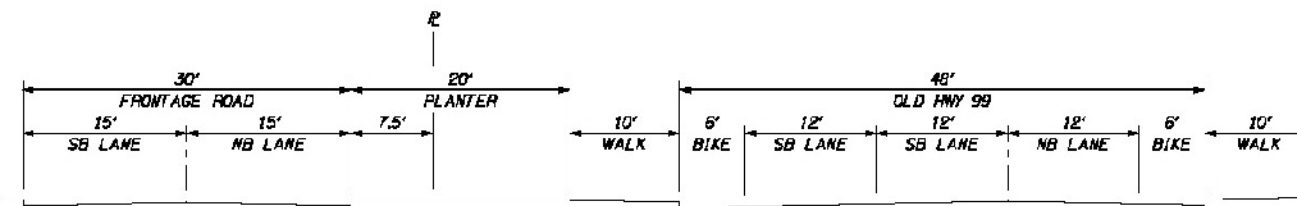
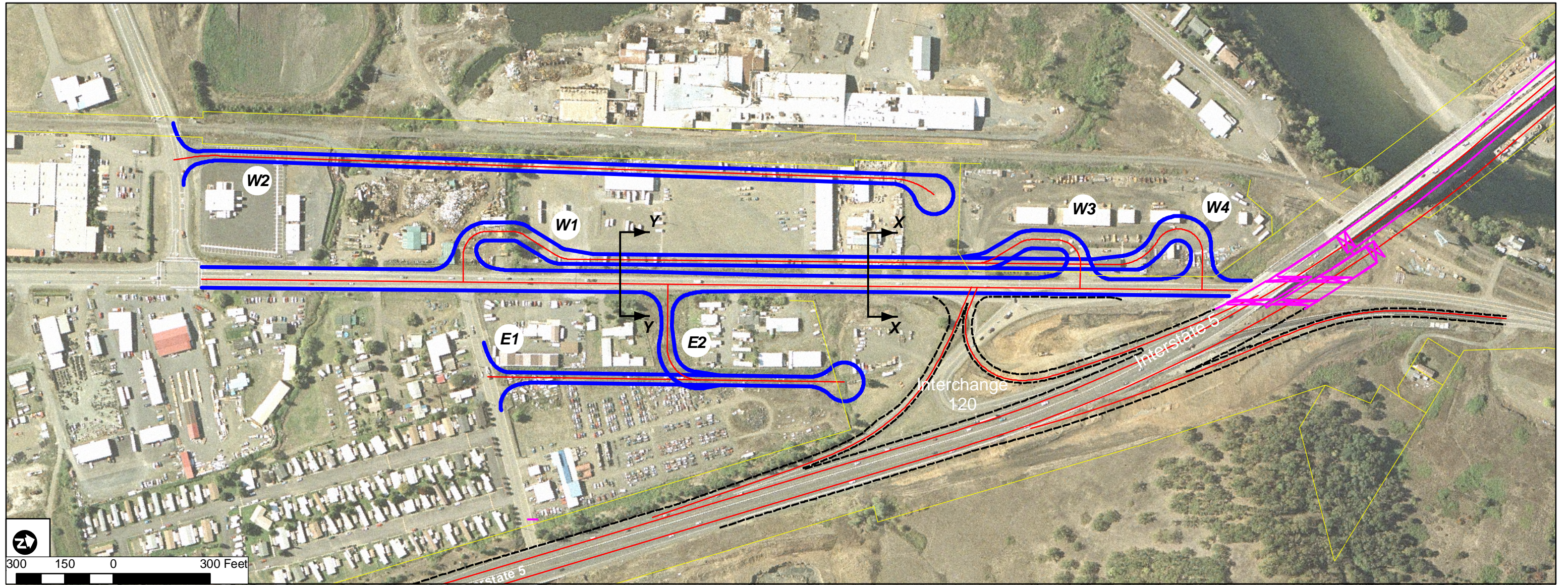
Access Inventory - Interchange 120 Vicinity			
Access Number	Tax Lot Number	Property Owner	Assessor's Site Address
1	27-06W-36C-00800	FOTHERINGHAM, ALONZO WESLEY	3047 OLD HIGHWAY 99 SOUTH
2	27-06W-36C-01300	STEINBACH, PAUL B	3071 OLD HIGHWAY 99 SOUTH
3	27-06W-36C-01400	OTIS, ROBERT W & CAROLYN A	3097 OLD HIGHWAY 99 SOUTH
4	28-06W-01B-00200	MENTONE COMPANY LLC	0 OLD HIGHWAY 99 SOUTH
5	28-06W-01B-00300	PRITCHARD, DAN W	3204 OLD HIGHWAY 99 SOUTH
6	28-06W-01B-00400	PRITCHARD, DAN W	0 OLD HIGHWAY 99 SOUTH
7	28-06W-01B-00500	BROWN, DUANE H & JESSIE F TRS	0 OLD HIGHWAY 99 SOUTH
8	28-06W-01B-00600	BROWN, DUANE H & JESSIE F	0 OLD HIGHWAY 99 SOUTH
9	28-06W-01B-00700	THORNTON, CLIFF & NAOMI I	0 OLD HIGHWAY 99 SOUTH
10	28-06W-02AA-00100	JENSEN, EARL A & CLAUDIA M	0 OLD HIGHWAY 99 SOUTH
11	28-06W-02AA-00200	JENSEN, EARL A & CLAUDIA M	3217 OLD HIGHWAY 99 SOUTH
12	28-06W-02AA-00300	STATE OF OREGON	0 OLD HIGHWAY 99 SOUTH
13	28-06W-02DA-00200	JOHANSEN, STANLEY K & DORIS	3598 OLD HIGHWAY 99 SOUTH
14	28-06W-02DA-00300	VEACH, LLOYD J JR & MARY M	3644 OLD HIGHWAY 99 SOUTH
15	28-06W-02DA-00500	A-1 AUTO SALES INC	3704 OLD HIGHWAY 99 SOUTH
16	28-06W-02DA-00600	MCGOVERN, JAMES D TRS OF THE	0 OLD HIGHWAY 99 SOUTH
17	28-06W-02DA-00602	RMW MANAGEMENT COMPANY LLC	3663 OLD HIGHWAY 99 SOUTH
18	28-06W-02DA-00603	RMW MANAGEMENT COMPANY LLC	3641 OLD HIGHWAY 99 SOUTH
19	28-06W-02DA-00700	MCGOVERN, JAMES D TRS OF THE	3801 OLD HIGHWAY 99 SOUTH
20	28-06W-02DD-00100	SHERRON ESTATES LLC	1 MANOR LOOP
21	NA	NA	SE PIPPEN AVENUE (PUBLIC)
22	NA	NA	SPEEDWAY ROAD (PUBLIC)
23	28-06W-02AD-00100	ODOT	3339 OLD HIGHWAY 99 SOUTH
24	28-06W-02AD-00199	ODOT	0 OLD HIGHWAY 99 SOUTH
25	28-06W-02AD-00200	BRYDEN, CLIFFORD M	0 OLD HIGHWAY 99 SOUTH
26	28-06W-02AD-00201	LEVIN, DAVID & SUSAN	3495 OLD HIGHWAY 99 SOUTH
27	28-06W-02AD-00202	RMW MANAGEMENT COMPANY LLC	3503 OLD HIGHWAY 99 SOUTH



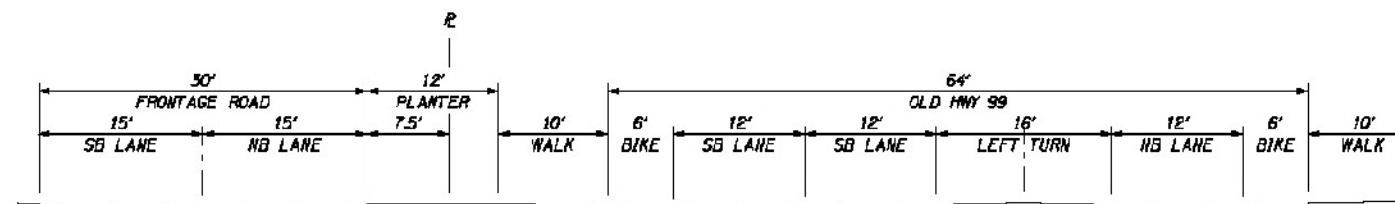
Access Inventory - Interchange 120 Vicinity			
Access Number	Tax Lot Number	Property Owner	Assessor's Site Address
1	28-06W-11C-300	HENSLEY, WALTER	171 ART MILL LANE
2	28-06W-11DB-700	THOMPSON, DOROTHY	140 ART MILL LANE
3	28-06W-11DB-600	THOMPSON, DOROTHY	210 WINERY LANE
4	28-06W-11DB-400	CROCKER, GEORGE	0 OLD HIGHWAY 99 SOUTH
5	28-06W-11DB-200	DILLINGHAM, J D	0 OLD HIGHWAY 99 SOUTH

**Figure 5-1**  
I-5 Interchanges 119 and 120  
Access Inventory





SECTION X-X



SECTION Y-Y

**Figure 5-2**  
I-5 Interchange 120  
Frontage and Service Road Alternatives



## 6 Priorities and Timing of Improvement Needs

### 6.1 State Priorities

Many of the recommended improvements to Interchange 119 and Interchange 120 are not currently listed in the STIP. Advancing the interchange improvements described in this IAMP is likely to be difficult given the funding conditions and the state's investment policy. The OHP contains the following language:

*It is the policy of the State of Oregon to place the highest priority for making investments in the state highway system on safety and managing and preserving the physical infrastructure.*

With regard to modernization, the OHP provides the following language:

*Give priority to modernization projects that improve livability and/or address critical safety problems and high levels of congestion.*

With regard to preservation, the OHP provides the following language:

*Maintain Statewide Highways at a higher condition than Regional and District Highways, and invest in thicker pavement on designated freight routes.*

With regard to safety, the OHP provides the following language:

*Focus on expenditures where the greatest number of people are being killed or seriously injured<sup>5</sup>*

As described in other sections of this report, there are certain elements of the existing design of the interchanges that are substandard. However, many of these have not resulted in high crash rates that could support a claim of significant safety problems. This could change with increases in traffic volumes, but the overall conclusion is that safety does not serve as a major argument for advancing interchange improvements.

Based on the analysis performed for this study, the performance of the southbound Exit 120 ramp currently does not meet mobility standards. As traffic volumes increase, it may become easier to demonstrate "high levels of congestion" needed to advance a modernization project.

Advancement of modernization projects in the IAMP management area may benefit from the classification of OR 42 as a Statewide Highway and Expressway, and therefore has the highest priority next to interstate highways.

### 6.2 Timing of Need for Improvements

The development potential of Green and the impact of traffic from new development is highly dependent on what land is ultimately developed and the type of development that actually occurs. The rate of development is dependent on economic and demographic factors that are determined on a scale far beyond Green's influence. The speed at which Preferred Alternative improvements are implemented is dependent on the rate of growth.

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<sup>5</sup> These priorities are reflected in the Safety Investment Program used to select safety projects for the Statewide Transportation Improvement Program. The Program identifies where the most people are being killed and seriously injured on the state highway system and applies the most cost-effective measures to reduce the number of crashes.

Among all the potential improvements that could be made in the Interchange Management Area, the improvement most likely to be needed first is a project to signalize the southbound Exit 120 ramp terminal intersection. Based on an evaluation of ODOT preliminary signal warrant criteria, a traffic signal is currently warranted at this intersection. For a traffic signal to be installed, Signalization must be based on meeting applicable signal warrants and approval by the State Traffic Engineer based on established criteria.

A project to add an additional eastbound lane over the new OR 42 bridge at Interchange 119 could be expected to improve traffic operations on the expressway approaches to the interchange. As discussed above, the improvement could have a useful life that extends well beyond year 2025.

Development of a well-connected local street system could result in immediate improvements to overall mobility in and around the Green area and could provide long term benefits to the community and the region. The timing of these improvements will largely be driven by development.

## 7 Implementation

Adoption of an IAMP is a requirement for interchanges undergoing significant modification and helps to demonstrate a commitment on behalf of both the County and ODOT to protect the long-term function of the interchanges.

Based on the work performed during this study, existing plans and policies can be strengthened, updated, and made more specific by amendments described below. The focus of these amendments is to specify the actions on the part of both the County and ODOT relative to implementation of the Preferred Alternative.

The elements recommended for formal adoption as part of this IAMP are specified below. Some actions are to be adopted by the OTC as a “facility plan” that implements the OHP. Other actions are adopted by Douglas County. Each subsection specifies which agency is responsible.

### 7.1 OHP Policy Statement

Adoption of the OHP is a state responsibility. Adopting a new policy statement describing the priorities associated with potential interchange improvements is a state responsibility.

The following policy statement is added to the Investment Policies and Scenarios section of the OHP:

*The highest priority for investments by the State to Interchange 120 shall be directed toward critical safety problems and maintaining the physical infrastructure of the existing interchange. Critical safety and maintenance projects shall not require adoption of the IAMP or adoption of local policies and/or ordinances to limit land use consistent with trip generation assumptions in the IAMP.*

*Investment by the State to construct projects 1 and 2 in Table 8-1 of IAMP 119/120 shall require Douglas County to adopt the IAMP and local policies and ordinances that limit land use consistent with the trip generation assumptions in the IAMP (e.g. trip allocation, permitted land uses, etc). IAMP 119/120 adoption, policies, and ordinances must be adopted prior to projects 1 and 2 being included in the Statewide Transportation Improvement Program (STIP) with state or federal funding.*

### 7.2 Access Management

#### **Douglas County Responsibilities**

Because Old Highway 99 is owned by Douglas County, adoption and implementation of the Access Management Plan is a County responsibility. The Access Management Plan (AMP) from Section 5 of this document is to be adopted, including Table 5-1 and Figures 5-1 and 5-2 and explanatory materials. The AMP is to be applied along Old Highway 99 within one quarter-mile of the Interchange 120 ramp terminal. Because access management along interchange crossroads is an important factor in maintaining safe and efficient interchange operations, ODOT will not seek to implement improvements specified in the Preferred Alternative, specifically the traffic signal at the Interchange 120 ramp terminal, until Douglas County adopts the Access Management Plan

#### **ODOT Responsibilities**

ODOT shall retain permitting authority for roadway approaches for the section of Old Highway 99 within 900 feet of the ramp terminals as specified in the OR 99 Jurisdictional Transfer Agreement (adopted in 1996) contained in Appendix D. The Access Management Plan applies to approaches along Old Highway 99 for a distance of 1320 feet.

## 7.3 Amend Douglas County TSP

### ***Amend TSP Goals and Objectives***

The TSP is a locally-adopted plan and is thus a responsibility of Douglas County. Amendment of the TSP Goals and Objectives is also a County responsibility.

Additional policy language is recommended as additional “policies” under “Objective B: To develop and utilize design standards for road construction that promote vehicular safety and economy of construction”

*12. To protect the function of Interchange 120, the County shall implement an access management plan along Old Highway 99 within one quarter mile of the Interchange 120 ramp terminals. The County recognizes that ODOT retains access permitting authority along Old Highway 99 within 900-feet of the Interchange 120 ramp terminals.*

### ***Amend TSP Projects***

The Green TSP is a locally-adopted plan and is thus a responsibility of Douglas County. Amendment of the Green TSP is also a county responsibility. The adopted 2001 TSP includes cost estimates for some of the projects specified in the Preferred Alternative. During the development of this IAMP, the Preferred Alternative interchange area improvements were developed to a higher level of specificity than was undertaken for the TSP. Updated cost estimates were also prepared. The TSP is to be amended to include the project descriptions and estimated costs listed in Table 8-1. In Table 8-1, a check mark in the “New Project” category indicates that this element of the Preferred Alternative is not in the 2001 TSP. The absence of a check mark indicates that the project is included, but that a more specific description and/or updated cost estimate has been prepared.

**Table 8-1. Preferred Alternative Projects**

	<b>Project</b>	<b>Explanation</b>	<b>Estimated Cost (1000 Dollars)</b>	<b>Roadway Jurisdiction</b>	<b>Funding Partners<sup>3</sup></b>
1	Interchange 120: Signalize ramp terminal intersection; widen ramp to accommodate a two-lane approach consisting of one left-turn lane and one shared left/right-turn lane from the exit ramp.	1	\$445	ODOT	ODOT, Developers
2	Old Highway 99: Widen from the Interchange 120 ramp terminal to Happy Valley Road to two southbound lanes to accommodate the dual left-turn lanes from the ramp terminal.	1	\$2,165	County	ODOT, County, Developers
3	OR 42 at Interchange 119: Provide two eastbound lanes on the new OR 42 bridge over I-5.	2	\$1,345	ODOT	ODOT
4	I-5 Mainline: When warranted by traffic volumes, provide an additional northbound through lane on I-5 beginning at Interchange 119.	2	Varies	ODOT	ODOT
5	Kelly's Corner (OR 42 at Carnes Road): Construct dual left-turn lanes on the southbound, eastbound and westbound approaches.	2	\$2,900	ODOT, County	ODOT, County, Developers
6	OR 42 Expressway Upgrade (2008-2011 STIP, KN 15006): Construct a signal on OR 42 at Rolling Hills Road; Construct a Necessary Local street; Close two street connections and eliminate private access.	2	\$1,200	ODOT, County	County, ODOT
7	Complete collector/arterial street network as specified in the Green TSP.	2	Varies	County	County, Developers
8	Speedway Road: Widen to accommodate a three-lane section between Old Highway 99 and Ingram Road; construct southbound left-turn lane on Old Highway 99	2	\$900	County	County, Developers
9	Speedway Road at Old Highway 99: Install traffic signal as warranted by future traffic volumes	2	\$445	County	County, Developers

## Notes:

1. Project not currently referenced in Douglas County TSP.
2. Project currently referenced in Douglas County TSP. The Preferred Alternative project descriptions contained in the IAMP provide updated cost estimates or more detailed description compared to TSP projects.
3. Potential funding partners lists possible participants and does not represent a commitment to participate. Funding arrangements will need to be negotiated when more is known about project costs and benefits and the sources of funds that may become available.



## **Appendix A**

### **Interchange Area Concept Alternatives**



Concept 1a

Figure A-1



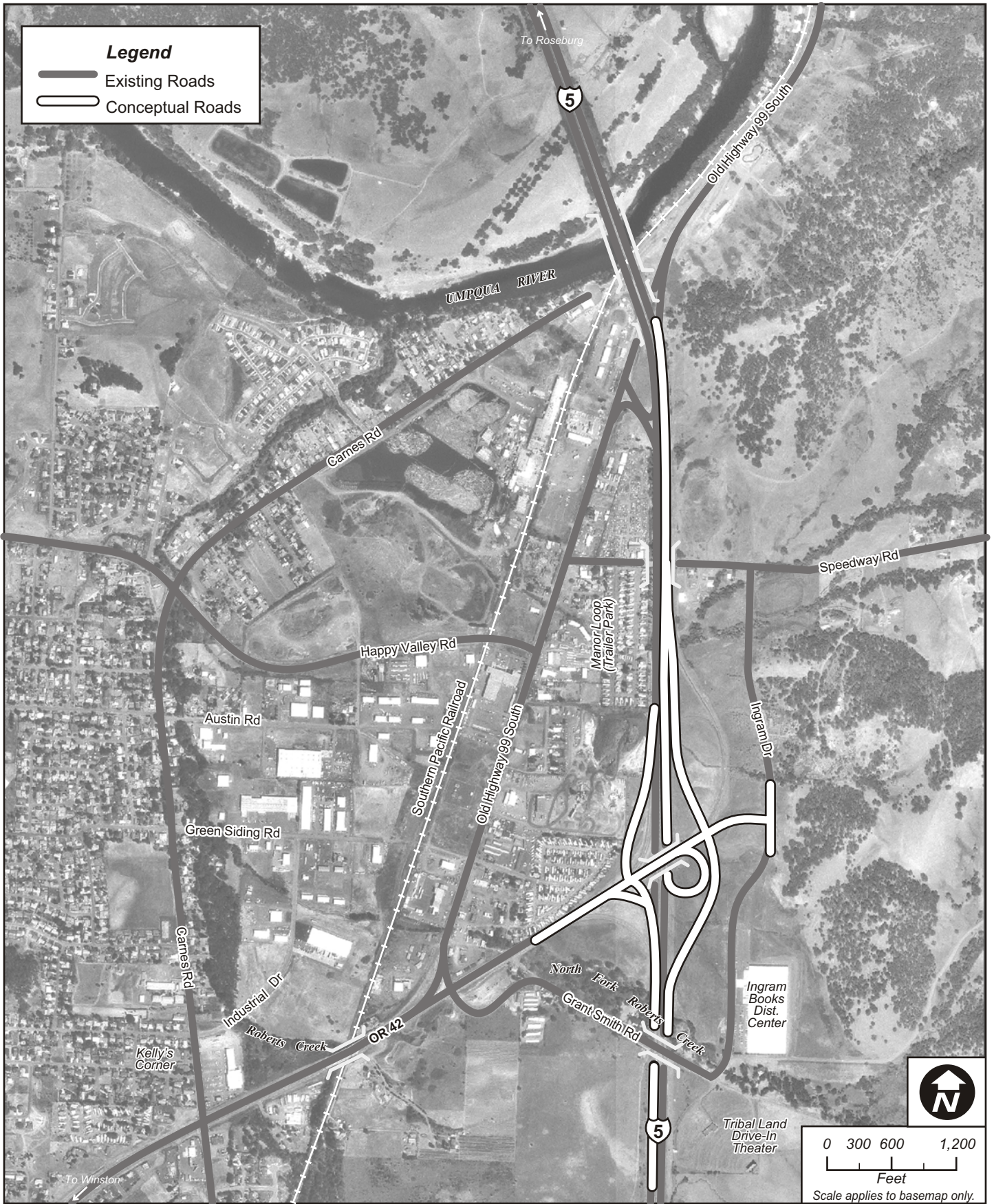
Concept 1b

Figure A-2



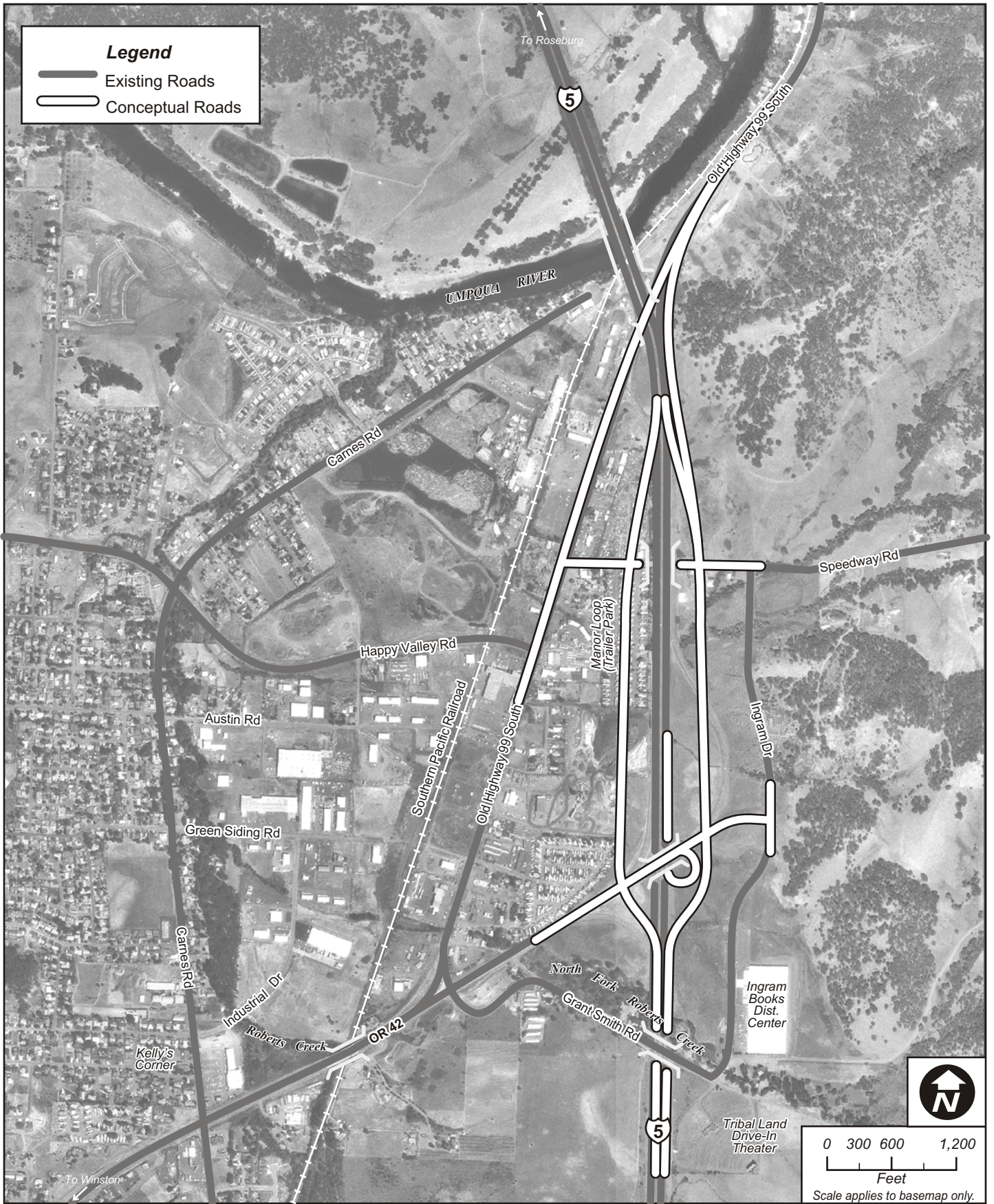
Concept 2

Figure A-3



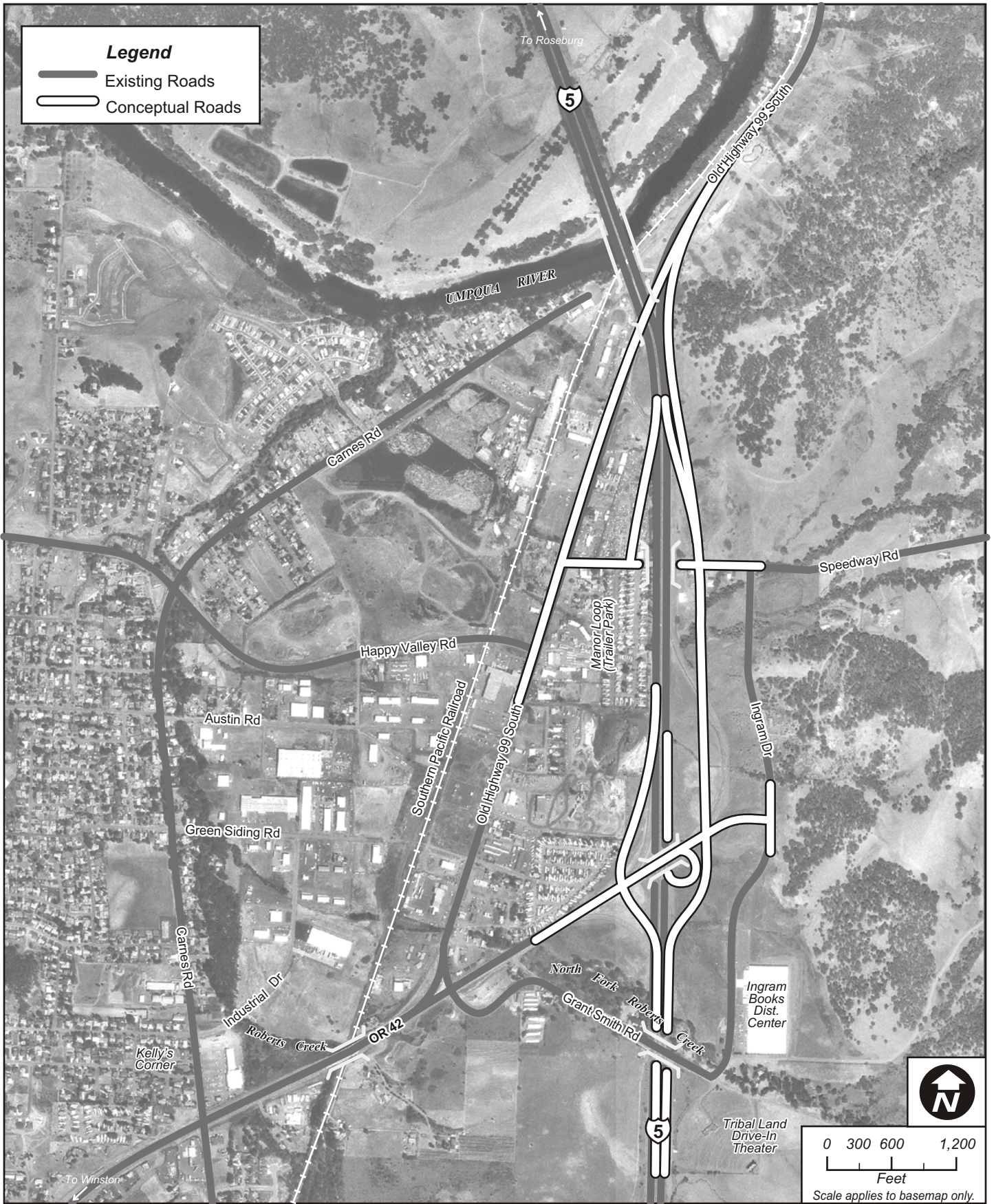
Concept 3

Figure A-4



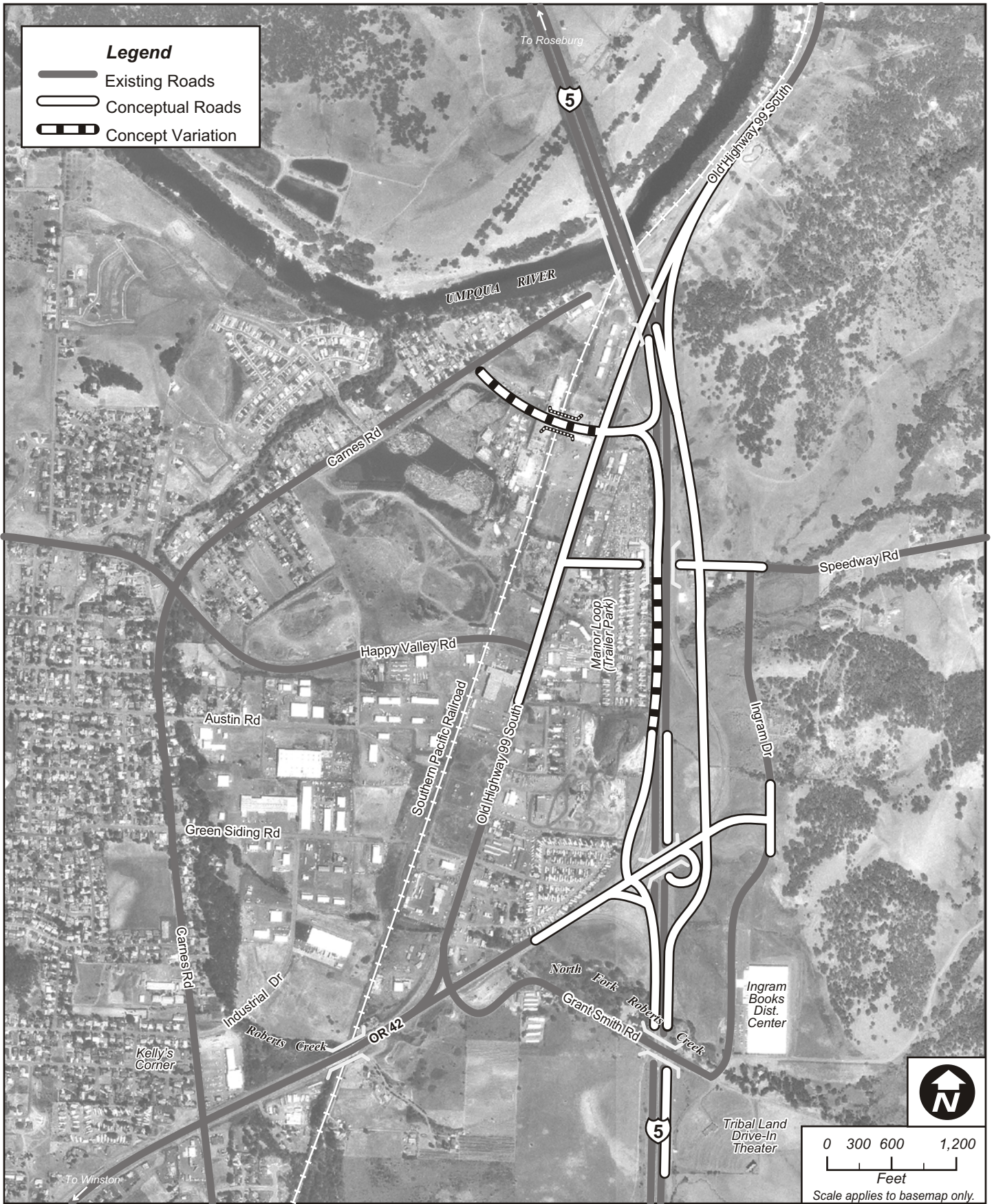
Concept 4

Figure A-5



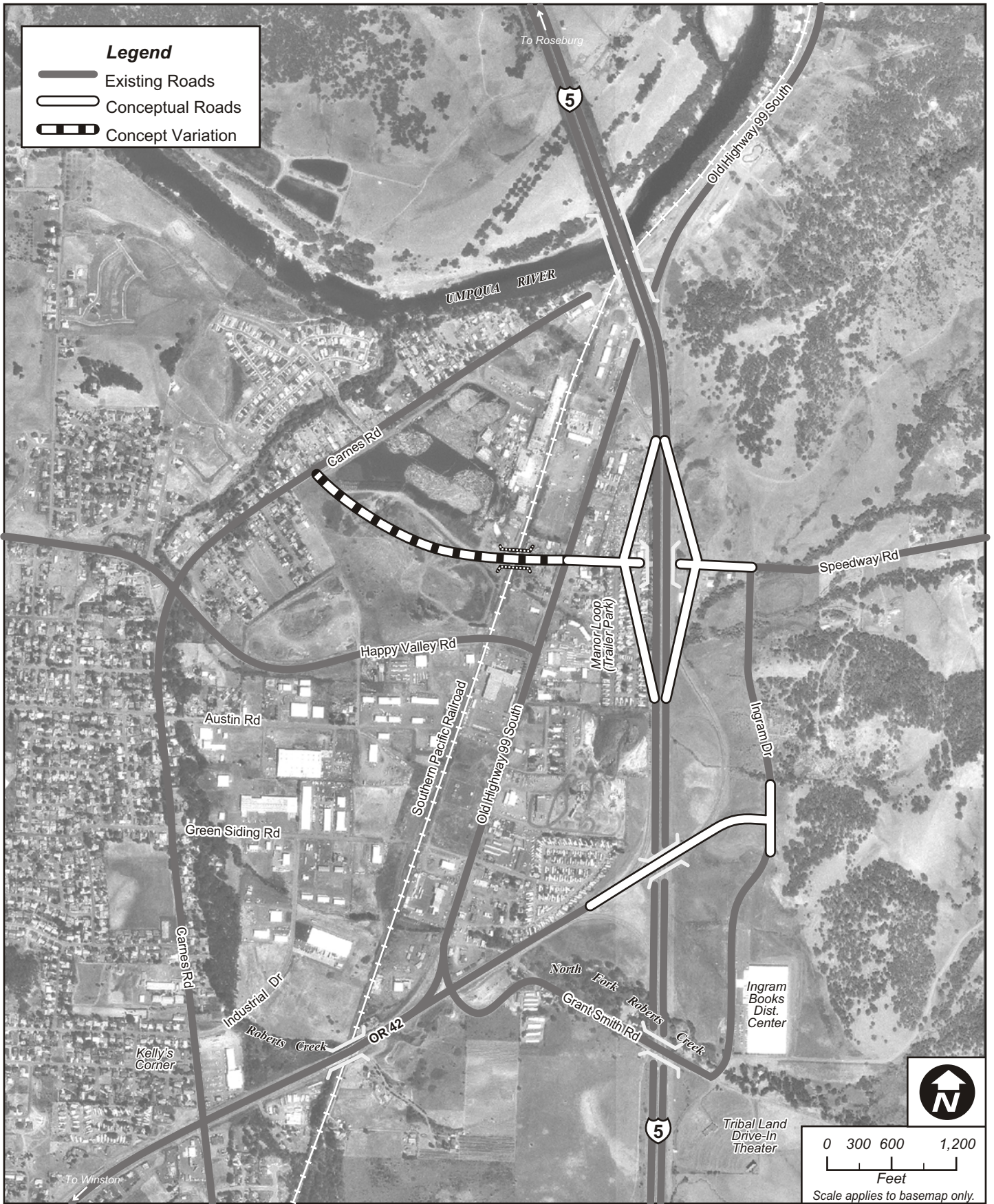
Modified Concept 4

Figure A-6



Concept 5

Figure A-7



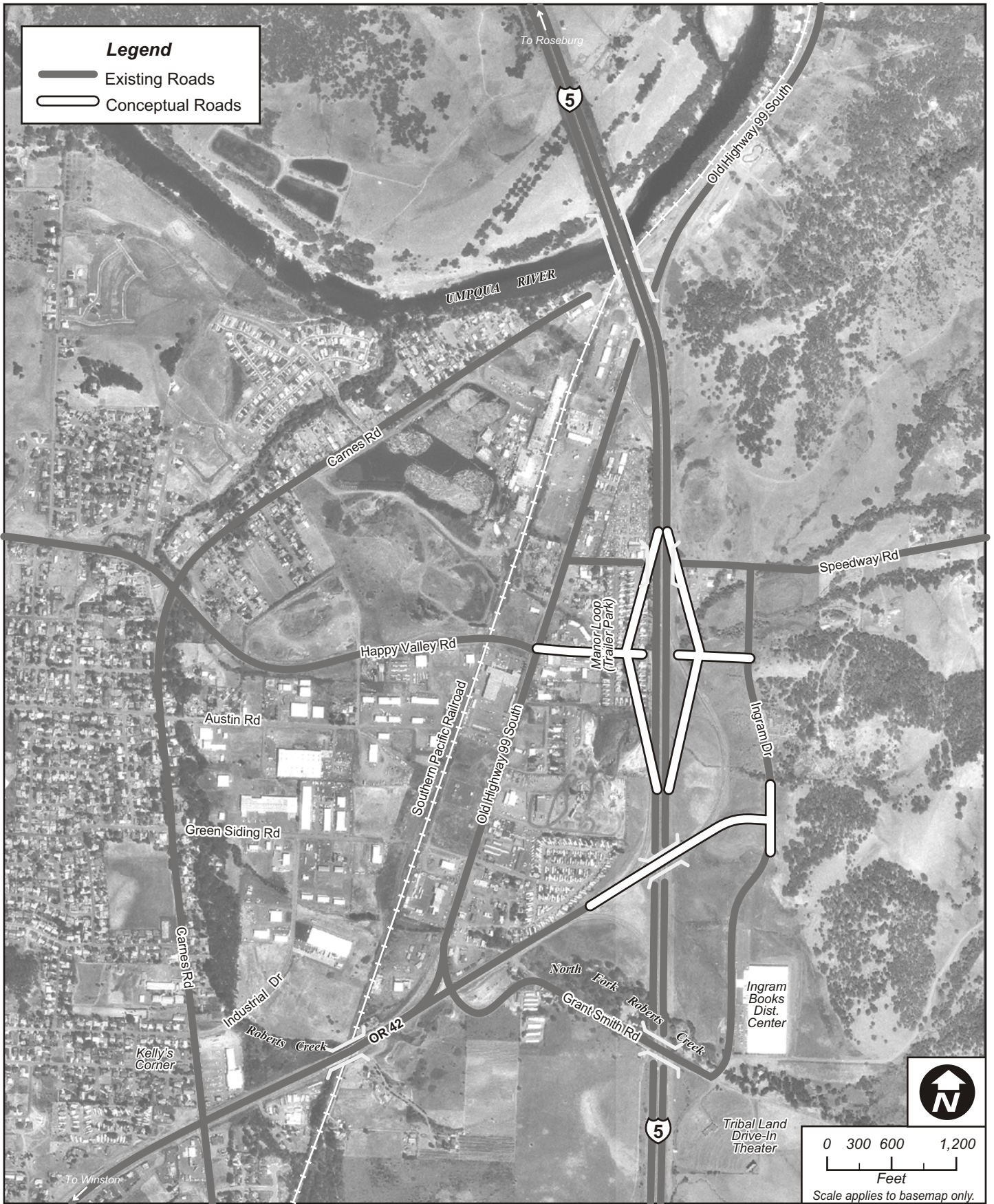
Concept 6

Figure A-8



Concept 7

Figure A-9



Concept 8

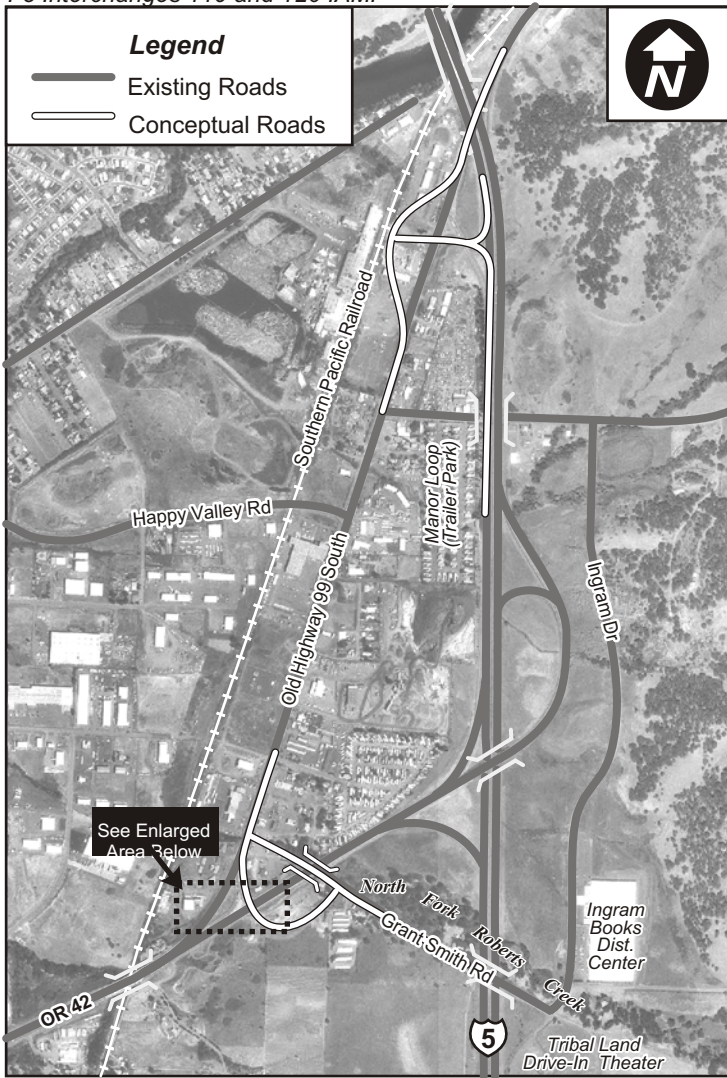
Figure A-10



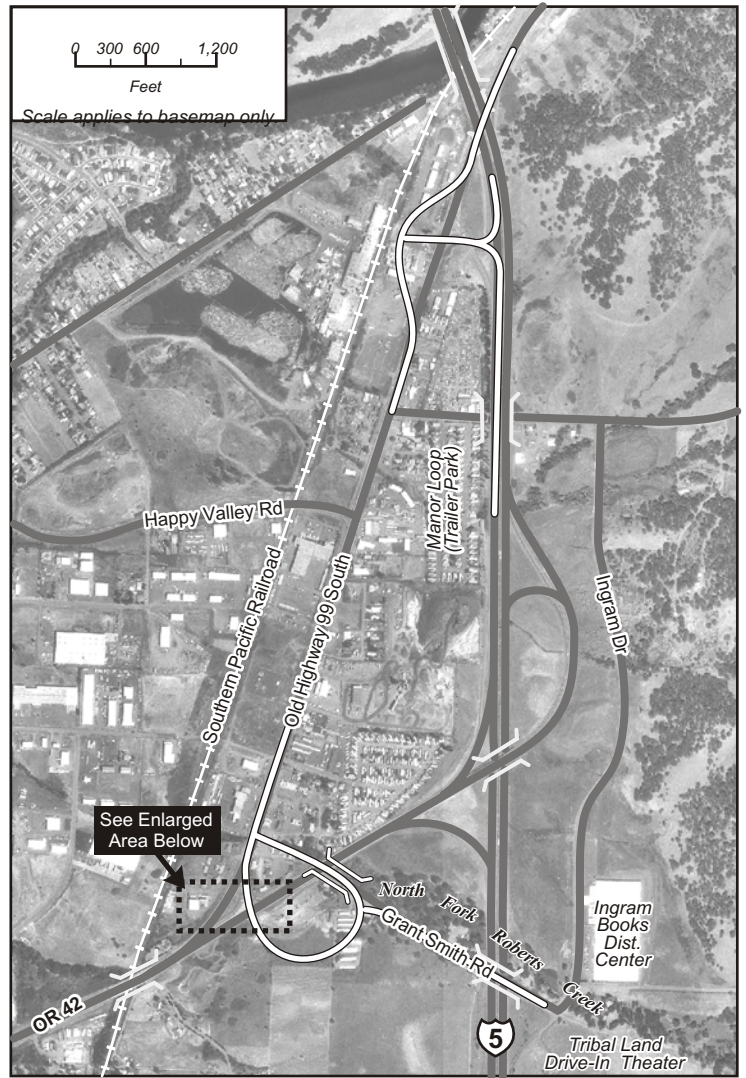
Concept 9

Figure A-11

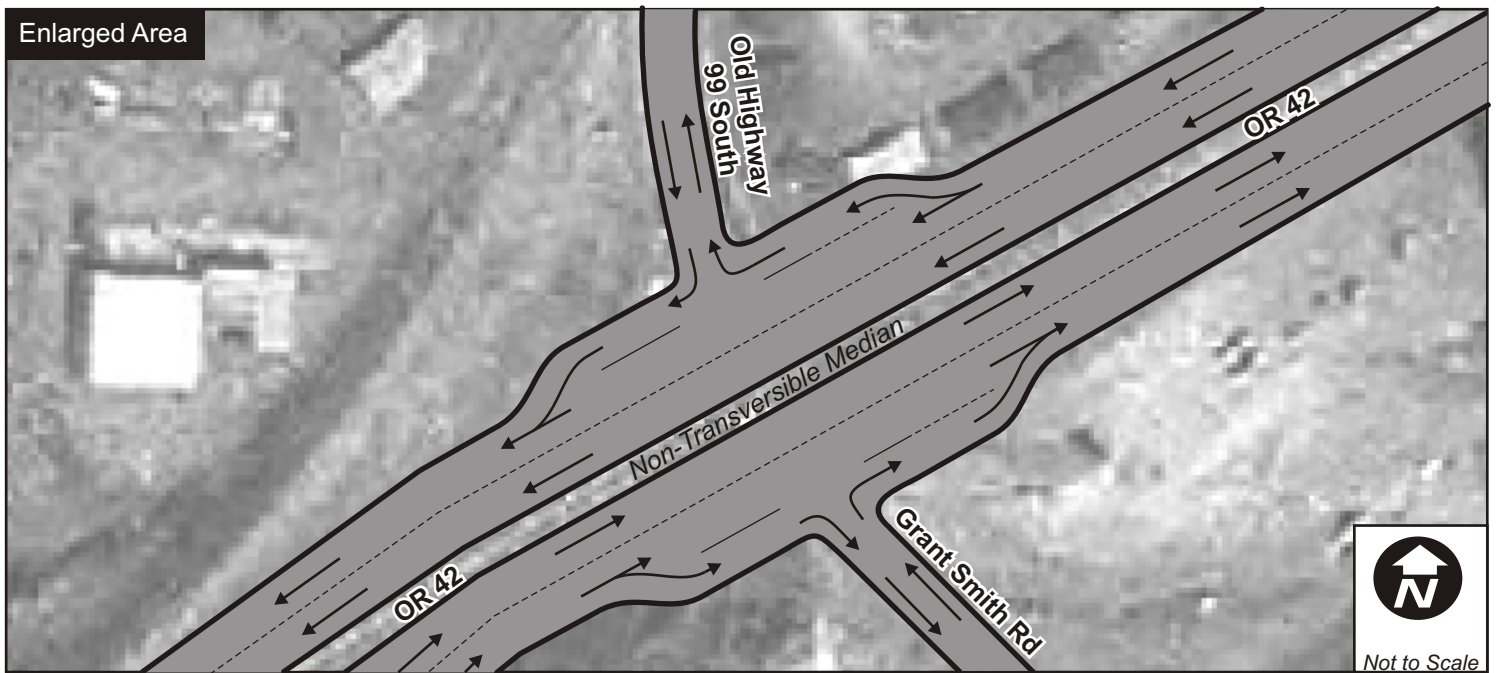
I-5 Interchanges 119 and 120 IAMP



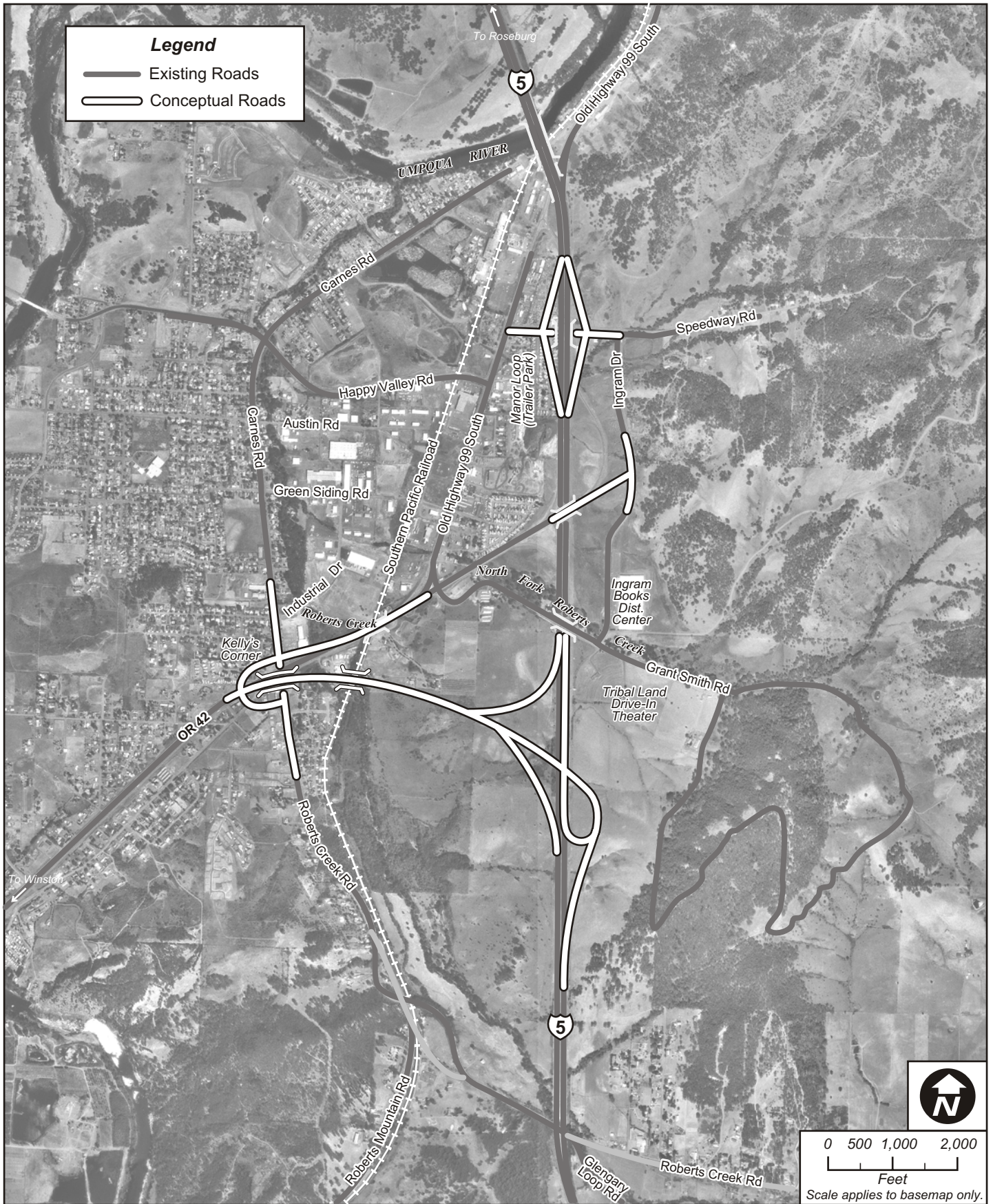
Concept 1b + 10a



Concept 1b + 10b

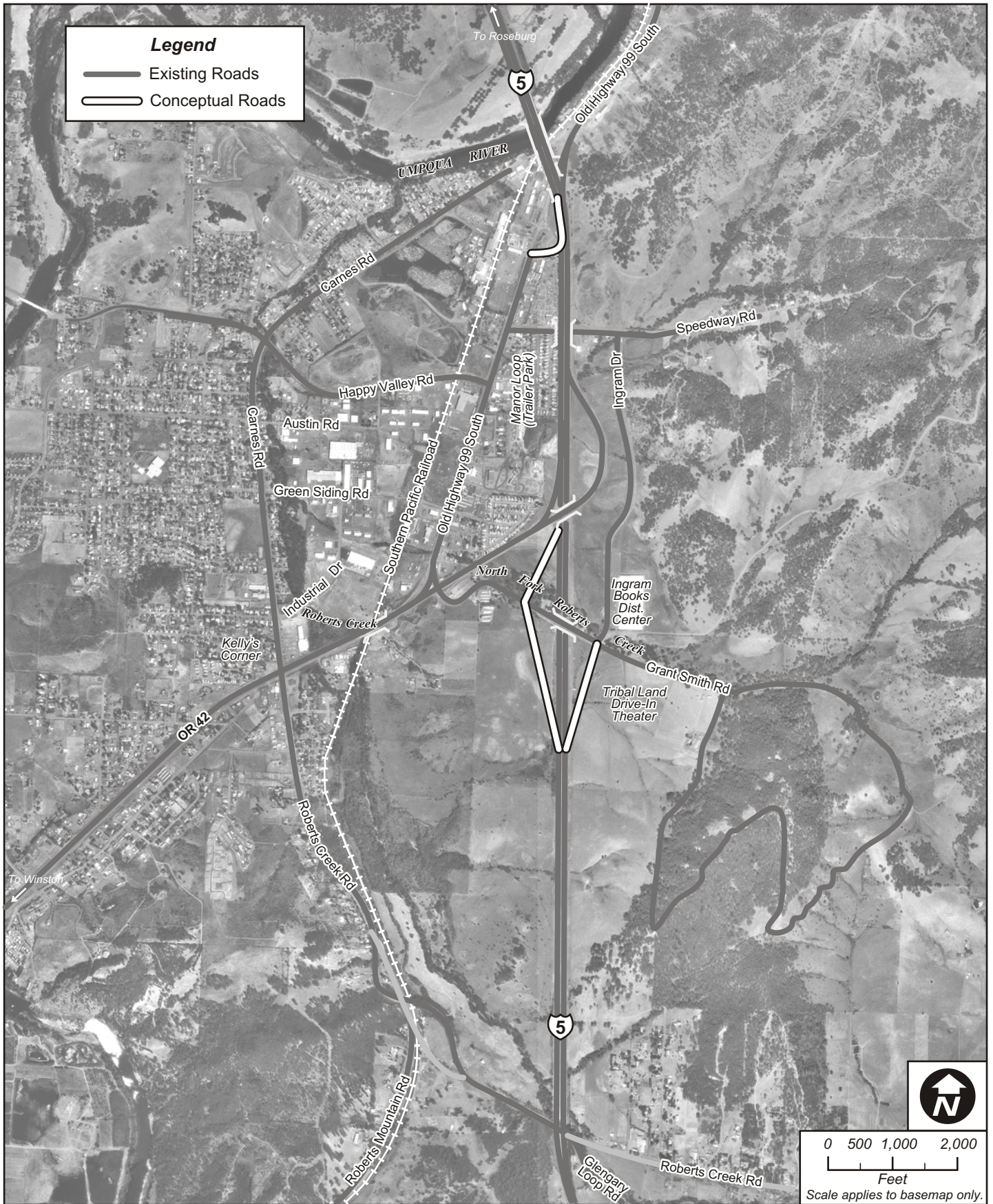


Concept 1b + 10



Concept 11

Figure A-13



Concept 12

Figure A-14

## **Application of Evaluation Matrix for Selection of Intermediate Interchange and Local Circulation Concepts**

To assist in the qualitative evaluation of each of the interchange and local circulation concepts, an evaluation matrix was assembled, with evaluation criteria listed horizontally at the top, and interchange configurations listed vertically on the left. A number between 1 and 5 was assigned to each criteria as applied to each concept. The scoring was advantage based, meaning that a higher benefit resulted in a higher score. The evaluation matrix is shown in the table below.

The two concepts that received the highest scores were subjected to higher levels of quantitative analysis, consisting of detailed future year traffic operations analysis, analysis of basic roadway geometric and right-of-way requirements, analysis of environmental constraints, and planning-level cost estimates. This detailed analysis is intended to provide sufficient data to facilitate a decision for a single Preferred Concept, which will then be incorporated into the Douglas County transportation system plan.

The evaluation matrix is not intended to be rigid and inflexible, but rather it should be viewed as a tool to assist in the qualitative evaluation of each of the concepts. At the same time, it is apparent that those concepts that scored highest are those that the TAC chose to carry forward.

Concept	Evaluation Criteria									
	Transportation Operations	Geometry	Accessibility: Green Area West of I-5	Accessibility: Green Area East of I-5	Accessibility: Retain OR 42/I-5 System Interchange	Cost	Land Use Impacts	Environmental Impacts	Social Impacts	
	5 Solves All Deficiencies 4 Solves Most Deficiencies 3 Solves Some Deficiencies 2 Solves a Few Deficiencies 1 Solves None	5 Solves All Deficiencies 4 Solves Most Deficiencies 3 Solves Some Deficiencies 2 Solves a Few Deficiencies 1 Solves None	5 Large Improvement 4 Modest Improvement 3 Minor Improvement 2 Minimal Improvement 1 No Improvement	5 Large Improvement 4 Modest Improvement 3 Minor Improvement 2 Minimal Improvement 1 No Improvement	5 Retains 0 Does Not Retain	5 Minimal Cost 4 Minor Cost 3 Moderate Cost 2 High Cost 1 Very High Cost	5 Little or No Impact 4 Some Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	5 No Impact 4 Little Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	5 No Impact 4 Little Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	
<b># 1a (Interchange 120 only)</b> Limited geometric improvements to Interchange 120; signalize ramp terminal; variations include eliminating southbound entrance ramp and/or extending exit ramp to Carnes Road (would require new RR overcrossing structure)	<b>2</b> Signalized intersection improves intersection operations and reduces queuing on southbound exit ramp.	<b>2</b> Some improvement in ramp geometry possible, provides additional queue storage, provides additional deceleration length	<b>2</b> Base option provides no change in accessibility; variation that includes extension to Carnes Road improves accessibility, elimination of southbound entrance ramp diminishes accessibility somewhat	<b>1</b>	<b>5</b>	<b>5</b> Low cost associated with base option; higher cost associated with RR overcrossing variation; higher cost associated with retaining southbound entrance ramp, which would require rebuilding of Speedway bridge to accommodate added acceleration lane length	<b>5</b>	<b>5</b>	<b>5</b>	<b>32</b>
<b>#1b (Interchange 120 only)</b> Limited geometric improvements to Interchange 120 with Realignment of Old Hwy 99, signalize ramp terminal; variations include eliminating southbound entrance ramp and/or extending exit ramp to Carnes Road (would require new RR overcrossing structure)	<b>2</b> Signalized intersection improves intersection operations and reduces queuing on southbound exit ramp.	<b>2</b> Some improvement in ramp geometry possible, provides additional deceleration length provides significantly more queue storage than Option #1a.	<b>2</b> Base option provides no change in accessibility; variation that includes extension to Carnes Road improves accessibility, elimination of southbound entrance ramp diminishes accessibility somewhat	<b>1</b>	<b>5</b>	<b>4</b> Moderate cost associated with base option due to realignment of Old Highway 99 and ROW acquisition; higher cost associated with RR overcrossing variation; higher cost associated with retaining southbound entrance ramp, which would require rebuilding of Speedway bridge to accommodate added acceleration lane length	<b>4</b> Moderate ROW needs, but only affects a few parcels.	<b>5</b>	<b>4</b> Displaces some businesses and ODOT maintenance yard	<b>29</b>
<b>#2 (Interchange 120 only)</b> Geometric improvements to southbound Interchange 120 ramps; signalize southbound ramp terminal; new northbound I-5 entrance ramp; realigned northbound I-5 exit ramp	<b>2</b> Signalized intersection improves intersection operations and reduces queuing on southbound exit ramp.	<b>1</b> <u>Southbound ramps:</u> Some improvement in ramp geometry possible, provides additional deceleration length. <u>Northbound ramps:</u> Grade issues present significant challenges; inadequate interchange spacing to McLain Interchange 121.	<b>3</b>	<b>1</b>	<b>5</b>	<b>2</b> Significant cost associated with new bridge over S. Umpqua River, ROW acquisition, earthwork	<b>3</b> Impacts land north of S. Umpqua River, Lindy property	<b>1</b> Construction of new bridge impacts river and wetland areas, farmland, historic properties	<b>3</b> Displaces some businesses	<b>21</b>
<b>#3 (Interchange 119 only)</b> Convert Interchange 119 to partial cloverleaf interchange, add northbound auxiliary lane, extend OR 42 to intersect Ingram Road	<b>2</b>	<b>2</b>	<b>2</b>	<b>4</b> Provides direct access from OR 42 to Ingram Road	<b>0</b>	<b>2</b> Significant cost associated with new overcrossing at Grant Smith Road to accommodate width needed for new northbound exit ramp and complete reconstruction of interchange	<b>4</b>	<b>4</b>	<b>5</b>	<b>25</b>

Concept	Evaluation Criteria									
	Transportation Operations	Geometry	Accessibility: Green Area West of I-5	Accessibility: Green Area East of I-5	Accessibility: Retain OR 42/I-5 System Interchange	Cost	Land Use Impacts	Environmental Impacts	Social Impacts	
	5 Solves All Deficiencies 4 Solves Most Deficiencies 3 Solves Some Deficiencies 2 Solves a Few Deficiencies 1 Solves None	5 Solves All Deficiencies 4 Solves Most Deficiencies 3 Solves Some Deficiencies 2 Solves a Few Deficiencies 1 Solves None	5 Large Improvement 4 Modest Improvement 3 Minor Improvement 2 Minimal Improvement 1 No Improvement	5 Large Improvement 4 Modest Improvement 3 Minor Improvement 2 Minimal Improvement 1 No Improvement	5 Retains 0 Does Not Retain	5 Minimal Cost 4 Minor Cost 3 Moderate Cost 2 High Cost 1 Very High Cost	5 Little or No Impact 4 Some Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	5 No Impact 4 Little Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	5 No Impact 4 Little Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	
<b>#4</b> Split diamond interchange, extend OR 42 to intersect Ingram Road; signalize intersection of Speedway Road and Old Highway 99	<b>3</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>2</b> Significant cost associated with new interchange, frontage roads, ROW	<b>2</b> Significant ROW acquisition necessary	<b>4</b>	<b>2</b>	<b>27</b>
<b>#5</b> Half split-diamond interchange with frontage road on east side only. Concept 1 improvements at Interchange 120, diamond configuration on west side of interchange 119.	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>1</b>	Requires some ROW acquisition on east side of I-5			<b>15</b>
<b>#6</b> Tight diamond interchange at Speedway Road, extend OR 42 to intersect Ingram Road	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>26</b>
<b>#7</b> SPUI at Speedway Road, extend OR 42 to intersect Ingram Road	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>25</b>
<b>#8</b> Tight diamond interchange at Happy Valley Road, extend OR 42 to intersect Ingram Road	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>26</b>
<b>#9</b> SPUI at Happy Valley Road, extend OR 42 to intersect Ingram Road	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>25</b>
<b>#10</b> Jug-handle interchange at OR 42/Old Highway 99/Grant Smith Road;	<b>3</b> Mitigates operational problems at intersection of OR 42/Old Highway 99/Grant Smith Road; enhances free-flow operations on OR 42 expressway; could be combined with Options 1a, 1b or 2 to improve geometrics and traffic operations at Interchange 120	<b>3</b>	<b>4</b> Improved operations at OR 42/Old Highway 99/Grant Smith Road decreases delay and improves access to Green	<b>1</b>	<b>5</b> Jug-handle decreases delay for through movements to/from Winston on OR 42	<b>4</b> New overcrossing structure required	<b>5</b>	<b>5</b>	<b>5</b>	<b>35</b>

Concept	Evaluation Criteria									
	Transportation Operations	Geometry	Accessibility: Green Area West of I-5	Accessibility: Green Area East of I-5	Accessibility: Retain OR 42/I-5 System Interchange	Cost	Land Use Impacts	Environmental Impacts	Social Impacts	
	5 Solves All Deficiencies 4 Solves Most Deficiencies 3 Solves Some Deficiencies 2 Solves a Few Deficiencies 1 Solves None	5 Solves All Deficiencies 4 Solves Most Deficiencies 3 Solves Some Deficiencies 2 Solves a Few Deficiencies 1 Solves None	5 Large Improvement 4 Modest Improvement 3 Minor Improvement 2 Minimal Improvement 1 No Improvement	5 Large Improvement 4 Modest Improvement 3 Minor Improvement 2 Minimal Improvement 1 No Improvement	5 Retains 0 Does Not Retain	5 Minimal Cost 4 Minor Cost 3 Moderate Cost 2 High Cost 1 Very High Cost	5 Little or No Impact 4 Some Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	5 No Impact 4 Little Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	5 No Impact 4 Little Impact 3 Moderate Impact 2 Significant Impact 1 Very Large Impact	
<b>#11</b> Relocate Interchange 119 to south, new diamond interchange at Speedway Road, jug-handle interchange at OR 42/Carnes Road/Roberts Creek Road	<b>5</b> Mitigates operational problems at intersections of OR 42 at Old Highway 99/Grant Smith Road and OR 42 at Carnes Road/Roberts Creek Road; enhances free-flow operations on OR 42 expressway.	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b> Free-flow operations at intersections of OR 42 at Carnes/Roberts Creek and Old Hwy 99/Grant Smith will decrease delay on the OR 42 expressway, but new interchange will require moderate out-of-direction travel.	<b>1</b> Very high costs associated with expressway alignment, new service interchange, several new overcrossings, cuts into hillside	<b>1</b> Requires significant ROW acquisition	<b>1</b> Significant estimated environmental impacts due to the extent of new road building on undeveloped land	<b>1</b> Significant displacement of homes and businesses	<b>29</b>
<b>#12</b> New partial interchange at Grant Smith Road, modifications to Interchanges 119 and 120	<b>2</b>	<b>3</b> Horizontal curvature on Grant Smith Road not adequate for interchange crossroad, would need to be realigned.	<b>3</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>23</b>



**Appendix B**  
**Concept Cost Estimates**

**SUMMARY - BID SCHEDULE - CONCEPTUAL COST ESTIMATE**

Intchg. 119 & 120 Modified Concept 10

<b>SECTION</b>	Based on drawing alt 10a 1"=1000' minus intchg.	<b>REFERENCE NAME/PHONE</b>	<b>COUNTY</b>	<b>SHEET</b>
Project Name		David Evans and Associates (503) 223-6663	Douglas	1 of 1
<b>KIND OF WORK</b>		<b>LENGTH</b>	<b>DATE</b>	<b>NAME</b>
Grading, Structure, Paving, Signal, Illumination		16,557	Mar. 2007	Mike Hickey

NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL	Section Totals
	<b>Mobilization and Traffic Control</b>					<b>\$ 3,200,000</b>
	Mobilization	LS	1	\$ 2,000,000	\$ 2,000,000	
	Temp. Protection and Direction of Traffic	LS	1	\$ 1,200,000	\$ 1,200,000	
	<b>Roadwork</b>				\$0	<b>\$ 3,400,000</b>
	Construction Surveying Work	LS	1	\$ 400,000	\$ 400,000	
	Clearing and Grubbing	LS	1	\$ 1,000,000	\$ 1,000,000	
	Embankment in Place	yd3	50,000	\$ 20	\$ 1,000,000	
	Retaining Wall	ft2	10,000	\$ 100	\$ 1,000,000	
	<b>Drainage and Sewers</b>				\$0	<b>\$ 1,042,909</b>
	Drainage incl. WQ	ft2	834,327	\$ 1.25	\$ 1,042,909	
	<b>Bridge</b>	ea				<b>\$ 7,500,000</b>
	Br. Costs 2ea.@100'x250'	ft2	50,000	\$150	\$ 7,500,000	
					\$0	
	<b>Bases</b>				\$0	<b>\$ 3,371,272</b>
	Aggregate Base (16" depth)	ton	82,196	\$ 40	\$ 3,287,840	
	Subgrade Stabilization	ft2	83,432	\$ 1	\$ 83,432	
	<b>Wearing Surface</b>					<b>\$ 7,606,050</b>
	Asphalt Concrete (8" depth)	ton	176,242	\$ 25	\$ 4,406,050	
	Sidewalk and ramps	yd2	160,000	\$ 20	\$ 3,200,000	
	<b>Permanent Traffic Control and Guidance Devices</b>				\$0	<b>\$ 4,255,000</b>
	Concrete Barrier	ft	1,000	\$ 30	\$ 30,000	
	Guard Rail	ft	5,000	\$ 25	\$ 125,000	
	Illumination	each	750	\$ 4,000	\$ 3,000,000	
	Signal	each	3	\$ 200,000	\$ 600,000	
	Striping	LS	1	\$ 500,000	\$ 500,000	
	<b>Right-of-Way Development and Control</b>					<b>\$ 500,000</b>
	Fence, Type 1	ft	2,000	\$ 5	\$ 10,000	
	Deciduous Trees, 2" Caliper	each	1,000	\$ 350	\$ 350,000	
	Shrubs, No.1 Container	each	2,000	\$ 20	\$ 40,000	
	Irrigation	LS	1	\$ 100,000	\$ 100,000	
	<b>Subtotal:</b>				<b>\$ 30,875,231</b>	
	50% - Engineering Contingencies:				\$ 15,437,600	
	Right of Way	ft2	150,000	\$50	\$ 7,500,000	
	Utilities Private	ft	10,000	\$50	\$ 500,000	
	Water	ft	8,000	\$100	\$ 800,000	
	Sewer	ft	8,000	\$100	\$ 800,000	
	<b>Subtotal: 2007 value</b>				<b>\$ 55,912,831</b>	
	cumulative inflation @ approx. 5% per year	years	10	\$2,795,642	\$ 27,956,415	
	<b>Program Cost:</b>				<b>\$ 83,869,246</b>	
	99E Realignment at Intchg 120	%	appx. 50% of total	50%	\$41,934,623	
	Grant Smith Jug Handle	%	appx. 25% of total	25%	\$20,967,312	
	Kellys Corner Jug Handle	%	appx. 25% of total	25%	\$20,967,312	

**SUMMARY - BID SCHEDULE - CONCEPTUAL COST ESTIMATE**

Intchg. 119 & 120 Modified Concept 11

<b>SECTION</b>	Based on drawing alt 11 1"=1400'	<b>REFERENCE NAME/PHONE</b>	<b>COUNTY</b>	<b>SHEET</b>
Project Name		David Evans and Associates (503) 223-6663	Douglas	1 of 1
<b>KIND OF WORK</b>		<b>LENGTH</b>	<b>DATE</b>	<b>NAME</b>
Grading, Structure, Paving, Signal, Illumination		43,704'	Mar. 2007	Mike Hickey

NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL	Section Totals
	<b>Mobilization and Traffic Control</b>					<b>\$ 7,000,000</b>
	Mobilization	LS	1	\$ 4,000,000	\$ 4,000,000	
	Temp. Protection and Direction of Traffic	LS	1	\$ 3,000,000	\$ 3,000,000	
	<b>Roadwork</b>				\$0	<b>\$ 8,400,000</b>
	Construction Surveying Work	LS	1	\$ 400,000	\$ 400,000	
	Clearing and Grubbing	LS	1	\$ 1,000,000	\$ 1,000,000	
	Embankment in Place	yd3	100,000	\$ 20	\$ 2,000,000	
	Retaining Wall	ft2	50,000	\$ 100	\$ 5,000,000	
	<b>Drainage and Sewers</b>				\$0	<b>\$ 2,230,569</b>
	Drainage incl. WQ	ft2	1,784,455	\$ 1.25	\$ 2,230,569	
	<b>Bridge</b>	ea			\$0	<b>\$ 15,000,000</b>
	Br. Costs 4ea.@100'x250'	ft2	100,000	\$150	\$ 15,000,000	
					\$0	
	<b>Bases</b>				\$0	<b>\$ 7,210,485</b>
	Aggregate Base (16" depth)	ton	175,801	\$ 40	\$ 7,032,040	
	Subgrade Stabilization	ft2	178,445	\$ 1	\$ 178,445	
	<b>Wearing Surface</b>					<b>\$ 6,406,050</b>
	Asphalt Concrete (8" depth)	ton	176,242	\$ 25	\$ 4,406,050	
	Sidewalk and ramps	yd2	100,000	\$ 20	\$ 2,000,000	
	<b>Permanent Traffic Control and Guidance Devices</b>				\$0	<b>\$ 6,400,000</b>
	Concrete Barrier	ft	20,000	\$ 30	\$ 600,000	
	Guard Rail	ft	8,000	\$ 25	\$ 200,000	
	Illumination	each	1,000	\$ 4,000	\$ 4,000,000	
	Signal	each	3	\$ 200,000	\$ 600,000	
	Striping	LS	1	\$ 1,000,000	\$ 1,000,000	
	<b>Right-of-Way Development and Control</b>					<b>\$ 515,000</b>
	Fence, Type 1	ft	5,000	\$ 5	\$ 25,000	
	Deciduous Trees, 2" Caliper	each	1,000	\$ 350	\$ 350,000	
	Shrubs, No.1 Container	each	2,000	\$ 20	\$ 40,000	
	Irrigation	LS	1	\$ 100,000	\$ 100,000	
	<b>Subtotal:</b>				<b>\$ 53,162,104</b>	
	50% - Engineering Contingencies:				\$ 26,581,100	
	Right of Way	ft2	200,000	\$30	\$ 6,000,000	
	Utilities Private	ft	10,000	\$50	\$ 500,000	
	Water	ft	5,000	\$100	\$ 500,000	
	Sewer	ft	5,000	\$100	\$ 500,000	
	<b>Subtotal: 2007 Value</b>				<b>\$ 87,243,204</b>	
	cumulative inflation @ approx. 5% per year	years	10	\$4,362,160	\$ 43,621,602	
	<b>Program Cost:</b>				<b>\$ 130,864,806</b>	
	North Intchg. Area Std. Diamond	%	appx. 50% of total	50%	\$65,432,403	
	Kellys Corner Folded Diamond	%	appx. 25% of total	25%	\$32,716,201	
	Intchg. 118 Folded Diamond	%	appx. 25% of total	25%	\$32,716,201	

**SUMMARY - BID SCHEDULE - CONCEPTUAL COST ESTIMATE**  
**PREFERRED ALTERNATIVE: LEFT TURN LANES AT OR42/ CARNES ROAD INTERSECTION**

SECTION	REFERENCE NAME/PHONE	COUNTY	SHEET			
Project Name	David Evans and Associates (503) 223-6663	Douglas	1 of 1			
KIND OF WORK	LENGTH	DATE	NAME			
Grading, Structure, Paving, Signal, Illumination		8/4/2007	Scott Dreher			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL	Section Totals
	<b>Mobilization and Traffic Control</b>					<b>\$ 400,000</b>
	Mobilization	LS	1	\$ 250,000	\$ 250,000	
	Temp. Protection and Direction of Traffic	LS	1	\$ 150,000	\$ 150,000	
	<b>Roadwork</b>					<b>\$ 185,360</b>
	Construction Surveying Work	LS	1	\$ 25,000	\$ 25,000	
	Clearing and Grubbing	LS	1	\$ 40,000	\$ 40,000	
	Embankment in Place	yd3	6,018	\$ 20	\$ 120,360	
	Retaining Wall	ft2	0	\$ 100	\$ -	
	<b>Drainage and Sewers</b>					<b>\$ 125,375</b>
	Drainage incl. WQ	ft2	100,300	\$ 1.25	\$ 125,375	
	<b>Bases</b>					<b>\$ 442,000</b>
	Aggregate Base (16" depth)	ton	11,000	\$ 40	\$ 440,000	
	Subgrade Stabilization	ft2	2,000	\$ 1	\$ 2,000	
	<b>Wearing Surface</b>					<b>\$ 491,200</b>
	Asphalt Concrete (8" depth)	ton	5,200	\$ 80	\$ 416,000	
	Sidewalk and ramps	yd2	3,760	\$ 20	\$ 75,200	
	<b>Permanent Traffic Control and Guidance Devices</b>					<b>\$ 228,000</b>
	Concrete Barrier	ft	0	\$ 30	\$ -	
	Guard Rail	ft	0	\$ 25	\$ -	
	Illumination	each	32	\$ 4,000	\$ 128,000	
	Signal	each	0	\$ 220,000	\$ -	
	Signal Modification	each	1	\$ 80,000	\$ 80,000	
	Striping	LS	1	\$ 20,000	\$ 20,000	
	<b>Right-of-Way Development and Control</b>					<b>\$ -</b>
	Fence, Type 1	ft	0	\$ 5	\$ -	
	Deciduous Trees, 2" Caliper	each	0	\$ 350	\$ -	
	Shrubs, No.1 Container	each	0	\$ 20	\$ -	
	Irrigation	LS	0	\$ 25,000	\$ -	
	<b>Subtotal:</b>				<b>\$ 1,871,935</b>	
	50% - Engineering Contingencies:				\$ 936,000	
	Right of Way	ft2	3,000	\$30	\$ 90,000	
	<b>Subtotal: 2007 Value</b>				<b>\$ 2,897,935</b>	
	cumulative inflation @ approx. 5% per year	years	10	\$144,897	\$ 1,448,968	
	<b>Program Cost:</b>				<b>\$ 4,346,903</b>	
	North Intchg. Area Std. Diamond	%	appx. 50% of total	50%	\$2,173,451	
	Kellys Corner Folded Diamond	%	appx. 25% of total	25%	\$1,086,726	
	Intchg. 118 Folded Diamond	%	appx. 25% of total	25%	\$1,086,726	

**SUMMARY - BID SCHEDULE - CONCEPTUAL COST ESTIMATE**  
**PREFERRED ALTERNATIVE: WIDEN SPEEDWAY ROAD BETWEEN OLD HIGHWAY 99 AND INGRAM ROAD**

SECTION	REFERENCE NAME/PHONE	COUNTY	SHEET			
Project Name	David Evans and Associates (503) 223-6663	Douglas	1 of 1			
KIND OF WORK	LENGTH	DATE	NAME			
Grading, Structure, Paving, Signal, Illumination		8/4/2007	Scott Dreher			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL	Section Totals
	<b>Mobilization and Traffic Control</b>					<b>\$ 125,000</b>
	Mobilization	LS	1	\$ 75,000	\$ 75,000	
	Temp. Protection and Direction of Traffic	LS	1	\$ 50,000	\$ 50,000	
				\$ 3		
	<b>Roadwork</b>					<b>\$ 58,560</b>
	Construction Surveying Work	LS	1	\$ 15,000	\$ 15,000	
	Clearing and Grubbing	LS	1	\$ 15,000	\$ 15,000	
	Embankment in Place	yd3	1,428	\$ 20	\$ 28,560	
	Retaining Wall	ft2	0	\$ 100	\$ -	
	<b>Drainage and Sewers</b>					<b>\$ 29,750</b>
	Drainage incl. WQ	ft2	23,800	\$ 1.25	\$ 29,750	
	<b>Bases</b>					<b>\$ 122,000</b>
	Aggregate Base (16" depth)	ton	3,000	\$ 40	\$ 120,000	
	Subgrade Stabilization	ft2	2,000	\$ 1	\$ 2,000	
	<b>Wearing Surface</b>					<b>\$ 136,000</b>
	Asphalt Concrete (8" depth)	ton	1,400	\$ 80	\$ 112,000	
	Sidewalk and ramps	yd2	1,200	\$ 20	\$ 24,000	
	<b>Permanent Traffic Control and Guidance Devices</b>					<b>\$ 68,000</b>
	Concrete Barrier	ft	0	\$ 30	\$ -	
	Guard Rail	ft	0	\$ 25	\$ -	
	Illumination	each	17	\$ 4,000	\$ 68,000	
	Signal	each	0	\$ 220,000	\$ -	
	Signal Modification	each	0	\$ 80,000	\$ -	
	Striping	LS	0	\$ 75,000	\$ -	
	<b>Right-of-Way Development and Control</b>					<b>\$ -</b>
	Fence, Type 1	ft	0	\$ 5	\$ -	
	Deciduous Trees, 2" Caliper	each	0	\$ 350	\$ -	
	Shrubs, No.1 Container	each	0	\$ 20	\$ -	
	Irrigation	LS	0	\$ 25,000	\$ -	
	<b>Subtotal:</b>				<b>\$ 539,310</b>	
	50% - Engineering Contingencies:				\$ 269,700	
	Right of Way	ft2	3,000	\$30	\$ 90,000	
	<b>Subtotal: 2007 Value</b>				<b>\$ 899,010</b>	
	cumulative inflation @ approx. 5% per year	years	10	\$44,951	\$ 449,505	
	<b>Program Cost:</b>				<b>\$ 1,348,515</b>	
	North Intchg. Area Std. Diamond	%	appx. 50% of total	50%	\$674,258	
	Kellys Corner Folded Diamond	%	appx. 25% of total	25%	\$337,129	
	Intchg. 118 Folded Diamond	%	appx. 25% of total	25%	\$337,129	

**SUMMARY - BID SCHEDULE - CONCEPTUAL COST ESTIMATE**  
**PREFERRED ALTERNATIVE: WIDEN OLD HIGHWAY 99 BETWEEN IC 120 AND HAPPY VALLEY ROAD**

SECTION	REFERENCE NAME/PHONE	COUNTY	SHEET			
Project Name	David Evans and Associates (503) 223-6663	Douglas	1 of 1			
KIND OF WORK	LENGTH	DATE	NAME			
Grading, Structure, Paving, Signal, Illumination		8/4/2007	Scott Dreher			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL	Section Totals
	<b>Mobilization and Traffic Control</b>					<b>\$ 250,000</b>
	Mobilization	LS	1	\$ 150,000	\$ 150,000	
	Temp. Protection and Direction of Traffic	LS	1	\$ 100,000	\$ 100,000	
	<b>Roadwork</b>					<b>\$ 160,200</b>
	Construction Surveying Work	LS	1	\$ 15,000	\$ 15,000	
	Clearing and Grubbing	LS	1	\$ 30,000	\$ 30,000	
	Embankment in Place	yd3	5,760	\$ 20	\$ 115,200	
	Retaining Wall	ft2	0	\$ 100	\$ -	
	<b>Drainage and Sewers</b>					<b>\$ 120,000</b>
	Drainage incl. WQ	ft2	96,000	\$ 1.25	\$ 120,000	
	<b>Bases</b>					<b>\$ 422,000</b>
	Aggregate Base (16" depth)	ton	10,500	\$ 40	\$ 420,000	
	Subgrade Stabilization	ft2	2,000	\$ 1	\$ 2,000	
	<b>Wearing Surface</b>					<b>\$ 400,000</b>
	Asphalt Concrete (8" depth)	ton	5,000	\$ 80	\$ 400,000	
	Sidewalk and ramps	yd2	0	\$ 20	\$ -	
	<b>Permanent Traffic Control and Guidance Devices</b>					<b>\$ 25,000</b>
	Concrete Barrier	ft	0	\$ 30	\$ -	
	Guard Rail	ft	0	\$ 25	\$ -	
	Illumination	each	0	\$ 4,000	\$ -	
	Signal	each	0	\$ 220,000	\$ -	
	Signal Modification	each	0	\$ 80,000	\$ -	
	Striping	LS	1	\$ 25,000	\$ 25,000	
	<b>Right-of-Way Development and Control</b>					<b>\$ 5,000</b>
	Fence, Type 1	ft	1,000	\$ 5	\$ 5,000	
	Deciduous Trees, 2" Caliper	each	0	\$ 350	\$ -	
	Shrubs, No.1 Container	each	0	\$ 20	\$ -	
	Irrigation	LS	0	\$ 25,000	\$ -	
	<b>Subtotal:</b>				<b>\$ 1,382,200</b>	
	50% - Engineering Contingencies:				\$ 691,100	
	Right of Way	ft2	3,000	\$30	\$ 90,000	
	<b>Subtotal: 2007 Value</b>				<b>\$ 2,163,300</b>	
	cumulative inflation @ approx. 5% per year	years	10	\$108,165	\$ 1,081,650	
	<b>Program Cost:</b>				<b>\$ 3,244,950</b>	
	North Intchg. Area Std. Diamond	%	appx. 50% of total	50%	\$1,622,475	
	Kellys Corner Folded Diamond	%	appx. 25% of total	25%	\$811,238	
	Intchg. 118 Folded Diamond	%	appx. 25% of total	25%	\$811,238	

**SUMMARY - BID SCHEDULE - CONCEPTUAL COST ESTIMATE**  
**PREFERRED ALTERNATIVE: WIDEN OR42 AT I-5 BRIDGE**

SECTION	REFERENCE NAME/PHONE	COUNTY	SHEET			
Project Name	David Evans and Associates (503) 223-6663	Douglas	1 of 1			
KIND OF WORK	LENGTH	DATE	NAME			
Grading, Structure, Paving, Signal, Illumination		8/4/2007	Scott Dreher			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL	Section Totals
	<b>Mobilization and Traffic Control</b>					<b>\$ 125,000</b>
	Mobilization	LS	1	\$ 75,000	\$ 75,000	
	Temp. Protection and Direction of Traffic	LS	1	\$ 50,000	\$ 50,000	
	<b>Roadwork</b>				\$0	<b>\$ 190,000</b>
	Construction Surveying Work	LS	1	\$ 15,000	\$ 15,000	
	Clearing and Grubbing	LS	1	\$ 15,000	\$ 15,000	
	Embankment in Place	yd3	8,000	\$ 20	\$ 160,000	
	Retaining Wall	ft2	0	\$ 100	\$ -	
	<b>Drainage and Sewers</b>				\$0	<b>\$ 77,000</b>
	Drainage incl. WQ	ft2	61,600	\$ 1.25	\$ 77,000	
	<b>Bases</b>				\$0	<b>\$ 134,000</b>
	Aggregate Base (16" depth)	ton	3,300	\$ 40	\$ 132,000	
	Subgrade Stabilization	ft2	2,000	\$ 1	\$ 2,000	
	<b>Wearing Surface</b>					<b>\$ 264,000</b>
	Asphalt Concrete (8" depth)	ton	3,300	\$ 80	\$ 264,000	
	Sidewalk and ramps	yd2	0	\$ 20	\$ -	
	<b>Permanent Traffic Control and Guidance Devices</b>				\$0	<b>\$ 46,000</b>
	Concrete Barrier	ft	200	\$ 30	\$ 6,000	
	Guard Rail	ft	1,000	\$ 25	\$ 25,000	
	Illumination	each	0	\$ 4,000	\$ -	
	Signal	each	0	\$ 220,000	\$ -	
	Signal Modification	each	0	\$ 80,000	\$ -	
	Striping	LS	1	\$ 15,000	\$ 15,000	
	<b>Right-of-Way Development and Control</b>					<b>\$ -</b>
	Fence, Type 1	ft	0	\$ 5	\$ -	
	Deciduous Trees, 2" Caliper	each	0	\$ 350	\$ -	
	Shrubs, No.1 Container	each	0	\$ 20	\$ -	
	Irrigation	LS	0	\$ 50,000	\$ -	
	<b>Subtotal:</b>				<b>\$ 836,000</b>	
	50% - Engineering Contingencies:				\$ 418,000	
	Right of Way	ft2	3,000	\$30	\$ 90,000	
	<b>Subtotal: 2007 Value</b>				<b>\$ 1,344,000</b>	
	cumulative inflation @ approx. 5% per year	years	10	\$67,200	\$ 672,000	
	<b>Program Cost:</b>				<b>\$ 2,016,000</b>	
	North Intchg. Area Std. Diamond	%	appx. 50% of total	50%	\$1,008,000	
	Kellys Corner Folded Diamond	%	appx. 25% of total	25%	\$504,000	
	Intchg. 118 Folded Diamond	%	appx. 25% of total	25%	\$504,000	

**SUMMARY - BID SCHEDULE - CONCEPTUAL COST ESTIMATE**  
**PREFERRED ALTERNATIVE: TRAFFIC SIGNAL AT INTERCHANGE 120**

SECTION	REFERENCE NAME/PHONE	COUNTY	SHEET			
Project Name	David Evans and Associates (503) 223-6663	Douglas	1 of 1			
KIND OF WORK	LENGTH	DATE	NAME			
Grading, Structure, Paving, Signal, Illumination		8/4/2007	Scott Dreher			
NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL	Section Totals
	<b>Mobilization and Traffic Control</b>					<b>\$ 70,000</b>
	Mobilization	LS	1	\$ 40,000	\$ 40,000	
	Temp. Protection and Direction of Traffic	LS	1	\$ 30,000	\$ 30,000	
	<b>Roadwork</b>				\$0	<b>\$ 6,000</b>
	Construction Surveying Work	LS	1	\$ 5,000	\$ 5,000	
	Clearing and Grubbing	LS	1	\$ 1,000	\$ 1,000	
	Embankment in Place	yd3	0	\$ 20	\$ -	
	Retaining Wall	ft2	0	\$ 100	\$ -	
	<b>Drainage and Sewers</b>				\$0	<b>\$ -</b>
	Drainage incl. WQ	ft2	0	\$ 1.25	\$ -	
	<b>Bases</b>				\$0	<b>\$ -</b>
	Aggregate Base (16" depth)	ton	0	\$ 40	\$ -	
	Subgrade Stabilization	ft2	0	\$ 1	\$ -	
	<b>Wearing Surface</b>					<b>\$ -</b>
	Asphalt Concrete (8" depth)	ton	0	\$ 80	\$ -	
	Sidewalk and ramps	yd2	0	\$ 20	\$ -	
	<b>Permanent Traffic Control and Guidance Devices</b>				\$0	<b>\$ 220,000</b>
	Concrete Barrier	ft	0	\$ 30	\$ -	
	Guard Rail	ft	0	\$ 25	\$ -	
	Illumination	each	0	\$ 4,000	\$ -	
	Signal	each	1	\$ 220,000	\$ 220,000	
	Signal Modification	each	0	\$ 80,000	\$ -	
	Striping	LS	0	\$ 75,000	\$ -	
	<b>Right-of-Way Development and Control</b>					<b>\$ -</b>
	Fence, Type 1	ft	0	\$ 5	\$ -	
	Deciduous Trees, 2" Caliper	each	0	\$ 350	\$ -	
	Shrubs, No.1 Container	each	0	\$ 20	\$ -	
	Irrigation	LS	0	\$ 50,000	\$ -	
	<b>Subtotal:</b>				<b>\$ 296,000</b>	
	50% - Engineering Contingencies:				\$ 148,000	
	Right of Way	ft2	0	\$30	\$ -	
	<b>Subtotal: 2007 Value</b>				<b>\$ 444,000</b>	
	cumulative inflation @ approx. 5% per year	years	10	\$22,200	\$ 222,000	
	<b>Program Cost:</b>				<b>\$ 666,000</b>	
	North Intchg. Area Std. Diamond	%	appx. 50% of total	50%	\$333,000	
	Kellys Corner Folded Diamond	%	appx. 25% of total	25%	\$166,500	
	Intchg. 118 Folded Diamond	%	appx. 25% of total	25%	\$166,500	

## **Appendix C**

### **OR 42 Expressway Upgrade Project Summary Report**

**Region 3**  
**2008-2011 Construction STIP**  
**Modernization Project Criteria Summary Report**

**Contact Person:** Mark Usselman

**Phone Number:** 541-396-3707

**Project Name:** OR 42 Expressway Upgrade

**Key Number:** 15006

**Project Location:** OR 42 (East of S. Umpqua River) in Green

<b>Total Estimated Project Cost:</b>	\$1,200,000
<b>PE:</b>	\$ 150,000
<b>ROW:</b>	\$ 150,000
<b>Utilities:</b>	\$ 50,000
<b>Construction:</b>	\$ 850,000

**Project Description:** Construct a signal on OR 42 at Rolling Hills Road; Construct a Necessary Local street; Close two street connections and eliminate private access.

**Project Eligibility**

*Consistency with existing plans:* The project is contained in the OR 42 Corridor Study and the Douglas County TSP.

*Consistency with OHP Policy 1G, Action 1G.1:* The project is the minimum necessary to relieve existing congestion issues on US 42.

**Additional ACT Project Eligibility Criteria:**

*Does the project provide additional capacity on a state highway?* The project is expected to add increased capacity on OR 42. The new frontage road (Necessary Local) will relocate a number of driveways. Two street connections will also be closed. With Rolling Hills constructed and signalized, it will improve traffic and safety operations at the Carnes Road intersection with OR 42.

*Is the project located on a state highway, or on a local county or city arterial connecting to and supporting a state highway (ORS 366.507)?* The project is located OR 42, a statewide freight expressway.

*Can the project be ready for bid by September 2011?* The project will be ready for bid by 2011.

## **Project Prioritization**

*Project readiness and milestones completed:* The project has been in plans for decades. It has been included in the OR 42 Corridor Plan to improve circulation in Green and operations on the highway. It has also been included in the Green Unincorporated Area TSP and the Douglas County TSP.

*Support of OHP policies:* The project meets the policies as outlined in the Oregon Highway Plan. More detail is shown under “additional ACT criteria.”

*Support of freight mobility:* This project is located on a state freight route and on a designated expressway. The project will help to move local traffic off the highway and onto local routes.

*Leverage of other funds and benefits:* Douglas County will contribute all funds in excess of \$1 million. Total estimated cost is \$1.2 million.

*Support of additional ACT criteria:* see below

### *Preservation of Transportation Facilities:*

The project will encourage local traffic to use the signalized intersections. Access management will be employed to build additional capacity into the system.

### *Quality Development Objectives:*

This area is located within the Green Urban Unincorporated Area and meets each of the Quality Development Objectives established by the Governor.

### *Economic Opportunity:*

The improvements will allow enhanced access to the highway. The reduction in access points will help to improve safety and reduce travel time from the resulting delays.

### *Provide Environmentally- Sensitive Transportation Options:*

The project will cross a local drainage ditch at locations where culverts already exist. There are no anticipated impacts to wetlands or water bodies.

### *Improves Safety:*

As the Green area continues to grow, additional access to OR 42 is essential. Currently all areas between Carnes and the S. Umpqua River (over a mile away) must use the Carnes Road intersection. With the completion of Rolling Hills Road and a signal, the traffic may be more easily split between Carnes and Rolling Hills allowing for improved operations and safety at Carnes. Outside of this improvement, a grade separated interchange at Carnes is the only other solution. This improvement will lessen that need and should improve an existing SPIS site (top 10%) within the Region.

**Conditions of Approval:** 1) Douglas County to design and construct the project, 2) Douglas County to provide all funds in excess of \$1million necessary to complete the project, 3) Douglas County to close Jackie and Heatherwood Lane, and 4) Douglas

County to construct a Necessary Local Street to remove private access between Rolling Hills Road and Jackie Lane.

**Appendix D**  
**Green Area Trip Budget Overlay District**

## **Trip Budget Overlay District**

This section describes the rationale and approach for developing a trip budget overlay district for the Green UUA as a means to protect the function of Interchanges 119 and 120.

### **Purpose of Trip Budget**

The purpose of a trip budget is to protect the function of the interchanges from being overwhelmed by traffic generated by development inconsistent with long-range plans. A trip budget is a tool that can be used to directly regulate the traffic impacts from development, and it can help ensure that future development in the interchange area is consistent with the TSP and the regional model. An Interchange Management Area (IMA) Overlay District is the mechanism by which a trip budget is often administered.

The practice of limiting trips, or placing “trip caps” or “trip budgets” involves permitting development projects based on the number of trips each will generate, in the context of development within a specified area. This method is typically employed in areas with a combination of significant congestion, capacity constraints, and few options for maintaining traffic flow.

The traffic analysis performed in support of this IAMP was based on the Roseburg transportation demand model maintained by ODOT. The model projects vehicle trips based on current comprehensive plan designations and existing and projected population, household, and employment data. There are a number of scenarios by which more traffic could be generated in the Green area than what is identified in the regional transportation demand model. These include: developing with an emphasis on high-traffic uses within current zoning; rezoning to allow more intensive uses; and expanding the urban growth boundary. Using any of these scenarios, if the lands are developed more intensively than assumed in the regional model, traffic congestion at the interchanges could become worse than anticipated. Specifically, if the Green area becomes a hub for high-trip-generation land uses, such as fast food restaurants, big box retailers, and even significant industrial development, operations at the interchanges could degrade significantly.

The potential intensity of development on commercial and industrial lands, even if allowed under existing zoning, is highly variable and unpredictable, and this represents a limitation of the predictive capabilities of the model. Ultimately, the problem is that if each property owner develops to maximum intensity, the traffic volume forecasts in the regional model could be exceeded. This could cause congestion and unacceptable operations at the interchanges, even if the recommended Preferred Alternative improvements are constructed. The trip budget is specifically designed to address this variability by managing the total volume from development in the area. Because of their greater level of predictability, future residential growth is fully accounted for in the model; therefore, residential trips need not be included in the trip budget.

Using a trip budget program could also provide a measure of flexibility for developers while limiting the total impact of development. A development that did not use all the allowable traffic generation potential of its land might be able to pass on its unused traffic potential to an adjacent development that could be allowed to generate more traffic. As long as the total traffic generation from the area remained within limits, interchange operations would be protected.

## **Development of a Trip Budget Proposal for the Green UUA**

Development of the trip budget proposal for Green borrowed heavily from the work done by ODOT and the City of Woodburn. There are certain similarities and many differences between the two interchange areas. The type of development anticipated is largely commercial and industrial for both, though Green also expects significant residential development west of I-5. Woodburn is significantly larger than Green and is more heavily influenced by two much larger metropolitan areas (Salem and Portland), whereas Green falls in the influence of Roseburg and Winston. Woodburn is further along with plans for an upgraded interchange than is Green. That fact, however, allows Green to draw upon the similarities and take advantage of the approach being pursued by Woodburn.

Because residential trips are largely predictable, the Woodburn trip budget addressed only industrial and commercial trips. This approach is also recommended for the proposed Green UUA Trip Budget Overlay District.

### ***Calculation of Trip Budget Threshold Numbers***

As discussed in Section 3, traffic operations analysis was performed on the Preferred Alternative improvements. The traffic volumes on which the analysis was based came from the Roseburg regional transportation demand model. The model forecasts vehicle trips from projected population, household and employment numbers. The analysis showed that the Preferred Alternative improvements could provide adequate operations under projected traffic through year 2025.

The forecasted model growth formed the basis for the Green UUA trip budget. The trip budget was derived from the total growth of non-residential, PM peak hour trip ends (vehicle trips that originate or terminate) within the Green UUA between years 2000 and 2025, as predicted in the regional model. According to the model, there are currently approximately 2650 trip ends within the Green UUA; approximately 1500 from non-residential uses (mostly commercial and industrial). The model predicts approximately 4000 total trip ends in year 2025, about 2600 from non-residential uses, which is an increase of 1100 non-residential trip ends between years 2000 and 2025. The predicted additional non-residential trip ends between years 2000 and 2025 (1100 PM peak hour trips) form the basis of the recommended trip budget. Growth attributable to residential land uses is accounted for in the model and need not be included in the trip budget. Therefore, *only non-household trips were included in the total trip budget.*

The analysis of the transportation system within the interchanges 119 and 120 management area has shown that the Preferred Alternative improvements could accommodate the projected 1100 additional non-residential peak hour trip ends in the Green UUA. High-intensity commercial or industrial land development that generate vehicle trips in excess of this threshold could cause the interchanges to be overwhelmed thereby causing the need for additional improvements that are not identified in the Preferred Alternative.

### ***Discussion of Per-Acre Trip Generation Rates***

Trip generation rates can be applied to parcels or acreage to assist the County with managing and understanding the impacts of growth as applications are processed. These per-acre trip rates may be used as a screening tool to help the County ease the land use approval process for low-intensity development proposals.

Based on an estimate of Green's vacant and under-developed commercial and industrial lands, trip generation rates were estimated and compared with interchange capacity and the IMA trip budget. Douglas County could employ trip generation rates in Green as follows: Commercial = 33 peak hour trips/acre; Industrial = 6 peak hour trips/acre. However, regardless of the trip generation rate, the total trip budget is the true limiting factor.

Applying these trip rates, commercial sites generating no more than 33 trips/acre and industrial sites generating no more than 6 trips/acre could be allowed with minimal traffic analysis, whereas higher-intensity developments would be required to perform additional impact assessments and would be subject to a more thorough development review process.

It should be noted that these trip rates have nothing to do with the development or implementation of the overall trip budget. These rates are simply intended to be used by the County to streamline the approval process for low-intensity development proposals. Whether or not the future non-residential development proposals fall below these specified thresholds, they will need to be counted toward the 1100 trip budget. These per-acre trip rates are optional and not an essential component of an effective trip cap overlay district.

### **Green IMA Overlay District Implementation**

This section presents information on the potential adoption of an Overlay District as a management measure designed to protect the function of Interchanges 119 and 120. In addition, this section identifies possible code amendments because implementing an overlay district would involve amending the Douglas County Code.

Implementing an overlay district would involve new administrative procedures and processes for the county's planning department and would require additional actions by property owners if they seek to develop or redevelop. The responsibilities of Douglas County and the Oregon Department of Transportation (ODOT) relating to an overlay district would also need to be further defined in an intergovernmental agreement (IGA).

The following pages identify the key elements of an IMA Overlay District. The material is presented in a form that could be modified and incorporated into Douglas County's development code, though it would need to be customized to reflect the county's code language, numbering, and format.

### ***Green UUA Interchange Management Area (IMA) Overlay District***

#### ***1. Purpose***

The purpose of this overlay district is to preserve the long-term capacity of Interchange 119 and Interchange 120, in coordination with the Oregon Department of Transportation (ODOT).

Preserving the capacity of the interchanges is important to the County and to ODOT because of the expense of developing and constructing them. Capacity increases of the interchanges could be implemented incrementally as the need occurs.

These goals are met by establishing trip generation budgets (trip budgets) and an adoption of an IMA Overlay District and incorporating administrative procedures into the Douglas County Code for the IMA Overlay District area, located in the vicinity of I-5, and consisting all land within the boundaries of the Green UUA and designated tax lots outside the Green UUA. The trip budgets are intended to assure that development is monitored such that planned capacity improvements

can be implemented in a timely manner and that the development in the IMA area does not exceed the ultimate capacity of the interchange.

*A. Boundaries of the IMA Overlay District*

The IMA Overlay District is defined as the land that is within the Green UUA and designated tax lots outside the Green UUA as they exist as of March 2008, and as illustrated in Figure 1-1.

*B. Applicability of this Chapter*

The regulatory provisions of this chapter apply to the cumulative and parcel specific impacts generated from all development within the IMA Overlay District.

*2. Vehicle Trip Budgets*

This section defines how a trip budget is used and the levels applicable for the Green UUA.

*A. Applying the IMA Trip Budget*

The trip budget applies to all commercial, industrial and institutional development in the IMA Overlay District, and it excludes residential parcels. In the case of redevelopment or expansion of existing uses, only new trips will be counted against the trip budget. The trip budget applies on a first-developed, first-served basis.

*B. The IMA Trip Budget*

For the Preferred Alternative the trip budget is 1100 PM peak hour vehicles, and excludes trips generated by residential development.

*3. Administration*

This chapter delineates responsibilities of the County and ODOT to monitor and evaluate vehicle trip generation impacts to Interchanges 119 and 120 from development approved under this chapter.

*A. Trip Generation Calculations*

To enable the County to monitor and tabulate the traffic impacts of development, the County shall require the applicant for a land use action or a building permit to provide an estimate of PM peak hour trip generation.

The estimates of PM peak hour trip generation should be provided by an Oregon-licensed Professional Engineer qualified to perform transportation analyses or a Professional Traffic Engineer.

*B. Traffic Impact Analysis (TIA) Methods*

The preparation of an estimate of PM peak hour traffic generation may be conducted as part of a traffic impact analysis (TIA). The preparation of an estimate of PM peak hour traffic generation does not substitute for a TIA that may be required for other purposes.

A TIA may be required by either the City or by ODOT according to their respective policies and procedures. Generally, TIAs needed to address the impact on state facilities must meet requirement of OAR 734-51: Highway Approaches, Access Control, Spacing Standards and Medians.

*C. ODOT Coordination in Land Use Reviews*

For a land use proposals that has a significant impact on facilities under ODOT's jurisdiction or applications involving a zone change:

1. The County shall not deem the land use application complete unless it includes a TIA prepared in accordance with ODOT requirements.
2. The County shall provide written notification to ODOT when the application is deemed complete.
3. ODOT shall have at least 30 days to provide written comments to the County, measured from the date the completion notice was mailed. If ODOT does not provide written comments during this 30-day period, the County staff report may be issued without consideration of ODOT comments.

*D. County Monitoring Responsibilities*

The details of County and ODOT monitoring and coordination responsibilities must be specified in an approved Douglas County-ODOT Intergovernmental Agreement (IGA).

1. The County shall be responsible for maintaining a ledger documenting the cumulative peak hour trip generation impact from all commercial, industrial and institutional public land use applications approved under this chapter, compared with the adopted IMA Trip Budget.
2. The County may adjust the ledger based on actual development and employment data, subject to review and concurrence by ODOT.
3. The County will provide written notification to ODOT when land use applications approved under this chapter, combined with approved building permits, result in traffic generation estimates that exceed 33% and 67% of the trip budget associated with the interchange configuration in operation. (See 1.B, above).

*E. Vesting and Expiration of Vehicle Trip Allocations*

This section recognizes that vehicle trip allocations may become scarce towards the end of the planning period. The following rules apply to allocations of vehicle trips against the adopted trip budget:

1. For commercial and industrial land use applications, vehicle trip allocations are vested at the time of design review approval.
2. Vehicle trips shall not be allocated based solely on approval of a comprehensive plan amendment or zone change, unless consolidated with a subdivision or design review application.
3. Vesting of vehicle trip allocations shall expire at the same time as the development decision expires, in accordance with the Douglas County Code.
4. Permitted, Special Use and Conditional Uses

Generally, permitted and conditional uses allowed in the underlying zoning district are allowed subject to other applicable provisions of the Douglas County Code and this chapter.

5. Comprehensive Plan and Zoning Map Amendments

This section applies to all Comprehensive Plan Map amendments within the IMA Overlay District. This section does not apply to Zoning Map amendments that result in conformance with the applicable Comprehensive Plan Map designation.

A. Transportation Planning Rule Requirements

Application for Comprehensive Plan Map amendments, and for Zoning Map amendments shall determine whether the proposed change will significantly affect a collector or arterial transportation facility, and must meet the requirements of OAR 660-012-0060 and Douglas County Code.

B. Limitations on Comprehensive Plan Amendments

To ensure that the remaining capacity of Interchanges are reserved for currently planned land uses, Comprehensive Plan Map amendments that allow land uses that will generate traffic in excess of the IMA trip budget shall be prohibited.

6. IMA Trip Budget Standards and their Application to Individual Development Proposals

This section establishes the standard that must be met for developments in the IMA:

- Cumulative Impact Standard. The cumulative impact of each individual development proposal within the IMA is counted against the IMA trip budget as defined in 2. A, above. This applies to all developments and accounts for all development in the IMA Overlay District as a whole.
- Site-Specific Standard. This is an additional standard that applies only to developments that propose to exceed a base level of traffic related to parcel size and the underlying zoning. It applies to industrial or commercial development proposals; not to residential or institutional development proposals.

A. Cumulative Impact Standard

All commercial, industrial and institutional land use applications subject to the provisions of the IMA Overlay District shall be subject to design review and shall meet the following standard:

1. Peak hour vehicle traffic generated from the proposed development shall not, in combination with other approved developments, exceed the IMA District Trip Budget specified in Section 2.B, above.
2. Prior to approval of any land use application, the County shall make an affirmative determination that traffic generated from the proposed development will be within the adopted total trip generation budget within the IMA Overlay District.
3. The applicant may propose, and the County may require transportation demand management (TDM) measures through the design review and conditional use process.

B. Site-Specific Standard

Individual development proposals may be subject to the Site-Specific Standard as follows:

1. Exemptions:















- a. Proposed residential development shall be exempted from the provisions of this section.
  - b. Proposed institutional development (schools, parks, and publicly-owned facilities) shall be exempted from the provisions of this section. Institutional development is required to meet only the provisions of 6.A., the Cumulative Impact Standard.
  - c. For development proposals on commercially zoned land, any commercial, industrial, office, service-related and public (i.e. non-residential and non-institutional) development that falls below an estimated PM peak hour trip rate equivalent to 33 PM peak hour trips per acre, shall not be subject to further review under this sub-section (Mandatory Site-Specific Standard), but shall meet transportation demand management conditions applied through the design review process and Section 6.A, the Cumulative Impact Standard.
  - d. For development proposals on industrially zoned land, any commercial, industrial, office, service-related and public (i.e. non-residential and non-institutional) development that falls below an estimated PM peak hour trip rate equivalent to 6 PM peak hour trips per acre, shall not be subject to further review under this sub-section (Site-Specific Standard), but shall meet transportation demand management conditions applied through the design review process and Section 6.A, the Cumulative Impact Standard.
2. Conditional Use Required. Proposed development that exceeds the parcel budget (33 PM peak hour trips per acre for commercially zoned land or 6 PM peak hour trips per acre for industrially zoned land) shall be reviewed through the Type III conditional use process. The following site-specific review criteria shall apply:
- a. Development on industrial or commercial land that provides employment opportunities listed on Table E-1 below may be permitted, if the County makes affirmative findings that the development will contribute substantially to Douglas County's economic objectives and transportation demand management conditions are applied through the design review process.
  - b. Non-residential and non-targeted development on land designated Commercial on the Douglas County Comprehensive Plan shall be denied unless transportation demand management conditions are applied through the design review process to ensure that the site-specific standard is not exceeded.

**Table E-1. Targeted Employers**

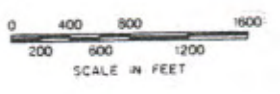
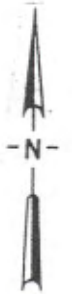
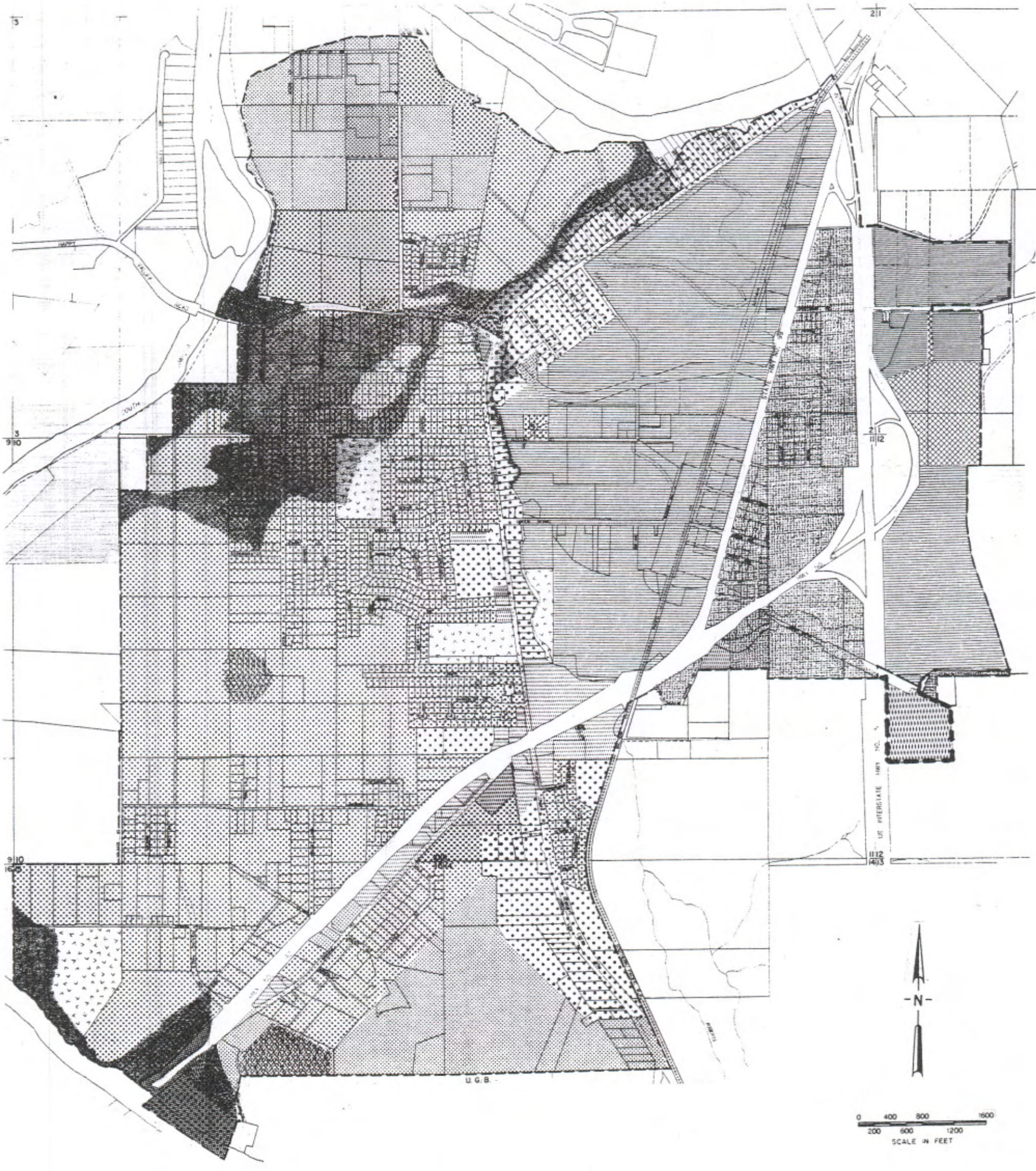
<b>Standard Industrial Category (SIC) Employment Category</b>	<b>Category Description</b>
Industry 27	Publishing, printing, and allied industries
Industry 32	Stone, clay, glass, and concrete products
Industry 34	Fabricated metal products, except machinery and transportation equipment
Industry 35	Industrial and commercial machinery and computer equipment
Industry 36	Electronic and other electrical equipment and components, except computer equipment
Industry 37	Transportation equipment
Industry 42	Motor freight transportation and warehousing
Industry 50	Wholesale trade – durable goods
Industry 51	Wholesale trade – non-durable goods
Industry 61	Non-depository credit institutions
Industry 73	Business services
Industry 80	Health services
Industry 87	Professional services



**Appendix E**  
**Green UUA Land Use**

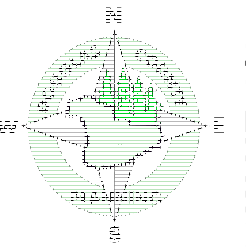
- INR  INDUSTRIAL RESERVE
- RCL  LOT OF RECORD
- RLD  LOW DENSITY RESIDENTIAL
- RMD  MEDIUM DENSITY RESIDENTIAL
- RHD  HIGH DENSITY RESIDENTIAL
- Z  LIMITED HAZARD RESIDENTIAL
- CO  COMMERCIAL
- CI  GENERAL COMMERCIAL/INDUSTRIAL
- IN  INDUSTRIAL
- PSP  PUBLIC/SEMI PUBLIC
- ZZ  GEOLOGIC HAZARD
-  URBAN GROWTH BOUNDARY
- AGG.  AGRICULTURE
- AGC 

# GREEN AREA LAND USE PLAN

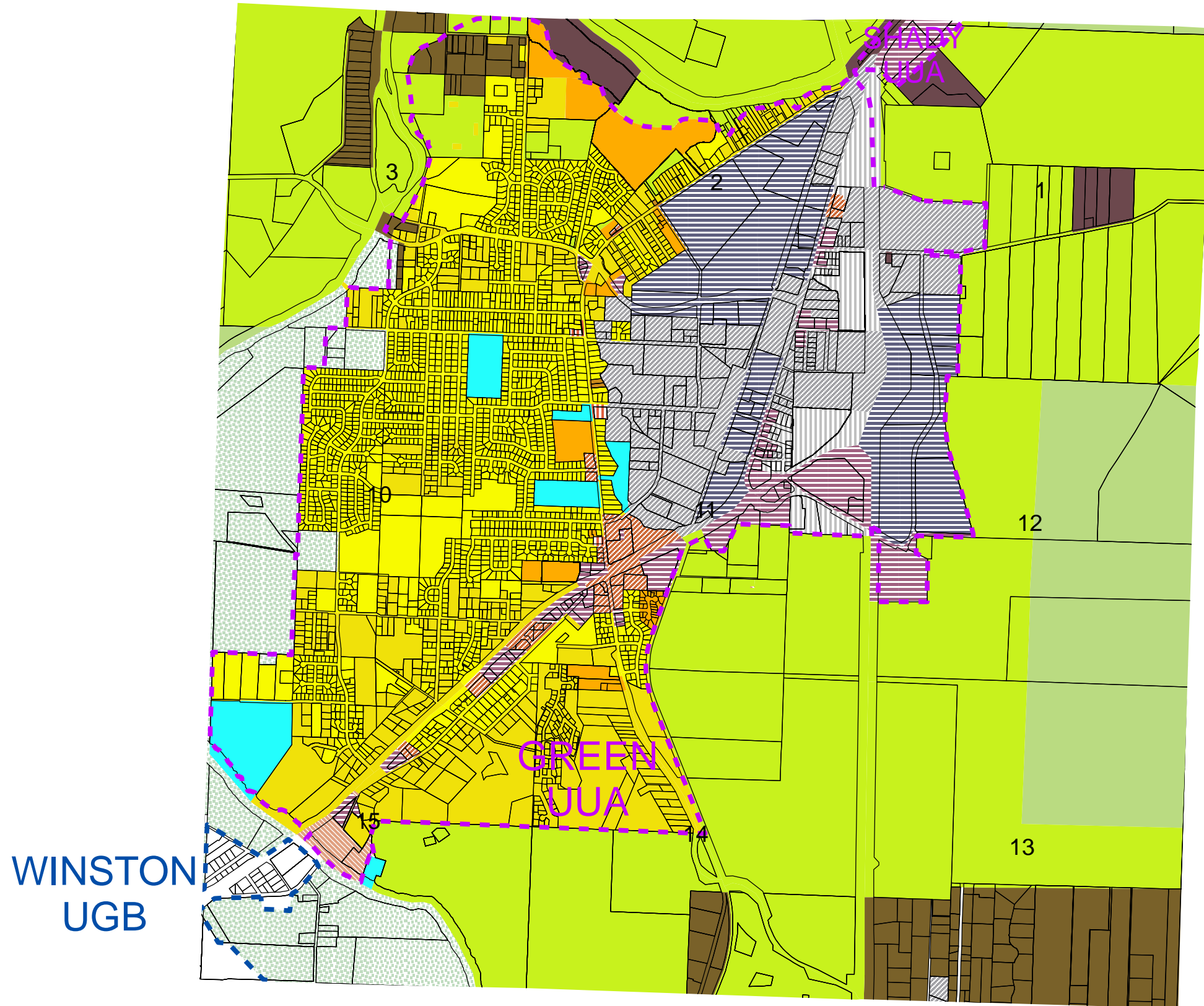


# ZONING MAP T28S R06W NE-1/4

January 17, 2008



T28S R06W NE-1/4



### Legend

- UGB
- UUA
- RC
- RSC
- TR
- FF
- AW
- FG
- F1
- F2
- F3
- 5R
- RR
- 1R
- RS
- R1
- R2
- R3
- CRS
- CRC
- CRE
- CT
- C1
- C2
- C3
- MRC
- ME
- M1
- M2
- M3
- PR
- WI
- ED
- EC
- EN
- CS
- MR
- WOCR
- WOTC
- MC
- MRI

ZONING GENERALLY EXTENDS TO THE  
CENTERLINE OF ROADS AND RIVERS



## ARTICLE 14

### **(R-3) Residential-High Density and Professional Office**

#### **SECTION 3.14.000 Purpose**

The residential high density and professional office classification is intended to provide for a high concentration of population. A full range of public services should be available. Siting of this zone should be near major streets or roads and community services. This zone may be utilized as a buffer to central business districts, major shopping centers or in areas of redevelopment.

#### **SECTION 3.14.050 Permitted Uses**

In the R-3 Zone, the following uses and their accessory buildings and uses are permitted, subject to the general provisions and exceptions set forth by this ordinance:

1. Multiple-family dwellings.
2. Duplexes.
3. Accessory buildings not exceeding 1,500 square feet used as garages, storerooms, woodsheds, hobby shops, laundries, playhouses or similar and related uses provided that there shall not be more than two buildings allowed as accessory to any single-family dwelling or duplex. Unattached structures shall be located on the rear half of the property unless a variance is granted, except that a detached garage in conjunction with the primary dwelling need not be located on the rear half of the lot.
4. Parks, playgrounds, or community centers.
5. Limited Home Occupation.
6. Grocery store, limited to 2,500 square feet.
7. Boarding and lodging houses.
8. Clubs, lodges and assembly halls.
9. Orphanages and charitable institutions.
10. Professional Offices.
11. Medical and dental clinics.

12. Pharmacy.
13. Hospitals.
14. Privately operated kindergartens or day nurseries.
15. Residential Facility.
16. Schools.
17. Churches.
18. Public and semipublic buildings and uses.

### **SECTION 3.14.075 Uses Permitted With Standards**

In the R-3 Zone, the following uses and activities are permitted subject to specified standards and the general provisions and exceptions set forth by this Ordinance.

Items 3 and 4 in this use category shall be subject to written consent from all surrounding adjacent property owners. Adjacent property owner consent shall be obtained by the applicant and submitted to the Planning Department on forms provided by the County. The surrounding adjacent property owners shall be identified by the Planning Department after a pre-application conference has been held and the fee paid (same fee as if the application were for a conditional use). Adjacent owner consent signatures shall be verified by sending a copy of the signed consent form to each identified owner of record. If no negative comments are received within 12 days, the request shall be granted. If adjacent owner consent cannot be obtained, the request shall then be processed as a conditional use pursuant to §2.060.1.

1. Zero lot line residential developments, subject to provisions of Article 31.
2. Mobile Home Parks subject to the density provisions and review standards of Article 51.
3. Nurseries for the growing, sale and display of trees, shrubs and flowers.
4. Buildings accessory to a single-family dwelling in excess of 1,500 square feet provided that there shall not be more than two buildings allowed as accessory to any single-family dwelling or duplex and further provided unattached structures shall be located on the rear half of the property unless a variance is granted.
5. Veterinary Clinic, provided the use shall be conducted wholly within enclosed structures and there shall be no outside animal runs.

### **SECTION 3.14.100 Buildings and Uses Permitted Conditionally**

In the R-3 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provision of §2.060.1 and Article 39 of this chapter:

1. One single-family dwelling.

### **SECTION 3.14.150 Property Development Standards**

#### **1. Area:**

- a. The minimum property area shall be 6,500 square feet.
- b. The minimum area for a multiple-family dwelling shall be 10,000 square feet provided that the minimum area per dwelling unit shall be 2,000 square feet.
- c. Lots or parcels shall have a minimum average width of 65 feet.
- d. Boarding and lodging houses shall have a minimum site area of 300 square feet for each occupant thereof.

2. **Coverage:** Not over 60 percent of the property shall be covered by all buildings located thereon.

#### **3. Setbacks:**

- a. Front Yard: No structure other than a fence or sign shall be located closer than 15 feet from the front property line.
- b. Side Yard: No structure other than a fence or sign shall be located closer than 5 feet from side property lines for interior properties and 10 feet from exterior side property lines for corner building sites.

No multiple-family dwellings shall be located closer than 10 feet from a side property line which abuts any other residential zone.

- c. Rear Yard: No structure other than a fence or sign shall be located closer than 5 feet from the rear property line.
- d. Vision Clearance: Vision clearance on corner properties shall be minimum of 20 feet.

4. **Height:** Maximum height of all structures shall be 60 feet.

## ARTICLE 13

### (R-2) Multiple Family Residential

#### SECTION 3.13.000 Purpose

The Multiple-Family Residential classification is intended to provide a wide range of housing density and type while preserving the residential character of an area. This zone applies to properties with minimal topographic limitations; locations which are readily accessible by and to major streets; and adjacent to public open space or commercial services. This zone is intended for areas with a full range of public services including public sewer and water.

#### SECTION 3.13.050 Permitted Buildings and Uses

In the R-2 Zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance:

1. Multiple family residential dwellings or condominiums.
2. Duplexes.
3. Accessory buildings not exceeding 1,500 square feet used as garages, storerooms, woodsheds, hobby shops, laundries, playhouses or similar and related uses provided that there shall not be more than two buildings allowed as accessory to any single-family dwelling or duplex. Unattached structures shall be located on the rear half of the property unless a variance is granted, except that a detached garage in conjunction with the primary dwelling need not be located on the rear half of the lot.
4. Limited Home Occupation.
5. Residential Facility.
6. Bed and Breakfast.

#### SECTION 3.13.075 Uses Permitted With Standards

In the R-2 Zone, the following uses and activities are permitted subject to specified standards and the general provisions and exceptions set forth by this Ordinance.

Items 3 and 4 in this use category shall be subject to written consent from all surrounding adjacent property owners. Adjacent property owner consent shall be obtained by the applicant and submitted to the Planning Department on forms provided by the County. The surrounding adjacent property owners shall be identified by the Planning

Department after a pre-application conference has been held and the fee paid (same fee as if the application were for a conditional use). Adjacent owner consent signatures shall be verified by sending a copy of the signed consent form to each identified owner of record. If no negative comments are received within 12 days, the request shall be granted. If adjacent owner consent cannot be obtained, the request shall then be processed as a conditional use pursuant to §2.060.1.

1. Zero lot line residential developments, subject to provisions of Article 31.
2. Mobile Home Parks subject to the density provisions and review standards of Article 51.
3. Privately operated kindergartens or day nurseries.
4. Buildings accessory to a single-family dwelling in excess of 1,500 square feet provided that there shall not be more than two buildings allowed as accessory to any single-family dwelling or duplex and further provided unattached structures shall be located on the rear half of the property unless a variance is granted.
5. One single-family dwelling, provided that adjacent properties within 100 feet are predominately developed with single-family dwellings.

### **SECTION 3.13.100 Buildings and Uses Permitted Conditionally**

In the R-2 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter:

1. One single-family dwelling where adjacent properties within 100 feet are predominately developed with uses other than single family dwellings.
2. Public and semipublic buildings and uses not otherwise specified in this section provided that side and rear yards shall be 20 feet.
3. Hospitals and schools (kindergartens, elementary, junior high and high), providing setbacks are established from side and rear property lines of at least 50 feet.
4. Parks, playgrounds, or community centers.

### **SECTION 3.13.150 Property Development Standards**

1. **Area:**
  - a. The minimum property area shall be 6,500 square feet. The minimum property area for multiple-family dwellings shall be 10,000 square feet provided that the minimum property area per dwelling unit shall be 2,000 square feet.

- b. Lots or parcels shall have a minimum average width of 65 feet.
  - c. A property containing less than 6,500 square feet existing at the time this ordinance became effective may be occupied by a single-family dwelling provided that all other property development standards shall be maintained.
2. **Coverage:** Not over 40 percent of the property shall be covered by all buildings located thereon.
3. **Setbacks:**
  - a. Front Yard: No structure other than a fence or sign shall be located closer than 15 feet from the front property line.
  - b. Side Yard: No structure other than a fence or sign shall be located closer than 5 feet from side property lines for interior properties and 10 feet from exterior side property lines for corner building sites. No multi-family dwellings shall be located closer than 10 feet from side property lines.
  - c. Rear Yard: No structure other than a fence or sign shall be located closer than 5 feet from the rear property line.
  - d. Vision Clearance: Vision clearance on corner properties shall be minimum of 20 feet.
4. **Height:** Maximum height for any structure shall be 45 feet.
5. **Signs:**
  - a. Signs shall not extend over a public right-of-way or project beyond the property line.
  - b. Except as provided in the following subsection, signs shall be limited to six square feet in area.
  - c. One lighted identification sign (excluding illuminated signs of the flashing or animated type) not exceeding 12 square feet in area is permitted for multiple-family dwellings having five or more dwelling units and for buildings other than dwellings.
6. **Parking:** Off street parking shall be provided in accordance with Article 35.
7. **Access:** Access to multiple-family dwellings or condominiums shall be provided in accordance with the provisions of Article 35.

## ARTICLE 12

# (R-1) Single-Family Residential

### SECTION 3.12.000 Purpose

The Single-Family Residential classification is intended to provide for a medium density urban residential use plus related compatible uses such as schools and parks. The classification is designed for those areas adjacent or close to existing cities or areas with an urban character in which urban services such as public water and sewer are available.

### SECTION 3.12.050 Permitted Uses

In the R-1 Zone, the following uses and their accessory buildings and uses are permitted, subject to the general provisions and exceptions set forth by this ordinance:

1. A single-family dwelling.
2. Duplex, subject to development standards contained in §3.12.150 or,
  - a. A duplex on a lot or parcel of not less than 7,500 square feet that was in existence at the time this Ordinance was adopted (Dec 31, 1980), providing such duplex meets one of the following requirements:
    - (1) it will be located on a collector street; or
    - (2) it will be located on a corner lot.
3. Accessory buildings not exceeding 1,500 square feet used as garages, storerooms, woodsheds, hobby shops, laundries, playhouses or similar and related uses provided that there shall not be more than two buildings allowed as accessory to any single-family dwelling or duplex. Unattached structures shall be located on the rear half of the property unless a variance is granted, except that a detached garage in conjunction with the primary dwelling need not be located on the rear half of the lot.
4. Limited Home Occupation.

### SECTION 3.12.075 Uses Permitted With Standards

In the R-1 Zone, the following uses and activities are permitted subject to specified standards and the general provisions and exceptions set forth by this Ordinance.

1. Zero lot line residential developments, subject to provisions of Article 31.

### **SECTION 3.12.100 Buildings and Uses Permitted Conditionally**

In the R-1 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter:

1. Hospitals and schools (kindergartens, elementary, junior high and high), provided setbacks are established from side and rear property lines of at least 50 feet.
2. Privately operated kindergartens or day nurseries.
3. Public and semipublic buildings and uses not otherwise specified in this section.
4. Mobile Home Parks subject to the density of the R-1 Zone and provisions of Article 51 of this chapter.
5. Parks, playgrounds, or community centers.
6. Residential Facility.
7. Bed and Breakfast.
8. Buildings accessory to a single-family dwelling in excess of 1,500 square feet provided that there shall not be more than two buildings allowed as accessory to any single-family dwelling or duplex and further provided unattached structures shall be located on the rear half of the property unless a variance is granted.

### **SECTION 3.12.150 Property Development Standards**

1. **Area:**
  - a. The minimum property area shall be 6,500 square feet for a single family dwelling and 10,000 square feet for a duplex.
  - b. Lots or parcels shall have a minimum average width of 65 feet.
2. **Coverage:** Not over 40 percent of the lot shall be covered by all buildings located thereon.
3. **Setbacks:**
  - a. Front Yard: No structure other than a fence or sign shall be located closer than 15 feet from the front property line.

- b. Side Yard: No structure other than a fence or sign shall be located closer than 5 feet from side property lines for interior properties, and 10 feet from exterior side property lines for corner building sites.
  - c. Rear Yard: No structure other than a fence or sign shall be located closer than 5 feet from the rear property line.
  - d. Vision Clearance: Vision clearance on corner lots shall be minimum of 20 feet.
4. **Height**: Maximum height for any structure shall be 35 feet, except hospitals, public buildings or churches may be 45 feet.
5. **Signs**:
- a. Signs shall not extend over a public right-of-way or project beyond the property line.
  - b. Signs shall not be illuminated or capable of movement.
  - c. The total sign area of all signs on the property shall be limited to thirty-two square feet.
  - d. One sign not exceeding 12 square feet in area is permitted for each building other than a dwelling.
6. **Parking**: Off street parking shall be provided in accordance with Article 35.

**ARTICLE 22****(M-3) Heavy Industrial****SECTION 3.22.000 Purpose**

The Heavy Industrial classification is intended to provide, protect and recognize areas well suited for medium and heavy industrial development and uses free from conflict with commercial, residential and other incompatible land uses. This district is intended to be applied generally only to those areas which have available excellent highway, rail or other transportation.

**SECTION 3.22.050 Permitted Uses**

In the M-3 zone, the following uses and their accessory buildings and uses are permitted, subject to the general provisions and exceptions set forth by this ordinance.

1. Any use permitted in the M-2 zone.
2. Processing of aggregate and mineral resources or other subsurface resources, including asphalt plants.
3. Manufacturing, repairing, fabricating, processing, parking, or storage use not listed in any other section of this ordinance or under conditional uses below.
4. One mobile home or watchman's quarters in conjunction with a use listed in this article.

**SECTION 3.22.100 Buildings and Uses Permitted Conditionally**

In the M-3 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter.

1. Salvage yard.
2. Automobile wrecking yard.
3. Disposal or reduction of waste materials, garbage, offal, or dead animals (not to be visible from an arterial roadway).
4. Manufacture and storage of chemicals and explosives.
5. Operations conducted for the exploration and mining of aggregate and mineral resources or other subsurface resources.
6. Slaughterhouse.

**SECTION 3.22.150 Property Development Standards**

1. **Area:** No standard established.
2. **Coverage:** Full coverage is allowable; provided minimum space, servicing space and setbacks have been provided.
3. **Setbacks:**
  - a. Front Yard: Front yards shall not be required.
  - b. Side and Rear Yard: Side or rear yards will not be required, but if side or rear yards are created they shall be a minimum of five feet.
  - c. Vision Clearance: Vision clearance shall be negotiated on submittal of plot plan for corner building sites.
4. **Height:** No structure shall exceed a height of 50 feet.
5. **Signs:**
  - a. Signs shall not extend over a public right-of-way or project beyond the property line.
  - b. Signs may be illuminated but may not be of the flashing or moving type.
6. **Parking:** Off street parking shall be provided in accordance with Article 35.
7. **Environmental Quality:** All uses in the M-3 zone shall comply with standards adopted by the Environmental Quality Commission for air, land, water and noise quality.

**ARTICLE 21****(M-2) Medium Industrial****SECTION 3.21.000 Purpose**

The Medium Industrial classification is intended to create, preserve and enhance areas containing a wide range of manufacturing and related establishments, and is typically appropriate to areas providing a wide variety of sites with good rail or highway access.

**SECTION 3.21.050 Permitted Uses**

In the M-2 zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance.

1. Any use permitted in the M-1 zone, §3.20.050.
2. Bottling works.
3. Contractor's equipment storage yards.
4. Freight and truck yards or terminals.
5. Lumber yards, retail, including mill work.
6. Manufacture of pottery.
7. Manufacturing, compounding or assembling of articles or merchandise from the following prepared materials: bone, cellophane, canvas, cloth, cork, feather, felt, fiber, fur, glass, hair, horn, leather, paper, plastics, metals, precious or semiprecious stones, shell, textiles, tobacco, wood, yarns, and paint; none of the foregoing employing a foundry process.
8. Meat processing plant (not including slaughtering).
9. Welding and machine shop.
10. Wholesale business, storage buildings, warehouses and bulk fuel storage facilities.
11. Concrete batching plants and the manufacture and sale of concrete products.

12. Airplane hangars, storage and other related facilities associated with an existing airport.
13. One mobile home or watchman's quarters in conjunction with a use listed in this article.

### **SECTION 3.21.100 Buildings and Uses Permitted Conditionally**

In the M-2 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter.

1. Uses similar to those permitted in §3.21.050 that are not specifically listed under the M-3 zone, provided that:
  - a. Use is not objectionable due to odor, dust, smoke, noise, vibration or appearance.
  - b. Items manufactured, processed or produced in this area shall be primarily for wholesale.
2. Slaughterhouse.
3. Airports

### **SECTION 3.21.150 Property Development Standards**

1. **Area:** No standard established.
2. **Coverage:** Full coverage is allowable; provided minimum space, servicing space and setbacks have been provided.
3. **Setbacks:**
  - a. Front Yard: Front yards shall not be required.
  - b. Side and Rear Yard: Side or rear yards will not be required, but if side or rear yards are created they shall be a minimum of five feet.
  - c. Vision Clearance: Vision clearance shall be negotiated on submittal of plot plan for corner building sites.
4. **Height:** No structure shall exceed a height of 50 feet.

**5. Signs:**

- a. Signs shall not extend over a public right-of-way or project beyond the property line.
  - b. Signs may be illuminated but may not be of the flashing or moving type.
- 6. Parking:** Off street parking shall be provided in accordance with Article 35.
- 7. Environmental Quality:** All uses in the M-2 zone shall comply with standards adopted by the Environmental Quality Commission for air, land, water and noise quality.

**ARTICLE 20****(M-1) Light Industrial****SECTION 3.20.000 Purpose**

The Light Industrial classification is intended to create, preserve, and enhance areas containing secondary manufacturing and related establishments and intense commercial uses with limited external impact. These uses are typically appropriate to locations near major thoroughfares and non-manufacturing areas.

**SECTION 3.20.050 Permitted Uses**

In the M-1 zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance:

1. Builder supplies including retail sales of lumber, agricultural supplies and machinery sales room.
2. Laboratories.
3. Mobile home and recreational vehicle sales.
4. Warehouses, including buildings for commercial storage of personal property not used for commercial purposes.
5. Plumbing and sheet metal shops.
6. Open storage area for commercial storage of personal property such as boats and recreational vehicles.
7. Wholesale business salesrooms.
8. Laundry, cleaning and dyeing works and carpet and rug cleaning.
9. The manufacture, compounding, processing, packaging or treatment of such products as bakery goods, candy, cosmetics, dairy products, drugs, perfumes, toiletries, soft drinks, and food products; except fish, meat products, sauerkraut, vinegar, yeast, and the rendering or refining of fats and oils.
10. Veterinary clinic.
11. Utility facilities necessary for public service.

12. Outdoor Advertising in conformance with state siting standards set forth in Oregon Revised Statutes and Oregon Administrative Rules.
13. One mobile home or watchman's quarters in conjunction with a use listed in this article.

### **SECTION 3.20.100 Buildings and Uses Permitted Conditionally**

In the M-1 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter:

1. Uses similar to those permitted in §3.20.050 that are not specifically listed under the M-2 or M-3 zones, provided that:
  - a. The use is not objectionable due to odor, dust, smoke, noise, vibration or appearance.
  - b. Items manufactured, processed or produced in this zone shall be primarily for wholesale.
2. One single family dwelling in conjunction with a use listed in this Article.

### **SECTION 3.20.150 Property Development Standards**

1. **Area:** No standard established.
2. **Coverage:** Full coverage is allowable; provided minimum space, servicing space and setbacks have been provided.
3. **Setbacks:**
  - a. Front Yard: Front yards shall not be required.
  - b. Side and Rear Yard: Side or rear yards will not be required, but if side or rear yards are created they shall be a minimum of five feet.
  - c. Vision Clearance: Vision clearance shall be negotiated on submittal of plot plan for corner building sites.
4. **Height:** No structure shall exceed a height of 50 feet.
5. **Signs:**
  - a. Signs shall not extend over a public right-of-way or project beyond the property line.
  - b. Signs may be illuminated but may not be of the flashing or moving type.

6. **Parking:** Off street parking shall be provided in accordance with Article 35.
7. **Environmental Quality:** All uses in the M-1 zone shall comply with standards adopted by the Environmental Quality Commission for air, land, water and noise quality.

## ARTICLE 3

# (FG) EXCLUSIVE FARM USE-GRAZING

### SECTION 3.3.000 Purpose

The purpose and intent of the Exclusive Farm Use-Grazing zone is to provide areas for the continued practice of agriculture and permit the establishment of only those new uses which are compatible with agricultural activities. The minimum property size established by this zone is intended to promote commercial agricultural pursuits, such as grazing, rangeland and other less intensive agricultural uses.

It is the purpose of this zone classification to provide the automatic farm use valuation for farms which automatically qualify under the provisions of ORS 308. Therefore, the Exclusive Farm Use Zone is to be applied to all lands designated "Agriculture" in the Comprehensive Plan in accordance with LCDC Goal No. 3 and the Douglas County Agricultural Element.

The Exclusive Farm Use Zone is intended to guarantee the preservation and maintenance of the areas so classified for farm use free from conflicting nonfarm uses and influences.

### SECTION 3.3.050 Permitted Uses

In the FG zone, the following uses and activities and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance:

1. Farm uses (except as provided in §3.3.100).
2. The propagation or harvesting of a forest product.
3. Other buildings and accessory uses customarily provided in conjunction with farm use.
4. Operations for the exploration of geothermal resources as defined by ORS 522.005.
5. Sites for the disposal of solid waste ordered to be established by the Department of Environmental Quality, and the facilities necessary for their operation.
6. Water impoundments with less than 1000 acre feet of storage capacity, in conjunction with beneficial uses of water customarily associated with farm

or forest uses or as a source of water for domestic use, provided that necessary state and federal permits have been issued.

7. Operations for the exploration for minerals as defined by ORS 517.750.
8. Farm stands as described in ORS 215.283.
9. Alteration, restoration or replacement of a lawfully established dwelling that:
  - a. Has intact exterior walls and roof structure;
  - b. Has indoor plumbing consisting of a kitchen sink, toilet and bathing facilities connected to a sanitary waste disposal system;
  - c. Has interior wiring for interior lights;
  - d. Has a heating system; and
  - e. In the case of replacement, the dwelling to be replaced shall be removed, demolished or converted to an allowable nonresidential use within three months of the completion of the replacement dwelling. An "Accessory farm dwelling" that was approved under §3.45.300.1.b.(3) may only be replaced by a manufactured dwelling.
  - f. A replacement dwelling may be located on any part of the same lot or parcel so long as it complies, where practicable, with all applicable siting standards.
  - g. If the dwelling to be replaced is located on a portion of the lot or parcel not zoned EFU, then the applicant shall, as a condition of approval, record a deed restriction prohibiting the future siting of a dwelling on that non-EFU portion of the lot or parcel. The deed restriction shall be noted on Planning Department records. A release from the deed restriction may only occur if the statute regarding replacement dwellings changes or if there is a change in the Plan and Zone designation.
  - h. Deferred replacement: Upon request from an applicant, a deferred replacement may be authorized, allowing the replacement dwelling to be constructed or placed at any time in the future. The deferred replacement allows a property owner to remove a dwelling meeting the criteria of 9.a-d above with the guarantee that the removed dwelling can be replaced at any time in the future, subject to the siting standards of 9.e-g. A deferred replacement is subject to the following:

- 1) The dwelling to be replaced shall be removed or demolished within three months after the deferred placement is issued. Conversion to a non-residential use shall not be permitted. Documentation (photos, contractors written statement, or other suitable evidence) that the dwelling has been removed or demolished shall be submitted by the applicant within the three month period. If the dwelling to be replaced is not removed or demolished within the three month period, the deferred replacement authorization shall become void.
  - 2) When constructed or placed, the deferred replacement dwelling shall comply with the building and sanitation codes that are applicable at the time of construction or placement.
  - 3) A deferred replacement authorization may be transferred, but only to the applicant's spouse or children.
10. Model aircraft take-off and landing sites as provided in ORS 215.283(1).
  11. Fire service facilities providing rural fire protection services.
  12. Irrigation canals, delivery lines and those structures and accessory operational facilities associated with an irrigation district, drainage district, water improvement district, or water control district (as those terms are defined in ORS 540).
  13. Establishment of a Wildlife Habitat Conservation and Management Plan.

### **SECTION 3.3.075 Uses Permitted with Standards**

In the FG zone, the following uses and activities are permitted subject to specified standards and the general provisions and exceptions set forth by this Ordinance.

1. One single-family dwelling customarily provided in conjunction with farm use on a property meeting the requirements of Article 45.
2. "Owner of Record" dwelling subject to the standards in 3.3.125.
3. "Relative Dwelling" -- A second single-family dwelling on real property used for farm use and meeting the notice and process requirements of §3.45.100.1 through 4:
  - a. If the dwelling is:
    - i. located on the same lot or parcel as the dwelling of the farm operator; and

- ii. occupied by a relative, which means a child, parent, step- parent, grandchild, grandparent, step-grandparent, sibling, step-sibling, niece, nephew or first cousin of the farm operator or the farm operator's spouse, whose assistance in the management and farm use of the existing commercial farming operation is or will be required by the farm operator. The farm operator shall continue to play the predominant role in the management and farm use of the farm.
  - b. Except as provided in ORS 215.283(1)(e), establishment of the second dwelling may not be used for future justification of land division; and
  - c. The County must find, based on the farm operators statement, that the second dwelling is necessary for the farm operation and that the farm operator fully understands the conditions under which the building permit is being approved.
- 4. Accessory farm dwellings on a property meeting the requirements of Article 45.
- 5. Churches, subject to §2.065.2, provided that they are not within 3 miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. Existing churches may be maintained, enhanced or expanded on the same tract without an exception. New churches are not allowed on high value farmland. Division of land for a new church or cemetery in conjunction with a church, as provided in ORS 215.263, shall not exceed five acres, and the remaining parcel must either meet the minimum parcel size or, if less than the minimum parcel size, be consolidated with an adjoining parcel.
- 6. Public or private schools, subject to §2.065.2, including all buildings essential to the operation of a school provided that they are not within 3 miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660, Division 4. Existing school facilities may be maintained, enhanced or expanded on the same tract without an exception. New facilities are not allowed on high value farmland.
- 7. Onsite filming and related accessory uses may be conducted without prior approval provided the use does not exceed 45 days.
- 8. Parking of up to seven log trucks unless the County determines that log truck parking on a particular lot or parcel will:
  - a. Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or

- b. Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.
  9. One single family dwelling in conjunction with a wildlife habitat conservation and management plan that has been approved by the State Department of Fish and Wildlife, provided that:
    - a. the proposed dwelling will be situated on a lot or parcel legally created prior to November 5, 1993; and
    - b. the subject lot or parcel qualifies for a farm or non-farm dwelling under current standards (except that farm assessment disqualification shall not be required); and
    - c. the proposed dwelling will not be established on a lot or parcel that is predominantly composed of class I or II, or prime or unique soils as identified by the U.S. Natural Resources Conservation Service; and
    - d. the governing body or its designee finds that the proposed dwelling will not:
      - (1) force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or
      - (2) significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.
      - (3) The standards of this subsection may be satisfied through the imposition of clear and objective conditions; and
    - e. The proposed dwelling will be the only dwelling situated on the subject lot or parcel.
  10. Single-family residential dwelling not provided in conjunction with farm use, subject to Sections 2.060.1 and 3.43.100.
  11. Utility facility service lines as defined in Section 1.090.
  12. Utility facilities necessary for public service, including wetland waste treatment systems, subject to Section 2.060.1 and provided the standards in Section 3.3.170 are met. This use does not include commercial facilities for the purpose of generating electrical power for public use by sale, or transmission towers over 200 feet in height.

- \_\_\_\_\_ 13. A facility for the processing of farm crops or the production of biofuel, provided that:
- a. The farm on which the processing facility is located must provide at least one-quarter of the farm crops processed at the facility;
  - b. The building established for the processing facility shall not exceed 10,000 square feet of floor area exclusive of the floor area designated for preparation, storage or other farm use; or, if an existing farm building is used, no more than 10,000 square feet shall be devoted to processing activities within that building; and
  - c. A land division separating the processing facility from the farm operation on which it is located shall not be permitted.

### **SECTION 3.3.100 Buildings and Uses Permitted Conditionally**

In the FG zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter:

1. Commercial activities that are in conjunction with farm use.
2. Operations conducted for:
  - a. Mining and processing of geothermal resources as defined by ORS 522.005 and oil and gas as defined by ORS 520.005.
  - b. Mining of 1,000 cubic yards or more of aggregate and other mineral and other subsurface resources or excavation preparatory to mining of a surface area of more than one acre. However, a permit for mining aggregate shall be issued only for a site included on the county inventory.
  - c. Processing, as defined by ORS 517.750, of aggregate into asphalt or portland cement, except no application shall be approved to allow batching of mineral and aggregate into asphalt cement within two miles of a planted vineyard. Planted vineyard means one or more vineyards totaling 40 acres or more.
  - d. Processing of other mineral resources and other subsurface resources.

3. Private parks, playgrounds, hunting and fishing preserves, and campgrounds, except that such new uses shall not be permitted on land predominantly composed of high value farmland as defined in OAR 660-33. Hunting preserves licensed under ORS 497.248, and which existed prior to July 29, 2003, are not subject to local land use approval, except that complaints against the hunting preserve shall be processed in the manner described in ORS 215.296. Private campgrounds shall be subject to the following:
  - a. Except on a lot or parcel contiguous to a lake or reservoir, private campgrounds shall not be allowed within three miles of an urban growth boundary unless an exception is approved pursuant to ORS 197.732 and OAR 660-004;
  - b. A private campground shall be established on a site, or is contiguous to lands, with a park or other outdoor natural amenity that is accessible for recreational use by the occupants of the campground;
  - c. A private campground shall be designed and integrated into the rural agricultural and forest environment in a manner that protects the natural amenities of the site and provides buffers of existing native trees and vegetation or other natural features between campsites;
  - d. Separate sewer, water or electric service hook-ups shall not be provided to individual camp sites; and
  - e. For campgrounds approved under this section, overnight temporary use in the same campground by a camper or camper's vehicle shall not exceed a total of 30 days during any consecutive 6 month period.
4. Public parks and playgrounds, except that public parks shall be subject to OAR 660-034.
5. Community centers owned by a governmental agency or a nonprofit community organization operated primarily by and for residents of the local rural community. A community center existing on January 1, 2006, may provide services to veterans, including but not limited to emergency and transitional shelter, preparation and service of meals, vocational and educational counseling, and referral to local, state or federal agencies providing medical, mental health, disability income replacement and substance abuse services (but excluding direct delivery of the listed referral services).
6. Golf courses as defined in OAR 660 Division 33.

7. Commercial utility facilities for the purpose of generating power for public use by sale and transmission towers over 200 feet in height. A power generating facility shall not preclude more than 20 acres (or 12 acres on high value farmland) from use as a commercial agricultural enterprise unless an exception is taken pursuant to OAR 660, Division 4.
8. Personal use airports for airplanes and helicopter pads, including associated hangar, maintenance and service facilities. A personal use airport as used in this section means an airstrip restricted except for aircraft emergencies, to use by the owner and, on an infrequent and occasional basis, by his invited guests, and by commercial aviation activities in connection with agricultural operations. No aircraft may be based on a personal use airport other than those owned or controlled by the owner of the airstrip. Exceptions to the activities permitted under this definition may be granted through waiver action by the Aeronautics Division in specific instances. A personal use airport lawfully existing as of September 13, 1975, shall continue to be permitted subject to any applicable regulations of the Aeronautics Division.
9. Home occupation as a use accessory to an existing dwelling.
10. A facility for the primary processing of forest products, provided that such facility is found to not seriously interfere with accepted farming practices and is compatible with farm uses described in ORS 215.203(2). Such a facility may be approved for a one year period which is renewable. These facilities are intended to be only portable or temporary in nature. The primary processing of a forest product, as used in this section, means the use of a portable chipper or stud mill or other similar methods of initial treatment of a forest product in order to enable its shipment to market. Forest products, as used in this section, means timber grown upon a property or land contiguous to the location of the primary processing facility.
11. Solid waste disposal site as provided in ORS 215.283.
12. Dog Kennels, including the breeding, kenneling and training of greyhounds for racing, except that, on high value farmland, new kennels may not be established. Existing kennels on high value farmland may be maintained, enhanced or expanded on the same tract.
13. The propagation, cultivation, maintenance and harvesting of aquatic species that are not under the jurisdiction of the State Fish and Wildlife Commission, or insect species, as provided in ORS 215.283(2).
14. Hardship dwelling meeting criteria of Article 46.
15. Onsite filming and related activities, subject to the provisions of §3.3.150, if the activity exceeds 45 days on any site within a one-year period or involves

erection of sets that would remain in place for longer than 45 days. These activities may include office administrative functions such as payroll and scheduling, and the use of campers, trailers or similar temporary facilities, or other temporary facilities to be used as temporary housing for security personnel.

16. Operations for the extraction and bottling of water.
17. Composting facilities on land not defined as high value farmland and as provided in OAR 660-033-0130.
18. Living history museum as defined in ORS 215.283(2)
19. A landscape contracting business or a business providing landscape architecture services, as defined in ORS 671, provided that the business is part of an operation involved in the growing and marketing of nursery stock on land that constitutes farm use.

### **Section 3.3.125 Standards for "Owner of Record" Dwellings**

A dwelling on a lot or parcel that was lawfully created and was acquired and has been owned continuously by the current owner since prior to January 1, 1985, or acquired by devise or intestate succession from an owner who acquired and had owned the property continuously since prior to January 1, 1985 may be allowed after notifying the County Assessor, and subject to the following:

1. For the purposes of this provision, "owner" includes the wife, husband, son, daughter, mother, father, brother, brother-in-law, sister, sister-in-law, son-in-law, daughter-in-law, mother-in-law, father-in-law, aunt, uncle, niece, nephew, stepparent, stepchild, grandparent, grandchild, of the owner or a business entity owned by any one or combination of these family members.
2. The tract on which the dwelling will be sited:
  - a. does not include a dwelling, and
  - b. if the lot or parcel on which the dwelling will be sited was part of a tract on November 4, 1993, no dwelling exists on another lot or parcel that was part of that tract.
3. The land in the tract is not either:
  - a. Characterized by predominantly irrigated prime, unique or Class I or II soils or non-irrigated prime, unique or Class I or II soils, as designated by the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture (formerly the Soil Conservation Service); or

- b. Planted with "specified perennials" grown for market or research purposes including but not limited to nursery stock, berries, fruits, nuts, Christmas trees or vineyards, but not including seed crops, hay pasture or alfalfa (as demonstrated by the most recent aerial photograph of the Agricultural Stabilization and Conservation Service prior to November 4, 1993).
- c. The soil class, soil rating, or soil designation of a specific lot or parcel may be changed if the property owner:
  - (1) Submits a statement of agreement from the NRCS that the soil data should be adjusted based on new information; or
  - (2) Submits a report from a soils scientist whose credentials are acceptable to the State Department of Agriculture that the soil class, soil rating or other soil designation should be changed; and
  - (3) Submits a statement from the State Department of Agriculture that the Director of Agriculture or the director's designee has reviewed the report described in subparagraph 2) above and finds the analysis in the report to be soundly and scientifically based.
4. The location of the homesite is consistent with the wildlife habitat requirements in Article 32.
5. When the lot or parcel where the dwelling is to be sited is part of a tract, the remaining portions of the tract are consolidated into a single lot or parcel as a condition of approval.
6. If a single family dwelling is established under this section, no additional dwellings may be sited later under the nonfarm dwelling criteria.
7. An Owner of Record Dwelling approval may be transferred by a person who has qualified under this section to any other person after the effective date of the land use decision.
8. Owner of Record Dwelling on High Value Farmland: If the tract on which the dwelling will be sited is composed predominately of high value farmland soils as defined in OAR 660-33, then subsection 3.3.125.3.a) and b) do not apply and the approval is subject to the following additional criteria:
  - a. Notice, pursuant to §2.065.12, is provided to the State Department of Agriculture; and

- b. The hearings body, pursuant to §2.060.3, finds that:
- (1) The lot or parcel cannot practicably be managed for farm use, by itself or in conjunction with other land, due to extraordinary circumstances inherent in the land or its physical setting that do not apply generally to other land in the vicinity.
  - (2) The proposed dwelling will not:
    - (a) Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or
    - (b) Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.
  - (3) The dwelling will not materially alter the stability of the overall land use pattern in the area.

### **SECTION 3.3.150 Conditional Use Approval Standards**

The Approving Authority shall consider the following additional criteria which must be met prior to the approval of a conditional use:

The use would not:

- a. Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or
- b. Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.

The Approving Authority shall also impose any conditions necessary to meet the applicable criteria so as to preserve agricultural land. Nothing herein shall be construed to require the granting of a conditional use permit. The criteria set forth in this Section shall not apply to farm or forest uses conducted within: parcels with a single family residential dwelling approved under ORS 215.284; an exception area approved under ORS 197.732; or, an acknowledged urban growth boundary.

### **SECTION 3.3.160 Siting Standard for Dwellings**

The following siting standard shall apply to all new dwellings and other specified uses for the purpose of preserving resource lands for resource purposes.

1. To ensure that forest operations and accepted farming practices will not be curtailed or impeded, a nonexclusive resource management covenant shall

be filed by the property owner with the County Clerk prior to development authorization for a dwelling or other use where specified. Such covenant shall specify that owners of adjacent and nearby land shall have: 1) the right to conduct forest operations consistent with the Forest Practices Act and Rules; 2) the right to conduct normal farming practices; and, 3) the right to extract aggregate or rock resources on their properties and that the owner (and subsequent owners) of the subject property waive all rights to object to legal resource management activities.

### **SECTION 3.3.170 Standards for Authorization of Utility Facility Necessary for Public Service**

A utility facility is necessary for public service if the facility must be sited in an exclusive farm use zone in order to provide the service. To demonstrate that a utility facility is necessary:

1. The applicant must show that reasonable alternatives have been considered.
2. The applicant must show that the facility needs to be sited in an exclusive farm use zone due to one or more of the following factors:
  - a. Technical and engineering feasibility;
  - b. The proposed facility is locationally dependent. A utility facility is locationally dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;
  - c. Lack of available urban and nonresource lands;
  - d. Availability of existing rights of way;
  - e. Public health and safety; or
  - f. Other requirements of state or federal agencies.
3. Costs associated with any of the factors listed above may be considered, but cost alone may not be the only consideration in determining that a utility facility is necessary for public service. Land costs shall not be included when considering alternative locations for substantially similar utility facilities and the siting of utility facilities that are not substantially similar.
4. The owner of the utility facility shall submit an agreement that establishes the utility facility as the responsible party for restoring to its former condition

those agricultural lands and associated improvements that are damaged or otherwise disturbed by the siting, maintenance, repair or reconstruction of the facility.

5. Clear and objective conditions shall be applied to mitigate and minimize the impacts of the proposed facility, if any, on surrounding lands devoted to farm use in order to prevent a significant change in accepted farm practices or a significant increase in the cost of farm practices on the surrounding farmlands.

Subsections 1 and 2 above shall not apply to interstate natural gas pipelines and associated facilities authorized by and subject to regulation by the Federal Energy Regulatory Commission.

### **SECTION 3.3.200 Property Development Standards**

1. **Property Size:** The creation of a unit of land shall be subject to the following:
  - a. The minimum parcel size shall be 80 acres.
  - b. The following exceptions may apply:
    - (1) Parcel size for non-farm uses, except dwellings, set out in ORS 215.283(2), may be less than the designated minimum parcel size upon a finding that the parcel is not larger than the minimum size necessary for the use, adequate sanitation facilities may be accommodated and negative impacts to surrounding farm or forest lands do not occur.
    - (2) Division of land for public park uses provided that:
      - i. The land division is for the purpose of allowing a provider of public parks or open space, or a not-for-profit land conservation organization, to purchase at least one of the resulting parcels; and
      - ii. If one of the resulting parcels contains a dwelling, that parcel shall be large enough to support continued residential use of the parcel.
      - iii. The parcel created for park or open space uses shall not contain a dwelling, and:

- a) is not eligible for siting a dwelling, except as may be authorized under ORS 195.120;
- b) may not be considered in approving or denying an application for siting any other dwelling;
- c) may not be considered in approving a redesignation or rezoning of forest lands except for a redesignation or rezoning to allow a public park, open space or other natural resource use; and
- d) may not be smaller than 25 acres unless the purpose of the land division is:
  - i) To facilitate the creation of a wildlife or pedestrian corridor or the implementation of a wildlife habitat protection plan; or
  - ii) To allow a transaction in which at least one party is a public park or open space provider, or a not-for-profit land conservation organization, that has cumulative ownership of a least 2,000 acres of open space or park property.

(3) Nonresource divisions for a non-farm dwelling may be less than the minimum parcel size subject to the provisions of Article 44.

- c. Land partitions which create parcels greater than 80 acres in size shall be reviewed by the Director as a ministerial action to ensure conformance with the provisions of this ordinance.
2. **Coverage:** No standard established.
  3. **Setbacks:** No structure other than a fence or sign shall be located closer than 30 feet from the right-of-way of a public road and 10 feet from all other property lines.
  4. **Height:** No standard established.

**5. Signs:**

- a. Signs shall not extend over a public right-of-way or project beyond the property line.
  - b. Signs shall not be illuminated or capable of movement.
  - c. The total sign area of all signs on the property shall be limited to thirty-two square feet.
- 6. Parking:** Off street parking shall be provided in accordance with Article 35.

**ARTICLE 18****(C-3) General Commercial****SECTION 3.18.000 Purpose**

The General Commercial classification is intended to provide areas within which a variety of retail and wholesale business will occur. These areas would serve general community needs with types of activities which need not be conducted wholly within an enclosed building.

**SECTION 3.18.050 Permitted Uses**

In the C-3 zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance.

1. Agricultural supplies and machinery sales rooms.
2. Nurseries for the growing, sale and display of trees, shrubs and flowers.
3. Automobile, truck and motorcycle sales agencies or repair garages.
4. Auto parts store.
5. Builders supplies including retail sales of lumber.
6. Buildings for commercial storage of private household goods, provided all storage shall be entirely within such building.
7. Business and professional office.
8. Funeral parlor, mausoleum or mortuary.
9. General retail sales of previously prepared products.
10. Hotel, Motel.
11. Medical and dental office.
12. Mobile home and recreational vehicle sales.
13. Outdoor advertising in conformance with state siting standards set forth in Oregon Revised Statutes and Oregon Administrative Rules.
14. Places of amusement such as billiard parlors, taverns, bowling alleys, drive-in theaters, dance halls and games of skill and science.

15. Plumbing and sheet metal shop.
16. Professional play fields such as baseball and football.
17. Public and semipublic buildings and uses.
18. Retail dry cleaning establishment.
19. Second-hand stores if conducted wholly within an enclosed building.
20. Stadiums.
21. Veterinary clinic.
22. Single family residence in conjunction with a use listed in this article.
23. Dwelling above a commercial structure; subject to the development standards of the R-3 zone classification.
24. Other uses similar to the above.
25. Other uses permitted by §3.17.050 (C-2 Zone) except those uses permitted by §3.16.050 (C-T Zone) unless such uses are otherwise specifically permitted in the C-2 Zone.

### **SECTION 3.18.100 Buildings and Uses Permitted Conditionally**

In the C-3 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter.

1. Stores (retail and wholesale) and business uses similar to those listed as permitted uses in the C-3 zone and normally located in a commercial district provided that:
  - a. Where there is a manufacturing, compounding, processing or treatment of products for wholesale, a minimum of 25% of the total floor area shall be used for retail sales.
  - b. Use is not objectionable due to odor, dust, smoke, noise, vibration or appearance.
2. Outdoor sales such as flea markets or swap meets of new or second-hand goods.

**SECTION 3.18.150 Property Development Standards**

1. **Area:** The area requirements for residential uses shall be the same as the R-3 zone.
2. **Coverage:** Full coverage is allowable, provided minimum loading space and setbacks have been maintained.
3. **Setbacks:**
  - a. Front Yard: Front yards will not be required except for residential uses which shall conform to the setbacks established in the R-3 zone.
  - b. Side Yard: Except for residential use, side yards will not be required, but if side yards are created they shall be a minimum of 3 feet wide. Residential uses shall conform to the minimum setbacks of the R-3 zone.
  - c. Rear Yard: No rear yard is required when property in the C-3 zone abuts property in a commercial or industrial zone.  
  
When not abutting a commercial or industrial zone, there shall be a rear yard of not less than ten feet extending the full width of the subject property; provided, however, alleys contiguous to or within the property being used may be included in the required setback.
  - d. Vision Clearance: Vision clearance for corner properties shall be at least 10 feet.
4. **Height:** No standard established.
5. **Signs:** No standard established.
6. **Parking:** Off street parking shall be provided in accordance with Article 35.

**ARTICLE 17****(C-2) Community Commercial****SECTION 3.17.000 Purpose**

The Community Commercial classification is intended to provide areas for localized shopping facilities. It is intended to preserve and enhance areas with a wide range of retail sales and service establishments serving both long and short term needs in compact locations.

**SECTION 3.17.050 Permitted Uses**

In the C-2 zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance and provided that these uses are conducted wholly within enclosed structures.

1. Antique or curio shops.
2. Art shop, gallery, studio and supplies.
3. Automobile service station.
4. Bakery.
5. Bank.
6. Barber shop or beauty shop.
7. Book or stationery store.
8. Business and professional offices.
9. Catering service.
10. Clothes cleaning or laundry agency.
11. Clubs or lodges, fraternal and religious associations.
12. Confectionery store.
13. Delicatessen.
14. Department store.

15. Drug store.
16. Dry goods or notions store.
17. Florist or gift shop.
18. Furniture and household goods store.
19. Grocery store.
20. Handicraft shop.
21. Hardware store.
22. Laundromat.
23. Manufacture of handicraft goods for sale on premises only such as wooden wares, pottery, tile, archery and seashell wares.
24. Meat market.
25. Medical and dental clinics.
26. Millinery or custom dressmaking shops.
27. Mobile Home Parks, subject to the provisions of Article 51, except that no mobile home parks shall be allowed within urban growth boundaries.
28. Musical instruments and supplies store.
29. Office supplies and equipment store.
30. Paint and wallpaper supplies store.
31. Photography studio or shop.
32. Pottery sales.
33. Printing.
34. Public and semipublic buildings and uses.
35. Public parking areas developed in accordance with provisions established under Article 35.
36. Restaurants, cafes.

37. Seed and garden supplies.
38. Shoe or shoe repair shop.
39. Sporting goods.
40. Surgical supplies and equipment.
41. Tailor, clothing, and wearing apparel shops.
42. Telephone and telegraph exchanges.
43. Theaters (indoor).
44. Nurseries for the growing, sale and display of trees, shrubs and flowers. This use need not be conducted within enclosed structures.
45. Retail dry cleaning establishment.
46. Single family residence in conjunction with a use listed in this article.
47. Dwelling above a commercial structure, subject to the development standards of the R-2 zone classification.
48. Other uses permitted by §3.16.050 (CT zone).
49. Other uses similar to the above.

### **SECTION 3.17.075 Uses Permitted With Standards**

In the C-2 zone, the following uses and activities are permitted subject to specified standards and the general provisions and exceptions set forth by this Ordinance.

1. Veterinary Clinic, provided the use shall be conducted wholly within enclosed structures and there shall be no outside animal runs.

### **SECTION 3.17.100 Buildings and Uses Permitted Conditionally**

In the C-2 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter and provided that these uses and activities are conducted wholly within enclosed structures unless otherwise specified below:

1. Outdoor activities accessory to a Veterinary Clinic, including outside animal runs.

**SECTION 3.17.150 Property Development Standards**

1. **Size:** The minimum property area for residential uses shall be the same as the R-3 zone.
2. **Coverage:** Full coverage is allowable, provided minimum loading space and setbacks have been maintained.
3. **Setbacks:**
  - a. Front Yard: Front yards will not be required except setback for residential uses shall conform to those established in the R-3 zone.
  - b. Side Yard: Except for residential uses, side yards will not be required but if side yards are created they shall be a minimum of 3 feet wide. Residential uses shall conform to the minimum setbacks of the R-3 zone.
  - c. Rear Yard: No rear yard is required when property in the C-2 zone abuts property in a commercial or industrial zone.  
  
When not abutting a commercial or industrial zone, there shall be a rear yard of not less than ten feet extending the full width of the subject property; provided, however, alleys contiguous to or within the property being used may be included in the required setback.
  - d. Vision Clearance: Vision clearance for commercial properties shall be at least 10 feet.
4. **Height:** No standard established.
5. **Signs:** No standard established.
6. **Parking:** Off-street parking shall be provided in accordance with Article 35.

## ARTICLE 15

### (C-1) Limited Commercial

#### SECTION 3.15.000 Purpose

The Limited Commercial classification provides for a desirable mixing of residential land uses with limited commercial land uses in close proximity to adjacent residential districts. The zone is also intended to serve local neighborhood needs rather than provide a full commercial area for an entire community. The limited commercial uses allowed in this district are selected for their compatibility with residential uses and ability to meet the frequently recurring needs of the neighborhood. Normally, the district is to be applied as a small compact area conveniently located in or near residential areas and along thoroughfares and may be utilized in areas designated as committed to nonresource use by the Comprehensive Plan.

#### SECTION 3.15.050 Permitted Uses

In the C-1 zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance.

1. Business and professional offices.
2. Pharmacy.
3. Medical and dental clinic.
4. Grocery store, limited to 2,500 square feet in area.
5. Public and semipublic buildings and uses.
6. Parks, playgrounds, or community centers.
7. Single family residence in conjunction with a permitted use.

#### SECTION 3.15.100 Buildings and Uses Permitted Conditionally

In the C-1 zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter.

1. Mobile Home Parks, subject to the provisions of Article 51, except that no mobile home parks shall be allowed within urban growth boundaries.
2. Veterinary clinic.

3. Uses similar to permitted uses but not listed and shown to meet the intent and purpose of the zone.
4. Signs which do not conform to the requirements of §3.15.150.5.

### **SECTION 3.15.150 Property Development Standards**

1. **Area:**
  - a. Lots or parcels shall have a minimum area of 7,500 square feet.
  - b. Lots or parcels shall have a minimum average width of 70 feet.
2. **Coverage:** Not over 60 percent of the property shall be covered by all buildings located thereon.
3. **Setbacks:**
  - a. Front Yard: No structure other than a fence or sign shall be located closer than 15 feet from the front property line.
  - b. Side Yard: No structure other than a fence or sign shall be located closer than 5 feet from side property lines for interior properties, 10 feet from exterior side property lines for corner building sites.
  - c. Vision Clearance: Vision clearance on corner properties shall be a minimum of 20 feet.
4. **Height:** Maximum height of all structures shall be 35 feet.
5. **Signs:**
  - a. Exterior signs shall be limited to two per business establishment.
  - b. Signs shall be limited to 32 square feet.
  - c. Signs may be illuminated, but shall not be of the flashing or blinking type.
  - d. No sign shall project above the height of the tallest structure on the lot.
6. **Parking:** Off-street parking shall be provided in accordance with Article 35.

## ARTICLE 8

### (5R) Rural Residential-5

#### SECTION 3.8.000 Purpose

The Rural Residential-5 classification is intended to provide for low density rural homesites in an open space environment in order to encourage the continued existence of rural family life. The 5R zone is also intended to provide a transition from more intense residential development to the agriculture, timber and open space areas of the County. The zone may be applied to areas committed to nonresource use or reserved for rural residential expansion at this density, as specifically provided in the Douglas County Comprehensive Plan.

#### SECTION 3.8.050 Permitted Uses

In the 5R Zone, the following uses and activities and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance:

1. One single-family dwelling.
2. Buildings accessory to a single-family dwelling such as garages, storerooms, woodsheds, laundry, playhouses, greenhouses, hobby shop, animal or fowl shelter, or similar and related accessory uses provided the structure does not exceed 1,500 square feet in size.
3. Additional single-family dwellings, to provide residence for an immediate family member or members of the owner, provided that a minimum average density of five acres per dwelling shall be maintained, and proper sanitation approvals are obtained.
4. Farm uses and/or animals, subject to conditions and limitations provided herein:
  - a. The total number of livestock allowed on a property shall be limited to the area of the property divided by the total minimum area required for each animal listed below:
    - (1) One horse, cow or swine per acre; or
    - (2) One goat, sheep, llama, alpaca or emu per half acre.
  - b. A minimum of five hundred square feet of area shall be required for each chicken, other fowl or rabbit kept on the property.

- c. The number of colonies of bees allowed on a property shall be limited to one colony for each ten thousand square feet of area and shall not be located closer than 50 feet from any property line.
  - d. Animals and fowl shall be properly caged or housed, and proper sanitation shall be maintained.
5. Forest uses, including the propagation and harvesting of forest products.
  6. Roadside stand.
  7. Limited Home Occupation.
  8. Publicly owned park, playground, or golf course.
  9. Public and semipublic buildings, structures and uses essential to the physical, social and economic welfare of an area, including but not limited to fire stations, schools, granges, community halls and churches.
  10. Fish and wildlife management.
  11. Utility and communication facilities necessary for public service.

#### **SECTION 3.8.075 Uses Permitted With Standards**

In the 5R Zone, the following uses and activities are permitted subject to specified standards and the general provisions and exceptions set forth by this Ordinance.

Item 1 in this use category shall be subject to written consent from all surrounding adjacent property owners. Adjacent property owner consent shall be obtained by the applicant and submitted to the Planning Department on forms provided by the County. The surrounding adjacent property owners shall be identified by the Planning Department after a pre-application conference has been held and the fee paid (same fee as if the application were for a conditional use). Adjacent owner consent signatures shall be verified by sending a copy of the signed consent form to each identified owner of record. If no negative comments are received within 12 days, the request shall be granted. If adjacent owner consent cannot be obtained, the request shall then be processed as a conditional use pursuant to §2.060.1.

1. Buildings accessory to a single-family dwelling in excess of 1,500 square feet.

#### **SECTION 3.8.100 Buildings and Uses Permitted Conditionally**

In the 5R zone, the following uses and activities and their accessory buildings and uses are permitted, subject to the provisions of §2.060.1 and Article 39 of this chapter:

1. Private park, playground, or golf course.
2. Nursery for the growing, sale and display of trees, shrubs and flowers.
3. Kennels.
4. Aggregate and mineral extraction.
5. Home Occupation.

### **SECTION 3.8.150 Property Development Standards**

1. **Size:** The minimum property size for which a building permit or placement permit for a dwelling may be issued is five (5) acres, or as otherwise provided in the Ordinance.
2. **Coverage:** Not over 40 percent of the lot area of any building site shall be covered by all buildings located thereon.
3. **Setbacks:** No structure other than a fence or sign shall be located closer than 30 feet from the right-of-way of a public road or from an easement serving more than 15 units of land, 10 feet from the right-of-way of other private road easements, and 10 feet from all other property lines.
4. **Height:** Maximum height of any structure shall be 45 feet.
5. **Signs:**
  - a. Signs shall not extend over a public right-of-way or project beyond the property line.
  - b. Signs shall not be illuminated or capable of movement.
  - c. The total sign area of all signs on the property shall be limited to thirty-two square feet.
6. **Parking:** Off street parking shall be provided in accordance with Article 35.

## ARTICLE 11

# (RS) Suburban Residential

### SECTION 3.11.000 Purpose

The Suburban Residential classification is intended to provide for a primarily single-family suburban environment within which certain limited agricultural pursuits may be carried on. It is intended to be applied in those areas which are within adopted Urban Growth Boundaries, yet have limited urban services.

### SECTION 3.11.050 Permitted Uses

In the RS Zone, the following uses and their accessory buildings and uses are permitted subject to the general provisions and exceptions set forth by this ordinance:

1. A single-family dwelling.
2. Duplex, provided a density of one dwelling per 15,000 square feet is maintained.
3. Buildings accessory to a single-family dwelling such as garages, storerooms, woodsheds, laundry, playhouses, greenhouses, hobby shop, animal or fowl shelter, or similar and related uses provided the structure does not exceed 1,500 square feet in size and that there shall not be more than four buildings allowed as accessory to any dwelling.
4. Farm use and/or animals, subject to conditions and limitations provided herein:
  - a. The total number of cows, horses, sheep or goats allowed on a property shall be limited to the area of the property divided by the total minimum area required for each animal listed below:
    - (1) One horse or cow per acre; or
    - (2) One goat or sheep per half acre.
  - b. A minimum of five hundred square feet of property area shall be required for each chicken, other fowl or rabbit kept on the property.
  - c. The number of colonies of bees allowed on a property shall be limited to one colony for each ten thousand square feet of lot area and shall be located no closer than 50 feet from any property line.

- d. The raising of swine is not permitted in the RS zone.
  - e. Animal runs or barns, and fowl pens shall be located no closer than fifty feet from any property line, or natural or other drainage channel.
  - f. Animals and fowl shall be properly caged or housed, and proper sanitation shall be maintained.
- 5. Limited Home Occupation.
  - 6. Bed and Breakfast.

### **SECTION 3.11.075 Uses Permitted With Standards**

In the RS Zone, the following uses and activities are permitted subject to specified standards and the general provisions and exceptions set forth by this Ordinance.

Items 3, 4 and 5 in this use category shall be subject to written consent from all surrounding adjacent property owners. Adjacent property owner consent shall be obtained by the applicant and submitted to the Planning Department on forms provided by the County. The surrounding adjacent property owners shall be identified by the Planning Department after a pre-application conference has been held and the fee paid (same fee as if the application were for a conditional use). Adjacent owner consent signatures shall be verified by sending a copy of the signed consent form to each identified owner of record. If no negative comments are received within 12 days, the request shall be granted. If adjacent owner consent cannot be obtained, the request shall then be processed as a conditional use pursuant to §2.060.1.

- 1. Zero lot line residential developments, subject to provisions of Article 31.
- 2. Mobile Home Parks subject to the density of the RS Zone and the provisions of Article 51.
- 3. Privately operated kindergartens or day nurseries.
- 4. Residential Facility.
- 5. Buildings accessory to a single-family dwelling in excess of 1,500 square feet.

### **SECTION 3.11.100 Buildings and Uses Permitted Conditionally**

In the RS zone, the following uses and activities and their accessory buildings and uses are permitted subject to the provisions of §2.060.1 and Article 39 of this chapter:

- 1. Park, playground or golf course.

2. Public and semipublic buildings, structures and uses essential to the physical, social and economic welfare of an area, including but not limited to schools, libraries, fire stations, granges, community halls, pumping stations, and substations. Churches shall maintain setbacks from side and rear property lines of at least 20 feet. Alleys contiguous to or within the property may be included in the requested setback.
3. Nursery for the growing, sale and display of trees, shrubs and flowers.

### **SECTION 3.11.150 Property Development Standards**

1. **Area:**
  - a. Minimum property size is one acre or larger when determined for proper sewage disposal by the appropriate sanitary authority in areas not served by a community water supply system or a community sanitary sewer system.
  - b. In areas served by community water supply system or by community sanitary sewer system, or both, lots or parcels may have a minimum area of 15,000 square feet.
  - c. Minimum average width shall be 100 feet.
2. **Coverage:** Not over 40 percent of the property shall be covered by all buildings located thereon.
3. **Setbacks:**
  - a. Front Yard: No structure other than a fence or sign shall be located closer than 15 feet from the front property line.
  - b. Side Yard: No structure other than a fence or sign shall be located closer than 5 feet from side property lines for interior properties and 10 feet from exterior side property lines for corner building sites.
  - c. Rear Yard: No structure other than a fence or sign shall be located closer than 5 feet from the rear property line.
  - d. Vision Clearance: Vision clearance on corner properties shall be a minimum of 20 feet.
4. **Height:** Maximum height for all structures shall be 35 feet, except hospitals, public buildings or churches which may be increased in height to 45 feet.

**Appendix F**  
**Interchange 119/120 Conditions Report**

# **Transportation Conditions Report**

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**I-5 Interchanges 119/120**

**Douglas County, Oregon**

*Prepared for*  
**Oregon Department of Transportation, Region 3**  
**3500 NW Stewart Parkway**  
**Roseburg, Oregon 97470**

*Prepared by*  
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**2100 SW River Parkway**  
**Portland, Oregon**

October, 2005



## **EXECUTIVE SUMMARY**

This document comprises the Interchange Area Study for Interchanges 119 and 120 (Winston and Green). The interchanges are located less than one mile apart, approximately five miles south of Roseburg, and serve the unincorporated community of Green in Douglas County.

The Conditions Report project is intended as the first step in planning for long-range improvements. This initial step is needed to gain a better understanding of both the current and the future deficiencies of these two interchanges. In the future, an Interchange Area Management Plan will be drafted using information from this Conditions Report to determine a preferred build solution that will solve the transportation problems within this area. Both interchanges have structurally deficient bridges and traffic operations limitations. The goal of this report is to identify and document conditions, limitations, opportunities and needs so that subsequent planning can address all relevant issues and focus on those that are most important. At the same time, long-range options should not be precluded by short-range solutions to immediate problems.

The conditions report contains a review of relevant plans and policies, including the Statewide Planning Goals, 1999 Oregon Highway Plan, Oregon Administrative Rules, Douglas County Transportation System Plan, Green Urban Unincorporated Circulation Plan, Winston Transportation System Plan, Greater Roseburg Area Transportation Study, 2000 I-5 State of the Interstate Report, and various traffic impact studies.

Operational analyses at planning area intersections and freeway facilities under existing and year 2025 no-build conditions were conducted and summarized in the report. The analyses confirmed that several intersections are approaching or exceeding ODOT operations standards. The I-5 southbound ramp terminals at Old Highway 99 are currently well over capacity with long queue lengths. The intersection of OR 42 with Carnes Road marginally exceeds ODOT operations standards under existing traffic conditions and approaches capacity under year 2025 traffic conditions. Preliminary analysis showed the intersection of Old Highway 99 and Grant Smith Road to marginally exceed ODOT standards under existing conditions, but still well under capacity. However, due to an imbalanced distribution of vehicles on the eastbound approaches caused by the Interchange 119 configuration, actual operations are much worse. Further analysis was conducted to model the detrimental effects of lane imbalance on this approach, and resulted in longer queue lengths and poor overall operation.

An analysis of the freeway ramps was conducted to test the benefits of adding a northbound auxiliary (weave) lane between the two interchanges. Results of this analysis showed that an auxiliary lane would improve operations somewhat over existing conditions. However, adding a weaving section would increase turbulence and increase the number of potential conflicts due to the introduction of a new lane-change maneuver for northbound traffic exiting at Interchange 120.

The report also contains a safety analysis, a listing of planned and programmed projects in the area, an examination of existing and future land uses, and a review of environmental constraints. The report also identifies deficiencies and needs related to roadway geometry, structures, operations, safety and access management standards. Additionally, the report identifies freight movement patterns and needs.

This conditions report has been prepared with participation of Douglas County, the City of Roseburg the Oregon Department of Transportation, and with input from a variety of stakeholders and the general public.

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# 1 INTRODUCTION

## 1.1 Project Study Area

Interstate 5 (I-5) Interchanges 119 and 120 are located approximately 5 miles south of Roseburg, serve the unincorporated community of Green in Douglas County and provide important connections to Roseburg and Winston. The two interchanges are located approximately 0.7 miles apart. Interchange 119 is a trumpet B form and generally exhibits good geometrics and operations. Interchange 120 is a modified partial cloverleaf, with constrained geometry, which results in poor operational characteristics, particularly at the southbound off-ramp. In addition, there is no northbound on-ramp to Interstate 5 at this location. Old Highway 99 South parallels Interstate 5 and crosses under the freeway just north of Interchange 120. The Coos Bay – Roseburg Highway (OR 42) enters Interstate 5 from the west at Interchange 119. Both Interstate 5 and Old Highway 99 experience peak hour commuter traffic between Green and Roseburg. Figure 1 shows the Interchange 119/120 planning area.

## 1.2 Project Description

The Interchanges 119 and 120 Conditions Report project is intended as the first step in planning for long-range improvements. This initial step is needed to gain a better understanding of both the current and the future operational deficiencies of these two interchanges. In the future, an Interchange Area Management Plan will be drafted using information from this conditions report to determine a preferred build solution that will solve the transportation problems within this area.

Both interchanges have structurally deficient bridges and traffic operations limitations. Additional planning is needed to ensure that long-range options are not precluded by short-range solutions to immediate problems. The goal of this initial step is to identify and document conditions, limitations, opportunities and needs so that subsequent planning can address all relevant issues and focus on those that are most important.

Planned local development will affect the operation of both interchanges. Recent zone changes have been approved by Douglas County in the study area that will likely lead to increased demand affecting both interchanges. Due to increased travel on I-5 and local growth in recent years, state and local officials, area businesses, and residents have developed a common understanding that both interchanges need to be evaluated and possibly improved to accommodate future travel demand.

The purpose of this initial planning effort is to evaluate the operation of Interchanges 119 and 120, assess the limitations and issues of concern, and, in general terms, assess the long-range needs attributable to planned development in the area. Because of the proximity of the interchanges to each other this work order is set up to evaluate how the interchanges perform independently as well as in combination as part of the Interstate 5 system serving the Green area. The work will also include a general assessment of the effect of the state and local highway system, within the study area, on the performance and traffic at the interchanges and on I-5.

One or more subsequent phases will be initiated after the completion of this work order to determine how best to improve the interchanges and the local transportation facilities that affect interchange operations.

This report was coordinated with the work to complete the I-5 Interchange 123 Interchange Area Management Plan.

### **1.3 Agency Participation**

This conditions report has been prepared with participation of Douglas County, the City of Roseburg the Oregon Department of Transportation, and with input from a variety of stakeholders and the general public. Contacts were made with stakeholders interested in or concerned about future modifications to the interchanges and the possible effects on existing land uses, access, and the local road system.

A Technical Advisory Committee (TAC) informed and guided the preparation of the work products developed for the report. The TAC met five times during the course of the project. TAC members included representatives from the Douglas County Planning and Road departments, and the City of Roseburg planning department. ODOT TAC members included staff from Region 3 Planning, Preliminary Design, Transportation Analysis Unit, Traffic/Region Access Management Engineer, Right-of-Way, and the Bridge Package Consultant Project Manager. In addition, two public meetings took place during the course of the project. The first public meeting took place on September 9, 2004 during a meeting of the City of Roseburg Public Works Commission. The second public meeting took place on May 17<sup>th</sup>, 2005 during a meeting of the Roseburg/Green Planning Advisory Committee.

### **1.4 Interchange Function**

Interchanges 119 and 120 are located outside the UGB of the City of Roseburg. However, the interchanges serve commuter traffic between Roseburg and the City of Winston as well as the unincorporated community of Green.

Interchange 119 connects I-5 with OR 42, classified by ODOT as a Statewide Highway and Expressway. Interchange 120 provides a partial connection with Old Highway 99 South, a County Arterial. The primary function of interstate freeways is to serve inter-regional and interstate passenger and freight traffic. The function of Statewide-level highways is to provide inter-regional and inter-urban mobility (connecting larger urban areas, ports and other locations that are not served by the Interstate system). The function of County Arterials is to provide through traffic movement between major communities in Douglas County, and distribute traffic between the State Highway system and the local streets network.

The intended function of Interchanges 119 and 120 is to safely and efficiently accommodate future traffic demands generated by population and employment growth in the region.

## 2 STAKEHOLDER IDENTIFICATION AND INTERVIEWS

### 2.1 Background

A specific task identified for this project involved interviewing interested parties with knowledge of the interchanges. With the help of the project's Technical Advisory Committee, the consulting team identified individuals that potentially had valuable information and insight into transportation and land use planning-related issues at the interchanges. This initial list ultimately was narrowed down to a representative list of 13 individuals. The individuals included business property owners, homeowners, representatives of distribution and manufacturing interests, visitor or traveler service providers, and economic development representatives. These individuals were then interviewed via telephone during the last two weeks of June 2004 to identify issues associated with the 119/120 Interchange area. This section provides an overview of the stakeholder interviews. The complete summary report from the stakeholder interviews, including a list of the stakeholders interviewed and a complete list of the interview questions and responses can be found in Appendix A.

### 2.2 Interview Summary

There were some topics or themes that were common to most of the responses to the interview questions. Most respondents were generally pleased with present operations at all three interchanges and did not have concerns regarding the interchanges' ability to handle current levels of traffic efficiently and safely. However, those interviewed did make a point of mentioning that the design of one or more of the interchanges was potentially dangerous. The majority of comments confirmed that current traffic conditions at the interchanges were not seen as having negative impacts to businesses or properties in the area. Words such as "workable," "acceptable," and "serves needs well" were used to describe current traffic conditions at the intersections, with one contrary comment pointedly saying that operations at Interchange 120 were unsatisfactory<sup>1</sup>.

Several of those interviewed emphasized the growth in Roseburg, Winston and Coos Bay and noted that this growth will likely have negative impacts on the interchanges in the future. Most interviewees anticipated increased growth in the immediate vicinity of the interchanges as well, noting the amount and location of vacant and redevelopable land. Increases in light industrial and distribution-warehousing was anticipated for the Interchange 119/120 area. One individual interviewed predicted more residential growth in the Interchange 120 and Green area, citing the relative affordability of housing prices.

The interviews highlighted that most people view the three interchanges' primary function to access property in the immediate area. In the case of the 119 exit, access to the coast and other tourist destinations (such as the Wildlife Safari in Winston), as well as access to the industrial park in Green, were also cited as a primary functions. Most of those interviewed expressed a vested interest in one particular interchange, typically the one closest physically to their property or place of business.

There were differing opinions regarding the function of Interchange 120; business representatives pointed to the necessity of the interchange for commercial uses and truck

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<sup>1</sup> It was unclear if this comment was reacting to current construction at the Interchange, but the implication was that this Interchange doesn't work well under normal conditions.

movement, but another interviewee saw Interchange 120 serving predominantly residential traffic west of the freeway and in the Green area, with 119 being the major commercial exit.

The recent construction at Interchange 119 was cited the most as an improvement that had a positive effect on traffic movement in the area. There were few comments directed specifically at access issues, beyond concerns that current access be retained, both during and after any future construction at the interchanges.

### **3 PLAN AND POLICY REVIEW**

This section summarizes the relevant plans and policies and identifies how they influence planning for Interchanges 119 and 120. The complete technical memorandum can be found in Appendix B.

This section reviews the following transportation and land use plans and regulations:

- Statewide Planning Goals 2 (Land Use Planning), 11 (Public Facilities Planning), and 12 (Transportation) , and 14 (Urbanization)
- 1999 Oregon Highway Plan (OHP);
- Oregon Administrative Rule (OAR) 734-051 (ODOT Division 51 Interchange Area Access Management Spacing Standards for Approaches);
- Douglas County Transportation System Plan (Adopted 2001);
- Green Urban Unincorporated Circulation Plan (adopted as part of the Douglas County TSP, 2001);
- City of Winston Transportation System Plan (2003);
- Greater Roseburg Area Transportation Study (GRATS) (Final Report 1996);
- 2000 I-5 State of the Interstate Report; and
- Traffic impact studies (developed as part of land use applications submitted to Douglas County).

#### **3.1 Statewide Planning Goal 2 and OAR 660, Division 4**

Goal 2, Land Use Planning, requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. Goal 2 is important because:

- 1) It requires planning coordination between ODOT and Douglas County to address future impacts to the area impacted by proposed interchange improvements, as well as the future operation of the interchanges;
- 2) It requires that land use decisions and actions be supported by “substantial evidence,” and for that evidence to be found as adequate to support findings of fact; and
- 3) It requires that local/state/federal level plans and actions related to land use be “consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268.”

### **3.2 Statewide Planning Goal 11 and OAR 660, Division 11.**

Statewide Planning Goal 11. Public Facilities Planning, requires cities and counties to plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development. The goal requires that urban and rural development be “guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable and rural areas to be served.” The Unincorporated Urban Area of Green is growing and appropriate transportation facilities are needed to manage impacts from that growth.

### **3.3 Statewide Planning Goal 12 and OAR 660, Division 12.**

Goal 12, Transportation, requires cities, counties, metropolitan planning organizations and ODOT to provide and encourage a safe, convenient and economic transportation system. This is accomplished through development of Transportation System Plans (TSPs) based on inventories of local, regional and state transportation needs. Goal 12 is implemented through OAR 660, Division 12, the Transportation Planning Rule (TPR). The TPR requires local governments to adopt land use regulations consistent with state and federal requirements “to protect transportation facilities, corridors and sites for their identified functions OAR 660-012-0045(2).” This policy is achieved through access control measures, road operations standards, and coordinated review of future land use decisions affecting transportation facilities between local jurisdictions and ODOT. See also OAR 660-012-0060.

LCDC’s rules implementing Goal 12 do not regulate access management. ODOT adopted OAR 734, Chapter 51 to address access management and it is expected that ODOT, as part of this project, will engage in access management consistent with its Access Management Rule.

### **3.4 Statewide Planning Goal 14, and OAR 660, Divisions 14 and 22**

Goal 14, Urbanization, is important because it focuses development within relatively compact boundaries of Urban Growth Boundaries (UGBs) and to a lesser degree in unincorporated communities. This compact development helps contain the costs of public facilities such as transportation by reducing the need for facilities further out and helping jurisdictions better anticipate where growth will occur. The Interchange 119 and 120 Study Area includes land in the unincorporated community of Green. Goal 14 (OAR 660, Division 22) recognizes established development centers that were never incorporated yet have many qualities of a small city.

### **3.5 1999 Oregon Highway Plan**

The 1999 Oregon Highway Plan (OHP) policies applicable to planning for interchanges 119 and 120 include four items under Goal 1 (System Definition). Policy 1B (Land Use and Transportation) recognizes the need for coordination between state and local jurisdictions. Policy 1C (State Highway Freight System) states the need to balance the movement of goods and services with other uses. Policy 1F (Highway Mobility Standards) sets mobility standards for ensuring a reliable and acceptable level of mobility on the highway system by identifying necessary improvements that would allow the interchange to function in a manner consistent with OHP mobility standards. Policy 1G (Major Improvements) requires maintaining performance and improving safety by improving efficiency and management before adding capacity.

Under Goal 2: System Management, Policy 2B (Off-System Improvements) helps local jurisdictions adopt land use and access management policies. Policy 2F (Traffic Safety) improves the safety of the highway system. While an IAMP is not part of this project, future proposed improvements to the interchanges will require preparation of an IAMP and Access Management Plan that will address access management standards. One component of the IAMP will be an intergovernmental agreement between ODOT and the local jurisdiction(s) to implement access management solutions.

Under Goal 3: Access Management, Policy 3A (Classification and Spacing Standards) sets access spacing standards for driveways on, and approaches to, the state highway system. Policy 3C (Interchange Access Management Areas) sets policy for managing interchange areas by developing IAMPs. Policy 3D (Deviations) establishes general policies and procedures for deviations from adopted access management standards and policies.

This report compares access spacing with adopted access standards (existing physical features summary). Any future suggested improvements for the interchange would need to comply with this policy and improve any deficiencies identified. Future improvements to the interchange may affect the current configuration of approaches and access points.

### **3.6 Oregon Administrative Rule 734, Division 51 (Highway Approaches, Access Control, Spacing Standards and Medians)**

OAR 734-051 governs the permitting, management, and standards of approaches to state highways to ensure safe and efficient operation of the state highways. OAR 734-051 policies address access spacing standards and the purpose and components of an access management plan.

### **3.7 Green Transportation System Plan (Adopted August 2001) and Douglas County Transportation System Plan (Adopted 2001)**

The Green Transportation System Plan (TSP) was adopted in 2001 to provide a detailed analysis of transportation facilities and levels of service for the Green Unincorporated Urban Area. The TSP inventories and analyzes the current transportation system and predicts conditions at buildout based on a buildable lands inventory and on population projections.

The TSP does not advocate any new projects directly impacting Interchanges 119 or 120. Key projects identified as solutions to Green's capacity, circulation, and safety issues include: improving traffic circulation by constructing multiple, local road connections; enhancing safety and circulation on and near OR 42 by closing some accesses and constructing a frontage road; and improving capacity and enhancing safety at Kelly's Corner by adding right-turn lanes on OR 42 in both directions, widening the local legs, moving the signal poles and highway signs away from the intersection, and re-phasing the signals.

The Green TSP was used as the basis of the Green Urban Area Circulation Plan that is part of the Douglas County TSP. The Douglas County Transportation System Plan (TSP) was adopted in 2001 and establishes a system of transportation facilities and level of service adequate to meet the county's transportation needs. This project is consistent with the goals and policies of the county's TSP, which includes goals to "provide and encourage a safe, convenient and

economical transportation system.” The TSP does not list any projects related to interchanges 119 or 120.

### **3.7.1 Green Urban Unincorporated Circulation Plan (2001)**

The purpose of the Green Urban Unincorporated Circulation Plan is to provide circulation policies and findings for the unincorporated urban areas and to address transportation issues within those unincorporated areas. The findings described in The Green Circulation Plan discuss previous transportation improvements within the community, including relocating the Carnes Road/Old Highway 99 intersection to improve intersection safety. The plan also proposes future improvements, including providing new roadways or increasing capacity of existing roadways within the planning area. Proposed new roadways near I-5 would serve future development of an industrial area between Carnes Road and the Central Oregon Pacific Railroad and a vacant industrial area on the east side of I-5. No new connection to I-5 is proposed in the Green Circulation Plan. Future interchange improvements, based on the 2025 Needs Summary Report to be developed as part of the Conditions Report, will need to consider accessibility from the proposed new roadways in the industrial areas, as adopted in the circulation plan.

### **3.8 City of Winston Transportation System Plan (2003)**

The City of Winston is located west of interchanges 119 and 120, which are outside of the city’s urban growth boundary (UGB). However, the Winston TSP may apply if improvements were to occur to Old Highway 99/OR 42 within the Winston UGB that connects with I-5 at interchange 120. This project’s objectives are consistent with the goals and policies of the Winston TSP; but it is possible that none of the proposed improvements will be within the city’s UGB. If no improvements are proposed within the UGB, the Winston TSP will not be applicable to this planning project.

### **3.9 Greater Roseburg Area Transportation Study (GRATS) (Final Report 1996)**

The Greater Roseburg Area Transportation Study (GRATS) is a regional framework study that identifies multimodal strategies to manage growth and the communities’ transportation needs. Several goals are described in the study and are relevant to the project; they include accessibility, mobility, affordability, safety, flexibility and connectivity. Although the GRATS provides some framework for planning in the region, it was not adopted. It was built on an older model and has subsequently been replaced by more current transportation system plans.

### **3.10I-5 State of the Interstate Report**

The I-5 State of the Interstate Report (2000) describes the existing and forecasted operating, geometric, safety, and physical conditions for the I-5 mainline and interchanges within Oregon. The following information within this report is relevant to interchanges 119 and 120. The State of the Interstate Report uses highway segments as a unit of analysis; the Conditions Report study area stretches from approximately milepost (MP) 119.24, at Grant Smith Road, to MP 120.62 at the South Umpqua River. The Conditions Report being prepared for interchanges 119 and 120 will incorporate information from the I-5 Report.

The Interstate Report references the 1997 Pavement Conditions Report. The information is outdated, as the 2003 Pavement Conditions Report is available. The Oregon State Highway System 2003 Pavement Conditions map for Region 3 (December 2003) shows the relevant segment as good. The 1997 report classifies the I-5 segment between MP 117.7 and 122.3 as having a 52.4 section index (fair condition) for the northbound lanes and a 43.0 (poor condition) section index for the southbound lanes. The index ranges from 0 to 100, with 11.0 to 45.0 categorized as poor and 46.0 to 75.0 as fair. A fair rating describes generally stable pavement with moderate cracking, minor areas of structural weakness and acceptable ride quality. Poor pavement conditions indicate a pavement with areas of instability, large crack patterns, heavy and numerous patches and acceptable to poor ride quality. Pavement in fair condition may require some maintenance to ensure the existing pavement does not fall below the fair category. Poor pavement quality requires action to meet ODOT's goal for ensuring pavement quality.

### **3.11 Traffic Impact Studies**

Three traffic impact studies (TISs) were reviewed as a part of this task. All are for land use proposals to rezone land within the Green Urban Unincorporated area. Of the three TISs, a potential area of concern where rezoning would cause congestion levels to worsen was identified as the unsignalized intersection at Old Highway 99 and the I-5 southbound ramps. Based on capacity analysis performed for the Speedway Industrial Rezone TIS, it was determined that this intersection warrants a signal. ODOT has indicated, however, that there are sight distance issues with the existing geometric configuration at the Old Highway 99/I-5 southbound ramps that would make locating a signal difficult.

## **4 TRANSPORTATION FACILITIES**

### **4.1 Traffic Operations Analysis**

This section summarizes the methods, procedures, and data used in analyzing the traffic counts and developing 30<sup>th</sup> highest hour volumes and year 2025 design hour volumes. Also included is a summary of the traffic operations analyses at key intersections, ramp terminals and freeway entrance / exit ramps. Analysis was conducted under both existing year (2004) and future year (2025) traffic volume conditions. The summary information in this section is based on the technical memoranda compiled in Appendix C.

#### **4.1.1 Planning Area Intersections, Ramps and Freeway Segments**

##### **Old Highway 99 at I-5 Southbound Ramps**

This is a T-intersection. The westbound leg consists of the southbound on- and off-ramps to I-5, which has a shared through-left turn with a channelized right-turn lane. Old Highway 99 consists of a through lane and channelized right-turn lane on the northbound approach. The southbound approach contains a through lane and a left-turn lane.

##### **Old Highway 99 at Speedway Road**

This is a T-intersection, with the stop-controlled Speedway Road intersecting Old Highway 99 with a single-lane approach for both left- and right-turning vehicles. Old Highway 99 is a two-lane facility with shared lanes for both through and turning movements.

### **Old Highway 99 at Happy Valley Road**

Happy Valley Road and Old Highway 99 is a signalized intersection with a driveway comprising the east approach. The northbound approach of Old Highway 99 has a shared through-right turn lane and a left-turn lane. The southbound approach consists of a channelized right turn lane with approximately 150 feet of vehicle storage, and a left turn lane. The eastbound approach of Happy Valley Road consists of a shared through-left turn lane with an exclusive right-turn lane.

### **Old Highway 99 at Beaver State Sand and Gravel Access**

The east leg of this T-intersection provides access to Beaver State Sand and Gravel. This approach consists of a single lane for both left- and right-turning vehicles. Old Highway 99 is a two-lane facility with shared lanes for both through and turning movements.

### **Coos Bay–Roseburg Highway (OR 42) at Old Highway 99/Grant Smith Road**

The intersection of Old Highway 99 and OR 42/Grant Smith Road is a signalized intersection located approximately 0.4 miles west of I-5. The westbound approach carries traffic from the north- and southbound off-ramps of Interchange 119 and has four lanes: a separate left-turn lane, two through lanes, and a separate right-turn lane. The eastbound approach consists of a left-turn lane, through lane, and a shared through-right turn lane. The southbound approach of Old Highway 99 has a channelized right-turn lane with separate through and left-turn lanes. The northbound approach from Grant Smith Road has a similar configuration with right-turn channelization and separate left-turn and through movements.

### **OR 42 at Carnes Road/Roberts Creek Road**

This intersection is located approximately 0.5 miles southwest of OR 42's intersection with Old Highway 99. The westbound approach on OR 42 consists of a left-turn lane, two through lanes, and a right-turn lane. The eastbound approach has a left-turn lane, one through lane, and one shared through-right turn lane. Both Carnes Road and Roberts Creek Road have shared through-right turn lanes and left-turn lanes.

The lane configuration and traffic control at each of the six intersections is illustrated in Figure 2.

### **Interchanges 119 and 120**

The OHP requires a minimum of two miles between the on-ramp of one interchange and the off-ramp of a downstream interchange in rural locations<sup>2</sup>. However, the southbound on-ramp at Interchange 120 is located about 2200 feet from the southbound off-ramp at Interchange 119, and the northbound on-ramp for Interchange 119 is located about 2500 feet from the off-ramp of Interchange 120.

The volume of vehicles entering I-5 northbound from Interchange 119 is significant, as it is approximately equal to the mainline volume. The acceleration lane for the northbound on-ramp at Interchange 119 is 300 feet short of ODOT standards. This configuration forces large volumes of vehicles to complete their merge maneuver over a substandard length. Freeway operations during peak operating hours are characterized by congestion between the northbound on- and off-ramps.

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<sup>2</sup> Although the interchanges are in a developed area, they do not lie inside the Roseburg Urban Growth Boundary. Therefore, the OHP classifies the interchanges as rural.

## **4.1.2 Traffic Counts and Design Hour Development**

### **Traffic Counts**

ODOT conducted 3-hour, and 14-hour manual classification counts at planning area intersections between November 2003 and June 2004. Additionally, ODOT conducted 48-hour tube counts at the ramps of Interchange 119 and 120 in May 2002. The classification counts were used in the development of 30<sup>th</sup> highest hour and design hour volumes. Details regarding traffic counts can be found in Appendix C.

ODOT count data enabled the determination of peak hour volumes, peak hour factors and the percentage of heavy vehicles at each intersection. The common peak hour for the four intersections was found to occur between 4:00 and 5:00 PM. Heavy vehicles were determined to comprise between three and eight percent of overall traffic at area intersections.

### **30<sup>th</sup> Highest Hour Determination**

The Transportation Planning Analysis Unit (TPAU) of ODOT has developed a procedure for calculating current year 30<sup>th</sup> highest hour traffic volumes. In an urban area the 30<sup>th</sup> highest hour typically occurs on a weekday during the peak month of the year, and in a rural area it typically occurs on a weekend day during the summer. The 30<sup>th</sup> highest hour is calculated by applying a seasonal factor to the recorded peak hour volumes. The seasonal factor is found by using the Automatic Traffic Recorder (ATR) closest to the location of interest with similar traffic flows, area type, and lane configuration. Traffic volumes are then multiplied by their appropriate seasonal factor to determine the 30<sup>th</sup> highest hour volumes.

The above procedure was applied to the Interchange 119/120 planning area to determine the 30<sup>th</sup> highest traffic volumes, which were then manually balanced between intersections and the two interchanges. These volumes are illustrated in Figure 3 and Figure 4.

### **Year 2025 Design Hour Development**

EMME/2 model volumes were developed for years 2000 and 2025. Year 2004 model volumes were determined through linear interpolation between 2000 and 2025 model volumes. Using the method outlined in NCHRP 255<sup>3</sup>, the difference between link volumes for the 2004 and 2025 model years was calculated and added to the 2004 30<sup>th</sup> highest hour volumes used for the traffic operations analysis for existing conditions. Volumes were then balanced between planning area intersections and the two interchanges. Figure 4 and Figure 5 show 2025 design hour volumes for the intersections and ramps within the Interchanges 119 and 120 planning area. See Appendix C for details regarding the model development process.

## **4.1.3 Traffic Operations Analysis Methods**

Traffic operations analyses were performed at the six interchange area intersections and at the ramp merge and diverge points on Interstate 5 using the methodology outlined in the *2000 Highway Capacity Manual* (HCM). The Synchro software package was selected for performing the traffic operational analysis for non-freeway facilities. Synchro report output summarizes the

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<sup>3</sup> National Cooperative Highway Research Program Report 255. "Highway Traffic Data for Urbanized Area Project Planning and Design." 1982.

calculated level of service (LOS), volume-to-capacity (v/c) Ratios, and the 95<sup>th</sup> percentile queue length by lane.

SimTraffic simulation modeling was used to supplement Synchro and HCM analysis for congested intersections and freeway ramp and weave segments. SimTraffic is not subject to the limitations inherent in HCM queuing analysis due to its ability to calculate the effects of traffic flow under saturated traffic conditions where traffic may spill out of left-turn storage bays or spill over from one intersection to another. SimTraffic also provides information on delay and average speed for freeway ramp and weaving segments. Appendix C contains further details and a discussion regarding traffic operations analysis methods.

#### **4.1.4 Operational Criteria**

Transportation engineers have established various descriptors for traffic operations of intersections. The most common descriptor is the level-of-service (LOS) as defined by the HCM. The LOS concept requires consideration of factors that include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort, convenience, and operating cost. Six standards have been established ranging from LOS A, where traffic is relatively free flowing, to LOS F, where the street system is totally saturated with traffic and movement is very difficult.

At both signalized and unsignalized intersections, LOS is based on control delay. At two-way stop-controlled intersections, control delay is the total duration from the time a vehicle joins the back of the queue until it proceeds forward into the intersection from the first position at the stop sign.

On freeway ramp and weaving segments LOS is based on the density of passenger cars per mile per lane (pc/mi/ln). At LOS A, traffic moves at free-flow speeds, and vehicles experience no impedance to their ability to maneuver in the traffic stream. At the other end of the continuum is LOS F, in which demand exceeds capacity and operational breakdowns occur. LOS E represents the density at capacity.

A comparison of traffic volume demand to intersection capacity is another method of evaluating how well an intersection is operating. This comparison is presented as a volume-to-capacity (v/c) ratio. A v/c ratio of less than 1.0 indicates that the volume is less than capacity. When it is closer to 0.0, traffic conditions are generally good with little congestion and low delays for most intersection movements. As the v/c ratio approaches 1.0, traffic becomes more congested and unstable with longer delays.

The OHP and the Douglas County Transportation System Plan (TSP) define mobility standards in terms of v/c ratios, which are dependent on the roadway classification and area type. According to the OHP, the mobility standard for OR 42, a rural Statewide Highway and Expressway, is 0.70. The controlling mobility standard for ramp terminals is the lower of 0.85 or that of the crossroad. Old Highway 99, the Interchange 120 crossroad, is a Rural Arterial according to the Douglas County TSP. As such, it has a mobility standard of 0.80. These mobility standards apply through the planning horizon year, which is 2025 in this case.

The OHP requires that a v/c ratio of 0.70 be met for rural interstate freeway segments. This mobility standard includes ramp and weaving segments.

#### 4.1.5 Intersection Operations Analysis Results

This section presents the results of the operational analysis for 2004 and 2025 conditions at each intersection. The results are based on HCS reports generated by Synchro. Table 1 summarizes traffic operations analysis results for both 2004 and 2025 traffic volume conditions.

**Table 1. Intersection Operations Analysis Summary**

Intersection	Approach	V/C Ratio	2004		2025		
			95th Percentile Queue	LOS	V/C Ratio	95th Percentile Queue	LOS
Old Highway 99 at I-5 SB Ramps	Westbound L	60	475	F	1.95	5.75	F
Old Highway 99 at Speedway Road	Westbound L/R	0.33	50	D	0.50	75	F
	Northbound T/R	0.29	0	n/a <sup>†</sup>	0.34	0	n/a <sup>†</sup>
Old Highway 99 at Happy Valley Road	<b>Intersection</b>	<b>0.65</b>	<b>n/a</b>	<b>B</b>	<b>0.70</b>	<b>n/a</b>	<b>B</b>
	Southbound T	0.58	325	B	0.65	400	B
	Eastbound L/T	0.79	225	C	0.82	250	D
Old Highway 99 at Beaver State S&G	Westbound L/R	0.14	<25	C	0.17	<25	C
	Northbound T/R	0.18	0	n/a <sup>†</sup>	0.21	0	n/a <sup>†</sup>
	Southbound L/T	0.00	0	A	0.01	<25	A
OR 42 at Old Highway 99 / Grant Smith Road	<b>Intersection</b>	<b>0.74</b>	<b>n/a</b>	<b>C</b>	<b>0.77</b>	<b>n/a</b>	<b>C</b>
	Eastbound L	0.73	175	D	0.76	250	D
	Eastbound T/R	0.65	350	B	0.75	475	B
	Southbound L	0.84	325	D	0.86	325	D
	Westbound T	0.61	325	B	0.75	425	C
OR 42 at Carnes Road / Roberts Creek Road	<b>Intersection</b>	<b>0.72</b>	<b>n/a</b>	<b>C</b>	<b>0.92</b>	<b>n/a</b>	<b>D</b>
	Eastbound L	0.82	275	D	0.94	350	E
	Westbound T/R	0.73	350	C	0.91	500	D
	Southbound L	0.66	250	D	0.92	300	E

† Free vehicular movements

The network is expected to see significant increases in traffic volumes in the next 20 years. Consequently, intersection operations will be degraded to varying degrees. A discussion of intersection results follows.

##### *Old Highway 99 at I-5 SB Ramps*

The westbound approach is currently well over capacity with a v/c of 1.60. The 95<sup>th</sup> percentile queue length is 475 feet. A queue of this length extends into the segment of the ramp needed for deceleration. Under 2025 volume conditions, intersection operations will further degrade with longer queues and more delay.

A preliminary signal warrant analysis has shown that this intersection meets the following MUTCD signal warrants under current traffic volume conditions: Warrant 1, Eight-Hour Vehicular Volume; Warrant 2, Four-Hour Vehicular Warrant; and Warrant 3, Peak-Hour.

##### *Old Highway 99 at Speedway Road*

The stop-controlled approaches are currently operating within County mobility standards and are expected to remain within an acceptable range through 2025. The westbound approach is

expected to be at LOS 'F' with delays of about 50 seconds. However, this is a relatively minor approach with low volumes. The overall intersection operation is expected to remain satisfactory.

*Old Highway 99 at Happy Valley Road*

This intersection is currently operating at a v/c of 0.65, with moderate queuing on the southbound and eastbound approaches. Under 2025 design hour volume conditions, the intersection is expected to meet the Douglas County mobility standard with a v/c of 0.70.

*Old Highway 99 at Beaver State Sand and Gravel*

This two-way stop-controlled intersection is operating well within the mobility standard under current and future traffic volume conditions.

*OR 42 at Old Highway 99 / Grant Smith Road*

The north- and southbound on-ramps for Interchange 119 diverge approximately 1000 feet to the east of this intersection, with the left lane going north and the right lane going south. About 85% of the eastbound vehicles leaving this intersection head north at the interchange. Most of those vehicles have already assumed their desired lanes on the eastbound approach to the intersection. This results in many more vehicles queuing in the left lane than in the right lane.

Preliminary analysis, as shown in Table 1, depicts the intersection operating with moderate queuing and overall v/c ratios of less than 1.00 for both existing and future year conditions. However, this analysis assumed a nearly equal distribution between the right and left lanes of the eastbound approach. Therefore, the values shown in Table 1 are likely underreporting overall v/c ratios and 95<sup>th</sup> percentile queue lengths on the eastbound approach due to lane imbalance that is occurring.

Supplemental analysis was conducted using Synchro and SimTraffic to more accurately reflect the queuing and v/c resulting from lane imbalances. Results confirmed that significant queuing of greater than 1000 feet results when the effects of lane imbalance are taken into account. A complete discussion of a Synchro HCM sensitivity analysis can be found in Appendix C. The sensitivity analysis tested the impacts of increasingly unbalanced lane use on the eastbound leg. Appendix C also contains a discussion of a SimTraffic simulation designed to test the impacts of lane imbalance.

*OR 42 at Carnes Road*

Currently this intersection marginally exceeds the mobility standard with a v/c of 0.75. Under future year traffic volume conditions, the intersection is expected to approach capacity with a v/c of 0.92. The eastbound left, westbound through/right, and southbound left-turn movements are all expected to exceed a v/c of 0.90 under future year traffic volume conditions.

#### **4.1.6 Freeway Operations Analysis Results**

A 1999 ODOT origin-destination study found that 20 percent of northbound vehicles entering at Interchange 119 subsequently exit at Interchange 120. It has been suggested that the addition of an auxiliary lane between the on- and off-ramps could improve operations. An auxiliary lane would create a weaving segment between the ramps. The following sections evaluate current and future year traffic operations under the existing interchange configuration (merge/diverge analysis) and with an auxiliary lane (weave analysis).

Due to the low volumes of ramp-to-ramp traffic in the southbound direction, a southbound auxiliary lane is not recommended. However, mainline freeway operations in the southbound

direction were examined and found to be operating at acceptable v/c ratios of 0.48 and 0.62 under 2004 and 2025 traffic volume conditions, respectively.

### Merge / Diverge Analysis

Figure 4 shows 2004 and 2025 volumes for the Interchange 119 and 120 ramps, as well as the mainline. HCM Ramps and Ramp Junction methodology was used to determine LOS of the Interchange 119 ramps under 2025 design hour volume conditions. A v/c analysis was also conducted so that the merge and diverge segments could be compared to OHP mobility standards.

Table 2 summarizes results for 2004 and 2025 ramp junction analysis at Interchanges 119 and 120 under existing lane configurations. The northbound off-ramp terminal at Old Highway 99 is also provided. As the table shows, the ramp junctions are expected to experience increased traffic volumes, which will increase density and degrade v/c and LOS. However, even under 2025 traffic volume conditions, no ramps are expected to operate below a v/c of 0.60 and LOS C.

**Table 2. Interchanges 119/120 Ramps Operations Analysis Summary**

Direction of Travel	Density (pc/mi/ln)	2004 v/c	LOS	Density (pc/mi/ln)	2025 v/c	LOS
IC 119 Northbound On	18.4	0.52	B	23.3	0.65	C
IC 119 Northbound Off	12.7	0.25	B	17.2	0.35	B
IC 119 Southbound On	12.9	0.33	B	17.4	0.46	B
IC 119 Southbound Off	26.3	0.53	C	27.3	0.68	C
IC 120 Northbound Off	20.6	0.54	C	26.1	0.68	C
IC 120 Southbound Off	23.7	0.57	C	29.3	0.72	D
IC 120 Southbound On	19.8	0.51	B	24.7	0.65	C
IC 120 Northbound Off at Old 99	n/a <sup>†</sup>	0.54	A	n/a <sup>†</sup>	0.60	B

† HCM (density-based) merge methodology does not apply to two-way, two-lane facilities. Synchro ICU report results are shown for a yield controlled intersection.

### Weave Analysis

A significant amount of northbound ramp-to-ramp traffic exists between the on-ramp at Interchange 119 and the off-ramp at Interchange 120. This section evaluates the effects of an auxiliary weave lane between the two interchanges. Figure 6 illustrates the merge and diverge movements for the current ramp configuration and the weave movements of a possible auxiliary lane between the two ramps. HCM Weaving methodology was used to determine LOS of an auxiliary lane scenario. A v/c analysis was also conducted so that the weave segment could be compared to OHP mobility standards. Analysis results are summarized in Table 3.

**Table 3. Interchange 119/120 Weaving Segment Summary**

	<b>2004</b>	<b>2025</b>
Speed (mph)	51.0	50.2
Density (pc/mi/ln)	15.3	19.7
v/c	0.41	0.50
LOS	B	B

Analysis results for the weave segment show moderately improved operations compared to the merge/diverge configuration (“*Northbound On*” row from Table 2), with the weave segment improving v/c from 0.46 to 0.41 for current year conditions and from 0.58 to 0.50 for year 2025 conditions. The weave segment would be expected to maintain a LOS of B through 2025.

ODOT conducted a weaving analysis in 1999 to evaluate whether an auxiliary lane between the ramps would have any operational benefits over the current ramp configuration. The ODOT analysis draws a similar conclusion, showing improved operations with an auxiliary weave lane. A detailed discussion of the ODOT analysis can be found in Appendix C.

Simulation modeling using SimTraffic software was conducted to supplement HCM analysis results and construct a more complete picture of freeway operations under both merge/diverge and weaving scenarios. The results showed that an auxiliary lane would improve freeway operations. However, the model results show the ramps operating with lower speeds and more delay with an auxiliary lane in place. This decrease in operational performance may reflect the spillback from disruption caused by the weaving of entering vehicles from Interchange 119 and mainline vehicles exiting at Interchange 120. It should be noted that the facility is expected to perform adequately under either scenario. Details regarding the SimTraffic model results can be found in Appendix C

#### **4.1.7 Auxiliary Lane Discussion**

Generally weaving lanes cause significant turbulence and increase the number of potential conflicts. An auxiliary lane would remove the merge/diverge maneuver for ramp-to-ramp vehicles. This movement accounts for a full 20 percent of entering vehicles at Interchange 119, or 260 out of 1300 future year peak hour vehicles. However, an auxiliary lane would force a lane-change maneuver where one currently does not exist for mainline vehicles exiting at Interchange 120 (approximately 120 future year peak hour vehicles). An auxiliary lane would allow a greater distance for entering vehicles to complete their merge with mainline traffic, but it would also extend the length over which potential conflicts may occur, as well as create additional conflicts over the current configuration.

HCM ramp and weaving analysis results show moderately improved overall performance with an auxiliary lane than with the current merge/diverge configuration. A v/c analysis shows that, while an auxiliary lane would improve operations, OHP mobility standards would be met under future year traffic volume conditions even if an auxiliary lane is not constructed. SimTraffic modeling shows that an auxiliary lane does offer some level of improved operations over the

existing merge/diverge configuration for mainline through traffic. However, an auxiliary lane may not provide appreciable benefits to ramp operations.

## 4.2 Safety Analysis

This section summarizes the crash analysis that was conducted for the Planning Area roadway facilities. The safety analysis included a review of the ODOT supplied Planning Research Corporation (PRC) crash listings (2000 to 2002), ODOT Safety Priority Index System (SPIS) data, and a comparison of calculated crash rates with statewide averages. The procedures used to analyze this data are discussed in Appendix D.

### SPIS Data

The SPIS is a method developed by ODOT for prioritizing locations where funding for safety improvements can be spent most efficiently and effectively. Based on crash data, the SPIS score is influenced by three components: crash frequency, crash rate, and crash severity. Three years of crash data are analyzed for the SPIS score. A list of the sites with the top 10% SPIS scores is produced each year. There are two Top 10% SPIS locations within the Interchanges 119/120 Planning Area. The first is at the intersection of OR 42 and Carnes Road. The second from milepost 76.29 to 76.43 on OR 42, which is located to the east of the intersection of OR 42 with Old Highway 99/Grant Smith Road. This section had one fatal crash where a pedestrian was walking in the roadway.

#### 4.2.1.1 Study Area Findings

Crashes were summarized by location for each of the six study intersections. Figure 7 shows the location and the number of crashes that occurred between 2000 and 2002. Intersection crash rates are summarized in Table 4.

**Table 4. Study Area Intersection Crash Rates**

<b>Intersection</b>	<b>ADT</b>	<b>3-Year Crash Rate</b>
Old Highway 99 at IC 120 SB On/Off Ramp	11,480	0.40
Old Highway 99 at Speedway Road	11,140	0.08
Old Highway 99 at Happy Valley Road	12,310	0.37
Old Highway 99 at Beaver State S & G	6,920	0.00
Old Highway 99 at OR 42	23,800	0.23
OR 42 at Carnes Road	23,610	1.04

The crash rate of 1.04 at the intersection of OR 42 with Carnes Road is high when compared to the surrounding intersections. This location had 27 crashes between 2000 and 2002 that occurred within 265 ft (0.05 mi.) of the intersection on both OR 42 and Carnes Road/Roberts Creek Road. Of the 27 crashes, 18 were rear end crashes. Fifteen (15) of the crashes resulted in injuries and 12 resulted in property damage only. There were no fatal crashes at this location during the study period. As noted above, this intersection is a Top 10% SPIS location.

The crash rate on Old Highway 99 from OR 42 to the ramp terminal at interchange 120 is 1.04. This is comparable to the statewide crash rate for highways in the same class as the Old Highway 99, which is 0.99.

Crashes were also examined on I-5 between Interchanges 119 and 120. The segment of freeway examined included both the northbound and southbound lanes, as well as the merge and diverge areas for both interchanges. The I-5 segment crash rate was found to be 0.28, which is slightly higher than the comparable statewide average of 0.22. Table 5 summarizes the crashes on Interstate 5 in the vicinity of Interchanges 119 and 120.

**Table 5. Freeway Crash Data**

<b>Location</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>Total</b>
<b>Northbound</b>				
IC 119 Off Ramp (MP 119.72)	1	0	0	1
IC 119 On Ramp (MP 119.99)	1	1	1	3
IC 119 On to IC 120 Off Ramps	2	1	4	7
IC 120 Off Ramp (MP 120.41)	1	1	2	4
IC 119 On and Off (OR 42)	1	1	2	4
<b>Southbound</b>				
IC 120 Off Ramp (MP 120.43)	0	1	0	1
IC 120 On Ramp (MP 120.13)	0	0	0	0
IC 120 On to IC 119 Off Ramps	0	4	0	4
IC 119 Off Ramp (MP 119.68)	0	0	0	0
IC 119 On Ramp (MP 119.68)	0	0	0	0

#### **4.2.1.2 Safety Conclusions**

The safety analysis showed that only one of the intersections in the study area, OR 42 at Carnes Road, has a crash rate greater than the surrounding area. This intersection had 25 crashes within the influence area between 2000 and 2002. The primary type of crash was rear-end, which are often caused by driver inattention and congestion at signalized intersections. Due to the nature of rear-end crashes, there is no specific mitigation that can be suggested. However, some general safety mitigations may help improve safety, including changes to signal timing such as increasing the clearance interval. Also, visibility of signals may be improved by re-aiming the signal heads or using a different luminaire.

### **4.3 Summary of Planned and Programmed Projects**

Both Douglas County and ODOT were asked to provide any planned or programmed projects in the area surrounding Interchange 119 and 120. The following section provides a brief overview of any planned or programmed projects and a discussion of the likely impact on the transportation infrastructure, use, and operations.

#### **OR 42: Winston to I-5 Resurfacing**

This project is part of the 2004 to 2007 Statewide Transportation Improvement Program. This project has several objectives including placing a new road surface and improving the intersection geometry at Kelly's Corner. This project took place from milepost 73.20 to 77.20 on

OR 42 and has been completed. It is expected that this project will improve safety and operations on this stretch of roadway.

### **I-5 Overcrossing: South Umpqua River and Old Highway 99**

The replacement project is in the approved 2004-2007 STIP. The I-5 northbound and southbound structures crossing over the South Umpqua River and Old Highway 99 will be replaced and widened. These Bridges are listed as an OTIA stage 1a project. As part of this project, the northbound off-ramp is being reconstructed as well.

## **4.4 Land Use**

### **4.4.1 Existing Land Uses**

The 119/120 planning area is located primarily within the Green Unincorporated Urban Area (UUA) of Douglas County. Although Green is not a city, it is developed with higher densities than typical rural areas with industrial, commercial, and residential development. The dominant land uses surrounding the interchanges and both sides of Old Highway 99 are industrial in nature. Access to OR 42 and Old Highway 99 makes this area appropriate for distribution-related industries, such as UPS and FedEx on Old Highway 99. Other “medium heavy” industrial uses, the largest area of which is along Austin Road, Green Siding Road, and Industrial Drive, include recreational boat manufacturing, auto body shops, storage, and machinery parts manufacturing. Pacific Power on the corner of Old Highway 99 and Happy Valley Road is also zoned medium industrial. “Heavy” industrial uses include wood products processing (Roseburg Forest Products owns 93 acres), paving materials manufacturing, and salvage/automobile wrecking (allowed conditionally in heavy industrial zones). The dominant land uses in the light industrial-zoned areas within the study area are mobile home parks (on Old Highway 99 and west of I-5, south of Interchange 120 and east of Interchange 199).

Commercial uses in the study area are predominantly found at Kelley’s Corner, the intersection of Carnes Road and OR 42, where there is a large grocery store, some strip commercial uses, and restaurants in “C-2,” and off of Grant Smith Road, south of Interchange 119 (Loves Truck Stop, zoned “C-3”). Outside of the mobile home parks, the majority of residential developments within Green are located farther from I-5 in the northern and western portions of the study area. Figure 8 and Figure 9 show zoning and Comprehensive Plan designations, respectively, for the planning area.

### **4.4.2 Douglas County Comprehensive Plan and Development Code**

The entire project area is located within Douglas County’s planning jurisdiction, mostly within the Green Urban Unincorporated Area (UUA). The northernmost portion, along Old Highway 99 north of Interchange 120, is outside of the Green planning area. The predominant land use designations, per the Douglas County Comprehensive Plan (2003) are Industrial and General Commercial/Industrial (described as a designation intended for heavy retail service commercial uses or light industrial uses). There is also an area of Industrial Reserve directly east of Interchange 119. Residential designations are also found along Roberts Creek and Carnes Road, the western boundary of the study area. Residential lots east of Carnes Road are designated High Density; moving northwest, from Carnes Road to the Umpqua River, residential densities go from High to Medium Density.

Comprehensive Plan land use policies applicable to the study area include:

3. *(Commercial) Future commercial development should be located along Carnes Road, at Kelley's Corner, and along Grange Road.*

4. *(Commercial/Industrial) A mix of light industrial and heavy commercial uses are encouraged in the designated portions of the area bounded by Carnes Road, OR 42, and I-5.*

In addition, there are specific industrial policies that pertain to industrial development east of I-5 at Interchange 119. These policies address improvements to Grant Smith Road, screening and landscaping, and drainage plans.

Industrial zones cover most of the study area and are concentrated along I-5 and Old Highway 99. Industrial designations include Light Industrial (M-1), Medium Industrial (M-2), and Heavy Industrial (M-3), permitting a range of uses from Mobil Home Parks and some commercial uses, "clean" industry, manufacturing, and heavy industry. Medium and Heavy Industrial specify the necessity of being in proximity to good (or excellent) rail or highway access.

Consistent with the Comprehensive Plan Land Use Map, to the east of Interchange 119 is an Industrial Reserve designation (INR). The intent of the Industrial Reserve is to ensure that an adequate quantity of land suitable for industrial use is available in Douglas County. Areas with this designation in the study area are in the Green Urban Unincorporated Area, and over time development is expected to reach urban densities. All sites designated Industrial Reserve are considered potentially good industrial sites and are protected for the County's economic future.

Commercial zoning is concentrated on the west side of I-5 primarily at Kelley's Corner, near Grant Smith Road and OR 42 near the Interchange 119 on ramp, and interspersed with industrial zoned property along the eastside of Old Highway 99.

Residential zoning in the study area includes primarily Single-Family Residential (R-1, 6,500 square foot minimum lot area), with some Multiple Family Residential (R-2, 6,500 square foot minimum lot area for single family residence) interspersed along Carnes Road, bordering the western study area boundary. The northwest corner of the study area also encompasses a portion of R-2. Suburban Residential (RS) flanks the intersection of OR 42 and Carnes Road, and continues to be the dominant zoning along Carnes Road in the northern portion of the study area. The RS zone is intended for suburban residential development where limited agricultural activities, including raising livestock and nursery stock, may be pursued. Minimum lot size in this zone are 15,000 square feet, when served by a community water supply system or community sanitary sewer system, and one (1) acre or larger if not on a water or sewer system. The RS zoning designation is not consistent with the Douglas County Comprehensive Plan, which specifies only high density residential along Carnes Road, but is fairly consistent with the type of existing residential development in the area.

#### **4.4.3 Future Land Uses**

The Green District is the largest urban unincorporated area in Douglas County and has seen a great deal of commercial and industrial growth in the last five years, including the new Love's Truck Stop and Ingram Book distribution center (approximately 6 acres and 500 employees) that lie within the study area. In addition, the Green District is the most populated urban unincorporated area in Douglas County and, with a growth rate of 2.2%, continues to attract

residents, predominantly to new residential developments in the west portion of the District.<sup>4</sup> The 2000 census recorded the population of Green as 6,174. Development services related to the Green area account for a third of the planning activity at the County's Planning Department. According to a representative of the Umpqua Economic Development Partnership, warehousing/distribution and light industrial growth is expected around Interchange 119 due to the available land, services and comparatively affordable housing in the vicinity. Interviews with business and property interests in the vicinity of the I-5 interchanges consistently included comments regarding the potential for continued commercial, industrial and residential growth in the area. Douglas County maintains a current buildable lands inventory of vacant industrial land in the study area.

The Green District is within the Roberts Creek Enterprise Zone, a program to encourage businesses to make new or additional investments through property tax abatement. The majority of vacant industrial land is east of I-5, in the vicinity of, and north of Ingram Book Distribution Center. Much of the developable land is within the Oak Creek Industrial Park where approximately 30 acres is available. The land is owned by Douglas County, and an industrial board, Umpqua Economic Development Partnership, is responsible for marketing the site. The goal of the park (which is restricted to "clean" industrial development) is to enhance Douglas County's industrial base and create jobs. Moderate slopes and stands of oak characterize the area north of the Industrial Park.

Also, the Cow Creek Tribe has recently purchased a 15.29-acre site, formerly a drive-in theater, to the south of Grant Smith Road. While this property has a "Rural Commercial (CRE)" zone designation, which allows a variety of commercial uses, it is expected that this parcel will ultimately be placed in the Tribal Trust and future uses will be dictated by the Tribe.

There are only a few vacant industrial areas west of I-5. The largest known redevelopment plan is at Roseburg Forest Products, which is currently undergoing an environmental permitting process to fill an existing 30-40 acre log pond (and nationally listed wetland). The company intends to drain the site, substantially increasing the buildable acreage on the property, in order to fulfill expansion plans for the plywood plant.

Residential areas close to I-5 are predominantly mobile home parks, with some pockets of "stick built" homes, and an occasional house associated with a business on Old Highway 99. Areas on "M-1," where mobile homes are allowed, appear to be built out. Numerous single-family residential developments have recently been built or are underway near Carnes Road, Happy Valley Road, and Little Valley Road.

The growth in the Winston-Dillard area, while outside of the study area, will also have an effect on the transportation system in the study area. The City of Winston, a community of roughly 5,000, has seen rapid residential growth in recent years and expects to see 520 homes built within the next 5-6 years. With very little commercial and no industrial uses in Winston, residents are dependent on OR 42 and Old Highway 99 to get to services and jobs. The Dillard area is being promoted as a prime industrial area. OR 42 is an important route for people and freight through Winston, Dillard and further west and is designated a Freight Route in the Oregon Highway Plan recognizing its significance in connecting Coos Bay and Roseburg.

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<sup>4</sup> The most recent demographic information for the Green District can be found in the Green Transportation System Plan, August 8, 2001, available at the Douglas County Planning Department.

## 4.5 Environmental Constraints

A review of existing natural and historic resources was conducted to identify sensitive natural and historic resources in the planning area that could result in potential constraints or barriers to future transportation facility improvements. The complete memorandum is contained in Appendix E. In addition to analyzing two environmental baseline reports, the following information was reviewed:

- Goal 5 resources and the Douglas County Comprehensive Plan;
- Federal Emergency Management Agency (FEMA) floodplains;
- Known Threatened and Endangered (T&E) listed species;
- Wetlands and the presence of hydric soils;
- Hazardous materials databases and field surveys;
- Cultural and historic resources; and
- Agency Cultural Resource Specialist lists for potential archeology sites.

More detailed analysis will need to occur after improvement projects are identified, to determine precise impacts and the resulting permitting and mitigation actions required. Local, state, and federal agencies/jurisdictions regulate project impacts associated with improvements.

Interchange 119 may have issues regarding wildlife, environmental, and cultural resource concerns, due to the proximity or potential proximity to threatened and endangered species, water resources, hazardous materials, and cultural deposits in an area not previously surveyed. Threatened species that may potentially be located near Interchange 119 include the bald eagle, coho salmon (Oregon Coast) and Kincaid's lupine flower. Potential endangered species near Interchange 119 includes the rough popcorn flower. A review of hazardous materials databases and field surveys found four sites with recognized environmental concerns located near Interchange 119. Also, the North Fork Roberts Creek runs through the project area enhancing the possibility of encountering buried cultural deposits near Interchange 119.

The Douglas County Floodplain Overlay indicates a portion of North Fork Roberts Creek, an intermittent stream that joins the South Umpqua River downstream of the site, is located about a quarter mile south of Interchange 119. Therefore, it is unlikely that special floodplain considerations would apply to repairs or replacement of Interchange 119 bridges.

Areas of concern for Interchange 120 include possible floodplain, wildlife, wetland, environmental, and cultural constraints. Unlike Interchange 119, Interchange 120 is located relatively close to the South Umpqua River yet outside of the 100-year floodplain. Interchange 120 is also near an unnamed stream with a floodplain that is constrained by terraces. Surveys would need to be conducted at the bridge site to better ascertain any floodplain constraints related to improvements. Potential threatened and endangered species identified near Interchange 119 also apply to Interchange 120. Wetlands identified by NWI mapping and the area of mapped hydric soils along Unnamed Stream 1, were not investigated for the baseline report in the field because of access limitations. Site surveys would be necessary prior to construction. A recognized environmental concern was identified through site reconnaissance located near Interchange 120. Prior to ground disturbance, an evaluation of potential hazardous materials and other sites of concern will need to be completed. In addition, the presence of an unnamed

tributary and a prehistoric lithic scatter near the Umpqua River highlights the potential for cultural resources near Interchange 120.

After project improvements are identified and construction envelopes delineated, potential impacts to natural and historic resources and necessary permitting can be determined. Any project impacts to wetlands or streams could require special permitting with the Oregon Department of Environmental Quality (DEQ), US Corps of Engineers (COE) and the Oregon Division of State Lands (DSL). These permits may require mitigation including one or more of the following: water quality swales, water quality detention ponds, construction of new wetlands, and/or enhancement of existing wetlands. Douglas County regulates impacts to floodplains and may require similar mitigation if impacts to the floodplains are anticipated.

Project impacts to threatened species or species of concern could require detailed consultation with the US Department of Fish and Wildlife and National Marine Fisheries Service (NOAA Fisheries). A Biological Assessment or similar biological evaluation may be required to determine project impacts to listed and proposed species. Based on the analysis, the agencies may require modified construction techniques and timing to minimize impacts on the species. If identified hazardous material sites will be disturbed during project construction activities, both testing for hazardous materials and proper disposal in an appropriate landfill will be required. DEQ is the overseeing agency for disposal of hazardous materials. Regarding cultural and historic resources, no resources have been identified, so special protective measures or mitigation are not necessary to implement prior to project area construction. However, if previously undetected cultural resources are encountered during the course of the project, all ground disturbing activities must cease and personnel at ODOT's Environmental Services Division must be notified immediately. Data recovery must be undertaken. This would likely result in construction delay and additional project costs to pay for the recovery.

## **5 NEEDS ASSESMENT**

The following section identifies geometric, operational, safety, and freight movement deficiencies related to the existing interchange and roadway network configurations. The needs identified in this section will be used to inform the future Interchange Area Management Plan (IAMP). The IAMP will recommend specific long-term strategies to address existing deficiencies in the planning area.

### **5.1 Interchanges 119/120 Geometric Deficiencies**

A review of geometric deficiencies for the I-5 interchanges 119 and 120 was conducted for this conditions report. The deficiencies described in this section are based upon a review of as-built drawings for the interchanges and information presented in the *I-5 State of the Interstate Report*. The existing conditions were compared against the ODOT design standards from the 2003 Highway Design Manual.

#### **5.1.1 Interchange 119 Deficiencies**

I-5 is a divided freeway in this section. There are only 4 foot wide inside shoulders when standard is 6 feet and the median width is only 30 feet when 64 feet is the standard. The vertical clearance beneath the OR 42 overpass is less than the required 17 feet. The Type 1 and earth mound guardrail terminals for this section are not to current standards. The spacing between the

ramps of the Coos Bay-Roseburg interchange and the ramps of Interchange 120 do not meet the 2 mile OHP standard spacing for rural interchanges<sup>5</sup>.

The northbound entrance ramp has a design speed of 55 mph, which meets current design standards. However, the acceleration length is approximately 300 feet short of ODOT standards for vehicles merging onto I-5. In addition, the merge area of the ramp is on a spiral as opposed to a tangent section, which is not desirable.

The northbound exit ramp functions as a loop ramp with a speed of 30 mph, meeting current standards for speed. However, the deceleration length is approximately 270 feet short of ODOT standards for vehicles leaving I-5. In addition, there is no tangent or spiral section prior to the curve to aid in speed reduction and superelevation transitions.

The southbound entrance ramp has a design speed of 45 mph, which meets current design standards for speed. The acceleration length is approximately 470 feet short of ODOT standards for vehicles merging onto I-5. In addition, the ramp merges onto I-5 with a 45 mph horizontal curve, with no tangent or spiral section to aid in speed increase and superelevation transitions. The superelevation transition must occur completely on the curve itself before the merge with I-5.

The southbound exit ramp has a design speed of 65 mph, meeting current design standards for speed. However, the deceleration length is approximately 140 feet short of ODOT standards for vehicles leaving I-5. In addition to the short deceleration length, the exit ramp is a horizontal curve, with no tangent or spiral section before it to aid in speed reduction and superelevation transitions. The superelevation transition must occur completely on the curve itself.

### **5.1.2 Interchange 120 Deficiencies**

I-5 is a divided freeway with a median barrier in this section. The median width is 16 feet, while the standard minimum width is 18 feet. The Type 1 and earth mound guardrail terminals for this section are not to current standards. The horizontal alignment contains spiral lengths of 400 feet, below the standard 600 feet required for a 4-lane section. This requires superelevation transitions to happen over a shorter distance. As noted in Section 5.1.1, the spacing between the ramps of this interchange and the ramps of Interchange 119 are substandard.

The northbound exit ramp has a design speed of 65 mph, meeting current design standards for speed. However, the deceleration length is approximately 70 feet short of ODOT standards for vehicles leaving I-5. The Type 1 and earth mound guardrail terminals on this ramp are not to current standards. Access should be controlled within 1320 feet of the ramp, however there are several private accesses on or within this distance on the crossroad. Also, 140 additional feet should be provided for acceleration from the ramp onto Old Highway 99. Note that this ramp will be reconstructed as part of the I-5 overcrossing project described in Section 4.4. This project will address many of the geometric deficiencies described above.

The design speed for the southbound entrance ramp is 45 mph, meeting current design standards for speed. The spirals of the horizontal alignment could be lengthened by 50 feet to provide longer transitions for superelevation. For both this ramp and the southbound exit ramp, access

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<sup>5</sup> Although the interchanges are in a developed area, they do not lie inside the Roseburg Urban Growth Boundary. Therefore, the OHP classifies the interchanges as rural.

should be controlled within 1320 feet of the ramp, however there are multiple private accesses within 1320 feet on the crossroad.

The southbound exit ramp has a design speed of 15 mph, which does not meet the standard of 25 mph minimum. The horizontal alignment contains a sharp, 72 foot radius curve with no spirals to aid in speed reduction and superelevation transitions. The following section contains additional discussion regarding the deficiencies of this ramp and measures to address them.

## **5.2 Traffic Operations and Safety Deficiencies**

Section 4.1 contains a comprehensive discussion regarding traffic operations analysis results. The following discussion presents some strategies that may be considered to address the major operational and safety deficiencies found in the planning area. As noted above, the future IAMP effort will expand on these general concepts and will recommend specific actions to address the existing operational and safety deficiencies within the planning area.

### **Old Highway 99 at I-5 SB Ramps**

The westbound left turn at the ramp terminal is currently operating over capacity at v/c of 2.05, and is forecast to reach a v/c of 2.51 in 2025. The ramp does not have adequate storage length to accommodate the queues that result, which often back up onto the freeway. Preliminary analysis has shown that several signal warrants are met for this intersection. A signal would improve operations and safety at the intersection by providing a protected left turn for southbound exiting vehicles, which would lower v/c and queue lengths.

However, signalization will not improve the operational problems related to geometric deficiencies. The southbound off-ramp contains a sharp, 15 mph curve with a 72-foot radius. In addition, the ramp terminal intersection with Old Highway 99 is too close to the freeway. Possible solutions include the relocation of Old Highway 99 further from the interstate to increase spacing and storage length, or the relocation of the ramp terminals further south on Old Highway 99. This would allow the curve on the southbound off-ramp to be designed with a larger-radius, and would also increase the storage length.

### **OR 42 at Old Highway 99 / Grant Smith Road**

The eastbound approach lanes experience excessive queuing and delays due to lane imbalance on the approach. The Interchange 119 ramp split is located less than 1000 feet downstream. Most vehicles have already assumed their desired lanes on the approaches to the intersection. With 85 percent of vehicles subsequently heading to the northbound I-5 ramps from the left lane, most vehicles queue in the left approach lane at the intersection.

A possible improvement includes constructing a new overcrossing, currently carrying a two-lane, two-way roadway, with sufficient width to accommodate two eastbound lanes. This would allow vehicles heading north at the interchange to occupy both eastbound lanes. At the north- and southbound split, the roadway would consist of one exclusive northbound lane and one lane for both north- and southbound traffic. Allowing northbound interchange traffic to occupy both lanes would reduce or eliminate the imbalance seen at the intersection of OR 42 at Old Highway 99 / Grant Smith Road.

### **OR 42 at Carnes Road / Roberts Creek Road**

This intersection marginally exceeds the ODOT mobility standard under current year conditions, but approaches capacity (0.92) under 2025 conditions. Possible mitigation strategies include adding lanes on the approaches and signal timing modifications.

### **Other Operational Issues**

Some stakeholders have identified as a deficiency the lack of northbound freeway access at Interchange 120. This places limitations on access to Roseburg and points north from the Green area. It also places additional demands on the intersection of OR 42 with Old Highway 99 / Grant Smith Road and Interchange 119, facilities that are already experiencing operational problems. One possible solution includes the construction of a full-movement interchange at this location that would provide a northbound entrance ramp. Another alternative might be to replace interchanges 119 and 120 altogether with a single interchange. This could provide better access to the Green area, while removing several closely-spaced entrance and exit ramps.

As discussed in Section 4.1, the northbound merge at Interchange 119 experiences operational problems due to the high volumes of entering traffic followed by an exit ramp 2500 feet downstream at Interchange 120. An auxiliary lane may provide some operational benefits compared to the existing interchange configuration. This alternative will be thoroughly evaluated in the future IAMP effort.

### **Traffic Safety Deficiencies**

As discussed in Section 4.2, intersection and segment crash rates for planning area facilities are generally consistent with statewide average crash rates. The intersection of OR 42 with Carnes Road has a higher crash rate, with a significant number of rear-end crashes.

## **5.3 Access Management Needs**

### **Background**

Access to the roads connecting to the interstate system is vital to the adjacent property owners who need access for their businesses and residences. However, it has been shown that a proliferation of driveways and minor street intersections on major roadways and near ramp terminals can drastically increase conflicts, causing operational problems, decreasing capacity, and generally degrading service for all system users.

One of the primary goals of the future IAMP will be to develop an access management strategy that helps preserve the functionality of planning area roadway facilities, protecting their ability to accommodate traffic volumes safely and efficiently into the future, while accommodating the needs of businesses and residences. This goal will be implemented by the development of a set of short, medium, and long-term strategies. The access management strategies will comply with the objectives outlined in OAR 734-051, the administrative rule pertaining to access management on State highway facilities.

### **Access Spacing Standards and Access Inventory**

The access management spacing standards for roadways in the study area vary according to jurisdiction, classification and posted speed. The OHP spacing standard for OR 42, a Statewide

Highway and Expressway, is one mile. As previously noted, the minimum spacing between the on-ramps of one interchange and the off-ramps of the downstream interchange is two miles for rural locations (outside of UGB). Also, the OHP specifies that access should be controlled on interchange crossroads within 1320 feet (1/4 mile) of ramp terminals. However, several private approaches currently exist on Old Highway 99 within 1320 feet of the Interchange 120 southbound ramp terminals. Douglas County has control over access spacing requirements on the remainder of Old Highway 99.

An inventory of existing access points on roads within the study area was compiled based on aerial and tax lot maps, and a site visit. The access points are listed in Appendix F. The access inventory revealed that many access points do not currently comply with the applicable access spacing standards. The IAMP will develop access management strategies for roadways in the study area to address safety or operational problems concerning existing or proposed private and public access points, with the overall goal of balancing the mobility needs with the access needs of residences and businesses.

#### **5.4 Freight Movement Patterns & Needs**

This section identifies significant freight movement patterns and freight movement deficiencies related to Interchanges 119 and 120. OR 42 and I-5 are both Statewide Freight System Routes on the National Highway System. OR 42 helps move freight in both Coos and Douglas Counties, while I-5 serves local, county, statewide, and interstate freight traffic. An automatic traffic recorder just north of Roseburg shows that approximately 18% of I-5 traffic is heavy vehicles. On OR 42, just west of Brockaway, the automatic traffic recorder shows approximately 13% of the traffic is heavy vehicles.

The *Intermodal Management System* (March 1997) identified no intermodal facilities for freight within the planning area. However, there were two project needs that the report identified within the area of interchanges 119 and 120. The first is a project that would allow the use of triple-trailers on OR 42 between Coos Bay and Roseburg. The second is a project that would provide a better highway connection between Coos Bay and Roseburg. One project that would address those needs would consist be the creation of a new highway with four lanes and flatter curves facilitating high-speed truck travel between the two cities. Such a facility would make travel safer for long vehicles and speed truck freight movement through the corridor.

ODOT's Motor Carrier Transportation Division has imposed weight restrictions in the vicinity of Interchanges 119 and 120. These include the Shady River Bridge over the South Umpqua River at MP 120.57 and the I-5 Overcrossing at Interchange 119.

The 1999 ODOT report entitled *Freight Moves the Oregon Economy* does not contain any specific needs or projects for the 119 and 120 study area. It does address some general improvements that could be applied in the area such as: installing additional automatic traffic recorders to monitor truck traffic, continuing to develop the Intermodal Management System, and continuing to identify and develop Intelligent Transportation Systems (ITS) applications for freight movements.

Other possible constraints identified in the region relate to possible clearance issues and pavement conditions. The county has noted that the clearance under I-5 on Speedway Road could have a possible height restriction. Grant Smith Road has been realigned and a traffic signal

installed to address past access and safety issues near interchange 119. As of 2001, the pavement condition on I-5 near interchanges 119 and 120 was identified as being in poor condition.

## 6 REFERENCES

- Oregon Department of Transportation (ODOT). 1999. *Oregon Highway Plan*. Salem OR.
- Douglas County, Oregon. 2001. *Douglas County Transportation System Plan*.
- Oregon Department of Transportation (ODOT). 2000. *State of the Interstate Report 2000; A Transportation Conditions Report*.
- Oregon Department of Transportation. 2003. *Highway Design Manual – English*.
- Transportation Research Board. 2000. *Highway Capacity Manual*. National Research Council. Washington DC.
- Transportation Research Board. 1992. *NCHRP Report 255; Highway Traffic Data for Urbanized Area Project Planning and Design*. National Cooperative Highway Research Program. Washington DC.
- Oregon Department of Transportation. *Oregon Transportation Plan*. 1992. Salem Oregon.
- Douglas County Comprehensive Plan*. Revised 1997. Douglas County OR.
- Comprehensive Plan for the Roseburg Urban Area*. 1982. Roseburg OR.