Oregon
Theodore R. Kulongoski, Governor

Department of Land Conservation and Development
635 Capitol Street, Suite 150
Salem, OR 97301-2540
(503) 373-0050
Fax (503) 378-5518
www.lcd.state.or.us

NOTICE OF ADOPTED AMENDMENT

03/23/2011

TO: Subscribers to Notice of Adopted Plan or Land Use Regulation Amendments

FROM: Plan Amendment Program Specialist

SUBJECT: City of Roseburg Plan Amendment
DLCD File Number 005-10

The Department of Land Conservation and Development (DLCD) received the attached notice of adoption. Due to the size of amended material submitted, a complete copy has not been attached. A Copy of the adopted plan amendment is available for review at the DLCD office in Salem and the local government office.

Appeal Procedures*

DLCD ACKNOWLEDGMENT or DEADLINE TO APPEAL: Thursday, April 07, 2011

This amendment was submitted to DLCD for review prior to adoption pursuant to ORS 197.830(2)(b) only persons who participated in the local government proceedings leading to adoption of the amendment are eligible to appeal this decision to the Land Use Board of Appeals (LUBA).

If you wish to appeal, you must file a notice of intent to appeal with the Land Use Board of Appeals (LUBA) no later than 21 days from the date the decision was mailed to you by the local government. If you have questions, check with the local government to determine the appeal deadline. Copies of the notice of intent to appeal must be served upon the local government and others who received written notice of the final decision from the local government. The notice of intent to appeal must be served and filed in the form and manner prescribed by LUBA, (OAR Chapter 661, Division 10). Please call LUBA at 503-373-1265, if you have questions about appeal procedures.

*NOTE: The Acknowledgment or Appeal Deadline is based upon the date the decision was mailed by local government. A decision may have been mailed to you on a different date than it was mailed to DLCD. As a result, your appeal deadline may be earlier than the above date specified. NO LUBA Notification to the jurisdiction of an appeal by the deadline, this Plan Amendment is acknowledged.

Cc: Teresa Clemons, City of Roseburg
Gloria Gardiner, DLCD Urban Planning Specialist
Ed Moore, DLCD Regional Representative
Gary Fish, DLCD Transportation Planner

<paa> YA

FORM 2 DLCD Notice of Adoption

This Form 2 must be mailed to DLCD within **5-Working Days after the Final Ordinance is signed** by the public Official Designated by the jurisdiction and all other requirements of ORS 197.615 and OAR 660-018-000

DATE STAMP

☐ In person ☐ electronic ☐ mailed

DEPT OF

MAR 18 2011

LAND CONSERVATION AND DEVELOPMENT

For Office Use Only

Jurisdiction: **City of Roseburg**

Local file number: **CPA-10-4**

Date of Adoption: **03/14/2011**

Date Mailed: **03/17/2011**

Was a Notice of Proposed Amendment (Form 1) mailed to DLCD? ☒ Yes ☐ No Date:

☒ Comprehensive Plan Text Amendment

☐ Comprehensive Plan Map Amendment

☐ Land Use Regulation Amendment

☐ Zoning Map Amendment

☐ New Land Use Regulation

☐ Other:

Summarize the adopted amendment. Do not use technical terms. Do not write "See Attached".

Adoption by reference of Interchange Area Management Plan (IAMP) for Interchange 129 in Douglas County. Amend Roseburg Comprehensive Plan and Roseburg TSP by including by reference (but not limited to) the Interchange Area Management Plan (IAMP) for Exit 129.

Does the Adoption differ from proposal? Please select one

No

Plan Map Changed from: to:

Zone Map Changed from: to:

Location: Acres Involved:

Specify Density: Previous: New:

Applicable statewide planning goals:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐

Was an Exception Adopted? ☐ YES ☒ NO

Did DLCD receive a Notice of Proposed Amendment...

45-days prior to first evidentiary hearing?	☒ **Yes**	☐ **No**
If no, do the statewide planning goals apply?	☐ **Yes**	☐ **No**
If no, did Emergency Circumstances require immediate adoption?	☐ **Yes**	☐ **No**

DLCD file No. 005-10 (18596) [16570]

Please list all affected State or Federal Agencies, Local Governments or Special Districts:

ODOT, Douglas County, Roseburg Urban Sanitary Authority, DLCD

Local Contact: **Teresa L. Clemons, CFM Comm. Plnr.** Phone: (541) **492-6750** Extension: **6877**

Address: **900 SE Douglas Avenue**

City: **Roseburg, OR** Zip: **97470** E-mail Address: **tclemons@cityofroseburg.org**

ADOPTION SUBMITTAL REQUIREMENTS

This Form 2 must be received by DLCD no later than 5 days after the ordinance has been signed by the public official designated by the jurisdiction to sign the approved ordinance(s)
per ORS 197.615 and OAR Chapter 660, Division 18

1. This Form 2 must be submitted by local jurisdictions only (not by applicant).
2. When submitting the adopted amendment, please print a completed copy of Form 2 on light **green paper if available**.
3. Send this Form 2 and **one complete paper copy** (documents and maps) of the adopted amendment to the address below.
4. Submittal of this Notice of Adoption must include the final signed ordinance(s), all supporting finding(s), exhibit(s) and any other supplementary information (ORS 197.615).
5. Deadline to appeals to LUBA is calculated **twenty-one (21) days** from the receipt (postmark date) of adoption (ORS 197.830 to 197.845).
6. In addition to sending the Form 2 - Notice of Adoption to DLCD, please also remember to notify persons who participated in the local hearing and requested notice of the final decision. (ORS 197.615).
7. Submit **one complete paper copy** via United States Postal Service, Common Carrier or Hand Carried to the DLCD Salem Office and stamped with the incoming date stamp.
8. Please mail the adopted amendment packet to:

ATTENTION: PLAN AMENDMENT SPECIALIST
DEPARTMENT OF LAND CONSERVATION AND DEVELOPMENT
635 CAPITOL STREET NE, SUITE 150
SALEM, OREGON 97301-2540

9. **Need More Copies?** Please print forms on **8½ -1/2x11 green paper only if available**. If you have any questions or would like assistance, please contact your DLCD regional representative or contact the DLCD Salem Office at (503) 373-0050 x238 or e-mail **plan.amendments@state.or.us**.

ORDINANCE NO. 3369

AN ORDINANCE DECLARING A COMPREHENSIVE PLAN TEXT AMENDMENT ADOPTING BY REFERENCE THE "I-5 EXIT 129 INTERCHANGE AREA MANAGEMENT PLAN (129 IAMP)"

WHEREAS, the Roseburg Urban Area Comprehensive Plan was adopted by the City Council in Ordinance No. 2345, effective on July 1, 1982, and re-adopted in Ordinance No. 2980 on December 9, 1996; and

WHEREAS, the Roseburg Land Use and Development Ordinance No. 2363, as originally adopted July 1, 1984, and re-adopted in Ordinance No. 2981 on December 9, 1996, establishes procedures for hearing Comprehensive Plan Amendment; and

WHEREAS, the Planning Commission held a public hearing on File No. CPA-10-4 after duly and timely notice; and

WHEREAS, the Planning Commission adopted Findings of Fact supporting a recommendation to approve a Comprehensive Plan Text Amendment to adopt the Roseburg School District Facility Plan by reference as it applies to properties within the City Urban Growth Boundary; and

NOW, THEREFORE, THE CITY OF ROSEBURG ORDAINS AS FOLLOWS:

SECTION 1: The City Council hereby takes official notice of the Planning Commission Findings of Fact and Decision February 7, 2011, recommending approval of the Comprehensive Plan Text Amendment.

SECTION 2: The City Council hereby adopted the Findings of Fact and Decision regarding the proposed amendment to the Comprehensive Plan as adopted by the Planning Commission making them their own Findings of Fact.

SECTION 3: Based on the evaluation detailed in the Planning Commission staff report and information considered through the public hearing process it has been determined that the proposal conforms the City of Roseburg Urban Area Comprehensive Plan and applicable Statewide Planning Goals.

SECTION 4. The City Council hereby approves the Comprehensive Plan Text Amendment as set for in the Findings of Fact and detailed in the Planning Commission staff report for File No. CPA-10-4.

SECTION 5. The City Recorder, at the request of, or with the concurrence of the City Attorney, is authorized to administratively correct any reference errors contained herein

or in other provisions of the Roseburg Municipal Code and/or the Roseburg Urban Area Comprehensive Plan as amended by the provisions added, amended or repealed herein.

ADOPTED BY THE CITY COUNCIL THIS 14TH DAY OF MARCH, 2011.

APPROVED BY THE MAYOR THIS 14TH DAY OF MARCH, 2011.

Larry Rich

Larry Rich, Mayor

ATTEST:

Sheila R. Cox

Sheila R. Cox, City Recorder

Interchange Area Management Plan

t stat 5/Interchange 129

Acknowledgments

The development of this plan has been the collective effort of the following people:

City of Roseburg

Fred Alley
Brian Davis

Oregon Department of Transportation

Lisa Cortes
Ron Hughes

Douglas County

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Keith Cubic
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Stephanie Morgan

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Stephanie Morgan, Douglas County
Dennis Randolph, Roseburg School District
John Renz, Oregon Department of Land Conservation and Development
Holly Truemper, Oregon Department of Fish and Wildlife

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

HDM	Highway Design Manual
I-5	Interstate 5
IAMP	Interchange Area Management Plan
NB	Northbound
OAR	Oregon Administrative Rule
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
SB	Southbound
TPAU	Transportation Planning Analysis Unit
TSP	Transportation System Plan
UGA	Urban Growth Area
UGB	Urban Growth Boundary
UGMA	Urban Growth Management Agreement
V/C	Volume to Capacity Ratio

CHAPTER 1: EXECUTIVE SUMMARY

This Interchange Area Management Plan (IAMP) for the I-5 Interchange 129 applies within the urban growth boundary (UGB) of Roseburg, Oregon. The IAMP acts as a refinement plan of the City of Roseburg and Douglas County Transportation System Plans (TSPs) and as a facility plan for the Oregon Department of Transportation. It establishes the desired function of this interchange and provides a long-range plan for infrastructure needs and system management practices that will allow for the safe and efficient movement of goods and people through the interchange area as the surrounding land develops. The development of this plan was a cooperative effort between the Oregon Department of Transportation, Douglas County, and the City of Roseburg. Further input was provided by area stakeholders through a Technical Advisory Committee and through public outreach conducted as part of the project development process.

This plan has been organized to facilitate implementation, including only content needed to understand the direction for managing the transportation system within the interchange area and to guide future decision-making in a manner consistent with that direction. Documents containing detailed background information developed through the planning process that created the basis for findings and recommendations are included in the appendix to this report. The plan elements included in this report are summarized as follows:

Chapter 2: Introduction

- This section discusses the purpose of the I-5 Interchange 129 IAMP, identifies problems addressed in the plan, describes the study area surrounding the interchange itself, identifies the intended function of the interchange, and outlines plan goals and objectives.

Chapter 3: Transportation Operations

- Describes expectations for operational performance of key roadways in the interchange area through the planning horizon year of 2027 and identifies pedestrian and bicycle facilities needs for completing a multimodal transportation system within the urban growth boundary.
- The "Ultimate Build" improvement scenario represents the transportation system that will be necessary to accommodate future traffic demands in the year 2027, such that mobility standards can be met at all study intersections. The additional improvement projects that will be needed following the completion of the Interchange 129 project (Immediate Build) are summarized in the table below.

Table 1: Exit 129 Interchange Area Ultimate Build Transportation Improvement Projects

Intersection	Improvement Projects
Del Rio Road & I-5 Southbound Ramp Terminal	Signalize the intersection Add a second westbound through lane
Old Highway 99 & I-5 Northbound Ramp Terminal	Add a second eastbound right turn lane
Del Rio Rd / Umpqua College Rd & Old Highway 99	Add a second northbound left turn lane Add a southbound shared through/right turn lane

Chapter 4: Management Strategies

- An access management plan is included to facilitate future decisions regarding approach locations to interchange crossroads within the interchange influence area in a manner that is consistent with the crossroads' intended function.
- Strategies for managing land use in a manner that is consistent with the interchange function are provided. The following specific policies are included in this IAMP:

1. The City and County recognize the importance of Interstate 5 to the movement of people and goods to and from the region and are committed to protecting the function of the interchange, as defined in the IAMP. Therefore, the City and County will coordinate with the Oregon Department of Transportation (ODOT) in evaluating land use actions that could adversely affect the function of the interchange.
2. The City and County will coordinate with ODOT prior to (a) amending their comprehensive plans (including their TSPs), (b) amending their land development ordinances (including text amendments and supplemental provisions in the urban growth management agreement [UGMA]), (c) changing zoning designation, or (d) proposing transportation improvements that could adversely affect the function of the interchange. The City and County will ensure that any such amendments are consistent with the function of the interchange, as defined in the IAMP.
3. Development within the Interchange 129 planning area will be jointly monitored and evaluated by ODOT, the County, and the City. ODOT will continue to coordinate with the City and County and state agencies in reviewing comprehensive plan amendments, zone change applications, changes to the UGMA, and development proposals that may have a significant impact on existing or planned transportation facilities.
4. The Interchange 129 area has a prime industrial site (shown on Figure 10) that is zoned Heavy Industrial (M-3) on the Douglas County zoning map. To ensure that the function of Interchange 129 is conserved during the 20-year life of the plan, commercial retail and service uses shall not be permitted on this site. The UGMA (Supplemental Standards, Section XII) between Douglas County and the City of Roseburg will prevent commercial retail and service uses on this prime industrial site.
5. The City and County recognize the importance I-5 plays in local and regional economic development and employment activity, and will coordinate with ODOT to assure such activity does not adversely affect the function of the interchange.

Chapter 5: IAMP Implementation and Adoption

- Roles and responsibilities related to the adoption and implementation of the IAMP are outlined for the Oregon Department of Transportation, Douglas County, and City of Roseburg. Recommended amendments to City and County plans and implementation measures necessary to successfully adopt and implement the IAMP are also included as appendices.

Chapter 6: IAMP Updates

- A list of potential actions or conditions that could result in a need to update the IAMP includes:

- A change to the Douglas County or City of Roseburg Comprehensive Plans, Plan Maps, implementing zoning ordinances or the UGMA that will have a "significant effect" on the transportation system within the IAMP study area. The determination of a "significant effect" shall be pursuant to Oregon Administrative Rule (OAR) 660-012-0060.
- The construction of transportation improvement projects within the IAMP study area that are inconsistent with planned and assumed projects in the Douglas County or City of Roseburg Transportation System Plans or the I-5 Interchange 129 IAMP.
- An amendment or update to the Douglas County or City of Roseburg Transportation System Plans.
- Development proposals in the study area that (a) are inconsistent with the IAMP implementing UGMA Supplemental Standards or (b) change the functional classification of a roadway.

CHAPTER 2: INTRODUCTION

This section discusses the purpose and intent of the IAMP, states the problem being addressed, describes the function of the interchange, introduces the IAMP study area, and outlines the goals and objectives.

IAMP Purpose and Intent

Interchange 129 is located on I-5, approximately 2.5 miles north of the Roseburg city limits. It provides access to Old Highway 99 (Old Oakland-Shady Highway) and Del Rio Road (County Road 115). It was constructed in 1978 as a folded diamond configuration in the southbound direction and as a gull wing in the northbound direction. The northbound structures on I-5 over the North Umpqua River and the Del Rio Road overcrossing were identified as deficient due to structural cracks and determined to be in need of repair. ODOT decided to modernize the interchange as part of the bridgework. The ODOT Transportation Planning Analysis Unit (TPAU) has evaluated different alternatives, which include improvements to the I-5 entrance ramps and realignment of Del Rio Road and Old Highway 99. The Interchange 129 construction is currently scheduled to start in 2011.[1] The proposed interchange improvements are shown in the study area map (**Error! Reference source not found.**).

OAR 734-051-0155(6) states: "Interchange Area Management Plans are required for new interchanges and should be developed for significant modifications to existing interchanges...." This IAMP was prepared in accordance with the recommendations in the above OAR because of planned modifications to Interchange 129. The purpose of the IAMP is to protect the function of the interchange and to protect the investment made by the State for a period of at least 20 years. The use of a 20-year planning period was chosen for this project to comply with the Transportation Planning Rule requirements and guidance from the Federal Highway Administration regarding project planning. 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 efficiently.

The purpose of this planning effort is to evaluate the long-term operation of Interchange 129, assess the limitations and issues of concern, and in general terms, identify possible future long-range needs attributable to planned development in the area. The IAMP recommends operational and physical improvements and access management techniques to provide efficient operation of the interchange and accommodate planned local land use.

[1] *Active Program Bundles by ODOT Region 3, January 2010.* Retrieved August 2010 from OTIA III State Bridge Delivery Program website: http://www.obdp.org/files/program/work/active_bundles/region3-active.pdf

Interchange 129 IAMP **Figure 1**

IAMP Study Area

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Water
- Study Intersection
- Streets
- Railroad

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Problem Statement

This problem statement serves as the basis for alternatives evaluation criteria and the benchmark against which to measure the plan's success. The modernization of Interchange 129 constitutes a major change to the study area's transportation network. One of the problems that will be resolved by this IAMP is how to integrate the modified interchange into the study area in a way that balances state highway transportation needs with local land use.

Of particular concern in this IAMP is conserving the existing Heavy Industrial site west of I-5 exclusively for industrial uses as called for in the Roseburg Comprehensive Plan and this IAMP. Due to Douglas County's pyramidal zoning scheme, some commercial retail and service uses are currently permitted in areas now designated for Heavy Industrial uses. Such retail commercial uses could prematurely exhaust the capacity of Interchange 129, thereby precluding the siting of industrial uses called for in the Roseburg Comprehensive Plan.

Existing problems such as geometrical deficiencies, poor sight distance, access spacing, recurring crashes, lack of pedestrian facilities, and heavy truck traffic at the interchange ramps have also been addressed by the project. Traffic weaving conditions north of the I-5 southbound off-ramp will not be a problem, since the Wilburn Greenlight Weigh-In-Motion scale house will be moved south of Roseburg prior to the reconstruction of Interchange 129.

Study Area

The study area boundaries, illustrated in **Error! Reference source not found.**, extend from the North Umpqua River to approximately 2,000 feet north of the Wilburn Greenlight Weigh-In-Motion scale house, and from approximately the Julina Lane/Del Rio Road intersection to approximately one-quarter mile west of Old Highway 99 to one-quarter mile east of Old Highway 99.

Study area roadways of interest include I-5, Old Highway 99, Del Rio Road, and Umpqua College Road. In addition, the following three intersections were selected for focused operations analysis.

- Old Highway 99 & I-5 Northbound
- Del Rio Road & I-5 Southbound
- Del Rio Road / Umpqua College Road & Old Highway 99

Comprehensive Plan Designations and Zoning Classifications

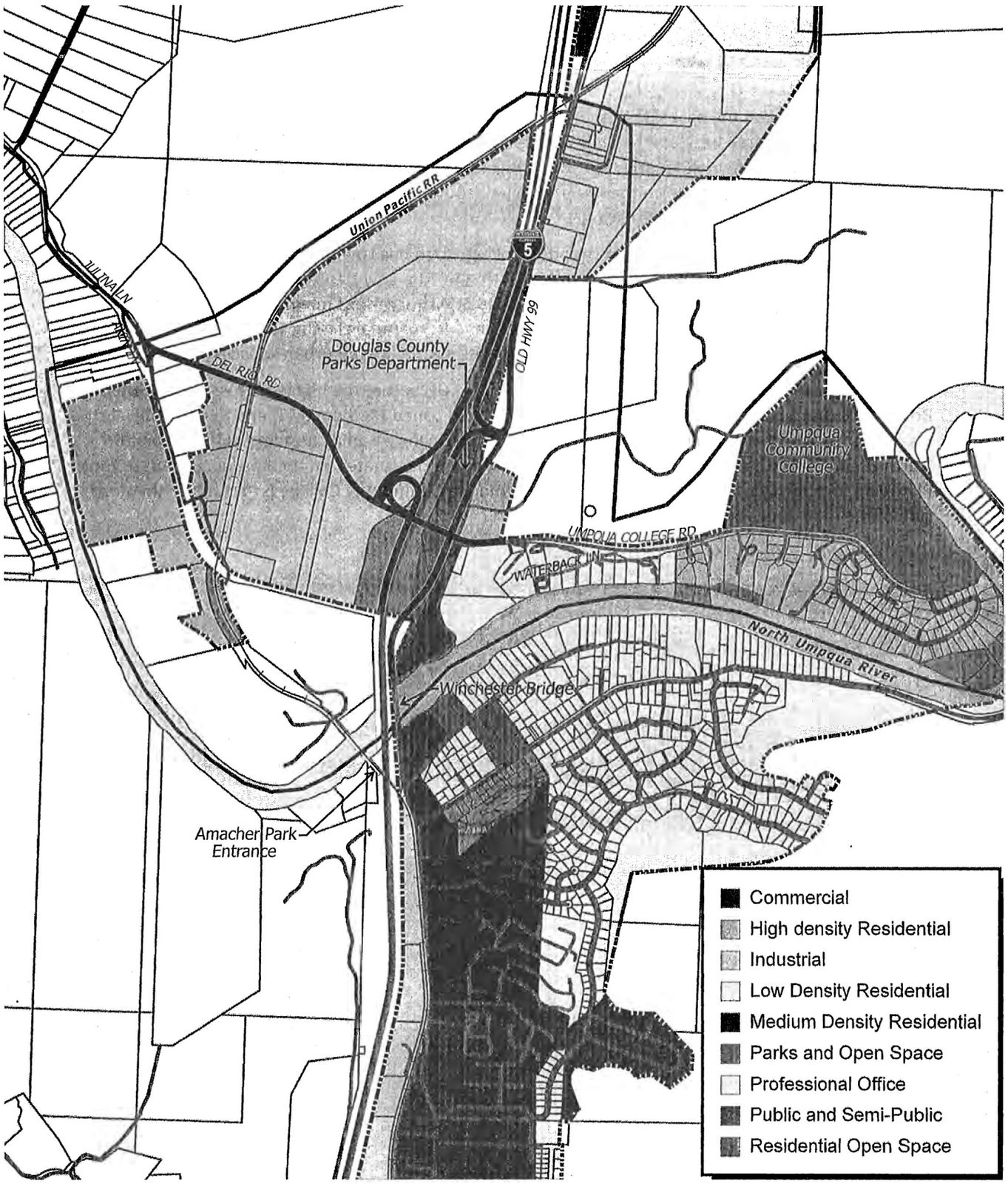
While the interchange area is partially within the Roseburg Urban Growth Area (UGA), none of this area lays within the city limits. Therefore, Douglas County is responsible for administering zoning for all land within the interchange area. For properties within the UGA, the City of Roseburg Comprehensive Plan controls; however, applicable comprehensive plan designations are implemented through Douglas County zoning and the UGMA between the City and County. City Comprehensive Plan designations and County zoning applied to land within the interchange area are illustrated in Figure 2 and Figure 3, respectively, and described below.

The north side of Del Rio Road immediately adjacent to the interchange is designated Heavy Industrial (M3) for the Douglas County Mill site. The Heavy Industrial zone is for heavy industrial development and is generally intended to be applied to those areas with excellent highway, rail, or other transportation access. The revised UGMA (2010) includes additional restrictions (Section XII of the Supplemental Standards) on commercial retail and service uses in the Heavy Industrial zone.

The ramp terminals on the east side of the interchange intersect Old Highway 99. Most of this area is inside the UGA. The area between I-5 and Old Highway 99 is zoned Public Reserve (PR). The northern portion of this area is the headquarters for the Douglas County Parks Department. On the east side of Old Highway 99, the frontage from the ramp terminals south to the North Umpqua River is zoned Community Commercial (C2) and is vacant.

The intersection of Old Highway 99 and Umpqua College Road has Low Density Residential (R1) on the south side and Suburban Residential (RS) on the north side. The Low Density Residential (R1) zone provides for a medium density urban residential use (6,500 square-foot minimum lot sizes) plus related compatible uses such as schools and parks. The Suburban Residential classification provides for single-family dwellings with 15,000 square-foot minimum lot sizes and limited urban services.

Farther north on Old Highway 99 is County EFU-Grazing (FG), before the highway crosses back into the Roseburg UGA to include a large amount of industrial land zoned Medium (M2) and Heavy (M3) Industrial. The south side of Umpqua College Road is zoned Single-Family Residential (R1) along the North Umpqua River, although some land on the east end is designated on the Roseburg Comprehensive Plan Map for High Density Residential (HDR). The Umpqua Community College is located on the north side of the road and is zoned Public Reserve (PR).



Interchange 129 IAMP **Figure 2**

City of Roseburg

Comprehensive Plan Designations

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Streets
- Railroad
- Water

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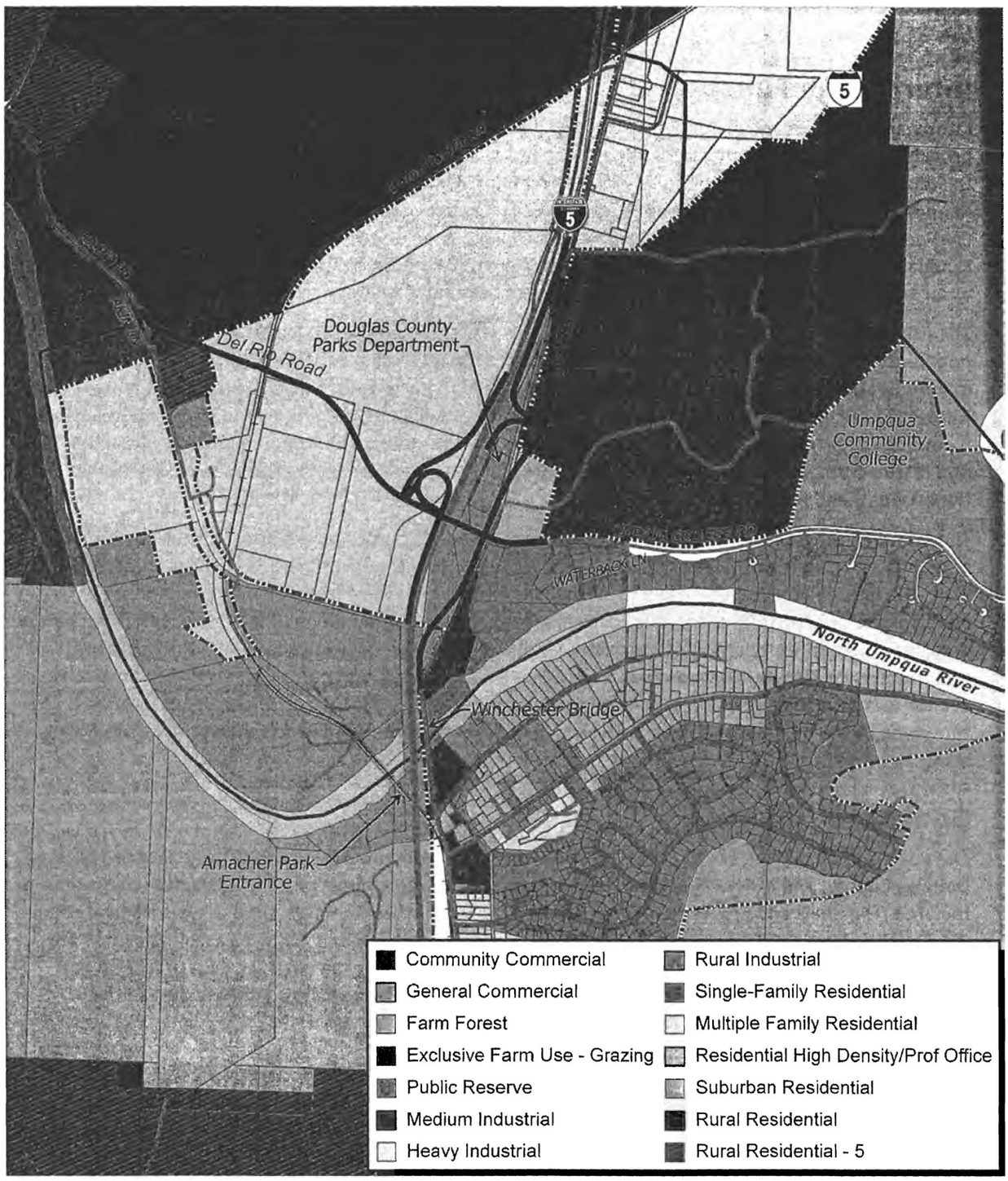

Interchange 129 IAMP **Figure 3**

Douglas County

Zoning Map

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Streets
- Railroad
- Water

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Interchange Function

Interchange 129 lies within the Roseburg UGB, but outside of the Roseburg city limits. Interchange 129 provides access to Old Highway 99 and Del Rio Road. The southbound I-5 ramp terminals intersect with Del Rio Road and the northbound I-5 ramp terminals intersect with Old Highway 99. Umpqua College Road is also located within the study area. The 1999 Oregon Highway Plan identifies I-5 as an Interstate Freeway within the study area. Old Highway 99, Del Rio Road, and Umpqua College Road fall under Douglas County jurisdiction. The Douglas County Transportation System Plan[2] identifies Old Highway 99 as an arterial, Del Rio Road as a major collector, and Umpqua College Road as a minor collector.

The primary land use designations served by the interchange are: Heavy Industrial on the northwest quadrant; Public Reserve on the southwest quadrant; Public Reserve and Residential on the northeast quadrant; and Residential, Community Commercial and Public Reserve on the southeast quadrant. The historical Winchester Bridge is located south of the Old Highway 99/ Del Rio Road intersection east of I-5. Among the properties served by the interchange are the Umpqua Community College, Amacher Park, Rod & Gun Club, Douglas County Forest Products, the headquarters for the Douglas County Parks Department, and residences.

The intended function of Interchange 129 is to safely and efficiently accommodate future traffic demands associated with current and planned land uses consistent with the Roseburg Comprehensive Plan. The interchange improvements scheduled are not intended to facilitate new commercial development in the study area – especially in areas designated for industrial use. However, interchange area improvements are intended to facilitate industrial development as called for in the Roseburg Comprehensive Plan and accommodate future traffic associated with current and planned land uses. Section XII of the amended UGMA includes provisions that prohibit the use of the Heavy Industrial site shown on Figure 10 for commercial retail and service uses, as required by the policy provisions of this IAMP.

Goals and Objectives

The goals and objectives of this IAMP reflect the intentions and interests of ODOT, the City of Roseburg, Douglas County, and other key stakeholders regarding the interchange and transportation operations in the area. The goals and objectives are guided by, but not re-statements of, 1999 Oregon Highway Plan (OHP) policies and OAR language. The objectives relate what the plan is trying to accomplish and are intended to be achievable and measurable. The objectives serve as the basis for data collection and research and as alternative evaluation criteria to guide alternatives analysis and selection of the preferred alternative, and to guide management decisions.

Project Goal

The goal of this IAMP is to preserve the investment being made in the new interchange facility and to maintain the interchange's intended function, which is to safely and efficiently accommodate future traffic demands associated with current and planned land uses consistent with the Roseburg Comprehensive Plan. The IAMP was developed in partnership with affected property owners in the interchange area, the City of Roseburg, Douglas County, ODOT, and other stakeholders, including interchange users.

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[2] Douglas County Transportation System Plan, December 2006.

Objectives

The objectives of the IAMP are to:

- Protect the function of the interchange as specified in the OHP and Roseburg TSP.
- Protect the safe and efficient operation of the interchange between connecting roadways and to minimize the need for major improvements at existing intersections.
- Provide safe and efficient operations on I-5 and arterial highways as specified in the OHP and Douglas County TSP.
- Develop an access management plan that provides for safe and acceptable operations on the transportation network, and meets OHP requirements and the access spacing standards in OAR 734-051.
- Identify future land use conditions and incorporate needed measures to conserve interchange capacity and limit land uses to those anticipated by the Roseburg Comprehensive Plan. Commercial retail and service land uses are to be prohibited within the Heavy Industrial (M-3) zone.
- Include short, medium, and long-range actions to improve and maintain roadway operations and safety in the interchange study area.
- Include amendments to the Roseburg Comprehensive Plan, Roseburg/Douglas County Urban Growth Management Agreement, and Roseburg and Douglas County Transportation System Plans, and other official documents as necessary to implement the recommended alternative for the interchange study area.
- Identify partnerships for the cooperative management of future projects and establish a process for coordinated review of land use decisions affecting transportation facilities.
- Provide for infrastructure needs for new industrial development (and related economic activity and employment associated with the industrial development in the study area) consistent with the Roseburg Comprehensive Plan and implementing measures.

CHAPTER 3: TRANSPORTATION OPERATIONS

The primary focus of the Interchange 129 project is the replacement of the northbound structure on I-5 over the North Umpqua River and the Del Rio Road over-crossing structure, which have been identified as being structurally deficient and in need of repair. This project also includes the realignment of Del Rio Road to intersect Old Highway 99 opposite Umpqua College Road, resulting in relocations of the interchange ramps to the north. Construction is to begin in 2011.

The Interchange 129 project is programmed solely for the replacement of a deficient bridge – not as a "modernization project" that would increase interchange capacity to meet future land use needs. Unlike a modernization project, the intent of this project was not to provide adequate capacity through the planning horizon year, but to replace old infrastructure and to restore the connecting roadways to preconstruction conditions. However, during the project development process, opportunities were taken to further enhance the capacity of the interchange and surrounding street network as the budgetary constraints would allow. Therefore, the Preferred Alternative selected through ODOT's project development process represents the improvements chosen to fulfill the need of replacing the deficient structures, but does not represent the ultimate buildout of the interchange and surrounding street network needed to provide adequate operations through the planning horizon year of 2027.

This chapter describes the "Immediate Build" condition that will exist following completion of the Interchange 129 construction project and identifies additional improvements that will be required to maintain adequate levels of safety and mobility through the planning horizon year of 2027.

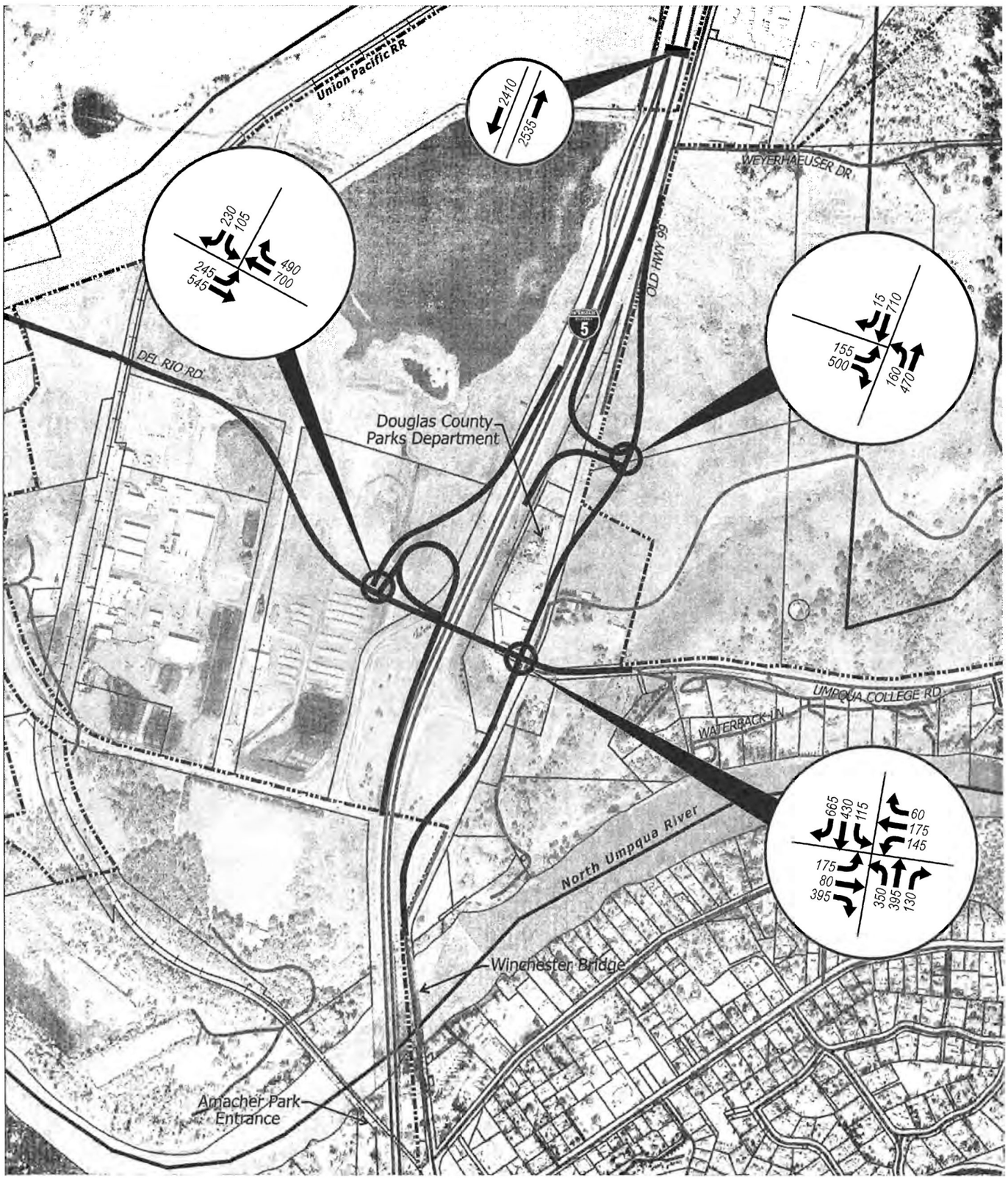
Motor Vehicle Improvements

Improvements to the roadway network for serving motor vehicle travel are described for the "Immediate Build" scenario, representing conditions that will exist following the Interchange 129 construction project in 2011, and for the "Ultimate Build" scenario, representing additional improvements that will be needed to serve forecasted traffic growth through the year 2027.

Future Traffic Volumes

Future traffic volumes for the study area in the year 2027 were developed by TPAU, using a combination of manual traffic counts, historic growth rates, data from the Roseburg Automatic Traffic Recorder (ATR No. 10-005) on I-5, ITE Trip Generation Seventh Edition, and the Roseburg transportation demand model (see Appendix E: Future Transportation Analysis for detailed methodology). The resulting future weekday p.m. peak hour volumes during the year 2027 at each of the study intersections are displayed in Figure 4.

Key land use assumptions effecting the interchange area that were included as the basis for projecting traffic volumes include the operation of the future Winchester Freight Rail Yard Facility located north of the Douglas County Forest Products Mill, full development of the 120-acre, industrially-zoned Mill Pond Site (also known as the Back Nine Property), and the recent opening of a Costco Warehouse located south of the interchange area.



Interchange 129 IAMP **Figure 4**

2027 Future Weekday PM Peak Hour Traffic Volumes

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Water
- Streets
- Railroad
- Study Intersection
- 00 Design Hour Traffic Volume

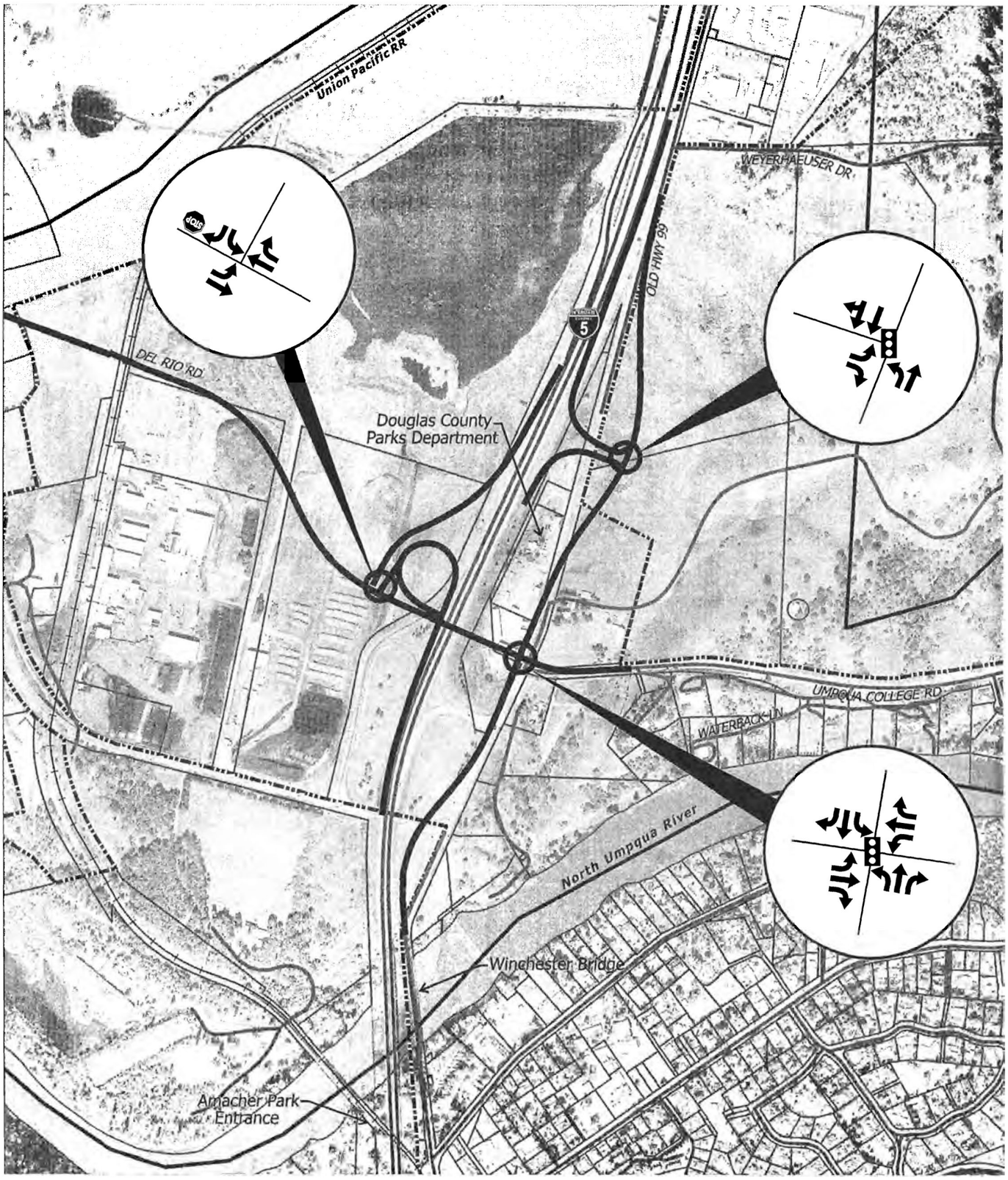
Development of the newly created surplus property south of the interchange between I-5 and the realigned Old Highway 99 was not assumed to occur in this plan because there is currently no zoning designation for it. Should it develop in the future, the potential trip generation could significantly impact Interchange 129 operations. Therefore, this IAMP should be updated concurrently with any Comprehensive Plan amendment that applies a zoning designation to this property.

Immediate Build Improvements

As part of the project to replace deficient bridges on I-5, ODOT will be constructing roadway improvements, beginning in 2011, affecting Interchange 129 and the surrounding surface streets. The Preferred Alternative chosen through the project development process, also referred to as the "Gull-Wing Hybrid Alternative" will realign Del Rio Road beginning approximately one mile west of I-5 and will cross I-5 approximately 1,280 feet north of the existing structure where it will connect directly to Umpqua College Road and Old Highway 99. The new intersection will eliminate the current intersection of Old Highway 99 at Del Rio Road.

The I-5 northbound ramp terminal will be moved north of the Douglas County Shops and Fire District #2 station and will be reconstructed in the same Gull-Wing layout as the existing ramps. The I-5 southbound ramp terminal will be moved north to accommodate the realignment of Del Rio Road and will be constructed using a partial cloverleaf layout. Old Highway 99 will be realigned to best fit the new intersections with Del Rio Road and the I-5 northbound ramp terminal and to improve the alignment with the approach to the old Winchester Bridge (see Figure 5).

No other roadway improvements are currently planned within the Interchange 129 study area.



Interchange 129 IAMP **Figure 5**

Immediate Build Roadway Improvements

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Water
- Streets
- Railroad
- Study Intersection
- Lane Configuration
- Stop Sign
- Traffic Signal

Roadway Jurisdiction and Functional Classification

Roadway functional classifications determine the applicable agency management objectives and design requirements for each facility. Table 2 identifies roadway jurisdictions and designated functional classes for major roadways in the study area once the project is completed. It can be used as reference when considering future actions that may affect these facilities.

Today, ODOT has jurisdiction of only I-5, while Douglas County has jurisdiction over all surface streets in the study area. The City of Roseburg does not maintain jurisdiction over any roadways within the study area at this time. Once the project is completed, ODOT will have jurisdiction over all study area intersections. ODOT will also have jurisdiction over Old Highway 99, Del Rio Road from Old Highway 99 to approximately 2,080 feet to the west, and Umpqua College Road from Old Highway 99 to approximately 660 feet to the east. Douglas County will maintain jurisdiction of (a) Del Rio Road to the west and Umpqua College Road to the east of the ODOT maintained roadways, and (b) Old Highway 99 north of the northbound ramp terminal no less than 1,000 feet south from the NW corner of the School District #4 property (approximately 1,000 feet from the northbound ramp terminal).

Table 2: Study Area Roadway Functional Classification

Roadway	Jurisdiction	Functional Classification
Interstate 5	ODOT	Interstate Freeway
Old Highway 99	ODOT	Local Interest Road
Del Rio Road	ODOT	Local Interest Road
Umpqua College Road	ODOT	Local Interest Road

Mobility Standards

ODOT has adopted mobility standards for transportation facilities under their jurisdiction that require a minimum level of acceptable performance, indicated by a volume to capacity (v/c) ratio. Table 3 provides applicable mobility standards for study intersections within the Interchange 129 IAMP area, taken from ODOT's OHP and 2003 Highway Design Manual (HDM). The OHP standards are to be applied to the review of development proposals and for the determination of needed infrastructure improvements (i.e., No Build scenarios). However, the mobility standards from the HDM are to be applied to the evaluation of all alternatives considered for roadway improvements through public investments. While the recommended improvements included in this plan were designed to comply with the HDM standards, the mobility standards from the OHP will be used for most future interchange area operations monitoring, including the review of development proposals.

Also note that while the location of the proposed I-5 northbound ramp terminal, with respect to the UGB, is not clearly defined, this intersection will be managed as though it is inside the UGB.

Table 3: Mobility Standards (Volume to Capacity Ratios)

Location	Speed (MPH)	OHP Standard	HDM Standard
Del Rio / Umpqua College Road & Old Highway 99	55 / 45**	0.80	0.75
Old Highway 99 & I-5 NB Ramp Terminal*	45***	0.80	0.70
Del Rio Rd & I-5 SB Ramp Terminal	55	0.80	0.70
I-5 Mainline Diverge / Merge Points	55	0.70	0.65

* Assumed to be included inside the UGB

** Del Rio Road and Umpqua College Road are 55 MPH, Old Highway 99 is 45 MPH

*** Old Highway 99 is 45 MPH south of the I-5 NB Ramp and 55 MPH north of the I-5 NB Ramp

Immediate Build Future Traffic Operations (2027)

The future traffic volumes forecasted for the year 2027 (shown in Figure 4) were applied to the Immediate Build roadway improvements that will be constructed as part of the Interchange 129 project in 2011, and analyzed to evaluate the operational characteristics of key intersections. Because no other roadway projects are planned within the vicinity, only these improvements were assumed to be made to the existing system through the year 2027. The results are shown in Table 4.

Table 4: Immediate Build Intersection Operations Analysis Results

Location	OHP Mobility Standard (v/c)	HDM Mobility Standard (v/c)	2027 PM Peak Hour v/c ratio
Del Rio Rd / Umpqua College Rd & Old Highway 99	0.80	0.75	1.03
Old Highway 99 & I-5 NB Ramp Terminal	0.80	0.70	0.74
Del Rio Rd & I-5 SB Ramp Terminal	0.80	0.70	>2.0

Note: Black shaded cells indicate that the mobility standard is exceeded

While significant improvements will be made to the transportation system through the Interchange 129 project, they will not be sufficient to adequately serve forecasted traffic volumes through 2027. The intersection of the I-5 northbound ramp terminal with Old Highway 99 will operate well (per OHP standards), however, additional capacity improvements will be required at the intersection of the I-5 southbound ramp terminal with Del Rio Road and at the intersection of Old Highway 99 with Del Rio Road/ Umpqua College Road.

Freeway operations surrounding Interchange 129 were also evaluated as part of the project development process, with the results shown in Table 5. On and off-ramp connections to I-5 will be relocated as part of the improvement project, but the merging and diverging characteristics and geometrics will remain unchanged. Therefore, while the results in Table 5 indicate that the freeway movements will fail to meet ODOT's mobility standards, this is not related to the improvements being made. However, it is an indication that the freeway is becoming more congested and that mobility standards will soon be exceeded.

Table 5: Immediate Build Freeway Operations Analysis Results

Merging and Diverging Movements	OHP Mobility Standard (v/c)	HDM Mobility Standard (v/c)	2027 PM Peak Hour v/c ratios
I-5 NB diverge	0.70	0.65	**0.88**
I-5 NB merge	0.70	0.65	**0.72**
I-5 SB diverge	0.70	0.65	**0.72**
I-5 SB merge	0.70	0.65	**0.82**
Basic Freeway Capacity			
I-5 NB	0.70	0.65	**0.86**
I-5 SB	0.70	0.65	**0.83**

Note: Black shaded cells indicate that the OHP standard is exceeded

Ultimate Build Improvements

The "Ultimate Build" improvement scenario represents the transportation system that will be necessary to accommodate future traffic demands in the year 2027, such that mobility standards can be met at all study intersections. The additional improvement projects that will be needed following the completion of the Interchange 129 project (Immediate Build) are illustrated in Figure 6 and described below in Table 6, including an estimated phasing plan.[3] This plan includes an estimated year of need, as well as weekday p.m. peak hour traffic volume thresholds for critical intersection movement pairs that can be used to monitor interchange area intersections and forecast approaching needs. These estimates assume area growth will occur on an even and linear basis through the year 2027. Because land use development is generally not that regular or predictable, the estimated year of need should be used with caution.

As shown in Table 7, interchange area study intersection operations will comply with adopted mobility standards (both OHP and HDM) through the year 2027 with the Ultimate Build transportation system in place.

[3] The Ultimate Build improvements and phasing plan are based on land use assumptions that correspond with the currently adopted Douglas County Comprehensive Plan. Future Comprehensive Plan amendments, such as those that would allow for development of the surplus property site south of the interchange, may result in a need to update the Ultimate Build improvements plan.

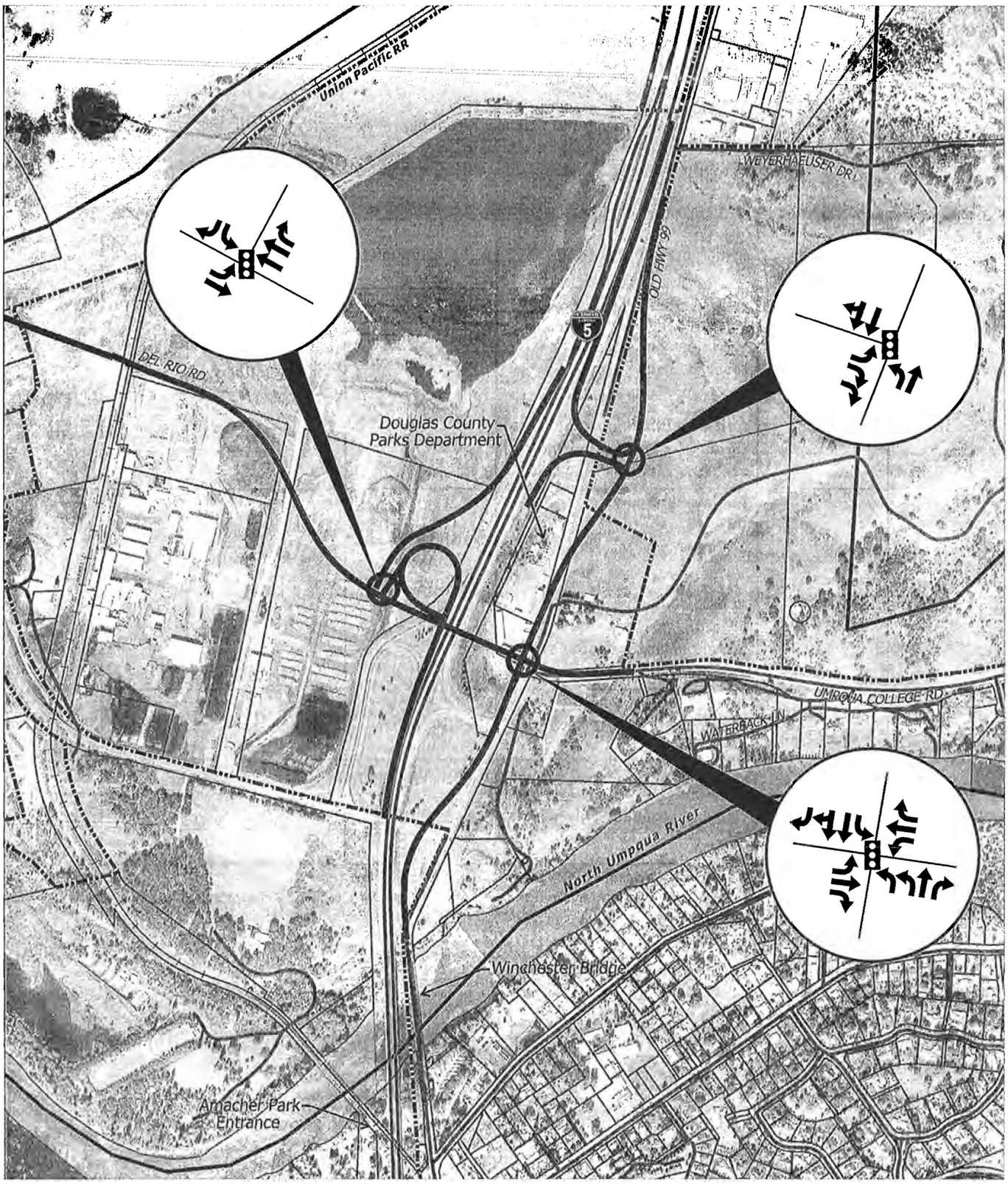
Table 6: Exit 129 Interchange Area Ultimate Build Transportation Improvement Project Phasing

Estimated Year of Need	Location	Project Needed	Critical Movements	Critical Movements Total Peak Hour Volume*	Resulting v/c Ratio	OHP Mobility Standard (v/c)
2020	Del Rio Road & I-5 SB Ramp	Signalize the intersection	Southbound Left / Westbound Through	535	0.55	0.80
	Del Rio Road / Umpqua College Rd & Old Hwy 99	Add an additional northbound left turn lane and accompanying westbound receiving lane - OR** - Add a southbound through/right turn lane and accompanying receiving lane	Northbound Left / Southbound Through and Right	1,230	0.75 0.71	0.80
2025	Del Rio Road / Umpqua College Rd & Old Hwy 99	Add a southbound through/right turn lane and accompanying receiving lane - OR** - Add an additional northbound left turn lane and accompanying westbound receiving lane	Northbound Left / Southbound Through and Right	1,405	0.67 0.69	0.80
2027	Del Rio Road & I-5 SB Ramp	Add a westbound through lane and accompanying receiving lane	Westbound Through/ Eastbound Left	945	0.63	0.80
Additional Improvements Needed to Meet HDM Mobility Standards						
2027	Old Hwy 99 & I-5 NB Ramp	Add an eastbound right turn lane	Eastbound Right / Southbound Through	1,210	0.63	0.80

* The sum of the weekday p.m. peak hour volumes for each of the critical movements listed.
** In 2020, either improvement will reduce the v/c ratio to meet the OHP mobility standard. In 2025, the complementary project will be needed to meet the OHP mobility standard.

Table 7: Ultimate Build Intersection Operations Analysis Results

Location	OHP Mobility Standard (v/c)	HDM Mobility Standard (v/c)	2027 PM Peak Hour v/c ratio
Del Rio Rd / Umpqua College Rd & Old Highway 99	0.80	0.75	0.64
Old Highway 99 & I-5 NB Ramp Terminal	0.80	0.70	0.63
Del Rio Rd & I-5 SB Ramp Terminal	0.80	0.70	0.63



Interchange 129 IAMP **Figure 6**

Ultimate Build Intersection Geometry

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Water
- Streets
- Railroad
- Study Intersection
- Lane Configuration
- Traffic Signal

Should the surplus property south of the interchange between I-5 and Old Highway 99 develop as a commercial use in the future, additional improvements may be needed. While an updated analysis of system needs would be required at the time the Douglas County Comprehensive Plan is amended to allow for such development, additional improvements may include:

- Del Rio Road/ Umpqua College Road & Old Highway 99: Modify northbound right turn lane to a shared through/right turn lane and accompanying receiving lane
- Old Highway 99 & I-5 NB Ramp Terminal: Add a southbound right turn lane and a northbound through lane with accompanying receiving lane
- Old Highway 99 & I-5 SB Ramp Terminal: Add an eastbound through lane and accompanying receiving lane

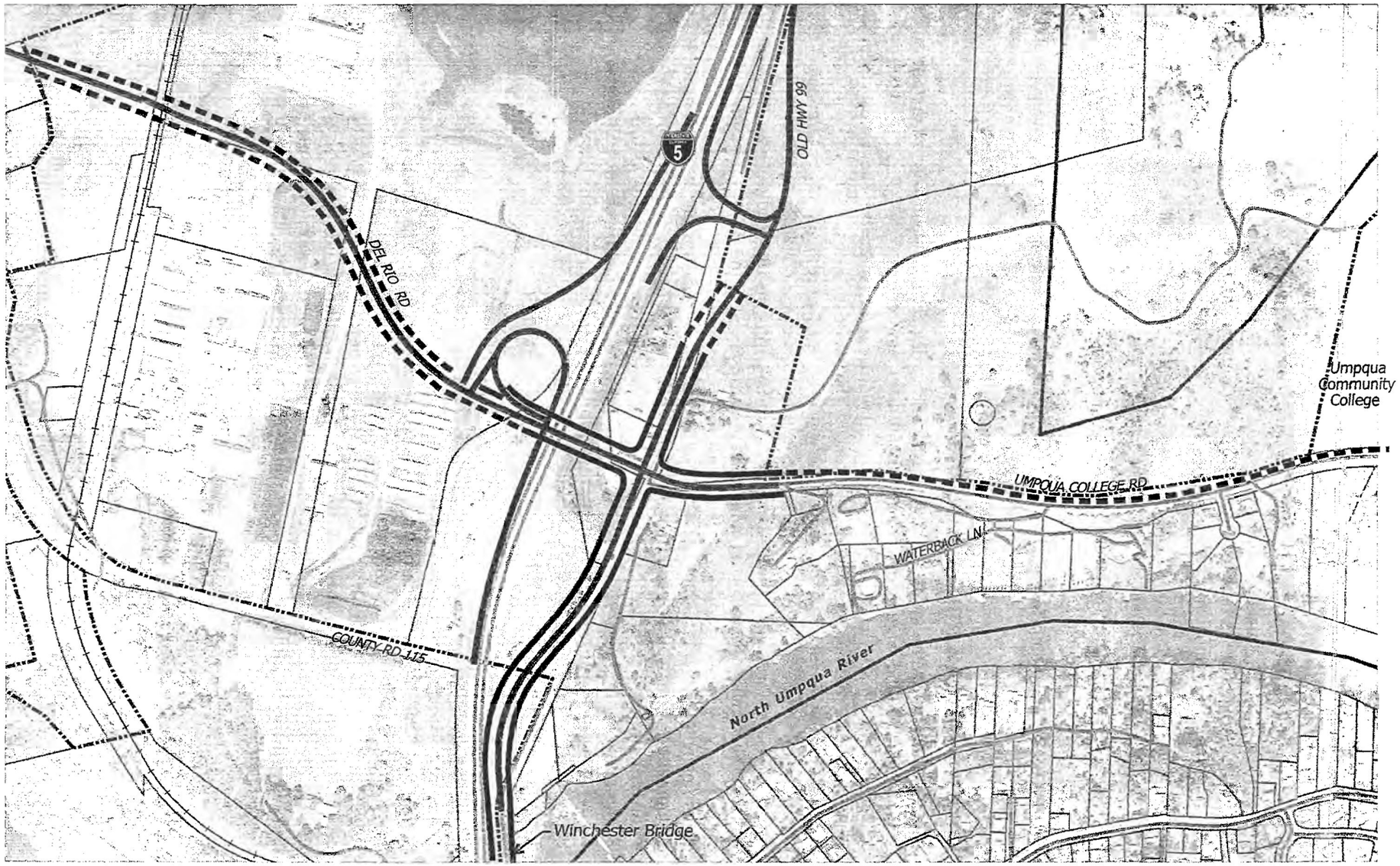
Pedestrian and Bicycle Improvements

As part of the interchange improvement project beginning in 2011, sidewalk will be constructed on Del Rio Road from the I-5 southbound ramp terminal to Old Highway 99, on Umpqua College Road from Old Highway 99 to a point approximately 660 feet east, and on Old Highway 99 from the Winchester Bridge to a point approximately 600 feet north of the intersection with Del Rio Road/Umpqua College Road. Signalized crossing opportunities for pedestrians will be provided at the I-5 northbound ramp terminal and at the intersection on Old Highway 99 with Del Rio Road/Umpqua College Road. This will provide facilities for pedestrian travel through most of the interchange area within the UGA and will connect to existing sidewalks on the Winchester Bridge to connect this area to the rest of the city to the south.

Sidewalk infill on remaining segments within the UGA should occur as part of future land use actions to serve new development. This may include additional sidewalk on Del Rio Road west of the I-5 southbound ramp terminal and a short extension of the sidewalk on Old Highway 99 towards the northern UGB. This network of sidewalks will also be complimented by a planned project in the Douglas County TSP that will construct a multiuse path adjacent to Umpqua College Road from Old Highway 99 to the college and North Umpqua River. Pedestrian facilities that will be present following the Interchange 129 reconstruction, as well as those described above that will still be needed, are illustrated in Figure 7.

Designated bike lanes will also be provided where sidewalk is being constructed as noted above. On Old Highway 99, the bike lanes will gradually taper into the travel lanes as the roadway approaches the Winchester Bridge, which is currently too narrow to accommodate bike lanes. Douglas County has classified Old Highway 99 as a Class III Bikeway, which is an on-roadway facility designated by signing and striping (e.g., bike lanes). Therefore, the bike lanes through the interchange area will eventually be integrated into a continuous network of bike lanes extending to the north and south. However, given the cost of widening the Winchester Bridge, it may be some time before bike lanes are available over that segment of Old Highway 99. Until then, bicyclists will be required to share the road with motor vehicles over the bridge.

Where sidewalk is not being constructed, 5 to 8-foot wide shoulders will be available for bicycle use. Bicycle facilities and needs are shown in Figure 8.



Interchange 129 IAMP **Figure 7**

Pedestrian Facilities

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Water
- Streets
- Railroad
- Sidewalk
- Future Sidewalk
- Future Multi-Use Path

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Interchange 129 IAMP **Figure 8**

Bicycle Facilities

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LEGEND

- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Water
- Streets
- Railroad
- Bike Lane/Shoulder
- Future Bike Lane/Shoulder
- Future Multi-Use Path

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CHAPTER 4: MANAGEMENT STRATEGIES

The Interchange 129 reconstruction project, in addition to the future improvements comprising the Ultimate Build, represents a significant investment in the area's transportation infrastructure. While these projects can provide the capacity needed to support future development consistent with the Roseburg Comprehensive Plan, proper management of the surrounding land use and roadway network will be critical for protecting the life of this investment and achieving the goals and objectives of this plan. This chapter provides important transportation system and land use management strategies to protect the investment made in these facilities and ensure that the expected quality of service can be provided as area lands develop.

Access Management Plan

A key element of the IAMP related to the long-range preservation of operational efficiency and safety of the reconstructed interchange is the management of access to the interchange crossroads (Del Rio Road/ Umpqua College Road and Old Highway 99). Because access points introduce a number of potential vehicular conflicts on a roadway and are frequently the cause of slowing or stopping vehicles, they can significantly degrade the flow of traffic and reduce the efficiency of the transportation system. However, by reducing the overall number of access points and providing greater separation between them, the impacts of these conflicts can be minimized.

To provide for the appropriate treatment of access within the interchange area, this access management plan will guide the future locations of public and private approaches on area roadways. Because access changes typically occur as part of land development actions and transportation improvement projects, the implementation of the access management plan is anticipated to occur incrementally over a long period of time as opportunities arise. Therefore, plan recommendations are separated into short, medium, and long-range actions, with supporting guidance provided to assist ODOT, County, and City staff with plan implementation.

Access Management Plan Objectives

As part of the project development process, ODOT formed an Access Management Subteam to guide decisions regarding actions on individual approaches to be carried out as part of the bridge replacement project. Because these actions are assumed to occur as part of the construction project, they are referenced in this access management plan as "short-range actions". While these actions are documented in the access management plan, the primary focus will be on the medium and long-range actions that will further improve conditions in the years following the project.

To provide a basis for decision-making during the development of the plan, a set of access management objectives was established that was intended to reflect ODOT's current policies, practices, and regulations pertaining to the management of access. Because these objectives are focused on long-range implementation and incremental modifications to access, they are different than those that support the Access Management Strategy for the construction project, which is not intended to be incorporated into the access management plan for this area. The objectives of this plan are listed below.

1. Within 1,320 feet of the I-5 northbound and southbound ramp terminals, meet, or move in the direction of meeting, ODOT's adopted access management spacing standards for access to interchange areas as defined in OAR 734-051-125, while recognizing the needs of existing development. According to OAR 734-051-125 and Table 5 (Minimum Spacing Standards Applicable to Freeway Interchanges with Multi-Lane Crossroads), the applicable spacing standards require:
    - A minimum of 1,320 feet between an interchange ramp terminal and the first intersection where left turns are allowed;
    - A minimum of 1,320 feet between an interchange ramp terminal and the first right-in/right-out only approach on the right (when traveling away from the ramp terminal); and
    - A minimum of 1,320 feet between an interchange ramp terminal and the last right-in/right-out only approach on the right (when traveling towards the ramp terminal).

    Where the term, "interchange ramp terminal" is used above, it refers to the center of the ramp intersection with the crossroad or the nearest end of a ramp taper, whichever configuration is applicable.
2. The extent of the access management plan for medium and long-range actions will be limited to the segments of Del Rio Road, Umpqua College Road, and Old Highway 99 within 1,320 feet of the I-5 northbound and southbound ramp terminals.
3. 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.
4. Replace private approaches with public streets, where feasible, to provide consolidated access to multiple properties.
5. Develop short, medium, and long-range actions for access management implementation, where short-range actions will include those that are anticipated to be implemented as part of the bridge reconstruction project. Medium and long-range actions will include those to be implemented as part of land development or future public construction projects by ODOT, the City of Roseburg, or Douglas County, with those currently in-process or programmed to occur within the next 5 years being classified as "medium-range". As the timing of property redevelopment and future construction projects is uncertain and cannot be predicted, the labeling of actions as medium or long-range is only intended to be a guide and should not be used to establish a required order of implementation. Any action should be implemented as opportunities arise, regardless of timing.
6. Proposed actions shall not prevent properties from maintaining reasonable access to the transportation system where available under existing conditions.
7. Provide a guide for the placement of future traffic controls within the interchange area to facilitate the orderly movement of traffic on the interchange crossroads.
8. Where approaches to the subject roadways are to remain upon consideration of the preceding objectives, such approaches should be aligned on opposite sides of roadways where feasible to reduce turning conflicts.

9. Recognize Douglas County jurisdiction of Old Highway 99 (approximately 1,000 feet north of the northbound ramp terminal) consistent with the Existing Exit 129 project conditional use permit and coordinated agreement on access spacing with the IAMP in accordance with OAR 734-051.
10. The County will control access on portions of the road system within the IAMP including accesses on Del Rio Road approximately 1,000 feet west of the southbound interchange ramp terminal.

Access Management Action Plan

The access management recommendations in this plan have been categorized into short-range, medium-range, and long-range actions based on the access research conducted by ODOT and constraints associated with their implementation. As previously noted, short-range actions are to be executed during the bridge reconstruction project. Medium and long-range actions will include those to be implemented as part of land development or future public construction projects by ODOT, the City of Roseburg, or Douglas County, with those currently in-process or programmed to occur within the next 5 years being classified as "medium-range". As the timing of property redevelopment and future construction projects is uncertain and cannot be predicted, the labeling of actions as medium or long-range is only intended to be a guide and should not be used to establish a required order of implementation. Any action should be implemented as opportunities arise, regardless of timing.

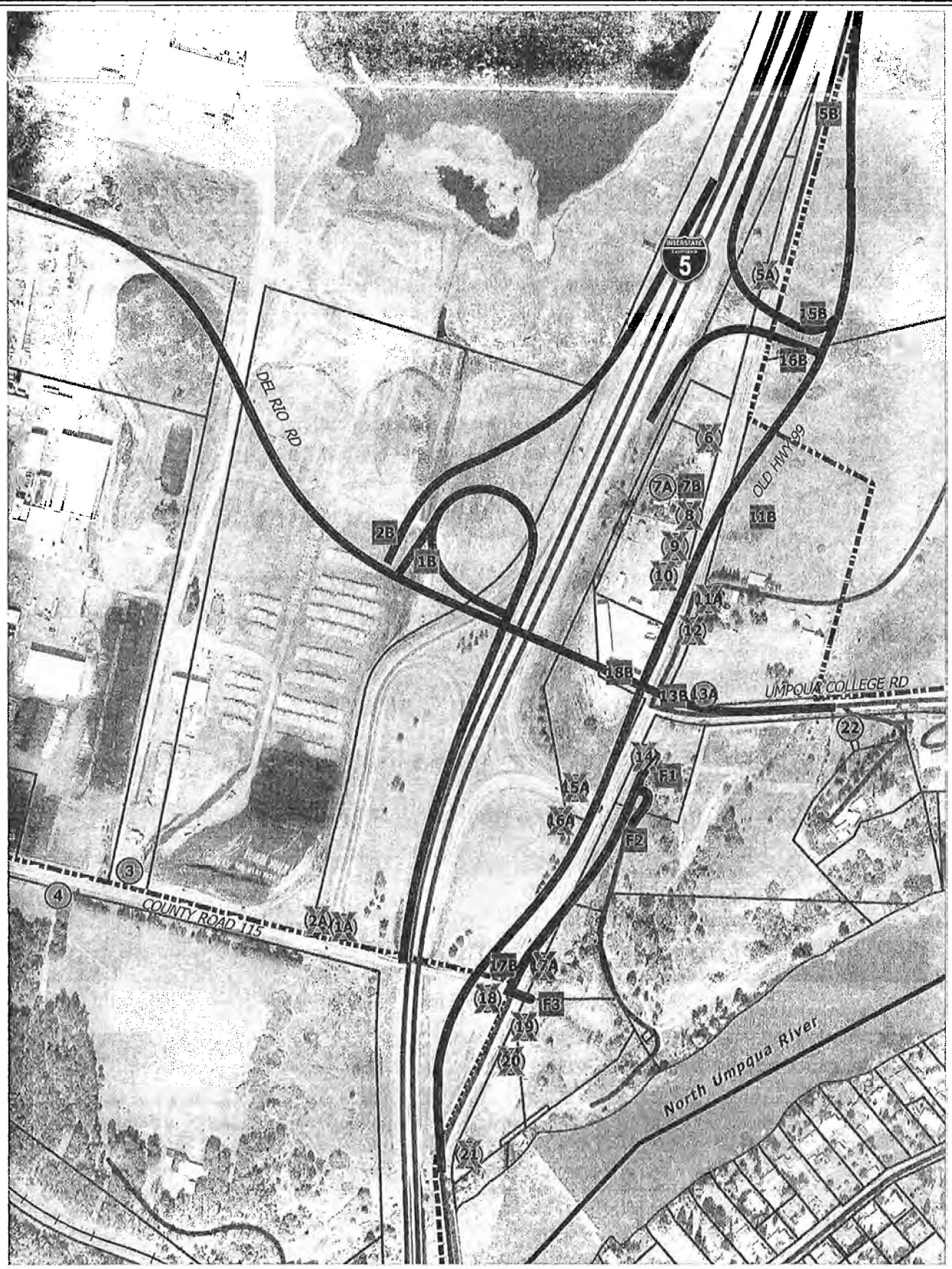
The recommended actions for each approach within the plan area are described in Table 8, with Figure 9 illustrating the short-range actions. The Interchange 129 reconstruction project will be including substantial access management improvements, so few long-range actions are necessary. Also, the Official Project Access List (OPAL) assembled by ODOT for the bridge reconstruction project, which provides detailed information regarding approach and property characteristics, as well as existing access rights, has been included in the appendix for reference. The approach numbers shown below in Table 8 correspond with those from the OPAL where possible to provide consistency.

Table 8: Access Management Plan Actions

Approach #	Short-Range Action
Del Rio Road (old alignment)	
1A	Remove and relocate existing approach (see approach 1B)
2A	Remove and relocate existing approach (see approach 2B)
3	No action
4	No action
Del Rio Road (new alignment)	
1A	Construct new ramp approach
2B	Construct new ramp approach
Umpqua College Road	
22	Pave existing approach
Old Highway 99	
5A	Remove and relocate existing approach (see approach 5B)
5B	Construct new approach
6	Remove and relocate existing approach (see approach 7B)

Table 8 (continued): Access Management Plan Actions

Approach #	Short-Range Action
7A	Remove and relocate existing approach (see approach 7B)
7B	Construct new approach
8	Remove and relocate existing approach (see approach 7B)
9	Remove and relocate existing approach (see approach 7B)
10	Remove and relocate existing approach (see approach 7B)
11A	Remove and relocate existing approach (see approach 11B)
11B	Construct new approach
12	Remove and relocate existing approach (see approach 11B)
13A	Modify and relocate existing approach (see approach 13B)
13B	Construct new intersection approach
14	Remove and relocate existing approach (see approach F1)
15A	Remove and relocate existing approach (see approach 15B)
15B	Construct new ramp approach
16A	Remove and relocate existing approach (see approach 16B)
16B	Construct new ramp approach
17A	Remove and relocate existing approach (see approach F3)
17B	Construct new frontage road approach
18A	Remove and relocate existing approach (see approach 18B)
18B	Construct new intersection approach
19	Remove and relocate existing approach (see approach F3)
20	Remove and relocate existing approach (see approach F3)
21	Remove and relocate existing approach (see approach F2)
New Frontage Road off of Old Highway 99	
F1	Construct new approach
F2	Construct new approach
F3	Construct new approach
Approach #	**Medium-Range Action**
	No in-process development or construction projects known. Future actions will be considered as long-range.
Approach #	**Long-Range Action**
Old Highway 99	
	Should access to the property bounded by I-5 to the west, Del Rio Road to the north, and Old Highway 99 to the east be needed in the future, it should be located on Old Highway 99 towards the southern end of the property while avoiding turning conflicts with approach 17B.



Interchange 129 IAMP **Figure 9**

Short-Range Access Actions

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- Proposed Roadway
- Study Area
- Roseburg UGB
- Tax Lots
- Water
- (3) Existing Approach
- (11) Reconstructed/New Approach
- X Removed Approach

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Future Traffic Controls

The placement of future traffic control devices in the IAMP area can have a significant impact on the quality of operation and safety provided by the transportation system. The following recommendations regarding traffic controls are not comprehensive and are intended to supplement, not replace, agency standards.

Traffic Signals

Upon completion of the bridge replacement project, the intersections of Old Highway 99 at Del Rio Road/ Umpqua College Road and Old Highway 99 at the I-5 northbound ramp terminal will be controlled with traffic signals. While no other traffic signals will be present within the interchange area at that time, early planning to guide the orderly installation of traffic signals in the IAMP area will provide further protection of the infrastructure investment.

In evaluating future signal proposals, a traffic engineering investigation will need to be conducted to ensure that the proposed signal does not negatively impact the signals at the intersections of Old Highway 99 at Del Rio Road/ Umpqua College Road and Old Highway 99 at the I-5 northbound ramp terminal, as well as the recommended future signal at the intersection of Del Rio Road at the I-5 southbound ramp terminal. Because poor progression of traffic and lack of adequate vehicle queue storage can degrade the long-term safety and operations of the area roadways, regulating the minimum spacing between future traffic signals will help maintain efficient operation as traffic volumes grow. A distance of at least 1,320 feet between these signals and new signals is to be required wherever feasible. In establishing the timing plans for all future signals, priority shall be given to the efficient operation of the interchange ramp terminals and the ability of the interchange crossroads to carry traffic away from the interchange.

Any proposed future signal in the IAMP area that is not found to be compatible with the signals at the intersections of Old Highway 99 at Del Rio Road/ Umpqua College Road and Old Highway 99 at the I-5 northbound ramp terminal, as well as the future signal on Del Rio Road at the I-5 southbound ramp terminal, over a 20-year period should not be approved for construction.

Medians & Traffic Separators

To provide further control of turning movements at approaches that are anticipated to remain within the 1,320-foot spacing standard of the interchange ramp terminals and to eliminate potential turning conflicts between offset approaches, the future installation of medians or traffic separators on interchange crossroads may be necessary. Because the installation of these devices may require additional roadway width, early planning and identification of areas of potential applications can allow for appropriate roadway design during future improvement projects.

The future five-lane cross-section anticipated for Del Rio Road and Old Highway 99 upon completion of recommended improvements to provide for adequate operation of area roadways may worsen the effects of turning movements to and from area properties as the number of lanes crossed increases and vehicles traveling in opposing directions share center turn lanes. The area of primary concern is the segment of Old Highway 99 from the I-5 northbound ramp terminal to the Del Rio Road/ Umpqua College Road intersection. Therefore, as part of future improvement projects, this segment should be designed to accommodate some type of positive separation in the median, whether it is to be a raised median or a smaller traffic separator. The timing of actual installation of positive separation shall be determined by ODOT staff as adjacent lands develop and as traffic characteristics change in the future.

Access Management Plan Implementation Recommendations

As the access management plan is implemented over time, there may be conditions under which modifications to the plan are desired as a result of new findings or changes in circumstances related to property accessibility. Under such conditions, modifications to the plan may be made by ODOT, with input provided by the applicable local jurisdiction (i.e., City of Roseburg or Douglas County). Any modifications made should be documented in writing and provided to ODOT, the City of Roseburg, and Douglas County. Specific conditions under which modifications to the access management plan actions are recommended are as follows.

Land Divisions and Consolidations

It should be noted that the recommended actions were based in part on current property configurations and ownerships. Should property boundaries change in the future through consolidation or other land use action, the access management plan may be modified by ODOT following consultation by the applicable local jurisdiction (i.e., City of Roseburg or Douglas County), where such modifications would move in the direction of the adopted access management spacing standards in this plan. Additional access points should not be allowed where they would result from future land partitions or subdivisions. Also, where contiguous properties have been placed under common ownership following plan adoption, opportunities to further consolidate access should be pursued.

Changes in Property Plan Designations, Zoning or UGMA Provisions

It should be noted that the recommended actions were based in part on current property zoning and comprehensive plan designations. Should property zoning change in a manner inconsistent with the Roseburg Comprehensive Plan or current zoning, the access management plan may be modified by ODOT following consultation by the applicable local jurisdiction (i.e., City of Roseburg or Douglas County), where such modifications would move in the direction of the adopted access management spacing standards in this plan. Provision for access management plan modification by ODOT shall also be allowed where conditional uses are approved. It is important to remember that the UGMA between the City of Roseburg and Douglas County modifies the list of permitted uses applicable to the prime industrial site (Figure 10) in the Heavy Industrial (M-3) zone to prohibit commercial retail and service uses – even where such uses are permitted in the M-3 zone.[4]

Furthermore, the recommended actions in the access management plan are not intended to override ODOT's maintenance and operational authority related to access in this area. Examples include:

Approach Permitting

The actions in this plan do not replace the requirement to obtain an approach permit from ODOT for the construction, maintenance, and operation of an approach to a roadway under ODOT jurisdiction.

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[4] Because Douglas County zoning is pyramidal, commercial uses allowed in the M-1 and M-2 zones are also allowed in the M-3 zone. Uses allowed in the M-3 district that could prematurely commit interchange capacity include:

- Builder supplies including retail sales of lumber, agricultural supplies and machinery sales room (M-1)
- Lumber yards, retail, including mill work (M-2)
- Wholesale businesses, storage buildings, warehouses and bulk fuel storage facilities (M-2)

Turn Restrictions & Approach Design

Conditions of use, including but not limited to approach design and the restriction of turning movements allowed, may be applied by ODOT through the approach application process. Unless specifically stated, the actions in this plan do not guarantee that all turning movements will be allowed to/from an approach.

Maintenance & Modernization of Legal Approaches

The actions listed in this plan shall not prevent the reconstruction of legal approaches as necessary to meet City, County, or ODOT standard design, as applicable. This provision is not intended to apply to conditions related to ODOT projects or actions resulting in a "Change in Use" of an approach as defined in OAR 734-051-0045.

Land Use Strategies and Policies

The I-5 Interchange 129 IAMP interprets the Douglas County Comprehensive Plan as applied in the interchange management area. The overall land use strategy in this (and other) IAMPs is to limit comprehensive plan and zoning amendments to preserve the long-term capacity of the affected interchange. Any plan or zoning map amendment must, of course, be consistent with the Transportation Planning Rule (OAR 660-0012-0060) and the provisions of this IAMP. The following policies are intended to ensure ongoing coordination among the City, County, and ODOT in the review of plan and zoning amendments. Policy 4 is intended to conserve the prime industrial site shown on Figure 10 for industrial uses – by prohibiting commercial retail and service uses on this site.

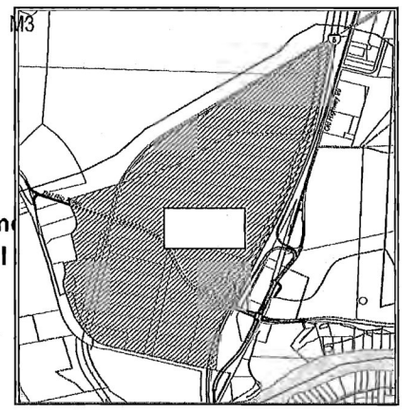

Figure 10: Prime Area Industrial

IAMP Land Use and Coordination Policies

1. The City and County recognize the importance of Interstate 5 to the movement of people and goods to and from the region and are committed to protecting the function of the interchange, as defined in the IAMP. Therefore, the City and County will coordinate with ODOT in evaluating land use actions that could adversely affect the function of the interchange.
2. The City and County will coordinate with ODOT prior to (a) amending their comprehensive plans (including their TSPs), (b) amending their land development ordinances (including text amendments and supplemental provisions in the UGMA), (c) changing zoning designation, or (d) proposing transportation improvements that could adversely affect the function of the interchange. The City and County will ensure that any such amendments are consistent with the function of the interchange, as defined in the IAMP.
3. Development within the Interchange 129 planning area will be jointly monitored and evaluated by ODOT, the County, and the City. ODOT will continue to coordinate with the City and County and state agencies in reviewing comprehensive plan amendments, zone change applications, changes to the UGMA, and development proposals that may have a significant impact on existing or planned transportation facilities.
4. The Interchange 129 area has a prime industrial site (shown on Figure 10) that is zoned Heavy Industrial (M-3) on the Douglas County zoning map. To ensure that the function of Interchange 129 is conserved during the 20-year life of the plan, commercial retail and service uses shall not be permitted on this site. The UGMA (Supplemental Standards, Section XII) between Douglas County and the City of Roseburg will prevent commercial retail and service uses on this prime industrial site.
5. The City and County recognize the importance I-5 plays in local and regional economic development and employment activity, and will coordinate with ODOT to assure such activity does not adversely affect the function of the interchange.

CHAPTER 5: IAMP IMPLEMENTATION AND ADOPTION

As land continues to develop within the interchange area, compliance will be required with the access management plan and land use management strategy and policies included in this IAMP. As part of the adoption of the IAMP, a number of amendments will be made to state and local documents, plans, and regulations that will implement the IAMP. These include amendments to the City of Roseburg and Douglas County Comprehensive Plans and Transportation System Plans.

It is anticipated that ODOT will adopt the IAMP, and that the City and County will co-adopt and/or incorporate policy provisions of the IAMP into their respective plan and implementation programs to protect the function of the interchange for current and future users. The purpose of the IAMP and function of the interchange are defined in this document. Separate adoption processes for the plans and implementing measures are envisioned for each agency. This section summarizes the implementation roles and responsibilities for the respective jurisdictions.

ODOT/State of Oregon Implementing Actions

Project Construction

- ODOT will complete the Interchange 129 reconstruction project, including the segment of the Del Rio Road realignment from Old Highway 99 to a point approximately 2,000 feet to the west.

Agency Coordination

- ODOT is committed to working with its local partners in monitoring and reviewing land use decisions within the Interchange 129 interchange area and coordinating with City and County officials in the review of comprehensive plan amendments, zone changes and/or amendments to the UGMA to ensure the continued functioning of this interchange consistent with this IAMP.

City of Roseburg Implementing Actions

Land Use and Access Management

- The City of Roseburg has been an active participant in the development of this IAMP and supports the effective implementation of access management standards and the conservation of the prime industrial site shown on Figure 10 for industrial employment uses.

Policy Actions

- In accordance with the UGMA and IAMP policies, Roseburg will coordinate on proposed comprehensive plan and LUDO amendments, zone changes, changes to the UGMA, and development applications that may adversely affect the transportation system within the interchange planning area.
- The City incorporate Interchange 129 IAMP policies and the recommended transportation improvement projects listed in Table 6 into its applicable plans.

Douglas County Implementing Actions

Project Construction

- The County will complete the Del Rio Road realignment to compliment the Interchange 129 reconstruction project.

Land Use and Access Management

- Douglas County recognizes the importance of the prime industrial site located west of I-5 in meeting the County's economic development objectives. Douglas County is committed to conserving this site for industrial uses consistent with OAR 600-009-005 (3) and (8) and protecting the public's investment in the capacity of Interchange 129.

Policy Actions

- The primary implementation tool to ensure that commercial retail and services uses are not permitted on the Heavy Industrial site shown on Figure 10 is Section XII of the UGMA between the City and County. Section XII of the UGMA is included as Appendix F to this plan. Section XII makes it clear that commercial retail and service uses normally permitted in the M-3 zone are not permitted in the Heavy Industrial site in the Interchange 129 management area. As noted in Section XII:

  > "The City and the County have a common concern for the economic health and vitality of the central Douglas County region. Consistent with the Winchester Interchange (I-129) Area Management Plan (IAMP), the City and County, together with ODOT, also have a commitment to conserve the Industrial Site west of I-5 at Exit 129 in the Roseburg Urban Growth Boundary from conflicting commercial retail and service uses. The industrial site, illustrated in Figure 10 attached, has been designated with the intent of providing for industrial uses consistent with OAR 660-009-005(3) and (8), and to conserve the limited supply of industrial land designated in the Roseburg Comprehensive Plan and implemented by Douglas County's Land Use and Development Ordinance."

- IAMP policy makes it clear that any changes to the UGMA shall be reviewed in consultation with ODOT and the City of Roseburg and shall be consistent with this policy framework. Section XII of the UGMA also commits the County to working with ODOT and the City of Roseburg prior to submittal of industrial development proposals:

  > "Prior to approval of any development application at the Winchester Interchange Industrial Site west of I-5, a site plan for any proposed use or reuse endorsed by the City and ODOT shall be submitted to the County Planning Department. The site plan shall, at a minimum, address sewer and water service; utility service; site access; internal traffic circulation; parcelization (including minimum parcel size standards); and drainage. Uses authorized in the site plan shall be consistent with Section XII c below. Any application for a new use or reuse shall not be deemed complete without the required City and ODOT review and endorsement."

- The County will incorporate into applicable plans and implementation measures the recommended transportation improvement projects listed in Table 6.

IAMP Adoption

It is anticipated that the adoption sequence will be as follows:

1. 45-day notice of initial public hearing to consider adoption of the IAMP and UGMA amendments sent to state agencies by City and County.
2. City/County planning commission advisory hearing to hear public testimony; deliberative hearings may be conducted separately or jointly at the discretion of the two bodies.
3. County Commission legislative adoption hearing to co-adopt the IAMP and UGMA amendments with coordinated staff report, public testimony, and deliberation.
4. City Council legislative adoption hearings to co-adopt the IAMP and UGMA amendments with coordinated staff report, public testimony, and deliberation.
5. Oregon Transportation Commission adoption hearing would take place at the first available meeting date after local adoption to consider amending the Oregon Highway Plan to include the I-5 Interchange 129 IAMP.

CHAPTER 6: IAMP UPDATES

As area conditions change, the I-5 Interchange 129 IAMP should be reviewed to ensure it continues to address needs through the planning horizon and should be updated accordingly. Actions that should trigger an IAMP review include:

- A change to the Douglas County or City of Roseburg Comprehensive Plans, Plan Maps, implementing zoning ordinances or the UGMA that will have a "significant effect" on the transportation system within the IAMP study area. The determination of a "significant effect" shall be pursuant to OAR 660-012-0060.
- The construction of transportation improvement projects within the IAMP study area that are inconsistent with planned and assumed projects in the Douglas County or City of Roseburg Transportation System Plans or the I-5 Interchange 129 IAMP.
- An amendment or update to the Douglas County or City of Roseburg Transportation System Plans.
- Development proposals in the study area that (a) are inconsistent with the IAMP implementing UGMA Supplemental Standards or (b) change the functional classification of a roadway.

In addition to the above actions, consideration should be given to reviewing the IAMP for needed updates as part of every TSP update cycle. This could be as simple as reviewing the above list for any actions that may have occurred since the last review.

APPENDIX A: IAMP STUDY PARAMETERS

DKS *Associates*
TRANSPORTATION SOLUTIONS

Technical Memorandum #1

DATE: March 22, 2007

TO: Lisa Cortes (ODOT)

FROM: Carl Springer, PE (DKS)
John Bosket, PE (DKS)
Monica Leal, EIT (DKS)
Tom Armstrong (Winterbrook Planning)

SUBJECT: **Task 1: IAMP Study Parameters**
Interchange 129 Interchange Area Management Plan (IAMP)
City of Roseburg P05041-002-001

This memorandum presents the purpose and intent statement, problem statement, interchange function, and goals and objectives for the Interchange 129 Interchange Area Management Plan (IAMP), as well as identifying the study area boundary.

Purpose and Intent Statement

Interchange 129 is located on I-5 approximately 2.5 miles north of the Roseburg city limits. It provides access to the Old Oakland-Shady Highway (Old Highway 99) and Del Rio Road (County Road 115). It was constructed in 1978 as a folded diamond configuration in the southbound direction and as a gull wing in the northbound direction. The northbound structures on I-5 over the North Umpqua River and Del Rio Road over crossing were identified as deficient due to structural cracks and determined to be in need of repair. The Oregon Department of Transportation (ODOT) decided to modernize the interchange as part of the bridgework. The ODOT Transportation Planning Analysis Unit (TPAU) has evaluated different alternatives which include improvements to the I-5 entrance ramps, and realignment of Del Rio Road and the Old Highway 99. The Interchange 129 construction is currently scheduled for construction in 2008[1]. The proposed interchange improvements are shown in the study area maps included at the end of this memorandum.

[1] *OTIA III State Bridge Delivery Program, A&E and Construction Contracts, Oregon Bridge Delivery Partners Web Site.*

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The purpose of this planning effort is to evaluate the operation of Interchange 129, assess the limitations and issues of concern, and in general terms, identify possible future long-range needs attributable to planned development in the area. The IAMP will recommend operational and physical improvements and access management techniques to provide efficient operation of the interchange and accommodate planned local land use.

The Oregon Administrative Rule (OAR) 734-051-0155(6) states: "Interchange Area Management Plans are required for new interchanges and should be developed for significant modifications to existing interchanges...." This IAMP will be prepared in accordance with the recommendations in the above OAR because of planned modifications to Interchange 129. The purpose of the IAMP is to protect the function of the interchange and to protect the investment made by the State for a period of at least 20 years. The use of a 20-year planning period was chosen for this project to comply with the Transportation Planning Rule requirements and guidance from the Federal Highway Administration regarding project planning. 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 efficiently.

Problem Statement

This section describes the problem that will be addressed by the Interchange 129 IAMP. This problem statement serves as the basis for alternatives evaluation criteria and the benchmark against which to measure the plan's success. The modernization of Interchange 129 constitutes a major change to the study area's transportation network. One of the problems that will be resolved by this IAMP is how to integrate the modified interchange into the study area in a way that balances state highway transportation needs with local land use. Existing problems such as geometrical deficiencies, poor sight distance, access spacing, reoccurring crashes, lack of pedestrian facilities and heavy truck traffic at the interchange ramps will be also addressed by the IAMP.

Traffic weaving conditions north of the I-5 southbound off-ramp will not be a problem, since it will be moved south of Roseburg prior to the modernization of Interchange 129.

Interchange Function Definition

Interchange 129 lies within the Roseburg Urban Growth Boundary (UGB), but outside of the Roseburg city limits. Interchange 129 provides access to the Old Oakland-Shady Highway (Highway 99) and Del Rio Road (County Road 115). The southbound interchange I-5 ramp terminals intersect with Del Rio Road, and the northbound interchange I-5 ramp terminals intersect with the Old Highway 99. The Umpqua College Road is also located within the study area. The 1999 Oregon Highway Plan identifies I-5 as an Interstate Freeway within the study area. The Old Highway 99, Del Rio Road and Umpqua College Road fall under Douglas County jurisdiction. The Douglas County

Transportation System Plan (TSP)[3] identifies the Old Highway 99 as an arterial, Del Rio Road as a major collector and the Umpqua College Road as a minor collector.

The main land uses served by the interchange are: heavy industrial on the north west quadrant, public reserve on the south west quadrant, public reserve and residential on the north east quadrant, and residential, community commercial and public reserve on the south east quadrant. The historical Winchester Bridge is located south of Del Rio/Highway 99 Intersection east of I-5. Among the properties served by the interchange are the Umpqua Community College, Amacher Park, Rod & Gun Club, Douglas County Forest Products, the headquarters for the Douglas County Parks Department, and residences (See area boundary maps attached at the end of this memorandum).

The intended function of interchange 129 is to safely and efficiently accommodate future traffic demands associated with current planned land uses consistent with the Roseburg Comprehensive Plan. The interchange improvements scheduled are not intended to facilitate commercial development on the new jug handles. The improvements are intended to facilitate industrial development and accommodate future traffic associated with current and planned land uses.

IAMP Goals and Objectives

Project Goal

The goal of this IAMP is to maintain the function of the interchange to preserve the investment in the facility. The IAMP will be developed in partnership with affected property owners in the interchange area, the City of Roseburg, Douglas County, and the Oregon Department of Transportation (ODOT), and other stakeholders, including interchange users.

Project Objectives

The objectives of the IAMP are to:

- Protect the function of the interchange as specified in the Oregon Highway Plan (OHP) and Roseburg Transportation System Plan (TSP).
- Protect the safe and efficient operation of the interchange between connecting roadways and to minimize the need for major improvements at existing intersections.
- Provide safe and efficient operations on I-5 and arterial highways as specified in the OHP and Douglas County TSP.

[3] *Douglas County Transportation System Plan, December 2006.*

- Develop an access management plan that provides for safe and acceptable operations on the transportation network, and meets OHP requirements and the access spacing standards in OAR 734-051.
- Identify future land use conditions and identify needed land protection measures.
- Include short, medium and long-range actions to improve and maintain roadway operations and safety in the Interchange Study Area.
- Include amendments to Roseburg Comprehensive Plan, Douglas County Zoning Ordinance, and Roseburg and Douglas County Transportation System Plans, and other official documents as necessary to implement the recommended alternative for the Interchange Study Area.
- Identify partnerships for the cooperative management of future projects and establish a process for coordinated review of land use decisions affecting transportation facilities.

Study Area Boundary

The study area boundaries extend from the North Umpqua River to approximately 2000 feet north of the Wilburn Greenlight Weight-In-Motion scale house, and from approximately Julina Lane/Del Rio Intersection to approximately one-quarter mile west of Highway 99 to ¼ mile east of Hwy 99 (college Road). Study area boundary maps are included at the end of this memorandum.

APPENDIX B: REVIEW PLANS AND POLICIES

DKS Associates
TRANSPORTATION SOLUTIONS

Technical Memorandum #2

DATE: March 27, 2007

TO: Lisa Cortes (ODOT)

FROM: Carl Springer, PE (DKS)
John Bosket, PE (DKS)
Monica Leal, EIT (DKS)
Tom Armstrong (Winterbrook Planning)

SUBJECT: **Task 3: Review Plans and Policies**
Interchange 129 Interchange Area Management Plan (IAMP)
City of Roseburg P05041-002-003

This memorandum includes a review of planning documents, policies and regulations applicable to the Interchange 129 Interchange Area Management Plan (IAMP). The following section summarizes key findings, and provides highlights of the relevant issues from State, County and City planning documents. This background review identifies how local plans fit into the larger regional context.

Interchange 129 Applicable Standards Summary

The Oregon Department of Transportation (ODOT), Douglas County and City of Roseburg roadway functional classification, mobility standards, and access spacing standards are summarized in Tables 1 through 3 below.

Roadway Functional Classification

Roadway functional classifications (Table 1) determine the applicable agency management objectives for each facility. In the study area, ODOT has jurisdiction of only I-5, while Douglas County has jurisdiction over all local facilities. The City of Roseburg does not maintain jurisdiction over any roadways within the study area at this time.

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Table 1: Study Area Roadway Functional Classification

Roadway	Roadway Functional Classification and Jurisdiction		
	ODOT	Douglas County	City of Roseburg
I-5	Interstate Highway	_	_
Highway 99	_	Arterial	_
Del Rio Rd.	_	Major Collector	_
Umpqua College Rd.	_	Minor Collector	_

Mobility Standards

Mobility standards set thresholds for congestion so adequate traffic operations can be maintained on area roadways. When these thresholds are exceeded, system capacity must be increased or traffic demand must be decreased to a level that the mobility standards can continue to be met. Both ODOT and Douglas County maintain mobility standards for their respective facilities, using volume to capacity ratios to measure operational performance. A volume to capacity ratio shows the amount of system capacity currently being used by traffic demand. Therefore, a volume to capacity ratio of 0.70 indicates that 70% of the system capacity is currently being used. The City of Roseburg has no current standards for traffic mobility.

ODOT mobility standards are provided in both the 1999 Oregon Highway Plan (OHP) and the 2003 Highway Design Manual (HDM). The mobility standards from the OHP are to be used for assessing existing and future no-build conditions and are intended to identify when improvements will be needed. When it has been determined that improvements will be needed, such improvements are to be designed to provide operational performance consistent with the standards in the HDM. Therefore, future build alternatives are to be evaluated using the HDM standards.

For Interstate Highways such as I-5, the OHP requires operation at a volume to capacity ratio of 0.70 or less. However, the interchange ramp terminal intersections are allowed to operate at volume to capacity ratios up to 0.85. The HDM standards, which generally require better operation than the OHP standards, require operation at a volume to capacity ratio less than 0.65 for both the mainline and ramp terminals.

Douglas County mobility standards vary according to functional classification and on the urban or rural nature. Urban road standards are applied to areas inside of the UGB, and rural road standards are applied to areas outside of the UGB. Table 2 provides the applicable mobility standards for area roadways under County jurisdiction.

Table 2: Maximum Volume to Capacity Ratios (v/c) for County Facilities

Roadway	Functional Class	v/c ratio	
		Rural	Urban
Old Highway 99	Arterial	0.85	0.80
Del Rio Rd.	Major Collector	0.90	0.85
Umpqua College Rd.	Minor Collector	0.95	0.90

Access Spacing Standards

Access spacing standards require a minimum amount of separation between driveways and public street intersections along roadway corridors to provide for safe and efficient driving environments. ODOT, Douglas County, and the City of Roseburg all maintain standards for access spacing. While the City of Roseburg does not maintain jurisdiction of any roadways within the study area, consideration may be given to applying City standards on County roadways within the urban growth boundary (UGB).

ODOT maintains access spacing standards for interchanges that provide minimum distances between interchanges on a freeway as well as standards for the distance between ramp terminals and adjacent driveways and public streets along interchange crossroads. Spacing standards for the separation of interchanges are found in Appendix C of the OHP. For Interstate Freeways, these standards require a minimum of 3 miles between interchanges in urban areas and 6 miles in rural areas.

Spacing standards for approaches along interchange crossroads are found in both the OHP and OAR 734-051. For a freeway interchange with a two-lane crossroad in an urban area, a minimum distance of 1,320 feet between the interchange ramp terminals and the nearest driveway or public street intersection is required. However, only 990 feet of separation is required between the ramp terminals and a right-in/right-out approach on the side of the crossroad approaching the interchange.

City and County access spacing standards vary according to functional classification. Table 3 provides City and County standards for roadways within the study area.

Table 3: Access Spacing Standards for City and County Roadways

Roadway	Functional Class	Access Spacing Standard (feet)	
		Douglas County (Urban / Rural)	City of Roseburg
Highway 99	Arterial	990 / 1,320	500
Del Rio Rd.	Major Collector	660 / 660	200*
Umpqua College Rd.	Minor Collector	330 / 660	200*

**Proposed spacing standards for collectors. Del Rio Rd and Umpqua College Rd. are designated as Collectors in the City of Roseburg Future Functional Classification.*

Statewide Planning Goals

There are four statewide planning goals that are directly applicable to the planning for the Interchange 129 area: Goal 2 (Land Use Planning), Goal 11 (Public Facilities Planning), Goal 12 (Transportation), and Goal 14 (Urbanization). Each goal is discussed below.

Statewide Planning Goal 2 (Land Use Planning) and OAR 660, Division 4

Goal 2 requires 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 requires planning coordination between those local governments and state agencies. In this process, Goal 2 requires ODOT to coordinate with Douglas County and the City of Roseburg, both of which have planning authority over the area immediately surrounding the interchange – Douglas County has jurisdiction over the project area, which is included in the Roseburg Urban Growth Area (UGA). Coordination with Douglas County is particularly important because the County is responsible for approving development consistent with the Roseburg Urban Area Comprehensive Plan in the interchange area. Per the Urban Growth Management Agreement (UGMA), the City maintains the authority for approving land use actions that would require Comprehensive Plan amendments.

Also, Goal 2 requires that plans and actions be consistent with the comprehensive plans. This provision is important because elements of the IAMP will be adopted the City, through amendments to each jurisdictions' TSP.

Statewide Planning Goal 11 (Public Facilities Planning) and OAR 660, Division 11

Goal 11 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 supported by appropriate urban and rural public facilities and services based on the designation of the urban, urbanizable and rural areas to be served.

Statewide Planning Goal 12 (Transportation) and OAR 660, Division 12

Goal 12 requires cities, counties, metropolitan planning organizations, and ODOT to provide a safe, convenient and economic transportation system. This goal is accomplished through development of TSPs based on local, regional, and state transportation needs.

Goal 12 is implemented through OAR 660, Division 12, and the Transportation Planning Rule (TPR). The TPR contains requirements for transportation planning and project development. Specifically, 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 a variety of measures, including:

- Access control measures that are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;
- Standards to protect future operations of roads;
- A process for coordinated review of future land use decisions affecting transportation facilities, corridors, or sites;
- A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;
- Regulations to provide notice to ODOT of land use applications that require public hearings, involve land divisions, or affect private access to roads; and
- Regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP (OAR 660-012-0060).

ODOT's access management rules are adopted as OAR 734, Chapter 51, which will apply to the interchange and a portion of Highway 99. As described below, Douglas County and the City of Roseburg have incorporated these requirements into their comprehensive plans and land use ordinances. Specifically, the IAMP will need to demonstrate that the function, capacity, and performance of the interchange will be protected.

Statewide Planning Goal 14 (Urbanization) and OAR 660, Divisions 14 and 22

Goal 14 requires an orderly and efficient transition from rural to urban land use. This is accomplished through the establishment of UGBs and unincorporated communities. UGBs and unincorporated community boundaries separate urbanizable land from rural land. Land uses permitted within the urban areas are more urban in nature and higher intensity than in rural areas.

Goal 14 is important because it establishes the location, type, and intensity of development within the study area will impact use of the interchange and could affect future use and operation of the interchange. The project area includes areas inside and outside the Roseburg UGB.

Oregon Transportation Plan (September 2006)

The Oregon Transportation Plan (OTP) was adopted by the Oregon Transportation Commission (OTC) in 2006 and is intended to meet the requirements of ORS 184.618(1), which requires the development of a state transportation policy and a comprehensive long-range plan for a multi-modal transportation system that addresses economic efficiency, orderly economic development, safety, and environmental quality. The OTP considers all modes of transportation and addresses the future needs of public transit, rail lines, bicycling and pedestrian facilities, pipelines, highways and roads, ports and waterway facilities, and airports through year 2030. The OTP establishes goals, policies, strategies and initiatives that will guide the transportation decision-making for the state multimodal, modal, topic and facility plans as well as the regional and local transportation system

plans. The OTP also provides the framework for prioritizing transportation improvements based on future revenue conditions.

1999 Oregon Highway Plan (OHP)

The 1999 OHP establishes policies and investment strategies for Oregon's state highway system over a 20-year period and refines the goals and policies found in the OTP. Policies in the OHP emphasize the efficient management of the highway system to increase safety and to extend highway capacity, partnerships with other agencies and local governments, and the use of new techniques to improve road safety and capacity. These policies also link land use and transportation, set standards for highway performance and access management, and emphasize the relationship between state highways and local road, bicycle, pedestrian, transit, rail, and air systems. The policies applicable to planning for Interchange 129 improvements are described below:

Goal 1 (System Definition) is designed to maintain and improve the safe and efficient movement of people and goods. This section also includes policies on highway mobility standards and major improvements, which further define state highway management goals and objectives. The following policies are applicable:

- Policy 1A: State Highway Classification System. Develop and apply the state highway classification system to guide ODOT priorities for system investment and management. Five categories of state highways are considered in the OHP: Interstate Highways, State Highways, Regional Highways, District Highways and Local Interstate Roads.

  Pacific Highway (I-5) is considered an Interstate Highway[1].

- Policy 1B: Land Use and Transportation. This policy recognizes the need for coordination between state and local jurisdictions.

  Coordination with local jurisdictions needs to occur throughout the preparation of the IAMP. A Technical Advisory Committee (TAC) has been formed to inform the IAMP. Members include representatives from Douglas County, the City of Roseburg, and key stakeholders (i.e., Umpqua Community College, Douglas Timber Operations, Douglas County Industrial Board, Umpqua Economic Development Partnership).

- Policy 1C: State Highway Freight System. Balance the need for movement of goods with other uses of the highway system, and to recognize the importance of maintaining efficiency through movement on major truck routes. Representatives from freight/shipping interests are involved in the Interchange 129 IAMP. I-5 is a designated freight route by the OHP.

- Policy 1F: Highway Mobility Standards. This policy 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.

[1] *1999 Oregon Highway Plan, Appendix D, pg 204.*

The purpose of the IAMP is to evaluate the operation of Interchange 129, assess limitations, identify future long-range needs, and identify recommended improvements in order to ensure consistency with mobility standards. The mobility standards applicable to I-5 were previously discussed in this memorandum.

- Policy 1G: Major Improvements. This policy requires maintaining performance and improving safety by improving efficiency and management before adding capacity.

  Interchange 129 was constructed in 1978 as a folded diamond configuration in the southbound direction and a gull wing in the northbound direction. Very minor improvements have been made since its construction. In 2002, the northbound structure on I-5 over the North Umpqua River and Del Rio Road over crossing to the north was identified as deficient due to structural cracks. As a result, ODOT has decided to rebuild this interchange.

Goal 2 (System Management) calls for jurisdictional coordination to create a seamless transportation system with respect to the development, operation and maintenance of the highway and road system. The following policies are applicable:

- Policy 2A: Partnerships. Close coordination between ODOT, City of Roseburg and Douglas County are necessary to make efficient and effective use of limited resources to maintain and improve the roadway system.
- Policy 2B: Off-System Improvements. The State may provide financial assistance for local road projects when the projects are cost-effective in improving the state highway conditions.
- Policy 2F: Traffic safety. Continually improve the safety for all users of the state transportation system through engineering, education, enforcement, and emergency services.

  One component of the IAMP is to identify existing crash patterns and rates and to develop strategies to address safety issues.

Goal 3 (Access Management) is critical in transportation planning efforts that involve state transportation facilities. Access management evaluates access to developed land in a safe and efficient matter. The following policies are applicable:

- Policy 3A: Classification and Spacing Standards. This policy manages the location and access spacing standards for driveways and approaches to the state highway system to assure safety and efficient operation of state highways.

  The management ODOT objectives are consistent with the classification of highways. I-5 is classified as an Interstate Highway. Actions under this policy pertaining to the Interchange 129 IAMP include:

  Action 3A.1: Manage access to state highways based on the access management classifications.

I-5: Interstate

- Subject to federal interstate standards as established by the Federal Highway Administration, and ODOT's Interchange Policy;
- Provide for the most efficient and safe high speed and high volume traffic movement;
- Preference is given to through traffic;
- Driveways are not allowed;
- Traffic signals are not allowed;
- Parking is prohibited;
- Opposite travel lanes are separated by a wide median or physical barrier;
- Grade separated crossings that do not connect to the freeway are encouraged to meet local transportation needs and to enhance bicycle and pedestrian travel; and
- Provide connections and links to major cities, regions of the state, and other states.

- Policy 3C: Interchange Access Management Areas. It plans for and manages grade separated interchange area to ensure safe and efficient operation between connecting roadways. Actions under this policy pertaining to the Interchange 129 IAMP include:

Action 3C.2: To improve an existing interchange or construct a new interchange:

- Meet appropriate spacing standards, if possible, to improve the current conditions by moving in the direction of the spacing standards;
- Necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source;
- Access to cross streets shall be consistent with established standards for a distance on either side of the ramp connections so as to reduce conflicts and manage ramp operations. The Interchange Access Management Spacing Standards supersede the Access Management Classification and Spacing Standards (Policy 3A), unless the latter distance standards are greater;
- Where possible, interchanges on freeways shall connect to state highways, major or minor arterials; and

- When possible, access control shall be purchased on crossroads for a minimum distance of 1,320 feet from a ramp intersection or the end of a free flow ramp terminal merge lane taper.

Action 3C.3: Establish criteria for when deviations to the interchange access management spacing standards may be considered.

- Location of existing parallel roadways (Highway 99);
- Use of traffic controls
- Potential queuing, increased delays and safety impacts; and
- Possible use of non-traversable medians.

Action 3C.4: When new approach roads or intersections are planned or constructed near existing interchanges, property is redeveloped or there is a change of use, wherever possible, the following access spacing and operation standards should be applied within the Interchange Management Area:

- Approach roads on the crossroads at no closer than 750 feet, and between 750 and 1,320 feet, shall be limited to right-in/right-out. This may require a nontraversible median or a median barrier; and
- The first full intersection on a crossroad should be no closer than 1,320 feet on the crossroad.

Action 3C.5: As opportunities arise, rights of access shall be purchased on crossroads around existing interchanges. Wherever possible this protective buying should be for a distance of 1,320 feet.

Action 3C.6: Plan for and operate traffic controls within the Interchange Access Management Area with a priority of moving traffic off the main highway, freeway or expressway and away from the interchange area. Within the Interchange Access Management Area, priority shall be given to operating signals for the safe and efficient operation of the interchange.

Action 3C.7: Use grade-separated crossings without connecting ramps to provide crossing corridors that relieve traffic crossing demands through interchanges.

- Policy 3D: Deviations. Manage request for deviations from adopted access management standards and policies through an application process to ensure statewide consistency. Actions under this policy pertaining to the Interchange 129 IAMP include:

Action 3D.1: Implement a procedure by which an applicant may request consideration of a deviation from access management standard and policies.

Action 3D.2: Establish Region Access Management Engineers to review and act on request of deviations from access management standards and policies.

Action 3D.3: Establish the use of a technical group to assist the Region Access Management Engineer in an advisory capacity in the review of request of major deviations from access management standards and policies.

Action 3D.4: Establish the criteria which the Region Access Management Engineers shall consider when reviewing request for deviations from access management standards and policies.

Action 3D.5: Establish the criteria for when minor deviations may be allowed. The kinds of considerations likely to be included are:

- Potential queuing, increased delays and safety impacts;
- Use of traffic controls;
- Requirements for local road systems;
- Improvement of connectivity to adjacent properties or local road systems;
- Plans that address an entire roadway system;
- Pedestrian and bicycle circulation;
- Potential need for channelization, such as for turn lanes; and
- Possible use of nontraversible medians for right-in/right-out movements. The first full intersection on a crossroad should be no closer than 1320 feet on the crossroad.

The access management spacing standards are part of these policies and special consideration must be given in the IAMP. The Douglas County TSP maintains spacing standards for access to local facilities. Table 16 (for freeway interchanges with two-lane crossroads) and Figure 18 of the OHP show the applicable access management spacing standards for Interchange 129. Spacing standard distances for State and County facilities were previously identified in this memorandum.

Goal 5 (Environmental and Scenic Resources), calls for natural resources to be maintained and even improved by transportation planning and projects involving state facilities.

Oregon Administrative Rule 734-020 (ODOT Division 20 Traffic Control)

Accommodating future traffic volumes may require modifications to highway traffic controls such as street signing, pavement markings, and installation or modification of traffic signals. These administrative rules outline the processes and decision-making criteria for such modifications and will be used by ODOT to evaluate proposed mitigation.

Oregon Administrative Rule 734-051 (ODOT Division 51 Interchange Area Access Management Spacing Standard for Approaches)

OAR 734-051 governs the permitting, management, and standards of approaches to state highways to ensure safe and efficient operation of the state highways. ODOT adopted the OAR 734-051 rules to establish procedures and criteria used to govern highway approaches, access control, spacing standards, medians and restrictions of turning movements in compliance with statewide planning goals and in a matter compatible with comprehensible plans and consistent with Oregon Revised Statutes (ORS), Oregon Administrative Rules (OAR) and the 1999 Oregon Highway Plan (OHP). Any changes to accesses or existing streets within the study area must follow these rules and be approved by ODOT.

OAR 734-051 policies address the following:

- How to bring existing and future approaches into compliance with access spacing standards, and ensure the safe and efficient operation of the highway;
- The purpose and components of an access management plan; and
- Requirements regarding mitigation, modification, and closure of existing approaches as part of project development.

OAR 734-051-0125 (Access Management Spacing Standards for Approaches in an Interchange Area). This rule establishes interchange management area access spacing standards. It also specifies elements that are to be included in IAMPs, such as short-, medium-, and long-range actions to improve and maintain safe and efficient roadway operations within the interchange area. The Access Management Plan component of this project will compare access spacing with adopted access standards. If future proposed interchange improvements would not meet access spacing standards outlined in OAR 734-051-0125, the project would require deviation findings to interchange and roadway approach (public and private streets and driveways) access management spacing standards, as per OAR 734-051-0135.

OAR 734-051-0155 (Access Management Plans, and Interchange Area Management Plans). This rule provides a description of what IAMPs are intended to do and when they are needed, as well as outlining key characteristics. According to this rule, the IAMP for Interchange 129 will:

- Be developed no later than the time an interchange is designed or is being redesigned;
- Identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment, and adopt strategies and development standards to capture those opportunities;
- Include short, medium, and long-range actions to improve operations and safety in the interchange area;

- Consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches;
- Provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years;
- Consider existing and proposed uses of the all property in the interchange area consistent with its comprehensive plan designations and zoning;
- Be consistent with any applicable Access Management Plan, corridor plan or other facility plan adopted by the Oregon Transportation Commission.
- Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied upon to implement the Interchange Area Management Plan.

Douglas County Transportation System Plan (TSP)

The Douglas County Transportation System Plan establishes a system of transportation facilities and mobility standards that is adequate to meet the County's transportation needs. The Douglas County TSP includes a determination of future transportation needs for road, transit, bicycle, pedestrian, air, water, rail, and pipeline systems; policies and regulations for the implementation of the TSP; and a transportation funding program.

Development of an IAMP for Interchange 129 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 Douglas County functional classification and maximum allowed volume to capacity ratios for the major roads within the study area were previously shown in Tables 1 and 2, respectively.

City of Roseburg Transportation System Plan (TSP)

The City's Transportation System Plan (TSP) provides a plan for the development of the City's transportation infrastructure, addressing improvements to existing roadways and freight facilities, new pedestrian and bicycle facilities, improvements in public transit service, and transportation demand deficiencies and needs. It also includes a capital improvement list of projects required to address the City's transportation needs for a 20-year planning period. The projects in the capital improvement list are prioritized based on current needs and the expected growth of the City. Specific projects that could affect traffic circulation in the IAMP study area are listed below.

<u>High priority (0-7 Years)</u>

- Multi-use path adjacent to Umpqua College Road from Highway 99 to college and North Umpqua River.

- Bike lanes on Highway 99 from Keller Road to Umpqua College Road

Medium Priority (8-15 Years)

- Traffic Signal at Highway 99/Del Rio Intersection.

New transportation facilities proposed as a result of this study that will be owned by the City of Roseburg must be designed in accordance with the city's TSP, incorporating the appropriate characteristics (cross-section design, treatment of pedestrian and bicycle facilities, etc…) for any applicable street functional classification. Recognition of needed street cross-sections for different functional classifications should be monitored closely, as it will affect the amount of right of way required.

In the City of Roseburg TSP[2], I-5 is designated as a "Freeway", Highway 99 is designated as an "Arterial", and Del Rio Road and College Road are designated as "Collectors". To determine existing deficiencies, the City uses the mobility standards from the 1999 Oregon Highway Plan (OHP) for State facilities and Douglas County standards for County facilities.

Comprehensive Plan and Zoning Ordinance for Douglas County

The interchange area is within the Roseburg UGB, but outside of the Roseburg city limits. Douglas County has jurisdiction of the area immediately around the interchange, which is outside of the city limits. However, according to the Douglas County – City of Roseburg Urban Growth Management Agreement, the City maintains authority over land use decisions that require amendments to the Comprehensive Plan.

In general, the Douglas County Comprehensive Plan map identifies the interchange area as part of the Urban Growth Area (UGA). The west side of the interchange is a mix of industrial, rural residential, and farmland land uses. The southbound interchange ramp terminals intersect with Del Rio Road (County Road 115). The north side of Del Rio Road immediately adjacent to the interchange is zoned Heavy Industrial (M3) for the Douglas County Mill site. The Heavy Industrial zone is for medium and heavy industrial development and is intended to be applied generally to those areas which have available excellent highway, rail or other transportation access. Amacher Park is on the south side of the Del Rio Road intersection and is zoned Public Reserve (PR), which is intended for a variety of public service activities, though not exclusively on publicly owned lands. Further west on Del Rio Road is a mix of rural residential (RR and 5R) and exclusive farm use (FG) zoning.

The ramp terminals on the east side of the interchange intersect Highway 99. Most of this area is inside the Roseburg UGA. The area between Interstate 5 and Highway 99 is zoned Public Reserve (PR). The northern portion of this area is the headquarters for the Douglas County Parks Department. On the east side of Highway 99, the frontage from the ramp terminals south to the North Umpqua River is zoned (C2) and is vacant. The intersection of Highway 99 and Umpqua College Road has Low Density Residential (R1) on the south

[2] *Figure 3-1, City of Roseburg Transportation System Plan.*

side and Suburban Residential (RS) on the north side. The Low Density Residential (R1) zone provide for a medium density urban residential use (6,500 square foot minimum lot sizes) plus related compatible uses such as schools and parks. The Suburban Residential classification provides for single-family dwellings with 15,000 square foot minimum lot sizes with limited urban services. Farther north on Highway 99 is exclusive farm use zoning (FG), before the highway crosses back into the Roseburg UGA to include a large amount of industrial land zoned Medium (M2) and Heavy (M3) Industrial. The south side of Umpqua College Road is zoned Single-Family Residential (R1) along the North Umpqua River, although some land on the east end is designated on the Comprehensive Plan Map for high density residential (HDR). The Umpqua Community College is located on the north side of the road and is zoned Public Reserve (PR).

Douglas County Land Use and Development Ordinance (LUDO)

The Douglas County LUDO includes other provisions that are relevant to the IAMP. First, transportation improvements are permitted outright or as a conditional use in all zoning designations within the study area.

SECTION 3.35.050 establishes access standards for new lots and parcels onto County roads, which are regulated by the Douglas County Public Works Department and are initiated with an access permit application. Additional standards apply to multi-family and condominium developments, as well as developments that generate more than 300 trips per day. Specifically, developments with more than 300 trips may require a Traffic Impact Study and must comply with the access standards shown in Table 3 and the traffic signal spacing standards shown below in Table 5:

Table 5: Douglas County Traffic Signal Spacing Standards*

Arterial	Major Collector	Minor Collector
0.5 miles	0.5 miles	0.25 miles

** Signals will not be placed on most rural roads.*

SECTION 3.35.060 provides for coordinated review of land use decisions affecting transportation facilities corridors by providing information to ODOT, URCOG, City of Roseburg, and affected school districts in Douglas County applications reviewed by a Hearings Officer or the Planning Commission, land divisions, developments generating more than 300 trips per day, or development within Airport Impact Zones.

SECTION 3.35.065 requires applications for proposed developments that require access onto State Roads to provide an approved State access permit prior to the land use application being considered complete.

Comprehensive Plan and Zoning Ordinance for City of Roseburg

The most directly applicable objectives in the Comprehensive Plan include:

Objective 1: "Minimize the direct and indirect effects of transportation upon the social, economic, and natural environment."

Objective 3: "Maximize the efficiency and safety of existing transportation facilities and services for the movement of people and goods."

The Comprehensive Plan designations inside the Roseburg UGA have been coordinated with Douglas County, which has adopted the land use same designations (see discussion under Douglas County).

City of Roseburg-Douglas County Urban Growth Management Agreement (UGMA)

Most of the interchange area lies within the unincorporated area within the Roseburg Urban Growth Boundary (UGB).[3] According to the UGMA, the Roseburg Urban Area Comprehensive Plan (City Plan) establishes the standards and procedures for comprehensive plan amendments, land use ordinance changes, land use actions, urban service provision, and public improvement projects within the Urban Growth Area (UGA). The County has jurisdiction, within the UGA, to implement the City Plan using County land use ordinances.

The UGMA establishes procedures for amendments to the City Plan and ordinances. All amendments are initiated by the City with notice to the County prior to the first planning commission hearing. The County will comment on the City Planning Commission recommendations before they are forwarded to the City Council. After the City Council makes its decision, the County Board of Commissioners has the option to review the City's decision. If the County reverses the City's decision, then the City may appeal the County decision to the Land Use Board of Appeals. Land use actions are initially processed by the County, with notification to the City for an opportunity to comment.

New streets within the UGB shall be constructed to coordinated urban street construction standards, which apply County standards with the reservations for other amenities or improvements the City may require in the future. The extension of sewer, water, and storm drainage facilities shall be consistent with the City Plan and any Urban Service Agreements.

City of Roseburg Land Use and Development Ordinance (1982 with amendments)

The Roseburg Land Use and Development Ordinance provides zoning for areas inside the city limits, therefore does not apply to the project area.

[3] *The interchange area lies within Sub-Area 2 of the County jurisdiction.*

APPENDIX C: EXISTING LAND USE ANALYSIS

MEMORANDUM

To: John Bosket, DKS

From: Jesse Winterowd

Date: April 25, 2007

Re: Task 4.1: Existing Land Use Analysis

TABLE OF CONTENTS

INTRODUCTION

Technical Memorandum #2 provided a basic overview of location and type of plan designations and zoning within the interchange study area. Much of the information provided in Memorandum #2 serves as a reference.

This memorandum responds to the requirements of Task 4.1, and provides description of Comprehensive Plan and Zoning designations within the interchange study area. This memorandum includes narrative describing the general planning of the area, as well as plan and zone matrices with specific information regarding uses and densities for all plan designations and zones within the interchange study area. The matrices include existing zoning, as well as all potential zones that can implement each plan designation.

COUNTY PLAN AND ZONING DESIGNATIONS

The Douglas County Comprehensive Plan map identifies the interchange area as part of the Urban Growth Area (UGA). The west side of the interchange is a mix of industrial, rural residential, and farmland land uses. The southbound interchange ramp terminals intersect with Del Rio Road (County Road 115). Amacher Park is on the south side of the Del Rio Road intersection and is zoned **Public Reserve (PR)**, which is intended for a variety of public service

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activities, though not exclusively on publicly owned lands. Further west on Del Rio Road is a mix of **Rural Residential (RR and 5R)** and **Exclusive Farm Use - Grazing (FG)** zoning.

These County plan designations and zones are shown on the *Interchange 129 IAMP Zone Map*, and described in Table 1, County Plan-Zone Matrix, below.

Table 1: County Plan – Zone Matrix

County Plan	Zones	Uses	Residential Densities
Public Reserve (PR)	PR	Farm Uses; Churches; Cemeteries; Clubs; Fairgrounds; Hospitals; Parks; Schools; Single-Family Dwelling	6,500 Square Foot minimum lot size when served with public facilities
Farm Forest (FF)	FF	Farm Uses; Forest Uses; Single Family Dwelling; Secondary "relative" Dwelling	80-acre minimum lot size
EFU – Grazing (FG)	FG	Farm Uses; Single Family Dwelling; Secondary "relative" Dwelling	80-acre minimum lot size
Rural Residential – 5 (5R)	5R	Single Family Dwelling; Farm or Forest Use; Farm Stand; Public and Semi-Public Uses including parks, schools, community halls, and churches	5-acre minimum lot size
Rural Residential – 2 (RR)	RR	Single Family Dwelling; Farm or Forest Use; Farm Stand; Public and Semi-Public Uses including parks, schools, community halls, and churches	2-acre minimum lot size

CITY PLAN AND ZONING DESIGNATIONS

The north side of Del Rio Road immediately adjacent to the Interchange is zoned **Heavy Industrial (M3)** for the Douglas County Mill site. The Heavy Industrial zone is for medium and heavy industrial development and is intended to be applied generally to those areas which have available excellent highway, rail or other transportation access.

The ramp terminals on the east side of the interchange intersect Highway 99. Most of this area is inside the Roseburg UGA. The area between Interstate 5 and Highway 99 is zoned **Public Reserve (PR)**. The northern portion of this area is the headquarters for the Douglas County Parks Department. On the east side of Highway 99, the frontage from the ramp terminals south to the North Umpqua River is zoned **(C2)** and is vacant.

The intersection of Highway 99 and Umpqua College Road has **Low Density Residential (R1)** on the south side and **Suburban Residential (RS)** on the north side. The **Low Density Residential (R1)** zone provide for a medium density urban residential use (6,500 square foot minimum lot sizes) plus related compatible uses such as schools and parks. The Suburban Residential classification provides for single-family dwellings with 15,000 square foot minimum lot sizes with limited urban services.

Farther north on Highway 99 is **County EFU-Grazing (FG)**, before the highway crosses back into the Roseburg UGA to include a large amount of industrial land zoned **Medium (M2)** and **Heavy (M3) Industrial**. The south side of Umpqua Collage Road is zoned **Single-Family Residential (R1)** along the North Umpqua River, although some land on the east end is designated on the Comprehensive Plan Map for **High Density Residential (HDR)**. The Umpqua Community College is located on the north side of the road and is zoned **Public Reserve (PR)**.

The City zones mentioned above are shown on the *Interchange 129 IAMP Zone Map*, and described in the City Comprehensive Plan-Zone Matrix contained in Table 2 below:

Table 2: City Plan-Zone Matrix

Plan	Zones	Uses	Residential Densities
Commercial	Limited Com (C-1); Community Com (C-2); General Com (C-3); Mixed Use (MU)	C-1: Community Centers; Offices under 1,500 sq ft; Retail under 2,500 sq ft; C-2: Services and Retail, Motels, Theaters C-3: All in C-1 and C-2, plus wholesale, auto sales, trailer parks	
Low-Density Residential	Low Density Res (R-1-10); Single-Family Res (R-1-7.5); Single-Family Res (R-1-6); Limited Commercial (C-1)	Single Family Residential; Duplex; Church	R-1-10: 10,000 Sq Ft Min Lot Size; 5,500 duplex; R-1-7.5: 7,500 Sq Ft Min Lot Size; 6,000 duplex; R-1-6: 6,000 Sq Ft Min Lot Size; 3,300 duplex;
Medium-Density Residential	Lim. M-F Res (MR-14); Med Den M-F Res (MR-18); Limited Commercial (C-1)	Single Family Residential; Duplex; Multi-Family; Mobile Home Park; Church; Residential Facility	MR-14: 6,000 Sq Ft Min Lot Size; 3,300 duplex; 3,000 Multi Family; 5 beds / 4,700 Facility MR-18: 6,000 Sq Ft Min Lot Size; 3,000 duplex; 2,350 Multi Family; 5 beds / 4,700 Facility
High-Density Residential	M-F Residential (MR-29); High Den M-F Res (MR-40); Limited Commercial (C-1)	Single Family Residential; Duplex; Multi-Family; Mobile Home Park; Church; Residential Facility	MR-29: 6,000 Sq Ft Min Lot Size; 3,000 duplex; 1,500 Multi Family; 5 beds / 3,000 Facility MR-40: 800 Multi Family; 5 beds / 2,200 Facility
Industrial	Light Industrial (M-1); Medium Industrial (M-2); Heavy Industrial (M-3);	M-1: Secondary manufacturing and intense commercial with limited	

Plan	Zones	Uses	Residential Densities
	Mixed Use (MU)	external impact; M-2: All in M-1, plus manufacturing. Good access to transportation; M-3: Medium and Heavy Industrial away from residential and commercial conflicts. Good access to transportation.	
Parks/Open Space	Public Reserve (PR)	Public/Semi-Public Uses including Schools, Churches, Fairgrounds, etc.	
Residential Open Space	Residential Open Space (RO)	Residential Single Family; Planned Unit Developments; Day Care Facilities; Parks	1 dwelling unit per 3 acres.
Public/Semi-Public	Public Reserve (PR); Airport District (AP)	Public/Semi-Public Uses including Schools, Churches, Fairgrounds, etc.	

APPENDIX D: EXISTING TRANSPORTATION CONDITIONS

DKS *Associates*
TRANSPORTATION SOLUTIONS

Draft - Technical Memorandum #4.2

DATE: May 4, 2007
TO: Project Management Team
FROM: John Bosket, PE
Rebecca Bauman

SUBJECT: **Task 4.2: Technical Memorandum #4.2**
Existing Transportation Conditions P05041-002-004

This memorandum provides a review of existing transportation conditions for the Roseburg Interchange 129 Area Management Plan (IAMP). The inventory data collected and performance of roadways and intersections around the interchange area was analyzed in order to establish a baseline for comparison against identified performance or design standards with any elements found to be deficient identified.

Study Area

Study area roadways of interest include I-5, Old Highway 99, Del Rio Road, and Umpqua College Road. In addition, the following four intersections were selected for focused operations analysis. The study intersections and roadways are shown in Figure 1.

- I-5 NB / Old Highway 99
- I-5 SB / Del Rio Road
- Old Highway 99 / Del Rio Road
- Old Highway 99 / Umpqua College Road

Traffic data was obtained for each intersection from the Transportation Planning Analysis Unit (TPAU). Additional data was collected for other aspects of the transportation system including reported vehicle crashes, locations of bike and pedestrian facilities, transit availability, and property access locations. Using this information, the following sections describe the characteristics, usage, and performance of the transportation system in the interchange area.

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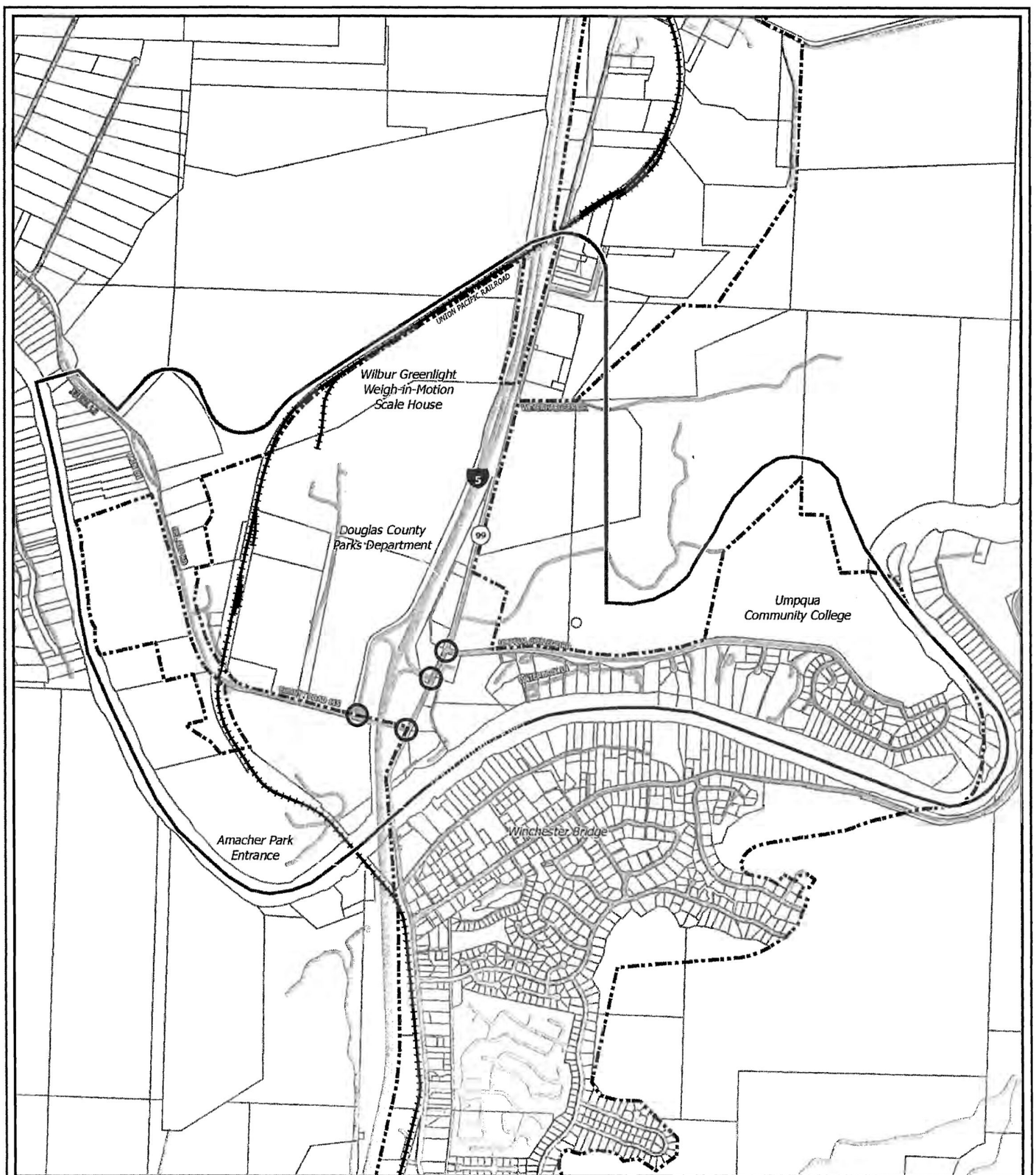

Interchange 129 IAMP **Figure 1**

Interchange Study Area

City of Roseburg

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System Inventory

Motor Vehicle

Field inventories were conducted to determine characteristics of major roadways in the study area. Data collected included posted speed limits, geometry and lane configurations, and traffic controls. These characteristics define roadway capacity and operating speeds throughout the corridor. The County functional classification for area roadways and posted speed limits can be seen in Figure 2, with lane configurations and traffic controls at study intersections displayed in Figure 3. The Northbound I-5 / Old Highway 99 intersection is the only signalized intersection within the study area.

Interstate 5 (I-5), also known as the Pacific Highway, is a federal facility managed by the Oregon Department of Transportation (ODOT). The *1999 Oregon Highway Plan* identifies I-5 as an Interstate Freeway within the study area. Interstate Highways often function as connectors to the largest urban areas to provide safe and efficient operations with continuous, high speed flow as well as serving as inter-urban and inter-state connectors. Within the study area, many sections of I-5 meet current design standards, with some areas have shoulders slightly narrower than required (see Tables 1 and 2).

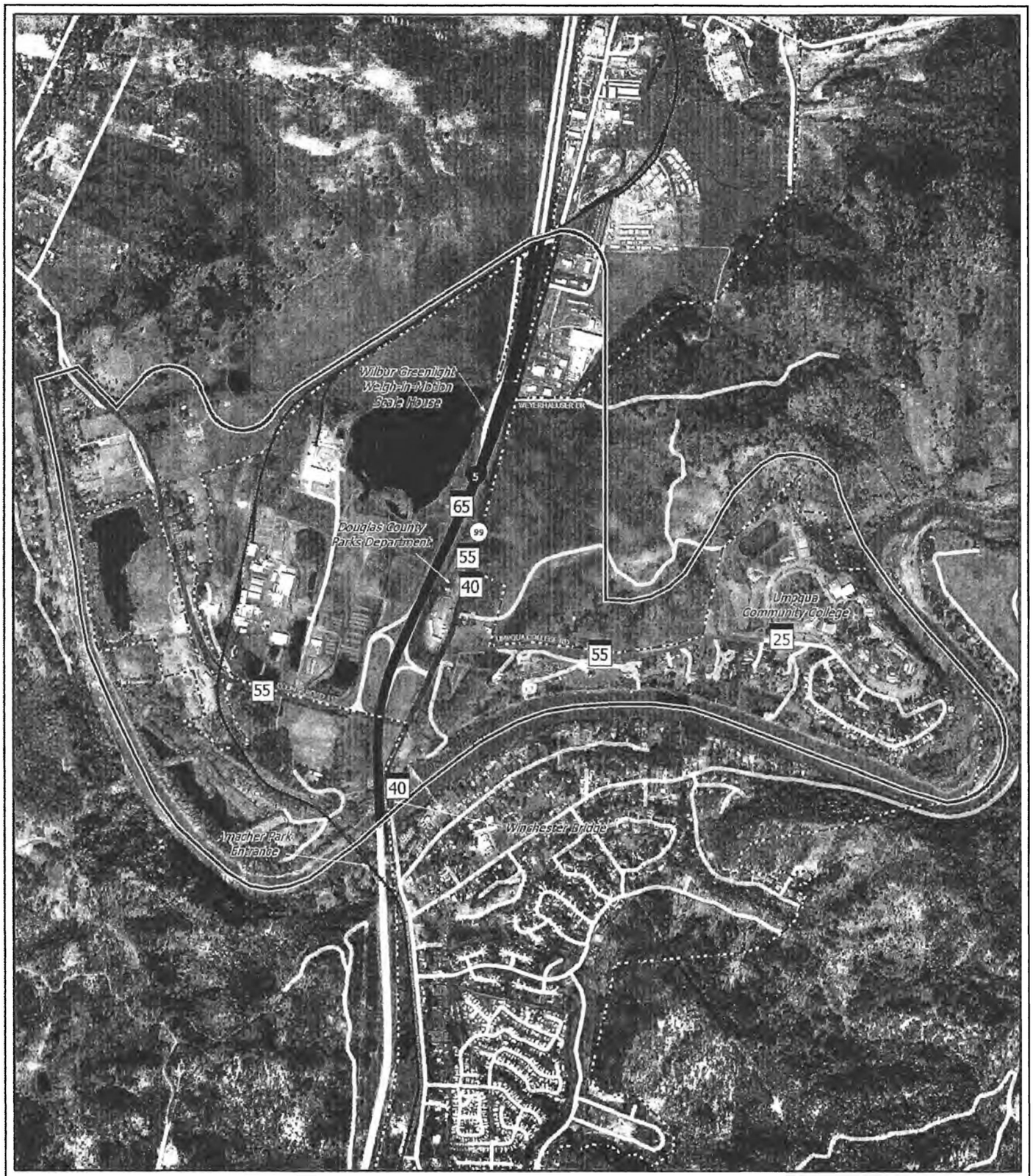
With the exception of I-5, all roadways fall under Douglas County jurisdiction and currently meet County design standards. However, the study area falls within the City of Roseburg Urban Growth Boundary (UGB), meaning that the City will eventually annex this area and potentially take jurisdiction of these roads. At that time, many roads will require improvements to make them compliant with the City's design standards, which may require the acquisition of additional right of way.

A summary of roadway characteristics can be seen in Table 1. The City, County, and State design standards for study area roadways are listed in Table 2.

Table 1: Study Area Roadway Characteristics*

Roadway	Jurisdiction	Functional Classification	Number of Lanes	Lane Width	Shoulder Width**	Meets Standards?
Interstate 5	State	Interstate Freeway	4	12'	**4-6' / 10'**	**No**
Old Highway 99	County	Arterial	2	12'	6'	Yes
Del Rio Road	County	Major Collector	2	12'	4'	Yes
Umpqua College Road	County	Minor Collector	2	12'	8'	Yes

* Bold type indicates design standards are not met.
** # / # = left shoulder width / right shoulder width



Interchange 129 IAMP **Figure 2**

Roadway Functional Classification & Posted Speed

Douglas County

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N
W E
S

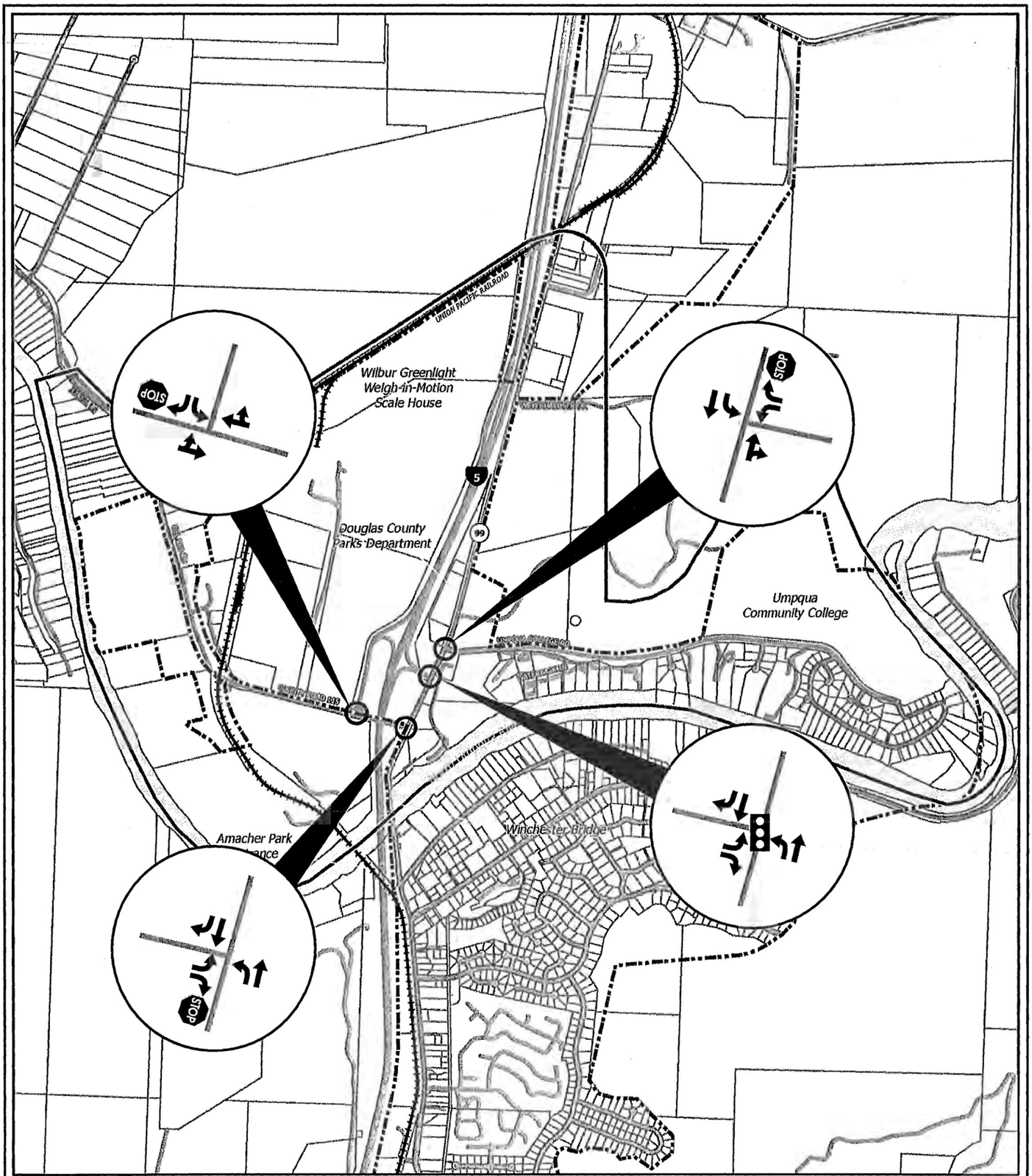
0 500 1,000 2,000
Feet

Legend

- 40 Posted Speeds
- Study Area
- Railroad
- Roseburg Urban Growth Boundary

Douglas County Functional Classification

- Principal Highway
- Arterial
- Major Collector
- Minor Collector



Interchange 129 IAMP **Figure 3**

Existing Geometry

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Table 2: Study Area Roadway Design Standards*

Jurisdiction	Functional Classification	Lane Width	Median Width	Shoulder Width**	Sidewalk Width	Left Turn Lane Width
ODOT	Interstate Highway	12'	18'	6' / 10'	N/A	N/A
Douglas County	Arterial – Urban (Rural)	12' (12')	2-14' (2-14')	10' (5-11')	6' (N/A)	14' (14')
Douglas County	Collector – Urban (Rural)	12' (12')	N/A	8' (3-9')	6' (N/A)	14' (N/A)
City of Roseburg	Arterial (3-lane)	11-12'	12-14'	6'	6-8'	
City of Roseburg	Collectors	11-12'	N/A	6'	6-8'	

* # / # - left shoulder width / right shoulder width
** Sources: Douglas County Land Use and Development Ordinance (Ch 4), 2006 Roseburg TSP, Oregon Highway Plan (updated January 2006), 2003 ODOT Highway Design Manual (Table 6-1)

Available Intersection Sight Distance (ISD) and Stopping Sight Distance (SSD) were measured from study area intersection approaches for comparison against minimum distances recommended by the American Association of State Highway and Transportation Officials (AASHTO)[1]. ISD represents the distance from the intersection that a stopped vehicle requires to comfortably pull out onto the crossing roadway, while SSD represents the distance required for a vehicle to safely stop once an obstacle has been seen. When feasible, ISD should always be provided for vehicles entering a roadway from a cross street. Where ISD can not be provided, at a minimum, enough sight distance must be provided for an approaching vehicle to safely stop without colliding with the entering vehicle (SSD).

Table 3 provides measured sight distances taken from stop-controlled approaches at study intersections and compares them against the AASHTO recommendations. Because traffic signals provide right of way for entering vehicles, ISD is generally not necessary. However, the ability to safely stop once the traffic signal has been seen (SSD) is still critical. Therefore, only the SSD for approaching vehicles at signalized intersections has been provided.

[1] A Policy on Geometric Design of Highways and Streets 2004, American Association of State Highway and Transportation Officials (AASHTO).

Table 3: AASHTO minimum sight distances

Intersection	Control – Direction of Sight	Posted Speed (mph)	Assumed Design Speed (mph)	Min. SSD (ft)	Min. ISD (ft)	Measured ISD (ft)
I-5 NB / Old Highway 99	Signalized – to North	40	45	360	-	>500
I-5 NB / Old Highway 99	Signalized – to South	40	45	360	-	>500
I-5 SB / Del Rio Rd	Stop Control –Left	55	65	645	720	**330**
I-5 SB / Del Rio Rd	Stop Control –Right	55	65	645	625	>700
Old Highway 99 / Del Rio Rd	Stop Control – Left	40	45	360	500	>600
Old Highway 99 / Del Rio Rd	Stop Control – Right	40	45	360	430	>500
Old Highway 99 / Umpqua College Rd	Stop Control – Left	40	45	360	500	>600
Old Highway 99 / Umpqua College Rd	Stop Control – Right	40	45	360	430	>500

Bold type indicates sufficient sight distance is not available.

As shown in Table 3, adequate ISD and SSD are available at all study intersection, with the exception of the I-5 southbound ramp terminal intersection with Del Rio Road. At this location, sight distance to the east for vehicles leaving the I-5 approach is well short of the recommended ISD and SSD due to a vertical curve in the bridge over the freeway. However, it should be noted that the recommended ISD and SSD shown in the table are associated with the posted speed of 55 mph and that many vehicles would not have reached this speed yet given the proximity to the end of the road to the east (approximately 300 feet from the point where vehicles would be seen). It should also be noted that this intersection will be removed and reconstructed to the north as part of the interchange modernization project that will include the realignment of Del Rio Road.

Pedestrian and Bicycle Facilities

The Oregon Bike and Pedestrian Plan defines a bike lane as a portion of the road designated for preferential use by bicyclists and must always be well marked as such. Shoulder bikeways are defined as paved shoulders with a preferential width of six feet and a minimum width of four feet where physical width limitations are present. There are no bicycle lanes located within the study area. However, Umpqua College Road and Old Highway 99 provide

adequate shoulder bikeways. The shoulders on Del Rio Road are generally no more than four feet wide, which is adequate in areas where no roadside barriers are present (e.g. curb or guardrail). In sections where roadside barriers are present, shoulders should be widened to at least five feet.

No sidewalks have been constructed within the study area. There are two crosswalks located on the western and southern legs of the I-5 NB / Old Hwy 99 intersection.

Transit

Transit service is provided in Roseburg by Umpqua Transit, which provides bus service for Douglas County linking the Cities of Winston, Green, Wilbur, and Sutherlin. Two bus routes pass through the study area, traveling along Old Highway 99, with one bus stop at Umpqua Community College. Busses run from 6 a.m. to 9 p.m., Monday through Friday. However, bus service at the Community College ends at approximately 7:00 p.m. The frequency of bus service throughout the day is shown in Table 4 below.

Table 4: Transit Service Frequency

Transit Route	Average Headways (Minutes)		
	AM	Midday	PM
Commuter Route	70	90	70
Roseburg Route	60	60	60

Note: AM Period = 6:00-08:30 AM, Midday Period = 8:30 AM-4:00 PM, PM Period = 4:00-7:00 PM

Access

ODOT and Douglas County maintain access spacing standards for roadways under their jurisdiction that identify the minimum required separation between adjacent approaches. Included in ODOT's access spacing standards are required approach spacing from freeway interchange ramp terminals. While, the crossroads with the freeway interchange ramp terminals are actually under the jurisdiction of the County, per the terms of the abandonment agreement, ODOT maintains authority for granting access to Old Highway 99 within 900 feet of the ramp terminal. Applicable access spacing standards for area roadways are shown in Table 5.

Table 5: Access Spacing Standards

	Roadway			
Jurisdiction	Interstate 5	Old Hwy 99	Del Rio Rd.	Umpqua College Rd.
ODOT	1320' / 990'	-	-	-
Douglas County	-	990'	660'	330'

/ # = Distance to first approach or first major intersections / Distance between the last right in/right out approach road and the start of the taper for the on-ramp.

A physical inventory of existing approaches to area roadways was collected, with descriptive information recorded for each approach indicating the approach's location, how the approach has been constructed and how it is currently being used. This physical inventory was compiled into an Access List, which has been included in the appendix to this memorandum. Additional investigation regarding property access rights, including a search of approach permits issued and right of way research conducted was performed by ODOT staff. The results of this research have also been included in the Access List. To compliment the Access List, a graphical display of individual approach locations along area roadways is shown in Figure 4.

Using this information, a comparison of existing conditions to ODOT and Douglas County access spacing standards was made to evaluate areas needing improvement. Table 6 provides the results of this investigation, displaying the number of approaches found on each roadway and comparing the average approach spacing per section to the applicable access spacing standard. While this level of analysis can not be used to identify potential improvements to approach spacing, it does reflect the degree to which the spacing standards are being met and provides an indication of the extent of improvements needed. The rightmost column in the table indicates the approximate number of driveway or public street approaches that would be allowed to fully comply with access spacing standards.

According to Table 6, there are far more approaches to Old Highway 99 within 1,320 feet of the I-5 northbound interchange ramp terminal than would be allowed by ODOT's spacing standards. However, beyond 1,320 feet, approach spacing increases significantly and complies with County spacing standards within the area studied. On Del Rio Road, there are more approaches within and beyond 1,320 feet of the I-5 southbound interchange ramp terminals than would be allowed to meet ODOT and County spacing standards. Finally, access spacing on Umpqua College Road is much greater than County standards require.

Interchange 129 IAMP

Figure 4

Existing Access Map

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N
W E
S

0 500 1,000 2,000
Feet

Legend

- Existing Approach
- Study Area
- Railroad
- Tax Lots
- Roseburg Urban Growth Boundary

Table 6: Approach Spacing on Study Area Roadways

Roadway	Number of Approaches	Segment Length (ft.)	Average Approach Spacing (ft.)		Number of Approaches allowed by Standard
			Actual	Standard	
Old Hwy 99 (<1,320' from ramp)	10	2,640	265	1,320	2
Old Hwy 99 (>1,320' N. of ramp)	1	990	990	990	1
Old Hwy 99 (>1,320' S. of ramp)	0	990	990	990	1
Del Rio Rd. (<1,320' from ramp)	4	1,980	495	1,320	1
Del Rio Rd. (>1,320' from ramp)	8	4,200	525	660	6
Umpqua College Rd.	3	2,050	685	330	6

Crash History

The last four years (2001 through 2005) of available crash data on study area roadways were obtained from ODOT to identify any areas of traffic safety concern. Table 7 summarizes the crashes experienced along the roadways within the boundaries of the study area and the resulting crash rate. It should be noted that as these crash rates are applied to stretches of road rather than specific intersections, values will be higher than the norm.

Table 7: Study Area Road Segment Crash Rates (2001 – 2005)

Roadway	Total Collisions	Fatal	Injury				Collision Rate
			A	B	C	PDO	
Interstate 5 (MP 128.90 to 130.50)	44	0	3	10	14	17	0.28
Old Highway 99 (MP 10.69 to 12.29)	25	0	2	4	5	14	2.24
Umpqua College Road (Old Hwy 99 to 1.5 miles east)	6	0	0	2	1	3	1.49
Del Rio Road (Old Hwy 99 to 1.5 miles west)	5	0	0	2	0	3	0.60

Source: ODOT Transportation Data Section – Crash Analysis and Reporting Unit

Crash Rate = (Crashes*1,000,000) / (Years*ADT*365)

Eighteen of the twenty-five collisions along Old Highway 99 took place at the Old Highway 99 / Del Rio Road intersection, giving this intersection a collision rate of 1.0. Generally, intersections with a collision rate of 1.0 or greater are considered problem areas where mitigating actions should be taken into consideration. Sixteen of the eighteen collisions at this intersection were due to improper left-hand turn movements onto Del Rio Road from the south. However, given that this intersection will be removed through the realignment of Del Rio Road as part of the interchange modernization project, no countermeasures will be necessary. All crashes occurring within the study area have been depicted in Figure 5.

Crash rates identifying the number of crashes per million vehicle-miles traveled for specified sections of I-5, as well as statewide average crash rates for various facility types, were obtained from ODOT's *2005 State Highway Crash Rate Tables*[2]. Highway sections analyzed in these tables are categorized by area type and functional classification to provide a basis for comparison between various facilities. For this analysis, I-5 was classified as an Interstate Freeway and the study corridor was categorized as a Suburban Area. Predetermined highway sections within these categories are provided in the crash rate tables with crash rates calculated for each section, as well as for groups of contiguous sections within the same area type. The resulting crash rates on I-5 over the last five years through the study area compared to the statewide average crash rates for other Interstate Freeways in Suburban Areas are shown below in Table 8.

Table 8: Interstate 5 Crash Rate Comparison for Statewide Suburban Areas

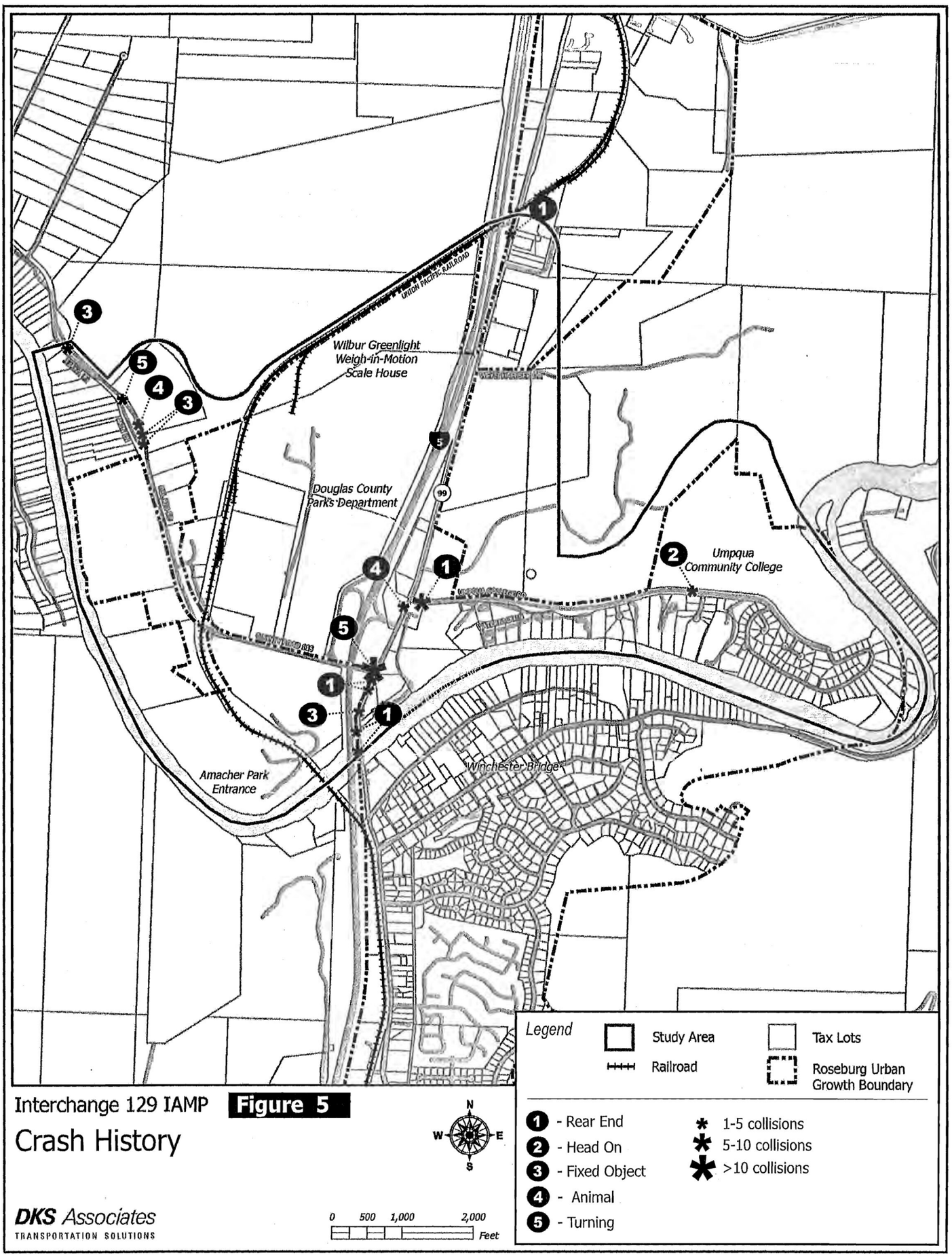
Section Limits (Milepoints)	Section Description	Crashes per Million Vehicles 2005	2004	2003	2002	2001
	Statewide Average Rate	**0.44**	**0.35**	**0.48**	**0.27**	**0.17**
MP 128.92 – MP 129.22	I-5: Winchester Bridge to End Roseburg Urban Area	0.29	0.25	0.22	0.26	**0.29**

Note: Bold type indicates the crash rate is greater than the statewide average.

According to Table 8, this segment of I-5 routinely experiences lower crash rates than other similar highway segments throughout the state. The only exception was in 2001. However, given the performance over the four years that followed that, there should be no reason for concern.

Safety Priority Index System (SPIS) ratings for I-5 through the study area were also examined to identify any areas in need of mitigation. The Safety Priority Index System is a method developed by ODOT for identifying hazardous locations on state highways. The SPIS score is based on three years of crash data and considers crash frequency, crash rate, and crash severity. In general, locations ranking within the State's top 10% of SPIS scores should be considered for potential mitigation. There were no SPIS ratings within the top 10% on I-5 within the study area.

[2] *2005 State Highway Crash Rate Tables (August 2006).*



Interchange 129 IAMP **Figure 5**

Crash History

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Traffic Operations

Motor Vehicle Volumes

Data describing peak hour traffic volumes at study intersections was obtained from ODOT's Transportation Planning Analysis Unit (TPAU). This data was collected through 14-hour manual turn movement counts, with a peak hour of 3:00 to 4:00 p.m. selected for analysis purposes. The raw counts were collected in various months within the year 2003, but were adjusted by TPAU through the use of seasonal factors and historic growth rates to provide traffic volumes representative of the 30th highest annual hour (30 HV)[3] in the year 2007. The 2007 30 HV traffic volumes at study area intersections are displayed in Figure 6.

Operating Conditions

Level of Service (LOS) and volume to capacity (v/c) ratios are both used as measures of effectiveness for intersection operation. LOS is similar to a "report card" rating based upon average vehicle delay. Level of Service A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. Level of Service D and E are progressively worse peak hour operating conditions. Level of Service F represents conditions where average vehicle delay exceeds 80 seconds per vehicle entering a signalized intersection and demand has exceeded capacity. This condition is typically evident in long queues and delays. Unsignalized intersections provide levels of service for major and minor street turning movements. For this reason, LOS E and even LOS F can occur for a specific turning movement; however, the majority of traffic may not be delayed (in cases where major street traffic is not required to stop). LOS E or F conditions at unsignalized intersections generally provide a basis to study intersections further to determine availability of acceptable gaps, safety and traffic signal warrants.

A volume to capacity (v/c) ratio is the peak hour traffic volume at an intersection divided by the maximum volume that intersection can handle. For example, when a v/c ratio is 0.80, peak hour traffic is using 80 percent of the intersection capacity. If traffic volumes exceed capacity, queues will form and will lengthen until demand subsides below the available capacity. When the v/c ratio approaches 1.0, intersection operation becomes unstable and small disruptions can cause traffic flow to break down.

Level of service, delay and volume to capacity ratios are used as measures of effectiveness for study intersection performance. Within the study area, the interchange ramp terminals of I-5 are under the jurisdiction of ODOT. The ODOT operating performance standards[4] for interchange ramp terminals require a v/c ratio of 0.85 or less during the 30 HV. All other roadways are currently under the jurisdiction of Douglas County, whose performance standards vary by functional classification and have been shown in Table 9.

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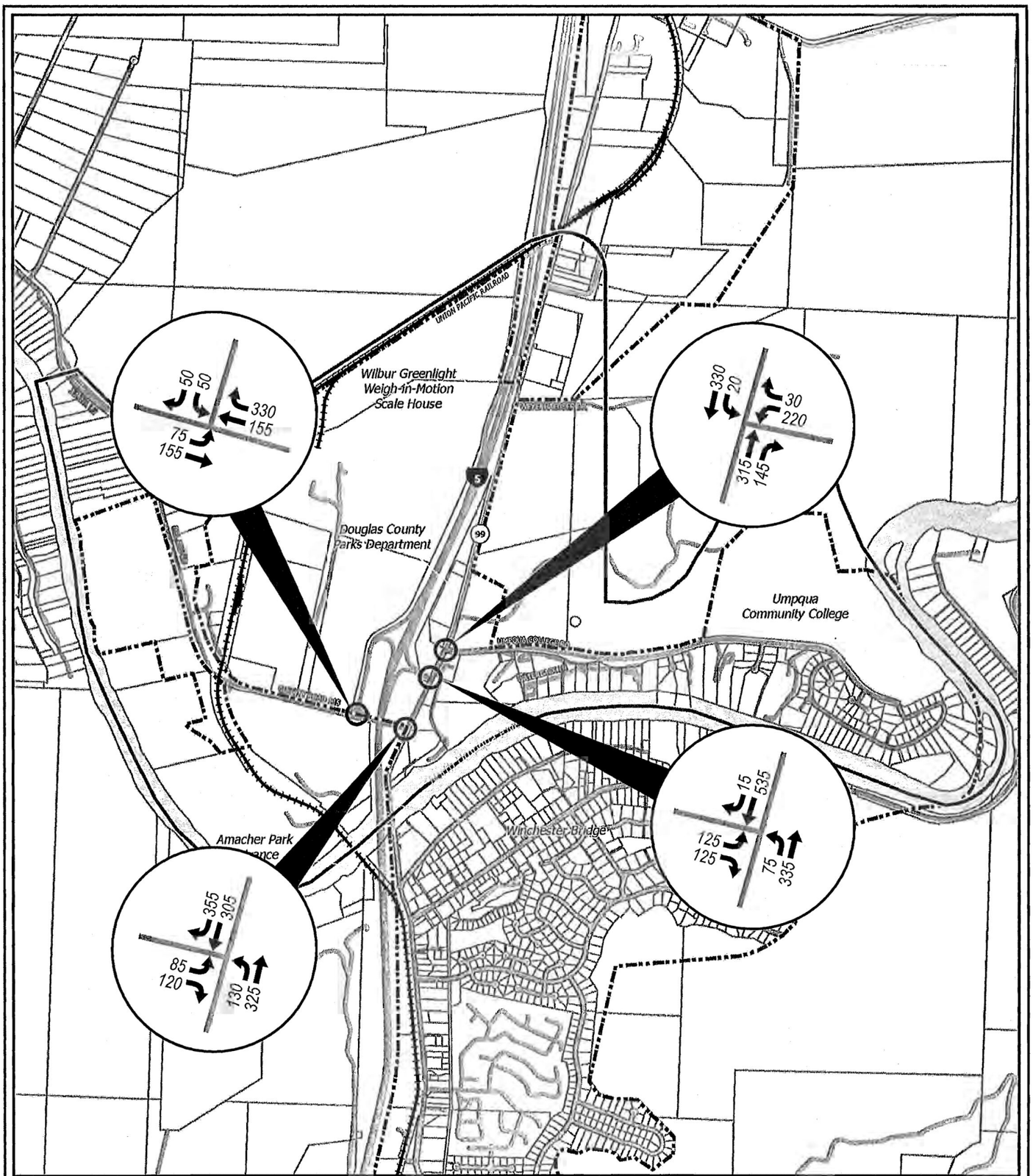
[3] 30th highest annual hour traffic volumes are commonly used for the design of transportation facilities.
[4] *1999 Oregon Highway Plan*, Oregon Department of Transportation, August 2006, Policy 1F.



Interchange 129 IAMP **Figure 6**

2007 30th Highest Hour Traffic Volumes

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N
W E
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0 500 1,000 2,000
Feet

Legend

- Study Area
- Tax Lots
- Railroad
- Roseburg Urban Growth Boundary
- Study Intersection
- 00 30 HV Traffic Volume

The 30 HV previously developed for the year 2007 were used to determine the existing study intersection operating conditions based on the *2000 Highway Capacity Manual* methodology for signalized and unsignalized intersections.[5] Operational analysis worksheets can be found in the appendix.

Table 9 summarizes the 2007 30 HV intersection operations at study intersections. All four intersections currently operate within adopted performance standards.

Table 9: Existing (2007) 30 HV Intersection Operations

Intersection	Operations			Applicable Standard	
	LOS	Average Delay (sec)	Volume/ Capacity (v/c)	ODOT	Douglas County
Signalized					
I-5 NB / Old Highway 99	B	15.2	0.63	0.85	-
Unsignalized					
I-5 SB / Del Rio Rd	A/B	2.8	0.17	0.85	-
Old Highway 99 / Del Rio Rd	A/C	4.4	0.47	-	0.85
Old Highway 99 / Umpqua College Rd	A/E	8.7	0.72	-	0.85

Notes: *LOS = Level of Service*
Delay = Average vehicle delay in the peak hour for entire intersection in seconds.
Unsignalized Intersection Operations:
A/A = Major street turn LOS / Minor street turn LOS

Summary of Deficiencies

Considering the investigation of existing conditions conducted, the following deficiencies will need to be addressed when identifying improvements to the transportation system in this plan.

- Shoulders on Interstate 5 vary in width and are narrower than ODOT's design standards require in some locations. Areas of Interstate 5 that are reconstructed as part of this project will present an opportunity to remedy this.
- Roadways under Douglas County jurisdiction within the urban growth boundary that meet County design standards may need to be widened and modernized should the City annex this area and take jurisdiction of such roads.

[5] *2000 Highway Capacity Manual*, Transportation Research Board, 2000.

- Sight distance from the I-5 southbound ramp terminal intersection to the east along Del Rio Road is limited by a vertical curve in the bridge over I-5. This condition can be remedied when the project reconstructs the interchange and realigns Del Rio Road.
- There are no sidewalks within the study area. As this area is annexed into the City, roadways will need to be modernized to include adequate pedestrian facilities.
- Shoulder widths on Del Rio Road will need to be increased to better accommodate bicycle travel as this area is annexed into the City and urbanized.
- Access spacing on Old Highway 99 and Del Rio Road within the interchange area does not meet spacing standards and will require significant improvement.
- The intersection on Old Highway 99 at Del Rio Road has a history of reoccurring crashes involving improper left-hand turns onto Del Rio Road from the south. This condition can be remedied when the project reconstructs the interchange and realigns Del Rio Road.

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APPENDIX

- Capacity Analysis Worksheets
- Project Access List

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1569	1404	1598	1682	1698	1443
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1569	1404	1598	1682	1698	1443
Volume (vph)	125	125	75	335	535	15
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	139	139	83	372	594	17
RTOR Reduction (vph)	0	112	0	0	0	8
Lane Group Flow (vph)	139	27	83	372	594	9
Heavy Vehicles (%)	9%	9%	7%	7%	6%	6%
Turn Type		Perm	Prot			Perm
Protected Phases	8		1	6	2	
Permitted Phases		8				2
Actuated Green, G (s)	11.1	11.1	8.3	37.1	24.8	24.8
Effective Green, g (s)	11.1	11.1	8.3	37.6	25.3	25.3
Actuated g/C Ratio	0.20	0.20	0.15	0.66	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	4.0	4.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	307	275	234	1115	758	644
v/s Ratio Prot	c0.09		0.05	c0.22	c0.35	
v/s Ratio Perm		0.02				0.01
v/c Ratio	0.45	0.10	0.35	0.33	0.78	0.01
Uniform Delay, d1	20.1	18.7	21.8	4.1	13.4	8.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.9	0.2	5.3	0.0
Delay (s)	21.6	18.9	22.7	4.3	18.7	8.8
Level of Service	C	B	C	A	B	A
Approach Delay (s)	20.2			7.7	18.4	
Approach LOS	C			A	B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	56.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	75	155	155	330	50	50
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	87	180	180	384	58	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						6
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	564				727	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	564				727	372
tC, single (s)	4.3				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	91				83	91
cM capacity (veh/h)	941				347	661

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	267	564	116
Volume Left	87	0	58
Volume Right	0	384	58
cSH	941	1700	694
Volume to Capacity	0.09	0.33	0.17
Queue Length 95th (ft)	8	0	15
Control Delay (s)	3.6	0.0	14.2
Lane LOS	A		B
Approach Delay (s)	3.6	0.0	14.2
Approach LOS			B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	85	120	130	325	305	355
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	98	138	149	374	351	408
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type	None					
Median storage veh)						
Upstream signal (ft)					725	
pX, platoon unblocked						
vC, conflicting volume	1023	351	759			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1023	351	759			
tC, single (s)	6.5	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.2			
p0 queue free %	53	80	82			
cM capacity (veh/h)	209	679	839			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	236	149	374	351	408
Volume Left	98	149	0	0	0
Volume Right	138	0	0	0	408
cSH	504	839	1700	1700	1700
Volume to Capacity	0.47	0.18	0.22	0.21	0.24
Queue Length 95th (ft)	61	16	0	0	0
Control Delay (s)	21.9	10.2	0.0	0.0	0.0
Lane LOS	C	B			
Approach Delay (s)	21.9	2.9		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	220	30	315	145	20	330
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	234	32	335	154	21	351
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
Upstream signal (ft)			417			
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	806	412			489	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	792	370			453	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	28	95			98	
cM capacity (veh/h)	327	630			1009	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	266	489	21	351
Volume Left	234	0	21	0
Volume Right	32	154	0	0
cSH	372	1700	1009	1700
Volume to Capacity	0.72	0.29	0.02	0.21
Queue Length 95th (ft)	134	0	2	0
Control Delay (s)	36.0	0.0	8.6	0.0
Lane LOS	E		A	
Approach Delay (s)	36.0	0.0	0.5	
Approach LOS	E			

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

ACCESS LIST AND PROJECT WORKSHEET

5/4/2007

Project Name: 15186 - Del Rio Rd_Winchester Ichng **E/A:** 35721220 & 35701003 **Hwy:** 1 **Key #:** 15186

Created By: J.W.Oltman **R/W Modified By:** **TCM Modified By:** **AM Sub-Team Modified By:** **Team Leader Modified by:**

Date: 1/8/2007 **Date:** **Date:** **Date:** **Date:**

Modified By: J. Bosket **Date:** 5/1/2007

PHYSICAL INVENTORY									ACCESS CONTROL RESEARCH								R/W RESEARCH	EXISTING APPROACHES STATUS RESEARCH										PROJECT PLAN							CONFIRMATION OF CHAMPS RECORDS		
Ref #	Side (L/R)	Mile Point	Eng Station	Exig Width (ft)	Surface Type	Property Use	Property Address	Comments	Ext R/W File No	Tax Lot	Twnsp-Rng-Sect	Map No	Res Eng Sta	Side	Res Width	Comments	Ownership	Side (L/R)	Legal Status (no/PM/GP)	Permit Issue Date	Mile Point	Station (ft)	Permitted Width (ft)	Surface Type	Permitted Use	Permitted To	Comments	Determination	Approach Type	Const Width (ft)	Const Sta	Comments	ADL Priority Ranking	Future Rec.	Action By District	Action By R/W	Action By xxx?
Douglas County Del Rio Road Beginning MP 0.00 at Hwy 99 Increasing going westerly																																				
13	R	0.13		300	Paved	Public	I-5 SB Ramps																														
14	R	0.18		100	Paved	Industrial				500	26-05-24						CBS Outdoor Inc.																				
15	R	0.26		150	Paved	Industrial (Lumber mill)				600,700, 800	26-05-24						DC Lumber											Do Nothing									
16	L	0.30		30	Paved	Public (Gun Club)				700	26-05-25						Rod & Gun Clb											Do Nothing									
17	R	0.70		60	paved	Commerical				200-400	26-05-24						Multiple Owners											Do Nothing									
18	L	0.71		30	Paved	Commerical				300-400	26-05-23D						Multiple Owners											Do Nothing									
19	R	0.85		20	Paved	Residental				300	26-05-24C						Blackford											Do Nothing									
20	R	0.94		30	Paved	Residental				200	26-05-24C						Smith											Reconstruct									
21	L	0.97		30	Paved	Public	Akin Ln southerly end										Multiple Owners											Remove									
22	L	1.12		45	Paved	Public	Akin Ln westerly end										Multiple Owners											Reconstruct									
23	R	1.17		25		Residental				401	26-05-24						Del Rio LLC																				
24	L	1.19		20	Paved	Residental				2300	26-05-23A						Lindell											Reconstruct									
Proposed NEW Alignment of Douglas County Del Rio Road																																				
	R		44+20		Paved	Commerical				600-800	26-05-24						DC Lumber											Construct									
	L		44+20		Paved	Commerical				600-800	26-05-24						DC Lumber											Construct									
	L		30+00		Paved	Residental				100	26-05-24C						DC Lumber											Construct									
Old Highway 99 Douglas County Road 388 Formerly Oakland Shady Highway (234)																																				
12	R	11.59	2248+50	300	Paved	Public				200, 202, 300, 400	26-05-24D						Douglas County											Reconstruct									
11	L	11.65	2251+60	25	paved	Residental				100	26-05-24D						Jackson Ranch											Reconstruct									
10	L	11.67	2252+53.76	15	paved	Residental				100	26-05-24D						Jackson Ranch											remove									
9	L	11.73	2250+90.50	60	Paved	Public	College Road										Douglas County											Reconstruct									
8	L	11.77	2257+80	40	paved	Residental				500	26-05-24D						Sepulvado	L	Reservation	No Permit		2257+80						Remove									
7	R	11.81	2260+00	70	Paved	Public	I-5 Ramps										ODOT											Remove									
6	L	11.92	2265+80	50	gravel	Commerical				600	26-05-25						Beckley		35121	1/21/1993	11.937	2264+75	28	paved	Motel/gas	Beckley		Remove									
5	R	11.95	2267+40.28	70	Paved	Public	Del Rio Road										Douglas County											Remove									
4	L	11.96	2268+25	40	gravel	Commerical				101,10 2, 500							Beckley	L	NO Permit									Remove									
3	L	11.97	2268+75	30	gravel	Commerical				101,10 2, 500							Beckley	L	NO Permit									Remove									
2	L	12.01	2270+60	30	gravel	Commerical				101,10 2, 500	26-05-25						Beckley	L	35122	1/21/1993	12.047	2270+60	28	paved	Rest/condo	Beckley		Remove									
1		12.05		140	paved	Commerical				500	26-05-25						Beckley	L	Reservation			2290+75	30				os 2272+20									
						Commerical				500	26-05-25						Beckley	L	Reservation			2291+20	30				os 2272+75									
Proposed New Interchange Jug Handle Connections																																				
																	Beck/Sepulvado											Construct		55+50						
																	Jackson Ranch											Construct		11+00						
																	Douglas County											Construct		9+20						
Umpqua College Road from Old Highway 99 to east																																				
25	R	0.13		50	paved	Residential	141 Umpqua College Rd.			701, 703, 800	26-05-24D						Vargas-Bozo																				
26	R	0.39		100	paved	Public	Waterback Ln.																														

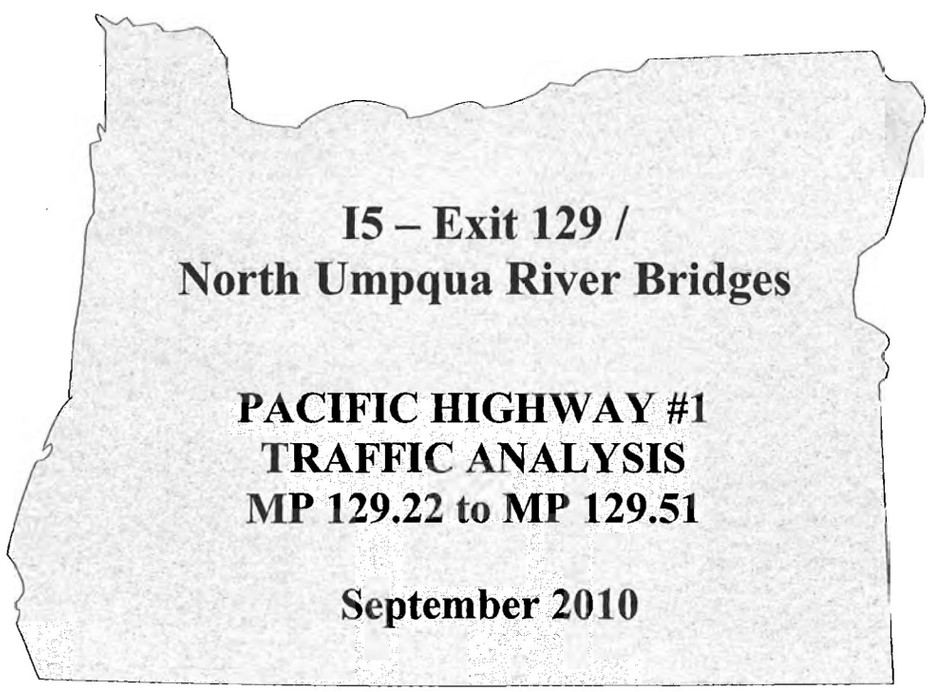
REGION MANAGER'S APPROVAL: DATE:
*Only needed if Project Recognizing an approach

DISTICT MANAGER'S APPROVAL: DATE:

AREA MANAGER'S APPROVAL: DATE:

APPENDIX E: FUTURE TRANSPORTATION ANALYSIS

Oregon Department of Transportation



I5 – Exit 129 / North Umpqua River Bridges

PACIFIC HIGHWAY #1 TRAFFIC ANALYSIS MP 129.22 to MP 129.51

September 2010

Transportation Planning Analysis Unit
Transportation Development Division, Salem, Oregon

I5 – Exit 129 / North Umpqua River Bridges

PACIFIC HIGHWAY #1
TRAFFIC ANALYSIS
MP 129.22 to MP 129.51

Oregon Department of Transportation
Transportation Development Division
Planning Section
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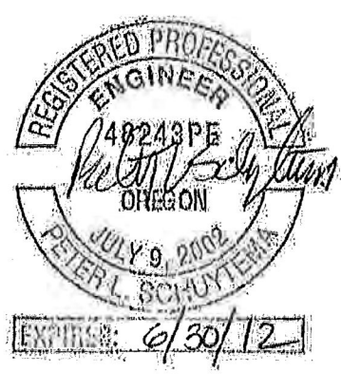


TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

EXECUTIVE SUMMARY

The Interstate 5 (I5) Exit 129 / North Umpqua River Bridges Project was originated to address replacement and realignment of the Del Rio Road crossing at the Exit 129 interchange as part of an interchange modification project. The I5 Exit 129 / North Umpqua River Bridges project is located on Pacific Highway No. 1 (I5) between mile points 129.22 and 129.51; approximately 2.5 miles north of the Roseburg city limits (see Figure 1).

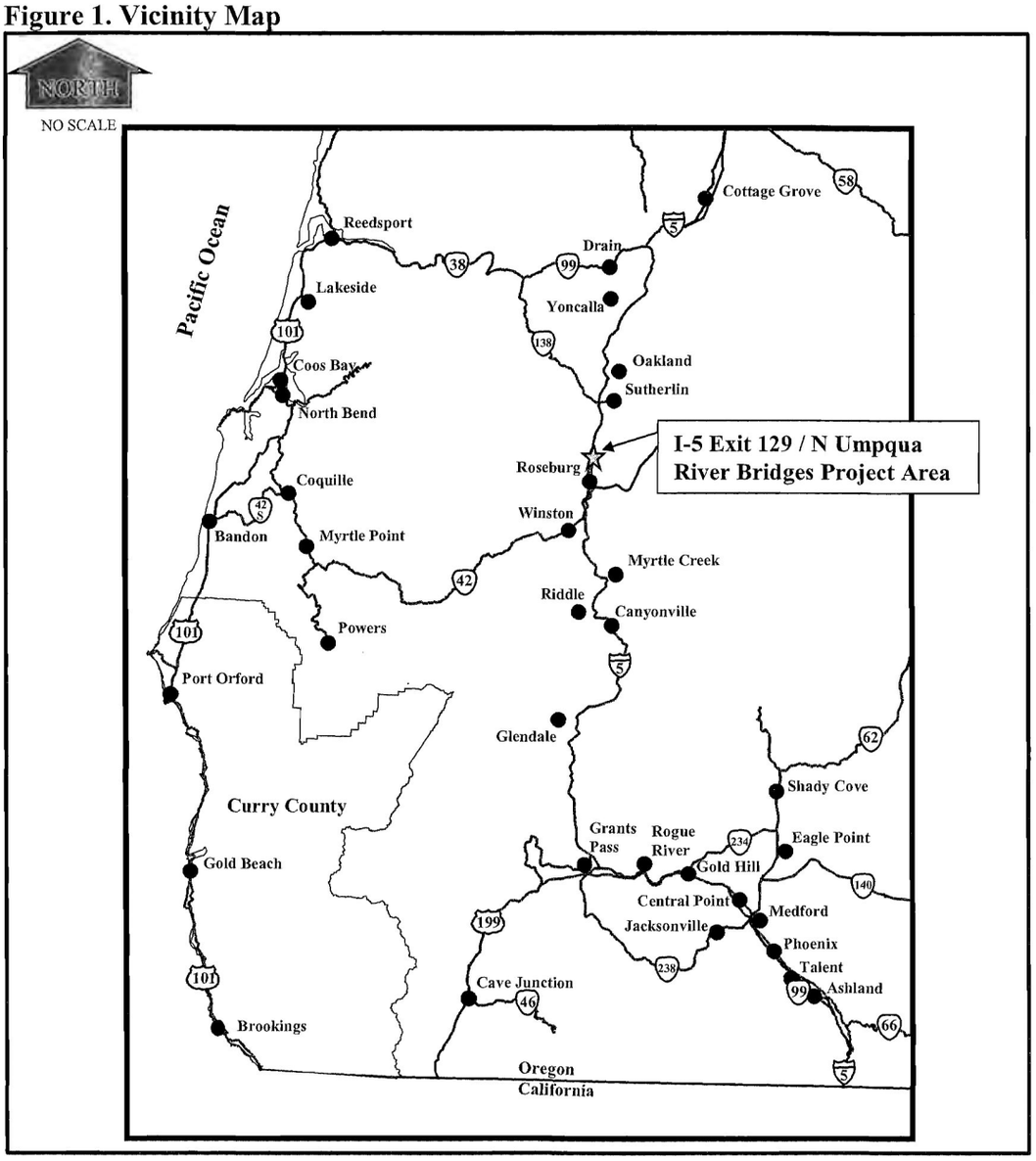
The project purpose is to improve structural and geometric conditions for the interchange. The existing Del Rio over-crossing structure has structural shear cracking and does not align with the interchange ramps creating deficient ramp geometry and an additional intersection on Old Highway 99 between Del Rio Road and Umpqua College Road. Also, the configuration does not meet ramp terminal spacing standards and will not meet Oregon Highway Plan (OHP) standards through the year 2027. During the project development process, steps were taken to increase the capacity of the interchange and surrounding local networks as much as budgetary constraints would allow.

Region 3 has selected the "Gull-Wing Hybrid" Alternative as the preferred build alternative. This alternative provides additional capacity, left and right turn storage and improves access spacing between the I5 north and south ramp terminals and access along Old Highway 99 and Del Rio Road. While the "Gull-Wing" layout does not meet the ramp terminal spacing standards for the I5 south ramp terminal, it is a significant improvement from the current layout. The Gull-Wing Hybrid will meet Highway Design Manual (HDM) and Douglas County volume to capacity (v/c) design standards beyond the future year 2027 for all intersections in the study area if no new development occurs.

The proposed alternative will realign Del Rio Road beginning approximately one mile west of I5 and will cross I5 approximately 1280 feet north of the existing structure where it will connect directly to Umpqua College Road. The I5 northbound ramp terminal will be moved north of the Douglas County Shops and Fire District #2 station and will be reconstructed in the same gull-wing layout as the existing ramps. The southbound ramps will intersect the new Del Rio Road just west of I5 using a partial cloverleaf layout. Old Highway 99 will be realigned to best fit the new intersections with Del Rio Road and the I5 northbound ramp terminal and to line up more suitably at the approach to the old Winchester Bridge.

The potential for development and traffic growth is a concern for the project area. Spacing limitations and traffic flow patterns make the configuration sensitive to large development. Because it is likely that some development will occur in the study area during the 20-year design life, it is recommended that construction of the interchange be phased in over several periods. The first phase should include construction of the Build lane configuration and purchase of additional right-of-way (ROW) in the analysis area to ensure that if development occurs, the second phase (Sensitivity Analysis mitigation) can be constructed as needed.

Figure 1. Vicinity Map



BACKGROUND INFORMATION

The I5 Exit 129 / North Umpqua River Bridges project is located on Pacific Highway No. 1 (I5); approximately 2.5 miles north of Roseburg city limits. The original intent of this project was to replace the I5 Exit 129 interchange and restore the pre-existing roadway connections. It did not include increasing capacity through the interchange however during the project development process, steps were taken to increase the capacity of the interchange and surround local networks as much as budgetary constraints would allow.

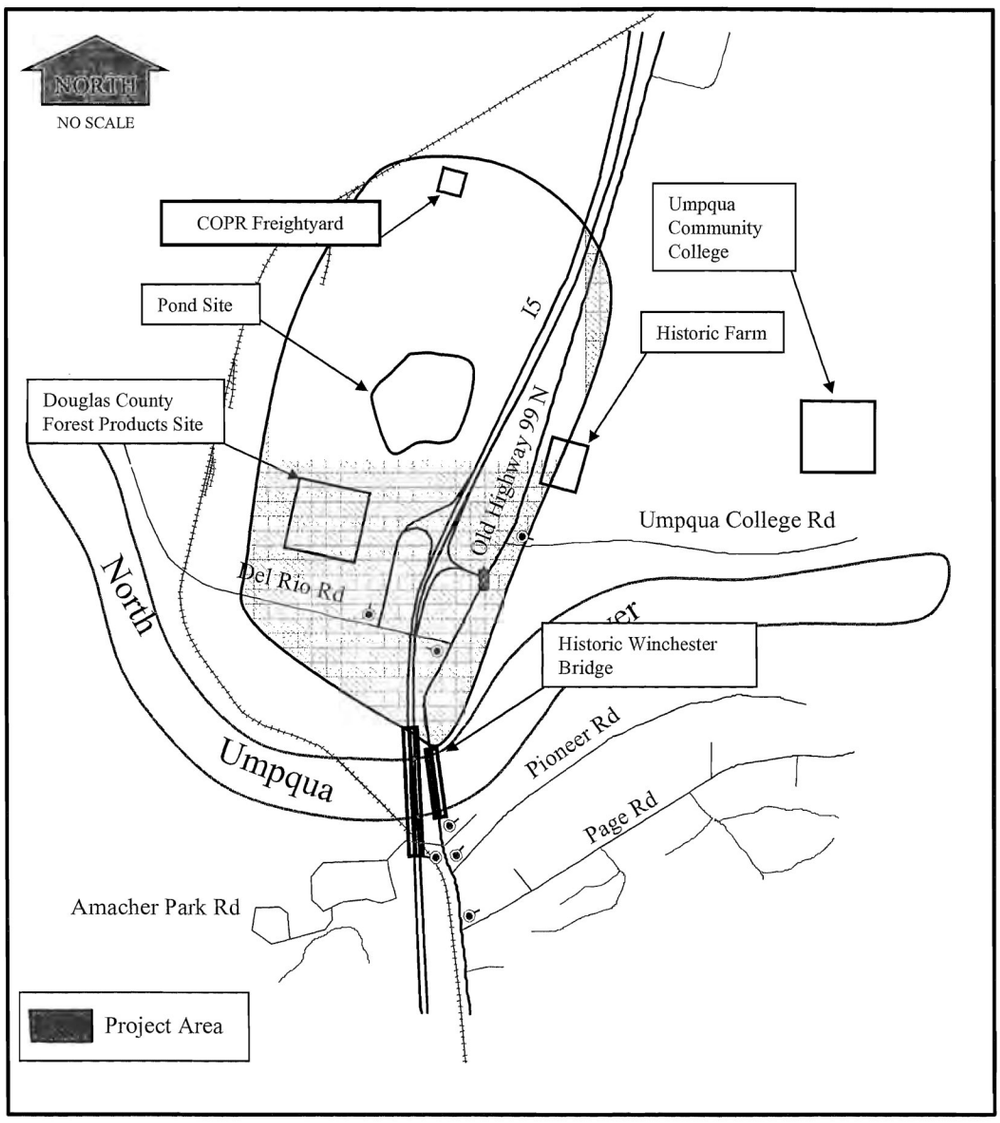
The project area is constrained by the North Umpqua River to the east, the Douglas County Forest Products Mill to the west, historic farm property to the north and the historic Winchester Bridge to the south. Pacific Highway No. 1 (I5) splits the project area in the east and west direction. The Wilbur Weigh Station, currently located approximately 0.30 miles north of the existing I5 south off ramp, will be moved south of Roseburg before the start of this project.

Impacts from the background traffic, the new Central Oregon & Pacific Railroad Switching Yard (COPR) and the new Costco store are included in the No-build and Build analysis. The railyard facility is currently relocating north of the Douglas County Forest Products Mill between I5 and the south off ramp and a Costco store has been approved and will be located a couple miles to the south of the interchange on Old Highway 99.

The project area for the build analysis is limited to the Exit 129 interchange and the immediate influence area. This includes Old Highway 99 from north of Umpqua College Road to south of Del Rio Road and Del Rio Road from the I5 south ramp terminals east to Old Highway 99 (see Figure 32).

The potential for development in the interchange area is a new concern. The mill pond (Pond Site) north of the Douglas County Forest Products and the surplus property to the south of the proposed interchange on Old Highway 99 are both potential development sites that may experience levels of development during the 20 year design period that adversely effects future traffic operations on the Build alternative. Impacts from the Pond Site and the surplus property to the Build alternative are included in Appendix D, Sensitivity Analysis.

Figure 2. Project Area



Pacific Highway No. 1 (I5) is a four-lane National Highway System (NHS) Interstate freight route with two lanes in both the north and south direction. The speed adjacent to the study area is 65 miles per hour. Old Highway 99 is a two-lane arterial that runs north and south through the project area. The posted speed through the study area varies between 30 and 45 miles per hour. Left turn lanes, on Old Highway 99, are provided at the intersections with Del Rio Road, the I5 north ramp terminal and Umpqua College Road. Old Highway 99 is signalized at the I5 north ramp terminal intersection and stop-controlled at all other intersections.

Del Rio Road is a two-lane rural major collector that runs east and west through the project area. The posted speed through the study area is 55 miles per hour and a left turn lane is provided at the intersection with Old Highway 99. Umpqua College Road is a two-lane rural major collector running east and west and has a posted speed of 35 miles per hour. A left turn lane is provided on Umpqua College Road at the intersection with Old Highway 99.

Performance Measures

Table 1 provides a summary of the OHP and HDM v/c standards for the No-Build and Build analysis. OHP and HDM standards are defined for inside and outside of the urban growth boundary (UGB). While the location of the proposed Gull-Wing Hybrid northbound ramp terminal, with respect to the UGB, is not clearly defined, the analysis is based on the assumption that the intent is to be included inside the UGB. Table 2 provides a summary of the Douglas County standards which are defined by functional class.

Table 1. OHP and HDM Analysis V/C Standards and Guidelines

Standard	Diverge / Merge Points (I5 Mainline)		Ramp Terminals		District / Local Interest Roads		
					In UGB		Out of UGB
	In UGB	Out of UGB	In UGB	Out of UGB	Speed > 35 (mph)	Speed >= 45 (mph)	
No-Build (OHP)	0.70	0.70	0.80[1]	0.80[1]	0.85	0.80	0.75
Build (HDM)	0.65	0.60	0.70[2]	0.60	0.80	n/a	0.70

[1] The maximum volume to capacity ratio for the ramp terminals of interchange ramps shall be the smaller of values of the volume to capacity ratio for the crossroad or 0.85. Both Old Highway 99 and Del Rio Road are classified as Rural Arterials

[2] The location of the proposed Gull-Wing Hybrid I5 northbound ramp terminal with respect to the current UGB is not clearly defined this analysis is based on the assumption that the intent is to be included inside the UGB.

Table 2. Douglas County Analysis V/C Standards[1]

	Principal Highway	Arterial	Major Collector	Minor Collector	Necessary Local Roads
Douglas County (Urban)	0.70	0.85	0.90	0.95	0.95
Douglas County (Rural)	0.70	0.80	0.85	0.90	0.90

[1] Standard from Douglas County TSP

NO-BUILD ALTERNATIVE

Exit 129 is currently a gull-wing configuration with single-lane on and off-ramps. The speed on the on- and off-ramps is 25 miles per hour. The northbound ramp terminal is signalized with a driveway access approximately 200 feet to the north and 700 feet to the south of the intersection. The southbound ramp terminal is stop-controlled, with an entrance to the Douglas County Forest Products site approximately 250 feet to the west and the Del Rio Rd / Old Highway 99 intersection approximately 650 feet to the east. The I5 southbound ramps experience heavy truck traffic entering and exiting from I5 because of the adjacent Douglas County Forest Products Mill.

The study area covers I5 Exit 129 and Old Highway 99 from Umpqua College Road south to Umpqua River and Del Rio Road from the I5 south ramp terminals east to Old Highway 99. Within the study area, I5 and the interchange ramp terminals are under the jurisdiction of ODOT and all other roadways are currently under the jurisdiction of Douglas County.

During the course of the analysis there have been several changes to the land use influencing the interchange. A Costco store has been approved on Old Highway 99 a few miles south of the interchange. The COPR freight yard will be relocated north of the Douglas County Forest Products Mill, Traffic impacts for the rail facility and Costco are included in the No-Build volumes.

No-Build Crash Analysis Summary

A detailed crash analysis is available in Appendix A. The crash analysis for the study area is broken into two parts: I5 and the interchange and Old Highway 99. Ramps are included in the I5 and interchange analysis. The crash analysis for I5 and the interchange covers I5 from MP 128.75 to MP 130.00 and includes all crashes for the years 2001 – 2005.

There were 45 crashes in the 1.25 miles of I5 and the interchange area during this period. There was one fatal crash (2001) in the five year study period. Using an average daily traffic volume of 33,000, this portion of I5 has a crash rate of 0.60 crashes per million-vehicle miles. This is above the five-year average of comparable rates for suburban area interstate freeways (0.44); however, this section of I5 has no Safety Priority Index System (SPIS) sites in the top 10% for the state. Table 3 is a summary of all crashes for I5 and the interchange area between MP 128.75 and MP 130.00 for the years 2001 - 2005.

Table 3. 2001-2005 I5 & Interchange Area Crash Summary (I5, MP 128.75-130.00) [1]

Year	Fatal Crashes	Injury Crashes	Property Damage Only Crashes	Total
2001	1	1	2	4
2002	0	4	2	6
2003	0	7	7	14
2004	0	6	2	8
2005	0	7	6	13
Total	1	25	19	45

[1] Crash statistics for years 2001 to 2005 (I5 and interchange area) provided by ODOT Crash Analysis and Reporting Unit

Turning movements and fixed object / other crashes accounted for 33 percent of the total crashes. Eighty percent of the turning movement related crashes occurred at the I5 south ramp terminal / Del Rio Road intersection (MP 129.29) and are caused by left turning vehicles (from Del Rio Road) onto the southbound ramp. This is likely because of the lack of gaps in Del Rio Road traffic for vehicles turning onto the southbound ramps. Fifty-four percent of the fixed object / other crashes were cited for speed too fast for conditions indicating that weather conditions likely contributed to the crash.

The crash analysis for local roads covers Old Highway 99 from MP 11.77 to MP 12.48 and includes all crashes for the years 2001 – 2005. A crash type summary for local roads is listed in Table 4. There were 45 crashes on Old Highway 99 between 2001 and 2005. The majority of crashes (64 percent) involved intersection turning movements followed by rear end crashes (18 percent). Seventy one percent of turning movement related crashes occurred at the intersection of Old Highway 99 and Del Rio Road. This is because of the lack of gaps in traffic for left hand turns at this intersection.

Table 4. 2001-2005 Local Roads Crash Summary[1]

Year	Fatal Crashes	Injury Crashes	Property Damage Only Crashes	Total
2001	0	5	8	13
2002	0	2	11	13
2003	0	2	2	4
2004	0	5	3	8
2005	0	5	2	7
Total	0	19	26	45

[1] Crash statistics for years 2001 to 2005 (Local Roads) provided by ODOT Crash Analysis and Reporting Unit

Traffic Development

The No-Build Volumes were developed for 2003, 2007 and 2027 using traffic counts, historic growth rates, Roseburg Automatic Traffic Recorder (ATR) 10-005, ITE Trip Generation Seventh Edition and the Roseburg Travel Demand Model. Seven 14–hour (6:00 A.M-8:00 P.M.) manual counts were conducted at major intersections May 14th and November 3rd to 4th, 2003 which include 15-minute interval turn movement data and full federal truck classification breakdowns (see Appendix B: Traffic Development).

Historic growth rates and the Roseburg ATR (10-005), located on I5 approximately one half mile north of the project, was used to seasonally factor the 30th highest hour traffic flows for the freeway. Traffic volumes for potential development sites and local roads in the project area were developed from traffic counts and the analysis of base and future Roseburg Travel Demand Models. From the manual counts, the study area peak hour was found to be from 3:00 pm to 4:00 pm.

No-Build Intersection Spacing

Access points introduce a number of potential vehicular conflicts on a roadway and are frequently the cause of slowing or stopping vehicles that can significantly degrade the flow of traffic and reduce the efficiency of the transportation system. The 1999 Oregon Highway Plan (OHP), as directed by Oregon Administrative Rule (OAR) Chapter 734, Division 51, has set spacing standards for freeway interchanges with two-lane crossroads. For rural and suburban statewide highways, the ramp terminal spacing standard for freeway interchanges with two-lane crossroads is 1320 feet (1/4 mi) for both right in / right out and full access intersections. Table 5 summarizes the current intersection spacing. Currently no interchange intersections meet the OHP spacing standards.

Table 5. No-Build Intersection Spacing Results[1]

From	To	Distance (Feet)	Within Standard
I5 north ramp terminal	North of the ramps	200	No
I5 north ramp terminal	South of the ramps	700	No
I5 south ramp terminal	Old Highway 99	650	No
I5 south ramp terminal	Douglas County Forest Products Mill	250	No

[1] Black shading indicates intersections do not meet spacing standards

Common No-Build Freeway Analysis

Table 6 shows the merge/diverge v/c's for both directions of I5 at the Exit 129 interchange and the freeway mainline v/c in each direction of I5. All merge / diverge areas as well as the I5 mainline in the northbound and southbound directions meet OHP v/c's for 2003 and 2007. By 2027, all merge / diverge areas as well as the I5 mainline will exceed the standard.

Table 6. No-Build Freeway Merge/Diverge Segment Analysis V/C Results[1]

Location	2003 V/C	2007 V/C	2027 V/C	Year OHP V/C exceeded
I5 NB diverge	0.53	0.57	0.87	2015
I5 NB merge	0.46	0.50	0.71	2026
I5 SB diverge	0.47	0.51	0.71	2026
I5 SB merge	0.44	0.48	0.79	2021
Directions	**2003 V/C**	**2007 V/C**	**2027 V/C**	**Year OHP V/C exceeded**
I5 NB (South of Interchange)	0.52	0.57	0.86	2016
I5 NB (North of Interchange)	0.48	0.52	0.74	2024
I5 SB (South of Interchange)	0.54	0.59	0.83	2017
I5 SB (North of Interchange)	0.46	0.50	0.70	2027

[1] Black shaded cells indicate that the OHP standard is exceeded.

2003 Intersection Analysis Results

The 2003 conditions were evaluated to determine the operation of the existing transportation system. Figure 3 shows the existing volume and lane configuration for the base year 2003.

All of the unsignalized intersections in the existing study area were reviewed to determine if they met the average daily traffic based Preliminary Signal Warrants (PSW). The PSW's are based on Signal Warrant 1, Case A and Case B (MUTCD), which deal primarily with high volumes on the intersecting minor street and high volumes on the major-street. Meeting PSW's does not guarantee that a signal will be installed. Before a signal can be installed a field warrant analysis is conducted by the Region. If warrants are

met, the State Traffic Engineer will make the final decision on the installation of a signal. None of the unsignalized intersections within the study area meet PSW's for 2003.

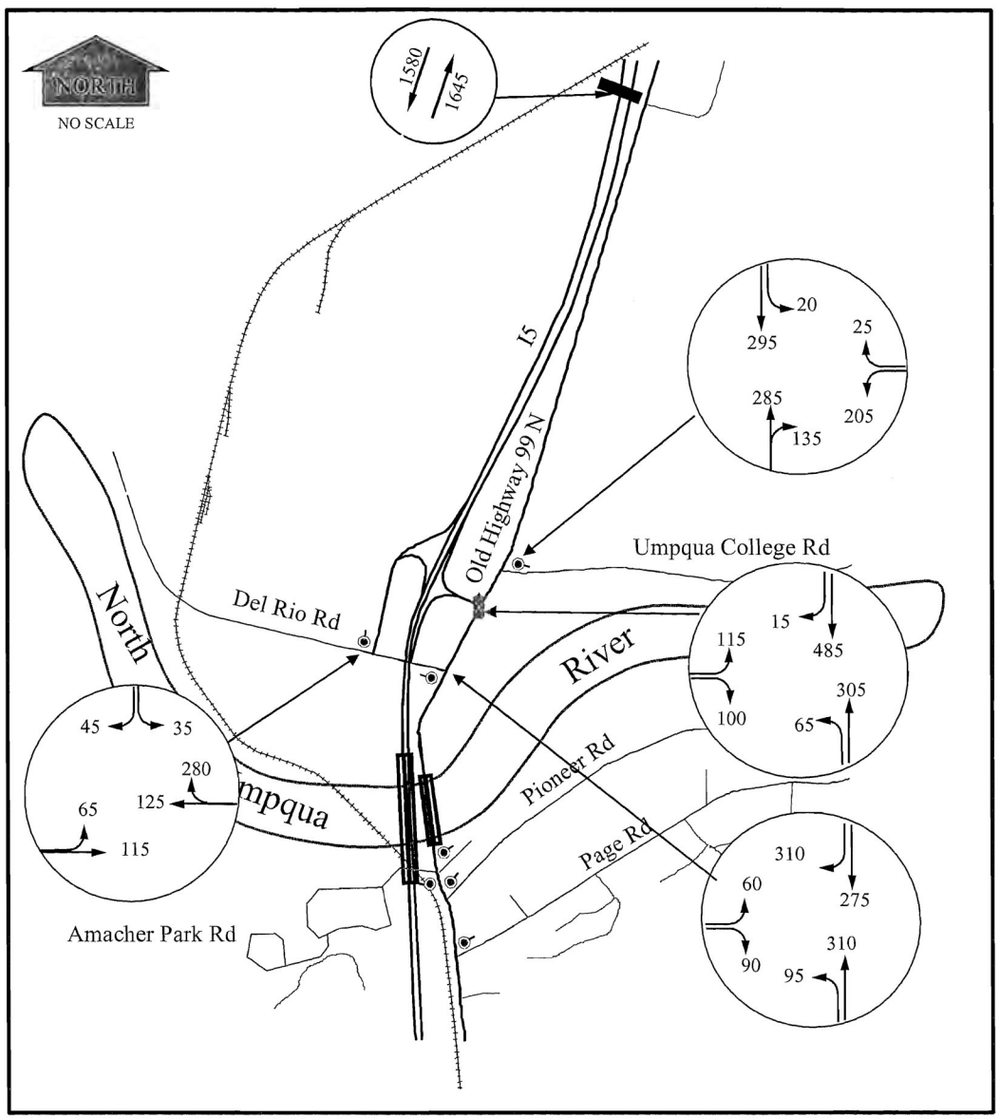
Table 7 summarizes the v/c's for the 2003 No-Build Alternative. All intersections operate below the OHP standard for the year 2003.

Table 7. 2003 No-Build V/C Results

Signalized Intersection		**V/C[1]**	**OHP V/C Standard**
Old Highway 99 & I5 NB Ramp Terminal		0.57	0.80
Unsignalized Intersection	**Controlling Movement**	**V/C[2]**	**OHP V/C Standard**
Del Rio Rd & I5 SB Ramp Terminal	SB Left	0.28	0.80
Umpqua College Rd & Old Highway 99	WB Left	0.59	0.80
Del Rio Rd & Old Highway 99	EB Left	0.26	0.80

[1] V/C for signalized intersection.
[2] V/C for stop-controlled highest movement.

Figure 3. 2003 No-Build 30th Highest Hour Volumes



2003 No-Build Queuing

Queuing is the lining up of vehicles waiting to make their movement, and is very important when considering the operation of a transportation facility. If too many vehicles are in the queue, or stopped at an intersection, they could "back-up" through left-turn refuges or adjacent intersections and adversely affect the operation of the adjacent intersection. Queuing was determined using the mircro-simulation tool, SimTraffic. When an intersection experiences blockage on a leg by more than five percent in the peak hour, it can have a significant effect on an intersection's operation as well as upstream and downstream intersections.

Table 8 shows the queue length for the unsignalized Old Highway 99/Umpqua College Road intersection in the study area for the year 2003. During peak hour travel periods, the westbound queue length exceeds the existing storage at the Old Highway 99/Umpqua College Road intersection and blocks the right turn storage 10 percent of the time in the peak hour.

Table 8. 2003 No-Build Queuing Results

Locations	Movements	2003 95th Queue Length[1] (feet)	Blocked Movement	Percent Time Blocked[2] (%)
Umpqua College Rd & Old Highway 99	WB left	175	WB right	10

[1] Black shaded cell indicates that available storage has been exceeded

[2] Percent time blocked is the proportion of time in the peak hour that a queue exceeds the storage available and /or blocks adjacent storage bays or intersections.

Future No-Build Conditions Analysis Results

The background volumes for 2007 and 2027 were analyzed to determine if any additional unsignalized intersections will meet PSWs. Figure 4 and Figure 5 show both the No-Build volume and lane configuration for 2007 and 2027. Table 9 is a summary of the results of the preliminary signal warrant analysis. For non-state highway intersections, the local jurisdiction will determine if traffic signals are warranted on their system.

Preliminary signal warrants for the I5 southbound ramp terminal intersection was analyzed by including all right turns for the minor street in the year that the stop-controlled v/c exceeded 1.0. When the v/c exceeds 1.0 the intersection is at capacity and failure results in traffic delays and queues that are unstable and could be excessively long in the peak hour. When delays are long, drivers are willing to accept smaller gaps and larger safety risk to make the turn movement. A signal investigation should be conducted at this location when it is near capacity.

Both of the intersections of Del Rio Road and Umpqua College Road with Old Highway 99 will meet PSWs beginning in 2014. The I5 southbound ramp terminal intersection will not meet PSW's.

Table 9. Future No-Build Preliminary Signal Warrants Summary

Location	2007[2]	2027 [1,2]	Met
Del Rio Rd & I5 SB Ramp Terminal	No	No	No
Del Rio Rd & Old Highway 99	No	Yes	2021
Umpqua College Rd & Old Highway 99	No	Yes	2014

[1] Black shaded cell's indicate preliminary signal warrants have been met.
[2] Meeting preliminary signal warrants does not guarantee that a signal will be installed. Before a signal can be installed, a traffic investigation must be conducted or reviewed by the Region Traffic Manager. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

Figure 4. 2007 No-Build 30th Highest Hour Volumes

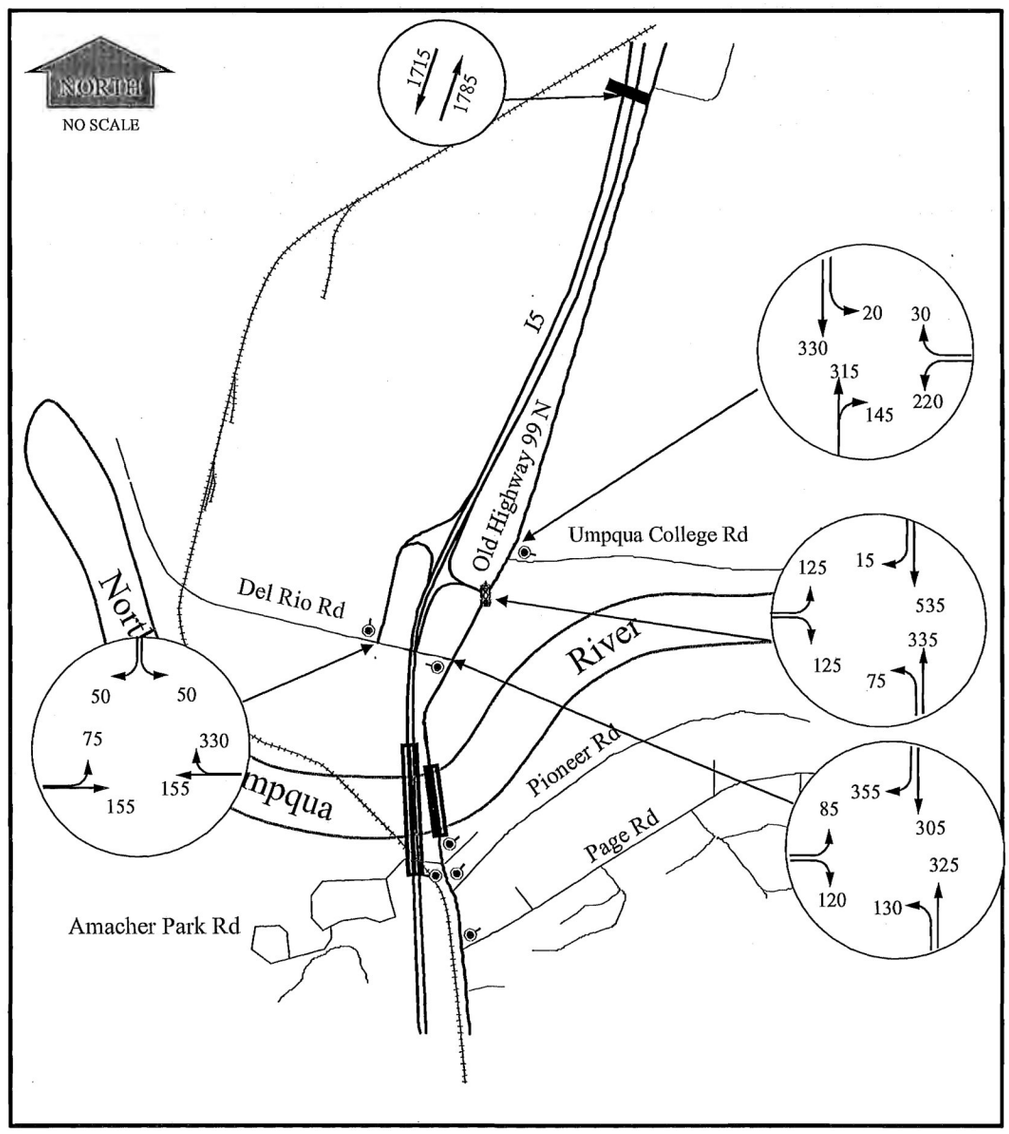
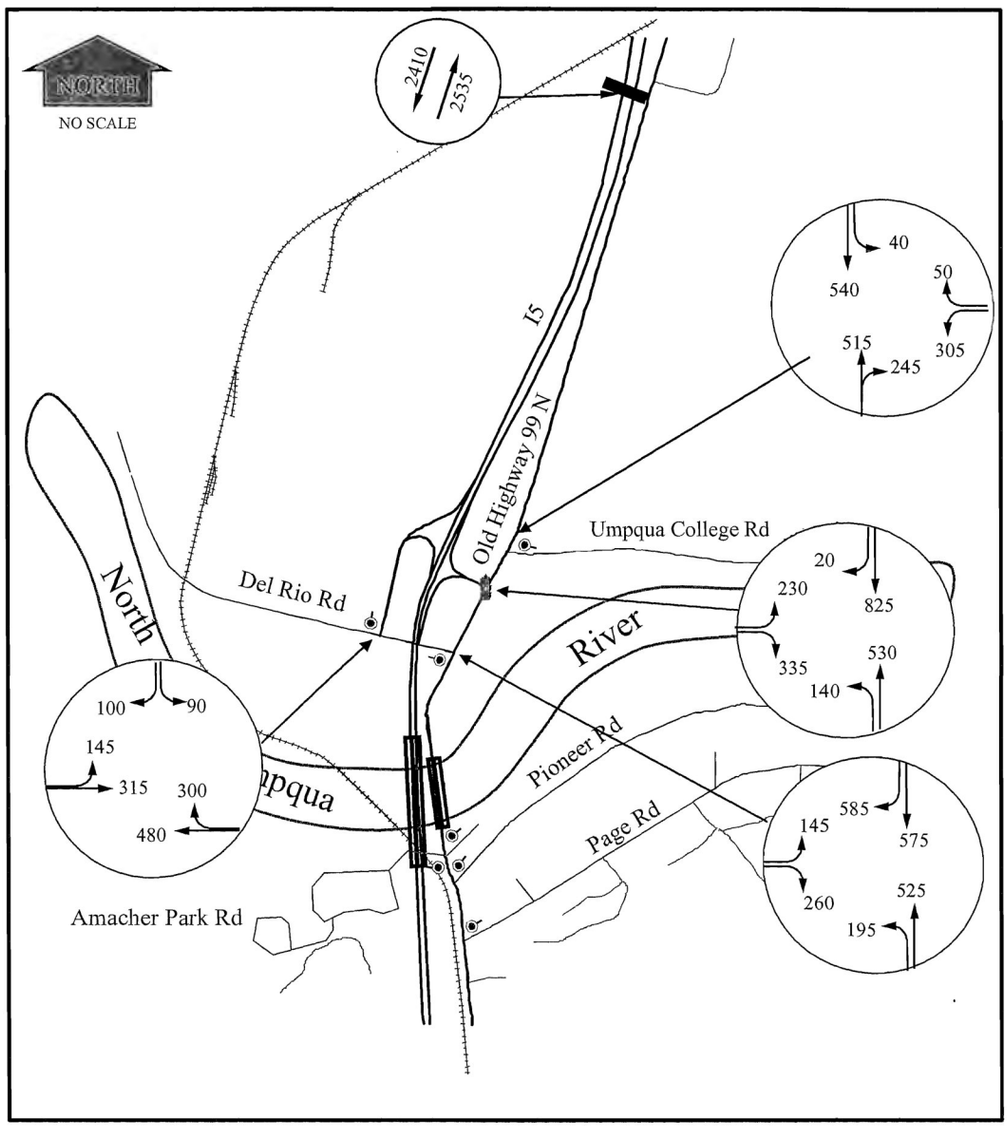


Figure 5. 2027 No-Build 30th Highest Hour Volumes



No-Build Year 2007

Table 10 summarizes the 2007 v/c's for the 2007 No-Build Alternative. Both ramp terminals operate within the OHP mobility standards for the year 2007 and all of the county intersections meet Douglas County mobility standards for 2007.

Table 10. 2007 No-Build V/C Results

Signalized Intersection		V/C[1]	OHP V/C Standard
Old Highway 99 & I5 NB Ramp Terminal		0.63	0.85
Unsignalized Intersection	**Critical Movement**	**V/C[2]**	**OHP V/C Standard**
Del Rio Rd & I5 SB Ramp Terminal	SB Left	0.33	0.80
Umpqua College Rd & Old Highway 99	WB Left	0.72	0.85
Del Rio Rd & Old Highway 99	EB Left	0.47	0.85

[1] V/C for signalized intersection.
[2] V/C for stop-controlled highest movement.

2007 No-Build Queuing

Queuing results for 2007 are shown in Table 11. In the year 2007, the transportation system will have one location in the study area with significant queuing during the peak hour. During peak hour travel periods, the Umpqua College Road left-turn queue length exceeds the existing storage and blocks the right-turn bay 18 percent of the time at the Umpqua College Road & Old Highway 99 intersection.

Table 11. 2007 No-Build Queuing Results

Locations	Movements	2007 95th Queue Length[1] (feet)	Blocked Movement	Percent Time Blocked[2] (%)
Umpqua College Rd & Old Highway 99	WB left	200	WB right	18

[1] Black shaded cell indicates that available storage has been exceeded
[2] Percent time blocked is the proportion of time in the peak hour that a queue exceeds the storage available and /or blocks adjacent storage bays or intersections.

No-Build Year 2027

Table 12 summarizes the 2027 v/c's for the No-Build Alternative. Four intersections will exceed OHP v/c standards by 2027 with two of the four locations having v/c's greater than 2.0. When the v/c exceeds 1.0, traffic delays and queues are unstable and could be excessively long in the peak hour and v/c's approaching or over 2.0 indicate that there are no available safe gaps in the traffic stream. Vehicles turning onto or off of a facility under these conditions have a higher risk of crashes.

Table 12. 2027 No-Build V/C Results

Signalized Intersection		V/C[1,3]	OHP V/C Standard	OHP Standards Exceeded (year)
Old Highway 99 & I5 NB Ramp Terminal		**0.92**	0.85	2019
Unsignalized Intersection	**Critical Movement**	**V/C[2]**	**OHP V/C Standard**	**OHP Standards Exceeded (year)**
Del Rio Rd & I5 SB Ramp Terminal	SB Left	0.84	0.80	2027
Umpqua College Rd & Old Highway 99	WB Left	**>2.0**	0.85	2009
Del Rio Rd & Old Highway 99	EB Left	**>2.0**	0.85	2010

[1] Black shaded cells indicate OHP v/c standard is exceeded
[2] V/C for signalized intersection.
[3] V/C for stop-controlled highest movement.

2027 No-Build Queuing Analysis

Queuing results for 2027 are shown in Table 13 and Figure 6. By 2027, there will be extreme queuing problems on one or more of the approaches at three of the intersections in the study area. The Del Rio Road & I5 Southbound Ramp Terminal intersection will have queues in excess of ¼ mile long in both the eastbound and southbound directions. At this intersection, the southbound left turns will block the right turn lane 98 percent of the time creating southbound queues that extend beyond the ramps and onto the I5 mainline. Queues extending onto the I5 mainline will create a significant safety problem with a risk for high-speed rear-end crashes. Because there is currently no eastbound left turn storage the left turning vehicles will create queues on Del Rio Road in excess of ¼ mile long that will block the entrance to the Douglas County Forest Products Mill and potentially extend beyond the railroad tracks.

The Umpqua College Road & Old Highway 99 intersection westbound left turns will block the right turn storage 97 percent of the time creating queues on Umpqua College Road in excess of ¼ mile. The Del Rio Road & Old Highway 99 intersection will experience queuing in both the northbound and eastbound direction. In the northbound direction, queues could potentially extend to the Old Winchester Bridge. In the eastbound direction the left turns blocks the right turn storage 91 percent of the time creating queues that will extend back into the Del Rio Road & I5 Southbound Ramp Terminal intersection and contribute to the eastbound queue at the Del Rio Road & I5 Southbound Ramp Terminal intersection as well.

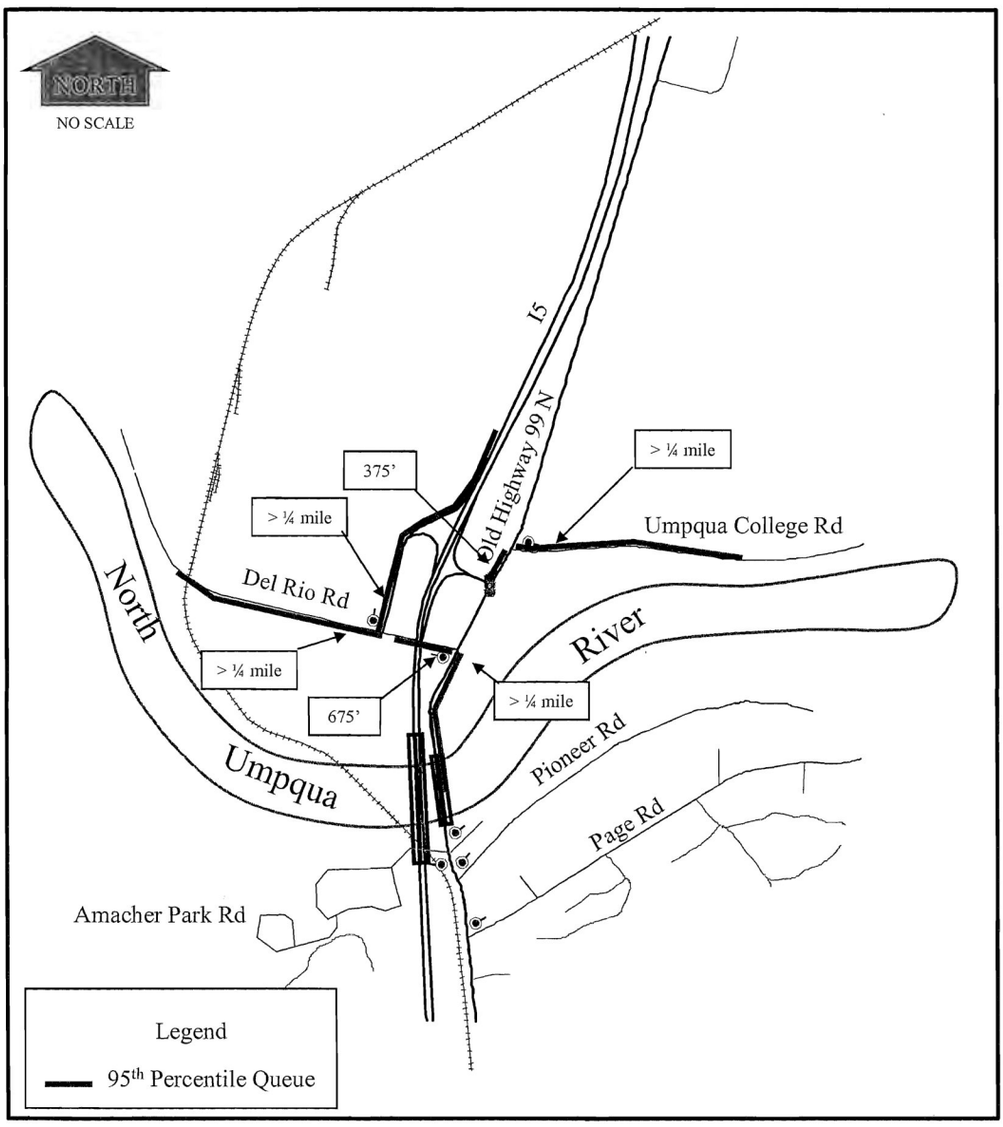
Table 13. 2027 No-Build Queuing Results

Intersection	Movement	2027 95th Queue Length[1] (feet)	Blocked Movement	Percent Time Blocked[2] (%)
Del Rio Road & I5 SB Ramp Terminal	SB left	> ¼ mile	SB right	98
	EB through and left	> ¼ mile	EB left and through	n/a[2]
Umpqua College Road & Old Highway 99	WB left	> ¼ mile	WB right	97
Del Rio Road & Old Highway 99	NB left	**1200**	NB through	6
	EB left	675	EB right	91

[1] Black shaded cell indicates that available storage has been exceeded

[2] Percent time blocked is the proportion of time in the peak hour that a queue exceeds the storage available and /or blocks adjacent storage bays or intersections.

Figure 6. 2027 No-Build 95th Percentile Queue Lengths

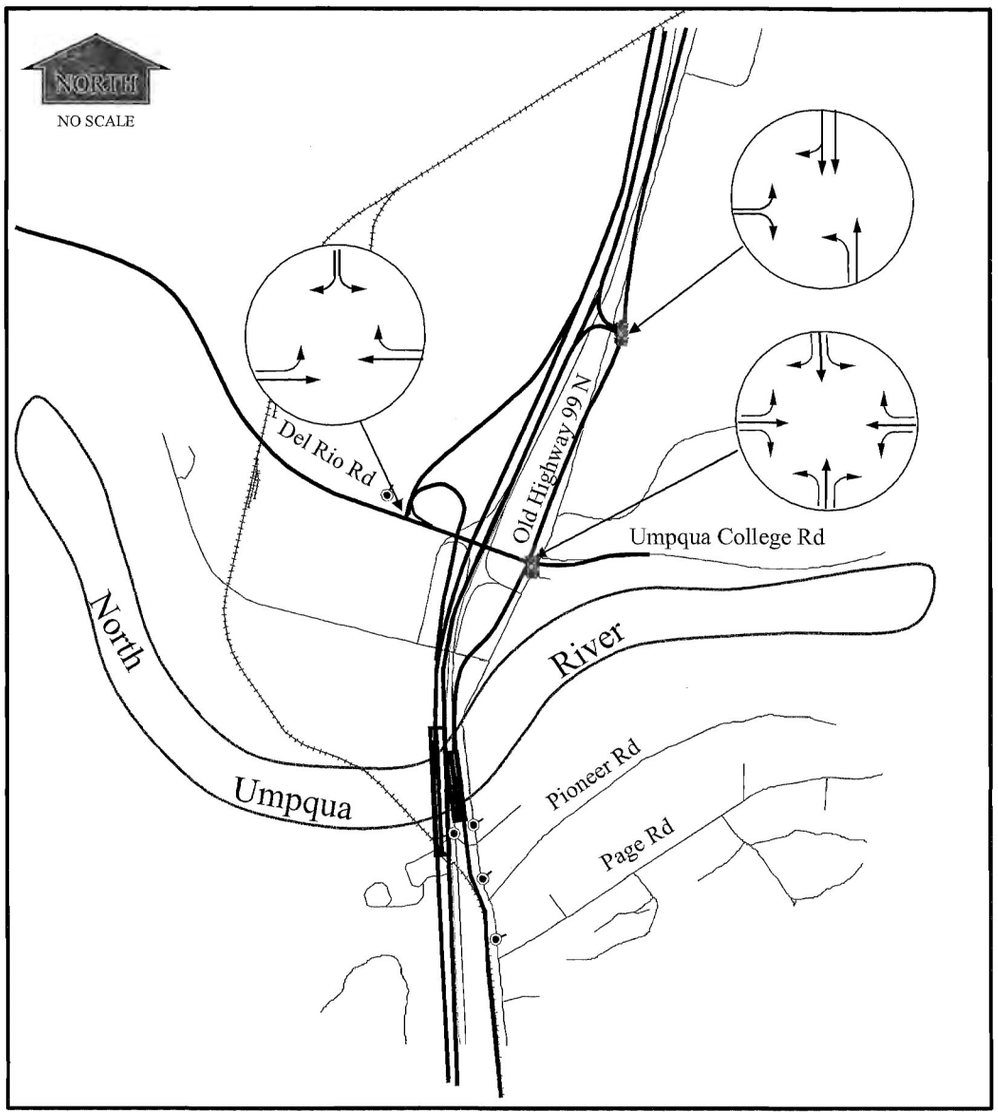


BUILD ALTERNATIVE DESCRIPTION

The Gull-Wing Hybrid Alternative, shown as the Build Alternative, will realign Del Rio Road beginning approximately one mile west of I5 and will cross I5 approximately 1280 feet north of the existing structure where it will connect directly to Umpqua College Road and Old Highway 99. The new intersection will eliminate the current intersection of Del Rio Road and Old Highway 99.

The I5 northbound ramp terminal will be moved north of the Douglas County Shops and Fire District #2 station and will be reconstructed in the same Gull-Wing layout as the existing ramps. The I5 southbound ramp terminal will be moved north to accommodate the realignment of Del Rio Road and will be constructed using a partial cloverleaf layout. Old highway 99 will be realigned to best fit the new intersections with Del Rio Road and the I5 northbound ramp terminal and to line up more suitable at the approach to the old Winchester Bridge (see Figure 7).

Figure 7. Build Layout and Lane Configuration



BUILD ALTERNATIVE RESULTS

Build Alternative Traffic Development

Traffic volume data used for the evaluation of Build Alternative were from 2007 and 2027 background traffic volumes previously calculated for the No-Build Alternative. These volumes were redistributed through the Build Alternative based on the No-Build volume distribution. Volumes were developed from manual traffic counts, ODOT's Permanent Recorder Stations (Roseburg Automatic Recorder ATR 10-005), Transportation Volume Tables and the Roseburg Transportation Demand Model.

Build Alternative Intersection Spacing Analysis

Table 14 summarizes the existing and Build alternative intersection spacing for the I5 north and southbound ramp terminals.

Table 14. Build Alternative Intersection Spacing Results

From	To	Existing Intersection Spacing (Feet)	Proposed Intersection Spacing (feet)	Proposed Intersection Spacing Within Standard? [1]
I5 NB Ramp Terminal	North of the ramps	200	800	No
I5 NB Ramp Terminal	South of the ramps	750	650	No
I5 SB Ramp Terminal	Old Highway 99	650	900	No
I5 SB Ramp Terminal	Douglas County Forest Products Mill	250	850	No

[1] Black shading indicates intersections do not meet spacing standards.

While this alternative does not meet intersection spacing requirements, it is a significant improvement from the current intersection spacing. The spacing is improved in both the east and west directions for the I5 southbound ramp terminal. The spacing is improved to the north direction, but reduced to the south for the I5 northbound ramp terminal. A deviation from the access management spacing standards can be considered when the approaches are consistent with safety factors defined in OAR 734-051-0080 (Section 9).

Build Alternative Freeway Analysis

Table 15 shows the merge/diverge v/c's for both directions of I5 south of the Exit 129 interchange and the freeway mainline v/c in each direction of I5. All merge / diverge areas and I5 mainline in both directions meet OHP v/c's for 2007. By 2027, all merge / diverge areas and the I5 mainline in both directions will exceed the standard.

Table 15. Build Alternative Freeway Merge/Diverge &Segment Results

Location	2007 V/C	2027 V/C[1]	Year OHP V/C exceeded
I5 NB diverge	0.57	**0.87**	2016
I5 NB merge	0.50	**0.70**	2027
I5 SB diverge	0.51	**0.71**	2027
I5 SB merge	0.48	**0.79**	2022
Directions	**2007 V/C**	**2027 V/C**	**Year OHP V/C exceeded**
I5 NB (South of Interchange)	0.57	**0.86**	2016
I5 NB (North of Interchange)	0.52	**0.74**	2024
I5 SB (South of Interchange)	0.59	**0.83**	2017
I5 SB (North of Interchange)	0.50	**0.70**	2027

[1] Black shaded cells indicate that the OHP standard is exceeded

Build Lane Configuration

The combination of the Del Rio Road & Old Highway 99 and the Umpqua College Road & Old Highway 99 intersection creates heavy turning volumes on all approaches; particularly the southbound right-turn movement (see Figure 9 and Figure 10 for 2007 and 2027 peak hour volumes). The southbound right-turn movement is a combination of the heavy eastbound right and southbound through movement at the I5 northbound ramp intersection. Because of the combination of these two movements, a minimum of four lanes (two lanes southbound with left turn storage and one lane northbound with left turn storage) is needed on Old Highway 99 between the I5 northbound ramp & Old Highway 99 intersection and the Del Rio / Umpqua College Road & Old Highway 99 intersection. Table 16 summarizes the storage length by approach for the Build configuration.

While the uneven lane distribution on Old Highway 99 is not typical, there does not seem to be a significant reverse directional flow in either the AM or PM peak hour that would justify an additional lane in the northbound direction. This indicates that in general the majority of traffic is originating from and returning to the south for both the AM and PM peak hour.

Table 16. Build Alternative Lane Configuration Storage Length

Intersection	Storage Length By Approach (ft)[1]							
	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Del Rio / Umpqua College Road & Old Highway 99	250	250	250	250	250	250	250	0
Old Highway 99 & I5 NB Ramp Terminal	0	350	0	0	200	0	0	175
Del Rio Rd & I5 SB Ramp Terminal	300	0	0	350[1]	0	0	0	150[2]

[1] Storage lengths based on 95th percentile queues
[2] Right turn channelization

Figure 8. 2007 Build DHV and Lane Configuration

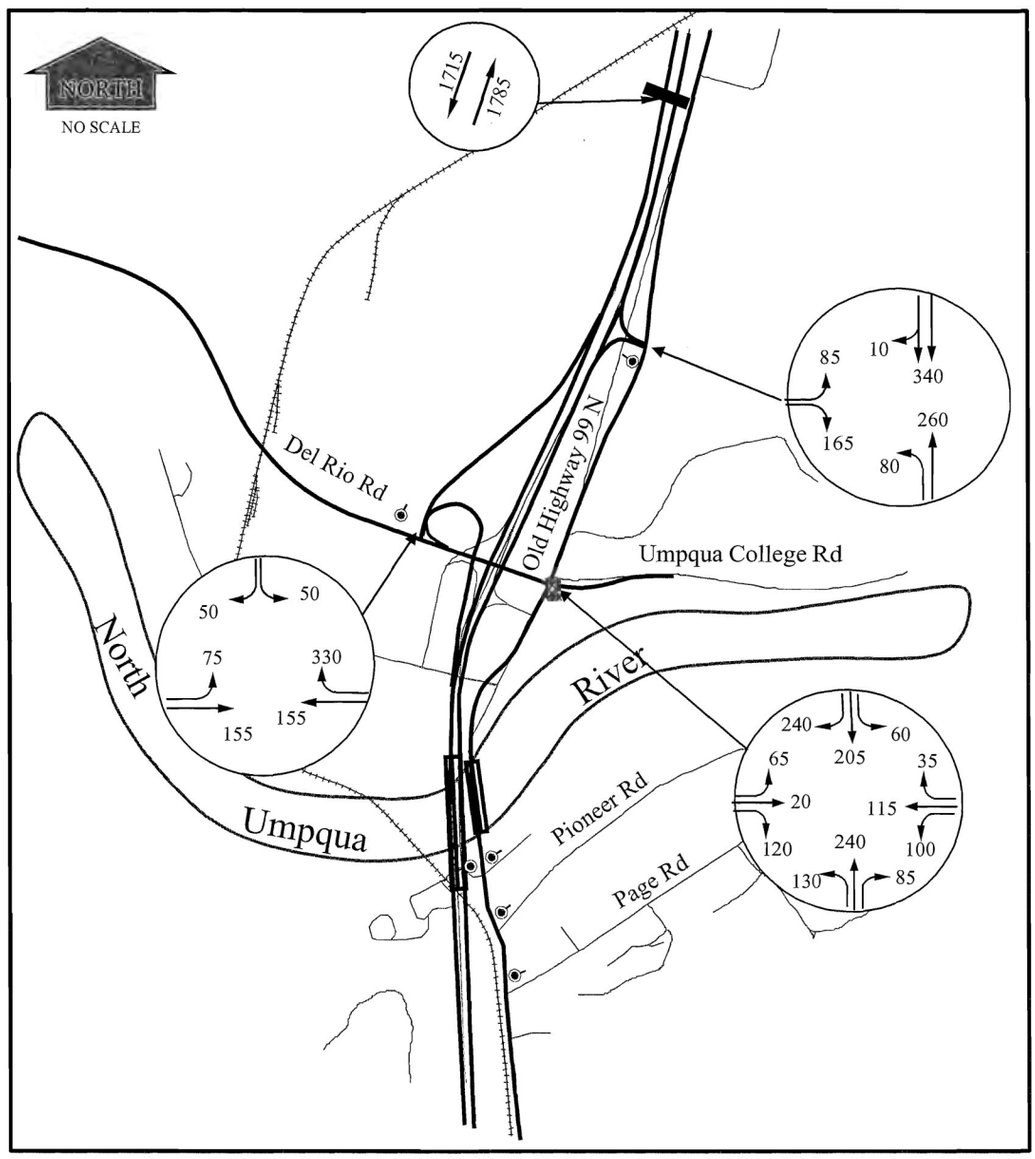
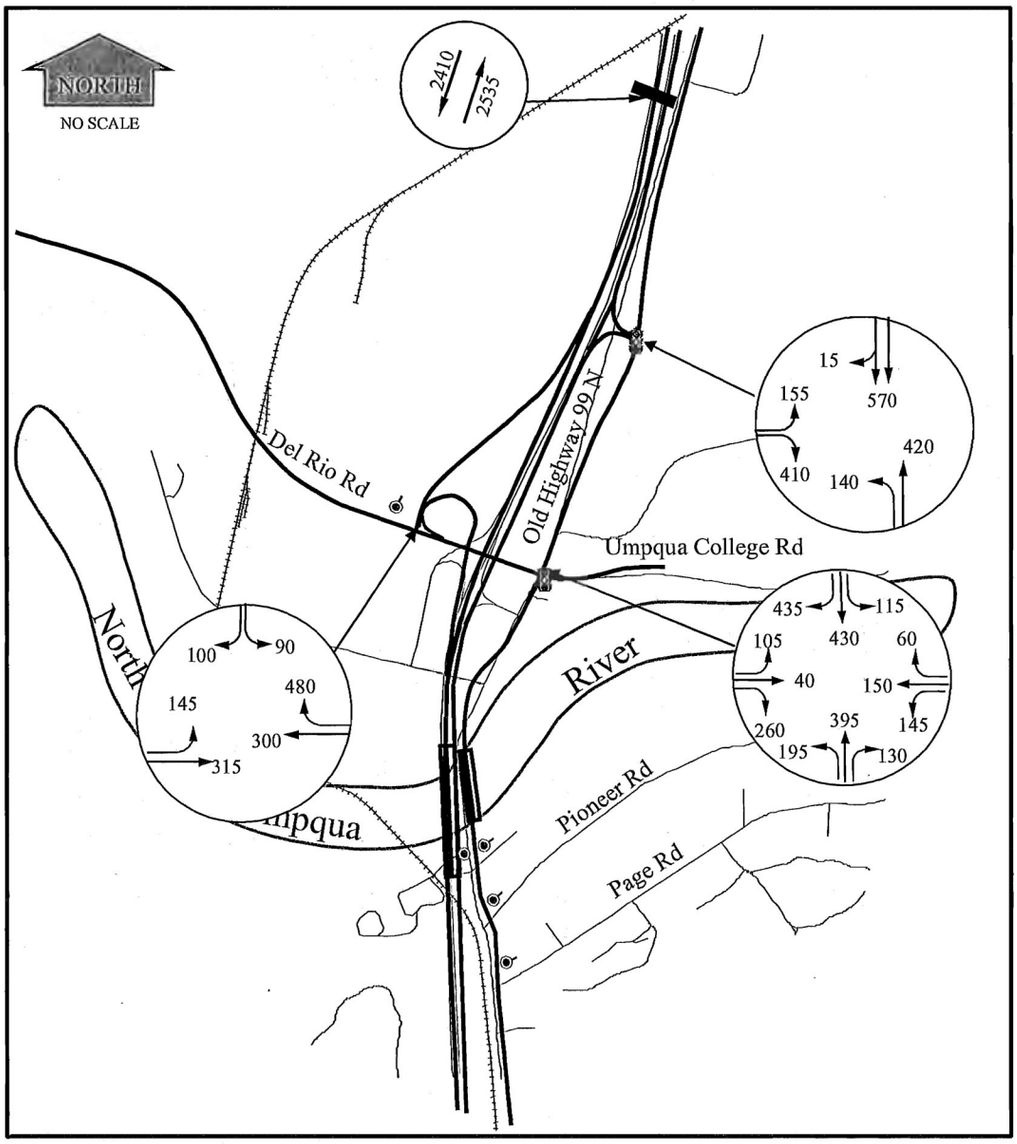


Figure 9. 2027 Build DHV and Lane Configuration



Years 2007 and 2027 were reviewed to determine if any unsignalized intersections will meet roundabout or the average daily traffic based PSWs. No intersections meet design requirements for roundabouts (see appendix E for Roundabout Evaluation). PSW's are based on Signal Warrant 1, Case A and Case B (MUTCD), which deal primarily with high volumes on the intersecting minor street and high volumes on the major-street. Meeting PSW's does not guarantee that a signal will be installed. Before a signal can be installed a field warrants analysis is conducted by the Region. If warrants are met, the State Traffic Engineer will make the final decision on the installation of a signal.

Preliminary signal warrants for intersections were met by including all right turns for the minor street in the year that the stop-controlled v/c exceeded 1.0 at the intersection. Table 17 is a summary of the results of the preliminary signal warrant analysis for the Build lane configuration with background traffic. Table 17 shows that for background traffic only, PSW's will be met only for the Del Rio / Umpqua College Road & Old Highway 99 intersection in 2015 and the I5 northbound ramp terminal in 2016.

Table 17. Build Alternative Preliminary Signal Warrants Results

Location	2007	2027[1,2]	Met
Del Rio / Umpqua College Rd & Old Highway 99	**No**	**Yes**	2015
Old Highway 99 & I5 NB Ramp Terminal	No	**Yes**	2016
Del Rio Rd & I5 SB Ramp Terminal	No	No	n/a

[1] Black shaded cells indicate preliminary signal warrants have been met.
[2] Meeting preliminary signal warrants does not guarantee that a signal will be installed. Before a signal can be installed, a traffic investigation must be conducted or reviewed by the Region Traffic Manager. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

Build Alternative Analysis

Table 18 summarizes the Build alternative v/c results. The v/c on the Del Rio Rd / Umpqua College Road & Old Highway 99 v/c is greater than 1.0 in 2007 however; it will not meet preliminary signal warrants until 2015. There are no queuing and blocking issues for background traffic on the Build lane configuration in either 2007 or 2027.

Table 18. Build Alternative V/C Analysis Results

Location	2007 V/C[1]	2027 V/C	Year HDM Exceeded	Year of Failure[2]
Del Rio Rd / Umpqua College Rd & Old Highway 99	**1.21**[3]	0.60[2]	>2040	>2040
Old Highway 99 & I5 NB Ramp Terminal	0.36[3]	0.58[2]	2038	>2040
Del Rio Rd & I5 SB Ramp Terminal	0.23[3]	0.52[3]	>2040	>2040

[1] Black shaded cells indicate OHP v/c standard is exceeded
[2] v/c for signalized intersection.
[3] v/c for stop-controlled highest movement.

Sensitivity Analysis

The Build Alternative layout facilitates the opportunity to develop various land parcels within the project area. The sensitivity analysis focuses on traffic impacts related to two sites in particular; the Pond Site and the Surplus Site. Direct access to Del Rio Rd. will be created with the realignment of Del Rio Rd. as part of the project. The Surplus site will be created once the new interchange, Old Hwy 99 and Del Rio Road alignments are constructed (see Appendix D). Because it is likely that some development, at one or both of these sites, will occur during the project life various growth scenarios were analyzed on the Build Alternative to determine the maximum level of traffic demand (additional trips) the Build Alternative can sustain for one or both sites and for additional trips beyond what the Build Alternative can sustain, the type and level of mitigation needed to maintain traffic operations in the project area through the 20-year project design life.

The Build Alternative can support a maximum of 300 PM Peak hour trips from the Pond Site or the Surplus Site. Development resulting in more than 300 PM peak hour trips from either site will trigger mitigation. See Appendix D for a complete summary of the sensitivity analysis.

CONCLUSIONS

Region 3 has chosen the Gull-Wing Hybrid Alternative as the preferred build alternative. This alternative is an improvement over the No-Build conditions and will meet HDM vc guidelines, have adequate storage distance and will also meet Douglas County LOS standards through the future year 2027. While this alternative does not meet intersection spacing requirements, it is a significant improvement from the No-Build intersection spacing conditions.

APPENDIX A: CRASH HISTORY

CRASH HISTORY

For the crash analysis, the study area is divided into two sections: I5 with interchange area and Old Highway 99 north of Umpqua College Road south to Page Road.

I5 and Interchange Area:

The crash history for I5 and interchange area (M.P 128.75 to M.P 130.00) includes all crashes between 2001 and 2005 (see Table 19. I5 and Interchange Area Crash Summary (MP 128.75 to 130.00)). There were 45 crashes in the 1.25 miles of I5 during this period (See Table 19. I5 and Interchange Area Crash Summary (MP 128.75 to 130.00)) and one fatal crash. The fatal crash resulted from a fixed object collision at MP 130.00 on I5 in 2001. Using an average daily traffic volume of 33,000, this portion of I5 has a crash rate of 0.60 crashes per million-vehicle miles. This is above the five-year average of comparable rates for suburban area interstate freeways (0.44) however; this section of I5 currently has no top 10 percent SPIS sites.

Table 19. I5 and Interchange Area Crash Summary (MP 128.75 to 130.00)

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
1/6/2001	128.78	CLR DRY DAY	REAR	PDO	Failed to decrease speed for slower moving vehicle
1/6/2001	129.00	CLDY DRY DAY	SS-O	PDO	Improper lane change
6/19/2001	129.50	CLR DRY DAY	SS-O	INJ C	Improper lane change
8/27/2001	130.00	CLR DRY DRK	FIX	FATAL	Excessive speed
11/23/2002	129.00	CLR DRY DRK	OTH	PDO	No error listed
5/17/2002	129.00	CLR DRY DRK	REAR	INJ A	Driving too fast for conditions, failed to decrease speed for slower moving vehicle
9/10/2002	129.24	CLR DRY DSK	FIX	INJ C	Driving too fast for conditions (not excessive speed)

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
8/16/2002	129.50	CLR DRY DAY	REAR	INJ B	Inattention
1/28/2002	130.00	CLDY ICE DAY	FIX	PDO	Driving too fast for conditions (not excessive speed)
6/14/2002	130.00	CLDY DRY DAY	FIX	INJ A	Driving unsafe vehicle
4/10/2003	128.97	CLDY DRY DAY	SS-O	PDO	Improper change of traffic lanes
4/17/2003	129.00	CLDY DRY DAY	SS-O	PDO	Improper change of traffic lanes
4/23/2003	129.10	RNY WET DAY	REAR	PDO	Failed to decrease speed for slower moving vehicle
8/25/2003	130.00	CLR DRY DAY	REAR	INJ C	Driving too fast for conditions, failed to decrease speed for slower moving vehicle
8/18/2003	129.12	FOG WET DRK	TURN	INJ C	Left turn in front of oncoming traffic, did not have right-of-way
1/23/2003	129.28	RNY WET DAY	FIX	INJ C	Driving too fast for conditions (not excessive speed)
1/24/2003	129.29	CLR DRY DAY	REAR	PDO	Failed to avoid stopped or parked vehicle ahead other than school bus
3/3/2003	129.29	CLR DRY DAY	TURN	INJ B	Left turn in front of oncoming traffic, did not have right-of-way
6/7/2003	129.29	CLR DRY DAY	TURN	INJ C	Left turn in front of oncoming traffic, did not have right-of-way
10/1/2003	129.29	CLR DRY DAY	TURN	PDO	Left turn in front of oncoming traffic

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
10/15/2003	129.29	RNY WET DAY	TURN	PDO	Left turn in front of oncoming traffic
10/29/2003	129.29	RNY WET DRK	TURN	PDO	Left turn in front of oncoming traffic
5/8/2003	129.29	CLR DRY DAY	TURN	INJ C	Did not have right-of-way
7/28/2003	129.24	CLR DRY DAY	TURN	INJ B	Inattention, disregarded traffic signal
1/1/2004	129.00	SNW SNW DRK	FIX	PDO	Driving too fast for conditions, ran off road
1/2/2004	129.00	CLDY ICE DRK	FIX	INJ C	Failed to maintain lane
1/3/2004	129.00	CLDY ICE DRK	FIX	INJ C	Driving too fast for conditions, ran off road
1/3/2004	129.00	CLDY ICE DRK	FIX	INJ C	Driving too fast for conditions, ran off road
3/15/2004	129.20	CLR DRY DAY	FIX	INJ B	Failed to maintain lane, ran off road
5/2/2004	129.40	CLR DRY DRK	FIX	INJ B	Failed to maintain lane, overcorrected
2/11/2004	129.24	CLR DRY DAY	REAR	PDO	Failed to avoid stopped or parked vehicle ahead other than school bus
3/27/2004	129.29	CLR DRY DAY	TURN	INJ C	Left turn in front of oncoming traffic
1/6/2005	128.82	RNY WET DAY	SS-O	PDO	Improper change of traffic lanes

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
3/28/2005	129.14	CLR DRY DAY	REAR	INJ C	Failed to decrease speed for slower moving vehicle
2/10/2005	129.15	RNY WET DRK	REAR	INJ A	Following to closely
12/2/2005	129.51	CLR DRY DRK	FIX	INJ B	Driving too fast for conditions (not excessive speed)
5/15/2005	129.88	CLR DRY DAY	FIX	PDO	Driving too fast for conditions, ran off road
5/9/2005	129.95	RNY WET DAY	FIX	INJ C	Over-correcting / over-steering, ran off road
2/20/2005	129.12	CLR DRY DWN	TURN	PDO	Did not have right-of-way
10/31/2005	129.16	RNY WET DAY	TURN	PDO	Did not have right-of-way
4/18/2005	129.24	CLR DRY DAY	REAR	INJ C	Failed to avoid stopped or parked vehicle ahead other than school bus
1/18/2005	129.29	FOG WET DLIT	TURN	PDO	Left turn in front of oncoming traffic
5/6/2005	129.29	RNY WET DAY	TURN	PDO	Left turn in front of oncoming traffic
2/14/2005	129.29	RNY WET DAY	TURN	INJ C	Did not have right of way
11/23/2005	129.29	CLDY WET DRK	TURN	INJ B	Did not have right of way

[1]REAR – Rear end collision; SS-O – Sideswipe overtaking; FIX- Fixed Object Collision; OTH – Other Collision; TURN- Turning Collision
[2]PDO- Property Damage Only; INJ A – Severe Injury; INJ B; Moderate Injury; INJ C; Minor Injury

From Table 19. I5 and Interchange Area Crash Summary (MP 128.75 to 130.00), over the five-year crash history, approximately 42 percent of the crashes resulted in property

damage, 56 percent in non-fatal crashes (at least one injury) and two percent in fatal crashes. Turning movement errors accounted for 33 percent of the crashes with a large majority occurring at the intersection of Del Rio Road and Old Highway 99. This is likely because of the lack of gaps in Old Highway 99 traffic for vehicles turning from Del Rio Road onto Old Highway 99. Speed too fast for conditions was cited in 54 percent of the crashes indicating that weather conditions likely contributed to the cause. Alcohol was cited as a factor in one crash and speed was cited as a factor in six crashes.

Table 20 summarizes the crash locations for I5 and the interchange area. Of the total crashes, 42 percent were intersection related with almost two-thirds of those occurring at intersection of Del Rio Road and Old Highway 99 (MP 129.29).

Table 20. I5 and Interchange Area Crash Location (MP 128.75 to 130.00)

Location	Number Of Crashes	Percent Fatal (%)	Percent Injury[1] (%)	Percent Property Damage Only (%)
Winchester Bridge	8	0	37	63
Curve[2]	2	0	100	0
Intersection[3]	19	0	53	47
Straight[4]	16	6	63	31

[1] Percent injury implies injury C or greater to at least one person involved in the crash
[2] Curves on I5 leading into and away from interchange area
[3] I5 Interchange area connections of Del Rio Road and the I5 north ramp terminal ramp terminal with Old Highway 99 (MP's 129.12, 129.16, 129.24, 129.29 and 129.51)
[4] Sections of I5 in the study area between connections, not on bridge or curve

Table 21 provides a summary of crash types for I5 and the interchange area. Fixed object /other type and turn movement collisions each accounted for 33 percent of the total crashes. There was one fatality involving fixed object / other collision type that occurred in 2001 at MP 130.00.

Table 21. I5 and Interchange Area Crash Type (MP 128.75 to 130.00)

Collision Type	Number Of Crashes	Percent Fatal (%)	Percent Injury[2] (%)	Percent Property Damage Only (%)
Fixed Object/ Other[1]	15	7	67	26
Sideswipe-Overtaking	5	0	20	80
Rear-End	10	0	40	60
Turning	15	0	53	47

[1] Other includes animals being struck
[2] Percent injury implies injury C or greater to at least one person involved in the crash

Table 22 provides a summary of crash type by year for I5 and the interchange area. Approximately 31 percent of the total crashes occurred in 2003 followed by 29 percent in 2005. The five-year average for this section is nine crashes per year.

Table 22. I5 and Interchange Area Crash Type by Year (MP 128.75 to 130.00)

Collision Type	2001	2002	2003	2004	2005
Fixed Object / Other[1]	1	4	1	6	3
Sideswipe-Overtake	2	0	2	0	1
Rear End	1	2	3	1	3
Turning	0	0	8	1	6
Total	4	6	14	8	13

[1] Other includes animals being struck

Table 23 provides a summary of injury severity for I5 and the interchange area for the years 2001 through 2005. The fatality (in 2001) equates to two percent of the crashes within the I5 study area. Approximately 42 percent of the total crashes involved property damage only. Of the remaining 56 percent, injury A (Incapacitating injury – bleeding and/or broken bones) accounted for seven percent, injury B (Non-incapacitating injury) accounted for 16 percent and injury C (possible injury - complaint of pain) accounted for 33 percent.

Table 23. I5 and Interchange Area Injury Severity (MP 128.75 to 130.00)

Year	Fatal	Injury A	Injury B	Injury C	PDO[1]
2001	1	0	0	1	2
2002	0	2	1	1	2
2003	0	0	2	5	7
2004	0	0	2	4	2
2005	0	1	2	4	6
Total	1	3	7	15	19

[1] PDO means property damage only

The Safety Priority Index System (SPIS) is a method developed in 1986 by the Oregon Department of Transportation (ODOT) for identifying potential safety problems on state highways. The SPIS is a method of identifying locations based on three years of crash data and considers crash frequency, crash rate and crash severity. A roadway segment becomes a SPIS site if a location has three or more crashes or at least one fatal crash over the three-year period. SPIS sites are 0.10-mile sections on the state highway system. SPIS is a flagging tool and further identification of the specific safety problem at a site requires an examination of crash records and often a field investigation. This section of I5 currently has no top 10 percent SPIS sites.

Old Highway 99

Table 24 provides a summary of crash data for Old Highway in the study area. The summary includes all crashes between 2001 and 2005. A total of 45 crashes occurred over the five year period on Old Highway 99 between north of Umpqua College Road and south of Page Road. Of the 45 crashes, 81 percent occurred during the day, 67 percent occurred on dry surface and 62 percent occurred at an intersection. Over the five year period, 13 percent of the total crashes occurred on the historical Winchester Bridge.

The majority of crashes (62 percent) involved turning movements followed by rear end crashes (18 percent). Of the 64 percent of crashes involving turn movements, 71 percent cite turning onto Old Highway 99 and occur at the intersection of Old Highway 99 and Del Rio Road (between MP 11.96 and MP 11.99). Modification of the existing interchange should be considered as most of trips go through the Del Rio Road & Old Highway 99 intersection to continue onto I5.

Table 24. Old Highway 99 Crash Summary

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
3/15/01	11.77	RNY WET DAY	TURN	PDO	Did not have right-of-way
1/20/01	11.96	RNY WET DAY	TURN	PDO	Improper turn
2/7/01	11.96	CLR DRY DAY	TURN	PDO	Improper turn
5/14/01	11.96	RNY WET DAY	TURN	PDO	Left turn where prohibited
6/19/01	11.99	CLR DRY DAY	TURN	PDO	Improper turn
10/04/01	11.99	CLR DRY DAY	TURN	INJ C	Driving unsafe vehicle
7/31/01	12.21	CLR DRY DAY	TURN	PDO	Straddling or driving on wrong lanes
1/09/01	12.21	RNY WET DUNL	FIX	PDO	Avoiding work zone
12/04/01	12.21	RNY WET DUNL	FIX	INJ A	Driving too fast for conditions
6/06/01	12.21	CLR DRY DAY	SS-M	PDO	Driving on wrong side of road
7/21/01	12.37	CLR DRY DAY	FIX	INJ C	Driving too fast for conditions
10/24/01	12.46	CLR DRY DAY	REAR	INJ C	Failed to avoid stopped or parked vehicle ahead other than school bus
1/22/01	12.47	CLR DRY DAY	TURN	INJ C	Left turn in front of oncoming traffic

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
6/19/01	11.99	CLR DRY DAY	TURN	PDO	Left turn in front of oncoming traffic
2/7/2002	12.48	RNY WET DAY	TURN	INJ C	Disregarded stop sign or flashing red
3/4/2002	12.38	CLR DRY DAY	REAR	PDO	Failed to avoid stopped or parked vehicle ahead other than school bus
3/11/2002	11.96	CLR DRY DAY	TURN	PDO	Left turn in front of oncoming traffic
3/15/2002	11.96	RNY WET DAY	TURN	PDO	Left turn in front of oncoming traffic
4/16/2002	11.96	RNY WET DAY	TURN	PDO	Left turn in front of oncoming traffic
6/13/2002	11.96	CLR DRY DAY	TURN	INJ A	Left turn in front of oncoming traffic
9/20/2002	11.99	CLR DRY DAY	FIX	PDO	No Error listed
10/1/2002	11.96	CLR DRY DRK	TURN	PDO	Left turn in front of oncoming traffic
10/9/2002	12.37	CLR DRY DRK	TURN	PDO	Left turn in front of oncoming traffic
10/28/2002	11.96	CLR DRY DAY	TURN	PDO	Left turn in front of oncoming traffic
11/6/2002	11.77	RNY WET DRK	OTH	PDO	No error listed
11/8/2002	12.39	RNY WET DAY	REAR	PDO	Failed to avoid stopped or parked vehicle ahead other than a bus
12/31/2002	11.96	CLR WET DLIT	TURN	PDO	Left turn in front of oncoming traffic

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
3/29/2003	12.48	CLR DRY DRK	TURN	INJ C	Did not have right-of-way
6/9/2003	12.12	CLR DRY DAY	REAR	PDO	Failed to avoid stopped or parked vehicle ahead other than school bus
7/17/2003	11.99	CLR DRY DAY	REAR	PDO	Failed to avoid stopped or parked vehicle ahead other than school bus
7/1/2003	11.99	CLR DRY DAY	TURN	INJ B	Left turn in front of oncoming traffic, did not have right-of-way
1/12/2004	12.03	RNY WET DAY	REAR	PDO	Failed to avoid stopped or parked vehicle ahead other than school bus
4/30/2004	11.99	CLR DRY DAY	TURN	INJ B	Left turn in front of oncoming traffic
5/7/2004	11.99	CLD WET DWN	TURN	INJ C	Cutting in
6/23/2004	11.99	CLR DRY DAY	REAR	INJ C	Failed to avoid stopped or parked vehicle ahead other than school bus
9/23/2004	11.99	CLR DRY DAY	TURN	INJ B	Left turn in front of oncoming traffic
2/20/2004	11.99	CLR DRY DAY	TURN	PDO	Left turn in front of oncoming traffic
11/5/2004	12.41	UNK UNK DAY	BACK	PDO	Backing improperly, inattention
11/22/2004	11.99	CLR DRY DLIT	TURN	INJ C	Left turn in front of oncoming traffic
2/3/2005	12.37	CLR DRY DAY	TURN	PDO	Left in front of oncoming traffic
6/18/2005	11.9	CLR DRY DAY	TURN	INJ B	Left in front of oncoming traffic

Date	MP Location	Weather Surface Light	Type[1]	Severity[2]	Error
8/21/2005	11.99	CLR DRY DAY	TURN	INJ C	Left in front of oncoming traffic
8/9/2005	12.39	CLR DRY DAY	TURN	INJ B	Left in front of oncoming traffic
9/30/2005	11.99	CLR DRY DAY	TURN	INJ A	Left in front of oncoming traffic
10/13/2005	12.04	CLR DRY DAY	FIX	PDO	Ran off road
12/7/2005	12.29	RNY WET DWN	REAR	INJ C	Driving too fast for conditions (not exceeding posted speed)

[1] REAR – Rear end collision; SS-M – Sideswipe meeting; FIX- Fixed Object Collision; OTH – Other Collision; TURN- Turning Collision
[2] PDO- Property Damage Only; INJ A – Severe Injury; INJ B; Moderate Injury; INJ C; Minor Injury

Table 25 summarizes the crash locations for local roads. Of the total crashes, 62 percent occurred at an intersection. Of the 62 percent that occurred at an intersection, 79 percent occurred between MP 11.96 and MP 11.99 (intersection of Old Highway 99 and Del Rio Road).

Table 25. Local Roads Crash Locatio

Location	Number Of Crashes	Percent Fatal (%)	Percent Injury[1] (%)	Percent Property Damage Only (%)
Alley[2]	4	0	75	25
Historic Bridge	6	0	17	83
Intersection	28	0	43	57
Straight[3]	7	0	43	57

[1] Percent injury implies injury C or greater to at least one person involved in the crash
[2] Driveway or alley access
[3] Sections of Old Highway 99 in the study area between intersections, does not include bridge

Table 26 summarizes the crash types for local roads. Fixed/other accounted for 63 percent of the total crashes followed by rear end crashes (18 percent). Of the turn movement crashes 50 percent involved property damage only.

Table 26. Local Roads Crash Type

Collision Type	Number Of Crashes	Percent Fatal (%)	Percent Injury[1] (%)	Percent Property Damage Only (%)
Fix Object / Other[2]	7	0	33	67
Back	1	0	0	100
Sideswipe-Meeting	1	0	0	100
Rear-End	8	0	38	62
Turn	28	0	48	52

[1] Percent injury implies injury C or greater to at least one person involved in the crash
[2] Other includes animals being struck

Table 27 summarizes the local road crash types by year. Approximately 34 percent of the total crashes occurred in 2003 followed by 29 percent in 2005. The five-year average is 7.6 crashes per year. Also the higher years (2003 and 2005) match the high counts of the freeway section.

Table 27. Local Roads Crash Type by Year

Collision Type	2001	2002	2003	2004	2005
Fixed Object / Other[1]	4	2	0	0	1
Back	0	0	0	1	0
Sideswipe-Meeting	1	0	0	0	0
Rear-End	1	2	2	2	1
Turn	7	9	2	5	5
Total	13	13	4	8	7

[1] Other includes animals being struck

Table 28 provides a summary of injury severity for local roads. The injury severity history for local roads includes all crashes between 2001 and 2005. There were no fatalities and approximately 58 percent of the total crashes involved property damage only. Of the remaining 42 percent, injury A (Incapacitating injury – bleeding and/or broken bones) accounted for nine percent, injury B (Non-incapacitating injury) accounted for 11 percent and injury C (possible injury - complaint of pain) accounted for 22 percent.

Table 28. Local Roads Injury Severity

Year	Fatal	Injury A	Injury B	Injury C	PDO[1]
2001	0	1	0	4	8
2002	0	1	0	1	11
2003	0	1	1	0	2
2004	0	0	2	3	3
2005	0	1	2	2	2
Total	0	4	5	10	26

[1] PDO means property damage only

APPENDIX B: TRAFFIC DEVELOPMENT

TRAFFIC DEVELOPMENT

Traffic Development

2007 and 2027 year traffic data used for the transportation analysis was developed from the following:

- Manual Counts at key locations
- ODOT's Automatic Traffic Recorder Stations (ATR)
- ODOT's Transportation Volume Tables (TVT)
- Roseburg Travel Demand Model
- Roseburg Costco Transportation Impact Analysis (TIA)

Manual Counts Locations

Table 29 provides a summary of the manual count locations used in the project area. Seven fourteen–hour (6:00 A.M-8:00 P.M.) manual counts were conducted at major intersections between May and November 2003 which include 15-minute interval turn movement data and full federal truck classification breakdowns. There were no manual counts on I5 within the study area.

Table 29. Manual Traffic Count Locations

Locations	Date	Duration
Del Rio Road & I5 SB Ramp Terminal	Nov 3/4, 2003	14 hrs
Old Highway 99 & I5 NB Ramp Terminal	July 28/29, 2003	14 hrs
Umpqua College Rd & Old Highway 99	May 14, 2003	14 hrs
Del Rio Rd & Old Highway 99	July 29/30, 2003	14 hrs

ODOT's Permanent Recorder Stations

ODOT maintains 158 permanent ATR stations throughout the state highway system that record information about highway use throughout the year. The data gathered from these recorders include Average Daily Traffic (ADT), Maximum Day, Maximum Hour, 10th, 20th, 30th Highest Hours shown as a percentage of ADT, truck classification breakdowns, Historical Annual Average Daily Traffic (AADT) by year, directional traffic splits, and seasonal variations in traffic. The Roseburg ATR (10-005) located approximately 0.53 miles north of Roseburg on I5, was used to determine the seasonal factor adjustment for intersections within the study area, when the I5 30th highest hour traffic flows occurred and the I5 traffic split between the north/southbound directions.

ODOT's Transportation Volume Tables

ODOT's Transportation Volumes Tables (TVT) contains tabulation listings of AADT values for all state highways. Information from these tables provides data on current

AADT values and historic growth trends. A historic growth rate was used to adjust the I5 2002 30th highest hour volume to 2007 and 2027 30th highest hour volumes.

Roseburg Travel Demand Model

The growth for intersection volumes within the study area used a combination of the Roseburg Transportation Demand Model and post-processing to incorporate Umpqua Community College traffic. The model describes the relationship between land use patterns and transportation flow in the Roseburg area. Land-use and demographic data is contained in Transportation Analysis Zones (TAZ) which is the principal geographic analysis for the model. Figure 10 displays the TAZ structure for the Exit 129 project area. The model is based on the current Douglas County comprehensive plan (see Figure 11). Growth beyond the current comprehensive plan will result in higher impacts than what is shown.

Significant approved developments were reviewed to see if the population and employment assumptions were consistent with the model assumptions. The only approved development in the area is the COPR freight yard facility. The development is consistent with the future model assumptions so no new trips were added to the network.

The model application effort used the Base Year (2000) and the Future Year (2025) Reference Scenarios to develop the future No-Build volumes. The volumes were post-processed using procedures from the National Cooperative Highway Research Council (NCHRP) Report 255. Model base and future year volumes are compared to develop a relative difference between scenarios (see Figure 12 and Figure 13). The difference was applied to the existing 2007 30^{th} highest hour volumes to arrive at the 2027 No-build volumes used in the analysis.

Roseburg Costco TIA

For consistency, the traffic impacts to the Exit 129 project area was based on information provided in the Roseburg Costco Transportation Impact Analysis (TIA) dated May 2009. Full build-out of a 148,000 square feet Costco warehouse with a 12-pump fueling facility in the southeast quadrant of NE Stephens Street/NE Kenneth in Douglas County, Oregon is expected to occur in the year 2010. These trips were added to the background traffic volumes in the No-Build and Build scenarios for years 2007 and 2027.

Figure 10. Roseburg Model Zone and Network Structure

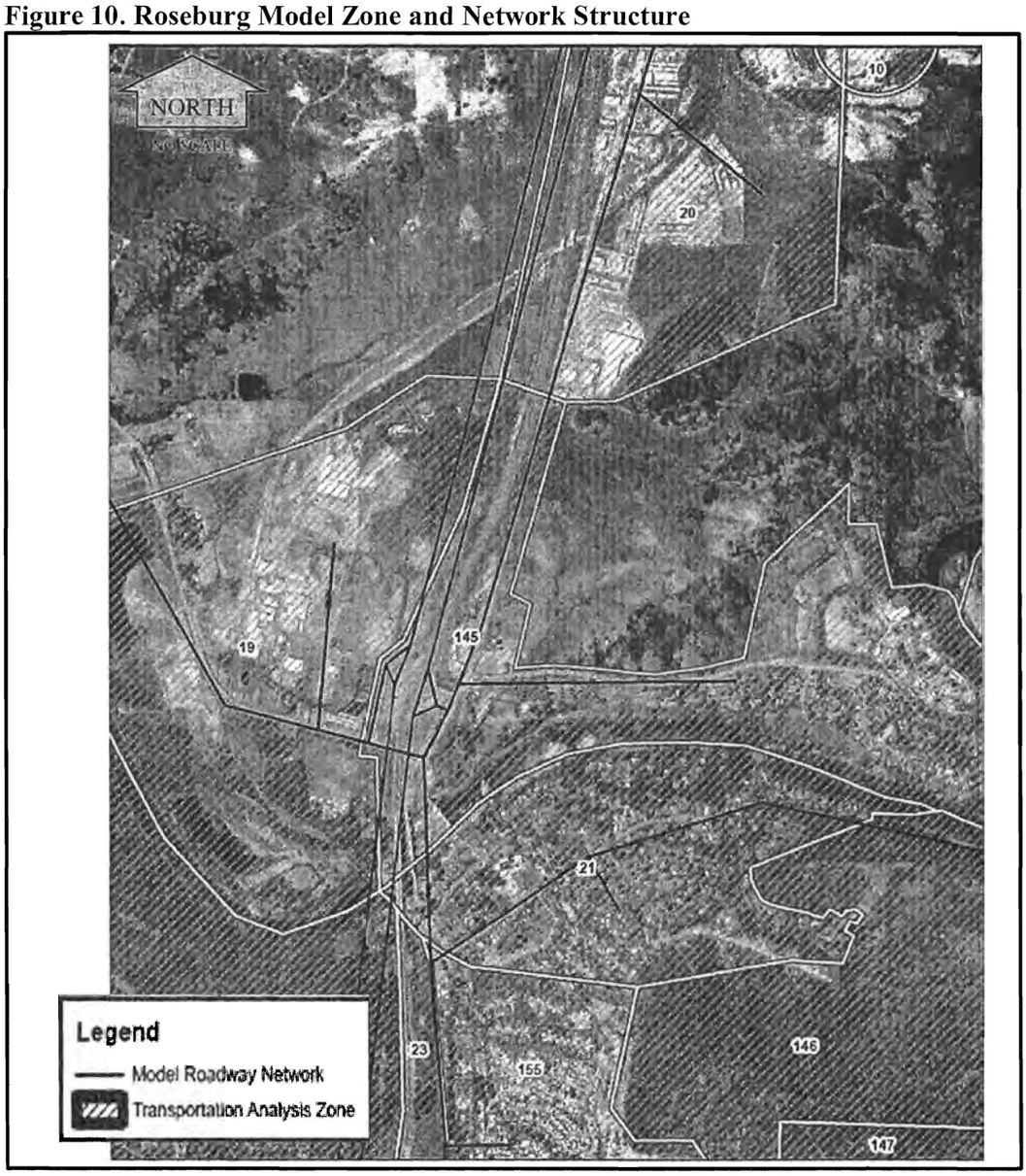


Figure 11. Roseburg County Zoning Map

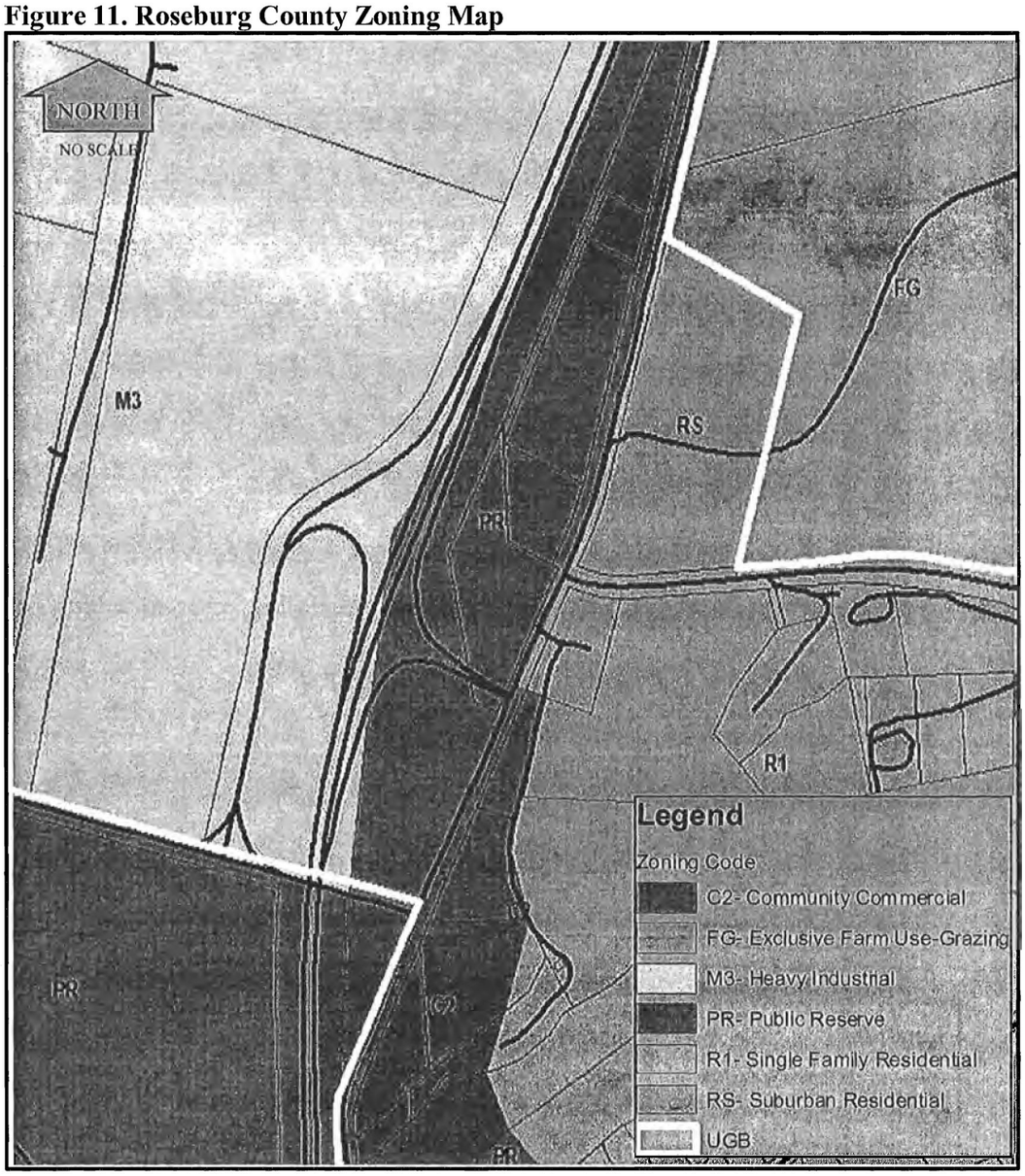


Figure 12. Roseburg Transportation Model Base Year 2000 Model Volume

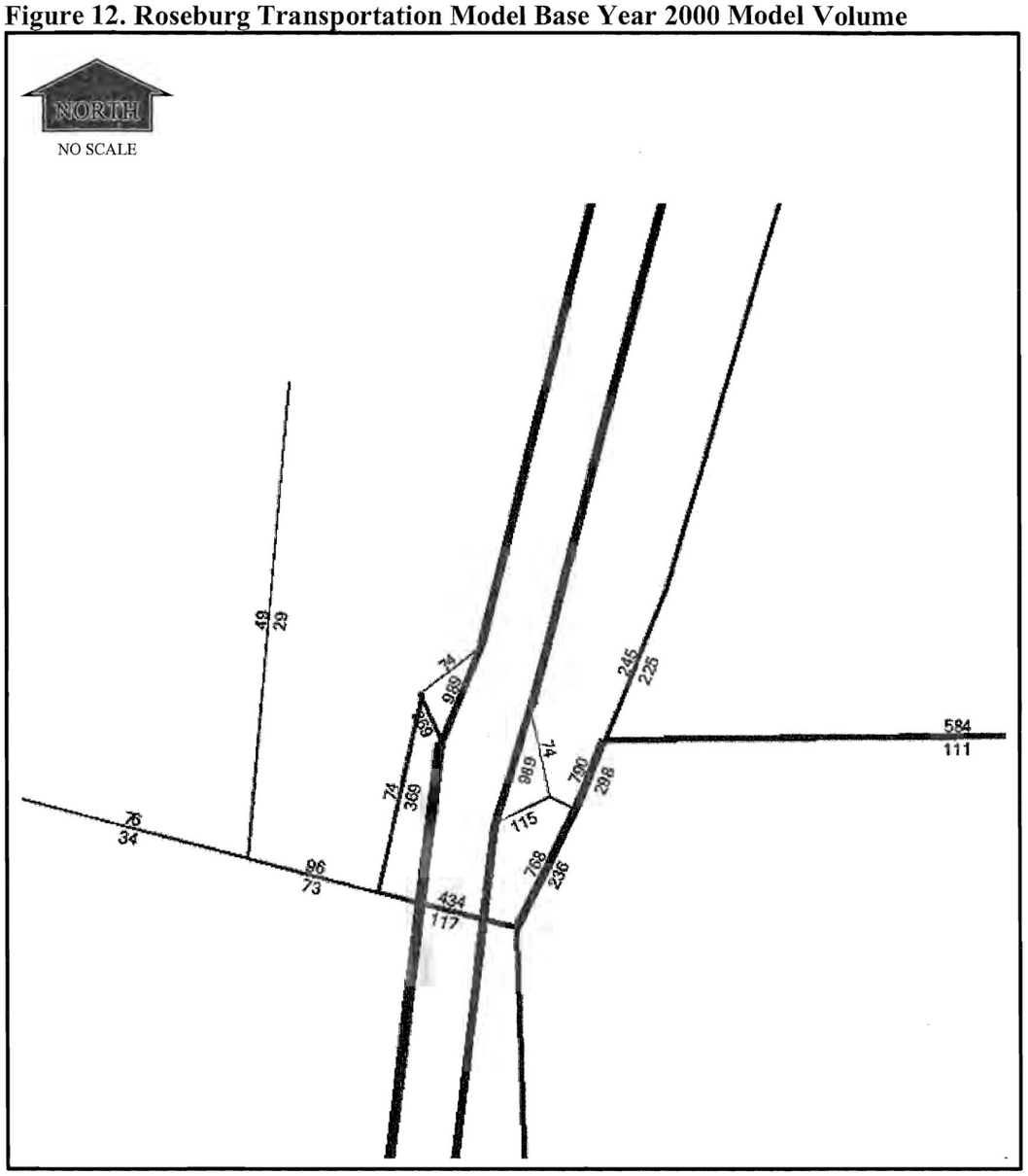
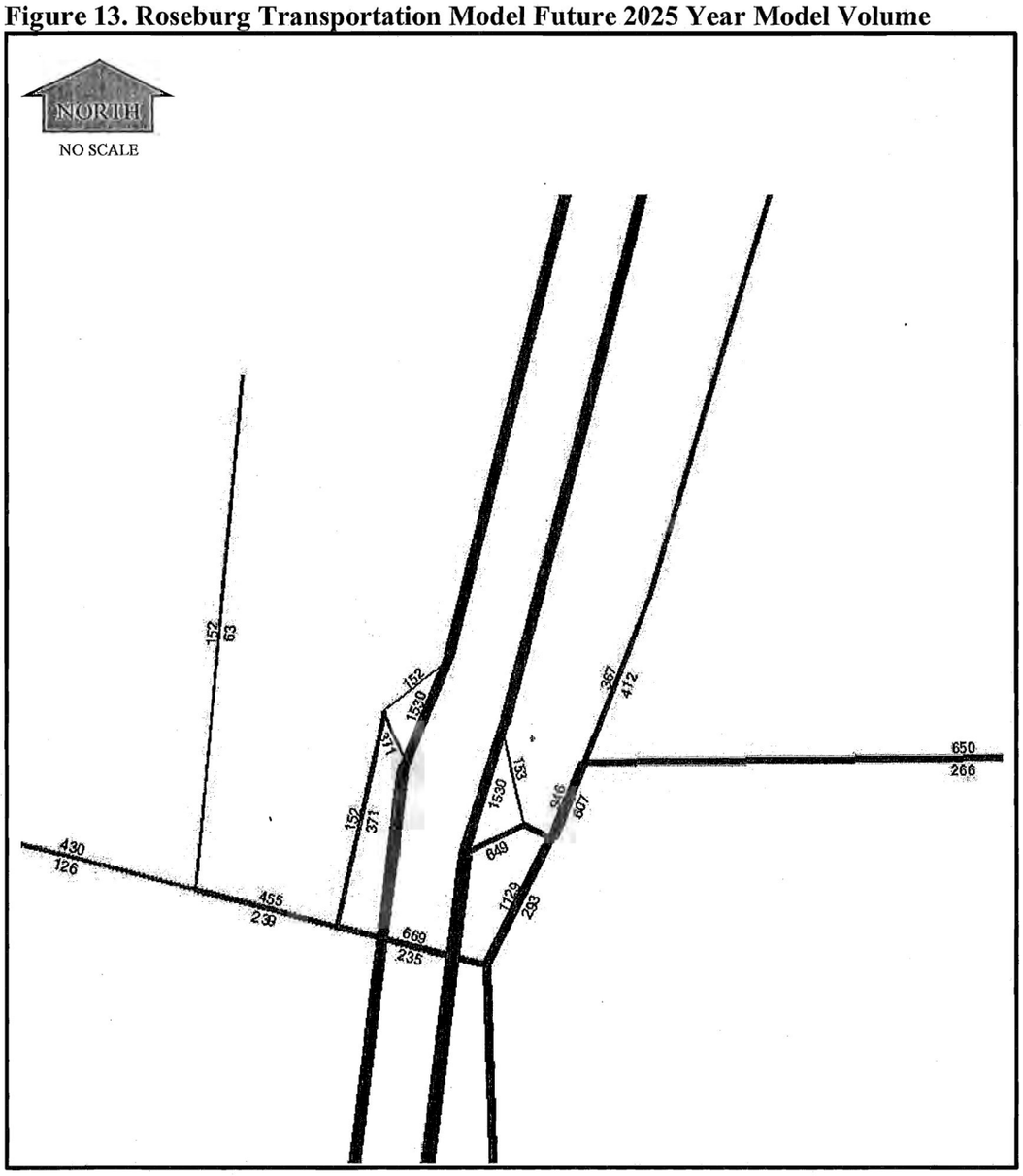


Figure 13. Roseburg Transportation Model Future 2025 Year Model Volume



APPENDIX C: ALTERNATIVES CONSIDERED, BUT NOT ADVANCED

ALTERNATIVES CONSIDERED, BUT NOT ADVANCED

Region 3 considered seven preliminary alternatives and five proposed Build Alternatives with options in addition to the preferred build alternative: "*Upgrade and Modifications*", "*Parallel 99*", *and* "*99 East*". Two other alternatives, "*Single Point Urban Interchange (SPUI)*" and "*Tight Diamond*", had fatal flaws because of inadequate spacing distance between the I5 north off ramp and the proposed North Umpqua College Road & Old Highway 99 (Old Highway 99) intersection and were not forwarded.

Seven preliminary alternatives (see Figure 14 –Figure 20) were considered with evaluation criteria based on the least number of signals and least impact to the weigh station. Preliminary signal warrants were evaluated based on 2027 volumes and the preliminary alternative lane configuration option. The calculation of the 2027 volumes were based on 1999 manual counts at the existing ramp terminals and the Del Rio Road & Old Highway 99 intersection and a 2003 manual count at the Old Highway 99 & Umpqua College Road intersection.

Table 30. Preliminary Alternatives General Summary

Alt.	Alternatives Ranked from best to worst**	Loop Ramp	Number of intersections	Number of signalized intersections	Number of primary intersections with v/c greater than HDM mobility standards*	Impact to the weigh station
# 1	5	None	4	1	1	Medium
# 2	4	NB On	3	1	1	Medium
# 3	7	SB Off	4	2	0	High
# 4	1	SB On	4	1	0	Low
# 5	2	SB On	4	1	0	Low
# 6	6	None	4	2	1	Medium
# 7	3	NB & SB On	3	1	0	Medium

Figure 14. Alternative 1

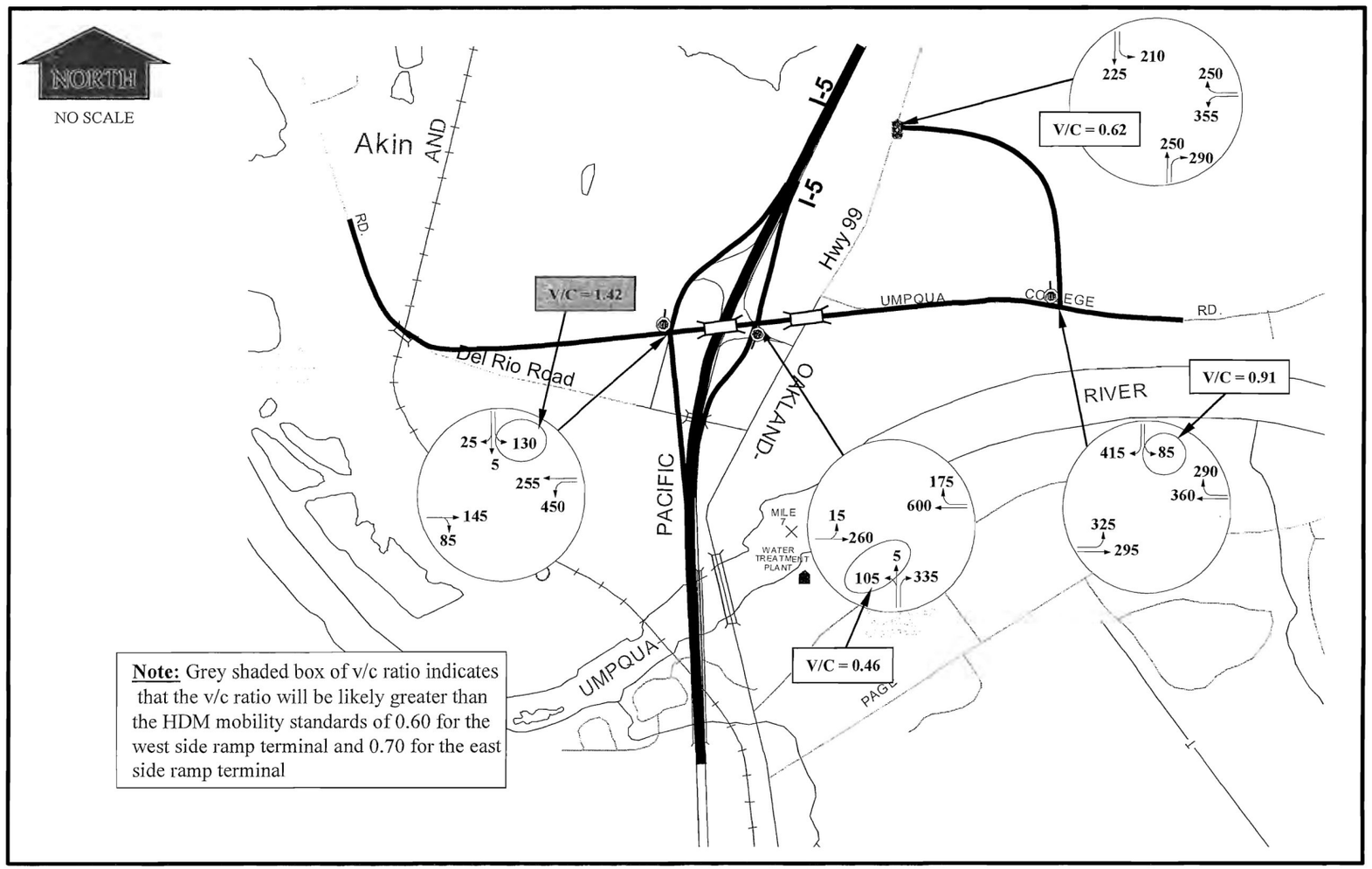


Figure 15. Umpqua Bridges Alternative 2

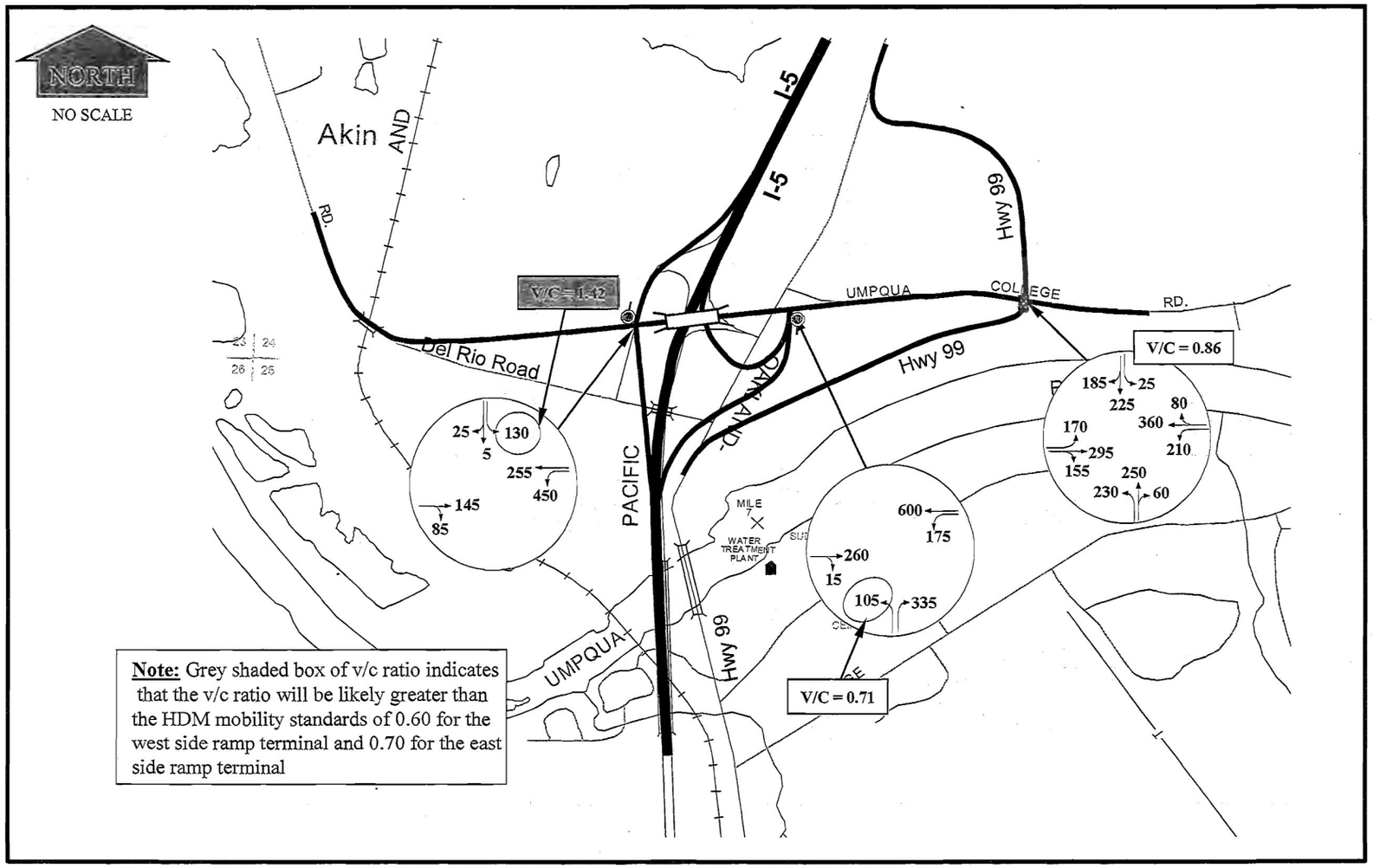


Figure 16. Alternative 3

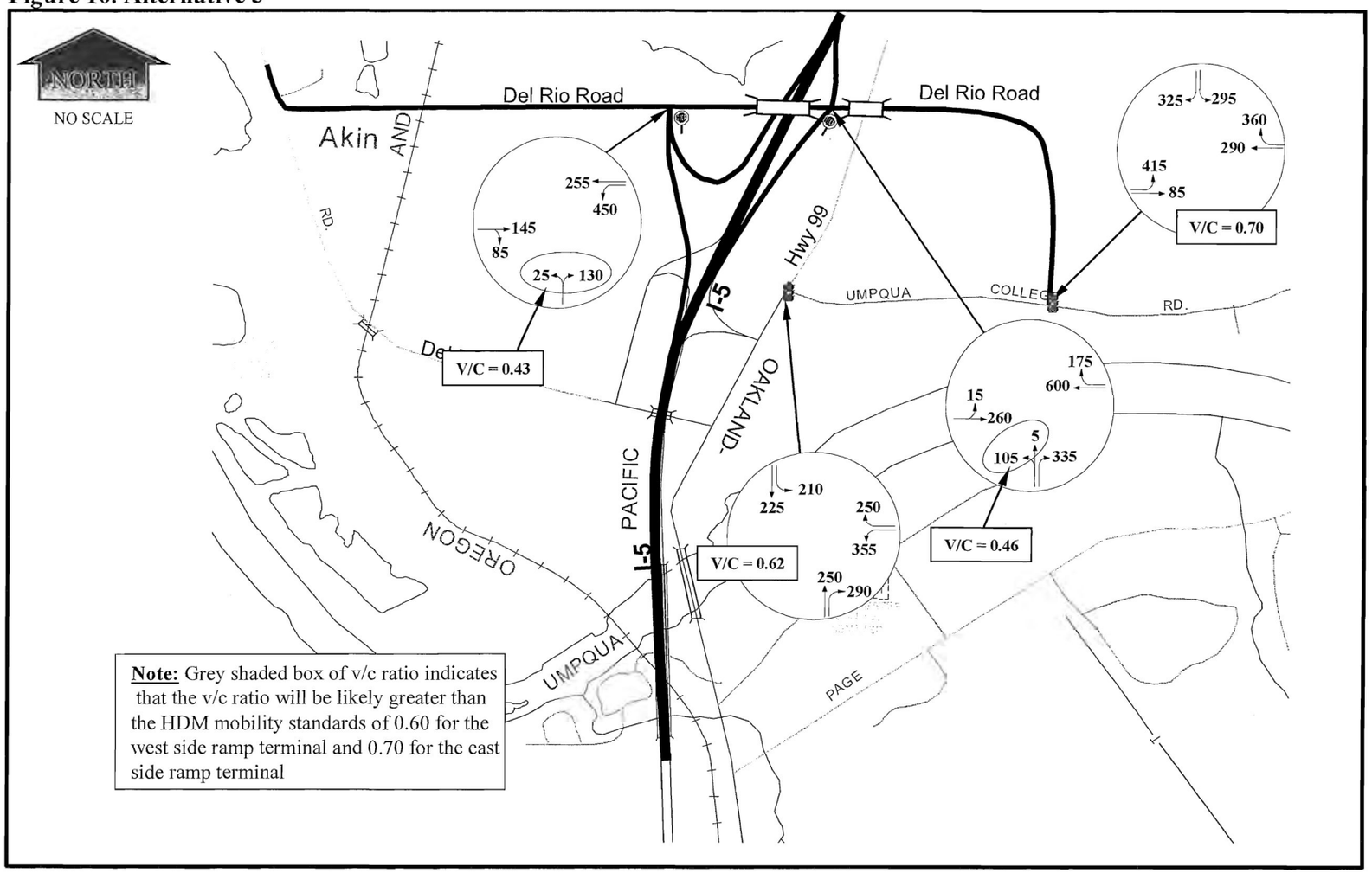


Figure 17. Alternative 4

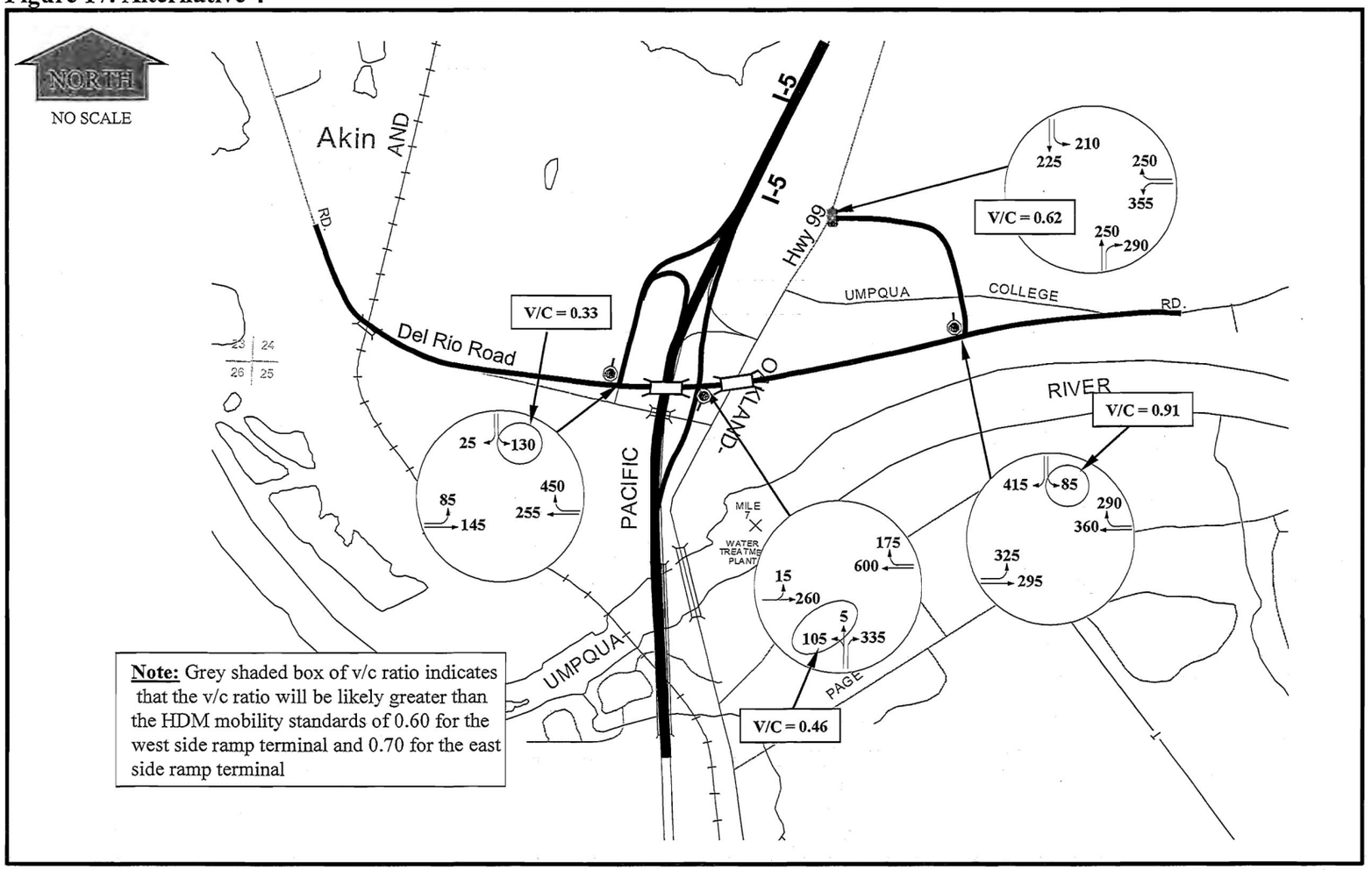


Figure 18. Alternative 5

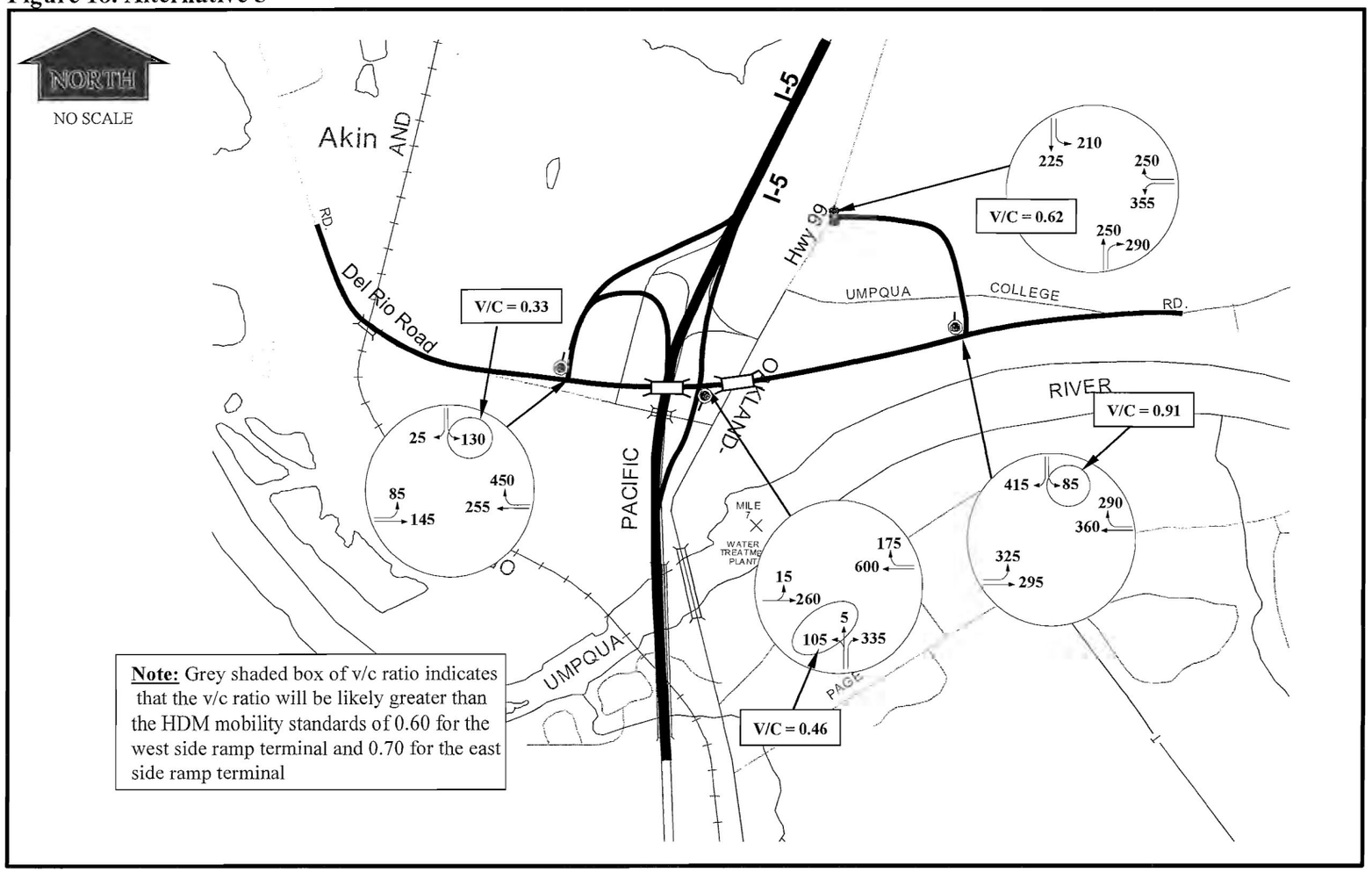


Figure 19. Alternative 6

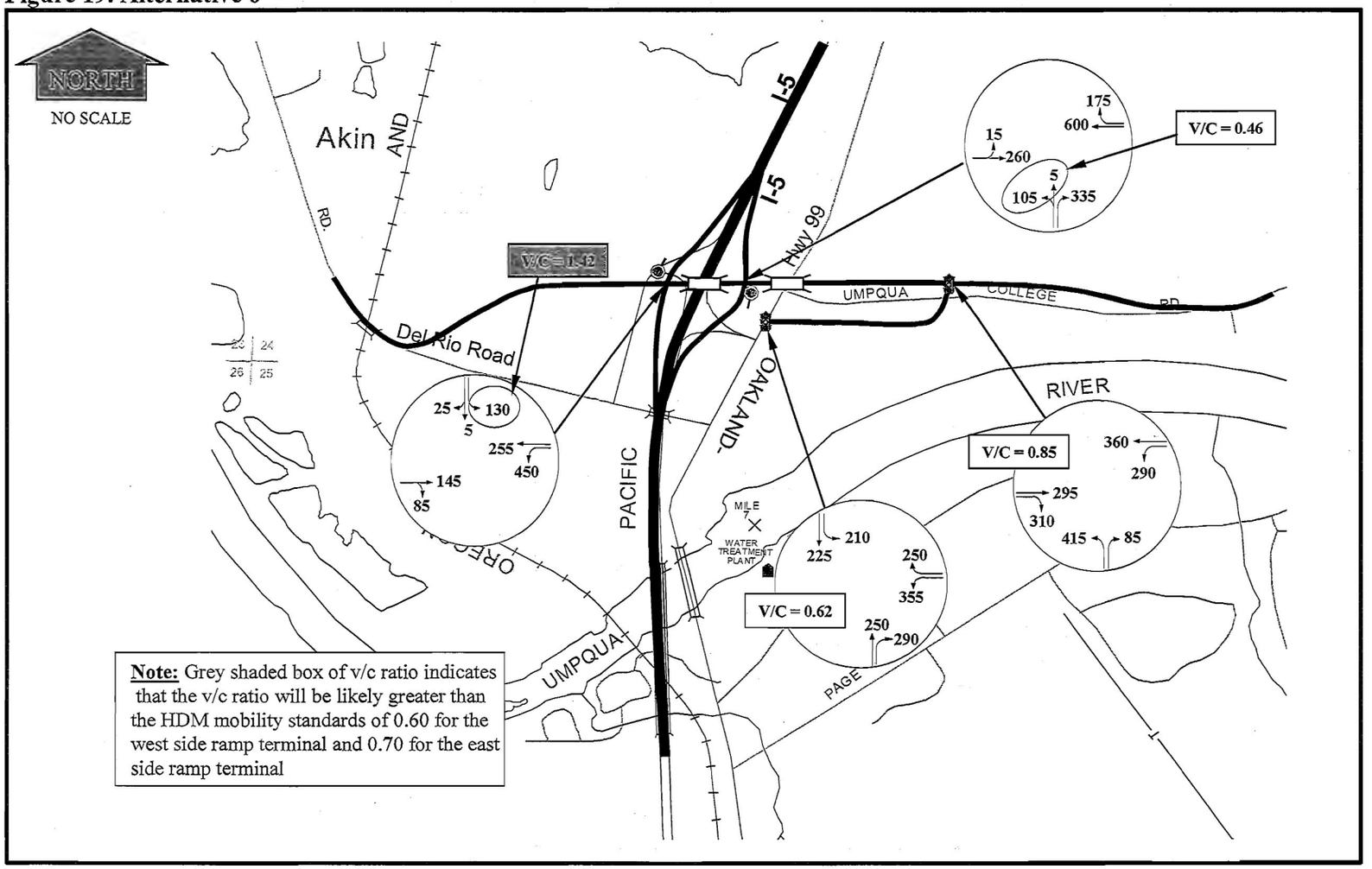
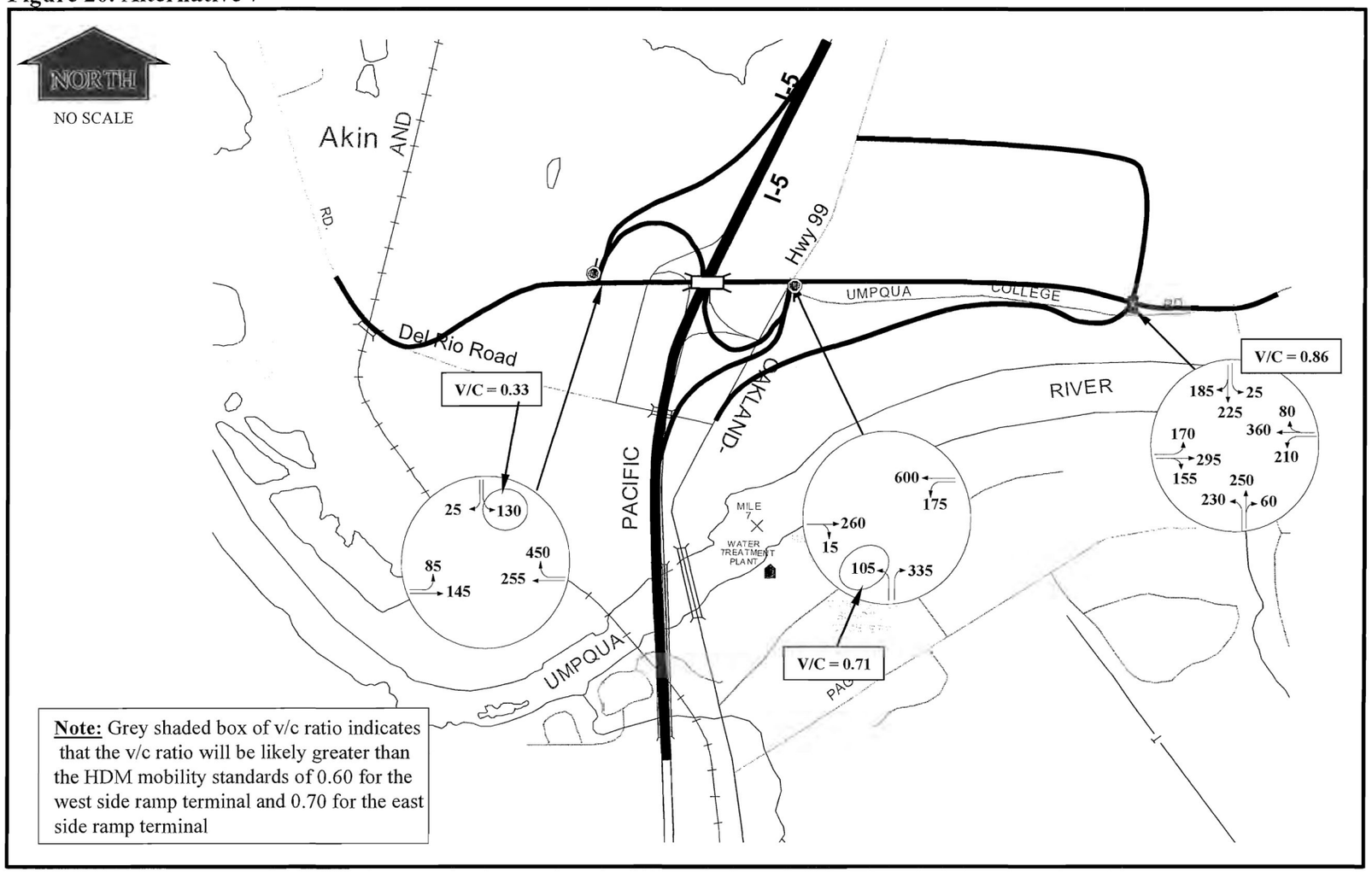


Figure 20. Alternative 7



Design elements from the preliminary alternatives served as a basis for the development of the build alternatives. Build alternatives were considered for advancement as future solutions based on criteria that included cost, adequate operation, impacts to the surrounding property owners and safety.

The 30th Highest Hour Volumes for years 2007 and 2027 were developed using traffic counts, historic growth rates, Roseburg ATR 10-005 and the Roseburg Travel Demand Model. The Mill Pond Site is a recent development and not included in the analysis for the alternatives in Table 30. Preliminary signal warrants were evaluated based on 2007 and 2027 volumes and the configuration option. Table 31 provides a brief summary of the Build Alternatives considered but not advanced.

Table 31. Build Alternatives Considered but Not Advanced Summary[1]

Alternative	Contributing Factors to Dismissal
Upgrade and Modification	Cost, Large 4-way intersection with dual left and right turns and minimum of 5-lane cross section on Old Highway 99 between I5 NB Ramp Terminal intersection and Del Rio Road & Old Highway 99 intersection, signalization at Del Rio Road & Old Highway 99 intersection
Parallel 99	Cost, out of direction travel, dual left turns and signalization on Del Rio Road at the I5 SB Ramp Terminal intersection. Impacts historic and surrounding property owners.
99 East – Left and Right Turn Storage	Lower design speeds and a large four-way intersection on sloped terrain on Old Highway 99. Also dual left turns and signalization on Del Rio road at the I5 SB Ramp Terminal intersection. Impacts historic and surrounding property owners.
SPUI	Fatal flaw, does not provide legal left turn lane changes, on Del Rio Road, from the I5 NB Ramp Terminal to Old Highway 99
Tight Diamond	Fatal flaw, does not provide legal left turn lane changes, on Del Rio Road, from the I5 NB Ramp Terminal to Old Highway 99
Gull-Wing – alignment	Cost and right-of-way concerns

[1] All alternatives require design acceptation to meet ramp terminal spacing standards.

The "*Upgrade and Modifications*" was dismissed because of cost. This alternative retains the existing gull-wing configuration but modifies the layout by directly connecting Umpqua College Road and the I5 northbound ramp terminal with Old Highway 99. It also shifts the Del Rio Road & I5 Southbound Ramp Terminal intersection west by approximately 200 feet (see Figure 14). For this alternative, a large 4-way intersection at the I5 northbound ramp terminal, a minimum 5 lane cross-section on Old Highway 99 between the I5 Northbound Ramp Terminal and Del Rio Road intersection, and a signal at the Del Rio Road & Old Highway 99 intersection would be required.

The *"Parallel 99"* alternative was dismissed because of cost, out of direction travel and impacts to surrounding property owners. The alternative (see Figure 15) re-routes Del Rio Road north of the Douglas County Forest Products Mill connecting directly to

Umpqua College Road and re-aligns Old Highway 99 parallel with I5. North and south right-in / right-out jug handles directly connect Old Highway 99 to Del Rio and Umpqua College Road. The right-in / right-out lane configuration reduces the conflict points at the intersection by eliminating the crossing conflicts that accompany left turn movements however, for this alternative it creates out of direction travel for vehicles. Additionally a loop on-ramp at the I5 southbound ramp terminal intersection was analyzed to avoid left turn conflicts.

The *"99 East"* alternative was dismissed because of cost, lower design speeds and terrain constraints. The alternative (see Figure 16) removes the Del Rio Road & Old Highway 99 intersection and re-routes Del Rio Road north of the Douglas County Forest Products Mill and combines Umpqua College Road and Old Highway 99 with Del Rio Road into a single intersection. Old Highway 99 is also shifted to the east and routed through historic property to the north. Additionally a loop on-ramp at the I5 southbound ramp terminal intersection was analyzed.

The "*Single Point Urban Interchange (SPUI)*" and "*Tight Diamond*" were dismissed because both had fatal flaws with inadequate spacing distance. For both alternatives (see Figure 17 and Figure 18), the required intersection spacing is larger than space available therefore; neither of these alternatives was considered as future solutions.

The "*Gull-Wing*" alternative was dismissed because the northern alignment in the Build Alternative opened up the possibility of development at Pond Site north of Douglas County Forest Products. The alignment shifts the I5 northbound and southbound ramp terminal north of there existing location and realigns Del Rio Road from east of the railroad tracks continuing west and connecting with the I5 southbound ramp terminal and the Umpqua College Road / Old Highway 99 intersection (see Figure 13).

Figure 21. Upgrade and Modification Alternative Layout

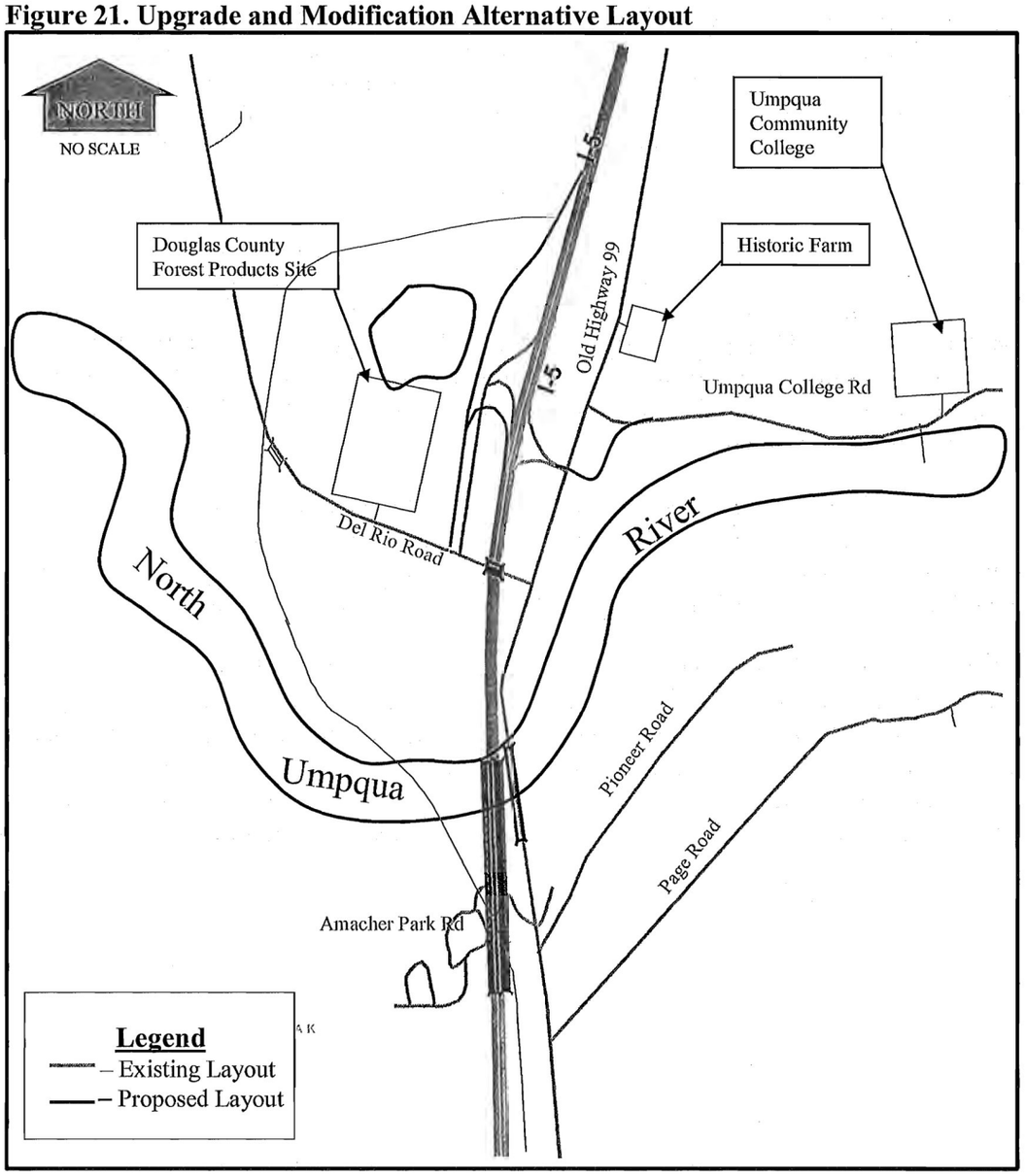


Figure 22. Parallel 99 Alternative Layout

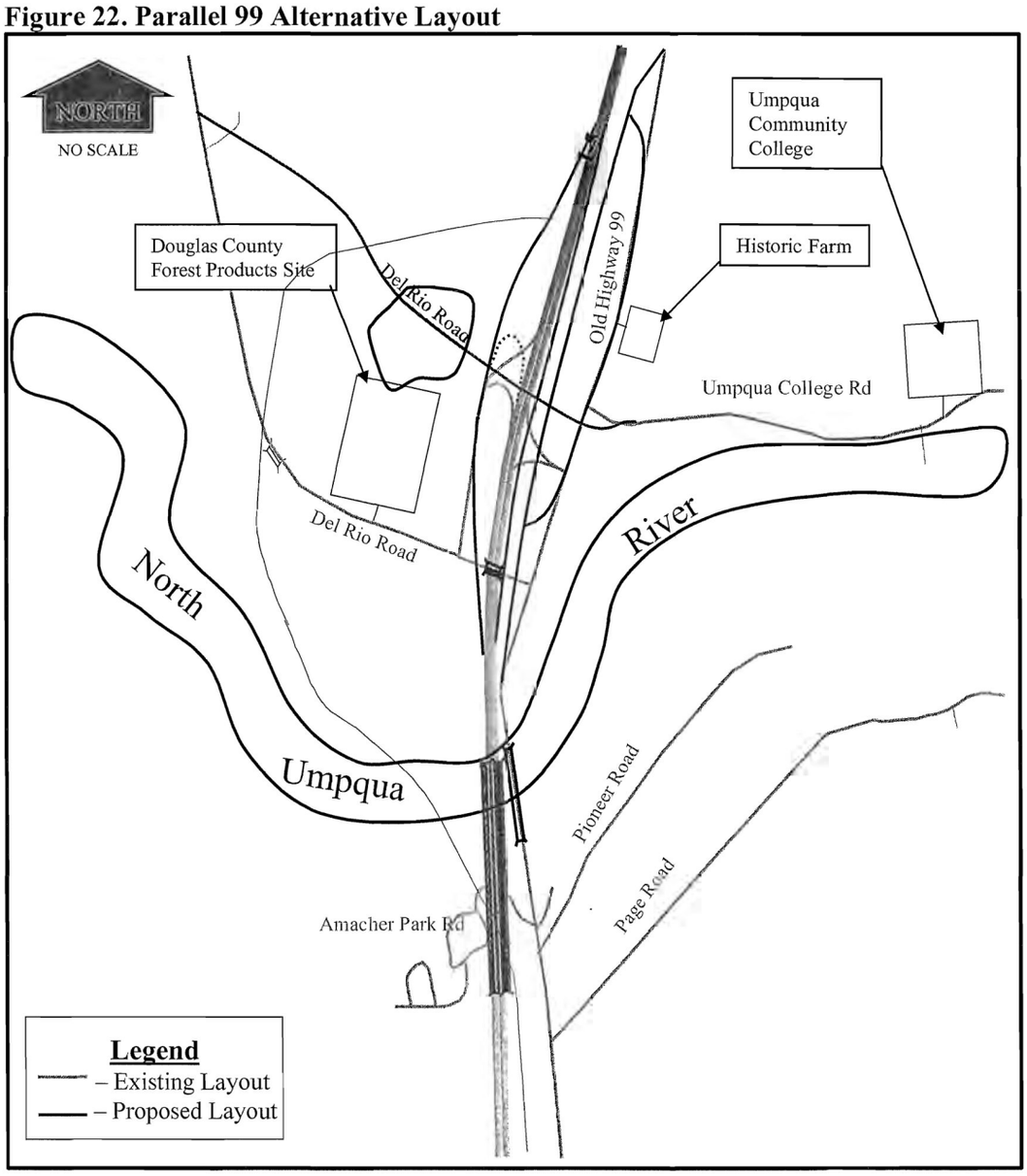


Figure 23. 99 East with loop ramp Alternative Layout

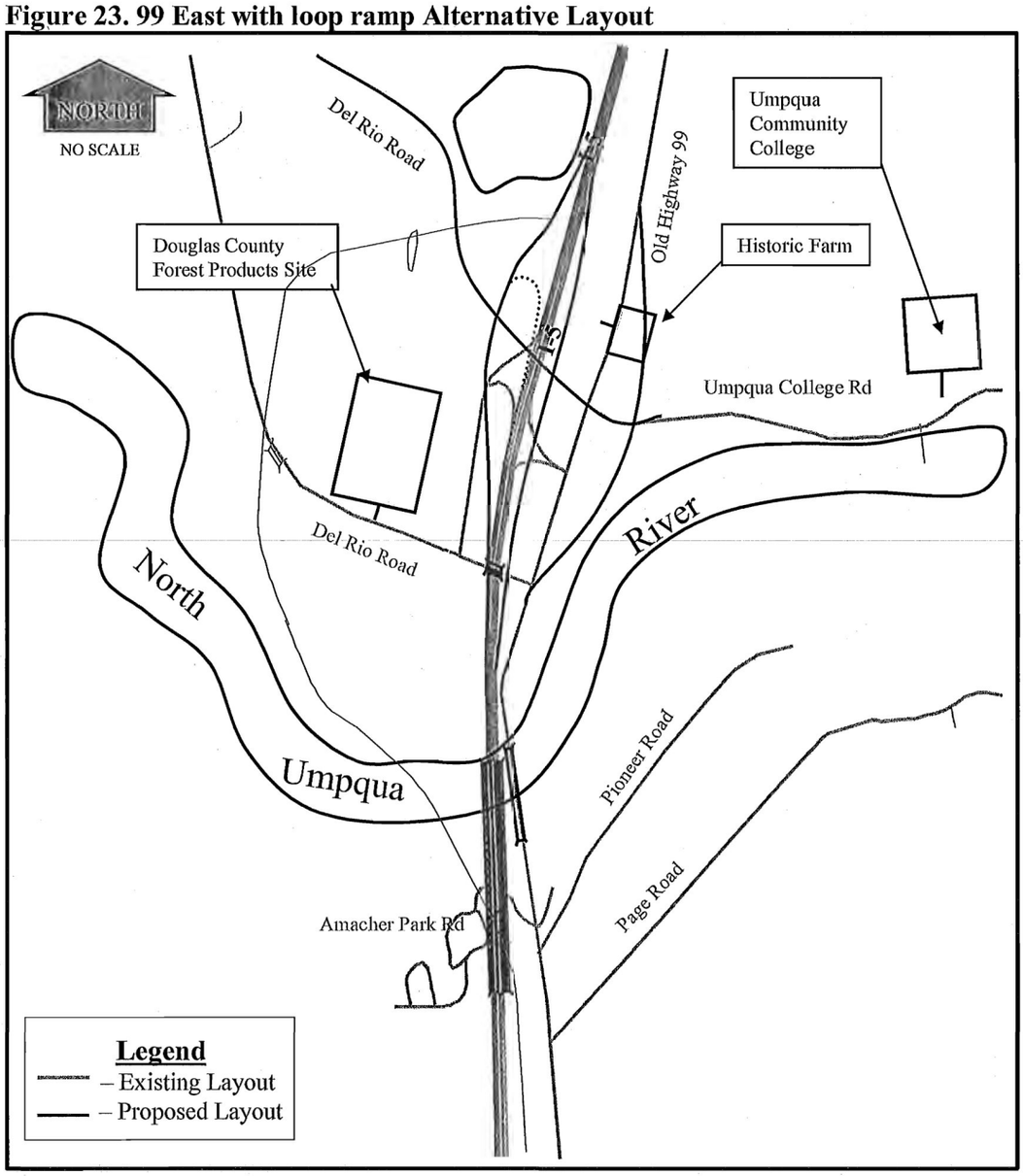


Figure 24. SPUI Alternative Layout

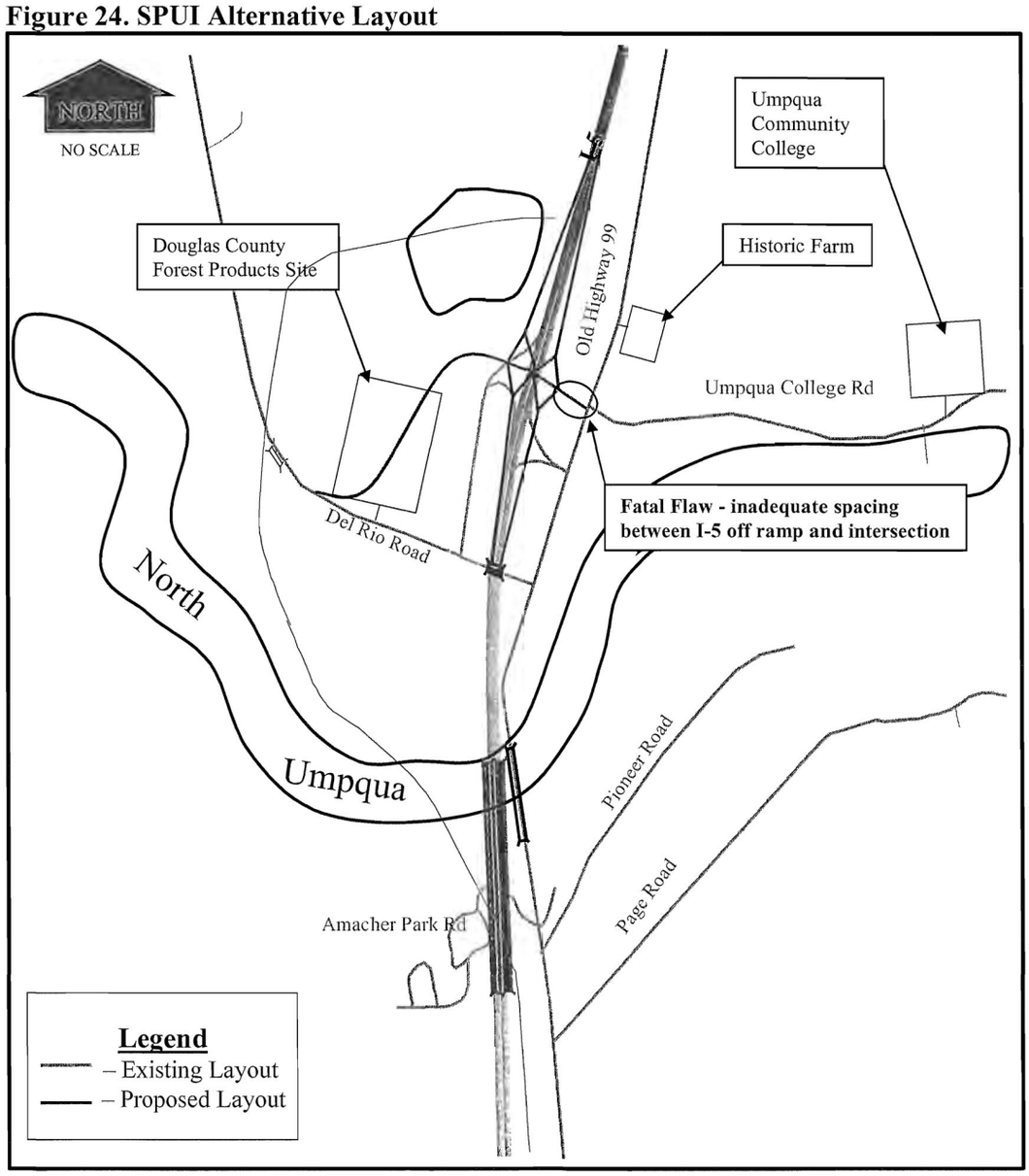


Figure 25. Tight Diamond Alternative Layout

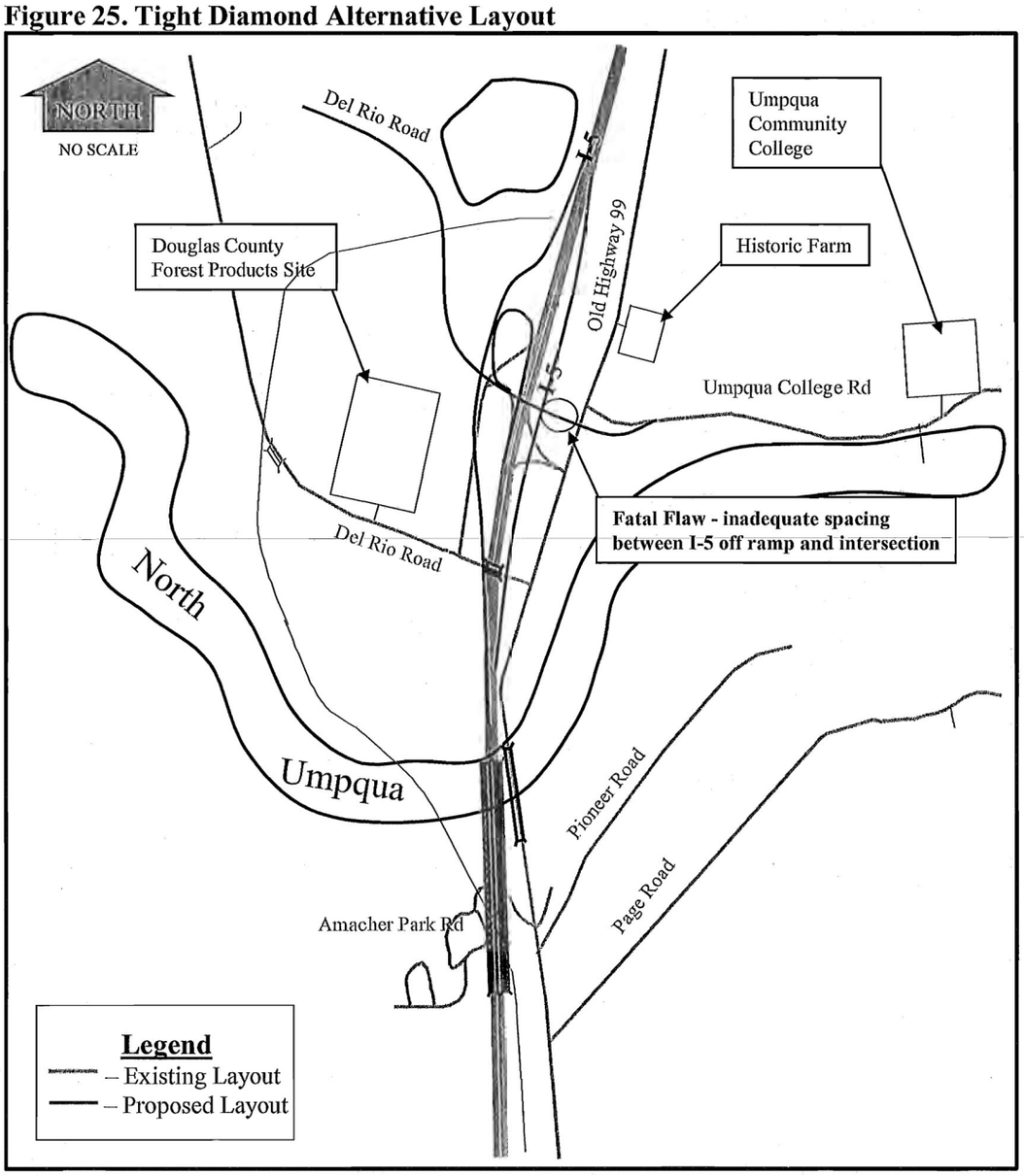
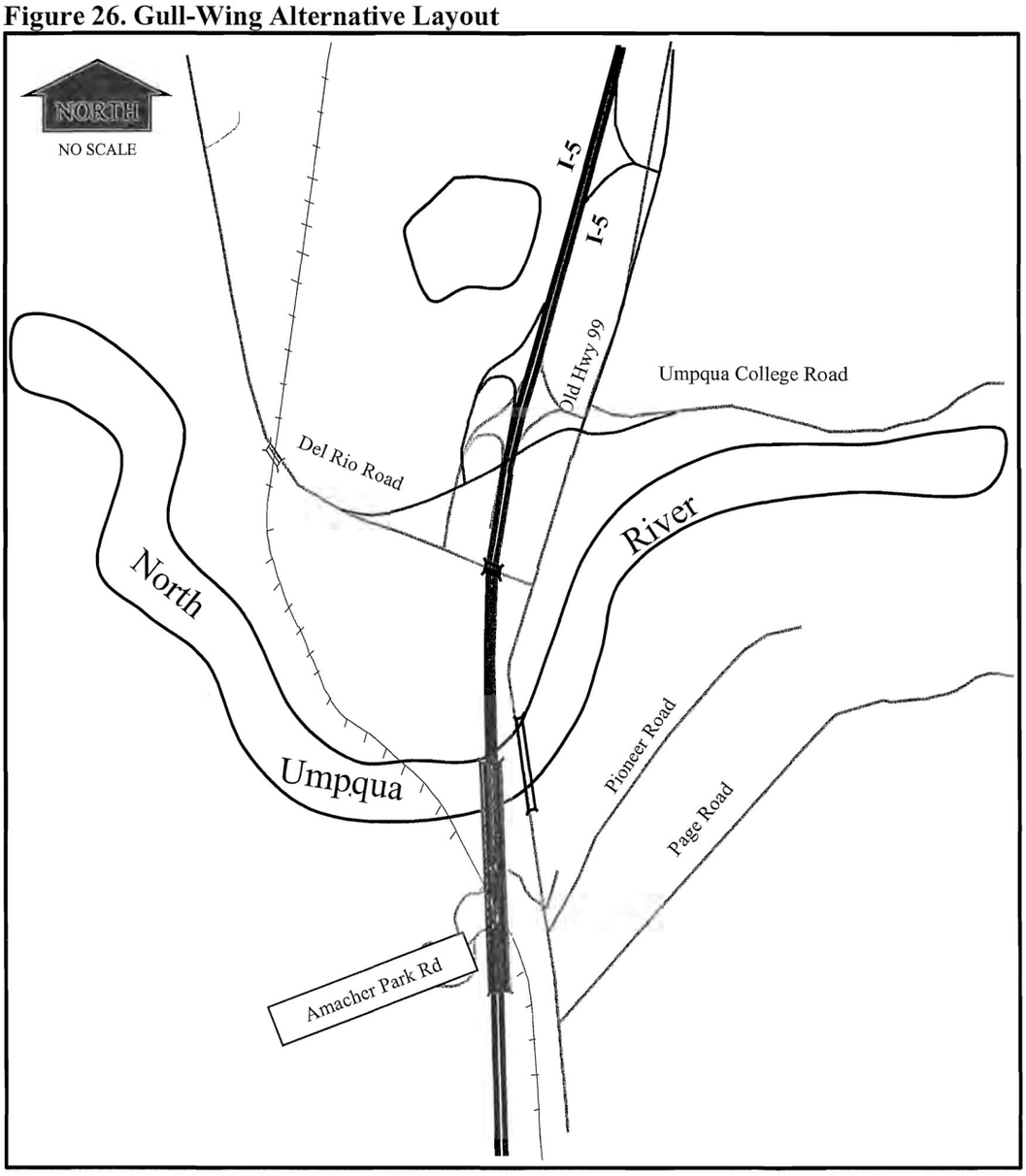


Figure 26. Gull-Wing Alternative Layout



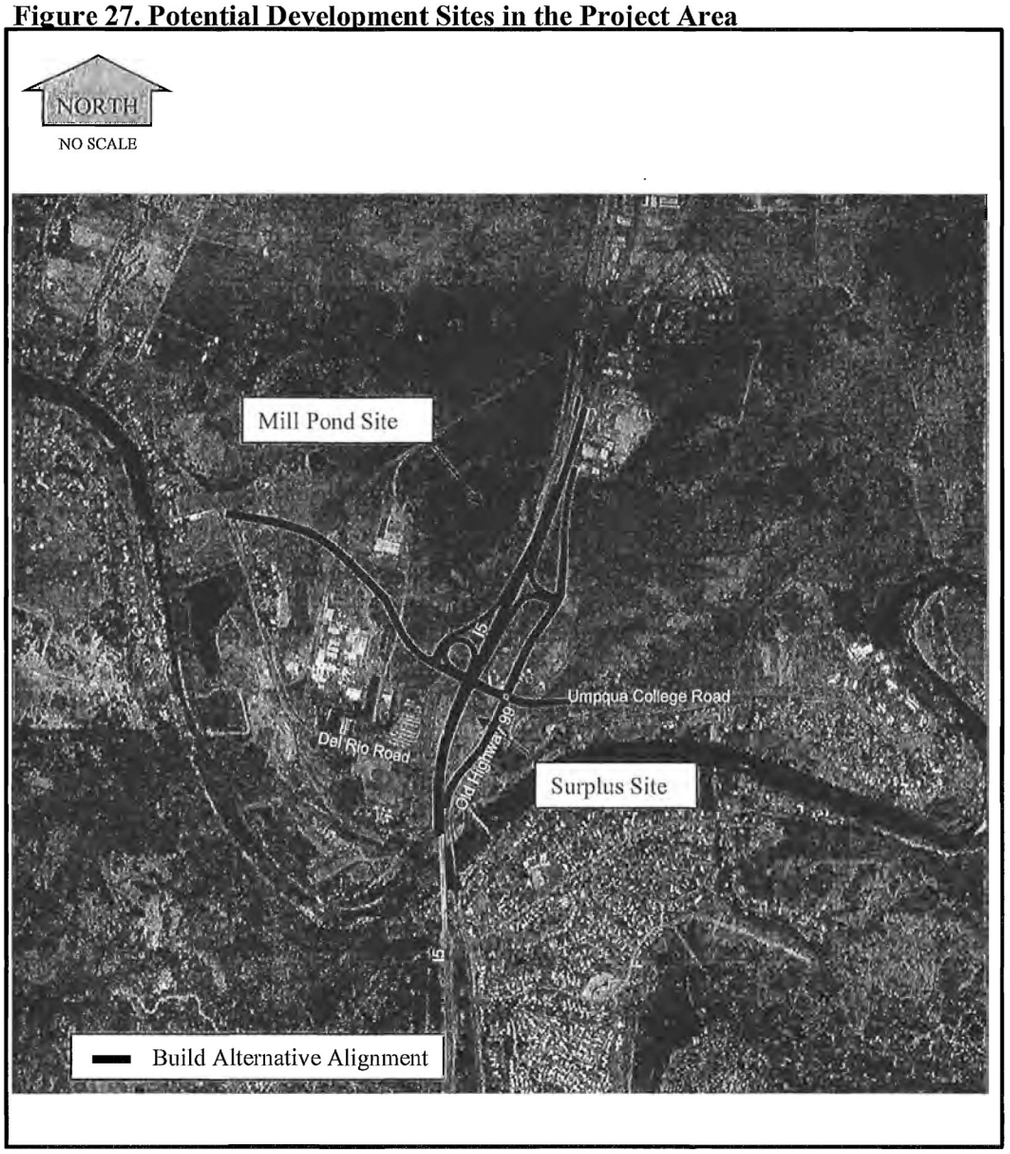
APPENDIX D: SENSITIVITY ANALYSIS

SENSITIVITY ANALYSIS

Available land near freeway interchanges is a highly desirable location for commercial and industrial developments. The traffic demands of multiple developments often produce traffic volumes that grow faster than the future forecast with which the design and analysis are based on. The additional traffic demand can result in congestion and safety issues that cause the Build Alternative to fail prematurely.

The Build Alternative lane configuration facilitates the opportunity to develop various land parcels within the project area. The sensitivity analysis focuses on traffic impacts related to two sites in particular, the Pond Site and the (ODOT) Surplus Site. The Pond Site (also known as the Back Nine Property) will directly access Del Rio Road west of the I5 southbound ramp terminal. It is a 120-acre parcel that is zoned for industrial use. The surplus site will be created once the new interchange and the Old Hwy 99 and Del Rio Rd alignments are constructed. The surplus site will directly access Old Highway 99 south of the Del Rio / Umpqua College Road & Old Highway 99/ intersection (south of the interchange). It is slightly less than five acres and zoned for commercial use. Region 3 has indicated that this property will be sold. Figure 27 displays the potential development sites.

Figure 27. Potential Development Sites in the Project Area



The Build Alternative represents the lane configuration needed to meet the 20-year project design life based on background historical growth forecasts. Because it is likely that some development, at one or both of these sites, will occur during the project life various growth scenarios were analyzed on the Build Alternative to determine:

1. The maximum level of traffic demand (additional trips) the Build Alternative can sustain for both sites, and
2. For additional trips beyond what the Build Alternative can sustain, the type and level of mitigation needed to maintain traffic operations in the project area through the 20-year project design life.

Traffic Development

While the Roseburg Transportation Demand Model assumes industrial growth for the west side of I5, it does not include development specifically for this site. Model land use is assigned according to buildable land. Since the Pond Site was backfilled and made available for development after the model was built, it is essentially "new land" and any development is in addition to what is accounted for in the model. In order to evaluate traffic impacts, Region 3 provided an estimate for the type, size and the number of potential employees for the Pond Site. Using ITE Trip Generation Seventh Edition, a 120-acre industrial site will generate approximately 1000 additional PM peak hour trips. Table 32 summarizes the ITE Trip Generation trip values for a 120-acre industrial site.

Table 32. ITE Trip Generation Values

Zone	Landuse		Acres	Trips[1]		Total Trips[2]
	Number	Type		Entering	Exiting	
Industrial	110	General Light	120	192	679	871
Industrial	130	Industrial Park	120	223	838	1061
Industrial	140	Manufacturing	120	533	472	1005
Industrial	150	Warehousing	120	372	691	1063
AVERAGE						**1000**

[1] ITE Trip Generation seventh edition values based on 120 acres
[2] Additional PM peak hour trips

The trips were distributed through the Build Alternative based on the no-build traffic patterns and then added to the no-build volumes. To achieve the 2027 Background and Pond Site PM peak hour design hour volumes (DHV), the trips were distributed linearly between the base (2009) and future (2027) year so that the base year reflects zero additional trips and the future year reflects 1000 additional trips. Figure 28 represents the 2027 Background and Pond Site PM Peak hour DHV on the Build Alternative.

Commercial development for the Surplus Site is not included in the Roseburg Transportation Demand Model because this land was occupied by the original Del Rio Road and Old Highway 99 alignments. In order to evaluate traffic impacts, Region 3 provided an estimate of 500 new PM Peak hour trips. To achieve the 2027 Background and Surplus Site PM Peak hour volumes, the trips were distributed through the Build Alternative based on the no-build traffic patterns and then added to the no-build volumes.

Figure 29 represents the 2027 Background and Surplus Site PM peak hour DHV on the Build Alternative.

Figure 28. 2027 Background and Pond Site DHV(Build Alternative)

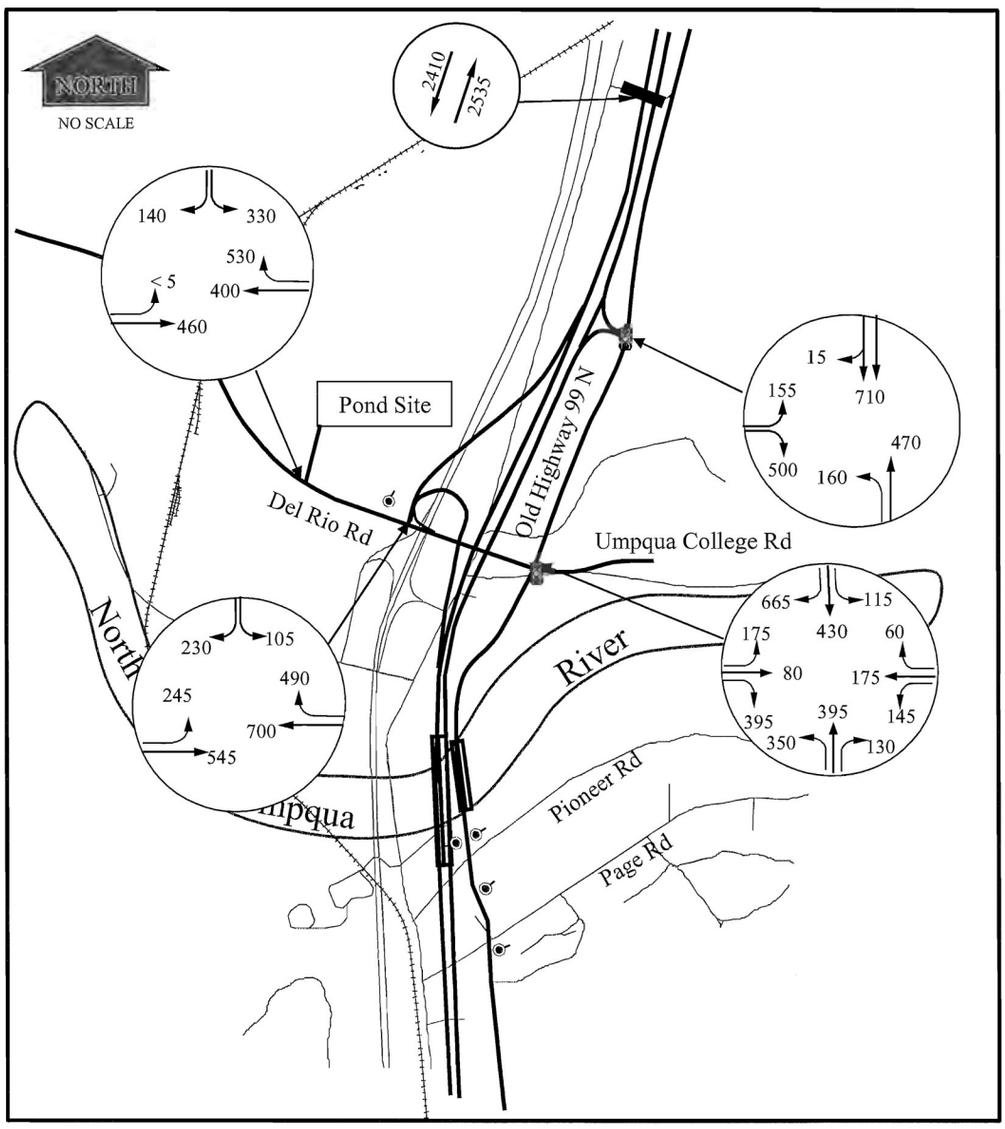
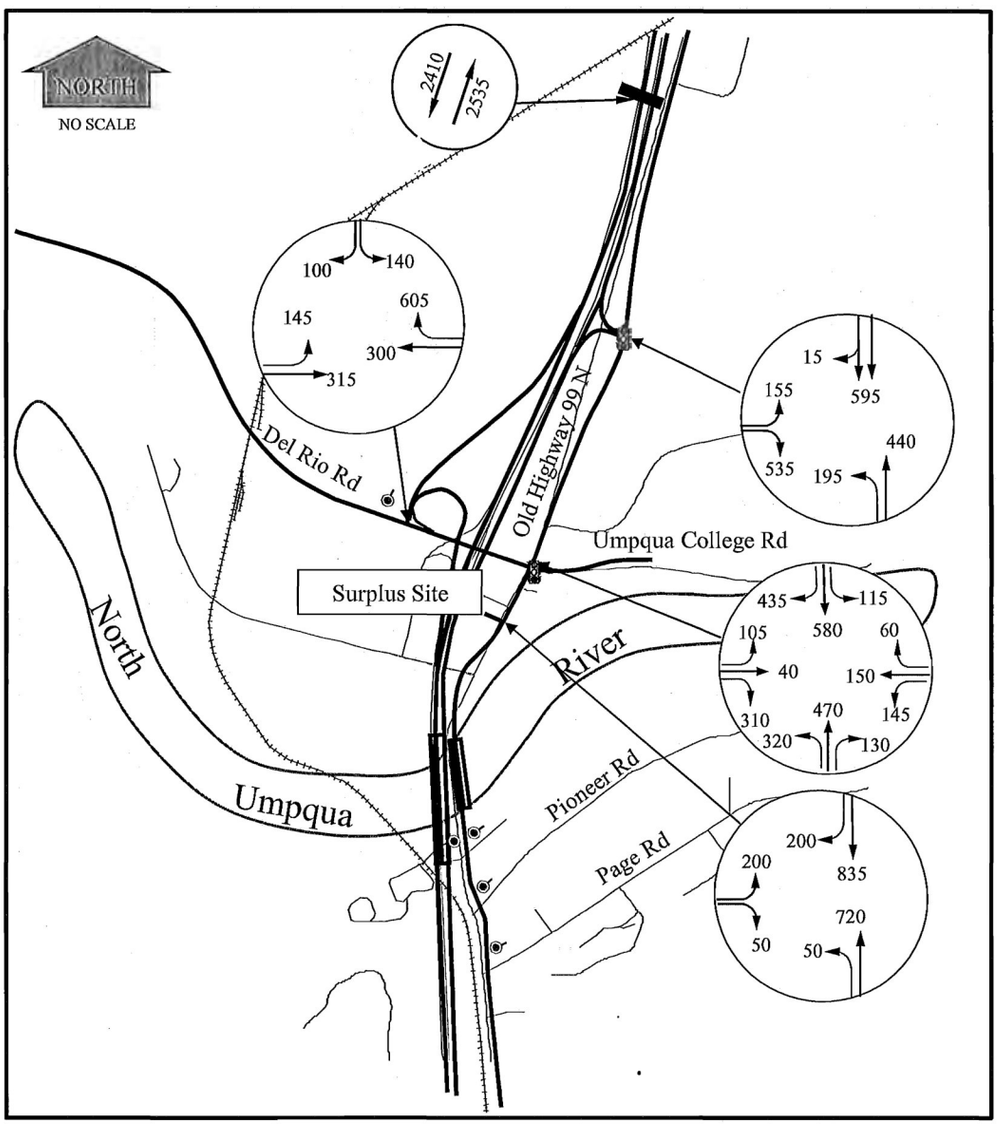


Figure 29. 2027 Background and Surplus Site DHV (Build Alternative)



Analysis Results

The impact of site development on the Build Alternative largely depends on the size, type and time of which the development(s) occurs. To determine mitigation needs for maintaining operations through the 20-year design life in the project area, full site development, in addition to design year 2027 background volumes, was analyzed. Table 33 summarizes the queuing problems and v/c's on the Build Alternative lane configuration that can be expected if the Pond Site is fully developed by the design year. A queue blockage or spillback condition is considered a problem when the duration exceeds five percent of the peak hour.

As shown in the table, all intersections in the study area will exceed HDM guidelines, two of which will be operating over capacity, and all three intersections will experience queuing problems by 2027.

Table 33. Build Alternative Lane Configuration with Pond Site Traffic V/C Results

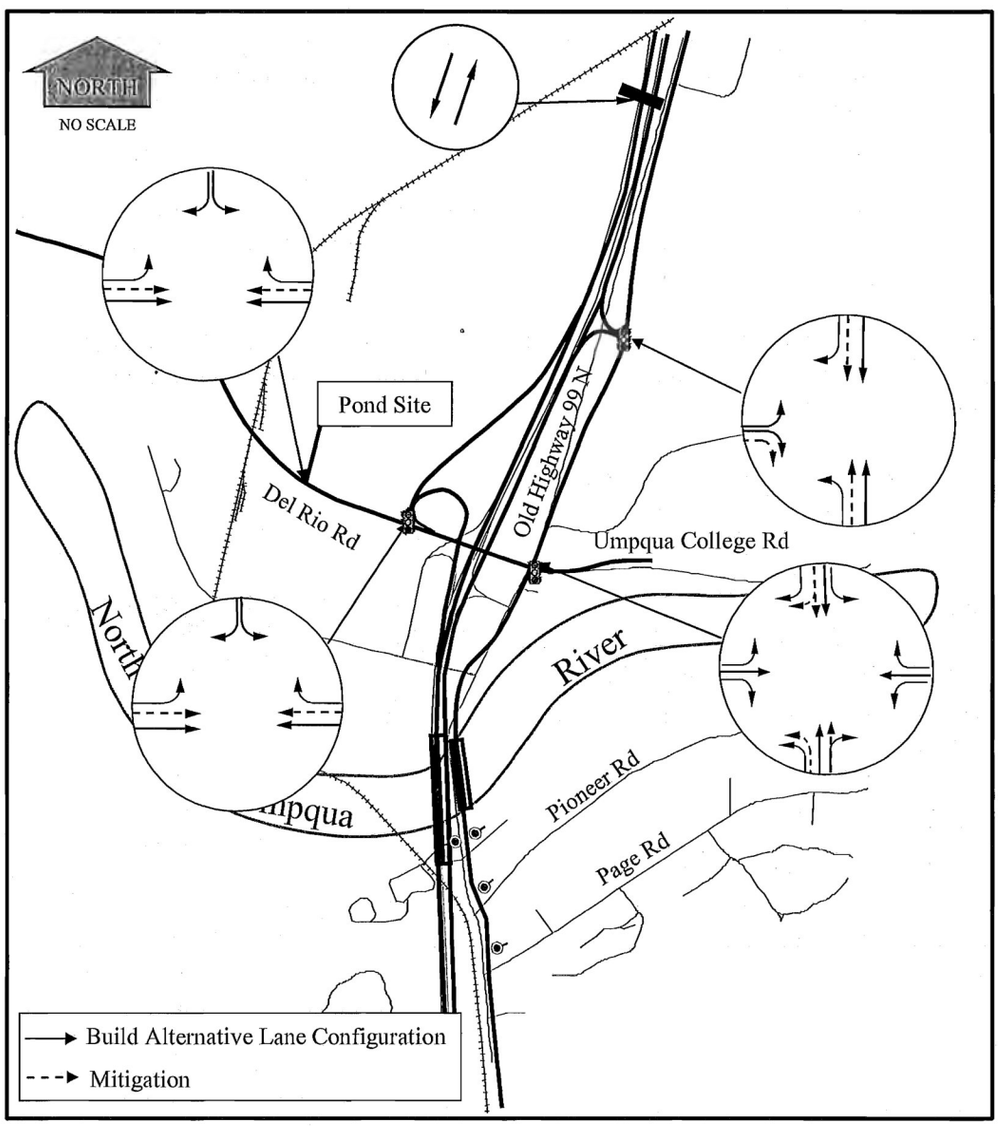
Intersection	2007	2027[1]	2027 Queuing Problems?
Del Rio / Umpqua College Road & Old Highway 99	0.37[2]	**1.03[2]**	**Yes**
Old Highway 99 & I5 NB Ramp Terminal	0.36[3]	**0.74[2]**	**Yes**
Del Rio Rd & I5 SB Ramp Terminal	0.23[3]	**>2.0[3]**	**Yes**

[1] Black shaded cells indicate HDM guidelines have been exceeded
[2] Signalized v/c
[3] Stop-sign controlled v/c

Development does not occur linearly therefore it is inappropriate to extrapolate when v/c's will exceed 1.0 (failure) or when HDM guidelines are exceeded. Based on analysis, the Build Alternative can support a maximum of 300 PM Peak hour trips from the Pond Site. Development resulting in more than 300 PM peak hour trips will trigger mitigation, beginning with a signal at the I5 southbound ramp terminals. Congestion is expected to create long delays for southbound left turn movements. When development exceeds 600 peak hour trips, queues begin to form at the Exit 129 southbound ramp terminal and the Del Rio Road/Umpqua College Road/Old Highway 99 intersection. At this level of development, signal installation will be required at the I5 southbound ramp terminal and additional capacity will be needed on Del Rio Road.

When site development exceeds 800 peak hour trips all intersections become congested. This level of development will not only require the addition of signals at the I5 southbound ramp and capacity on Del Rio Road, but also will require additional capacity on Old Hwy 99 beginning at least 500 feet north of the I5 northbound ramp terminal and terminating at least 500 feet south of the Del Rio / Umpqua College Road and Old Highway 99 intersection. Figure 30 displays the mitigation needed to maintain operations, when site development exceeds 800 trips, through the future year.

Figure 30. 2027 Pond Site Lane Configuration Mitigation



As shown in Table 34, the Build Alternative cannot support full development of the Surplus Site. As previously indicated, a queue blockage or spillback condition is considered a problem when the duration exceeds five percent of the peak hour. All intersections in the study area will exceed HDM guidelines and two intersections will experience queuing problems by 2027.

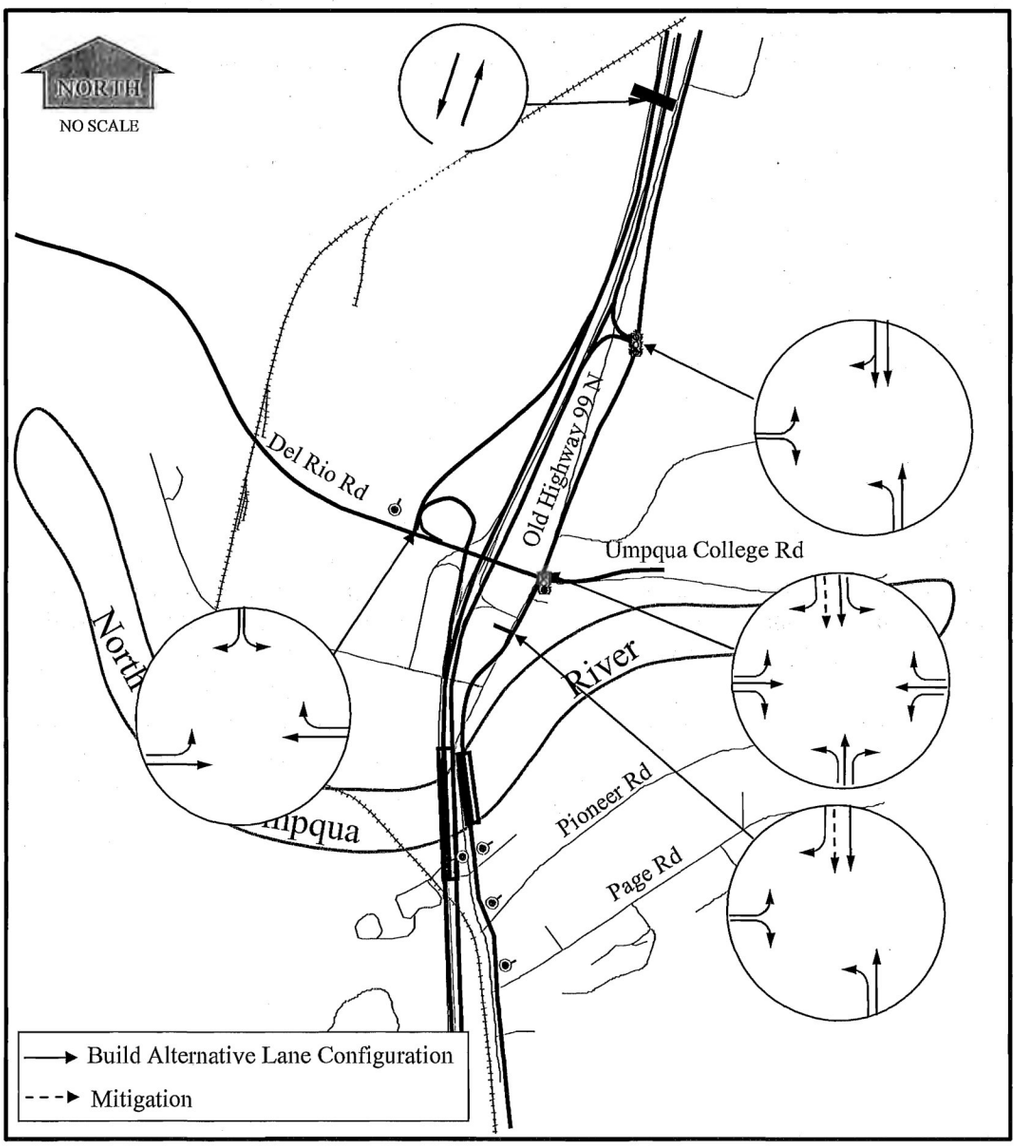
Table 34. Build Alternative Lane Configuration with Surplus Site Traffic V/C Results[1]

Intersection	2007	2027	2027 Queuing Problems?
Del Rio / Umpqua College Road & Old Highway 99	0.37[2]	**0.86[2]**	**YES**
Old Highway 99 & I5 NB Ramp Terminal	0.36[3]	**0.63[2]**	**NO**
Del Rio Rd & I5 SB Ramp Terminal	0.23[3]	**0.70[3]**	**YES**

[1] Black shaded cells indicate HDM guidelines have been exceeded
[2] Signalized v/c
[3] Stop-sign controlled v/c

The Build Alternative can support a maximum of 300 PM Peak hour trips from the Surplus Site. Development resulting in more than 300 PM peak hour trips will trigger mitigation. An additional lane on Old Hwy 99 beginning approximately 500 feet north of the I5 NB ramps and continuing south through the access site will mitigate the queuing issues. A signal analysis at the site and the I5 southbound ramp terminal should be conducted. Based on volumes at the site it will likely require some type of higher level intersection control such as a roundabout or signal. Figure 31 displays the mitigation needed to maintain operations, when site development exceeds 300 trips, through the future year.

Figure 31. 2027 Surplus Site Lane Configuration Mitigation



APPENDIX E: ROUNDABOUT ANALYSIS

Three locations were analyzed for the years 2012 and 2027 to determine if roundabouts could be installed in place of signalized intersections; the Old Highway 99 & I5 Northbound Ramp Terminal intersection, the Old Highway 99 &/ I5 Southbound Ramp Terminal intersection and the Del Rio / Umpqua College Road & Old Highway 99. Analysis volumes include the Pond Site development. Analysis procedures outlined in the Analysis Procedure Manual (APM) Chapter 7.3.6 Roundabouts was used for all three intersections. Bypass lanes were considered when the v/c exceeded 0.80 for heavy right turn movements.

The analysis shows that roundabouts would not be an alternative to a signal at any of the locations (see Figure 32 through Figure 46 for analysis sheets). For the Del Rio / Umpqua College Road & Old Highway 99 intersection, a single-lane roundabout with a southbound bypass lane will work for 2012; however, by 2027 a double-lane roundabout with a southbound bypass will fail.

For the I5 north ramp terminal intersection a single-lane roundabout with an eastbound bypass lane will work for 2012; however, by 2027 a double-lane roundabout with an eastbound bypass will fail. For the I5 south ramp terminal intersection, a Single-lane roundabout with a westbound bypass lane will work for 2012; however by 2027 it will need to be a double-lane roundabout with a westbound bypass lane.

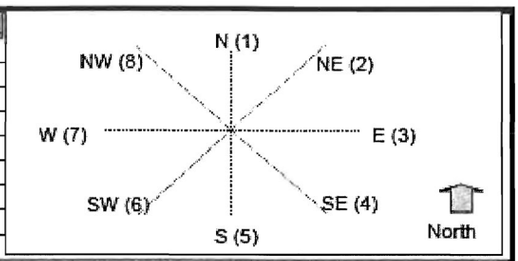
While the v/c's at the I5 south ramp terminal intersection are below the HDM standard for 2027, both of the I5 ramp intersections would need to be roundabouts to function well. As previously discussed, the north ramp terminal intersection will fail with a double-lane roundabout and eastbound bypass lane by 2027, therefore neither location should be considered for a roundabout. In addition roundabouts are best used in places where there are random arrivals because signals cause platooning effects which can cause high delays and queues on the entrance legs. The signal at the Del Rio / Umpqua College Road & Old Highway 99 intersection would contribute to platooning effects at both locations.

Figure 32. Gull-Wing Full-Lane Configuration 2012 Single-lane Roundabout Analysis: I5 Southbound Ramp Terminal Intersection

NCHRP Report 572 Roundabout Calculator
Single-Lane

Version 1.0
01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
ntersection:	SB on/off at Del Rio Road
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2012



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input Volumes to Leg #	N (1), vph			365				120	
	NE (2), vph								
	E (3), vph	60						255	
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	95		290					
	NW (8), vph								
Output	Total Vehicles	155	0	655	0	0	0	375	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	8.0	0.0	8.0	0.0	16.0	0.0	8.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
F_{HV}	0.926	1.000	0.926	1.000	0.862	1.000	0.926	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	458	0	0	0	151	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	75	0	0	0	0	0	320	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	119	0	364	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	195	0	823	0	0	0	471	0
Conflicting flow, pcu/h	364	973	151	546	546	546	75	559

Results	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	785	NA	972	NA	NA	NA	1048	NA
Leg v/c ratio	0.25		0.85				0.45	
Control Delay, s/pcu	6.1		20.2				6.2	
LOS	A		C				A	
95th Percentile Queue (ft)	270	0	1139	0	0	0	652	0

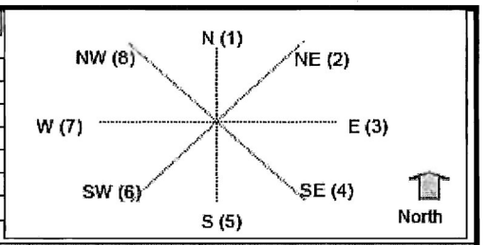
Oregon Dept of Transportation

Transportation Planning Analysis Unit

Figure 33. Gull-Wing Full-Lane Configuration 2012 Single-lane with Westbound Bypass Roundabout Analysis: I5 Southbound Ramp Terminal Intersection

NCHRP Report 572 Roundabout Calculator — Version 1.0
Single-Lane — 01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	SB on/off at Del Rio Road
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2012



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input Volumes to Leg #	N (1), vph			0				120	
	NE (2), vph								
	E (3), vph	60						255	
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	95		290					
	NW (8), vph								
Output	Total Vehicles	155	0	290	0	0	0	375	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	8.0	0.0	8.0	0.0	16.0	0.0	8.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
F_{HV}	0.926	1.000	0.926	1.000	0.862	1.000	0.926	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	0	0	151	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	75	0	0	0	0	0	320	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	119	0	364	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	195	0	364	0	0	0	471	0
Conflicting flow, pcu/h	364	515	151	546	546	546	75	559

Results	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	785	NA	972	NA	NA	NA	1048	NA
Leg v/c ratio	0.25		0.37				0.45	
Control Delay, s/pcu	6.1		5.9				6.2	
LOS	A		A				A	
95th Percentile Queue (ft)	270	0	504	0	0	0	652	0

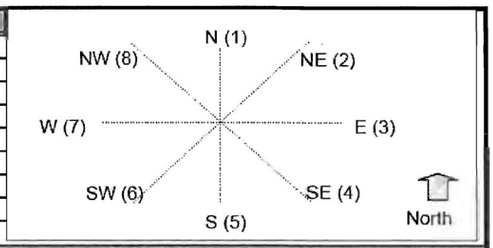
Oregon Dept of Transportation — Transportation Planning Analysis Unit

Figure 34. Gull-Wing Full-Lane Configuration 2027 Single-lane Roundabout Analysis: I5 Southbound Ramp Terminal Intersection

NCHRP Report 572 Roundabout Calculator
Single-Lane

Version 1.0
01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	SB on/off at Del Rio Road
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2027



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input Volumes to Leg #	N (1), vph			475				245	
	NE (2), vph								
	E (3), vph	90						545	
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph	230		700					
	NW (8), vph								
Output	Total Vehicles	320	0	1175	0	0	0	790	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	8.0	0.0	8.0	0.0	16.0	0.0	8.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
F_{HV}	0.926	1.000	0.926	1.000	0.862	1.000	0.926	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	597	0	0	0	308	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	113	0	0	0	0	0	684	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	289	0	879	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	402	0	1476	0	0	0	992	0
Conflicting flow, pcu/h	879	1783	308	1105	1105	1105	113	1281

Results	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	469	NA	831	NA	NA	NA	1009	NA
Leg v/c ratio	0.86		1.78				0.98	
Control Delay, s/pcu	38.6		363.3				39.7	
LOS	E		F				E	
95th Percentile Queue (ft)	556	0	2043	0	0	0	1374	0

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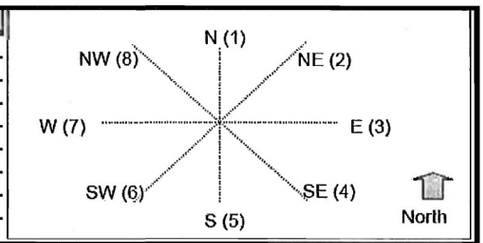
Transportation Planning Analysis Unit

Figure 35. Gull-Wing Full-Lane Configuration 2027 Double-lane Roundabout Analysis: I5 Southbound Ramp Terminal Intersection

NCHRP Report 572 Roundabout Calculator
Multilane

Version 1.0
01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	SB on/off at Del Rio Road
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2027



Volumes		Roundabout Approach/Entry Legs							
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Volumes	N (1), vph						475		
to Leg #	NE (2), vph	90							
	E (3), vph								
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph		230			350	350		
	NW (8), vph								
	Entry Volume, vph	90	230	0	0	350	825	0	0
		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	N (1), vph					245			
	NE (2), vph								
	E (3), vph					270	275		
	SE (4), vph								
	S (5), vph								
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
	Entry Volume, vph	0	0	0	0	515	275	0	0

Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	475	0	0	0	245	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	0	0	0	0	0	0	270	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	0	0	0	0	0	0	0	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	230	0	350	0	0	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	230	0	825	0	0	0	515	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	8.0	0.0	8.0	0.0	16.0	0.0	8.0	0.0
F_{hv}	0.926	1.000	0.926	1.000	0.862	1.000	0.926	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	597	0	0	0	308	0
Leg #	NE (2), pcu/h	113	0	0	0	0	0	0	0
	E (3), pcu/h	0	0	0	0	0	0	684	0

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Transportation Planning Analysis Unit

SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	0	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	289	0	879	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Conflicting flow, pcu/h	879	1783	421	1105	1105	1105	113	1281

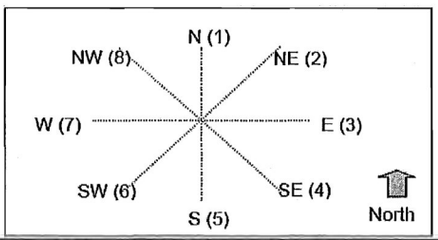
Results	N	NE	E	SE	S	SW	W	NW
Crit. Entry Capacity pcu/h	611	NA	842	NA	NA	NA	1044	NA
Crit. Lane Entry Flow pcu/h	289	0	1036	0	0	0	647	0
Leg v/c ratio	0.47		1.23				0.62	
Control Delay s/pcu	11.1		127.4				8.9	
LOS	B		F				A	
95th Percentile Queue ft	400	0	1435	0	0	0	896	0

Figure 36. Gull-Wing Full-Lane Configuration 2027 Double-lane Roundabout with Westbound Bypass Analysis: I5 Southbound Ramp Terminal Intersection

NCHRP Report 572 Bypass Lane Merge Calculator for Multilane Roundabouts Version 1.0
01/15/08

Bypass Lane Merge Point Analysis
of dual exit lanes and a single bypass lane

Bypass from Leg: 3
to the leg adjacent in the counterclockwise direction



Volumes	Circulatory Exit leg Flow (inner)	Circulatory Exit leg Flow (outer)	Approach Bypass Lane Flow
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	0	all 8 #2 cells	
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	all 8 #1 cells	245	
Critical exiting Lane Volume	245	greatest of two exit lanes	
Right turn volume removed from roundabout approach leg (leg bypass diverges from)			475
Volume Characteristics	**Exit leg**		**Bypass**
% Trucks (in percent, not decimal)	16		8
E_t (2.0 suggested)	2.0		2.0
PHF (0.92 default)	0.86		0.86
F_{HV}	0.862		0.926
Entry/Conflicting Flows			
Entry Flow			597
Conflicting Flow	330		
Bypass Lane Results			
Entry Capacity at merge point of bypass, pc/h	897		
Bypass Lane v/c ratio	0.67		
Control Delay, s/pc	11.6		
LOS	B		
95th Percentile Queue (ft)	474		

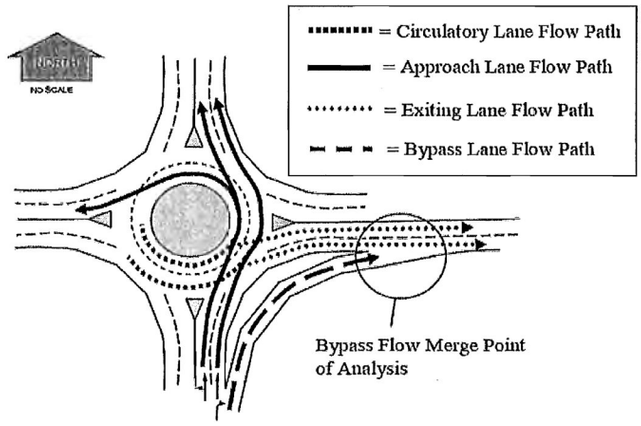
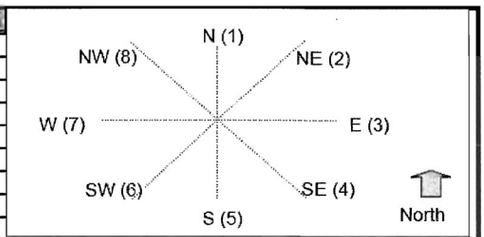


Figure 37. Gull-Wing Full-Lane Configuration 2012 Single-lane Roundabout Analysis: I5 Northbound Ramp Terminal Intersection

NCHRP Report 572 Roundabout Calculator — Version 1.0
Single-Lane — 01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	NBon/offGull Wing at OldHwy99
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2012



Volumes		Roundabout Approach/Entry Legs							
		N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input Volumes to Leg #	N (1), vph					310		105	
	NE (2), vph								
	E (3), vph								
	SE (4), vph								
	S (5), vph	430						250	
	SW (6), vph								
	W (7), vph	10				95			
	NW (8), vph								
Output	Total Vehicles	440	0	0	0	405	0	355	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	8.0	0.0	0.0	0.0	6.0	0.0	9.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
F_{HV}	0.926	1.000	1.000	1.000	0.943	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	365	0	127	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	0	0	0	0	0	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	516	0	0	0	0	0	303	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	12	0	0	0	112	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	528	0	0	0	477	0	430	0
Conflicting flow, pcu/h	112	604	604	604	127	946	516	640

Results	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	1010	NA	NA	NA	995	NA	675	NA
Leg v/c ratio	0.52				0.48		0.64	
Control Delay, s/pcu	7.4				6.9		14.2	
LOS	A				A		B	
95th Percentile Queue (ft)	765	0	0	0	684	0	626	0

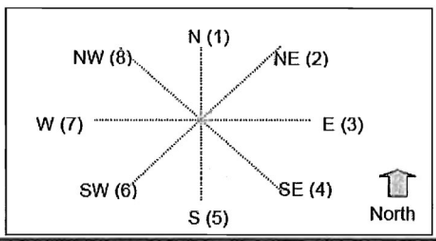
Oregon Dept of Transportation — Transportation Planning Analysis Unit

Figure 38. Gull-Wing Full-Lane Configuration 2012 Single-lane with Eastbound Bypass Roundabout Analysis: I5 Northbound Ramp Terminal Intersection

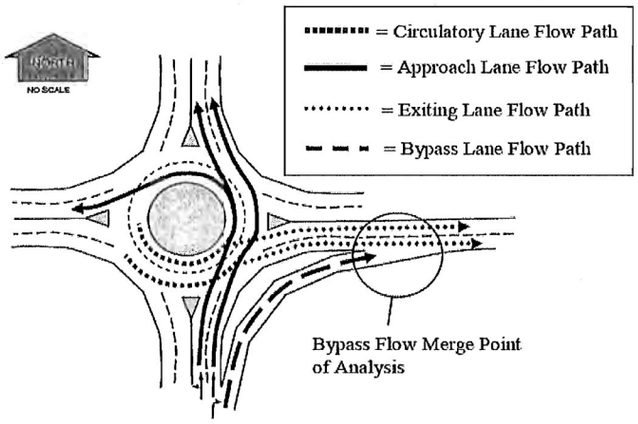
NCHRP Report 572 Bypass Lane Merge Calculator for Multilane Roundabouts Version 1.0
01/15/08

Bypass Lane Merge Point Analysis
of dual exit lanes and a single bypass lane

Bypass from Leg:_____
to the leg adjacent in the counterclockwise direction



Volumes	Circulatory Exit leg Flow (inner)	Circulatory Exit leg Flow (outer)	Approach Bypass Lane Flow
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	0	all 8 #2 cells	
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	all 8 #1 cells	0	
Critical exiting Lane Volume	0	greatest of two exit lanes	
Right turn volume removed from roundabout approach leg (leg bypass diverges from)			0
Volume Characteristics	**Exit leg**		**Bypass**
% Trucks (in percent, not decimal)	0		0
E_t (2.0 suggested)	2.0		2.0
PHF (0.92 default)	0.92		0.92
F_{HV}	1.000		1.000
Entry/Conflicting Flows			
Entry Flow			0
Conflicting Flow	0		
Bypass Lane Results			
Entry Capacity at merge point of bypass, pc/h	1130		
Bypass Lane v/c ratio	0.00		
Control Delay, s/pc	3.2		
LOS	A		
95th Percentile Queue (ft)	0		



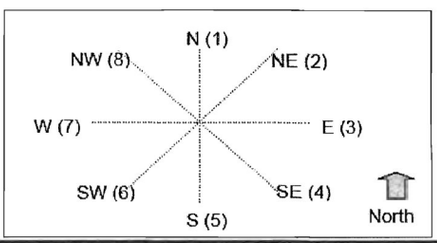
Oregon Dept of Transportation Transportation Planning Analysis Unit

Figure 39. Gull-Wing Full-Lane Configuration 2027 Single-lane Roundabout with Eastbound Bypass: I5 Northbound Ramp Terminal Intersection

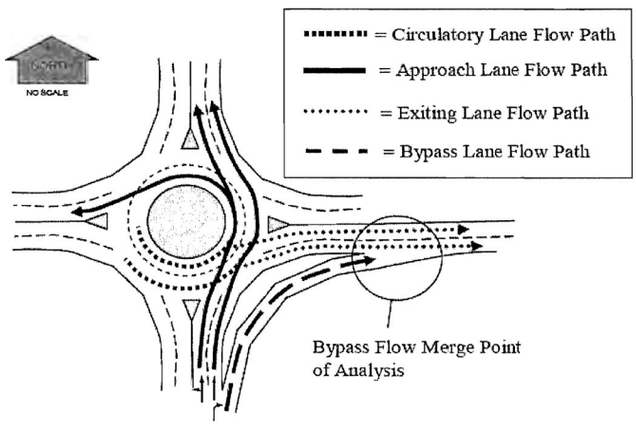
NCHRP Report 572 Bypass Lane Merge Calculator for Multilane Roundabouts Version 1.0
01/15/08

Bypass Lane Merge Point Analysis
of dual exit lanes and a single bypass lane

Bypass from Leg:_____
to the leg adjacent in the counterclockwise direction



Volumes	Circulatory Exit leg Flow (inner)	Circulatory Exit leg Flow (outer)	Approach Bypass Lane Flow
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	0	all 8 #2 cells	
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	all 8 #1 cells	0	
Critical exiting Lane Volume	0	greatest of two exit lanes	
Right turn volume removed from roundabout approach leg (leg bypass diverges from)			0
Volume Characteristics	**Exit leg**		**Bypass**
% Trucks (in percent, not decimal)	0		0
E_t (2.0 suggested)	2.0		2.0
PHF (0.92 default)	0.92		0.92
F_{HV}	1.000		1.000
Entry/Conflicting Flows			
Entry Flow			0
Conflicting Flow	0		
Bypass Lane Results			
Entry Capacity at merge point of bypass, pc/h	1130		
Bypass Lane v/c ratio	0.00		
Control Delay, s/pc	3.2		
LOS	A		
95th Percentile Queue (ft)	0		



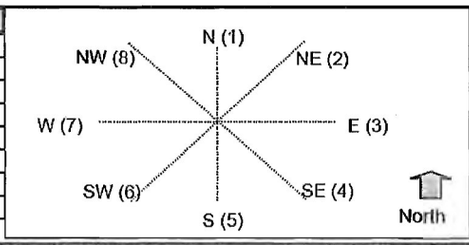
Oregon Dept of Transportation Transportation Planning Analysis Unit

Figure 40. Gull-Wing Full-Lane Configuration 2027 Double-lane Roundabout Analysis: I5 Northbound Ramp Terminal Intersection

NCHRP Report 572 Roundabout Calculator
Single-Lane

Version 1.0
01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	NBon/offGull Wing at OldHwy99
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2027



Volumes		Roundabout Approach/Entry Legs N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input Volumes to Leg #	N (1), vph					460		155	
	NE (2), vph								
	E (3), vph								
	SE (4), vph								
	S (5), vph	700						0	
	SW (6), vph								
	W (7), vph	15				130			
	NW (8), vph								
Output	Total Vehicles	715	0	0	0	590	0	155	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	8.0	0.0	0.0	0.0	6.0	0.0	9.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
F_{HV}	0.926	1.000	1.000	1.000	0.943	1.000	0.917	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	0	0	542	0	188	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	0	0	0	0	0	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	840	0	0	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	18	0	0	0	153	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	858	0	0	0	695	0	188	0
Conflicting flow, pcu/h	153	883	883	883	188	1028	840	1011

Results	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	970	NA	NA	NA	937	NA	488	NA
Leg v/c ratio	0.88				0.74		0.38	
Control Delay, s/pcu	24.2				14.0		11.9	
LOS	C				B		B	
95th Percentile Queue (ft)	1243	0	0	0	997	0	273	0

Oregon Dept of Transportation

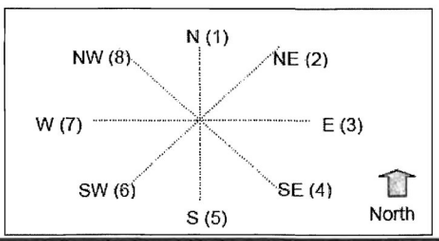
Transportation Planning Analysis Unit

Figure 41. Gull-Wing Full-Lane Configuration 2027 Double-lane Roundabout with Eastbound Bypass Analysis: I5 Northbound Ramp Terminal Intersection

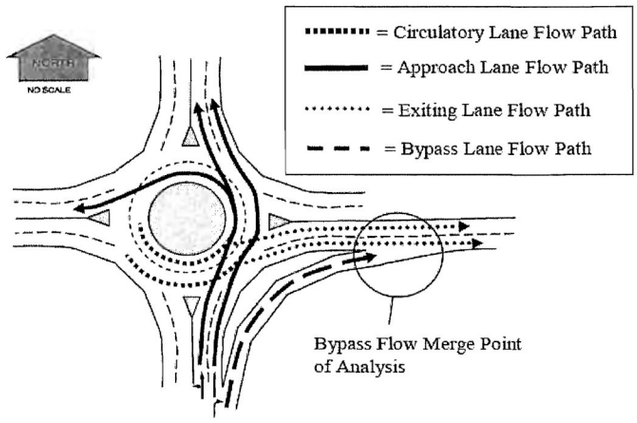
NCHRP Report 572 Bypass Lane Merge Calculator for Multilane Roundabouts Version 1.0 01/15/08

Bypass Lane Merge Point Analysis
of dual exit lanes and a single bypass lane

Bypass from Leg: 7
to the leg adjacent in the counterclockwise direction



Volumes	Circulatory Exit leg Flow (inner)	Circulatory Exit leg Flow (outer)	Approach Bypass Lane Flow
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	350	all 8 #2 cells	
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	all 8 #1 cells	350	
Critical exiting Lane Volume	350	greatest of two exit lanes	
Right turn volume removed from roundabout approach leg (leg bypass diverges from)			495
Volume Characteristics	**Exit leg**		**Bypass**
% Trucks (in percent, not decimal)	6		9
E_t (2.0 suggested)	2.0		2.0
PHF (0.92 default)	0.90		0.90
F_{HV}	0.943		0.917
Entry/Conflicting Flows			
Entry Flow			600
Conflicting Flow	412		
Bypass Lane Results			
Entry Capacity at merge point of bypass, pc/h	847		
Bypass Lane v/c ratio	0.71		
Control Delay, s/pc	13.9		
LOS	B		
95th Percentile Queue (ft)	591		

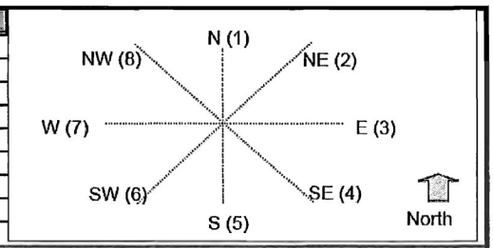


Oregon Dept of Transportation Transportation Planning Analysis Unit

Figure 42. Gull-Wing Full-Lane Configuration 2012 Single-lane Roundabout Analysis: Del Rio / Umpqua College Road & Old Highway 99 Intersection

NCHRP Report 572 Roundabout Calculator — Version 1.0
Single-Lane — 01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	Del Rio Road at OldHwy99
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2012



Volumes		Roundabout Approach/Entry Legs N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input Volumes to Leg #	N (1), vph			40		180		95	
	NE (2), vph								
	E (3), vph	75				95		35	
	SE (4), vph								
	S (5), vph	260		110				185	
	SW (6), vph								
	W (7), vph	345		130		270			
	NW (8), vph								
Output	Total Vehicles	680	0	280	0	545	0	315	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	5.0	0.0	6.0	0.0	9.0	0.0	8.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.92	0.92	0.90	0.92	0.92	0.92	0.90	0.92
F_{HV}	0.952	1.000	0.943	1.000	0.917	1.000	0.926	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	47	0	213	0	114	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	86	0	0	0	113	0	42	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	297	0	130	0	0	0	222	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	394	0	153	0	320	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	776	0	330	0	646	0	378	0
Conflicting flow, pcu/h	603	977	647	887	242	890	512	1379

Results	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	619	NA	592	NA	887	NA	677	NA
Leg v/c ratio	1.25		0.56		0.73		0.56	
Control Delay, s/pcu	144.2		13.5		14.1		11.8	
LOS	F		B		B		B	
95th Percentile Queue (ft)	1132	0	473	0	961	0	548	0

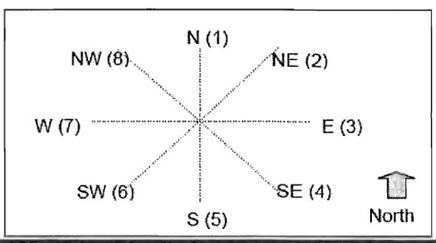
Oregon Dept of Transportation — Transportation Planning Analysis Unit

Figure 43. Gull-Wing Full-Lane Configuration 2012 Single-lane with Southbound Bypass Roundabout Analysis: Del Rio / Umpqua College Road & Old Highway 99 Intersection

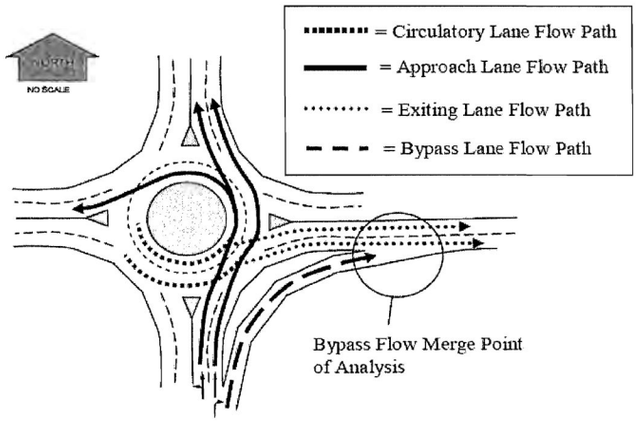
NCHRP Report 572 Bypass Lane Merge Calculator for Multilane Roundabouts Version 1.0
01/15/08

Bypass Lane Merge Point Analysis
of dual exit lanes and a single bypass lane

Bypass from Leg:_____
to the leg adjacent in the counterclockwise direction



Volumes	Circulatory Exit leg Flow (inner)	Circulatory Exit leg Flow (outer)	Approach Bypass Lane Flow
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	0	all 8 #2 cells	
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	all 8 #1 cells	0	
Critical exiting Lane Volume	0	greatest of two exit lanes	
Right turn volume removed from roundabout approach leg (leg bypass diverges from)			0
Volume Characteristics	**Exit leg**		**Bypass**
% Trucks (in percent, not decimal)	0		0
E_t (2.0 suggested)	2.0		2.0
PHF (0.92 default)	0.92		0.92
F_{HV}	1.000		1.000
Entry/Conflicting Flows			
Entry Flow			0
Conflicting Flow	0		
Bypass Lane Results			
Entry Capacity at merge point of bypass, pc/h	1130		
Bypass Lane v/c ratio	0.00		
Control Delay, s/pc	3.2		
LOS	A		
95th Percentile Queue (ft)	0		

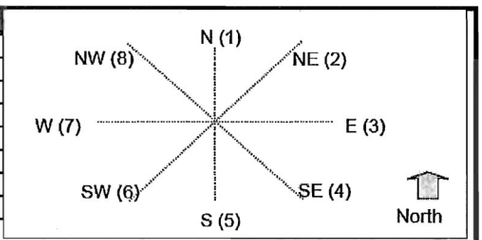


Oregon Dept of Transportation Transportation Planning Analysis Unit

Figure 44. Gull-Wing Full-Lane Configuration 2027 Single-lane Roundabout Analysis: Del Rio / Umpqua College Road & Old Highway 99 Intersection

NCHRP Report 572 Roundabout Calculator — Version 1.0
Single-Lane — 01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	Del Rio Road at OldHwy99
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2027



Volumes		Roundabout Approach/Entry Legs N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
Input	N (1), vph			60		335		175	
Volumes	NE (2), vph								
to Leg #	E (3), vph	115				130		80	
	SE (4), vph								
	S (5), vph	415		145				380	
	SW (6), vph								
	W (7), vph	665		175		335			
	NW (8), vph								
Output	Total Vehicles	1195	0	380	0	800	0	635	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Trucks	5.0	0.0	6.0	0.0	9.0	0.0	8.0	0.0
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
PHF	0.92	0.92	0.90	0.92	0.92	0.92	0.90	0.92
F_{HV}	0.952	1.000	0.943	1.000	0.917	1.000	0.926	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	71	0	397	0	210	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	131	0	0	0	154	0	96	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	474	0	171	0	0	0	456	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	759	0	206	0	397	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	1364	0	448	0	948	0	762	0
Conflicting flow, pcu/h	774	1451	1004	1385	437	1538	776	2138

Results	N	NE	E	SE	S	SW	W	NW
Entry Capacity, pcu/h	521	NA	414	NA	730	NA	520	NA
Leg v/c ratio	2.62		1.08		1.30		1.46	
Control Delay, s/pcu	745.4		94.4		158.2		235.9	
LOS	F		F		F		F	
95th Percentile Queue (ft)	1990	0	642	0	1411	0	1104	0

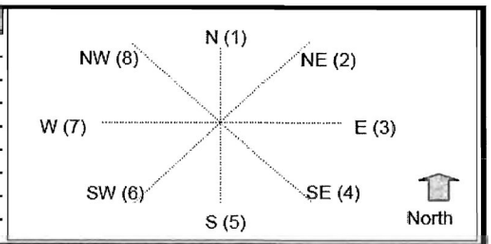
Oregon Dept of Transportation — Transportation Planning Analysis Unit

Figure 45. Gull-Wing Full-Lane Configuration 2027 Double-lane Roundabout Analysis: Del Rio / Umpqua College Road & Old Highway 99 Intersection

NCHRP Report 572 Roundabout Calculator
Multilane

Version 1.0
01/15/08

General & Site Information	
Analyst:	Joseph Meek
Agency/Company:	ODOT/TDD/TPAU
Date:	8/14/2008
Project Name:	Exit 129
Intersection:	Del Rio Road at OldHwy99
Analysis Time Period:	PM Peak
Jurisdiction:	ODOT
Year:	2027



Volumes		Roundabout Approach/Entry Legs							
		N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Volumes	N (1), vph						60		
to Leg #	NE (2), vph								
	E (3), vph	115							
	SE (4), vph								
	S (5), vph	205	210			145			
	SW (6), vph								
	W (7), vph		665			85	90		
	NW (8), vph								
	Entry Volume, vph	320	875	0	0	230	150	0	0
		S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
	N (1), vph	165	170			175			
	NE (2), vph								
	E (3), vph		130			40	40		
	SE (4), vph								
	S (5), vph						380		
	SW (6), vph								
	W (7), vph	335							
	NW (8), vph								
	Entry Volume, vph	500	300	0	0	215	420	0	0

Critical Lane Volumes	N	NE	E	SE	S	SW	W	NW
N (1), vph	0	0	0	0	165	0	0	0
NE (2), vph	0	0	0	0	0	0	0	0
E (3), vph	0	0	0	0	0	0	40	0
SE (4), vph	0	0	0	0	0	0	0	0
S (5), vph	210	0	145	0	0	0	380	0
SW (6), vph	0	0	0	0	0	0	0	0
W (7), vph	665	0	85	0	335	0	0	0
NW (8), vph	0	0	0	0	0	0	0	0
Entry Volume, vph	875	0	230	0	500	0	420	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
PHF	0.92	0.92	0.90	0.92	0.92	0.92	0.90	0.92
E_t	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
% Trucks	5.0	0.0	6.0	0.0	9.0	0.0	8.0	0.0
F_{hv}	0.952	1.000	0.943	1.000	0.917	1.000	0.926	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	71	0	397	0	210	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	131	0	0	0	154	0	96	0

Oregon Dept of Transportation

Transportation Planning Analysis Unit

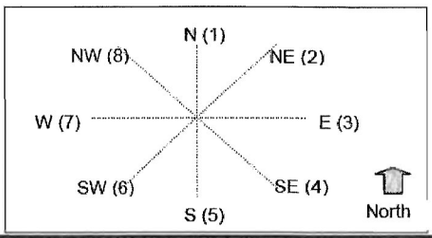
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	474	0	171	0	0	0	456	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	759	0	206	0	397	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Conflicting flow, pcu/h	774	1451	1004	1385	437	1538	776	2138
Results	N	NE	E	SE	S	SW	W	NW
Crit. Entry Capacity pcu/h	657	NA	560	NA	832	NA	657	NA
Crit. Lane Entry Flow pcu/h	999	0	271	0	592	0	504	0
Leg v/c ratio	1.52		0.48		0.71		0.77	
Control Delay s/pcu	254.1		12.3		14.3		21.2	
LOS	F		B		B		C	
95th Percentile Queue ft	1457	0	389	0	882	0	730	0

Figure 46. Gull-Wing Full-Lane Configuration 2027 Double-lane Roundabout with Southbound Bypass Analysis: Del Rio / Umpqua College Road & Old Highway 99 Intersection

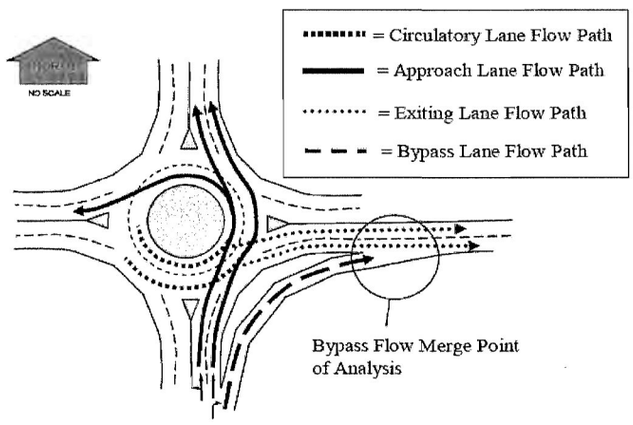
NCHRP Report 572 Bypass Lane Merge Calculator for Multilane Roundabouts Version 1.0
01/15/08

Bypass Lane Merge Point Analysis
of dual exit lanes and a single bypass lane

Bypass from Leg: 1
to the leg adjacent in the counterclockwise direction



Volumes	Circulatory Exit leg Flow (inner)	Circulatory Exit leg Flow (outer)	Approach Bypass Lane Flow
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	90	all 8 #2 cells	
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	all 8 #1 cells	420	
Critical exiting Lane Volume	420	greatest of two exit lanes	
Right turn volume removed from roundabout approach leg (leg bypass diverges from)			665
Volume Characteristics	**Exit leg**		**Bypass**
% Trucks (in percent, not decimal)	0		0
E_t (2.0 suggested)	2.0		2.0
PHF (0.92 default)	0.92		0.92
F_{HV}	1.000		1.000
Entry/Conflicting Flows			
Entry Flow			723
Conflicting Flow	457		
Bypass Lane Results			
Entry Capacity at merge point of bypass, pc/h	821		
Bypass Lane v/c ratio	0.88		
Control Delay, s/pc	27.1		
LOS	D		
95th Percentile Queue (ft)	648		



Oregon Dept of Transportation Transportation Planning Analysis Unit

APPENDIX F: NO-BUILD EIS DATA

Figure 47. No-Build EIS Section Identifier

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: Exit 129 Analysis
LOCATION: Douglas County
ALTERNATIVE: No-Build

PAGE: 1
PRINTING DATE: May 12, 2010
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	TRKS	SP	PEAK HOUR VOL	AUTO	MTR	HTR	SP	AVERAGE HOUR VOL	TRKS	SP	PEAK TRUCK HOUR VOL	AUTO	MTR	HTR	SP
I-5 SB before off ramp																		
001	0.25	2007	17200	4283	65	1720	1264	100	356	65	0	0	65	1720	1261	103	353	65
001	0.25	2027	24100	6001	65	2410	1771	140	499	65	0	0	65	2410	1766	145	499	65
Section of I-5 (SB) betwee																		
002	0.25	2007	16000↘	4000	65	1620	1173	97	350	65	0	0	65	1620	1171	99	350	65
002	0.25	2027	21800	5450	65	2220	1607	133	480	65	0	0	65	2220	1605	135	480	65
I-5 SB after on ramp																		
003	0.25	2007	20600	4614	65	2020	1521	115	384	65	0	0	65	1970	1456	118	396	65
003	0.25	2027	26800	6003	65	2660	2003	152	505	65	0	0	65	2590	1914	155	521	65
I-5 NB before off ramp																		
004	0.25	2007	20400	4549	65	1940	1455	109	376	65	0	0	65	1930	1434	112	384	65
004	0.25	2027	31100	6935	65	2940	2205	165	570	65	0	0	65	2930	2177	170	583	65
I-5 NB between on and off																		
005	0.25	2007	16800	4368	65	1690↘	1229↘	98↘	363↘	65	0	0	65	1690↘	1227↘	96↘	367↘	65
005	0.25	2027	23400	6084	65	2380	1730	138	512	65	0	0	65	2380	1728	136	516	65
I-5 NB after on ramp																		
006	0.25	2007	17900↘	4457	65	1788	1309	103	368	65	0	0	65	1780	1309	103	368	65
006	0.25	2027	25400	6325	65	2540	1867	147	526	65	0	0	65	2540	1867	147	526	65
I-5 NB on ramp																		
007	0.27	2007	1100	99	40	90	81	5	4	40	0	0	40	80	69	7	4	40
007	0.27	2027	1900	171	40	160	144	9	7	40	0	0	40	150	131	12	7	40
I-5 NB off ramp																		
008	0.30	2007	3600	324	40	250	227	11	12	40	0	0	40	250	219	15	16	40
008	0.30	2027	7700	693	40	560	508	25	27	40	0	0	40	560	490	34	36	40
I-5 SB on ramp																		
009	0.40	2007	4600	428	40	400	348	18	34	40	0	0	40	350	281	20	49	40
009	0.40	2027	5000	465	40	440	384	19	37	40	0	0	40	390	313	22	55	40
WB DIRECTION; W leg of																		
010	0.25	2007	1200	89	40	100	92	2	6	40	0	0	40	90	80	4	6	40
010	0.25	2027	2300	170	40	190	175	4	11	40	0	0	40	180	142	7	11	40
WB DIRECTION: W leg of																		

ABBREVIATION SECT = SECTION NUMBER
VOL = TOTAL VOLUME
MTR = MEDIUM TRUCK VOLUM
SP = SPEED OF VEHICLE
AUTO = AUTOMOBILE VOLUME
HTR = HEAVY TRUCK VOLUME

ANALYST: Christina McDaniel-Wilson
CHECKED BY:
FILE: NB2010.MDB

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: Exit 129 Analysis
LOCATION: Douglas County
ALTERNATIVE: No-Build

PAGE: 2
PRINTING DATE: May 12, 2010
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	AVERAGE DAY TRKS	AVERAGE DAY SP	PEAK HOUR VOL	PEAK HOUR AUTO	PEAK HOUR MTR	PEAK HOUR HTR	PEAK HOUR SP	AVERAGE HOUR VOL	AVERAGE HOUR TRKS	AVERAGE HOUR SP	PEAK TRUCK HOUR VOL	PEAK TRUCK HOUR AUTO	PEAK TRUCK HOUR MTR	PEAK TRUCK HOUR HTR	PEAK TRUCK HOUR SP
011	0.25	2007	2400	182	55	200	179	7	14	55	0	0	55	190	165	10	15	55
011	0.25	2027	6900	517	55	580	521	20	39	51	0	0	55	550	480	28	42	53
EB DIRECTION: W leg of I																		
012	0.25	2007	2300	389	55	230	185	12	33	55	0	0	55	190	138	16	36	55
012	0.25	2027	4600	777	55	460	370	24	66	55	0	0	55	380	276	32	72	55
WB DIRECTION: Del Rio F																		
013	0.13	2007	5700	445	55	480	426	20	34	55	0	0	55	440	381	22	37	55
013	0.13	2027	9200	718	55	780	693	32	55	44	0	0	55	720	622	37	61	52
EB DIRECTION: Del Rio R																		
014	0.13	2007	2200	312	55	200	166	8	25	55	0	0	55	170	130	13	27	55
014	0.13	2027	4200	596	55	400	333	18	49	55	0	0	55	340	262	25	53	55
WB DIRECTION: E leg of (																		
015	0.25	2007	3300	79	55	250	242	7	1	55	0	0	55	250	236	13	1	55
015	0.25	2027	4800	115	55	360	349	10	1	55	0	0	55	360	340	19	1	55
EB DIRECTION: E leg of C																		
016	0.25	2007	2000	120	55	160	151	7	2	55	0	0	55	160	150	8	2	55
016	0.25	2027	3500	210	55	280	265	12	3	55	0	0	55	280	263	14	3	55
SB DIRECTION: S leg of C																		
017	0.36	2007	5100	434	40	420	388	17	15	40	0	0	40	390	353	20	17	40
017	0.36	2027	9900	842	40	840	777	34	29	37	0	0	40	780	706	40	34	40
NB DIRECTION: S leg of C																		
018	0.36	2007	5400	345	40	480	422	20	18	40	0	0	40	430	386	24	20	40
018	0.36	2027	8600	550	40	720	659	32	29	40	0	0	40	670	602	37	31	40
SB DIRECTION: Old Hwy 9																		
019	0.14	2007	8000	560	40	660	612	25	22	40	0	0	40	630	569	33	28	40
019	0.14	2027	14100	987	40	1160	1077	45	38	40	0	0	40	1110	1003	58	49	40
NB DIRECTION: Old Hwy 9																		
020	0.14	2007	4800	336	40	410	376	18	16	40	0	0	40	390	351	21	18	40
020	0.14	2027	7800	546	40	670	615	29	26	40	0	0	40	630	566	34	30	40
SB DIRECTION: Old Hwy																		
021	0.08	2007	5400	416	40	550	512	21	17	40	0	0	40	520	473	25	21	40

ABBREVIATION SECT = SECTION NUMBER
VOL = TOTAL VOLUME
MTR = MEDIUM TRUCK VOLUM
SP = SPEED OF VEHICLE
AUTO = AUTOMOBILE VOLUME
HTR = HEAVY TRUCK VOLUME

ANALYST: Christina McDaniel-Wilson
CHECKED BY:
FILE: NB2010.MDB

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: Exit 129 Analysis
LOCATION: Douglas County
ALTERNATIVE: No-Build

PAGE: 3
PRINTING DATE: May 12, 2010
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	AVERAGE DAY TRKS	AVERAGE DAY SP	PEAK HOUR VOL	PEAK HOUR AUTO	PEAK HOUR MTR	PEAK HOUR HTR	PEAK HOUR SP	AVERAGE HOUR VOL	AVERAGE HOUR TRKS	AVERAGE HOUR SP	PEAK TRUCK HOUR VOL	PEAK TRUCK HOUR AUTO	PEAK TRUCK HOUR MTR	PEAK TRUCK HOUR HTR	PEAK TRUCK HOUR SP
021	0.08	2027	10000	650	40	1000	931	38	31	40	0	0	40	950	864	48	38	40
NB DIRECTION: Old Hwy																		
022	0.08	2007	5700	433	40	460	422	19	19	40	0	0	40	440	395	22	23	40
022	0.08	2027	9500	722	40	760	698	31	31	40	0	0	40	730	655	37	38	40
SB DIRECTION: N leg of C																		
023	0.25	2007	3800	365	40	350	317	16	17	40	0	0	40	320	283	16	21	40
023	0.25	2027	6400	614	40	580	525	27	28	40	0	0	40	530	469	27	34	40
WB DIRECTIONB DIRECT																		
024	0.25	2007	4400	343	40	340	308	14	18	40	0	0	40	330	291	17	22	40
024	0.25	2027	7200	562	40	560	506	24	30	40	0	0	40	550	484	29	37	40

ABBREVIATION SECT = SECTION NUMBER
VOL = TOTAL VOLUME
MTR = MEDIUM TRUCK VOLUM
SP = SPEED OF VEHICLE
AUTO = AUTOMOBILE VOLUME
HTR = HEAVY TRUCK VOLUME

ANALYST: Christine McDaniel-Wilson
CHECKED BY:
FILE: NB2010.MDB

APPENDIX G: BUILD EIS DATA

Figure 48. Build EIS Section Identifier

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: Exit 129 Analysis
LOCATION: Douglas County
ALTERNATIVE: Build

PAGE: 1
PRINTING DATE: May 18, 2010
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	TRKS	SP	PEAK HOUR VOL	AUTO	MTR	HTR	SP	AVERAGE HOUR VOL	TRKS	SP	PEAK TRUCK HOUR VOL	AUTO	MTR	HTR	SP
I-5 SB before off ramp																		
001	0.25	2007	17200	4283	65	1720	1264	100	356	65	0	0	65	1720	1261	103	356	65
001	0.25	2027	24100	6001	65	2410	1771	140	499	65	0	0	65	2410	1766	145	499	65
Section of I-5 (SB) betweer																		
002	0.25	2007	16000	4000	65	1620	1173	97	350	65	0	0	65	1620	1171	99	350	65
002	0.25	2027	21800	5450	65	2220	1607	133	480	65	0	0	65	2220	1605	135	480	65
I-5 SB after on ramp																		
003	0.25	2007	20600	4614	65	2020	1521	115	384	65	0	0	65	1970	1456	118	396	65
003	0.25	2027	26800	6003	65	2880	2003	152	505	65	0	0	65	2590	1914	155	521	65
I-5 NB before off ramp																		
004	0.25	2007	20400	4549	65	1940	1455	109	376	65	0	0	65	1930	1434	112	384	65
004	0.25	2027	31100	6935	65	2940	2205	165	570	65	0	0	65	2930	2177	170	583	65
I-5 NB between on and off																		
005	0.25	2007	16800	4368	65	1690	1229	98	363	65	0	0	65	1690	1227	96	367	65
005	0.25	2027	23400	6084	65	2380	1730	138	512	65	0	0	65	2380	1728	136	516	65
I-5 NB after on ramp																		
006	0.25	2007	17900	4457	65	1780	1309	103	368	65	0	0	65	1780	1309	103	368	65
006	0.25	2027	25400	6325	65	2540	1867	147	526	65	0	0	65	2540	1867	147	526	65
I-5 NB on ramp																		
007	0.27	2007	1100	99	40	90	81	5	4	40	0	0	40	80	69	7	4	40
007	0.27	2027	1900	171	40	160	144	9	7	40	0	0	40	150	131	12	7	40
I-5 NB off ramp																		
008	0.30	2007	3600	324	40	250	227	11	12	40	0	0	40	250	219	15	16	40
008	0.30	2027	7700	693	40	560	508	25	27	40	0	0	40	560	490	34	36	40
I-5 SB on ramp																		
009	0.40	2007	4800	428	40	400	348	18	34	40	0	0	40	350	281	20	49	40
009	0.40	2027	5000	465	40	440	384	19	37	40	0	0	40	390	313	22	55	40
WB DIRECTION: W leg of																		
010	0.25	2007	1200	89	40	100	92	2	6	40	0	0	40	90	80	4	6	40
010	0.25	2027	2300	170	40	190	175	4	11	40	0	0	40	160	142	7	11	40
WB DIRECTION: W leg of																		

ABBREVIATION SECT = SECTION NUMBER
VOL = TOTAL VOLUME
MTR = MEDIUM TRUCK VOLUM
SP = SPEED OF VEHICLE
AUTO = AUTOMOBILE VOLUME
HTR = HEAVY TRUCK VOLUME

ANALYST: Christina McDaniel-Wilson
CHECKED BY:
FILE: 82010.MDB

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: Exit 129 Analysis
LOCATION: Douglas County
ALTERNATIVE: Build

PRINTING DATE: May 18, 2010
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	TRKS	SP	PEAK HOUR VOL	AUTO	MTR	HTR	SP	AVERAGE HOUR VOL	TRKS	SP	PEAK TRUCK HOUR VOL	AUTO	MTR	HTR	SP
011	0.25	2007	2400	182	40	200	179	7	14	40	0	0	40	190	165	10	15	40
011	0.25	2027	6800	517	40	580	521	20	39	40	0	0	40	550	480	28	42	40
EB DIRECTION: W leg of I																		
012	0.25	2007	2300	389	40	230	185	12	33	40	0	0	40	190	138	16	36	40
012	0.25	2027	4600	777	40	460	370	24	66	40	0	0	40	380	276	32	72	40
WB DIRECTION: Del Rio F																		
013	0.13	2007	5700	445	40	480	426	20	34	40	0	0	40	440	381	22	37	40
013	0.13	2027	9200	716	40	780	693	32	55	33	0	0	40	720	622	37	61	38
EB DIRECTION: Del Rio R																		
014	0.13	2007	2200	312	40	200	166	9	25	40	0	0	40	170	130	13	27	40
014	0.13	2027	4200	596	40	400	333	18	49	40	0	0	40	340	262	25	53	40
WB DIRECTION: E leg of (																		
015	0.25	2007	3300	79	40	250	242	7	1	40	0	0	40	250	236	13	1	40
015	0.25	2027	4800	115	40	360	349	10	1	40	0	0	40	360	340	19	1	40
EB DIRECTION: E leg of C																		
016	0.25	2007	2000	120	40	160	151	7	2	40	0	0	40	160	150	8	2	40
016	0.25	2027	3500	210	40	280	265	12	3	40	0	0	40	280	253	14	3	40
SB DIRECTION: S leg of C																		
017	0.36	2007	5100	434	40	420	388	17	15	40	0	0	40	390	353	20	17	40
017	0.36	2027	9900	842	40	840	777	34	29	37	0	0	40	780	706	40	34	40
NB DIRECTION: S leg of C																		
018	0.36	2007	5400	346	40	460	422	20	18	40	0	0	40	430	386	24	20	40
018	0.36	2027	8600	550	40	720	659	32	29	40	0	0	40	670	602	37	31	40
SB DIRECTION: Old Hwy																		
021	0.08	2007	5900	555	40	500	452	22	26	40	0	0	40	450	400	23	27	40
021	0.08	2027	11400	1072	40	980	885	43	52	40	0	0	40	880	782	44	54	40
NB DIRECTION: Old Hwy																		
022	0.08	2007	4000	292	40	340	310	14	16	40	0	0	40	300	268	18	14	40
022	0.08	2027	6600	482	40	560	512	22	26	40	0	0	40	490	437	30	23	40
SB DIRECTION: N leg of C																		
023	0.25	2007	3800	385	40	350	317	16	17	40	0	0	40	320	283	16	21	40

ABBREVIATION SECT = SECTION NUMBER
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AUTO = AUTOMOBILE VOLUME
HTR = HEAVY TRUCK VOLUME

ANALYST: Christina McDaniel-Wilson
CHECKED BY:
FILE: B2010.MDB

TRANSPORTATION PLANNING ANALYSIS UNIT
EIS TRAFFIC DATA

PROJECT: Exit 129 Analysis
LOCATION: Douglas County
ALTERNATIVE: Build

PRINTING DATE: May 18, 2010
UNIT: English

SECT	DIST	YEAR	AVERAGE DAY VOL	TRKS	SP	PEAK HOUR VOL	AUTO	MTR	HTR	SP	AVERAGE HOUR VOL	TRKS	SP	PEAK TRUCK HOUR VOL	AUTO	MTR	HTR	SP
023	0.25	2027	6400	614	40	580	525	27	28	40	0	0	40	530	489	27	34	40
WB DIRECTIONB DIRECT																		
024	0.25	2007	4400	343	40	340	308	14	18	40	0	0	40	330	291	17	22	40
024	0.25	2027	7200	562	40	580	506	24	30	40	0	0	40	550	484	29	37	40

ABBREVIATION SECT = SECTION NUMBER
VOL = TOTAL VOLUME
MTR = MEDIUM TRUCK VOLUM
SP = SPEED OF VEHICLE
AUTO = AUTOMOBILE VOLUME
HTR = HEAVY TRUCK VOLUME

ANALYST: Christina McDaniel-Wilson
CHECKED BY:
FILE: B2016.MDB

APPENDIX F: AMENDMENT TO ROSEBURG/DOUGLAS COUNTY URBAN GROWTH MANAGEMENT AGREEMENT STANDARDS SUPPLEMENT

REVISED - DRAFT AMENDMENT - SEPTEMBER 23, 2010

ROSEBURG/DOUGLAS COUNTY URBAN GROWTH MANAGEMENT AGREEMENT STANDARDS SUPPLEMENT

AN AGREEMENT BETWEEN THE CITY OF ROSEBURG AND DOUGLAS COUNTY FOR THE JOINT MANAGEMENT OF THE ROSEBURG URBAN GROWTH AREA

XII Winchester Interchange Industrial Site Development

XII a The City and the County have a common concern for the economic health and vitality of the central Douglas County region. Consistent with the Winchester Interchange (I-129) Area Management Plan (IAMP), the City and County, together with ODOT, also have a commitment to conserve the Industrial Site west of I-5 at Exit 129 in the Roseburg Urban Growth Boundary from conflicting commercial retail and service uses. The industrial site, illustrated in map ____ attached, has been designated with the intent of providing for industrial uses consistent with OAR 660-009-005(3) and (8), and to conserve the limited supply of industrial land designated in the Roseburg Comprehensive Plan and implemented by Douglas County's Land Use and Development Ordinance.

XII b Prior to approval of any development application at the Winchester Interchange Industrial Site west of I-5, a site plan for any proposed use or reuse endorsed by the City and ODOT shall be submitted to the County Planning Department. The site plan shall, at a minimum, address sewer and water service; utility service; site access; internal traffic circulation; parcelization (including minimum parcel size standards); and drainage. Uses authorized in the site plan shall be consistent with Section XII c below. Any application for a new use or reuse shall not be deemed complete without the required City and ODOT review and endorsement.

XII c The Winchester Interchange Industrial Site shall be maintained in a general or "heavy" industrial zoning classification and shall not be used for commercial retail or service uses. For the purposes of this provision, commercial retail and service use means any of the following: (1) other employment uses as defined in OAR 660-009-005(6); (2) commercial retail or services uses listed as permitted uses in the County's M1 and M2 zone; (3) "Big-Box" (mixed use) commercial warehouse stores; (4) manufactured homes or vehicles supply and sales facilities; (5) any use where a majority of revenue is generated from sales of products not manufactured or processed on-site; or (6) traveler oriented retail and service facilities such as truck stops, fuel stations, restaurants and overnight accommodations.

XII d The Exit 129 IAMP is a part of the Roseburg Comprehensive Plan and jointly implemented by the City and County. The purpose of this supplemental standard is to conserve industrial land from conflicting uses; to assure that the site is used for basic industries as defined in OAR 660-009-005(3) and (8); and to protect the public's investment in the long-term capacity of Exit 129 and to achieve the objectives of ODOT for Exit 129 interchange area management.

APPENDIX G: OFFICIAL PROJECT ACCESS LIST

ACCESS LIST AND PROJECT WORKSHEET

10/1/2010

Project Name: 15186 - Del Rio Rd_Winchester Ichng
Created By: J.W.Oltman
Date: 1/6/2007
R/W Modified By:
Date:
TCM Modified By:
Date:
E/A: 35721220 & 35701003
Hwy: 1
AM Sub-Team Modified By:
Date:
Key #: 15186
Team Leader Modified by:
Date:

Ref #	PHYSICAL INVENTORY								ACCESS CONTROL RESEARCH								R/W RESEARCH	EXISTING APPROACHES STATUS RESEARCH										PROJECT PLAN							CONFIRMATION OF CHAMPS RECORDS		
	Side (L/R)	Mile Point	Eng Station	Extg Width (ft)	Surface Type	Property Use	Property Address	Comments	Ext R/W File No	Tax Lot	Twnsp-Rng-Sect	Map No	Res Eng Sta	Side	Res Width	Comments	Ownership	Side (L/R)	Legal Status (no/P#/GF)	Permit Issue Date	Mile Point	Station (ft)	Permitted Width (ft)	Surface Type	Permitted Use	Permitted To	Comments	Determination	Approach Type	Const Width (ft)	Const Sta	Comments	ADL Priority Ranking	Future Rec.	Action By District	Action By R/W	Action By xxx?
[illegible] Douglas County Del Rio Road [illegible]																																					
	R	0.26			Paved	Industrial (Lumber mill)				600,700, 800	26-06-24						DC Lumber											Do Nothing									
	L	0.30			Paved	Public (Gun Club)				700	26-06-25						Rod & Gun Clb											Do Nothing									
	R	0.70			paved	Commerical				200-600	26-06-24						Multiple Owners											Do Nothing									
	L	0.71			Paved	Commerical				300-400	26-06-23D						Multiple Owners											Do Nothing									
	R	0.85			Paved	Residental				300	26-06-24C						Blackford											Do Nothing									
	R	0.94			Paved	Residental				200	26-06-24C						Smith											Reconstruct									
	L	0.97			Paved	Public	Akin Ln southerly end										Multiple Owners											Remove									
	L	1.12			Paved	Public	Akin Ln westerly end										Multiple Owners											Reconstruct									
	L	1.17			Paved	Residental				2300	26-06-23A																	Reconstruct									
Proposed New Alignment [illegible] Douglas County Del Rio Road [illegible]																																					
	R		44+20		Paved	Commerical				600-800	26-06-24						DC Lumber											Construct									
	L		44+20		Paved	Commerical				600-800	26-06-24						DC Lumber											Construct									
	L		30+00		Paved	Residental				100	26-06-24C						DC Lumber											Construct									
Old Highway [illegible] Douglas County Road [illegible] Formerly Oakland [illegible] Highway 234)																																					
	R	11.59	2248+50	300	Paved	Public				200	26-06-24D						Douglas County											Reconstruct									
	R	11.59	2248+50	300	Paved	Public				202	26-06-24D						Douglas County											Reconstruct									
	R	11.59	2248+50	300	Paved	Public				300	[illegible]-24D						Douglas County											Reconstruct									
	R	11.59	2248+50	300	Paved	Public				400	[illegible]-24D						Douglas County											Reconstruct									
	L	11.65	2251+60	25		Residental				100	[illegible]-24D						Jackson Ranch											Reconstruct									
	L	11.67	2252+63.76	15		Residental				100	[illegible]-24D						Jackson Ranch											remove									
	L	11.73	2250+90.50		Paved	Public	College Road										Douglas County											Reconstruct									
	L	11.77	2257+80			Residental				500	[illegible]-24D						Sepulvado	L	Reservation	No Permit		2257+80						Remove									
	R	11.81	2260+00		Paved	Public	I-5 Ramps										ODOT											Remove									
	L	11.90								600	[illegible]-25		2264+75	Left			Beckley		Reservation			2264+75						?									
	L	11.92	2265+80			Commerical				600	26-06-25						Beckley		35121	1/21/1993	11.93?	2264+75	28	paved	Motel/gas	Beckley		Remove									
	R	11.95	2267+40.28		Paved	Public	Del Rio Road										Douglas County											Remove									
	L	11.97	2268+75			Commerical				101,102, 500							Beckley	L	NO Permit									Remove									
	L	12.01	2270+60			Commerical				101,102, 500	26-06-25						Beckley	L	35122	1/21/1993	12.04?	2270+60	28	paved	Rest/condo	Beckley		Remove									
						Commerical				500	26-06-25							L	Reservation			2290+75	30				OS 2272+20										
						Commerical				500	26-06-25							L	Reservation			2291+20	30				OS 2272+75										
Proposed New Interchange [illegible] Connections																																					
																	Beck/Sepulvado											Construct			55+50						
																	Jackson Ranch											Construct			11+00						
																	Douglas County											Construct			9+20						
End of Project Milepoint [illegible]																																					

REGION MANAGER'S APPROVAL: DATE:
*Only needed if Project Recognizing an approach

DISTICT MANAGER'S APPROVAL: DATE:

AREA MANAGER'S APPROVAL: DATE:

APPENDIX H: COMMITTEE MEETINGS AND PUBLIC INVOLVEMENT

APPENDIX I: STAFF REPORT

APPENDIX J: FINDINGS OF COMPLIANCE

107

DEPT OF

MAR 18 2011

LAND CONSERVATION
AND DEVELOPMENT

CITY OF ROSEBURG
900 S.E. DOUGLAS AVENUE
ROSEBURG, OR 97470-3397

TO:

ATTENTION: PLAN AMENDMENT SPECIALIST
DLCD
635 CAPITOL STREET NE, SUITE 150
SALEM, OR 97301-2540