Interchange Area Management Plan

I-5 Interchange 123 (Fairgrounds)

Douglas County, Oregon

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

Prepared by
David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon

June 2005

Interchange Area Management Plan

I-5 Interchange 123 (Fairgrounds)

Douglas County, Oregon

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

Prepared by
David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon

June 2005

List of Acronyms

C2	Community Commercial
C3	General Commercial
CT	Tourist Commercial
I-5	Interstate 5
IAMP	Interchange Area Management Plan
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
OAR	Oregon Administrative Rule
ODOT	Oregon Department of Transportation
OHP	1999 Oregon Highway Plan
OTC	Oregon Transportation Commission
OTIA	Oregon Transportation Investment Act
OTP	Oregon Transportation Plan
PR	Public Reserve
R1	Single-Family Residential
RS	Suburban Residential
SPIS	Safety Priority Index System
TAC	Technical Advisory Committee
TPR	Transportation Planning Rule
TSP	Transportation System Plan
UGA	Urban Growth Area
UGB	Urban Growth Boundary
v/c	Volume to Capacity Ratio

EXECUTIVE SUMMARY

This document comprises the Interchange Area Management Plan (IAMP) for the Fairgrounds Interchange (123). Interchange 123 provides the sole access to the Douglas County Fairgrounds, as well as some residential areas just outside of the Roseburg city limits but within its urban growth boundary.

The purpose of this planning effort is to evaluate the operation of Interchange 123, assess the limitations and issues of concern, and, in general terms, identify possible future long-range needs attributable to planned development in the area. It is also intended to assess the impacts of the possible future construction of a new bridge across the South Umpqua River along the Portland Avenue alignment. The primary goal of the IAMP is to protect the function of the interchange and preserve the investment in the facility as specified in the Oregon Highway Plan and Douglas County Transportation System Plan through the creation of a comprehensive land use – transportation strategy for the IAMP study area.

Four alternative interchange concepts were evaluated. The recommended alternative consists of a tight diamond interchange, similar to what currently exists. The project would replace the structurally deficient I-5 overcrossing and improve the safety and operational efficiency of the interchange. Portland Avenue, the interchange crossroad, would be widened to four lanes with bike lanes and sidewalks on both sides. This width would be to accommodate traffic associated with large events at the Fairgrounds, not daily traffic. The ramp terminals would be made to intersect Portland Avenue at more perpendicular angles. Acceleration and deceleration lengths on the on- and off-ramps would be increased to meet current ODOT design standards. A sight distance deficiency caused by bridge columns at the southbound ramp terminals would also be corrected. Funding for this project will be provided through the 2003 Oregon Transportation Investment Act (OTIA) legislation. Funding for design and construction will be released after the IAMP is adopted by the Oregon Transportation Commission and the local jurisdictions.

An access management strategy was developed as part of this planning effort. The primary recommendation is the relocation of Frear Street to line up with Kendall Street should a bridge be constructed that connects Portland Avenue with Roseburg, or if the Fairgrounds proposes an expansion that would result in an increase in peak period traffic volumes.

Traffic operations at Interchange 123 function well except during large events at the Fairgrounds, such as the County Fair. During these events the interchange experiences significant congestion, and manual traffic control is used to direct traffic through the interchange. This type of control reportedly works well. Even so, substantial queues frequently form on Portland Avenue, which interferes with mainline I-5 operations. Year 2030 traffic operations were analyzed and the interchange is expected to accommodate expected traffic volumes, even if a bridge is constructed that connects the interchange to Roseburg via Portland Avenue.

This IAMP has been prepared with participation from Douglas County, the City of Roseburg, ODOT, and with input from a variety of stakeholders and the general public.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Follows page

LIST OF APPENDICES

1 INTRODUCTION

The Interstate 5 (I-5) Fairgrounds Interchange (Interchange 123) provides access to and from the Douglas County Fairgrounds via Portland Avenue. Immediately east of this interchange are the South Umpqua River and the Roseburg city limits. The Fairgrounds Interchange was constructed in 1954 as a standard diamond configuration. Since its construction, only minor improvements have been made to the interchange. The area around the interchange is primarily undeveloped hillside to the west, and a mix of uses to the east, including the Douglas County Fairgrounds. Frear Street runs parallel to I-5 on the east side, provides access to the fairgrounds, and connects to Portland Avenue (the interchange crossroad) very close to the northbound ramp terminal. The interchange experiences considerable congestion during the week of the County Fair and periodically on other weekends during significant events.

In 2002, the Interchange 123, I-5 overcrossing was identified as deficient due to structural cracks and in need of replacement. The recently passed 2003 legislation (Oregon Transportation Investment Act [OTIA] III) is expected to provide sufficient funding to pay for bridge replacement and perhaps limited modernization of the facility.

At the same time, Douglas County and the City of Roseburg have discussed construction of a new bridge over the South Umpqua River connecting Old Highway 99 (also known as South Stephens and County Road No. 400) with Interchange 123 via Portland Avenue. The new connection would provide a fourth interchange connection into Roseburg and would likely create increased demand at the interchange. Although funding has not been identified for this bridge, improvements identified in the Interchange Area Management Plan (IAMP) consider the implications of a future bridge connection across the river.

The preparation of the IAMP needs to be completed before the start of any interchange redesign work. The IAMP must be developed in accordance with the Oregon Highway Plan (OHP) Policy 3C, Oregon Administrative Rule (OAR) 734-051-0200, Interchange Access Management Standards for Approaches, and OTIA conditions for interchanges adopted by the Oregon Transportation Commission (OTC) on January 6, 2002.

1.1 IAMP PLANNING AREA

Interchange 123 is located to the west of the South Umpqua River, at the southern edge of the Roseburg Urban Growth Boundary (UGB). The interchange currently serves as the sole access to several areas, including the Douglas County Fairgrounds, some commercial development, and several residences. **Figure 1** shows a map of the vicinity and IAMP Planning Area.

The IAMP planning area is generally bounded by the South Umpqua River to the south, and encompasses the extent of isolated residential development to the north and west. The planning area also includes a section of Roseburg across the river that is not currently

accessible from the interchange. Should a bridge be constructed between Interchange 123 and this section of Roseburg, additional vehicle trips at the interchange from this area of Roseburg would be expected. This area is roughly bounded by Main Street to the east, and Waite and Burke avenues to the north. **Figure 2** shows the planning area.

1.2 PUBLIC AND AGENCY PARTICIPATION

This IAMP has been prepared with participation from Douglas County, the City of Roseburg, the Oregon Department of Transportation (ODOT) and with input from a variety of stakeholders and the general public. Contacts were made with stakeholders interested in or concerned about the proposed interchange modifications and possible effects on existing land uses, access, and the local road system. Appendix A contains details regarding stakeholder interview results.

A public meeting was conducted at the ODOT Region 3 offices in Roseburg on September 9, 2004, at which the IAMP project was introduced.

Technical Advisory Committee (TAC) meetings were conducted on July 28, September 9, and December 7 of 2004, and May 18, 2005.

The Planning Advisory Committee for the Roseburg/Green area met on May 17th, 2005, during which the project team described the Interchange 123 bridge replacement and IAMP projects and received citizen input.

Legend

Highways

Planning Area

N

0 1,250 2,500

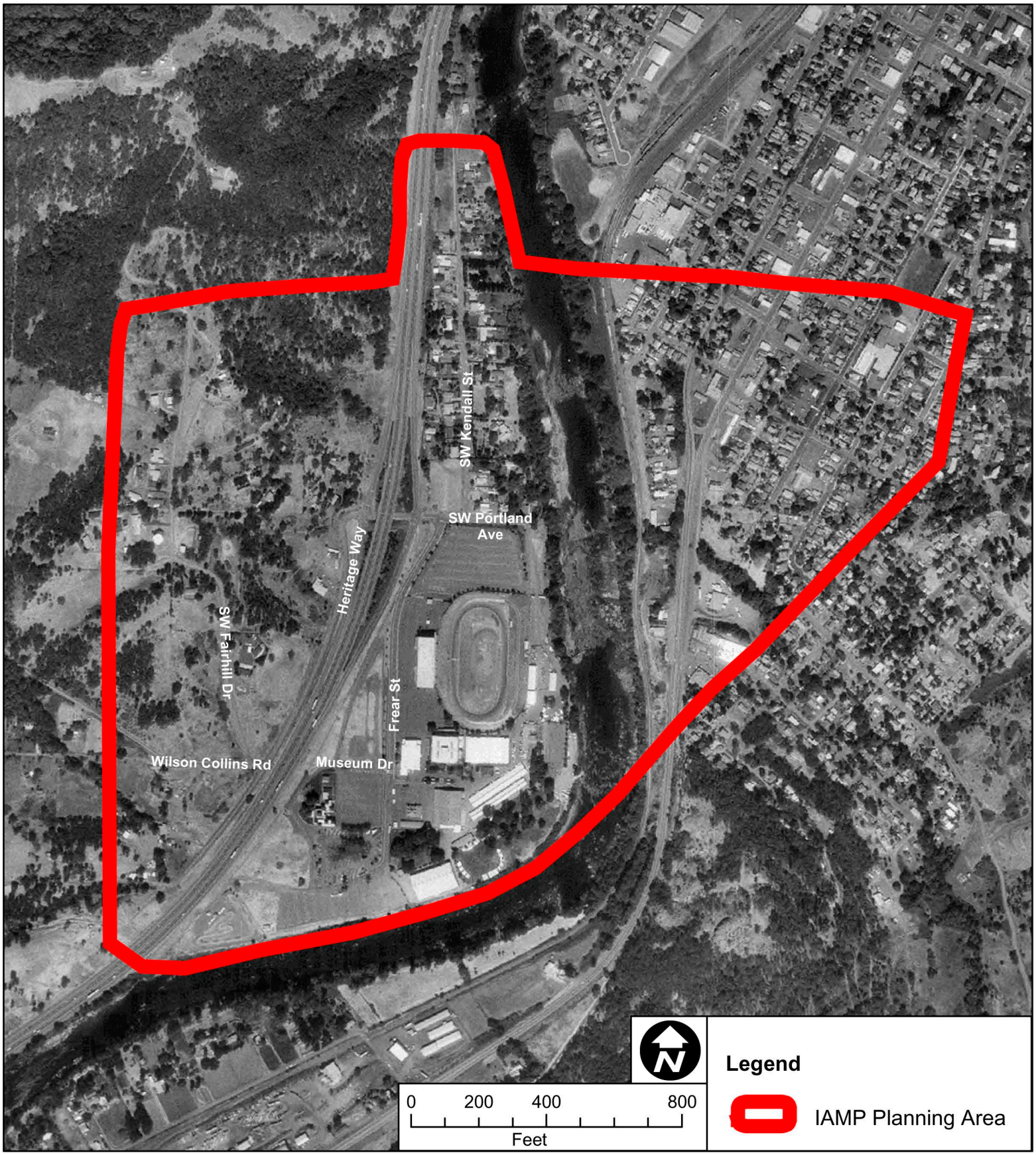
Feet

n:/gis/odot0436/arcmap/interchange_project_area_123_11x17_042805.mxd

DAVID EVANS AND ASSOCIATES INC.

Figure 1

Interchange 123 and Vicinity



n:/gis/odot0436/arcmap/i123_PlanningArea_8x11_042805.mxd

DAVID EVANS AND ASSOCIATES INC.

Figure 2

I-5 Interchange 123
IAMP Planning Area Map

2 PROJECT DESCRIPTION, PURPOSE, AND GOALS AND OBJECTIVES

2.1 PROJECT DESCRIPTION

The recommended design consists of a tight diamond interchange, which is similar to the existing configuration. (See Concept 2 in Section 4.2.) The project would replace the structurally deficient I-5 overcrossing and improve the safety and operational efficiency of the interchange. The separation between the northbound and southbound ramp intersections would be approximately 300 feet. The ramp terminals would be made to intersect Portland Avenue (the interchange crossroad) at more perpendicular angles. Acceleration and deceleration lengths on the entrance and exit ramps would be increased to meet current ODOT design standards. Portland Avenue would have a four-lane cross-section, with one through lane in each direction and side-by-side left-turn lanes. This widening would be to accommodate traffic associated with large events at the Fairgrounds, not daily traffic. Portland Avenue would also have bike lanes and sidewalks on both sides. Due to the impacts to Fairgrounds parking, it is not recommended that Frear Street be relocated at this time. However, Section 5, *Access Management,* outlines conditions under which a relocation of Frear Street is recommended. These conditions include the construction of a Portland Avenue Bridge, or a major expansion of the Fairgrounds.

2.2 PURPOSE OF PLANNING EFFORT

The purpose of this planning effort is to evaluate the operation of Interchange 123, assess the limitations and issues of concern, and, in general terms, identify possible future long-range needs attributable to planned development in the area. It is also intended to assess the impacts of the possible future construction of a new bridge across the South Umpqua River along the Portland Avenue alignment.

2.3 IAMP GOALS AND OBJECTIVES

The goal of this IAMP is to maintain the function of the interchange to preserve the investment in the facility.

The objectives of the IAMP are to:

Protect the function of the interchange as specified in the OHP and Douglas County 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.

Not preclude a potential bridge over the South Umpqua River connecting Portland Avenue to Roseburg.

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 uses that would be inconsistent with the operation and safety of the new interchange and develop strategies for recommended land use controls.

Ensure that ODOT is involved in future land use decisions that could affect the function of the interchange.

2.4 INTERCHANGE FUNCTION

Interchange 123 lies just to the west of the Roseburg city limits, but within its UGB. The interchange provides access to an isolated area that is not served by any other roadways. The area is isolated by steep topography to the west and the South Umpqua River to the east. Among the properties served by the interchange are the Douglas County Fairgrounds, the Douglas County Museum of History, Umpqua Park, and several single-family residences.

The interchange operates well most of the time, with low volumes and good Level of Service, except during the Douglas County Fair and other large events, which have become more frequent in recent years. During the fair and other large events, major delays and queuing occurs, and flaggers are used to control traffic.

The interchange was constructed in 1954 as a standard diamond configuration. Minor improvements have been made to the interchange including moderate improvements to ramp alignments of ramps and the installation of a guardrail.

2.5 DEFICIENCIES

The primary reason for this project is the replacement of the structurally deficient I-5 overcrossing. Funding for replacement of the structure is provided for under the 2003 OTIA III legislation. This project may provide limited funding for other improvements to the interchange. Several operational deficiencies have been identified in addition to the structural deficiencies, and are described below. Many of these could be addressed as part of the limited interchange modernization improvements.

2.5.1 Sight Distance

Inadequate sight distance is the most obvious deficiency and is particularly evident at the intersection of Portland Avenue and the I-5 southbound ramps. The bridge columns supporting the overcrossing severely restrict intersection sight distance for the westbound Portland Avenue approach to the southbound I-5 ramps.

Mitigation measures have been implemented to improve safety at this location. One mitigation measure has been the introduction of unconventional intersection control that forces vehicles on Portland Avenue and Heritage Way to stop for vehicles on the southbound off-ramp, which are not required to stop. Another mitigation measure was the restriping of the southbound off-ramp. This reduced the number of lanes from two to one. The lane striping now forces all vehicles to the far-right side of the ramp. This increases the distance between vehicles approaching from the off-ramp and those approaching from westbound Portland Avenue, increasing intersection sight distance. Despite these measures, sight distance remains well below acceptable standards, which compromises safety at the intersection.

Design of the structural elements of a reconstructed overcrossing would ensure that adequate sight distance on all approaches would be achieved. Standard intersection control could then be established.

2.5.2 Portland Avenue

Another deficiency is the limited width of Portland Avenue under the I-5 overcrossing. Portland Avenue is striped for two lanes, and only the south side has a sidewalk. The new overcrossing structure should allow sufficient width for a four-lane section on Portland Avenue with bike lanes and sidewalks on both sides. The lane configurations should have two through lanes (one in each direction) and two side-by-side left-turn lanes. Increased width on Portland Avenue would allow for greater flexibility as well as increased vehicle storage during special events.

2.5.3 Freeway Ramps

Acceleration and deceleration lengths for the on- and off-ramps at the interchange do not meet current ODOT design standards. Interchange improvements would offer opportunities to increase ramp lengths. More detail regarding ramp and roadway deficiencies can be found in Section 3.2.1, Geometric Conditions.

2.5.4 Access Spacing

There is substandard access spacing from the northbound interchange ramp terminals. Frear Street currently intersects Portland Avenue about 135 feet from the ramp terminals, and Kendall Street intersects Portland Avenue about 275 feet from the ramp terminals. The spacing standard, outlined in the OHP, is 1,320 feet. Increasing the spacing of Frear Street would allow greater vehicle storage length on Portland Avenue, and would decrease the likelihood that interchange and freeway operations would be impacted by event-generated traffic.

However, given the geographic constraint posed by the South Umpqua River, this spacing would be impossible to achieve. Furthermore, any relocation of Frear Street to the east would reduce the amount of parking at the Fairgrounds. The operational constraints imposed

by reduced parking capacity would likely outweigh any benefit gained by the increased access spacing. It should be noted that operations during major Fairgrounds events are already mitigated through the use of manual traffic control (flaggers). This type of control reportedly works well for diminishing the duration and severity of impacts to I-5.

Opportunities to increase the spacing should be considered should a bridge be constructed that connects Portland Avenue with Roseburg, or if any land use changes are proposed for the Fairgrounds complex. This will be discussed further in Section 5.3, *Access Management Strategy and Actions.*

3 CHARACTERISTICS OF THE PLANNING AREA

The following sections contain information relating to existing and proposed land uses geometric conditions, existing and future traffic operations analysis, safety analysis, and future planning area improvements.

3.1 LAND PARCELS AND PLANNING

3.1.1 Existing Land Uses

Existing land uses in the planning area are generally consistent with the current City of Roseburg and Douglas County plan designations and zoning. The Interchange 123 area west of the South Umpqua River is outside of Roseburg's city limits, but within its UGB. This area is covered by an Urban Growth Management Agreement between the City of Roseburg and Douglas County and falls within "Sub-Area 2," wherein the County has planning authority. The City is notified of, and has the ability to comment on, land use proposals in this area. The portion of the study area east of the river is within the city limits of Roseburg. **Figure 3** shows Comprehensive Plan designations and existing land uses, and **Figure 4** shows existing zoning in the planning area.

The dominant feature in the study area west of the South Umpqua River is the Douglas County Fairgrounds. This complex, sandwiched between the river and I-5, includes a museum, camping areas for recreational vehicles/motor homes, and parking for visitors. Kendall Street, north of the fairgrounds, is a dead-end residential street that "T"s into Portland Avenue. There are also residences on the north side of Portland Avenue. Directly west of Interchange 123 is a small area of commercial that houses a local construction company and a church. Low density residential comprises the western and northern boundaries of the study area west of I-5.

The study area east of the South Umpqua River includes the area of Old Highway 99 in south Roseburg where the roadway branches into the Pine/Stephens couplet. The area contains established residential neighborhoods, including a small portion of a historic residential area along the river and railroad tracks, the Mill-Pine National Historic District. Architecture in the "medium-density" district is predominantly in the bungalow/craftsman style typical of early 20th Century neighborhoods, with some examples of late Victorian residences. Residential structures are predominantly single-family with varying lot sizes, but likely averaging the 6,000 square foot minimum required by the underlying zoning (R-1-6). There are some examples of residential "adaptive reuse" on Old Highway 99 (motels converted to multifamily) and on Pine (larger residences converted to multi-plexes). The northern boundary of the study area goes through the South Umpqua Dairy.

Land uses along the Old Highway 99 couplet are commercial, consistent with the City's General Commercial zoning. Uses on Stephens and part of the couplet include convenience stores, a gas station, auto parts and service businesses, small strip commercial, and motels.

There is some non-conforming residential on Stephens in the form of converted motor lodge-type structures. Only the east side of Pine Street is commercially zoned and there are few businesses along this street in the study area.

Moving east from the commercial area along Old Highway 99 to the study area boundary there are more residential neighborhoods. The northeast section of the study area contains Rose Elementary School at 948 SE Roberts, an institution that celebrated 100 years of serving educational needs in Roseburg in the spring of 2004. This use is consistent with the Public Reserve designation on the City's zoning map. There is also a church in this area (on the corner of Rice Avenue and Jackson Street) and a park at the eastern boundary of the study area (Thompson Park).

The southernmost portion of the study area, a triangle formed by the intersection of Old Highway 99 and Main Street, is zoned for commercial and includes Reddaway Trucking, a nursery, some small-scale "strip" commercial, and a convenience store.

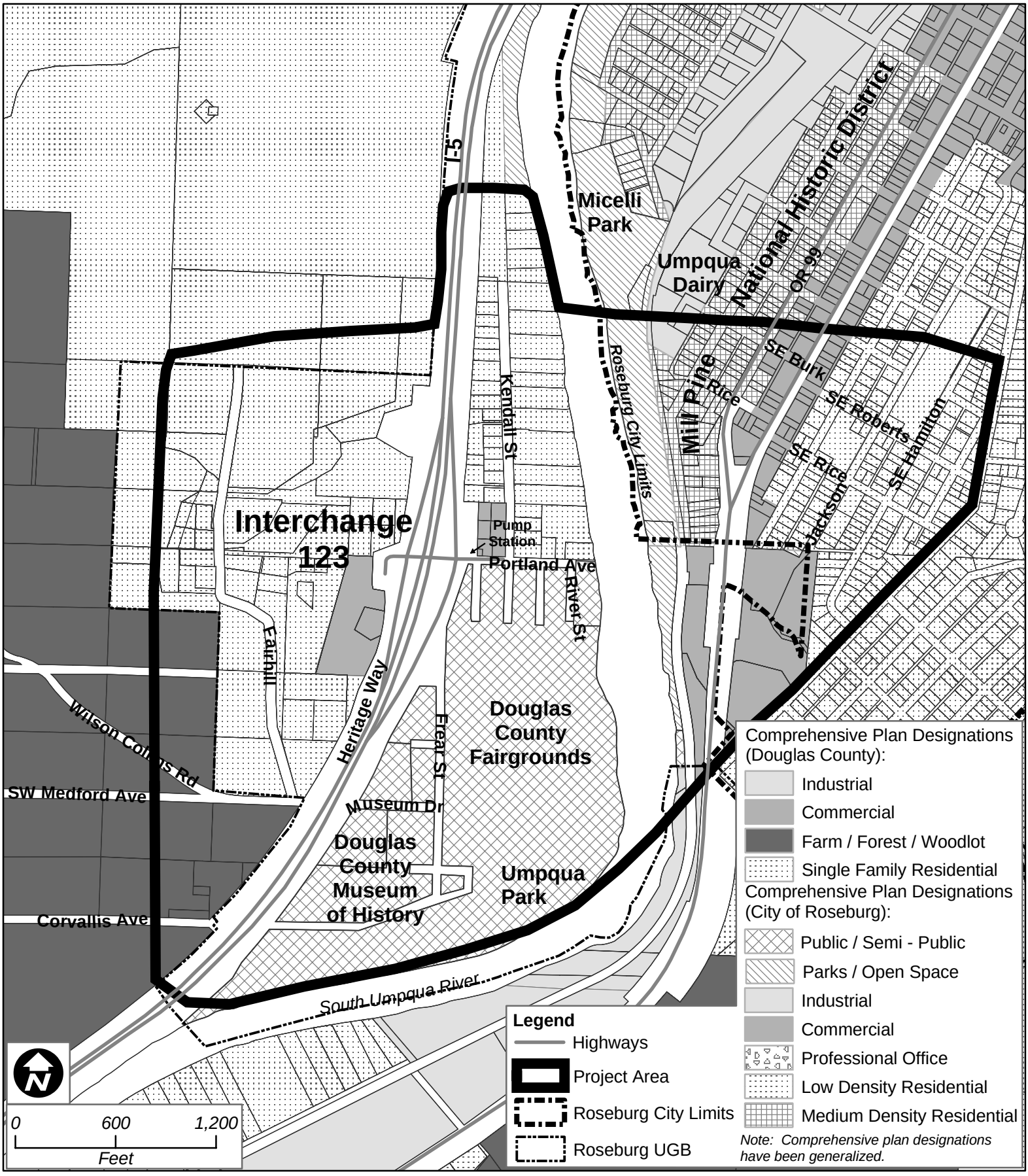
Land adjacent to the South Umpqua River, in the study area within the city limits, is zoned Public Reserve. The study area contains the southernmost tip of Micelli Park that lies along the river. The City has a 50-foot riparian setback from the River wherein all development is restricted. There are no other identified State Goal 5 natural resources in the area, with the exception of Parrot Creek, which is also subject to the riparian setback standards.

3.1.2 Future Land Uses

The City of Roseburg's planning staff did not have any knowledge of planned changes to the land uses within the planning area. Douglas County staff mentioned some recent new low-density residential activity in areas directly west of the interchange, outside of the city limits, and that this has been limited to partitions of existing lots. The oversized residential lots and the existence of some vacant land in the area suggests possible opportunities for subdividing, but the steep topography and the existing county zoning (Single-Family Residential, Rural Residential, 1-acre minimum lot size, and Suburban Residential, 15,000 square foot minimum lot size, if served by community sewer/water) preclude a great deal of future development.

There is less than five acres of commercially-zoned property to the west of the interchange. The owner of an existing construction company there would like to develop a motel and restaurant but contends that the viability of the project depends on the construction of a Portland Avenue bridge (restaurants are allowed in Community Commercial, the current zoning on this property, but hotels are not). Depending on future plans for the church, which reportedly is not currently in use, this approximately half-acre site could be developed as a commercial use consistent with the 4.2 acres of commercial property that surrounds it.

The Douglas County Fair is currently in the process of replacing a 12,000 square foot conference center with a 25,000 square foot facility, scheduled for completion in 2005. The



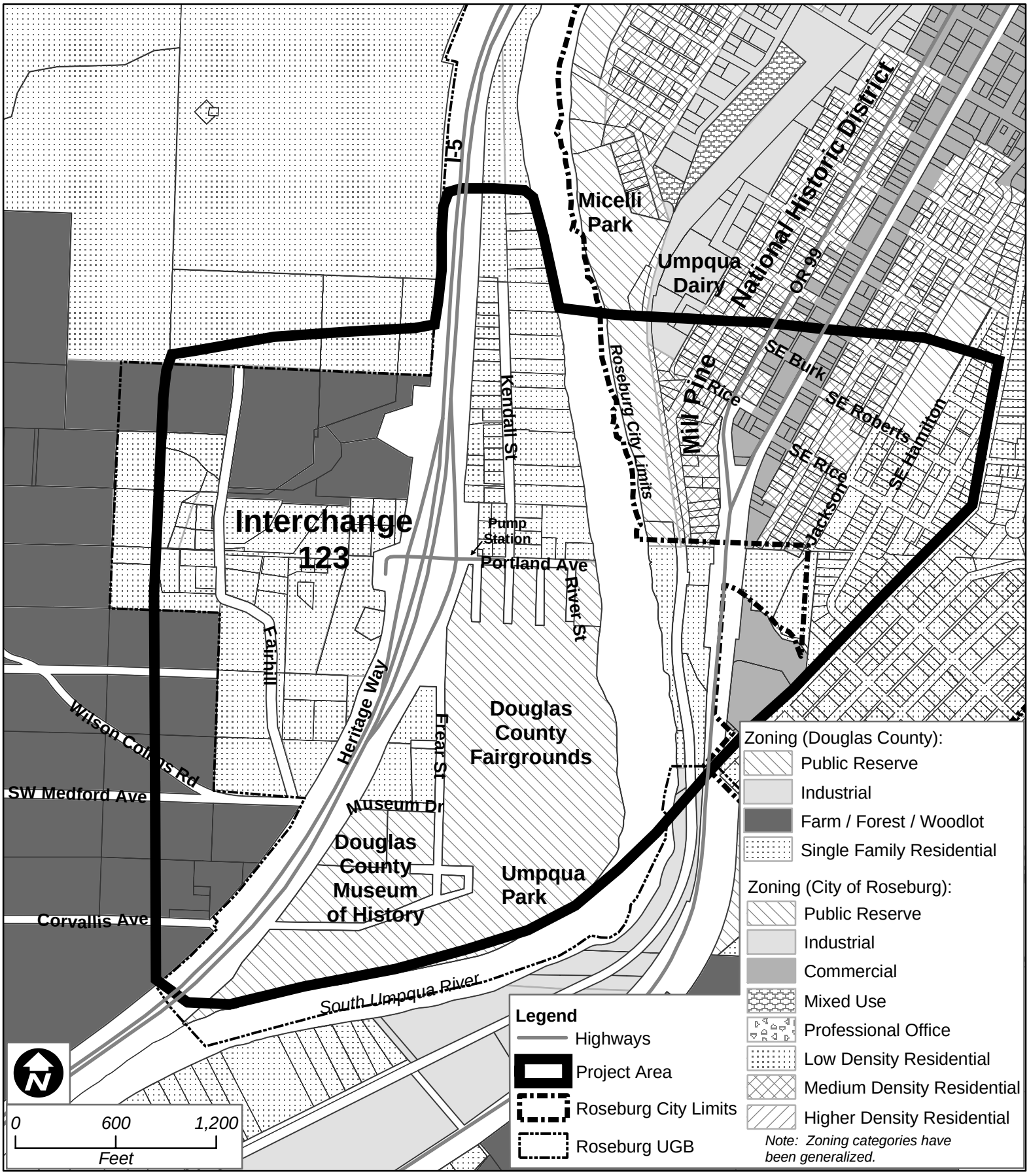
n:/gis/odot0436/arcmap/i123_comp_8x11_042805.mxd

DAVID EVANS AND ASSOCIATES INC.

Figure 3

I-5 Interchange 123

Comprehensive Plan and Existing Land Uses



n:/gis/odot0436/arcmap/i123_zoning_8x11_042805.mxd

DAVID EVANS AND ASSOCIATES INC.

Figure 4

I-5 Interchange 123
Zoning

Fair Director reports that they have the first right of refusal on a vacant property next to the intersection, near the existing pump station; have purchased an existing residence on Portland Avenue; and have a "buy order" for additional homes in the area in anticipation of future growth. Due to environmental constraints, other vacant areas between I-5 and the South Umpqua River do not provide any development opportunities.

Improvements to Interchange 123 would likely not affect access to properties in the vicinity. However, if future transportation improvements included a new bridge at Portland Avenue, increased traffic moving on a new north-south connection for south Roseburg would speed up re-development of the commercial land west of the interchange. A new bridge would likely impact business on the west side of Old Highway 99, before the couplet, and possibly those businesses in the triangle formed by Main Street and Old Highway 99. Additional right-of-way needs on Portland Avenue would also likely impact current residential properties directly to the east of the interchange.

The subject area east of the South Umpqua River is characterized by established residential neighborhoods and commercial uses flanking Old Highway 99. There is little vacant land available and no large-scale redevelopment activity anticipated. Proposed improvements to Interchange 123 would not affect this area, unless these improvements involved a new Portland Avenue bridge across the South Umpqua River. A Portland Avenue bridge may have direct impacts on areas designated as Parks and Open Space next to the river, the Parrot Creek riparian area, and businesses on Old Highway 99 in the vicinity of the proposed overcrossing (Reddaway Trucking, hotel). A new bridge may also have indirect impacts on the historic neighborhood that lies east of the existing railroad tracks. The largest indirect impact would likely come from increased east-west traffic afforded by a new bridge. Traffic from existing residents in the southern areas of Roseburg and the periodic event traffic generated from the Fairgrounds has the potential to stimulate commercial growth in areas currently zoned commercial. While there are few vacant lots, and existing lots are intensely used, the Roseburg Zoning Ordinance allows a zero lot line setback (front, side, and rear, except where commercial abuts residential) and a maximum height limit of 80 feet. Some commercial uses along the Old Highway 99 couplet do not have any setbacks, but currently there are no commercial buildings over one story high.

3.2 TRANSPORTATION FACILITIES

3.2.1 Geometric Conditions

The comments provided in this section are based upon a review of as-built drawings for the interchanges and information presented in the *I-5 State of the Interstate Report*. The existing conditions were compared against the ODOT design standards from the 2003 Highway Design Manual.

Interstate 5

A design speed of 70 miles per hour (mph) (5 mph over the posted limit) was assumed for this review. I-5 is a four-lane freeway in this section with a median barrier. The median width is 16 feet, while the standard minimum width for a median is 18 feet. The horizontal alignment contains spiral lengths of 400 feet, which are below the standard 600 feet required for a 4-lane section. This requires superelevation transitions to happen over a shorter distance than is optimal. The spacing between the ramps of Interchange 123 and the ramps of the next nearest interchange (Harvard Boulevard at milepost 124) do not meet the OHP interchange spacing requirements, which call for three miles of separation outside of urban growth boundaries. Incidents at one interchange can impact the operation of the other. Also, the substandard distance can create possible weaving issues between vehicles entering I-5 and those trying to exit at the following interchange.

Northbound Entrance Ramp

The design speed for this ramp is 35 mph, meeting current design standards for speed. The acceleration length is approximately 520 feet short of being adequate for vehicles merging onto I-5. The grade of the ramp is 6.5% when the maximum should be 6.0%. The terminal ramp spread between the northbound and southbound ramps is only 265 feet. Assuming the speed on Portland Avenue is 25 to 30 mph, the spread should be 600 feet.

Northbound Exit Ramp

The design speed for this ramp is 40 mph, meeting current design standards for speed. However, the deceleration length is approximately 160 feet short of being adequate for vehicles leaving I-5. At the ramp terminus, sight distance to the west along Portland Avenue is limited to approximately 110 feet due to the overpass columns. The standard distance to allow a vehicle to safely make a turn from the ramp onto Portland Avenue is 390 feet.

Southbound Entrance Ramp

The design speed for this ramp is 45 mph, meeting current design standards for speed. The 100-foot spiral segment on the horizontal alignment could be lengthened to 240 feet to provide longer transitions for superelevation. The acceleration length is approximately 340 feet short of being adequate for vehicles merging onto I-5.

Southbound Exit Ramp

The design speed for this ramp is 40 mph, meeting current design standards for speed. However, the deceleration length is approximately 130 feet short of being adequate for vehicles leaving I-5. Traffic on this ramp is allowed to turn left onto Portland Avenue or right onto the frontage road without stopping. Westbound Portland Avenue and eastbound Heritage Way are stopped at this intersection, so sight distance from the exit ramp is not an issue, but this stop sign application is unconventional and violates driver expectation.

Heritage Way

Heritage Way runs parallel to I-5 on the west side before curving sharply just before the intersection of the southbound ramps. Stopping sight distance for vehicles traveling on Heritage Way to the intersection of the southbound ramps is approximately 180 feet, 70 feet short of the 250-foot requirement.

Portland Avenue

Portland Avenue crosses underneath the I-5 overcrossing, and its width is limited by the bridge columns. It has two lanes, with a sidewalk on the south side only. The road connects the north- and southbound ramp terminals, which are separated by only 265 feet—335 feet short of standard assuming a speed of 25 to 30 mph.

3.2.2 Existing Traffic Operations in the Planning Area

A traffic operations analysis was performed to determine how roadways within the study area are operating. This process included analysis of traffic counts, developing 30th highest hour volumes, a Level of Service analysis, and comparison with existing traffic operations standards. Traffic analysis methodologies used are described in Appendix C. The results for both the northbound and southbound ramp terminals are summarized below.

Existing PM peak hour traffic volumes are shown in **Figure 5**, and 30th highest hour volumes are shown in **Figure 6**. The 30th highest hour represents the highest traffic volume a facility will normally experience, excluding special events, and usually occurs during the evening peak hour in urban areas.

Operational Criteria

Transportation engineers have established various descriptors of traffic operations at intersections. The most common descriptor is the Level of Service (LOS) as defined by the *Highway Capacity Manual*. The LOS considers factors that include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort, convenience, and operating cost. Six standards have been established ranging from LOS A, where traffic is relatively free flowing, to LOS F, where the street system is totally saturated with traffic and movement is very difficult. At both signalized and unsignalized intersections, LOS is based on control delay. At two-way stop-controlled intersections, control delay is the total duration from the time a vehicle joins the back of the queue until it proceeds forward into the intersection from the first position at the stop sign.

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

The 1999 OHP defines mobility standards in terms of v/c ratios for state highways. According to the OHP, the mobility standard for the Interchange 123 ramp terminal intersections is 0.85. These mobility standards apply through the planning horizon year of 2030.

Intersection Results

Table 1 summarizes the traffic operations analysis results for existing 30th highest hour volume conditions. Analysis showed the interchange operating very well with ample excess capacity and virtually no queuing or delays. It should be noted that the traffic volumes in this analysis were the calculated 30th highest hour volumes for the current year. Traffic operations during the County Fair were not analyzed. During large events such as the County Fair, special traffic control utilizing personnel is used to direct traffic at the intersections. This type of traffic control generally works well considering the substantial influx of vehicles. Although during large events interchange area operations generally break down, with large queues and long delays, it would not be cost effective to design the interchange to accommodate traffic volumes that occur on relatively infrequent occasions. Mitigating congestion with manual traffic control is a more cost-effective solution.

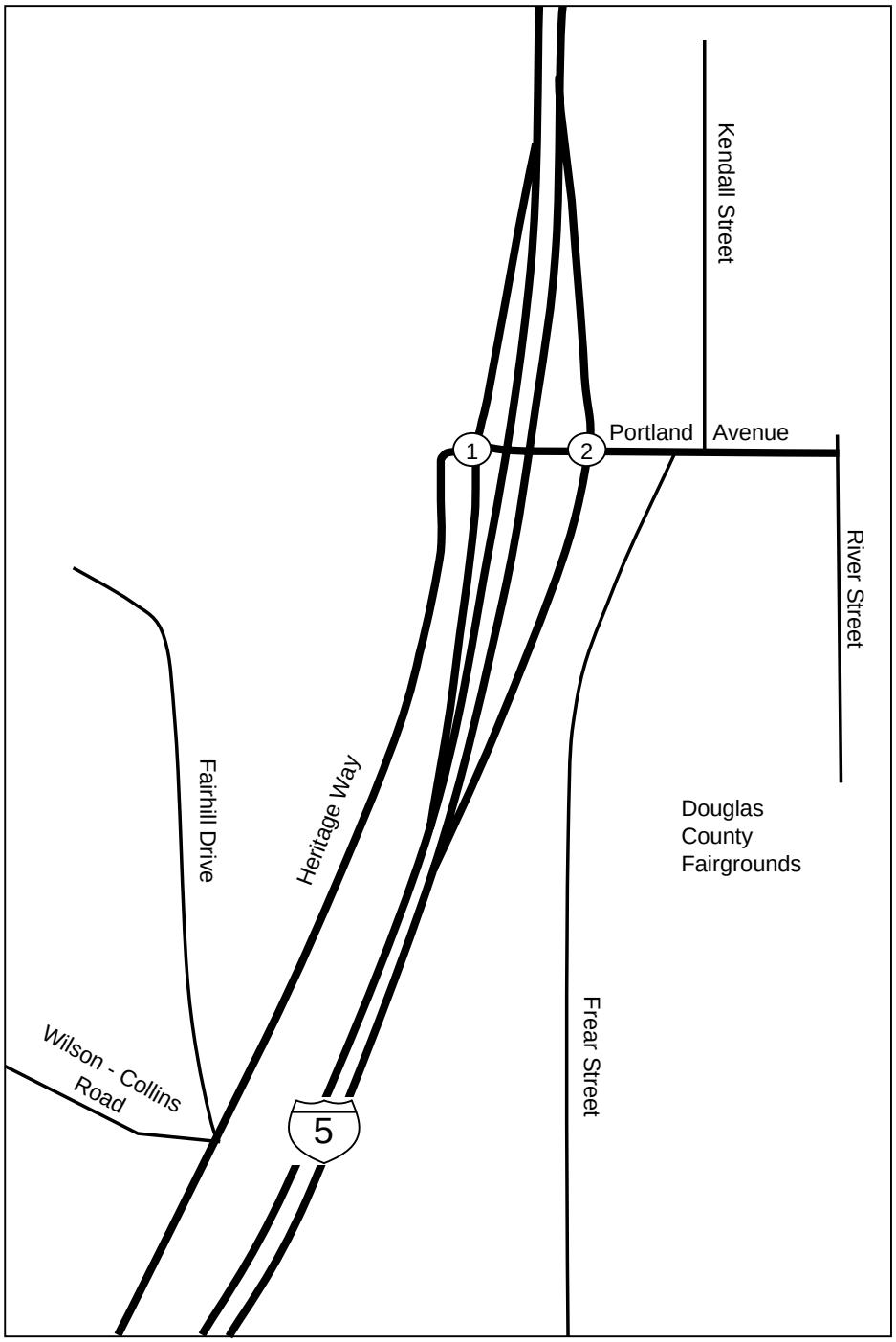
Table 1. Traffic Operations Analysis Results – Existing Conditions

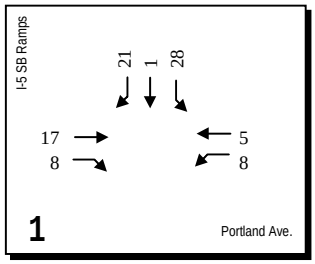
Intersection	Approach	V/C Ratio	95th Percentile Queue (ft.)	LOS
I-5 Southbound Ramp Terminals at Portland Avenue	Portland Avenue Eastbound	0.04	<20	A
	Portland Avenue Westbound	0.02	<20	A
	Southbound I-5 Off-ramp	0.03	<20	n/a†
I-5 Northbound Ramp Terminals at Portland Avenue	Portland Avenue Eastbound	0.02	<20	n/a†
	Portland Avenue Westbound	0.01	0	n/a†
	Northbound I-5 Off-Ramp (Left)	0.01	0	A
	Northbound I-5 Off-Ramp (Through/Right)	0.02	<20	A

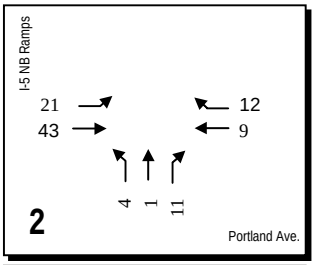
† Free vehicular movement

3.2.3 Safety Analysis

A safety analysis was conducted that included a review of the ODOT-supplied Planning Research Corporation crash listings, ODOT Safety Priority Index System (SPIS) data, and the calculated crash rates. The process for analyzing the safety data provided was to determine the location and frequency of crashes occurring in the study area. Crashes were totaled by segment and by intersection. A description of the crash analysis methodology and results can be found in Appendix C.







Not to Scale

DAVID EVANS AND ASSOCIATES INC.

LEGEND

000 = PM Peak Hour Turning Movement Volume

= Turning Movement

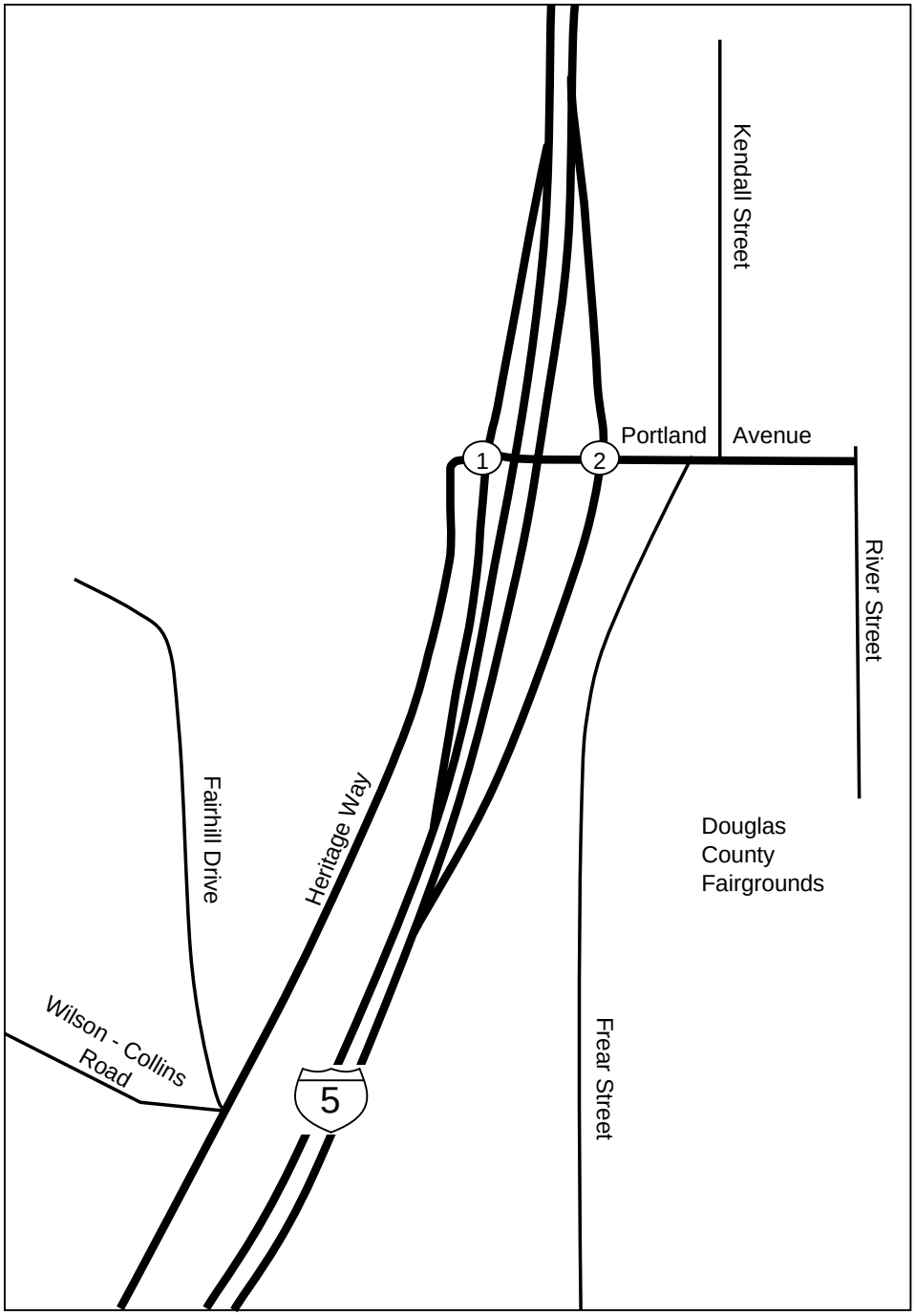
(14) = Intersection Number

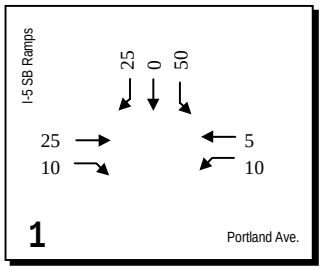
Figure 5

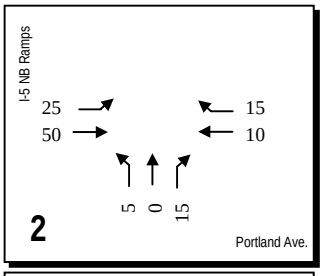
Existing Traffic Volumes

Nov. 2003 4:00 to 5:00 PM

Interchange 123







Not to Scale

DAVID EVANS AND ASSOCIATES INC.

LEGEND

000 = PM Peak Hour Turning Movement Volume

= Turning Movement

(14) = Intersection Number

Figure 6

30th Highest Volumes

Balanced

Interchange 123

Safety Conclusions

The safety analysis performed revealed that there have been a small number of crashes occurring around interchange 123, resulting in crash rates below the statewide average for comparable facilities. Each of the on- off-ramps and the northbound mainline averaged one crash per year or less. The southbound mainline averaged just under two crashes per year. Due to the small number of crashes surrounding interchange 123, no patterns in the types of crashes was seen.

Despite the relatively small number of documented crashes, the interchange does have a significant safety deficiency. As noted in section 2.5, sight distance is limited at the southbound ramp terminal. While there is not a documented crash problem at this intersection, there have been many close calls according to stakeholders. Stop-control at the intersection was modified in an attempt to compensate for the limited sight distance. However, the unconventional intersection control violates driver expectation and presents its own hazards.

3.2.4 Future Traffic Operations Analysis

Traffic operations analyses were performed to determine how roadways within the study area will operate under 2030 traffic volume conditions. As in the existing traffic operations analysis, the process included a LOS analysis, and comparison with existing traffic operations standards.

Two scenarios were analyzed. The first was a baseline scenario. This scenario was based on the existing roadway configurations and connections with changes limited to those necessary to correct geometric deficiencies. The second scenario included the addition of a bridge across the South Umpqua River connecting Old Highway 99 and Portland Avenue in addition to the interchange improvements under the baseline scenario. The results for the northbound and southbound ramp terminals under both scenarios are summarized below.

2030 Traffic Volumes

2030 traffic volumes were developed using the difference method outlined in the National Cooperative Highway Research Program (NCHRP) Report 255. NCHRP Report 255 gives several methods for determining future year turning movement forecasts assuming that a discrepancy between a base year count and a base year assignment is likely to be of the same magnitude in the future. The future year analysis used the difference method to project existing 30th Hour Volumes to 2030 Future Volumes. Year 2030 traffic volumes for the 2030 baseline scenario are shown on **Figure 7**, and volumes for the 2030 Portland Avenue Bridge scenario are shown on **Figure 8**.

Portland Avenue Bridge Scenario

With the addition of a bridge connecting Interchange 123 with Roseburg, Portland Avenue would be expected to see a significant increase in volumes during the PM peak hour. As

shown on Figure 8, a new bridge is predicted to carry approximately 215 westbound and 175 eastbound vehicles during the year 2030 design hour. This would more than quadruple the existing traffic volumes at the interchange.

Traffic Operations Analysis Results

Traffic operations analyses conducted under both scenarios showed that the interchange is expected to accommodate increased traffic volumes and remain well under capacity with good LOS and minimal queuing at the ramps. **Table 2** summarizes the analysis results.

Table 2. Traffic Operations Analysis Results – 2030 Volume Conditions

		Baseline Scenario			Portland Avenue Bridge Scenario		
Intersection	**Approach**	**V/C Ratio**	**95th Percentile Queue (ft.)**	**LOS**	**V/C Ratio**	**95th Percentile Queue (ft.)**	**LOS**
I-5 Southbound Ramp Terminals at Portland Avenue	Portland Avenue Eastbound	0.09	<25	B	0.12	<25	B
	Portland Avenue Westbound	0.04	<25	B	0.18	<25	B
	Southbound I-5 Off-ramp	0.04	<25	n/a†	0.11	<25	n/a†
I-5 Northbound Ramp Terminals at Portland Avenue	Portland Avenue Eastbound	0.03	<25	n/a†	0.03	<25	n/a†
	Portland Avenue Westbound	0.02	0	n/a†	0.12	0	n/a†
	Northbound I-5 Off-Ramp (Left)	0.01	<25	A	0.01	<25	B
	Northbound I-5 Off-Ramp (Through/Right)	0.02	<25	A	0.09	<25	A

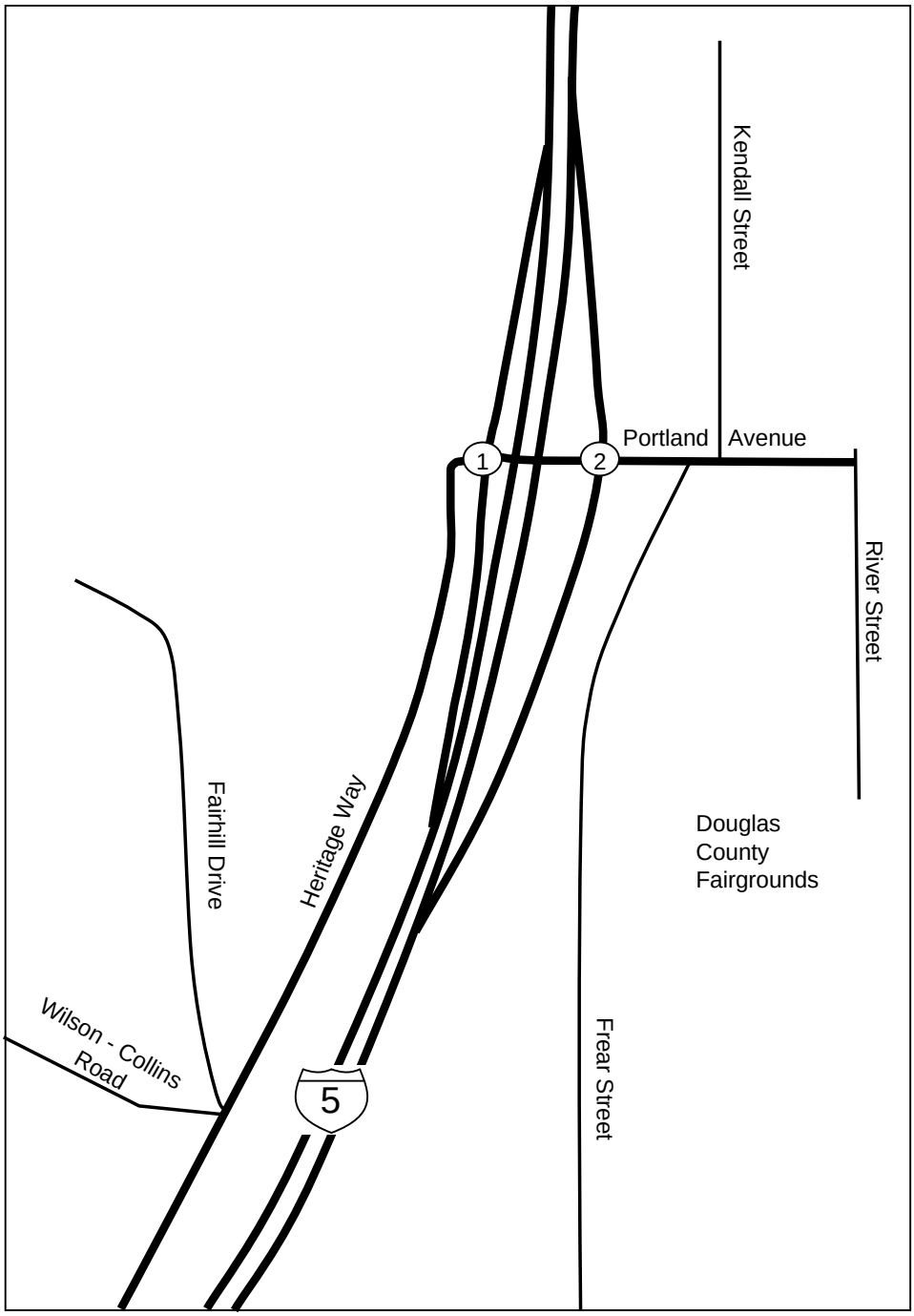
† Free vehicular movement

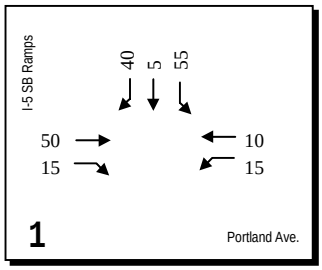
Effects of Portland Avenue Bridge on Surrounding Interchanges

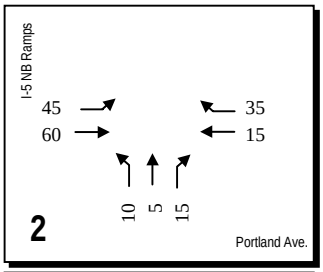
The effects of adding a Portland Avenue bridge on traffic volumes at surrounding interchanges in the Roseburg area was analyzed. The 2025 model volumes for the Portland Avenue Bridge Scenario were compared to the 2025 Baseline Scenario. Based on this comparison, the change in volume by movement was found to be minimal (less than 10%) at Roseburg area interchanges (119 through 129).

Design Issues Related to the Portland Avenue Bridge

In developing the IAMP, the analysis focused on avoiding changes that could preclude the future construction of a new bridge in the Portland Avenue corridor. As indicated in Table 2, above, the traffic impacts predicted from a new bridge were not significant if land uses remain as currently planned. Constructing the I-5 bridges over Portland Avenue such that four lanes could be accommodated helps assure adequate vehicular capacity at the ramp terminals.







Not to Scale

DAVID EVANS AND ASSOCIATES INC.

LEGEND

000 = PM Peak Hour Turning Movement Volume

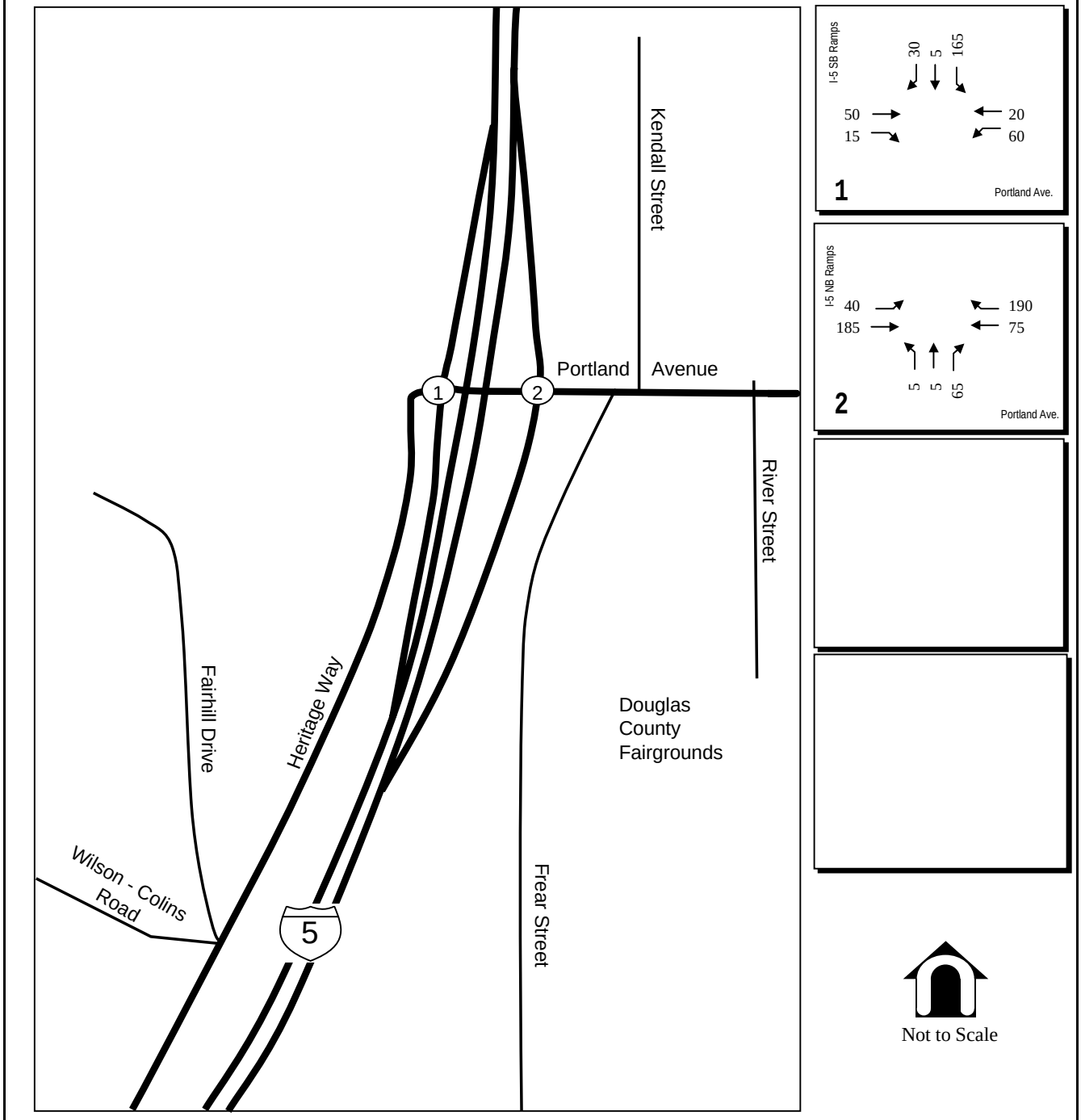
= Turning Movement

(14) = Intersection Number

Figure 7

2030 Baseline Scenario Volumes

Interchange 123



DAVID EVANS AND ASSOCIATES INC.

LEGEND

000 = PM Peak Hour Turning Movement Volume

= Turning Movement

(14) = Intersection Number

Figure 8

2030 Portland Avenue Bridge Scenario Volumes

Interchange 123

Constructing a new bridge across the river in the Portland Avenue corridor has some significant design complications beyond traffic volumes. The distance between Old Highway 99 and the northbound ramp terminal at Interchange 123 is slightly more than a quarter mile. On the east side of the river, design challenges include providing a standard intersection with Old Highway 99 and providing adequate vertical clearance over the railroad tracks. The bridge itself must also provide adequate vertical clearance over the river, avoid or mitigate for wetlands and floodplain issues, and avoid interfering with normal and flood waters. On the west side of the river, the design challenges include bringing the new roadway down to current elevations as close to the river as possible while maintaining acceptable grades. Potential loss of access to adjacent parcels and the need for a wider right of way to accommodate the bridge approach will be difficult issues to balance.

Geometric, environmental, access and right of way issues will require careful consideration during studies to determine the potential environmental effects of and the design of a bridge in the Portland Avenue corridor.

4 ALTERNATIVES CONSIDERED

Four separate interchange concepts—standard diamond interchange, tight diamond interchange, single-point diamond interchange, and folded diamond interchange—have been developed to address existing deficiencies (see Figures 9 through 12). All four concepts shift the alignment of Heritage Way in the southwest quadrant of the interchange to the west to allow a 25-mph curve coming into the intersection with the southbound ramps. This alignment will provide the required stopping sight distance for vehicles.

Concepts 1-3 treat Frear Street in the southeast quadrant of the interchange similarly. Since it is not possible to relocate Frear Street 1,320 feet away from the interchange as called for in the 1999 OHP, the street is shown shifted to align with the existing Kendall Street intersection. However, as noted in Section 2.5, this realignment would have impacts to the Fairgrounds that may not make it practical at this time. Concepts 2 and 3 could be constructed with Frear Street remaining in its current location. Concept 4 does not alter the location of Frear Street, and includes a folded diamond configuration for the northbound ramps.

Concept 2, with Frear Street remaining in its current location, is the preferred alternative.

4.1 CONCEPT 1 – STANDARD DIAMOND INTERCHANGE

This concept, illustrated in **Figure 9**, consists of a standard diamond interchange, centered equally about I-5. The separation between the northbound and southbound ramp intersections would be 610 feet, a design intended to meet current design standards. Portland Avenue would have three lanes. However, this configuration could accommodate 5 lanes with minimal impact to the interchange. Both the acceleration and deceleration lengths on the entrance and exit ramps would be increased to meet current standards.

The distance between the northbound ramp intersection and the Kendall Street/Frear Street intersection would be approximately 70 feet, which is well below the 1320 foot OHP access spacing standard. This concept would have a significant impact on parking at the fairgrounds. Shifting the Kendall Street/Frear Street intersection further to the east than in this concept would eliminate or completely separate the Fairgrounds' parking lot from the Fairgrounds. Several houses on the north side of Portland Avenue would also be impacted if the access road and Kendall Street were shifted to the east.

4.2 CONCEPT 2 – TIGHT DIAMOND INTERCHANGE (PREFERRED CONCEPT)

This concept, illustrated in **Figure 10**, consists of a tight diamond interchange, similar to the existing configuration. The separation between the northbound and southbound ramp intersections would be approximately 300 feet. The ramps would be more perpendicular to Portland Avenue than the existing configuration. Portland Avenue would be four lanes under

I-5, with one through lane and one left turn lane for each direction. There would be two turn lanes, rather than one, to provide queuing space lost because of the tight intersection spacing. Adding additional through lanes could be done with minimal impact to the interchange. Both the acceleration and deceleration lengths on the entrance and exit ramps would be increased to meet current standards.

This concept shows Frear Street relocated to line up with Kendall Street, which would increase the distance between the northbound ramp intersection and the Kendall Street/Frear Street intersection to approximately 250 feet. However, the proposed design does not involve a relocation of Frear Street.

4.3 CONCEPT 3 – SINGLE POINT DIAMOND INTERCHANGE

This concept, illustrated in **Figure 11**, consists of a typical single point diamond interchange. The curves for the right turn movements on to and off of the ramps could be pulled more perpendicular to Portland Avenue than what is shown on the figure to reduce the overall length of the interchange. Portland Avenue would have 3 lanes under I-5. Both the acceleration and deceleration lengths on the entrance and exit ramps would be increased to meet current standards. The distance between the right turning movements from the northbound exit and the Kendall Street/Frear Street intersection would be approximately 165 feet. The distance between the left turning movements on to the southbound entrance ramp and the Kendall Street/Frear Street intersection would be approximately 450 feet.

This interchange configuration would require a traffic signal to control traffic movements. All of the left turns at this interchange would occur at this signalized intersection. Also, a longer bridge span would be required to allow adequate sight distance for the signal. This longer distance could require greater structure depth than the existing structure, which may mean vertical changes to Portland Avenue and/or I-5.

Widening of Portland Avenue to 5 lanes could be done. However, attention will be needed to ensure sight distance around abutments to the signal is maintained.

4.4 CONCEPT 4 – FOLDED DIAMOND INTERCHANGE

Concept 4, illustrated in **Figure 12**, takes the diamond design of Concept 1 and folds the northbound exit ramp into the northeast quadrant of the interchange. The southbound ramps are unchanged from Concept 1. The folded ramp loop was designed for a 25-mph design speed so as to minimize its size. This concept would preserve the parking lot facilities of the County Fairgrounds. However, the ramp would sweep into the Kendall Street neighborhood.

This configuration would require a realignment of Kendall Street to the east, requiring displacements of residences. It would also leave Frear Street intact within the interchange between the westside and eastside ramps. This would be a significant deviation from common practice and would probably be disallowed. The best alternative option would be to

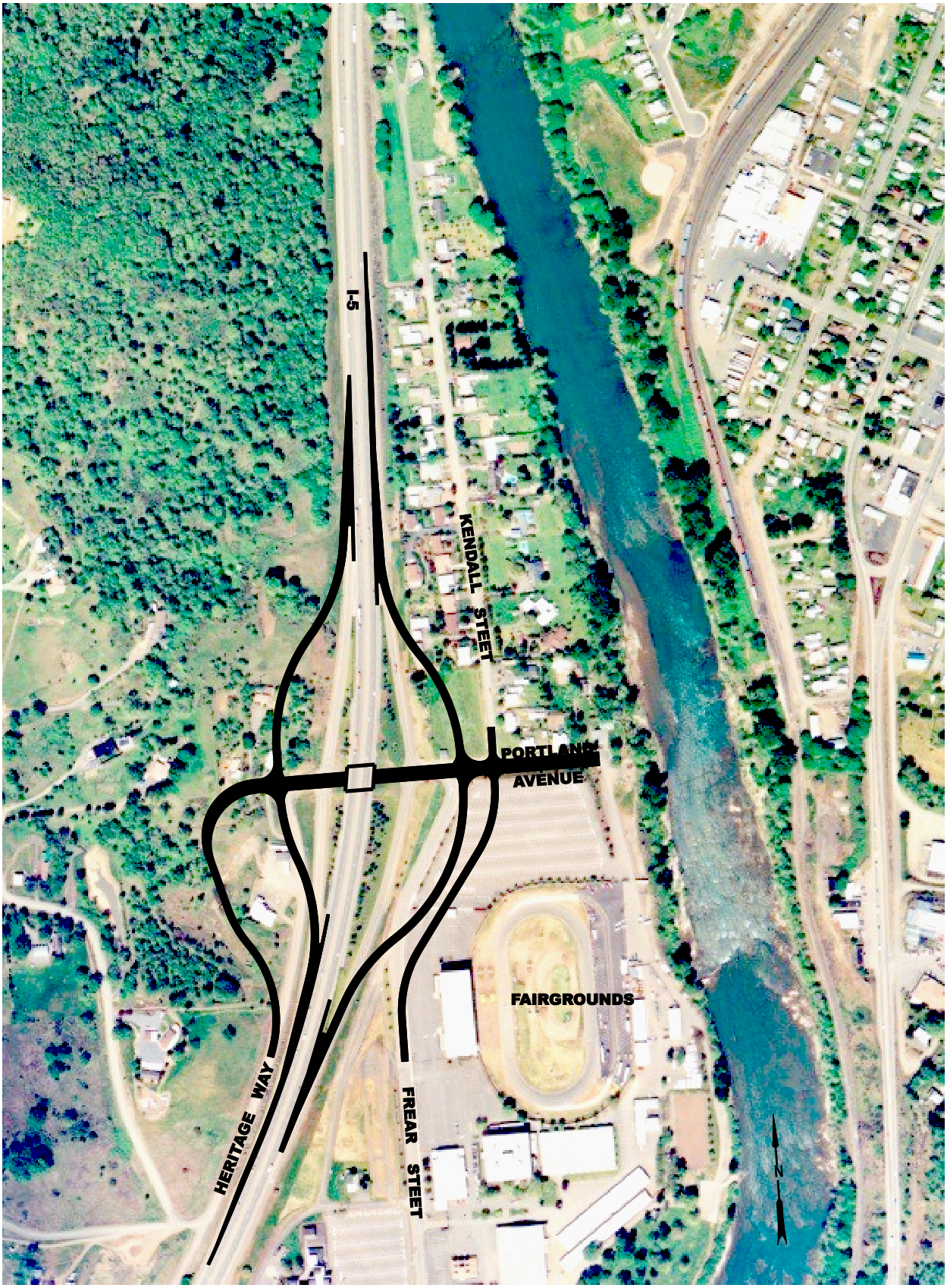


Figure 9

I-5 Interchange 123
Concept 1 - Standard Diamond Interchange

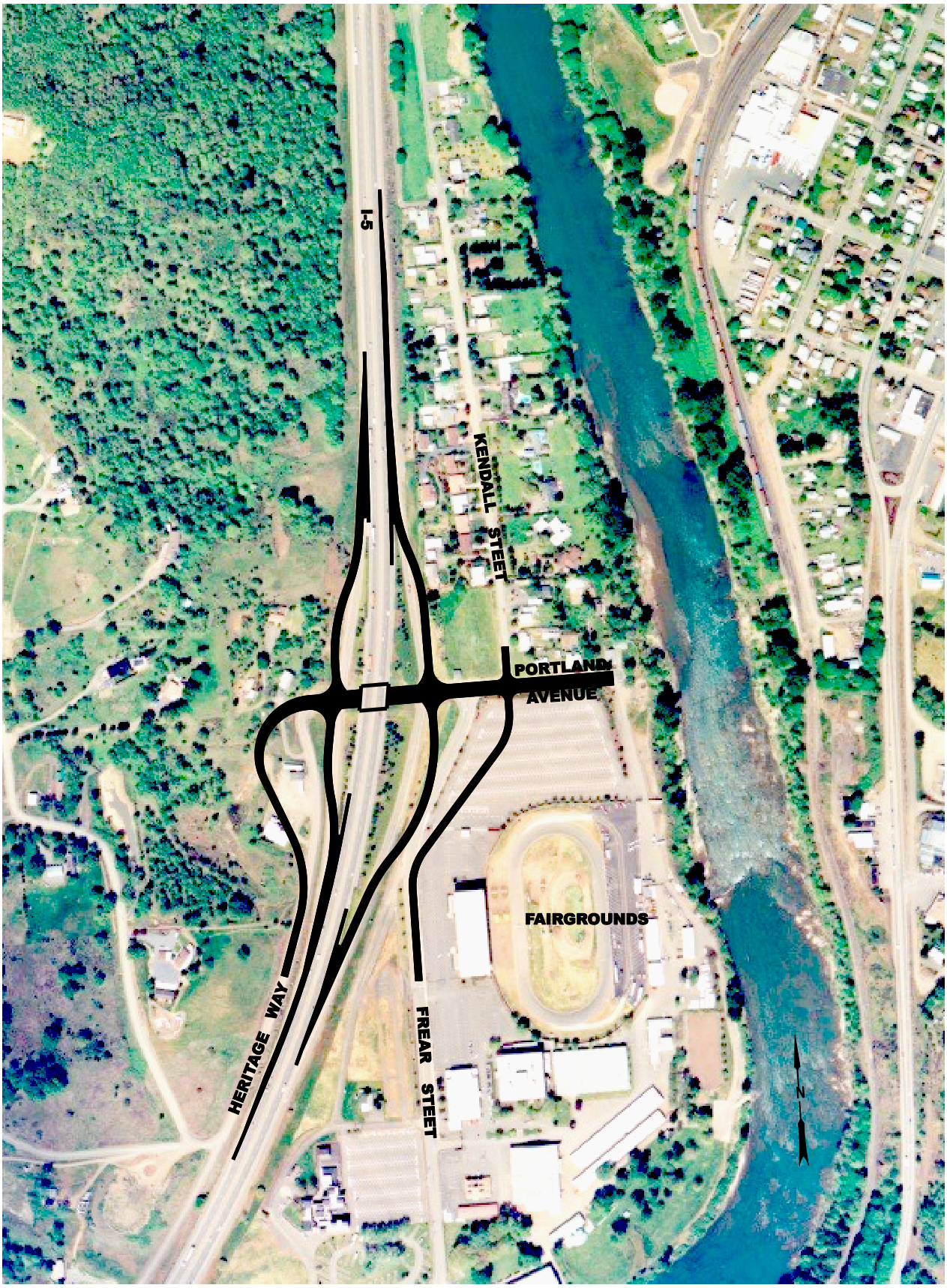


Figure 10

I-5 Interchange 123
Concept 2 - Tight Diamond Interchange

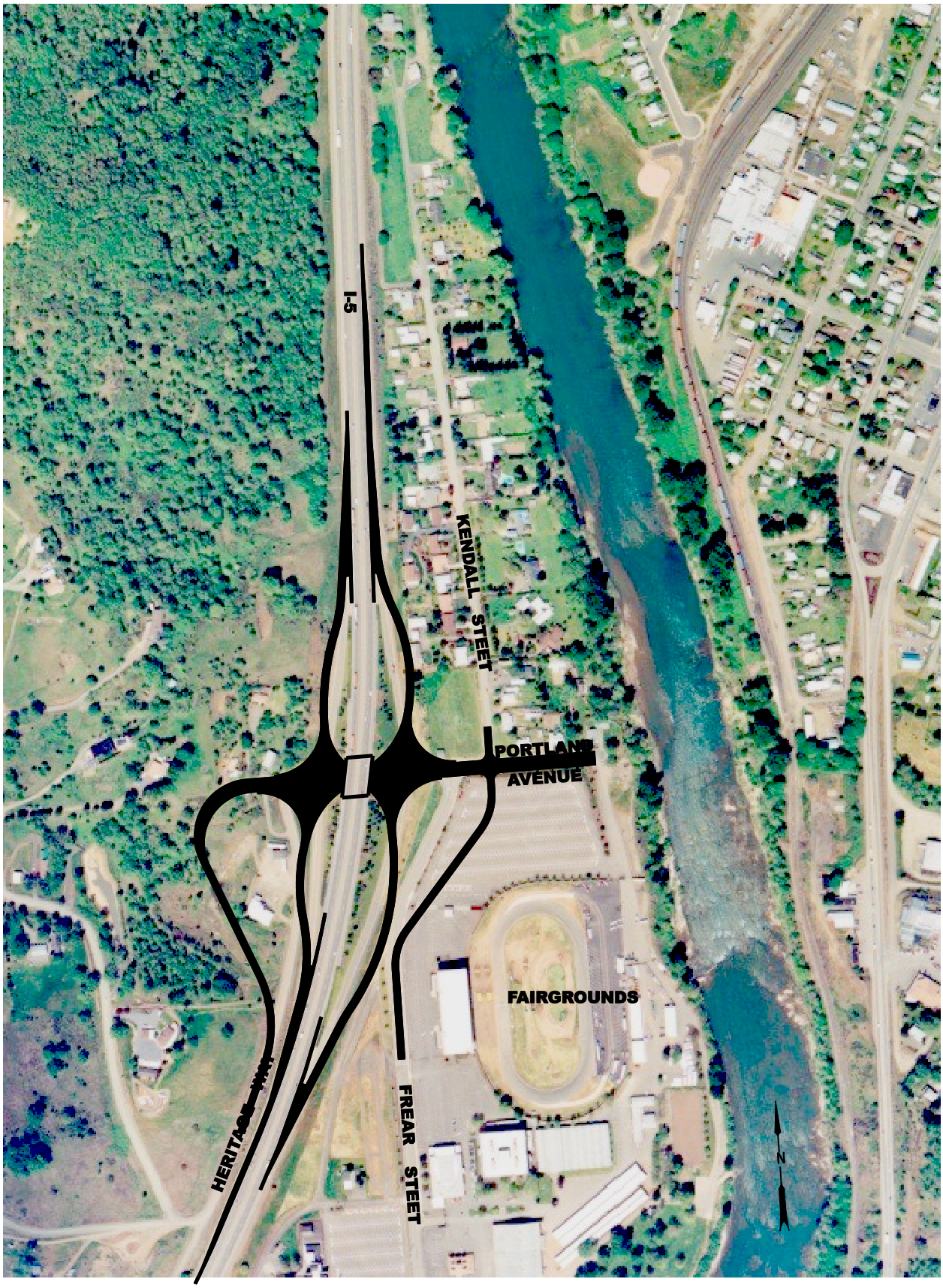


Figure 11

I-5 Interchange 123
Concept 3 - Single Point Diamond Interchange

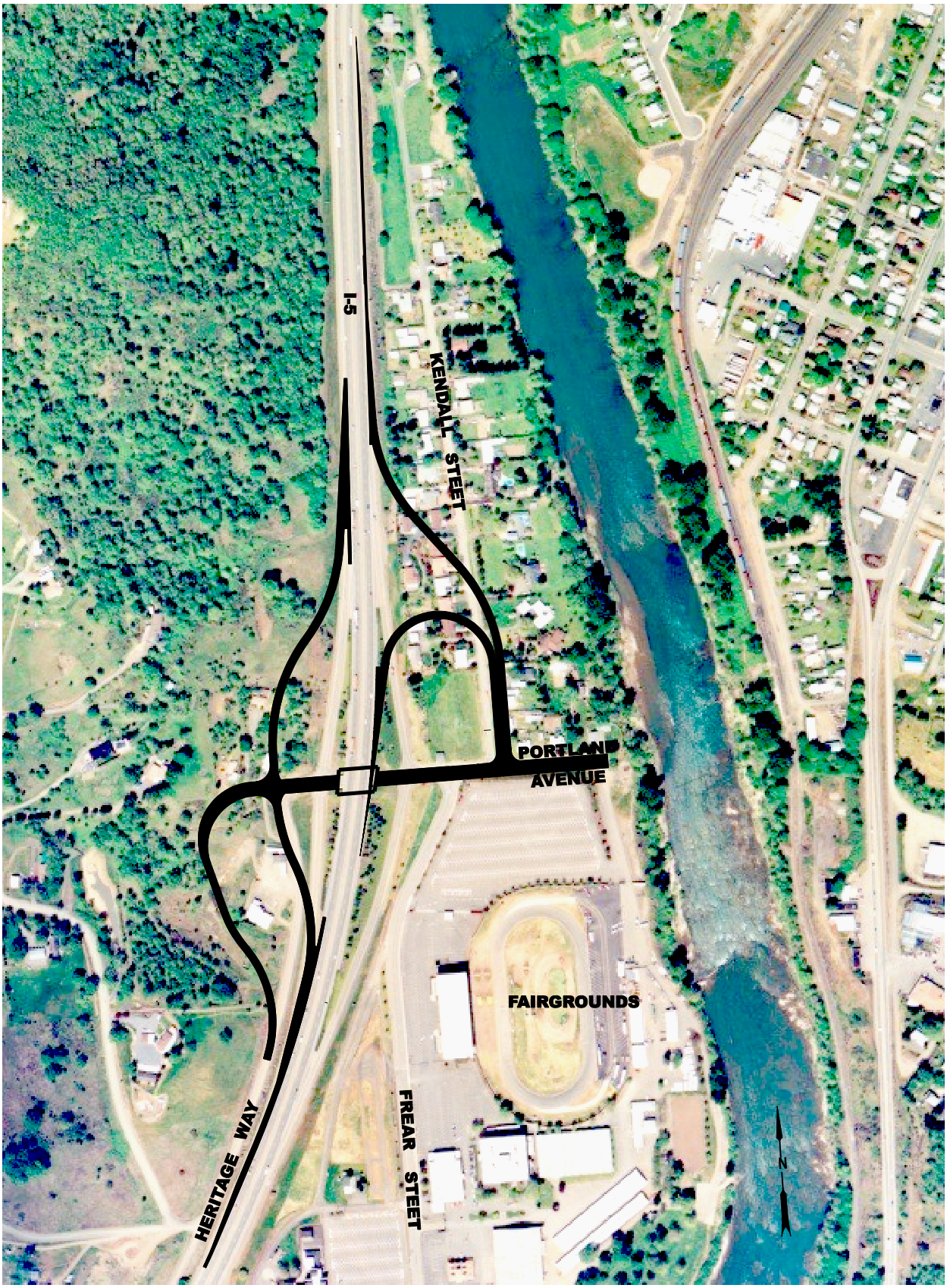


Figure 12

I-5 Interchange 123
Concept 4 - Folded Diamond Interchange

relocate Frear Street to the east to line up with Kendall Street, which would eliminate some Fairgrounds parking and negate any benefit related to this concept.

5 ACCESS MANAGEMENT

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

The access management strategy must balance the competing needs of traffic capacity and safety for I-5 and the study area and local access needs. The OHP devotes an entire section to the discussion of access management. More detailed requirements and the access spacing standards for state highways are specified in OAR 734-051 (Division 51). Ideally, a project will include provisions by which access within the project limits can be made fully compliant with Division 51. In many instances, however, access needed for current parcels will not allow these standards to be met. When the requirements and standards cannot be met, the access management strategy must demonstrate progress toward meeting the applicable standards.

5.1 ACCESS SPACING STANDARDS

OAR 734-051 and the OHP contain standards for private driveway and public road approach spacing based on highway classifications and speeds. According to these standards, the first full intersection on the crossroad at an interchange should be no closer than 1,320 feet for rural interchanges with two-lane crossroads. Approach roads that are less than 1,320 feet but no closer than 750 feet shall be limited to right-in/right-out. Requests for deviations from these standards can be made, and the process is outlined in OAR 734-051-0135.

OAR 734-51-0115 (1)(c)(C) and 734-051-0125 (1)(c)(C) require that "for a highway or interchange construction or modernization project…the project will improve spacing and safety factors by moving in the direction of the access management spacing standards, with the goal of meeting or improving compliance with the access management spacing standards." The OAR 734-051 and OHP access spacing standards apply to both streets and driveway approaches and are measured from the center of one access to the center of the next access on the same side of the road.

5.2 EXISTING ACCESS

An inventory was conducted of public street intersections and approaches to major roads within the study area. The locations are illustrated in **Figure 13**. For private approaches, information including the tax lot, property owner, use, and related information is summarized in **Table 3**.

Table 3. Interchange 123 Approach Inventory

Aerial Approach Number	Loc. N/S E/W	Tax Lot Number 27-06W	Property Owner	Property Owner Address	Property Use	Width (ft)	Permit Info
1	East Side of Kendall	25BA-00300	Larson, Donald G. & Virginia L.	1753 SW Kendall St.	Residential	25	
2	East Side of Kendall	25BA-00400	Abel, Timothy A. & Ann E.	630 Portland Ave.	Residential	15	
3	North Side of Portland	25BA-00400	Abel, Timothy A.& Ann E.	630 Portland Ave.	Residential	15	
4	North Side of Portland	25AB-01000	Robinson, John W. & Constance L.	570 Portland Ave.	Residential	15	
5	North Side of Portland	25AB-01100	Beckham, Dale E & Joyce E.	590 Portland Ave.	Residential	15	
6	North Side of Portland	25AB-01200	Douglas County	530 Portland Ave.	Residential	15	
7	South Side of Portland	25AB-01300	Douglas County	N/A	Fairgrounds/ Parking		
8	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
9	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
10	West Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
11	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
12	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
13	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
14	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
15	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
16	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
17	West Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		
18	East Side of Frear	25-00100	Douglas County	2110 Frear St.	Fairgrounds/ Museum		

Table 3. Interchange 123 Approach Inventory (cont.)

Aerial Approach Number	Loc. N/S E/W	Tax Lot Number 27-06W	Property Owner	Property Owner Address	Property Use	Width (ft)	Permit Info
19	West Side of Heritage	25BA-01600	James, Stephen Mark	161/175 Heritage Way	Vacant/ Church	100	1957
20	West Side of Heritage	25BA-01700	Garden Valley Church of Christ	175 Heritage Way	Church	15	1957
21	West Side of Heritage	25BA-01600	James, Stephen Mark	161 Heritage Way	Vacant	20	
22	North side of Portland	27BA-0500	Douglas County	N/A	Pump Station	20	
A	Portland Ave. & Kendall St.	n/a					
B	Frear St.	n/a					
C	Heritage Loop	25BA-0600	James, Stephen Mark	161 Heritage Way	Vacant	20	1957
D	Fairhill Dr./Wilson Collins Rd.	n/a					
E	Museum Dr.	n/a					

Three roads and ten driveways directly access the interchange crossroads (Heritage Way and Portland Avenue) within the 1,320-foot spacing standard. The roadways include Heritage Loop (C on Figure 13), Frear Street (B), and Kendall Street (A). The driveways include single-family residential lots and fairgrounds parking access.

ODOT requires approach permits for approaches to highways under its jurisdiction, but many driveways and public streets predate the permitting process or have come into existence without permits. Furthermore, Division 51 provides ODOT with the authority to acquire access control on the interchange crossroad for a distance of 1,320 feet from the ramp terminals. Access permits are not issued for approaches to an access-controlled highway or interchange crossroad. To maintain access across an access control line, a property owner must have a reservation of access, which provides access at a specific location.

Permits were found for only three of the 23 public and private approaches in the planning area. The three permits on file in the Interchange 123 study area are dated September 3, 1957. All three locations are west of Interchange 123 along Heritage Way. Each of these access points is within 1,320 feet of the southbound ramp terminal. The first permit was issued for a street that would serve a subdivision at the present location of Heritage Loop. Currently, Heritage Loop is a private drive that services several single-family dwellings. The

second permitted location is just south of Heritage Loop and allows two road approaches for a service station. The service station is no longer operating and the site is currently occupied by a building contractor. The third permitted access was requested to serve a motel just south of the service station. The motel does not exist and the Garden Valley Church of Christ appears to be using the access point.

5.3 ACCESS MANAGEMENT STRATEGY AND ACTIONS

5.3.1 Access Management Strategy

Per OAR 734-051-0285(6)(b), an access management strategy, "must improve access management conditions to the extent reasonable within the limitation, scope, and strategy of the project and consistent with design parameters and available funds."

The overall strategy of this access management plan is to protect traffic operations and safety within the interchange influence area by moving in the direction of meeting the interchange access spacing standards. This will be accomplished using short-, medium-, and long-term actions in the area per OAR 734-051-0285(7)(g).

This section identifies actions to be implemented consistent with the IAMP goals. The short-term actions are those that might be implemented in connection with the Interchange 123 Improvement Project. Medium- and long-term actions are those recommended as land use changes and redevelopment occurs in concurrence with future roadway improvement projects.

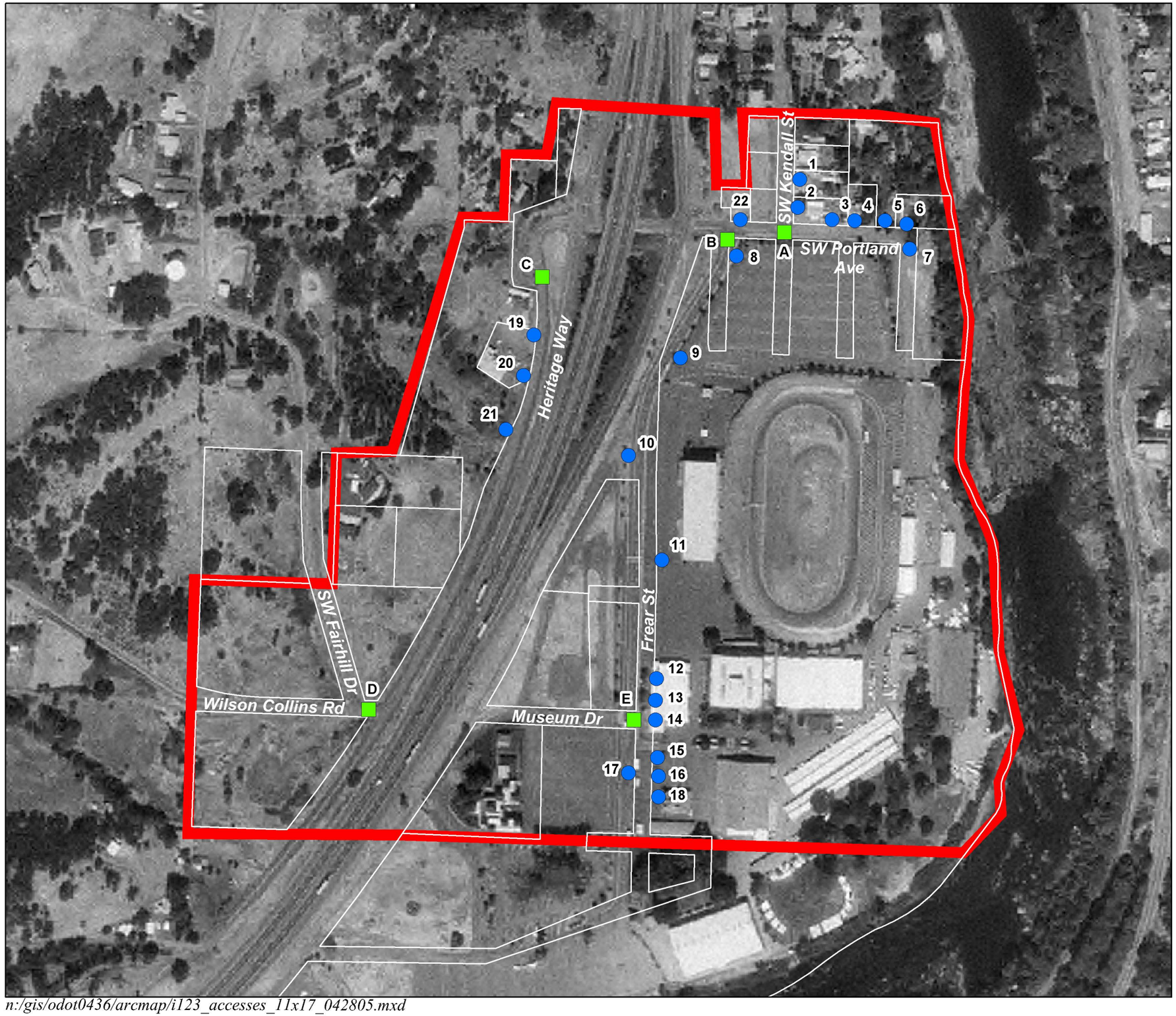
5.3.2 Short-term Access Management Actions

Concurrent with the Interchange 123 improvements, ODOT will acquire access control along the interchange crossroads (Portland Avenue and Heritage Way) for a distance of up to 1,320 feet from the interchange ramp terminal intersections. This action is consistent with Policy 3C of the OHP. However, several public and private approaches currently access these roadways and closure is not an option. Reservations of access will be issued for these approaches. A reservation of access gives a property owner the common law right of access to the state highway (or interchange crossroad) only at specific locations. A reservation of access may contain use restrictions and does not guarantee approval of the approach location should the property redevelop in the future. Reservations of access will be recorded in the property deeds.

Although highly desirable from an operations standpoint, relocation of Frear Street to a location further from the interchange ramp terminals is not practical at this time due to the impacts it would have on parking for the fairgrounds.

5.3.3 Medium-term and Long-term Access Actions

It has been widely acknowledged that Frear Street is far too close to the northbound interchange ramp terminals. There is minimal storage distance between the intersection and



Legend

- Driveway Approach
- Road Approach
- Access Study Area

N

0 250 500

Feet

n:/gis/odot0436/arcmap/i123_accesses_11x17_042805.mxd

DAVID EVANS AND ASSOCIATES INC.

Figure 13

I-5 Interchange 123
Approach Inventory

the ramp terminals. During major events at the Fairgrounds vehicles stack up on Portland Avenue and onto the interchange off-ramps, which disrupts I-5 mainline traffic operations.

The primary long-term recommendation of the access management plan is the relocation of the northernmost section of Frear Street so that it aligns with Kendall Street, as shown in Figure 10. This action should be implemented if and when a new bridge connecting Portland Avenue with Roseburg is constructed. A new bridge would bring significant volumes of traffic from the east for large events. If Frear Street remains in its current location (offset from Kendall Street by approximately 150 feet), a new conflict would be created between westbound left-turning traffic at Frear Street and eastbound left-turning traffic at Kendall Street. This conflict currently exists in theory; however there are effectively no westbound left-turning vehicles at Frear Street. The other condition under which Frear Street should be relocated would be if the Fairgrounds proposed an expansion resulting in an increase in peak period traffic volumes. Increased traffic would exacerbate existing stacking on Portland Avenue that interferes with freeway operations.

By aligning with Kendall Street, Frear Street would be located about 275 feet from the northbound ramp terminals. The 275-foot separation, while still substandard, would allow considerably more storage between the intersections, eliminate the turn conflicts between Kendall Street and Frear Street, and generally improve operations.

The negative aspects of this action would include the cost of the realignment and the loss of parking in the fairgrounds complex. However, a new bridge would provide more opportunities for off-site parking, shuttle buses, and event access via alternative modes, such as bicycle and pedestrian.

Other approach-specific recommendations for the IAMP study area include:

- Consolidate and reduce the number of access points on Heritage Way serving the Garden Valley Church of Christ (tax lot 27-06W-25BA-01700) (20 in Figure 13) and the James properties (tax lot 27-06W-25BA-01600) (19 and 21).

- Develop alternative access and circulation for the fairgrounds complex, such as enhanced access using the northeast driveway to SW Portland Avenue (7 in figure 13).

- Access for the pump station (22) may remain in place if used strictly for maintenance purposes on an infrequent basis. However, should the property redevelop, access should not be allowed to Portland Avenue.

- Access for the undeveloped properties north of Portland Avenue and East of Kendall Street (tax lots 27-06W-25BA-600 and 601) should be taken exclusively from Kendall Street. Under no circumstances should an approach to Portland Avenue be allowed.

Medium-term to long-range actions could be implemented as land use changes/redevelopment applications occur, in connection with future roadway improvement projects, or as needed to rectify safety problems. General medium-term actions throughout the planning area include:

- Encourage redevelopment opportunities that consolidate access points.
- Encourage sharing of access points between adjacent properties.
- Offset driveways at proper distances to minimize the number of conflict points between traffic using the driveways and through-traffic.
- Provide driveway access via local roads where possible.
- Enforce access management spacing standards to the extent possible.
- Minimize driveway widths.

The factors that need to be considered for each approach before an access is altered include: access rights, safety concerns, existing and potential land use, existing site development including access use and function, parking, and circulation. Also, whether or not the property has more than one approach road to the interchange crossroad and if the property has access or potential access to a local street needs to be considered.

6 PLAN AND POLICY REVIEW

This section summarizes relevant plans and policies and identifies how they influence planning for Interchange 123. This section reviews the following transportation and land use plans and regulations:

Statewide Planning Goals 2 (Land Use Planning), 11 (Public Facilities Planning), and 12 (Transportation), and 14 (Urbanization);

Oregon Transportation Plan (OTP) (1992);

1999 Oregon Highway Plan (OHP);

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

Douglas County Transportation System Plan (TSP) (Adopted 2001, Revised with amendments 2004);

Douglas County Comprehensive Plan (Revised with amendments 2004) and Land Use and Development Ordinance (1997 with 2004 amendments); and

Comprehensive Plan for the Roseburg Urban Area (1982) and Land Use and Development Ordinance (Revised 1994 with amendments).

6.1 STATEWIDE PLANNING GOALS

6.1.1 Statewide Planning Goal 2 and OAR 660, Division 4

Goal 2, Land Use Planning, requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. This Goal is one of four statewide planning goals that play a key role in management planning for the Interchange 123 area. The other goals are Goals 11 (Public Facilities Planning), 12 (Transportation), and 14 (Urbanization).

Goal 2 is important for three reasons. First, Goal 2 requires planning coordination between those local governments and state agencies "which have programs, land ownerships, or responsibilities within the area included in the plan." Here, Goal 2 will require that ODOT coordinate with Douglas County and the City of Roseburg, both of which have planning authority over the area impacted by the proposed interchange improvements (the area immediately surrounding the interchange is in Douglas County's jurisdiction; east of the South Umpqua River is in the City's jurisdiction). Coordination is particularly important because development within both the city and the county will impact use of the proposed interchange, and land use decisions in that area could affect future use and operation of the interchange.

A second important element of Goal 2 is its provision that land use decisions and actions be supported by an "adequate factual base." This requirement applies to both legislative and quasi-judicial land use actions and requires that such actions be supported by "substantial evidence." In essence, it requires that there be evidence that a reasonable person would find to be adequate to support findings of fact, that a land use action complies with the applicable review standards.

Third, Goal 2 requires that city, county, state, and federal agency and special district plans and actions related to land use be "consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268." This provision is important because elements of an IAMP developed for Interchange 123 will need to be adopted by both the county and city, through an inter-governmental agreement or elements, may ultimately be incorporated into the jurisdictions' TSPs.

6.1.2 Statewide Planning Goal 11 and OAR 660, Division 11.

Statewide Planning Goal 11. Public Facilities Planning, requires cities and counties to plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban and rural development. The goal requires that urban and rural development be "guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable and rural areas to be served."

6.1.3 Statewide Planning Goal 12 and OAR 660, Division 12

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

Goal 12 is implemented through OAR 660, Division 12, the Transportation Planning Rule (TPR). The TPR contains numerous requirements governing transportation planning and project development, several of which warrant comment in this report.

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. See also OAR 660-012-0060.

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

6.1.4 Statewide Planning Goal 14, and OAR 660, Divisions 14 and 22

Goal 14, Urbanization, 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 is more urban in nature and higher intensity than in rural areas, which primarily include farm and forest uses.

Goal 14 is important because it focuses development within relatively compact boundaries of the UGB and to a lesser degree in unincorporated communities. This compact development helps contain the costs of public facilities, such as transportation, by reducing the need for facilities farther out and helping jurisdictions better anticipate where growth will occur. 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 recommended transportation improvements in this IAMP may promote growth. The recommended improvements would be in urban or urbanizable areas based on the Roseburg Comprehensive Plan, thereby minimizing pressure on rural areas to develop to urban densities and fostering appropriate growth within the urban areas. For example, a potential Portland Avenue Bridge could lead to redevelopment within the city. In addition, steep topography and the South Umpqua River restrict development on the west side of the river.

According to the Roseburg Comprehensive Plan, the Interchange 123 IAMP study area is planned for urban or suburban levels of development and is located almost entirely within the Roseburg UGB.[1] The portion of the study area east of the South Umpqua River is also

[1] *Only a small portion of the study area, west of I-5 and Heritage Way, lies outside of the City's UGB and this section is designated County Farm/Forest/Woodlot.*

within the city of Roseburg. The area outside of the city is designated Low Density Residential, Commercial, Public/Semi-Public, and Parks/Open Space by the City's Comprehensive Plan. The largest area is designated for Public/Semi-Public (the fairgrounds). The area within the city is primarily designated Low Density Residential and Commercial, with some Medium Density Residential, Industrial, and Parks/Open Space areas.

6.2 OREGON TRANSPORTATION PLAN (1992)

The Oregon Transportation Plan (OTP) was adopted by the OTC in 1992 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 consists of two elements: the Policy Element defines goals, policies, and actions for the state over the next 40 years; the System Element identifies a coordinated multi-modal transportation system and a network of facilities and services for different modes of transportation that are to be developed over the next 20 years to implement the goals and policies of the OTP.

This IAMP is consistent with the goals and policies of the OTP. The applicable OTP policies to the proposed interchange improvements are Policy 1B (Efficiency), Policy 1C (Accessibility), Policy 1G (Safety), Policy 2B (Urban Accessibility), and Policy 4G (Management Practices). Policy 4G has the most direct relation to the development of the IAMP because it identifies access management (Action 4G.2) as one of the management practices to be implemented.

6.3 1999 OREGON HIGHWAY PLAN

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 the Fairgrounds interchange improvements are described below, with impacts to interchange planning shown in italic.

Under Goal 1: System Definition, the following policies are applicable:

Policy 1B (Land Use and Transportation), which recognizes the need for coordination between state and local jurisdictions;

Coordination with local jurisdictions has occurred 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 Cow Creek Band of Umpqua Tribe of Indians, the City of Roseburg, and the City of Winston. Appendix B contains a list of TAC members.

Policy 1C (State Highway Freight System), which states the need to balance the movement of goods and services with other uses;

Stakeholder interviews have been conducted and are summarized in Section 3. Stakeholders include representatives from freight/shipping interests, including UPS and Federal Express. I-5 is a designated freight route.

Policy 1F (Highway Mobility Standards), which 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; and

The purpose of the IAMP is to evaluate the operation of Interchange 123, assess limitations, identify future long-range needs, and identify recommended improvements in order to ensure consistency with mobility standards.

Policy 1G (Major Improvements), which requires maintaining performance and improving safety by improving efficiency and management before adding capacity.

The interchange has had only minor improvements since its construction in 1954. The purpose of the IAMP is to assess interchange improvements that may be needed to accommodate the fairgrounds crossroads connection, the replacement of the structurally deficient I-5 overcrossing bridge, and the potential construction of a new Portland Avenue bridge over the South Umpqua River.

Under Goal 2: System Management, the following policies are applicable:

Policy 2B (Off-System Improvements), which helps local jurisdictions adopt land use and access management policies.

This IAMP includes sections describing existing and future land use patterns, an access management strategy, and implementation measures. A component of the IAMP is an intergovernmental agreement between ODOT and the local jurisdictions to implement access management solutions.

Policy 2F (Traffic Safety), which improves the safety of the highway system.

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

Under Goal 3: Access Management, the following policies are applicable:

Policy 3A: (Classification and Spacing Standards), which sets access spacing standards for driveways and approaches to the state highway system;

Policy 3C (Interchange Access Management Areas), which sets policy for managing interchange areas by developing an IAMP that identifies and addresses current interchange deficiencies and short, medium and long term solutions; and

Policy 3D (Deviations), which establishes general policies and procedures for deviations from adopted access management standards and policies.

Section 6.3 contains the Access Management Strategy and Actions, which compares access spacing with adopted access standards. If proposed interchange improvements do not meet access spacing standards, the project would require deviation findings.

6.4 OREGON ADMINISTRATIVE RULE 734, DIVISION 51 (HIGHWAY APPROACHES, ACCESS CONTROL, SPACING STANDARDS, AND MEDIANS)

OAR 734-051 governs the permitting, management, and standards of approaches to state highways to ensure safe and efficient operation of the state highways. The OTC formally adopted the revisions to OAR 734-051 dated July 1, 2003 that became effective on March 1, 2004.

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.

Section 734-051-0125, Access Management Spacing Standards for Approaches in an Interchange Area, 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.

6.5 DOUGLAS COUNTY TRANSPORTATION SYSTEM PLAN (ADOPTED 2001, REVISED WITH AMENDMENTS 2004)

The Douglas County TSP was adopted in 2001 and amended in 2004. It establishes a system of transportation facilities and LOS that is adequate to meet the County's transportation needs. The 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.

The Fairgrounds interchange improvements are not included in the County's TSP capital improvement plan. The extension of Portland Avenue across the South Umpqua River to Old Highway 99 is identified as a way to more effectively utilize the Portland Avenue interchange. No funding is identified for the project.

Development of an IAMP for Interchange 123 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." Adoption of the IAMP by the County may necessitate amendments to the County's TSP.

Douglas County Comprehensive Plan (Revised with amendments 2004) and Land Use and Development Ordinance (1997 with 2004 amendments); and

6.6 DOUGLAS COUNTY COMPREHENSIVE PLAN (REVISED WITH AMENDMENTS 2004) AND LAND USE AND DEVELOPMENT ORDINANCE (1997 WITH 2004 AMENDMENTS)

The project study area is within the Roseburg UGB, both inside and outside of the Roseburg city limits. Douglas County has jurisdiction of the area immediately around the interchange, which is outside of the city limits. Roseburg has planning jurisdiction of the area within the city limits (east of the river) as discussed under the Roseburg Comprehensive Plan and Land Use Development Ordinance below.

The Douglas County Comprehensive Plan map identifies the county area as Urban Growth Area (UGA). County zoning designations within the vicinity of the interchange include Suburban Residential (RS), Single-Family Residential (R1), Community Commercial (C2), Tourist Commercial (CT), and Public Reserve (PR). The general uses allowed within each zone are described below; relevant transportation-related development criteria, if any, are also included. **Figure 3** shows the Comprehensive Plan and existing land uses, and **Figure 4** shows existing zoning for the planning area.

The dominant designation in the county study area is PR, which covers the area south of the interchange between I-5 and the South Umpqua River, and includes the Douglas County Fairgrounds. Uses allowed within the PR designation are generally public uses such as fairgrounds, churches, cemeteries, hospitals, parks, playgrounds, campgrounds and other recreational facilities. Public uses "essential to the physical, social, and economic welfare of

the area" are also permitted. There are three parcels located within this quadrant that are zoned CT. The CT zone allows tourist-oriented commercial uses and is generally applied to parcels near interchanges. Single-family residences are also allowed provided the residential use is in conjunction with another permitted use. Public and semipublic building and uses are also permitted outright.

The majority of the northeast portion of the county study area is zoned R1, which allows single-family detached residences and some duplex development. Public and semipublic buildings and uses are allowed as conditional uses. Six parcels adjacent to the interchange are zoned CT; permitted uses within this zone are described above.

The southwest portion of the county study area is zoned C2, R1, and RS. Parcels adjacent to I-5 are zoned C2, and are intended to provide a location for local shopping facilities such as galleries, automobile service stations, grocery stores, etc. Single-family residences are allowed provided it is in conjunction with one of the permitted uses allowed outright within this zone. Public and semipublic building and uses are also permitted outright. West of the CT zone, several parcels are zoned R1, which designates land for single-family residential and limited duplex development. The remaining parcels located west of the R1 zone are designated RS, which allow single-family residential uses on lots large enough to accommodate hobby farms. Duplexes are permitted provided it is located on a lot large enough to maintain one dwelling unit per 15,000 square feet. Public and semipublic buildings and uses are allowed as a conditional use.

A small portion of the study area east of the South Umpqua River (north of the intersection of Old Highway 99 and Main Street) is also in the County's jurisdiction—it is zoned CT, C2, and General Commercial (C3). Intended uses for CT and C2 are described above. The C3 zone is a general commercial zone intended for a variety of retail and wholesale uses serving the general community.

The proposed project is consistent with the Douglas County Comprehensive Plan and Development Code. Improvements to the transportation system (assuming the transportation system would be considered a public use) are permitted outright or as a conditional use in all zoning designations within the study area. IAMP recommendations may have an impact on existing access points near the interchange, but will not have an impact on permitted land uses. The IAMP includes an analysis of comprehensive plan and zoning designations and land uses, as well as an access management plan. Upon completion, the County will adopt the IAMP as a policy and implementation document.

6.7 COMPREHENSIVE PLAN FOR THE ROSEBURG URBAN AREA (1982 WITH AMENDMENTS) AND LAND USE AND DEVELOPMENT ORDINANCE (1982 WITH AMENDMENTS)

The City of Roseburg Comprehensive Plan was originally adopted in 1973 and was last amended in 1992. 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 designates planned land uses within the Roseburg UGB which covers the study area east and west of the South Umpqua River. (See **Figure 3***: Interchange 123 Comprehensive Plan and Existing Land Uses*) The dominant Comprehensive Plan designations in the study area are Public/Semi Public and Low Density Residential. The Public/Semi Public designation is associated with the Douglas County Fairgrounds and is located within the southeast quadrant of the study area. Low Density Residential dominates the northern portion of the study area, as well as on the western side of the river and the far eastern portion east of the river. There are also two areas designated as Commercial located adjacent to the interchange on both the east and west sides of the interchange and a large swath of commercial along the Old Highway 99 couplet across the river in Roseburg. Medium Density Residential land sits northwest of the Old Highway 99 commercial area adjacent to a small area of Industrial-zoned property. The area along the east bank of the river and the extreme northern portion of the west bank are designated as Parks/Open Space. The Roseburg Comprehensive Plan designations are consistent with Douglas County zoning, which is described above.

The Roseburg Land Use and Development Ordinance provides zoning for the project area inside the city limits. (See **Figure 4:** *Interchange 123 Zoning*) The city land is zoned predominately Residential (R-1-7.5 and R-1-6), which call for primarily single-family residential uses on 7,500 square foot lots and 6,000 square foot lots, respectively. These zones also allow for two-family dwellings, accessory dwelling units, residential care facilities, and churches. The commercial area along Old Highway 99 is zoned C3, allowing for a variety of retail and wholesale business uses. There are two areas designated PR, which include Thompson Park and a church near the northeastern boundary of the study area, and an area along the river including part of Micelli Park. A very small portion of the project area is designated Heavy Industrial, which is part of the Umpqua Dairy.

The portion of the study area west of the South Umpqua River is outside of the Roseburg city limits, but inside of the UGB. It is under county planning jurisdiction until the area is annexed into the Roseburg city limits, which would then have planning jurisdiction. The Douglas County Development Code describes existing zoning within the study area.

Interchange improvements and preparation of an IAMP would not affect Roseburg Comprehensive Plan designations. The IAMP includes an analysis of comprehensive plan and zoning designations and land uses. The County would review development permits under county criteria. Once adopted by the City, the IAMP will be a policy and regulatory document for the jurisdiction.

7 IMPLEMENTATION OF THE IAMP

7.1 BACKGROUND

Douglas County, the City of Roseburg, and the OTC will jointly adopt the IAMP for the I-5 Interchange 123. The Interchange 123 project, proposed for the replacement of the I-5 overcrossing and the reconfiguration of the northbound and southbound ramp intersections, was identified by ODOT Region 3 as a priority construction project eligible for OTIA funding. The OTC approved OTIA funding for this interchange modernization project with the provision that an IAMP would be completed before the start of any interchange redesign work.

Interchange 123, often referred to as the Fairgrounds Interchange, provides the only access to the Douglas County Fairgrounds complex and nearby residences and properties on both sides of I-5. It is important to continue to provide adequate access to these areas, while at the same time ensuring the safe and efficient movement of traffic on I-5. Implementing the IAMP will improve the function and safety of Interchange 123 for all users of the transportation system and ensure that future land use actions will not negatively impact the interchange.

7.2 PLANNING FOR FUTURE GROWTH

Interchange 123 is within the City of Roseburg's UGB. The project study area is an area where future development could impact the functionality of the interchange. It lies both within and outside of the City limits.2 The study area falls within "Sub-Area 2" in the Urban Growth Management Agreement (UGMA) that was jointly adopted by the City of Roseburg and Douglas County in 1994. For Sub-Area 2 within the Urban Growth Area, the County has jurisdiction to implement the City (land use) Plan using County land use ordinances. The study area's location within the UGB indicates that land in the vicinity of the interchange is planned for future urbanization and City expansion.

The study area is under County planning jurisdiction until the area is annexed into the Roseburg city limits, when jurisdiction will switch to the City. Despite the potential for growth at urban densities, the land use analysis concluded that there is limited opportunity for new development in the immediate vicinity of the interchange. Residential uses to the west of I-5 are limited by steep topography, the existing residential area near the fairgrounds is mostly built out, and future commercial opportunities are limited to a small area near the pump station to the east, and redevelopment of an approximately 5-acre commercial site to the west of the interchange.

The construction of a new river crossing at Portland Avenue is a concept identified in both the City of Roseburg's and Douglas County's comprehensive plans. The bridge would

[2] *Only a small portion of the study area, west of I-5 and Heritage Way, lies outside of the City's UGB and this section is designated County Farm/Forest/Woodlot.*

provide direct access from southern parts of the city to the Douglas County Fairgrounds and Interchange 123 creating a fourth interchange connection into Roseburg. While the I-5 Interchange 123 IAMP identifies that this bridge would more than quadruple the existing traffic volumes at the interchange, traffic operations analyses show that Interchange 123 is expected to accommodate increased traffic volumes that could result from a new Portland Avenue Bridge and remain well under capacity with an acceptable v/c and minimal queuing at the ramps. To decrease the likelihood that interchange and freeway operations will be impacted by increased volumes due to the construction of this bridge and event-generating traffic, the IAMP recommends that Frear Street be realigned further away from the ramp terminals when a new bridge connecting Portland Avenue with the City of Roseburg is constructed.

7.3 IMPLEMENTATION PROCESS

Because the City and County have joint planning responsibility in this area, they both must adopt changes to their transportation policy and implementation ordinances to ensure that the land uses and the planned improvements to the interchange are in balance. Douglas County will amend the Douglas County Transportation System Plan (TSP), an element of the adopted Comprehensive Plan, to include by reference the I-5 Interchange 123 IAMP. The City of Roseburg does not have an adopted TSP so the City will adopt this IAMP as a transportation element of the adopted Comprehensive Plan. Both jurisdictions will be amending their comprehensive plans when adopting the IAMP, which is considered a legislative action, subject to the local jurisdictions' required notice and hearing procedures.[3]

When adopting the IAMP, both the County and the City will need to draft findings to show how implementing the IAMP is consistent with Statewide Planning Goals and how the proposed interchange improvements comply with the Oregon Transportation Plan and applicable Oregon Administrative Rule requirements (see Section 6, Plan and Policy Review, of the IAMP). In addition, local jurisdictions will need to produce supportive findings to show that the proposed amendments are consistent with local policies related to the transportation system plan.

7.4 PROPOSED AMENDMENTS

The following summarizes the major amendments to the Transportation Element of the Douglas County TSP that will need to occur to support the adoption of the I-5 Interchange 123 IAMP. Similarly, these elements of the IAMP are highlighted for the City of Roseburg and will need to be incorporated into the City's transportation element of the Comprehensive Plan.

- The list of projects necessary to implement the Preferred Concept for Interchange 123 improvements shall be included as part of the Transportation Element of the

[3] *The City's adoption procedures are contained in the City of Roseburg's Land Use and Development Ordinance, Chapter 2, Legislative Action Procedures.*

Douglas County TSP/City of Roseburg's Comprehensive Plan. The Preferred Concept, as illustrated in Figure 10 of the I-5 Interchange 123 IAMP and described therein as "Concept 2," includes increasing the separation between the northbound and southbound ramp intersections and widening Portland Avenue to four lanes under I-5, with one through lane and one left turn lane in each direction.

- The Short-term Access Management Actions, as detailed in Section 5.3.2 of the I-5 Interchange 123 IAMP shall be adopted by reference into the County's TSP/ City of Roseburg's Comprehensive Plan. ODOT will acquire access control along the interchange crossroads (Portland Avenue and Heritage Way) for a distance of up to 1,320 feet from the interchange ramp terminal intersections. Reservations of access will be issued for private and public approaches currently in existence to give property owners continued access to the state highway (or interchange crossroad) at specific locations.

- The approach-specific recommendations for access management, as detailed in Section 5.3.3, Medium-term and Long-term Access Actions, of the I-5 Interchange 123 IAMP, shall be adopted by reference into the County's TSP/ City of Roseburg's Comprehensive Plan. Recommendations include:

  - Consolidate and reduce the number of access points on Heritage Way.

  - Develop alternative access and circulation for the fairgrounds complex.

  - Retain access for the pump station only for the current use and as long as access is used strictly for maintenance purposes on an infrequent basis.

  - Access for the underdeveloped properties north of Portland Avenue and East of Kendall Street should be taken exclusively from Kendall Street.

- Relocating the northernmost section of Frear Street to align with Kendall Street has been identified as a necessary long-term access management action when a new bridge connecting Portland Avenue with the City of Roseburg is constructed. The Frear Street realignment, as described in Section 5.3.3, Medium-term and Long-term Access Actions of the I-5 Interchange 123 IAMP and shown on Figure 10, shall be adopted by reference into the County's TSP/ City of Roseburg's Comprehensive Plan.

- General Medium-term to Long-term access strategies, as listed in Section 5.3.3 of the I-5 Interchange 123 IAMP shall be adopted by reference into the County TSP/ City of Roseburg's Comprehensive Plan. Strategies include:

  - Encourage redevelopment opportunities that consolidate access points.

  - Encourage sharing of access points between adjacent properties.

- Offset driveways at proper distances to minimize the number of conflict points between traffic using the driveways and through-traffic.

- Provide driveway access via local roads where possible.

- Enforce access management spacing standards to the extent possible.

- Minimize driveway widths.

In addition, upon County/City adoption of the IAMP, the following general policy statements that support the preferred concept for Interchange 123 improvements will be incorporated into the Douglas County TSP/ City of Roseburg's Comprehensive Plan:

- Douglas County/the City of Roseburg recognizes the importance of Interstate 5 in the movement of people and goods to and from the region and is committed to protecting the function of Interchange 123 to provide access to I-5. Currently, Interchange 123 is the only way motorized vehicles can access the Douglas County Fairgrounds and residential areas to the east and west of I-5. Ensuring the continued safe and efficient movement of traffic at this interchange is a priority for the County/City.

- Douglas County/the City of Roseburg will coordinate with ODOT in evaluating land use actions that could affect the function of Interchange 123.

- Douglas County/the City of Roseburg will coordinate with ODOT prior to amending/adopting its transportation system plan or proposing transportation improvements that could affect the function of Interchange 123.

8 REFERENCES

Oregon Department of Transportation (ODOT). *1999. Oregon Highway Plan*. Salem OR.

Douglas County, Oregon. 2001. *Douglas County Transportation System Plan.*

Oregon Department of Transportation (ODOT). 2000. *State of the Interstate Report 2000; A Transportation Conditions Report.*

Oregon Department of Transportation. 2003. *Highway Design Manual – English.*

Transportation Research Board. 2000. *Highway Capacity Manual*. National Research Council. Washington DC.

Transportation Research Board. 1992. *NCHRP Report 255; Highway Traffic Data for Urbanized Area Project Planning and Design.* National Cooperative Highway Research Program. Washington DC.

Oregon Department of Transportation. *Oregon Transportation Plan*. 1992. Salem Oregon.

Douglas County Comprehensive Plan. Revised 1997. Douglas County OR.

Comprehensive Plan for the Roseburg Urban Area. 1982. Roseburg OR.

Appendix A

Stakeholder Interview Responses
Stakeholder Notification Letter
Stakeholder List
Stakeholder Interview Questions

Stakeholder Identification and Interviews

Stakeholder interviews were conducted to learn about current conditions in the Interchange 123 IAMP study area. These were conducted simultaneously with interviews regarding Interchanges 119 and 120. These interviews provided background for two distinct ODOT planning projects – a Transportation Conditions Report for Interchanges 119 and 120 and the other an Interchange Area Management Plan for Interchange 123. The projects are being produced concurrently and share the same technical advisory committee and project team to maximize efficiency.

The Process

With the help of the two projects' Technical Advisory Committee, the consulting team identified individuals that potentially had valuable information and insight into transportation and land use planning-related issues at the interchanges. This initial list ultimately was narrowed down to a representative list of 13 individuals. On June 17, 2004, Michael Baker, Project Manager ODOT Region 3 Planning, sent a letter to this list that introduced the projects and invited the chosen interviewees to participate in the process. A series of telephone interviews were then conducted with these individuals to identify issues associated with the 119/120 Interchange area and Interchange 123 during the last two weeks of June. Each person interviewed was contacted by phone. The interview typically lasted from 20-30 minutes.

The Participants

The participants were chosen because they, as individuals or as representatives of a group, had an interest in the operation of one, or all of the subject interchanges. Those interviewed included business property owners, homeowners, distribution and manufacturing interests, visitor or traveler service providers, and economic development representatives. Of the 12 people contacted, four were primarily interested in just Interchange 123. Appendix A contains the list of the stakeholders interviewed. [1]

The Questions

A complete list of the interview questions is included in Appendix A. The interview questions can be categorized in the following general topic areas:

- The effect current traffic conditions at the interchange(s) have on business/property owners/interest groups.
- Major transportation deficiencies at the interchange(s).
- Future growth in areas around the interchange(s).

[1] Thirteen individuals were contacted to participate in the stakeholder interviews; twelve interviews ultimately were conducted and summarized as part of this report.

- Ideas for improvements at the interchange(s).

The same set of questions were used for all of the interviewees, with some alternate questions used in the case of interviews that were only concerned with Interchange 123.

Interview Summary

There were some topics or themes that were common to most of the responses to the interview questions. Most respondents were generally pleased with present operations the interchange and did not have concerns regarding its ability to handle current levels of traffic efficiently and safely. However, those interviewed did make a point of mentioning that the design of the interchange was potentially dangerous. The majority of comments confirmed that current traffic conditions at the interchange was not seen as having negative impacts to businesses or properties in the area, with the notable exception of major event days at the Douglas County Fairground. Words such as "workable," "acceptable," and "serves needs well" were used to describe current traffic conditions at the intersections.

Several of those interviewed emphasized the growth in Roseburg and noted that this growth will likely have negative impacts on the interchange in the future. Most interviewees anticipated increased growth in the immediate vicinity of the interchange as well, noting the amount and location of vacant and redevelopable land. Some residential and commercial opportunities west of the interchange were mentioned, with development and redevelopment in the vicinity expected to increase if a new bridge was constructed at Portland Avenue.

There were few comments directed specifically at access issues, beyond concerns that current access be retained, both during and after any future construction at the interchanges.

Stakeholder Interviews

The following is a list of paraphrased comments that were shared during the telephone interviews regarding the Interchange 123 study area. The comments are organized under three general topic areas: Specific Concerns Regarding Interchange 123; Growth in the Region Affecting Interchange 123; and Past Improvements/Suggestions for the Future. When there was more than one related comment this fact is noted in parentheses.

Specific Concerns Regarding Interchange 123

- A new bridge at Portland Avenue is necessary to alleviate the "bottleneck" that occurs occasionally at 123; another exit would improve traffic congestion from south Roseburg.
- There are geometric and sight distance problems with the interchange (all four interviewees with an interest in this interchange mentioned that traffic movement under the overpass was challenging and dangerous, citing lack of traffic controls at the off ramp and having to turn against traffic when accessing Portland Avenue).
- There seems to be a lot of accidents (off southbound exit).
- Any improvements will need to be well coordinated with operations of Old Highway 99 east of the river.

- The time of construction for future improvements is a concern (Douglas County Fair week is the first or second week of August; 80,000 visitors over 5 days cause back-ups on I-5).
- Residents should be able to access their homes during construction of any future improvements; the sooner improvements happen, the better.
- Even though event parking on Kendall is prohibited, people still park in front of residences and this area is not patrolled for violators in the "no parking" areas.
- The design of a future Portland Avenue bridge will be particularly important, as it will become an arterial roadway.
- The mill between Portland Avenue and Interchange 123 creates significant traffic on Old Highway 99 in this area; if the bridge is built, all this traffic will use that facility; if Interchange 120 is constructed as a four-way intersection, then the traffic in and out of the mill will use this intersection.
- Backups on I-5 southbound and the barrier that trains cause at the Highway 99 Harvard Exit are a detriment in emergency situations, particularly when trying to reach Mercy Hospital.

Growth in the Region Affecting Interchange 123

- Improvements to Interchange 123 will affect the quality of development in its vicinity. A decent quality interchange and a new bridge will cause rural/heavy industrial uses to evolve into high density, quality commercial uses.
- If the interchange is upgraded, there will likely be a rapid shift from residential to commercial uses in the immediate vicinity.
- The Douglas County Fair has a "buy order" for houses along Portland Avenue and has a "first right of refusal" for the Driver Property near the water shed.
- The Douglas County Fair is currently in the process of replacing a 12,000 square foot conference center with a 25,000 square foot facility, scheduled for completion in Spring 2005.
- There isn't a lot of room for more residential growth along Kendall Street; there aren't plans for the couple of vacant lots to be developed or sold.
- Improvements could facilitate commercial (motel/restaurant) and residential growth west of the interchange.
- Roseburg is growing; there is definitely a need for a bridge at Portland Avenue.

Past Improvements/Suggestions for the Future

- Working closely with ODOT, many of the Fairground traffic issues were eliminated last year; re-striping at the interchange has improved its functionality.

- While visibility has improved under the 123 bridge, it is still an uncontrolled intersection with nothing to slow down traffic; more needs to be done to address this issue with regards to the traffic volumes coming from the north to access the fairgrounds.

- Interchange 123 needs to be made fully functional with sufficient area underneath for improvements (a four-way intersection).

- The traffic impacts on Interchange 123 would be significantly lessened if 120 was to become a four way interchange (instead of southbound on and off only).

- The fairgrounds need more parking area and more control over parking in prohibited areas would be helpful.

- Really need a new interchange at 123; a redesign should straighten out the alignment and widen the overpass to make that intersection more safe. (Three comments concerned the curve at this intersection, as it related to safety issues.)

- A new Portland Avenue bridge would be the biggest improvement to improve traffic flow south of Roseburg. (All interviewees with an interest in the Interchange 123 area shared a similar opinion.)

- Another exit (new bridge crossing) in the area would disperse traffic, get congestion out of downtown Roseburg and alleviate log and semi-truck traffic on Old Highway 99 (Sunstuds Lumber Mill and Umpqua Dairy traffic mentioned).

- Adding another lane from Harvard into the Fairgrounds would help with traffic/access.

[name]

[company]

[address]

Roseburg, OR 97470

Dear [name]:

The Oregon Department of Transportation (ODOT) is currently conducting planning studies for I-5 Interchanges 119 and 120 and Interchange 123. ODOT has contracted with the engineering firm David Evans and Associates (DEA) for consulting work on these three interchanges; the planning firm Angelo Eaton & Associates is a subconsultant for land use issues. Two projects, one resulting in a Transportation Conditions Report for Interchanges 119 and 120 and the other an Interchange Area Management Plan for Interchange 123, are happening concurrently. I am contacting you because you have been identified as a person, or as a representative of a group, who has an interest in the operation of one, or all of these interchanges. We would like to schedule 10-20 minutes of your time to discuss the information or concerns you have about the interchange(s).

Staff from Angelo Eaton & Associates will be conducting stakeholder interviews during the week of June 21-25. They will be contacting you via telephone during this week to either conduct a short interview, or schedule another time that is more convenient for you.

Some of the question topic areas will include:
The affect current traffic conditions at the interchange(s) have on business/property owners/interest groups.
Major transportation deficiencies at the interchange(s).
Future growth in areas around the interchange(s).
Ideas you may have for improvements at the interchange(s).

We hope that you, or an associate with similar knowledge, will be willing to spend some time contributing to the interchange planning projects by participating in a stakeholder interview. While this call will be relatively short and informal, your input is important to successfully identifying future solutions for these interchanges. If you have questions about the Interchanges 119 and 120 Conditions Report or the Interchange 123 Interchange Area Management Plan, please call me at 541-957-3658.

Sincerely,

Michael Baker

Project Manager

ODOT Region 3 - Planning

Interchanges 123
Stakeholder List

Name	Organization	Address
Interchanges 119/120		
Tonya Theiss*	Cow Creek Band of Umpqua Tribe of Indians	2371 NE Stephens, Ste 100 Roseburg, OR 97470
Tony Wright	UPS	4429 Old Highway 99 S., Roseburg, OR 97470
Helga Conrad	Umpqua Economic Development Partnership	744 SE Rose St., Roseburg, OR 97470
Allyn Ford	Roseburg Forest Products	P.O. Box 1088, Roseburg, OR 97470
Dave Gilbert	Lindyland (Lindy's Center?)	P.O. Box 909, Roseburg, OR 97470
Patty Carte	Love's Truck Stop	280 Grant Smith Rd., Roseburg, OR 97470
Mike Crennen	Roseburg Paving, a Division of LTM Inc.	P.O. Box 1427, Roseburg, OR 97470
Wes Melo	Ingram Books	201 Ingram Drive, Roseburg, OR 97470
Rod Johnson	Littlebrook Estate	200 Littlebrook Lane, Roseburg, OR 97470
Interchange 123		
Harold Philips	Douglas County - Fair Director	2110 SW Frear, Roseburg, OR 97470
Stephen James	Stephen James Construction	161 Heritage Way, Roseburg, OR 97470
Dave Leonard	Pinnacle Engineering	3329 NE Stephens, Roseburg, OR 97470
William Baker	Property Owner	1713 SW Kendall, Roseburg, OR 97470

* This stakeholder was contacted but did not have time to discuss the interchange planning projects within the timeframe for completion of this report. Tonya Theiss represents the interests of the Cow Creek Band of Umpqua Tribe of Indians as a member of the I-5 Interchanges 119/120 Technical Advisory Committee.

Stakeholder Interviews for:
Interchanges 119 and 120 Transportation Conditions Report
Interchange 123 Interchange Area Management Plan

A reminder that the purpose of the interviews is to:

- Uncover underlying issues in the community;
- Establish a sense of confidence in the consultant team;
- Gather information and opinions that might not otherwise be available;
- Observe patterns of opinion from a range of diverse community leadership;
- Determine overall willingness to participate in the project.

The purpose of this process is to gain a better understanding of both the current and future deficiencies in how the 119 and 120 interchanges function. With the help of an advisory committee, the consultant team will identify and document conditions, limitations, and opportunities and needs, all of which will be captured in a Conditions Report.

The purpose of the Interchange 123 planning effort is to evaluate the operation of, assess the limitations and issues of concern, and identify possible future long-range needs attributable to planned development in the area. The project is to prepare an interchange area management plan, as required by State law, for the I-5 overcrossing bridge replacement and the potential new Portland Avenue bridge over the South Umpqua River.

To what extent are you familiar with the planning project(s)? *(Interviewer will distinguish these from the construction projects underway; questions will be referred to Chris Hunter, ODOT CPM, 541-957-3689)*

(1.) What concerns, if any, do you have about the purpose and process? What are your expectations?

(2.) What interchange is of particular interest to you? Why?

For property owners/tenant stakeholders:
What are the existing uses on the property?
Are the existing uses considered temporary, short-term, or long-term?
Do you have any short-term, medium-term, or long-term plans to change use, or develop on the property? If yes, would the change(s) involve a need to change access to the property?

(3.) How is your property/business/ constituency/members affected by current traffic conditions at the interchange(s)?

(4.) What do you see as the primary function of the interchange(s)? How do you think the interchange(s) and I-5 can balance serving local/regional access needs with interstate use (mobility) and function?

(5.) What do you believe are the major deficiencies at the (these) interchange(s) – e.g. congestion, access to properties, safety, design, etc.?

(6.) What are your ideas for improvements to the interchange(s)?

(7.) What do you envision for future growth in the region? Do you think the area needs – or is likely to see - more industrial growth, more commercial growth or more residential growth? What locations might this occur in the future?

(8.) Have past ODOT or County improvements or particular development projects helped or hindered traffic congestion and access issues in the vicinity of the interchange?

(9.) How would the construction of a new bridge across the South Umpqua River affect traffic movement or land uses in the area?

(10.) An access management plan will be a part of the interchange area management plan for Interchange 123. Do you have concerns specific to access management, such as related safety considerations or the location of future access points?

(11.) This process will continue through Fall of 2004, with several public input and information opportunities. What suggestions do you have for us about how we involve the public in this process? How would you like to stay involved? Are there other specific individuals and groups that we need to contact?

Appendix B
Interchange 123
Technical Advisory Committee Members

ODOT

Mike Baker	Project Manager, Region 3 Planning
Lisa Cortes	Region 3 Planning
Doug Norval	Transportation Planning Analysis Unit
Dave Warrick	Preliminary Design
Ron Hughes	Region 3 Traffic/RAME
Steve Madison	Region 3 Right-of-Way
Darrin Neavoll	ODOT

Consultant Team

John Stutesman	DEA
John Replinger	DEA
Rick Kuehn	CH2MHill
Darci Rudzinski	Angelo Eaton & Associates

TAC

Kelly Niemeyer	Douglas County - Planning
Mike Luttrell	Douglas County - Public Works
Jim McClellan	SWACT (Southwest Area Commission on Transportation)
John Boyd	Douglas County – Planning
Clay Baumgartner	City of Roseburg – Public Works Director
Sarah Mizejewski	City of Roseburg – Planning
Rex Stevens	City of Winston – Mayor
David VanDemark	City of Winston – City Administrator

Harold Philips	Douglas County Fair
Tonya Theiss	Cow Creek Band of Umpqua Tribe of Indians
John Renz	The Department of Land Conservation and Development
Fred Patron	Federal Highway Administration

Appendix C
Traffic Operations Analysis Methodologies

Traffic Counts

The Oregon Department of Transportation (ODOT) conducted two 14-hour manual classification counts. One count was conducted at the northbound I-5 ramp terminals at Portland Avenue on Wednesday, 11/19/2003, and the other was conducted at the southbound I-5 ramp terminals at Portland Avenue on Tuesday, 11/13/2003.

The 14-hour manual classification counts were examined to determine the Peak Hour Volume, Peak Hour Factor, and Percent of Heavy Vehicles at each intersection. The common peak hour for the intersections was found to occur between 4:00 and 5:00 PM. Existing traffic volumes can be found in **Figure 5**. Because the traffic volume data for the Fairgrounds interchange area were tabulated for one-hour increments rather than 15-minute increments, count data from the area surrounding interchanges 119 and 120 was used to develop the peak hour factor. Based on this data, a peak hour factor of 0.95 was used.

Heavy vehicle percentages were determined for each intersection from the counts provided. Heavy vehicles were considered to be any vehicle with three or more axles excluding buses. Based on the provided counts, heavy vehicles were found to comprise one percent of the overall traffic volume.

Developing 30th Highest Hour Volumes

ODOT's Transportation Planning Analysis Unit (TPAU) has developed a procedure for calculating current year 30th highest hour traffic volumes. This procedure was applied to the area surrounding Interchange 123.

The 30th highest hour traffic volumes are calculated by applying a seasonal factor to the peak hour volumes. The 30th Hour Volume usually occurs during the peak month of the year. The peak hour volume is multiplied by the seasonal factor to obtain the 30th Hour Volume.

The seasonal factor is found by using the ODOT Automatic Traffic Recorder (ATR) closest to the location of interest with similar traffic flows, area type, and lane configuration. For locations on the freeway ramps, ATR 10-005, located 3.40 miles north of Roseburg on I-5, was used to determine an appropriate seasonal factor of 1.19. For the traffic volumes on Portland Avenue, an average seasonal factor of 1.14 was calculated using ATRs 10-006, 15-017, 15-014, and 18-018.

Traffic volumes were then multiplied by their appropriate seasonal factor to determine the 30th Hour Volumes. The traffic volumes were rounded to the nearest five vehicles and balanced using the larger volume. Balanced 30th Hour Volumes can be found in **Figure 6**.

Traffic Operations Analysis

Synchro and SimTraffic were selected for performing the traffic operational analysis. The two intersections in the study area are stop-controlled intersections. The Level-of-Service report from Synchro on unsignalized intersections is based on Chapter 17 of the 2000 Highway Capacity Manual (HCM)[2]. The Synchro report summarizes the calculated Level-of-Service, Volume-to-Capacity ratios, and the 95th Percentile Queue Length by lane and minor street approach for two-way stop-controlled intersections.

Crash Analysis

The following describes the methodologies and results from the Interchange 123 crash analysis.

PRC Reports

PRC reports are generated by ODOT personnel in the Crash Analysis and Reporting Unit from state-wide crash databases. The PRC crash listings were obtained from ODOT for the most recent three complete years of reported crashes. It should be noted that the crashes listed are only the crashes reported.

Crash Rates

The crash rates were calculated from the PRC crash reports. Crash information collected represents crashes that occurred within 265 feet of the intersection (or more if it is determined the crashes are within the influence area of the intersection) and only those crashes that were reported. In Oregon, legally reportable crashes are those involving death, bodily injury or damage to any one person's property in excess of $1,000.

Both intersection crash rates and segment crash rates were calculated using the following equations.

$$rate_{\text{int}} = \frac{(Crashes \cdot 1{,}000{,}000)}{(365 \cdot Years \cdot ADT)} \quad \text{and} \quad rate_{segment} = \frac{(Crashes \cdot 1{,}000{,}000)}{(365 \cdot Years \cdot Length \cdot ADT)},$$

where

$Rate_{int}$ = Crash rate per Million Entering Vehicles (MEV)

$Rate_{segment}$ = Crash rate per Million Vehicle Miles Traveled (MVMT)

Crashes = Number of crashes during the time segment

Years = Number of years being studied

ADT = Average Daily Traffic volumes

[2] Highway Capacity Manual, Transportation Research Board, Washington DC, 2000.

Length = Length of roadway segment being studied (for segment rates).

The number of crashes was determined from the PRC reports. The ADT for corridor crash rates was obtained using the ODOT Transportation Volume Tables. The ADT for intersection crash rates was determined by taking 10 times the total entering volume for the peak hour of traffic. Crash rates were calculated for the entire three-years of available crash data.

SPIS Data

SPIS is a method developed by ODOT for prioritizing locations where funding for safety improvements can be spent most efficiently and effectively. Based on crash data, the SPIS score is influenced by three components: crash frequency, crash rate, and crash severity. Three years of crash data are analyzed for the SPIS score. SPIS locations meet one of two criteria during the previous three years: three or more crashes at the same location, or one or more fatal crashes at the same location. A list of the sites with the top 10% SPIS scores is produced each year. For the year 2003, which includes crash data for 2000, 2001, and 2002, the SPIS scores at or above 45.07 are in the top 10%. There are no segments surrounding Interchange 123 that are in the Top 10% of SPIS scores.

Study Area Findings

Crashes were summarized by location for each of the ramp terminals and the freeway segments between the on and off-ramps. The southbound off-ramp at Portland Avenue had one crash between 2000 and 2002. The estimated ADT was 880 vehicles per day, which returned a crash rate of 1.04. There were two crashes that occurred near the merge area of I-5 southbound and the on ramp at interchange 123. There were five crashes on the mainline between the southbound off- and on-ramps.

The northbound direction had one crash on the northbound off-ramp between the freeway and Portland Avenue. There were no crashes at the intersection of Portland Avenue and the northbound on-/off-ramps. There were three crashes on the northbound mainline between the northbound off- and on-ramps of interchange 123.

A crash rate for both the northbound and southbound directions of I-5 was calculated using a three-year average ADT of 42,500 vehicles per day. A three-year crash rate 0.21 was found for I-5 from milepost 122.50 to 122.80. This is just over 0.25 miles south of the northbound off-ramp and southbound on-ramp. The area between the on- and off-ramps of I-5 at exit 123 has a crash rate of 0.34 and the area to north on I-5 from milepost 123.23 to 123.50 has a crash rate of 0.16. The statewide comparable crash rate for freeways in rural areas is 0.26, 0.24, and 0.22 for 2000, 2001, and 2002 respectively. The crash rates for I-5 near exit 123 are below the statewide average north and south of the interchange, but just above the average for the area between the on- and off- ramps.

Appendix D

Constructability Issues

At the December 2004 TAC Meeting, the team was asked to consider the interrelationship of the design and siting of the interchange with the construction and phasing of the project. Engineers from David Evans and Associates, Inc., CH2MHill, Inc., and ODOT discussed the issues and the discussions are summarized below.

Assumptions

With a daily traffic volume of approximately 44,000, it was determined that two travel lanes must be kept open on I-5 in each direction for the duration of the bridge reconstruction. Due to the lack of alternative access for local residents and the Douglas County Fairgrounds, it was also assumed that access would be maintained to the local street on both the east and west sides of the interchange.

It was assumed that the I-5 mainline bridge would be constructed to accommodate three lanes in each direction in the future. This assumption, which may not be critical to the design or siting of the interchange and bridge, is discussed in more detail below.

Finally, it was assumed that the I-5 traffic could be restricted to a narrower portion of the existing bridge, allowing two-direction travel to be maintained, but still allowing a portion of the existing bridge to be removed. This partial removal, which is thought to minimize the lateral offset of the new bridge, is also discussed in more detail below.

Possible Construction Phasing Sequence

The need to maintain two travel lanes in each direction is a key factor with this project. **Figure D1** depicts a schematic of the possible construction phasing. Note that this schematic depicts three construction phases and maintains two travel lanes in each direction during each phase. The new structure is estimated to be approximately 34 to 40 feet wider than the existing bridge. The construction sequence depicted would result in the new bridge being offset to either the east or west. The new, wider structure would result in an adjustment of about 40 feet to one side of the other and a shift of the I-5 centerline of approximately 20 feet.

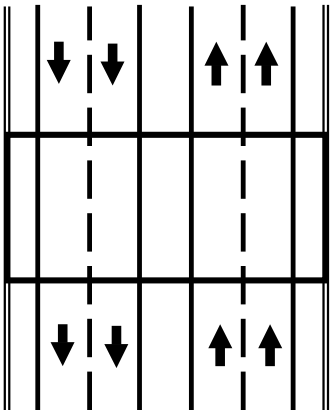
A construction phasing sequence that attempted to limit the construction to two phases or an inability to remove part of the existing structure would likely cause a greater shift in the centerline and a greater offset from the existing edge of structure.

Symmetrical widening of I-5 was also considered. This would maintain the centerline of I-5 in its current location. Though there may be a way to widen symmetrically to each side, a phasing sequence could not be developed for this possibility that did not involve temporary facilities that would be constructed and later removed.

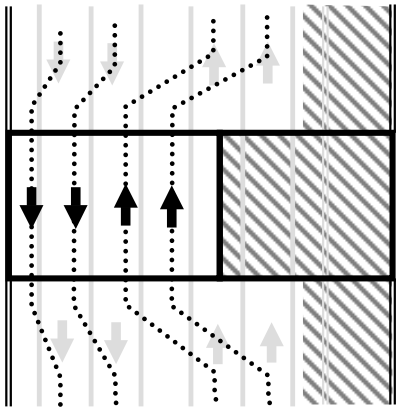
Siting of the New Bridge and Realignment of I-5

From a construction phasing standpoint, there would be no difference between widening to the east (toward the Fairgrounds and river) or to the west (toward Heritage Way and the hillside). The widening of the bridge and shifting I-5 in either direction is likely to require some right-of-way acquisition and, potentially, some relocation of residents. Shifting toward the east would likely involve retaining walls and substantial earthwork to relocate road connections and ramp changes. Shifting to the west would likely involve ramp changes and retaining walls.

A substantial length of I-5 would have to be reconstructed to accommodate a change in centerline alignment. In addition, due to the increase in bridge length (needed to accommodate more lanes on Portland Avenue), the bridge structure would be deeper, adding to the need to reconstruct a portion of I-5.

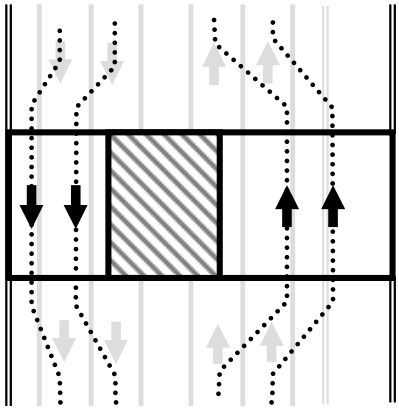


Existing Conditions

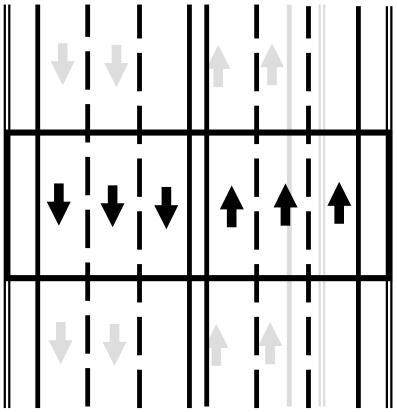


Phase 1 Construction

Notes:
Phase 1 - Shift traffic to west, using shoulder for through travel.
Widen on east side, widen and replace easternmost bridge section.
Phase 2 - Shift traffic to outer lanes, reconstruct center bridge section.
Phase 3 - Shift traffic to east, reconstruct westernmost bridge section
Ultimate configuration represents shift of centerline to the east
towards Fairgrounds

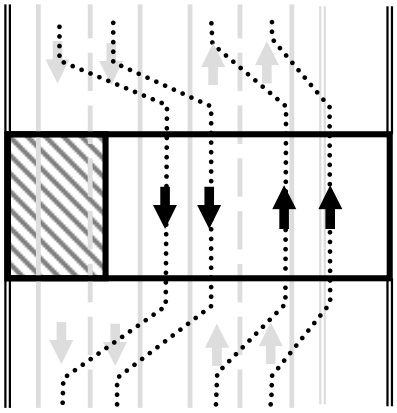


Phase 2 Construction



Ultimate Configuration

Not to Scale



Phase 3 Construction

DAVID EVANS AND ASSOCIATES INC.

LEGEND

Work zone

Bridge

Direction of travel

Detour Route

Figure D1

Construction Phasing

Interchange 123