Facility Plan

OR 22 (W) Expressway Management Plan

Derry Overcrossing (MP 16.94) to Doaks Ferry Road (MP 22.04)

Willamina-Salem Highway No. 30

Polk County, Oregon

Oregon Department of Transportation

July 2008

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CHAPTER 1

Background

1.1 Plan Purpose

This report documents the results of the transportation facility planning process conducted by the Oregon Department of Transportation (ODOT) for the western segment of OR 22 east from the Derry Overcrossing (MP 16.94) to Doaks Ferry Road (MP 22.04). OR 22 is State Highway No. 30, the Willamina-Salem Highway. The vicinity of the study area is shown in Figure 1-1. For purposes of identifying solutions, the section of highway and future land use between Doaks Ferry Road and College Drive (MP 23.67) were considered. The intersection of OR 22 and OR 51 (MP 20.37) was also included in the expressway planning process.

Facility plans, such as this expressway management plan (EMP), can serve a variety of purposes. In some cases, a facility plan is developed to address an outstanding planning issue or narrow the alternatives that are then advanced into the environmental documentation process required by the National Environmental Policy Act (NEPA). In other cases, a facility plan process may either constitute the first phase of the formal NEPA process or the development process for a non-NEPA project.

The purpose of the OR 22 (W) Expressway Management Plan (Derry Overcrossing to Doaks Ferry Road) was to assess traffic and safety problems within the study area and identify potential solutions to these problems. This effort was a technical exercise to evaluate and screen alternatives prior to conducting project development. The operational feasibility of alternative solutions to identified problems through the year 2030 was the focus of this effort, which was started in 2000 then halted in 2004 prior to completion due to lack of funding by ODOT.

The conclusions in this document have provided direction to the project development process by defining the key features of the alternatives that have been identified for construction at problem locations along the OR 22 study area, including the intersection with OR 51 (Independence Highway No. 193) and local interest road intersections. This report also provides a basis for ODOT to work with Polk County to amend its Comprehensive Plan, Transportation Systems Plan (TSP), and Zoning Ordinance as well as the Regional Transportation System Plan (RTSP) of the metropolitan planning organization, SKATS (Salem Keizer Area Transportation Study). These amendments will acknowledge the project development decisions that have been made and the short-, medium-, and long-term facility management approach (including Polk County land use decisions) that will be implemented to help protect the function of these improvements through the 20-year planning horizon.

The construction projects recommended by this facility plan are expected to be included in the Statewide Transportation Improvement Program (STIP) after adoption by the Oregon Transportation Commission (OTC) and when funding for full development and construction of such projects has been secured.

1.2 Plan Context

This EMP is ODOT's first step in the project development process. Where this plan fits within the ODOT's hierarchy of planning, programming, and project development processes is shown in Figure 1-2. At the top is the Oregon Transportation Plan (OTP), which includes plans for specific modes, such as highway, rail, and aviation. Facility plans are prepared for these modes, and may include plans for a specific interchange, corridor, or expressway, for example. Facility plans often identify projects for inclusion in the Statewide Transportation Improvement Program (STIP), leading to environmental permitting, design, and construction. The OTP sets broad policies for the state transportation system. Included are policies and action steps intended to improve rural highways. Overall, the intent of the OTP is to guide future development and ensure a safe, convenient, and efficient transportation system throughout the state in order to promote economic prosperity and livability for all Oregonians.

Based on Statewide Level of Importance (LOI) designations, the Oregon Highway Plan (OHP) defines specific standards for state highways, including mobility standards, interchange spacing requirements, investment priorities, and access control standards. The operational performance and mobility standards in the OHP can vary by location and adjacent land use type.

The OHP designates OR 22 as having a Statewide LOI as a freight route. OR 22 has also been designated by the OTC as an expressway and is included as part of the National Highway System (NHS). Expressways are a subset of Statewide, Regional, and District LOI highways that are intended to provide a high level of mobility for longer distance travelers. The OHP designates OR 51 as having a District LOI.

ODOT corridor-level plans and local Transportation Systems Plans (TSP) define the existing conditions and future improvements necessary to support land use plans 20 years into the future and implement the OHP and other ODOT modal plans. ODOT's OR 22 Corridor Strategy (West) identified the OR 22 with OR 99W and OR 22 with Dallas-Rickreall Highway intersections as areas that needed further solution development work. This corridor strategy covered the portion of OR 22 from its intersection with OR 18 at Willamina to the Deer Park/Gaffin Road Interchange approximately 4 miles east of Interstate 5. These recommendations were further supported by a corridor safety analysis performed in 1999. Other planning efforts cover OR 22 west to the interchange with OR 99W, constructed under the adopted Rickreall Junction Transportation Facility Plan (ODOT, June 2005) and ongoing planning activities for OR 22 extending into Salem and across the Willamette River. The OR 22 study area of this report is Derry Overcrossing to Doaks Ferry Road.

The Polk County TSP identifies both OR 22 and OR 51 as principal arterials in the County road system. It identifies a number of possible road construction projects including the construction of an interchange at the OR 22/51 intersection. The TSP states that the county will work with ODOT on any necessary studies related to these projects. This EMP is based upon earlier planning efforts by ODOT and local agency staff to develop a facility plan focused on the segment of OR 22 between Greenwood Road (MP 18.61) to Doaks Ferry Road (MP 22.04).

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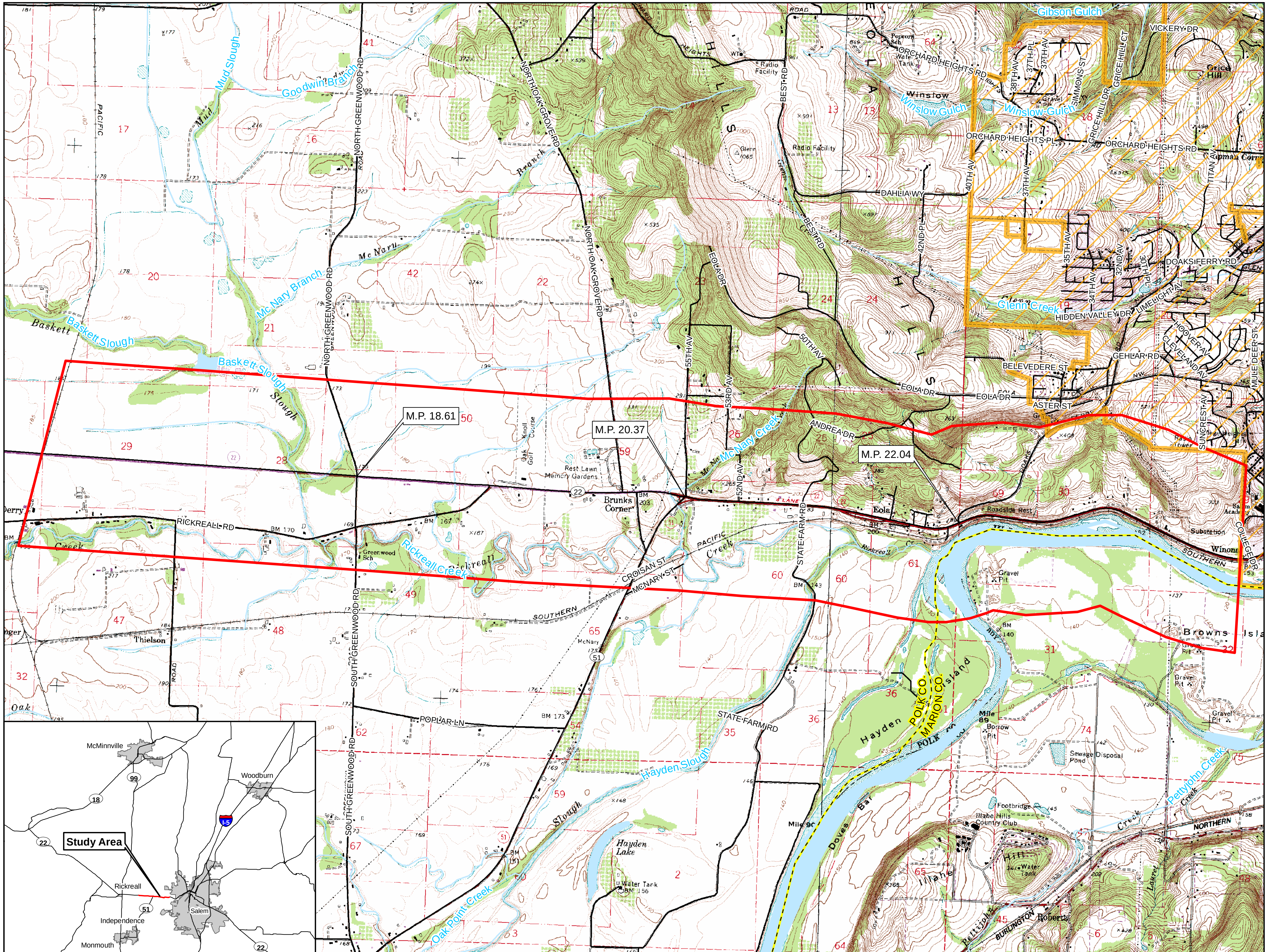

Figure 1-1
Project Vicinity
OR 22 West EMP

LEGEND

- Study Area
- Highways and Roads
- Creeks and Streams
- Willamette River
- Urban Growth Boundary
- Counties

SOURCE: POLK COUNTY GIS

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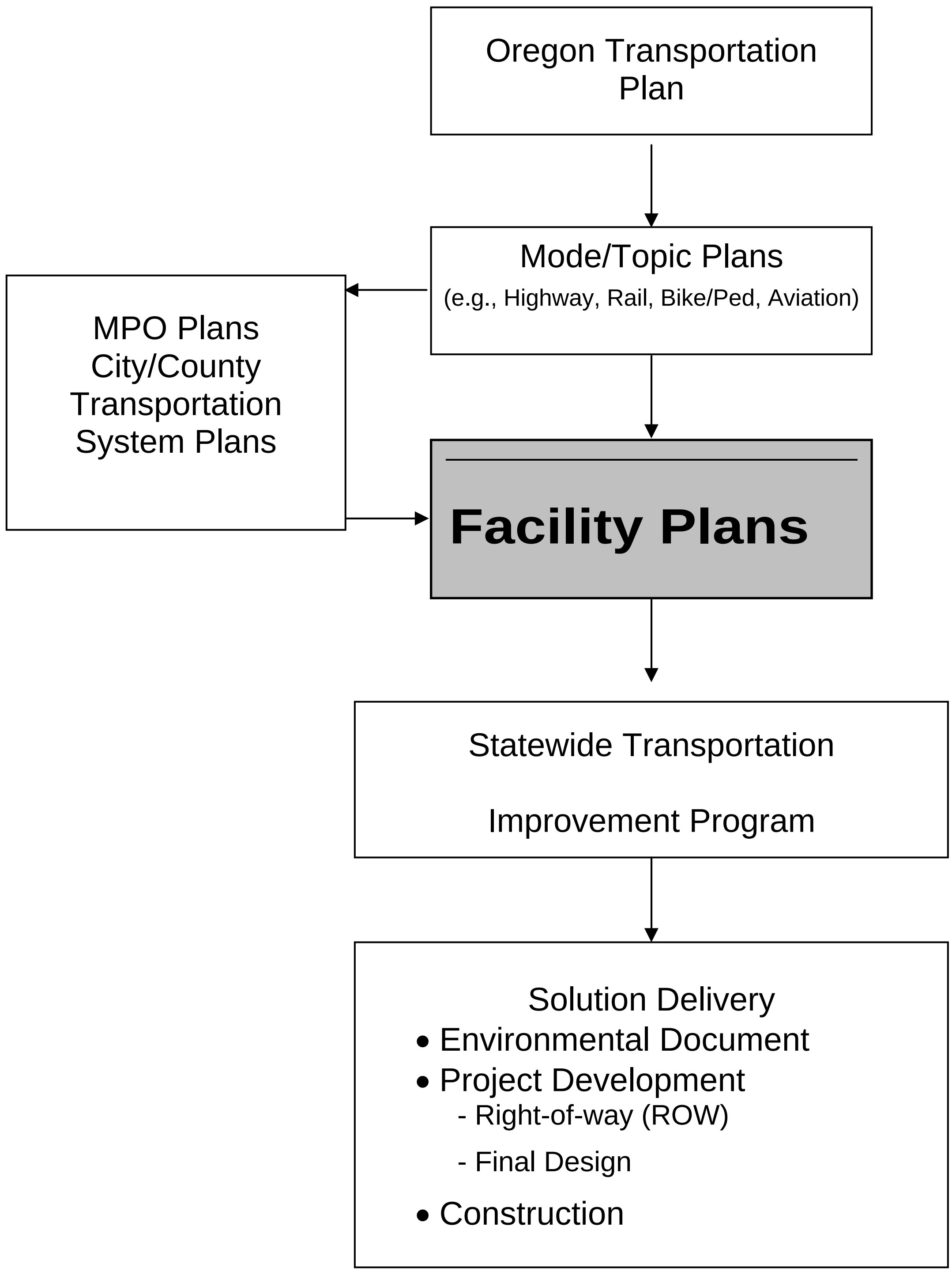


FIGURE 1-2. ODOT Planning, Programming, and Project Development Context

That earlier effort, from 2000-2005, was not completed, but nevertheless provided many of the identified alternatives for evaluation. In addition, a study prepared for Polk County by W&H Pacific, "Project 22: Hwy 22/51 Interchange Implementation Strategy" (June 20, 2005) provided project delivery concepts and a strategy report for phasing the proposed OR 22/51 interchange and frontage/backage roads options.

1.3 Plan Process

A consultant team led by CH2M HILL with Kittelson & Associates was contracted by ODOT to produce the expressway management plan. The team's first efforts were to gather data and information related to the earlier efforts led by ODOT with contributions from Polk County and the Mid-Willamette Valley Council of Governments (MWVCOG). This plan process consisted of the following phases:

- **Project Management Team Formation -** A Project Management Team (PMT) was formed to oversee development of the expressway management plan and also serve as the technical advisors for project alternatives. The PMT consisted of federal, state, and local representatives including Federal Highway Administration (FHWA) staff, ODOT staff, CH2M HILL staff, Kittelson & Associates staff, Department of Land Conservation and Development (DLCD) staff, MWVCOG staff, and representatives from Polk County and the City of Salem. The PMT was responsible for developing project goals and the problem statement, assisting with data collection and analysis, identifying and evaluating alternatives, and making recommendations. The PMT meeting summaries are included as Appendix A.
- Scoping and Inventory - Conducted a review of existing plans, policies, and study documentation related to the existing highway segment to identify pertinent policies and determine data collection needs.
- Conditions Assessment - Conducted an analysis and validation of existing operating and geometric conditions; development of future traffic volumes; and analysis of operating conditions assuming the existing geometric conditions remain in place. From these assessments, deficiencies were identified.
- Alternative Identification - identified a range of improvement alternatives and conducted screening to select the most feasible alternatives for evaluation.
- Alternative Evaluation - Evaluated the operational performance and geometric feasibility of the selected alternatives using the traffic volumes for the years 2015 and 2030.
- Stakeholder Input - Conducted a series of meetings with key stakeholders from the 2000-2002 planning process. These included community residents and local business owners, and emergency response personnel of the study area. The purpose of the meetings was to review preliminary evaluation results and improvement concepts and receive stakeholder feedback. The earlier stakeholder outreach process culminated with an open house at the Eola RV Park in September 2004; the acceptability of many of the project concepts recommended by this expressway management plan was affirmed at this open house; some concepts are newly developed. A more recent public meeting before the Polk County Commission and attended by stakeholders in August 2007 reactivated public

involvement and reaffirmed the continuing validity of the project. An Open House in November 2007 at the Polk County Fairgrounds reaffirmed earlier evaluation results and public preferences. Additional public input can also be provided through the Polk County and OTC adoption processes.

- **Expressway Management Plan Preparation -** The project team prepared the EMP including documenting the previous steps, identifying investment requirements, and making recommendations for adoption.

Figure 1-3 illustrates the facility plan process.

1.4 Transportation Context

1.4.1 OR 22 Characteristics and History

The OR 22 transportation corridor extends for approximately 140 miles, beginning at the intersection with US Highway 101 in Hebo and terminating at Santiam Junction where it intersects with US 20. Between Salem and Willamina, the corridor primarily runs through farmland with little development occurring outside of Salem. OR 22 is of critical importance to a wide range of statewide, regional, and local users and is therefore designated as a highway of statewide importance from Valley Junction to Santiam Junction.

The highway serves as the primary route connecting the Salem-Keizer Metropolitan Area and the mid-Willamette Valley to the Oregon Coast, providing connections to Lincoln City and Tillamook. It is also a major connecting route from the Central Oregon Coast to the Interstate Highway System, and to Central Oregon. The corridor is used by a large number of recreational travelers. It also serves industrial manufacturers and commercial outlets located in the Willamette Valley, the Oregon Coast, and in Central Oregon.

OR 22 is frequently used by local farmers as they move equipment from farm to field and serves as an important farm-to-market road. The highway also serves a number of local businesses that transport gravel or lumber from source to processing facilities. Additionally, the corridor serves as a vital link for area residents needing health care and emergency services.

For the communities located along or within several miles of OR 22, the corridor west of Salem serves as a major commuting route. A large number of commuters use the corridor to get from their residences in outlying communities like Dallas, Monmouth, and Willamina to their jobs in Salem. A smaller number of Salem area residents also use the corridor to commute to employment in outlying communities.

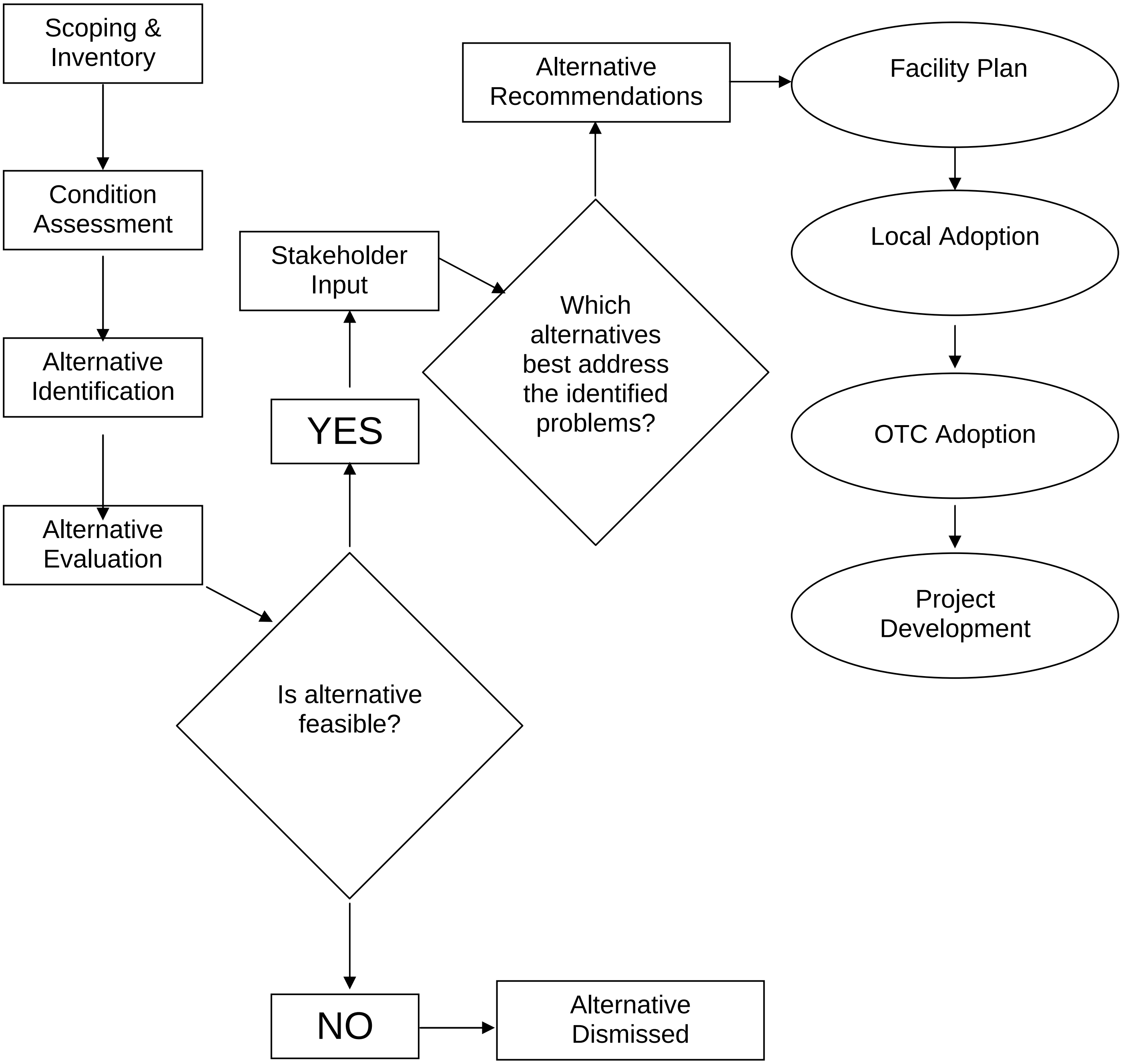


Figure 1-3. Facility Plan Process Flowchart

West of Salem and north of Rickreall, OR 22 (MP16.12) intersects with OR 99W, forming a new interchange (construction completed 2006). Closer to Salem at MP 20.37, OR 22 intersects with OR 51 (Independence Highway). Intersections of OR 22 with local interest roads within the study section are listed below:

- Greenwood Road (MP 18.61)
- Rickreall Road (MP 19.32)
- Old Knoll Golf Course Driveway (MP 19.54)
- Oak Grove Road (west access) (20.03)
- Oak Grove Road (east access) (MP 20.10)
- 55^{th} Avenue (MP 20.37)
- 52nd Avenue (MP 20.84)
- State Farm Road (east access) (MP 21.19)
- 50th Avenue (west access) (MP 21.19)
- Shaw Street (MP 21.86)
- Access to EOLA Bend RV Park (MP 21.85)
- Riggs Street (MP 21.66)
- Spring Street (MP 21.72)
- Mill Street (MP 21.78)
- OR 22/Doaks Ferry Road (MP 22.04)

1.4.2 OR 51 Characteristics and History

OR 51 is a district highway, known as the Independence Highway (State Highway No. 193), that runs for 6.34 miles from Monmouth at the intersection with OR 99W, through Independence, and ends at its connection with OR 22.

Similar to OR 22 and OR 99W, OR 51 serves as a farm-to-market route for agricultural interests and a support route for rural resource industries. Commuters also use the route to travel between Monmouth and Independence to Salem (or vice-versa).

1.4.3 Study Area

The purpose of identifying the study area is to define the transportation analysis area. The study will complete coverage of OR 22 in the West Salem area by linking-up to adjacent planning areas including, the OR 22/OR 99W Rickreall Junction Transportation Facility Plan study area farther west; and planning efforts involving OR 22 and a third Willamette River crossing to the east. Thus, the project study area and coverage of this plan is the western segment of Oregon Route 22 east from the Derry Overcrossing (MP 16.94) to Doaks Ferry Drive (MP 22.04). The study area includes the area approximately one-half mile on either side of the highway. However, the focus of the study and potential improvements identified in this document are somewhat more than one-mile inwards of those termini, between Greenwood Road (MP 18.61) and Doaks Ferry Road (MP 22.04), including the intersection with OR 51 (MP 20.37) and local interest roads. The westernmost study area, between the Derry Overcrossing and Greenwood Road, has no intersecting roadways of significance. For purposes of identifying solutions, the highway between Doaks Ferry Road and College Drive (MP 23.67) was included. The area east of College Drive is considered to be part of the planning area for the Salem Willamette River Crossing. However, future development in this area associated with possible rezoning could affect traffic patterns involving College Drive as well as Doaks Ferry Road, which connect indirectly north of OR 22. For that reason, study of potential improvements to College Drive are deferred to other or subsequent planning efforts, though existing traffic conditions for OR22/College Drive were considered. The project study area is shown in Figure 1-1.

1.5 Document Structure

This first chapter, Background, describes the content and purpose of the OR 22 (W) Expressway Management Plan (Derry Overcrossing to Doaks Ferry Road). The chapter also describes how the document is organized and how the project was staffed.

Chapter 2, Problem Statement and Plan Goals, defines the problems this facility plan is intended to address and outlines project goals.

Chapter 3, Existing Policies, Plans, and Standards, provides an overview of the plans, policies, and standards related to this segment of OR 22. This chapter is organized into sections that address federal, state, and local (county) information. Hyperlinks may be embedded in the chapter text to take the reader to related federal and state web sites.

Chapter 4, Condition and Deficiency Assessment, provides an assessment of year 2007 and 2030 traffic conditions and deficiencies within the study area. These include safety, operational, and geometric data for the OR 22 mainline as well as intersections with OR 51 and local interest roads. This chapter also includes an assessment of future conditions (year 2030) for each of these areas. Based on the assessment of deficiencies, the chapter concludes with a finding on whether or not the transportation problem statement has been validated by the assessment (or needs revision).

Chapter 5, Alternatives Identified, outlines the approach used to identify alternatives. The chapter includes an inventory of study area constraints. This inventory includes existing land use as well as significant natural and cultural resources and known hazardous materials sites in the area. The purpose of this inventory is to identify any fatal flaws in existing conditions that could limit the range of alternatives considered. This chapter also describes several alternatives that were considered and dismissed by the PMT after preliminary evaluation.

Chapter 6, Alternatives Evaluation, describes the evaluation criteria and range of alternatives evaluated by the PMT. This chapter also includes a summary of key findings from the stakeholder meeting process.

Chapter 7, Recommendations, identifies the preferred alternative and associated recommendations for managing the expressway. Such recommendations may address strategies such as modernization, maintenance, preservation, access management, land use management, transportation demand management, local circulation improvements, and phasing. This chapter provides specific recommendations for improving and protecting the transportation facility function throughout the 20-year planning horizon.

Chapter 8, Next Steps, provides a summary of actions and responsibilities that will be taken by ODOT and Polk County prior to project construction. For example, the EMP must be adopted by the affected local jurisdictions into transportation system plans (TSPs) and by the Oregon Transportation Commission (OTC) into the OHP. Depending on the management strategies and measures identified, additional amendments to local comprehensive plans and zoning codes may also be necessary to implement EMP recommendations. This chapter also discusses the implementation of the Access Management Plan (AMP), as defined in OAR 734-051-0155 (5). Information in the chapters and appendixes of this EMP address the requirements for an AMP for the expressway facility; thus, this EMP is the AMP, too.

The appendices include relevant plans and reports, references, technical information, including alternative evaluation tables, diagrams, and analysis, and PMT and stakeholder meeting summaries.

CHAPTER 2

Transportation Problem Statement and Facility Plan Goals

2.1 Transportation Problem Statement

From 2000-2005 planning efforts to develop a facility plan for this segment of OR 22 included several meetings between ODOT, local agency staff, and the public to discuss what problems this project is intended to address. A problem statement was developed in 2004 and subsequently revised slightly for this current study. The Project Management Team (PMT) agreed on the following problem statement in June-July 2007 and later presented it for public comment and input:

The area of OR 22 (Willamina – Salem Highway, State Highway No. 30) from the Derry Overcrossing (MP 16.94) east to College Drive (MP 23.67) is a high-speed, high-volume highway which has experienced significant safety problems. Crash data indicate that the safety problems between Greenwood Road (MP 18.61), the intersection with OR 51 (MP 20.37), and Doaks Ferry Road (MP 22.04) are generally related to vehicles entering or exiting the highway (i.e., turning movements). These problems are attributable but not limited to: 1) increased traffic volumes on the highway; 2) the large number of public and private accesses to the highway; and 3) poor geometry in some locations. While the 1999 Oregon Highway Plan (OHP) mobility standards are currently being met in most locations, it is expected that traffic volume growth will reduce operations below these standards at some intersections within the 20-year planning horizon (year 2030). It is expected that safety will become a bigger issue in the future as traffic volumes and congestion increase on this highway. OR 22 has been designated as a statewide "expressway" and freight route, which further emphasizes its role in the state system as a high-speed, high-volume facility intended to primarily carry regional traffic, rather than to provide local access. While the eastern study limit is currently defined as Doaks Ferry Road, it is possible that potential solutions could extend farther east. For purposes of identifying solutions, the highway between Doaks Ferry Road and College Drive (MP 23.67) will be included.

2.2 Facility Plan Goals

The goals for the OR 22 (W) Expressway Management Plan were directly derived from the Oregon Transportation Plan (OTP) and the Oregon Highway Plan (OHP). The goals were presented to the PMT, stakeholders, and the Polk County Board of Commissioners.

The goals of this facility plan are to:

- Conduct credible analysis of the problems within the study area.
- Identify, analyze, and narrow the number of feasible alternatives that address operational, safety, and geometric problems, meet applicable Highway Design Manual

(HDM) standards, and are consistent with the 1999 Oregon Highway Plan (OHP) Major Investment Policy.

- Incorporate findings, recommendations, and improvements into City of Salem and Polk County transportation system plans (TSPs) as well as the Salem Keizer Area Transportation Study (SKATS) regional TSP.
- Conduct sufficient environmental analysis to identify potential “red flag” constraints and validate the feasibility of the various alternatives.
- Meet the HDM mobility standards and OHP policies (Mobility, Access, Circulation, Major Investment, etc.).
- Meet access spacing requirements of OAR 734-051 to the maximum extent feasible.
- Meet applicable geometric standards of the Oregon Highway Design Manual.
- Develop improvements that will facilitate the continued operation of the highway as an expressway through the year 2030.
- Provide an access management plan as defined in OAR 734-051-0155.
- Incorporate findings and recommendations into the City of Salem and Polk County TSPs.
- Prepare and obtain adoption of the Expressway Management Plan by the Oregon Transportation Commission.
- Optimize short-term investment to provide the highest overall long-term value per dollar invested.

CHAPTER 3

Existing Policy, Plans, and Standards

3.1 Purpose and Organization

This chapter reports on a review of existing planning and policy background documents that are relevant to the OR 22 (W) Expressway Management Plan (EMP. This chapter is divided into the following sections:

- State and Federal Plans and Policies
- Regional Plans and Policies
- Local Plans and Policies
- Conclusions

3.2 State and Federal Plans and Policies

3.2.1 NEPA

Summary

In 1969, the National Environmental Policy Act was signed into law. The Act, considered the basic "National Charter" for protection of the environment, sets national environmental policy and establishes a basis for environmental impact statements (EISs).

NEPA has two main thrusts. First, NEPA requires meaningful participation of the public and governmental agencies in developing alternatives to federal actions, and actions funded by federal agencies. Second, NEPA requires consideration of an action's impacts to the human environment, both the natural and social environment. This is accomplished by evaluating the project or action using an interdisciplinary approach in planning and decision-making for actions that impact the environment. NEPA requires the preparation of an EIS on all major federal actions significantly affecting the human environment. In general, NEPA requires that, to the extent possible, the policies, regulations, and laws of the federal government be interpreted and administered in accordance with the protection goals of the law.

NEPA is applicable to all federal agencies, including the Federal Highway Administration (FHWA), but each agency has been allowed to tailor NEPA to the needs of the agency, while staying within general guidelines adopted by the Council on Environmental Quality (CEQ). For highway projects using Federal funds, NEPA requires the examination and consideration of potential impacts on sensitive social and environmental resources when considering the approval of a proposed transportation facility. The decision-making process takes into account the potential impacts on the human and natural resources and the public's need for safe and efficient transportation improvements.

Relevance

The OR 22 (W) Expressway Management Plan (EMP) is an effort to assess traffic and safety problems within the study area and identify potential solutions to these problems. It is not a NEPA-level analysis or document. After selection of an alternative identified by this process, it may be determined by the ODOT Environmental Section that a NEPA environmental document would be needed to advance this project. A categorical exclusion determination would not exempt this project from obtaining any necessary permits or approvals (as determined during project development) prior to construction.

3.2.2 SAFETEA-LU

Summary

The Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law in 2005, and authorizes highway, highway safety, transit, and other surface transportation programs for 6 years (2004-2009). SAFETEA-LU builds on the initiatives of the Transportation Equity Act for the 21st Century (TEA-21), which in kind built on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). This Act combines the continuation and improvement of current programs with new initiatives to meet the challenges of improving safety, protecting and enhancing communities and the natural environment, and advancing America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation. The act also streamlines the environmental review and project delivery process, even while the definition of participating agencies has been expanded.

SAFETEA-LU assures a guaranteed level of federal funds for surface transportation through FY 2009. The core metropolitan and statewide transportation planning requirements remain intact under SAFETEA-LU, emphasizing the role of state and local officials, in cooperation with transit operators, in tailoring the planning process to meet metropolitan and state transportation needs.

Continuing at both the metropolitan and statewide level are provisions concerning fiscal constraint, planning horizon, and public involvement. The statewide planning process establishes a cooperative framework for making transportation investment decisions throughout the state and is administered jointly by Federal Highway Administration (FHWA) and Federal Transit Authority (FTA). Congress will develop a new Act to be in place for FY 2010.

Relevance

SAFETEA-LU provides a significant funding source for transportation improvements on the National Highway System, of which OR 22 is a part. The Act establishes requirements for the planning process used to identify needed improvements. Section 6002 requires cooperating agencies to collaborate on methodologies for determining environmental impacts.

3.3.3 Oregon Transportation Plan, 2006

Summary

The purpose of the Oregon Transportation Plan (OTP) is to guide the development of a safe, convenient, and efficient transportation system that promotes economic prosperity and livability for all Oregonians. The OTP sets broad policies for the state transportation system. Included are policies and action steps intended to improve rural highways.

The Oregon Transportation Plan (OTP) is the state's long-range multimodal transportation plan. The OTP is the overarching policy document among a series of plans that together form the state transportation system plan. The OTP considers all modes of Oregon's transportation system as a single system and addresses the future needs of Oregon's airports, bicycle and pedestrian facilities, highways and roadways, pipelines, ports and waterway facilities, public transportation, and railroads through 2030. It assesses state, regional, and local public and private transportation facilities. The OTP establishes goals, policies, strategies and initiatives that address the core challenges and opportunities facing Oregon. The Plan provides the framework for prioritizing transportation improvements based on varied future revenue conditions, but it does not identify specific projects for development.

The new OTP, adopted September 20, 2006, supersedes the 1992 Plan. The 1992 OTP established a vision of a balanced, multimodal transportation system and called for an expansion of ODOT's role in funding non-highway investments. The 1992 OTP did not specifically address improvements to OR 22, but did show commuter transit service between Salem and Dallas as part of the preferred transportation system for the year 2012. With 14 years of additional experience and technological advances, the 2006 OTP provides a framework to further these policy objectives with emphasis on maintaining the assets in place, optimizing the existing system performance through technology and better system integration, creating sustainable funding and investing in strategic capacity enhancements.

Relevance

The OTP emphasizes the need to develop and promote service in transportation corridors by the most appropriate mode, including intercity bus, truck, rail, airplane, passenger vehicle, and bicycle. The OTP also promotes safety improvements in design, construction, and maintenance of new and existing systems and facilities for the users and benefactors.

The OTP also promotes highway safety standards for trucks and truck operators and the maintenance, preservation, and improvement of the highway system to provide for the efficient movement of goods by truck and bus.

3.3.4 Oregon Highway Plan, 1999

Summary

The Oregon Highway Plan (OHP) is a modal element of the OTP. The plan addresses efficient management of the system to increase safety, preserve the system, and extend its capacity; increased partnerships, particularly with local and regional governments; links between land use and transportation; access management; links with other transportation modes; and environmental and scenic resources. The OHP also established a variety of policies that are directly related to this Plan. The principal policies related to this Plan are the Mobility Policy, the Major Improvement Policy, and the Access Management Policy. These and the other policy elements of the OHP can be read in Appendix B.

The OHP designates OR 22 as a Statewide Highway. OR 22 has also been designated by the OTC as an Expressway and is included as part of the National Highway System (NHS). Expressways are a subset of Statewide, Regional, and District highways. The OHP designates OR 51 as a District Highway. OR 22 and OR 51 in the study area are outside the urban growth boundary of Salem.

OR 22 is also identified as a designated freight route. No segment of OR 22 nor OR 51 have been designated a Special Transportation Area (STA) or Urban Business Area (UBA).

Under OHP Policy 1A: State Highway Classification System, the category of state highways is used to guide planning, management, and investment decisions regarding state facilities as follows:

Statewide Highways typically provide inter-urban and interregional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal.

Expressways are complete routes or segments of existing two-lane and multi-lane highways and planned multi-lane highways that provide for safe and efficient high speed and high volume traffic movements. Their primary function is to provide for interurban travel and connections to ports and major recreation areas with minimal interruptions. In urban areas, speeds are moderate to high. In rural areas, speeds are high. Usually there are no pedestrian facilities, and bikeways may be separated from the roadway. Along expressways, private accesses are discouraged, public road connections are highly controlled, and signals are discouraged in rural areas.

District Highways are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment.

OHP Policy 1G, Action 1G.1 directs agencies to make the fewest number of structural changes to a roadway system to address its identified needs and deficiencies through the 20-year planning horizon, and to protect the existing highway system before adding new facilities to it. The action ranks four priorities of projects, as follows:

- Preserving the functionality of the existing system
- Making minor improvements to improve the efficiency and capacity of the existing system
- Adding capacity to the existing system
- Building new transportation facilities

OHP Policy 3C, Action 3C.2 applies interchange access management spacing standards for construction of a new interchange.

Relevance

The OHP establishes the state highway classification system to guide ODOT priorities for system investment and management. In addition, the OHP provides interchange spacing requirements, investment priorities, access management policy, and mobility standards. The OHP mobility standards for different highway categories use volume-to-capacity ratios (v/c) to measure performance. For statewide freight routes, including OR 22 in the study area, the v/c ratio is 0.70 outside the SKATS boundary and 0.80 within the SKATS boundary; and for district highways, including OR 51, the v/c ratio is 0.80 through rural lands and 0.90 within the SKATS boundary. Access spacing standards for interchanges are listed in Tables 16-19 of OHP Appendix C.

3.3.5 Oregon Public Transportation Plan, 1997

Summary

The Oregon Public Transportation Plan (OPTP) is a modal element of the OTP. The OPTP (1997) states that in recent years, small community local bus passenger trips have increased 14 percent and dial-a-ride passenger trips have increased 38 percent. One major gap is the growing concern between service demand and the ability of operators to provide the requested passenger trips.

The OPTP provides for implementation in 2015 at three levels. Level 1 and Level 2 emphasize delivery of services to those most in need of public transportation. Level 3 emphasizes service to riders of choice or commuters. Level 3 offers a number of services that respond to Oregon’s anticipated rapid growth during the next two decades.

Level 1 would essentially freeze ridership at current (1997) levels - 82 million trips annually.

Level 2 increases services such as senior and disabled public transportation, intercity bus service, and rideshare and Transportation Demand Management (TDM). Under this level, system ridership would increase 12 to 16 percent to about 94 million trips annually and size would grow to over 1,500 vehicles.

Level 3 would expand services to meet numerous state and federal mandates and goals. Additional services would include: providing intercity bus services through communities of 2,500 population; providing rideshare and TDM service in communities over 10,000 population; providing additional senior and disabled public transportation; providing additional service for citizens dependent on public transportation; and providing additional service for citizens using public transportation by choice.

Under Level 3, the service mix in small communities and rural areas would be significantly enhanced to ensure that mobility and intercity needs are met, and in some cases, commuter connections are available to Oregonians living in these communities.

The OPTP indicates that the intercity bus connection will be particularly important in small communities. Under Level 3, intercity service would expand, both in routes and frequencies, and would provide riders with the opportunity to access goods and services in larger communities or in major cities located within the Willamette Valley.

Under Level 3, public transportation services in communities of at least 2,500 persons, such as Monmouth, Independence, and Dallas, would:

- Provide daily peak hour commuter service to the core areas of the central city;
- Provide a guaranteed ride home program to all users of the public transportation system and publicize it well;
- Provide park & ride facilities along transit route corridors to meet reasonable peak and off-peak demand for such facilities;
- Maintain vehicles and corresponding facilities in a cost-effective manner and replace vehicles when they reach the manufacturers suggested retirement age; and
- Establish ride-matching and demand management programs in communities of 10,000.

Reducing highway demand is one of the policies of the OPTP. Strategy 1E.1 of the OPTP states that demand management and transportation system management techniques be used to reduce peak period single-occupant automobile travel and vehicle miles traveled and improve traffic flow.

Relevance

Currently, the Chemeketa Area Regional Transportation Service (CARTS) provides van service to Dallas, Monmouth, Independence, Rickreall, and Salem. Central Route #1 serves Dallas, Rickreall, and Salem via OR 22, Dallas-Rickreall Road, and Ellendale Road. CARTS currently makes six (6) trips per day along this route, using 18-person vans, between the hours of 6:00 a.m. and 8:00 p.m.

ODOT should continue to seek ways to achieve Level 3 service. However, even if this regional service were in place and very successful, achieving urban-level modal splits, its affect on vehicle volume and the need for highway improvements would be very marginal (perhaps a 2-3 percent reduction). In addition to expanding modal choice and better serving the transit-dependent population, Level 3 service would help, in a very small way, to extend the life of any highway investment made. It would not, however, eliminate the need for the highway improvements or alter the nature of the improvements needed.

Although public transit service in the area is currently limited, improvements within the study area will need to support potential increases in service in the future. Installing transit amenities, like shelters and information systems as part of any planned improvements would support implementation of Strategy 1E.1 and should be considered during the project development phase.

3.3.6 Oregon Bicycle and Pedestrian Plan, 1995

Summary

The Oregon Bicycle and Pedestrian Plan (OBPP) is a modal element of the OTP. The OBPP states that pedestrian activity in rural areas is limited because travel distances tend to be great.

The OBPP states that state highways and county roads provide good opportunities for long-distance touring and shorter recreational rides. When located closer to cities, these roads serve as commuter routes into the urban area from outlying residential areas.

The OBPP mentions that most people will feel comfortable walking and bicycling along a roadway if well-designed facilities are available. OR 22 is identified as having 4-foot wide shoulders, which the OBPP considers suitable for bicycling.

In terms of improvement priorities, the OBPP states that sections of rural highways that link schools, parks, residential areas, and other trip generators to the nearest urban area will receive high consideration. Special consideration will be given to rural highways near urban areas (where traffic volumes are relatively high) to facilitate bicycle commuting.

Strategy 1A is intended to provide bikeway and walkway systems that are integrated with other transportation systems. On rural highways, this policy requires integration of bicycle and pedestrian facility needs into all planning, design, construction, and maintenance activities of the Department of Transportation and local units of government.

Regarding financial considerations, the OBPP notes that the cost of providing paved shoulders is incorporated into the cost of a project, since shoulders are provided primarily for motor vehicle safety and to reduce long-term maintenance costs.

Relevance

The OBPP lists guidelines and standards for bikeways and walkways at freeway interchanges, including both at-grade and grade-separated crossings. These standards will be incorporated into designs during the project development phase.

3.3.7 Transportation Planning Rule

Summary

The Transportation Planning Rule (TPR) (OAR 660-12-000) implements Statewide Planning Goal 12 (Transportation) and identifies how transportation facilities and services are planned for and provided on rural and urban lands consistent with goals.

Relevance

This rule identifies transportation facilities, services, and improvements that may be permitted on rural lands consistent with Statewide Goals without a goal exception (OAR 660-12-0065). Included in the list of transportation facilities permitted on rural lands is replacement of an intersection with an interchange. The provisions of this section have been incorporated into the applicable sections of the Polk County Zoning Ordinance. A Polk County conditional use permit will be required prior to constructing an interchange.

3.3.8 Access Management Rule

Summary

The Access Management Administrative Rule (OAR 734-051) applies to the location, construction, maintenance, and use of approaches onto the state highway rights-of-way and properties under the jurisdiction of ODOT. These rules also govern closure of existing approaches, spacing standards, medians, deviations, appeal processes, grants of access, and indentures of access.

Relevance

These rules set access management spacing standards for all new construction or reconstruction projects on state highways and include provisions for closure of existing approaches. The rules also establish requirements for interchange access spacing as part of an interchange area management plan and allow for development of access management plans along state highways (Appendix C). This rule would be addressed as part of an interchange area management plan (IAMP) and the final interchange design.

3.3 Regional Plans

3.3.1 Willamina to Salem Corridor – Oregon 22 – Interim Corridor Strategy, 1996

Summary

The Interim Corridor Strategy for OR 22 (Willamina to Salem) consists of goals and objectives that serve to guide the work of ODOT, cities, counties, and the Salem-Keizer Metropolitan Planning Organization in transportation planning and development of future transportation facilities in the corridor. This document established ODOT's official recommendation to advance the work now being considered with this Expressway Management Plan. The Interim Corridor Strategy was endorsed by the OTC in June 1996.

Average annual daily traffic volumes were forecast for 2005 to be 22,400 at Greenwood Road and 31,200 at Doaks Ferry Road.

The goals of the strategy and pertinent objectives include:

- Transportation Balance Goal: Provide for a balanced mix of transportation modes within the corridor in order to provide a range of modal choice for urban and rural users of the transportation system.
  - Commuter Travel Objective A.3: Park and Pool/Park and Ride Lots. Using an approach that considers the entire corridor, establish park and pool/park and ride lots and promote car-pooling. Explore development of facilities at major intersections with Oregon 22, such as the Oregon 223 intersection.
  - Bicycle Travel Objective A.18: Continue to provide continuous bike facilities (bike lanes or highway) throughout the Oregon 22 Corridor.
  - Pedestrian Travel Objective A.22: Ensure that pedestrian facilities are replaced, added, or upgraded to desired conditions in conjunction with other highway construction.
  - Pedestrian Travel Objective A.23: Geometric improvements made to increase mobility of other transportation modes should be undertaken in a manner that minimizes the impact of those improvements on pedestrian mobility.
- Regional Connectivity Goal: Develop transportation facilities within the corridor to provide a high degree of regional connectivity for all corridor users, both internal to the corridor as well as those passing through the corridor.

- Regional Connectivity Objective B.1: Maintain existing travel times throughout the planning period.
- Regional Connectivity Objective B.6: West of the Willamette River, avoid installation of additional traffic signals.
- Regional Connectivity Objective B.7: West of the Willamette River, intersections with the highway may need to be replaced with interchanges. Where interchanges are constructed, land use controls should be implemented to protect the integrity of the interchange operations for transportation purposes.
- Operate all transportation facilities within the corridor at a level of service that is cost-effective and appropriate for the area served.
- Congestion Objective C.6: Manage highway facilities in a manner that does not result in conditions that are less than the following for highway traffic.

Location	Level of Service
West of OR 51	LOS C

- Continually improve all facets of transportation safety within the corridor.
  - Safety Objective D.1: Target safety improvement projects to sections of the corridor with the highest accident rates. Analyze the accident types at sites that fall within the top 10 percent of all accident index sites. Develop solutions that reduce accident rates, including:
    - Operational changes such as increased traffic enforcement and consideration of appropriate speed zones;
    - Minor design modifications, such as change in striping, geometric layout, or illumination; and
    - Major redesign including intersection replacement with interchanges, street alignment changes and passing lanes.
  - Safety Objective D.5: Analyze alternatives to reduce accident risk near the intersections with a high number of turning vehicles, including OR 51.
- Promote economic health and diversity through the efficient and effective movement of goods, services, and passengers in a safe energy-efficient and environmentally sound manner.
  - Economic Impact Objective E.4: Provide opportunities for the use of alternative modes of transportation in conjunction with special events on or near the corridor.
- Provide a transportation corridor that has positive social impacts by providing for the safe movement of goods and people while reducing the negative impacts caused by transportation/land use conflicts.

- Social Impacts Objective F.2: Improve pedestrian crossing opportunities, particularly in the urban sections of OR 22, to reduce the “barrier” effect of the roadway and to foster good pedestrian connections between both sides of the road.
- Social Impacts Objective F.4: Examine methods to reduce negative impacts and increase the positive impacts of OR 22 corridor transportation systems on neighbor-hoods, parks, and community facilities.

- Provide a transportation system throughout the OR 22 corridor that is environmentally responsible and encourages protection of natural resources.
  - Environmental Impacts Objective G.5: Evaluate and mitigate, as needed, the impact of Oregon 22 corridor transportation improvements on water quality for adjacent streams and rivers, such as McNary Creek, Rickreall Creek, and the Willamette River.
  - Environmental Impacts Objective G.6: Prepare an inventory of sensitive environmental and cultural resources in the corridor that identifies resources that should be avoided when transportation improvement projects are proposed. The inventory should include:
    - Rare, threatened, and endangered plants and animals or their known habitats;
    - Wetland resources;
    - Creeks, streams, and rivers;
    - Wildlife refuges or significant wildlife habitat; and
    - Archeological or cultural resources.
  - Environmental Impacts Objective G.7: Prepare an inventory of hazardous material sites on the corridor that should be avoided when transportation improvements are proposed.
- Provide a transportation system that minimizes transportation-related energy consumption by using energy-efficient and appropriate modes of transportation for the movement of people and goods.
  - Energy Impacts Objective H.1 Give priority to those projects that reduce energy consumption and vehicle miles traveled.

Relevance

Safety Objective D.5 identifies the need to identify alternatives to address safety issues at the OR 22/51 intersection. The Interim Strategy provides a number of goals and objectives relating to the transportation mix, connectivity, and social, economic, energy, and environmental impacts to be used when developing and evaluating projects. These goals and objectives are in line with the requirements of the National Environmental Policy Act (NEPA) that would need to be more formally and definitively addressed during the project development phase.

3.3.2 Willamette Valley Transportation Strategy, 1995

Summary

The Willamette Valley Policy Committee on Transportation (VPACT) developed the Willamette Valley Transportation Strategy as a coordinated transportation strategy for the Willamette Valley consistent with the OTP. VPACT identified three distinct goals for the transportation system: (1) mobility, (2) industrial growth, and (3) livability. VPACT chose to place primary emphasis on the goal of livability, but included significant commitment to the other goals as well. The strategy attempts to assess broad impacts of actions and identify the most cost-effective investments in transportation facilities for the Willamette Valley.

The strategy has two primary components: a transportation development strategy and a transportation coordination strategy. Implementation of the strategy will be achieved through a number of action steps. Action steps applicable to this project include:

- Develop methodology and decision making for selecting future highway projects that are based on consideration of full economic costs and benefits and rates of return.
- Select highway projects that maximize the net full benefits of the Valley's transportation system as a whole.
- Coordinate highway improvement projects with land use policies and other transportation improvements.
- Make strategic capacity enhancements to access-controlled highways.
- Maintain regional highway linkages upon which rural communities are dependent to build viable communities.
- Improve north-south and east-west links to the existing highway system.
- Include provisions for bicycle and pedestrian use in all new facilities and major construction.
- In consultation with local government, develop administrative rules and set standards for interchanges. Integrate land use plans with the function and capacity of interchanges, considering highway construction financial constraints.

Relevance

The WVTS provides guidance for investments priorities, interstate interchanges, access management, and mobility standards. Many of these guidelines became part of the OHP. The VPACT Strategy document was a precursor to the MWACT Strategy document. Similar to the MWACT document, the VPACT Strategy provides general guidelines for developing projects.

3.3.3 Transportation Strategy of the Mid-Willamette Valley Area Commission on Transportation (1998)

Summary

The purpose of the Mid-Willamette Valley Area Commission on Transportation (MWACT) is to apply transportation goals to the specific needs of the Mid-Willamette Valley area as identified by the local jurisdictions. The MWACT balances the needs identified by the local jurisdictions with the desired vision of the entire valley in light of the statewide transportation policies. The MWACT also assists the Oregon Transportation Commission to provide the transportation program that best meets the needs based on the revenues available. Finally, the MWACT works with local citizens and jurisdictions to develop an understanding and support for transportation projects and services throughout the area.

The Strategy document includes eight strategies and associated action steps.

Applicable strategies include:

- Strategy 1: Highways

  Highways will continue to be the primary facilities for the movement of intercity freight and passengers by a variety of modes. Therefore, continued maintenance and improvements of the highways is necessary.

  Highway maintenance and improvement priorities:

  – Maintain existing system.

  – Manage existing system.

  – Select strategic improvements.

  – Select future highway projects considering the full economic cost and benefit to the valley’s transportation system as a whole, coordinate with land use policies and make strategic capacity enhancements which preserve community linkages and improve north-south and east-west linkages.

  Action Steps:

  – Give funding priorities to solutions for regional problem areas.

  – Encourage intelligent transportation systems at the local level to increase highway capacity.

  – Facilitate a balance between the needs of the regional highway system for access and interchange management and the local access needs of the community.

- Strategy 6: Alternative Modes

  Easy access to bicycle and pedestrian networks in urban areas will encourage travel by means other than the automobile.

  – Include provisions for bicycle and pedestrian use in all new facilities and major construction.

Relevance

The Transportation Strategy does not specifically reference the OR 22/51 intersection, but provides guidance for investment priorities as well as general guidelines for developing and evaluating projects that are compatible with the work done for this Expressway Management Plan.

3.3.4 SAMTD Specialized Transportation Plan, 2007

Summary

The Salem Area Mass Transit District (SAMTD) recently adopted a Specialized Transportation Plan (STP), which largely supersedes the Regional Transportation Enhancement Plan (R-TEP) of 1998, titled "Moving Toward Action – the Marion and Polk Counties Regional Transportation Enhancement Plan – A Strategy for Improving Special Needs Mobility and Beyond." The STP and R-TEP were developed to set goals, quantify needs and estimate demand for services, improve mobility choices for the area's senior and disabled populations, and better utilize Special Transportation Fund (STF) revenues. The STP evaluates current operations of the Chemeketa Area Regional Transportation Service (CARTS), and presents recommendations for service and coordination strategies.

Relevance

Two transit routes have been developed that currently serve Polk County. CARTS provides van service to Dallas, Rickreall, and Salem via OR 22, OR 223, and Ellendale Road. CARTS currently makes six (6) trips per day along this route, using 18-person vans, between 6:00 a.m. and 8:00 p.m.

Although public transit service in the area is currently limited, improvements to the OR 22/51 intersection would support potential increases in service in the future.

3.3.5 SKATS 2031 Transportation Regional Transportation Systems Plan, 2007

Summary

The Salem-Keizer Area Transportation Study (SKATS) 2031 Regional Transportation Systems Plan (RTSP), adopted on May 22, 2007, is based on 24-year projections of population, employment, and land use in the Salem-Keizer area. It provides a comprehensive, long-range plan for meeting our transportation needs over the next 24 years. The current plan reflects new federal regulations that became law in late 2005. Two new chapters were added to the plan: one to address the safety and security of the regional transportation system, and one to examine how and where potential projects might impact environmental, cultural, or historical resources.

Relevance

The main portion of the plan identifies projects that have a reasonable certainty of being funded and result in an improvement in the air quality of the area. Another portion of the plan describes those transportation projects that the area would like to implement if additional funding was secured. The OR 22/51 interchange is identified as a project for future study. An existing multi-use path is identified parallel to OR 22 in the study area.

3.4 Local Plans

3.4.1 Polk County Transportation System Plan, 1997

Summary

The Polk County Transportation System Plan (TSP) identifies OR 22 and OR 51 as principal arterials in the County road system. The TSP (see Table 20) identifies a number of conceptual road construction projects, including the construction of an interchange at the OR 22/51 intersection, associated frontage roads on both side of the highway between 52^{nd} Ave. and Oak Grove Road, and a grade separation of OR 22 and Greenwood Road with no highway access. The TSP states that the County will work with ODOT on any necessary studies related to these projects.

The TSP also includes coordinated population projections for all cities in the County through 2020 as required by Oregon Revised Statutes (ORS) 195.036.

Relevance

In the TSP, Polk County supports an interchange alternative at the OR 22/51 intersection and a grade separation of OR 22 and Greenwood Road. Adopted population projections should be used to develop future traffic projections.

3.4.2 Highways 18 and 22 Safety Report, 1999

Summary

The Highway 18 and 22 Safety Report was initiated by the Mid-Willamette Valley Area Commission on Transportation to address the increasing concerns over the safety problems on OR 18 and OR 22. Recommendations in the report were based on a crash analysis report completed on May 6, 1999. The report proposes three types of alternatives to address identified safety problems: engineering options, enforcement options, and education options.

The study examined 12 specific locations along OR 18 and OR 22 including the OR 22/51 intersection (Site 12 – Greenwood Road to Rosewood Drive). During a 5-year study period from January 1, 1994 to December 31, 1998, there were 45 potentially preventable crashes with injuries or fatalities between Greenwood Road and Doaks Ferry Road. There were 14 crashes involving left turns out of driveways, 2 U-turn crashes, and 9 head-on and side-swipe crashes.

The study discussed several possible improvement alternatives and opportunities: local street system improvements, frontage roads, access management, raised center median barrier, and jug-handle turnarounds. To resolve the safety issues, the study recommended that ODOT consider initiating a Refinement Study for this section, to further explore alternatives and engage local stakeholders.

Relevance

This study is a precursor to the expressway management plan process described in this report.

3.5 Conclusions

Existing plans and policies provide the basis to evaluate proposed improvement alternatives for OR 22 (W) from the Derry Overcrossing to Doaks Ferry Road. Safety and operational conditions have been diminished at intersections along this segment, particularly with OR 51, due to increased traffic that has largely resulted from regional growth and commuting between Salem, Corvallis, Monmouth, Independence, Dallas, and destinations on OR 18 and the Oregon Coast. Forecasted growth trends indicate traffic will continue to grow into the future and cause additional safety and operational problems. Recommended alternatives should meet standards for mobility and spacing (Appendix C) and be consistent with the relevant federal, state, and local plans and policies.

CHAPTER 4

Condition and Deficiency Assessment

4.1 Conditions Evaluation Approach

The purpose of this analysis phase is to determine the location and magnitude of existing and future conditions and identify transportation deficiencies. The assessment approach to facility refinement planning is intended to evaluate the interrelationship of existing facility conditions, user behavior, and future demands in order to identify deficiencies. From a listing of identified deficiencies, it is possible to further evaluate symptoms, causes, and ultimately the problem to be solved. The following categories were used to assess conditions and identify deficiencies:

- Safety: For this assessment, ODOT crash data along the OR 22 study corridor was used to determine deficiencies.
- Transportation Operations: For this assessment, existing traffic counts were used, in combination with local land use plans, and future travel demand characteristics, to determine deficiencies.
- Geometric Design: For this assessment, "As constructed" information of existing roadway elements was compared with current design standards to determine deficiencies.

Below is a brief overview of the evaluation process for each category.

4.1.1 Safety Conditions

ODOT uses a variety of database systems that rely on crash history to identify and monitor the safety of roadway facilities throughout the state. The two databases administered by the state are the SPIS (Safety Priority Index System) and the statewide CDS (Crash Data System) database of all crashes on state facilities.

The SPIS is a ranking system that considers a composite factor of crash frequency, severity, and rate per million miles traveled. This system monitors crashes over 0.01-mile segments during a three-year period (the most recent SPIS report covers the years 2004 through 2006). A specific location along a state facility is identified as a "SPIS site" if, during the past three years, it has experienced one or more fatal crashes and/or three or more crashes of any type. SPIS sites are ranked and the top 10 percent are used by ODOT Region Offices to identify potential safety improvement projects.

The CDS database includes information about the crash type and severity, location, time of crash, and potential cause or error. This information is available for intersections and highway segments using a beginning and ending milepost query.

The safety assessment includes identifying high crash locations and determining crash causes at that location. The full set of crash data assembled for this report is included in Attachment C of Appendix D.

4.1.2 Transportation Operations

ODOT uses the ratio of traffic volume to facility capacity (v/c ratio) as a standard to measure performance of transportation facilities. The measure can apply to highway segments, intersections, and/or a series of intersections. Facility capacity takes into account a number of adjustment factors, such as number of lanes, grades, traffic control, parking, growth rates, percent truck traffic, access spacing, etc.

Base and future year traffic data used for the transportation analysis was developed from the following:

- Manual Counts at key intersections located along the study corridor,
- ODOT's permanent recorder stations,
- ODOT's Future Traffic Volume Tables,
- Maps depicting land use and development potential in the study area,
- Anticipated major traffic generators within the region, and
- Traffic model runs from the Salem Keizer Area Transportation Study (SKATS) travel demand model.

Future year traffic projections are typically developed using cumulative analysis, historic growth trends, or transportation models. A combination of historic growth trends and SKATS traffic model runs were determined to be the most accurate method to use for this project.

The Oregon Highway Plan (1999 as amended) (OHP) outlines specific performance measures to be maintained along ODOT facilities as part of their Highway Mobility Standards. These standards are aimed at maintaining mobility along important road corridors and vary according to functional classification, location, and role within the National Highway System (NHS).

The following intersection performance measures are applicable for facilities within this study:

- Volume-to-capacity ratio of 0.70 for movements along OR 22 outside the SKATS boundary and 0.80 within the SKATS boundary, given its classification as a Statewide, NHS Expressway.
- Volume-to-capacity ratio of 0.80 for all movements along OR 22 that must stop or yield the right-of-way.

4.1.3 Geometric Design

The project team used an observational approach to identify geometric conditions. If safety and operational deficiencies were identified in particular areas of the expressway, ODOT's Highway Design Manual provides geometric design standards to determine possibly related geometric deficiencies that could be corrected as part of an improvement project design. It is ODOT policy to remain within the American Association of State Highway and Traffic Officials (AASHTO) standards for acceptable designs.

The geometric evaluation included: (1) a comparison to existing standards, (2) a correlation to existing operations, and (3) an evaluation of the effects for future demand. Where a geometric deficiency could be correlated to a safety or operational deficiency, those elements were documented as a significant existing deficiency.

4.2 Existing Conditions Summary

4.2.1 Safety

This safety analysis provides an assessment of vehicular crash history for OR 22 and key intersections along the study area. The study area was divided into three segments to facilitate the crash analysis:

1. OR 22 from Derry Overcrossing (MP 16.94) to State Farm Road (MP 21.19)
2. OR 22 from State Farm Road (MP 21.19) to Doaks Ferry Road (MP 22.04)
3. OR 51 from OR 22 (MP 0.00) to South Oak Grove Road (MP 0.25)

Crashes were summarized from ODOT's CDS database from January 1, 2002 through December 31, 2006. This crash data and an analysis of the Safety Priority Index System (SPIS) records revealed the following:

OR 22 from Derry Overcrossing to State Farm Road

- There were a total of 80 reported crashes on this segment.
- Crash Severity: There was 1 fatal crash (1 percent), 46 injury crashes (58 percent), and 33 property damage only crashes (41 percent).
- Crash Type: The most common types of crashes were rear-end crashes (30 percent) and angle/turning crashes (34 percent). The highest concentration of angle/turning and rear-end crashes occurred within the general vicinity of the OR 22/OR 51 intersection.

OR 22 from State Farm Road to Doaks Ferry Road

- There were a total of 35 reported crashes on this segment.
- Crash Severity: There were no fatal crashes, 19 injury crashes (54 percent), and 16 property damage only crashes (46 percent).
- Crash Type: The most common types of crashes were angle/turning crashes (57 percent) and rear-end crashes (23 percent). The highest concentration of angle/turning and rear-end crashes occurred within the general vicinity of the OR 22/Doaks Ferry Road intersection.

OR 51 from OR 22 to South Oak Grove Road

- There were a total of 3 reported crashes on this ¼ mile segment of highway.
- Crash Type: There was 1 injury crash (33 percent) and 2 property damage only crashes (67 percent).
- The most common types of crashes were fixed object crashes (67 percent).

Safety Priority Index System (SPIS)

A roadway segment becomes a SPIS site if a location has three or more crashes; or one or more fatal crashes over a 3-year period. Based on crash data for the years 2004 through 2006, there is one top 10 percent Region 2 SPIS location along OR 22. This location is a 650 foot stretch of OR 22 that includes the OR 51 intersection. (For the years 2003-2005, the Doaks Ferry Road intersection along with the OR 51 intersection were top 5 percent SPIS locations.)

4.2.2 Existing Operations

Existing Intersection Operations

All of the intersections along the OR 22 study corridor are currently unsignalized. For unsignalized intersections, the operations assessment is typically based on the intersection's ability to accommodate the worst or critical movement during the study time period. For the operations assessment, the study time period is based on the weekday p.m. peak hour adjusted to represent the 30th highest hour volume.

From a traffic operations perspective, all of the critical movements at the study intersections along the OR 22 corridor are operating within acceptable volume-to-capacity ratios with the exception of the following intersections:

- OR 22/OR 51 – (WB left-turn, NB through/left-turn, and shared SB approach all operate above capacity)
- OR 22/50th Avenue – (SB approach operates above capacity)
- OR 22/Doaks Ferry Road – (SB approach operates above capacity)

The operations that do not meet performance standards at the intersection critical movements can be attributed in part to the heavy traffic demand along OR 22.

Existing Mainline Capacity Analysis

Analyses of the mainline volume-to-capacity ratio along three critical segments of OR 22 are provided in Table 4-1. These ratios were calculated using the HCM (Highway Capacity Manual) 2000 Multilane Highways Methodology.

Table 4-1. OR 22 Mainline Existing Volume to Capacity Ratio

Segment	Direction	V/C*	Adequate?
Greenwood Road to OR 51	Eastbound	0.32	Yes
	Westbound	0.43	Yes
OR 51 to 50th Avenue	Eastbound	0.38	Yes
	Westbound	0.56	Yes
50th Avenue to Doaks Ferry Road	Eastbound	0.40	Yes
	Westbound	0.57	Yes

* Assumes a free flow speed of 55 mph and a maximum service flow rate of 2,100 pc/h/ln.
0.70 is the adopted performance standard

As shown in Table 4-1, the calculated volume-to-capacity ratios for the three critical segments of OR 22 meet the applicable performance standard. It should be noted that the segment of OR 22 east of OR 51 experiences higher traffic volumes in the westbound direction resulting in a volume-to-capacity ratio that is proportionally higher than the remainder of the study corridor. This can be attributed to the influence of OR 51. West of OR 51, traffic volumes drop to a level that results in a significantly lower mainline volume-to-capacity ratio.

4.2.3 Geometry

OR 22 in the study area is a five-lane facility with four travel lanes (two in each direction) and a continuous 16-foot two way left turn lane between OR 51 and Doaks Ferry Road. Lane widths are 12 feet. Horizontal curves are consistent with the design speed of 55 mph. OR 22 in the study area is a designated safety corridor with a posted speed limit of 55 mph. Toward the eastern end of study area (from Eola east), the highway generally follows the meandering course of the Willamette River. The highway has a pair of broad reversing curves over mildly rolling terrain that limit sight distance for traffic entering the highway from Doaks Ferry Road and numerous other public roads and private drives. West of Eola, the highway is generally straight and level except for a curve west of the OR 51 intersection. The intersection with OR 51 has a SB left-turn lane without raised median channelization, and an EB on-ramp acceleration lane. There are no deceleration lanes, although the paved shoulder is broad at some intersections. There are no existing access controls through the study area. Entering from the east and continuing as far as Rickreall Road, a multi-use path approximately 3-4 feet wide with a raised curb runs on the northside of the highway, either adjacent to the outside shoulder of the WB lanes or a few feet away. The path includes a structure that crosses OR 22 to connect with Rickreall Road and the golf course.

Safety data for the vicinity of Doaks Ferry Road indicate left turns onto OR 22 are a problem; left turns are complicated by westbound traffic approaching on the curve. The 10-foot shoulders of the highway should provide sufficient stopping sight distance when curves turn to the right. The required clearing beyond the edge of shoulder (for worst case scenarios) to provide the adequate stopping distance (495 feet for level terrain) ranged from 6 to 11 feet. Left turns from OR 22 to OR 51 face eastbound traffic on a right curve.

4.3 Future Conditions Summary

4.3.1 Safety

Local and regional traffic growth is likely to have an impact on the safety of the OR 22 study corridor. An existing prevalence of angle/turning and rear-end collisions can be expected to increase at major regional intersections such as OR 51 and Doaks Ferry Road as gaps in the oncoming traffic stream become less frequent. In addition, turning movements to/from other minor street intersections are likely to become more difficult during peak traffic periods, which can lead to a higher propensity for collisions.

4.3.2 Year 2030 Operations

Future transportation demand estimates for the study area were based on a combination of forecasts from the Salem Keizer Area Transportation Study (SKATS) travel demand model, ODOT's Future Volume Tables, and a review of growth rates used in previous planning studies along the OR 22 corridor. From these sources, annual growth rates along the OR 22 study corridor are projected to range from approximately 3.2 percent at the east end of the study corridor to 3.6 percent at the west end of the study corridor.

2030 Intersection Operations

Based on the projected increase in traffic volumes along the OR 22 study corridor, the critical movements at the following intersections will operate above capacity:

- OR 22/Greenwood Road – NB and SB approaches
- OR 22/Oak Grove Road – SB approach
- OR 22/S. Oak Grove Road – NB approach
- OR 22/OR 51 – WB left-turn, NB right-turn, NB through/left-turn, and SB (55th Ave.) approaches
- OR 22/52nd Avenue – SB approach
- OR 22/50th Avenue – SB approach
- OR 22/Eola Bend RV Park – NB approach
- OR 22/Mill Street – SB approach
- OR 22/Shaw Street – SB approach
- OR 22/Doaks Ferry Road –(EB left-turn and SB approaches

The operations that do not meet performance standards at these intersections can be attributed to the heavy traffic demand along OR 22 and suggest that intersection improvement and access management techniques will need to be addressed.

2030 Mainline Capacity Analysis

Year 2030 analyses of the mainline volume-to-capacity ratio along three critical segments of OR 22 are provided in Table 4-2. These ratios were calculated using the HCM (Highway Capacity Manual) 2000 Multilane Highways Methodology.

Table 4-2. OR 22 Mainline 2030 Volume to Capacity Ratio

Segment	Direction	V/C*	Adequate?
Greenwood Road to OR 51	Eastbound	0.64	Yes
	Westbound	0.78	No
OR 51 to 50th Avenue	Eastbound	0.74	No
	Westbound	0.99	No
50th Avenue to Doaks Ferry Road	Eastbound	0.76	No
	Westbound	1.00	No

* Assumes a free flow speed of 55 mph and a maximum service flow rate of 2,100 pc/h/ln.
0.70 is the adopted performance standard.

As shown in Table 4-2, the calculated volume-to-capacity ratios for the three critical segments of OR 22 are projected to operate slightly above the applicable performance standard in the eastbound direction. In the westbound direction, the segments located east of OR 51 are forecast to operate at or near the effective capacity of the highway. West of OR 51, traffic volumes drop to a level that results in a significantly lower volume-to-capacity ratio. However, the westbound direction is still forecast to operate just above the performance standard. These results indicate that mainline capacity improvements will need to be addressed for particular segments of the study corridor.

4.3.3 Geometry

Based upon safety and operational data, the following future geometric deficiencies were identified in the study area.

Unless conditions change to reduce traffic demand in the OR 22 corridor, the existing two lanes for westbound traffic through the entire study area will not provide enough capacity to meet future demand nor the existing two lanes for eastbound traffic after OR 51.

The critical movements at the following intersections with OR 22 will operate above capacity without additional lanes, intersection reconfigurations, or access management:

- Greenwood Road – NB and SB approaches.
- OR 51 – WB left-turn, NB right-turn, NB through/left-turn, and SB (55^{th} Ave.) approaches.
- Doaks Ferry Road – EB left-turn and SB approaches.
- Other minor streets: Oak Grove Road – SB approach, S. Oak Grove Road – NB approach, 52^{nd} Avenue – SB approach, 50^{th} Avenue – SB approach, Eola Bend RV Park – NB approach, Mill Street – SB approach, Shaw Street – SB approach.

4.4 Deficiency Assessment Summary

Safety and operational conditions have been diminished at the OR 22/OR 51 and OR 22/Doaks Ferry Road intersections by increased local and regional traffic growth. Both of these intersections have experienced a significant number of angle/turning and rear-end collisions, resulting in those segments of OR 22 to be ranked in the top 10 percent of the Safety Priority Index System listing in recent years. From a traffic operations perspective, high traffic flows along OR 22 result in critical left-turn and side-street approaches operating above capacity during peak traffic conditions.

With the projected increase in local and regional traffic growth through the year 2030, all local and regionally significant intersections along the OR 22 study corridor will experience critical left-turn and minor street approaches that operate above capacity. These existing and forecast deficiencies suggest that intersection improvements and access management techniques will need to be addressed as part of the plan.

4.5 Validated Transportation Problem Statement

Based on data and observations, the PMT developed the initial problem statement presented previously in Chapter 2. The PMT agreed that this initial problem statement would be validated through subsequent analysis and public input and modified, if subsequent information warranted changes. No changes to the problem statement are warranted by the safety and operational analysis.

CHAPTER 5

Alternatives Identified

5.1 Alternatives Identification Approach

The approach for identifying alternatives consisted of three basic steps: pre-screening, concept development and design, and preliminary assessment and evaluation.

The pre-screening process included:

- Identifying physical, natural, and social environmental constraints, and
- Identifying appropriate design concepts based on facility function and their ability to address the transportation problem.

During concept development, a range of transportation issues were considered:

- The highway network
- Alternative transportation modes, including existing and projected transit service
- Freight mobility
- Land use and environment
- Anticipated new major traffic generators within the region
- Proposed expansion of major traffic generators within the region

These factors were considered to determine their current and future effects on the operation of OR 22 between the Derry Overcrossing and Doaks Ferry Road, including the key intersections with Greenwood Road, Independence Highway, and Doaks Ferry Road.

The final alternative identification step was to preliminarily assess how well the conceptual improvements for the three key intersections address the transportation problem, and identify those alternatives warranting further, more detailed evaluation. The preliminary assessment consisted of an evaluation using three transportation objective categories:

- Transportation operations (addressing mobility, access, function, and safety)
- Project impacts (addressing natural and built environment)
- Implementation (addressing plan consistency, cost, maintenance issues, phasing, and constructability)

These same categories, their specific evaluation criteria, and performance measures were also used in the detailed alternative evaluations described in Chapter 6. The categories, criteria, and measures are shown in Appendix F. Several conceptual intersection improvement designs were dismissed after this preliminary assessment; these are described in Section 5.3. Three or four alternatives for each intersection were identified for further evaluation and are described in Section 5.4.

5.2 Pre-Screening Study Area Constraints

Pre-screening is intended to identify significant constraints that could become fatal flaws. This assessment is conducted early in the analysis process so that it can be factored into alternative development efforts.

This section identifies environmental constraints that pose challenges or barriers to transportation improvements and also evaluates constraints based on existing zoning and land use, and future land use and development potential. These conditions and constraints were identified by reviewing documents and maps from previous planning efforts, including:

- Polk County Comprehensive Plan (2004) and Zoning Map
- National Wetlands Inventory (NWI) Maps
- Federal Emergency Management Agency (FEMA) 100-year Floodplain Maps
- Rickreall Junction Transportation Facility Plan, ODOT, February 2005 (the OR 22/99W/Rickreall Interchange Area Management Plan).
- Willamina to Salem Corridor Oregon Highway Route 22 (Highway 18 Interchange to the Salem Eastern Urban Growth Boundary, Deer Park [Gaffin Road] Interchange) Interim Corridor Strategy, ODOT, January 1996, OTC Endorsement June 1996
- Cultural Resources Survey OR 22 (Hwy 30) Willamina-Salem Highway between MP 16.94 to MP 28.90 (March 2001)
- Hazardous Materials Report Limited Phase One Study Refinement Plan for a Portion of OR 22 (Hwy 30-Willamina-Salem Hwy.) Vicinity of Rickreall to Salem Bridges, Polk County, Oregon, ODOT Geo/Hydro Section, (January, 2001)

The document review yielded information on existing land uses and zoning, environmental resources including fish and wildlife, wetlands and floodplains, and potential hazmat concerns in the study area.

5.2.1 Land Use and Zoning

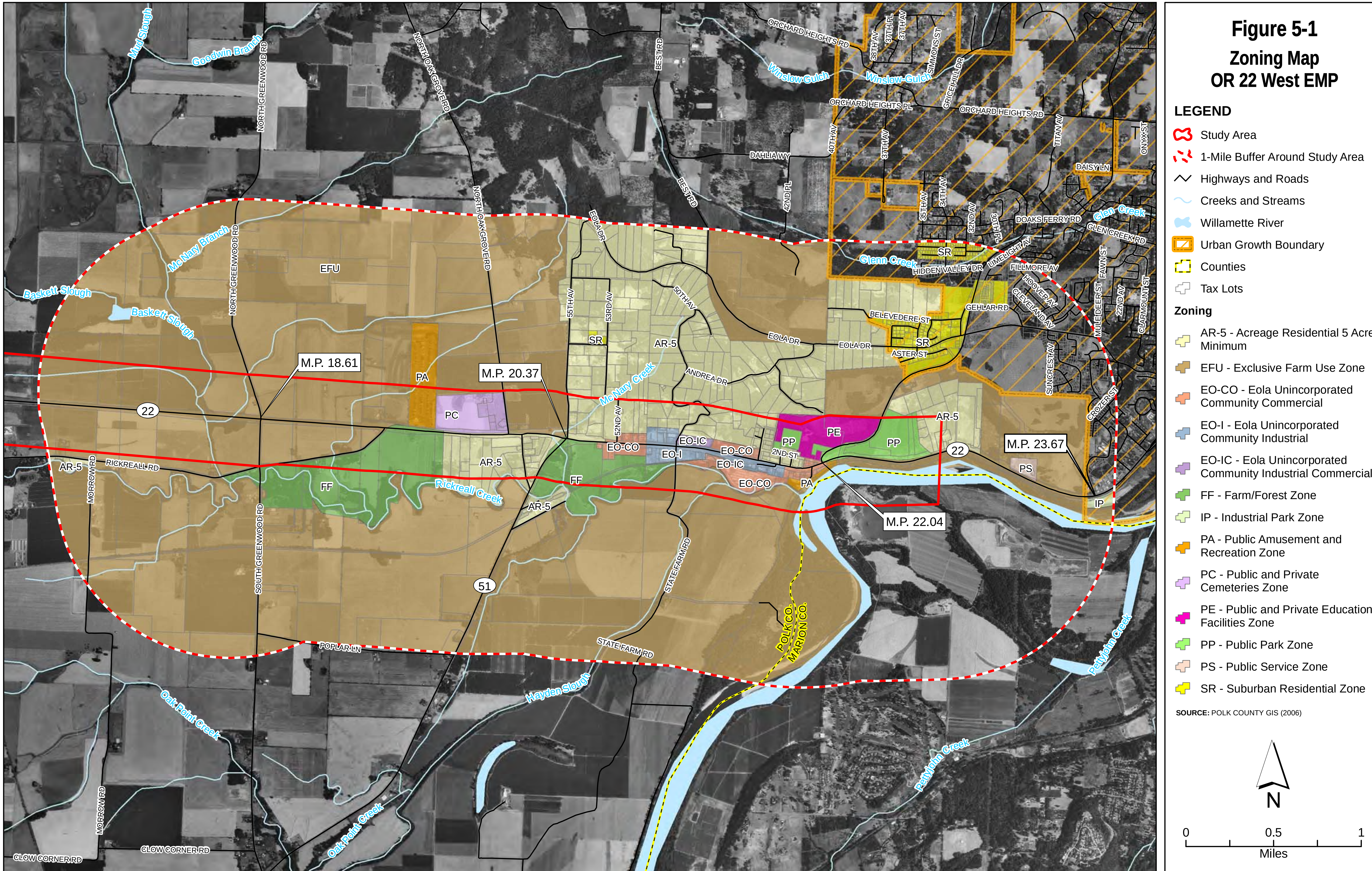
The entire study area for the EMP is outside of an urban growth boundary (UGB) in primarily rural lands. As such, adding turn lanes or replacing an at-grade intersection with a grade-separated interchange is an allowed activity under the Transportation Planning Rule (OAR 660-012-0065). The provisions of OAR 660-012-0065 have been incorporated into applicable sections of the Polk County Zoning Code. Such an action would, therefore, not require an exception to any of Oregon's statewide planning goals to advance an intersection improvement or interchange alternative within the study area. The study area for the OR 22W EMP is depicted in Figure 5-1.

OR 22 between Greenwood Road and Derry Overcrossing

The land directly abutting OR 22 between Greenwood Road and Derry Overcrossing is zoned Exclusive Farm Use (EFU), as illustrated in Figure 5-1. Exclusive Farm Use zones limit the number and intensity of land uses, therefore, it is reasonable to assume that no significant source of traffic generation will be developed in these areas. The development potential is limited by the EFU designation, which does not allow the development of churches, schools, kennels, golf courses, composting operations, and solid waste processing facilities, effectively limiting the already low traffic generation potential of these land parcels.

INSERT FIGURE 5-1 ZONING 11x17

Figure 5-1
Zoning Map
OR 22 West EMP



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Backside of Figure 5-1

INSERT FIGURE 5-2 LAND USE 11x17

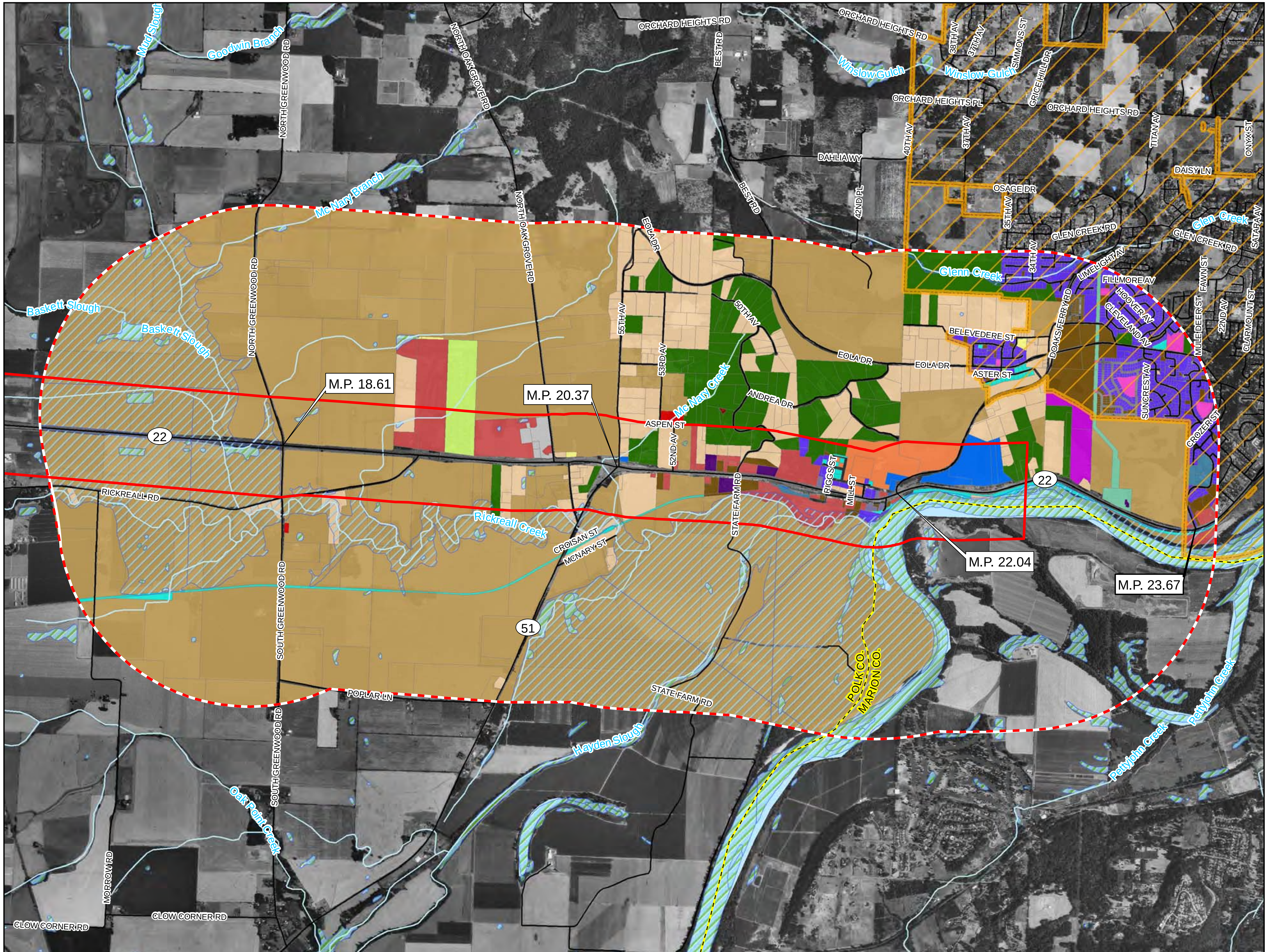

Figure 5-2

Land Uses and Environmental Constraints OR 22 West EMP

LEGEND

- Study Area
- 1-Mile Buffer Around Study Area
- Highways and Roads
- Creeks and Streams
- Willamette River
- Urban Growth Boundary
- Counties
- Wetlands
- 100-year FEMA Floodplains

Property Classes

- Cemetery
- Church
- City Owned
- Commercial
- County Owned
- Farm
- Federally Owned
- Forest
- Fraternal Ownership
- Golf Course
- Housing & Business
- Industrial
- Open Space
- Port Properties or other Municipal Properties
- Residential
- School
- Single Family Residence
- State Owned
- Unbuildable
- Unknown / No Data
- Vacant

SOURCE: POLK COUNTY GIS

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Miles

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OR 22 between Rickreall and OR 51

The land south and adjacent to OR 22 generally between Rickreall and OR 51 is designated Farm/ Forest Zone and Acreage Residential 5 Acre minimum (AR-5). Existing uses in these areas, illustrated in Figure 5-2, are primarily farm uses, again generating a relatively low number of trips. Although agricultural lands generate a few trips, farm owners/operators often use large equipment or haul oversized loads on OR 22. These farms also have several paved field access points along OR 22. Some farms span across OR 22, and farmers have the need to transport equipment and supplies across OR 22.

Adjacent lands north of OR 22 between North Greenwood Road and North Oak Grove Road are primarily vineyards or agricultural uses. A few single family homes are also in this area with right in/right out only access drives to OR 22. Oak Knoll Golf Course is on the northside of OR 22, and has an access point on OR 22, which is shared by a single family home. On the northwest corner of the intersection of OR 22 and North Oak Grove Road is a cemetery, which generates a low level of traffic. On the northeast corner of this intersection is the historic Harrison Brunk House.

OR 22 East of Junction with OR 51

East of the junction with OR 51, along OR 22 is the unincorporated community of Eola. The Polk County Comprehensive Plan (2001) recognizes the community of Eola with Eola Unincorporated Community zoning (Figure 5-1), affirming existing land uses. Land use zoning includes commercial, industrial, and industrial/commercial. Uses in the unincorporated community of Eola include single family residences, industrial, a Chevron gas station, an RV trailer park, Eola Florist Shop, Knorr Plant, Eola Inn, and a fruit stand. The Knorr Plant generates a moderate level of truck traffic. East of the intersection of OR 22 and 51, between the Chevron gas station and the fruit stand, a car lot is proposed, the owner of which is working with ODOT to obtain an approach road permit. Access points are frequent in this area (mile point [MP] 22.04 to MP 20.84) serving the adjacent land uses. South of OR 22 and east of State Farm Road is a weigh station and RV park, with access on OR 22. Topography in this area is steep, so that while the RV Park is adjacent to OR 22, it is down a hill. Areas highlighted as unbuildable lands on Figure 5-2 delineate a steep decline in topography within the study area.

On 52nd Street, north of OR 22 is the Pentacle Theater. In speaking with board member, Dave Davis (April, 2007), the Pentacle Theater has recently renovated their building, which now has capacity for 199 seats, and a parking lot for 100 cars. The theater has shows all year round, and approximately eight shows per year, with shows running for four consecutive weekends, and one weekend off. The theater has approximately 10 acres abutting OR 22, and has realigned their property line to place a large billboard type sign on OR 22, which is expected to attract more patrons and traffic. In the year 2020, the theater plans to build a new building with a 400 seat theater, and a parking lot for 300 cars.

The former Hansen concrete pipe factory site is west of 50th Street on OR 22. The area is zoned industrial. The County has received inquiries from a log home manufacturer who is interested in zoning the parcel for commercial use. If the County zones the parcel for commercial use, and the site is converted, more trips can be expected than the current use. Some of the property formally used as part of the manufacturing operation has been sold to the Eola Bend RV Park.

West of Doaks Ferry Road is the Northwest Viticulture Center, which is owned by Chemeketa Community College and has a Vineyard Management/Winemaking program. Access to the

Viticulture Center is off of Doaks Ferry Road. Director Craig Anderson said that the building is not being fully utilized yet. The student population has been growing and is expected to continue to grow. At any given time, approximately 60 to 65 students attend courses at the Viticulture Center. The school recommends that visitors traveling towards Salem (east) do not use OR 22, as it is difficult and dangerous to make a left turn at the intersection of OR 22 and Doaks Ferry Road. The school recommends visitors go north on Doaks Ferry Road and use either Eola Drive or Glen Creek Road to travel east.

Deleted: No expansion is planned at this time.

The area east of Doaks Ferry Road is considered the West Salem Neighborhood, which is zoned for public park use and acreage residential (5 acre minimum). The area has a public park (Holman Wayside State Park and rest stop), forest land, and housing as existing uses. Holman State Wayside is a small day-use park of 10 acres that contains a 30-35 car parking lot, restroom, and wooded area. A bicycle path from West Salem (maintained by the Oregon Department of Transportation) passes through the park, heading west to the golf course, then crossing OR 22 on a bridge to connect with Rickreall Road. In Fall 2007 the Oregon Parks and Recreation Commission voted to close the park permanently but will retain a restroom and drinking water on the site to serve bicyclists and pedestrians using the multi-use path that traverses the property. The Commission also left open the option to provide limited vehicle parking in the future, if determined necessary.

In 2001, a development application was submitted for a residential subdivision to develop vacant lands in the area east of Doaks Ferry Road. The application was later withdrawn, but provides good information on the type of development that could occur in the area. The vacant land has potential for residential development and a connection to OR 22 via College Drive or a new road as an alternative connection to Doaks Ferry Road. Another development application is anticipated soon.

5.2.2 Environmental Resources

The west side of the study area, towards Greenwood Road, is characterized by flat agricultural land, some of which is farmed wetland, especially along Rickreall Creek. Fish and wildlife, wetlands, and floodplain information sources were reviewed, the findings from which are discussed below.

Fish and Wildlife

Rickreall Creek, surveyed during the development of the Rickreall IAMP, contains the following: cutthroat trout, steelhead, coho salmon, and possibly Chinook salmon which are anadromous fish species. The coho salmon and cutthroat Evolutionarily Significant Units (ESUs) are not listed or proposed for listing. However, winter steelhead and spring Chinook salmon are part of the Upper Willamette River ESUs, which are on the federal Endangered Species Act (ESA) threatened list. The current presence of these fish is known, however their numbers and distribution in Rickreall Creek is unknown.

Most of the study area is designated by Polk County as significant fish habitat/riparian areas. Remnants of the Willamette Valley prairie grasslands exist in the corridor, including highway right-of-way. These areas are habitat for a number of rare native plant and invertebrate species. Baskett Slough National Wildlife Refuge, a major wildlife refuge developed for migratory waterfowl, particularly for a subspecies of Canada Goose, is outside of the study area bordering

OR 22, northwest of Rickreall. These areas of environmental sensitivity must be considered when decisions about roadway improvements are made.

Wetlands

Rickreall Creek is a significant water feature in the project vicinity and study area, which the ODOT wetlands specialist described as having a “well-defined wooded riparian corridor” with “excellent hydrology and riverine morphology conducive to use by game fish.” However, the stream also has significant water quality problems evidenced by moribund emergent vegetation on side channels and heavy layers of brown algae in the main channels. Non-point agricultural runoff of herbicides and fertilizers along with several toxic spills in the past are likely the cause of the stream’s current water quality problems. Currently, Rickreall Creek is in poor condition with high water temperatures, poor continuous riparian cover, and non-point source pollution. Rickreall Creek is included on the Oregon Department of Environmental Quality (DEQ) 303 (d) list of waterways needing flow modification and temperature improvements.

If highway improvements were to significantly impact the wetlands or streams, several permits would be required. Through an administrative agreement, permits for removal and filling are obtained jointly through the US Army Corps of Engineers (USACE) and the Oregon Department of State Lands (DSL). The state removal and fill law requires a permit for any removal or fill activities of 50 cubic yards or more in a waterway of the state. In addition, the Oregon DEQ administers Section 401 Certification as part of the Clean Water Act for the US Environmental Protection Agency (EPA). If jurisdictional wetlands and water were to be affected by a proposed project, a Section 404 permit issued by the USACE would be necessary, according to the federal Clean Water Act.

National Wetlands Inventory (NWI) data were reviewed to determine the location of wetlands, illustrated in Figure 5-2. Few wetland areas exist within the project study area. The largest wetland area within the project study area is along the western terminus of the study corridor. The wetland area is approximately a quarter-mile west of North Greenwood Road, south and adjacent to OR 22. Another wetland area is east of North Greenwood Road, north of OR 22. Both of these wetlands are in EFU areas within an existing farm.

Floodplains

FEMA 100-year floodplains, delineated in Figure 5-2, encompass much of the farm land to the west of North Greenwood Road, and to the south of OR 22. East of OR 51, 100-year floodplains encompass the majority of farmed land in the one-mile buffer area surrounding the study area. No 100-year floodplain areas are to the north of OR 22 east of North Greenwood Road. Development in these floodplains is regulated by Polk County Floodplain Overlay Zone.

Historic/Cultural

On January 17, 2001, ODOT Cultural Resource Specialists conducted a windshield survey of historic resources adjacent to the highway. Prior to the windshield survey, the Cultural Resource Specialists reviewed the State Historic Preservation Office (SHPO) database for Polk County. The only property adjacent to OR 22 within the study area and listed on the National Register of Historic Places is the Harrison Brunk house.

The historic Harrison Brunk House at MP 20.15, which is listed on the National Register of Historic Places, is north and adjacent to OR 22, and has access off of Oak Grove Road. The Brunk house was built in 1861 and is representative of farm houses of that era. The restored farm house contains common items of such homes before 1900. The Brunk House holds tours by appointment, and generates a low level of traffic.

The cultural resources survey identified several historic resources as well. Historic resources are properties that have not been formally designated as historically significant at this time, but may be eligible for the National Register with further research. If any highway projects are proposed that would affect any of the identified historic resources, further cultural work would need to be done and determinations of eligibility (DOE) prepared and concurrence would need to be obtained from SHPO. The 11 historic resource sites identified during the cultural resources survey are listed below.

Site 1: 6900 Rickreall Road (MP 18.75[1])

Property Description: 1936 house and 1909 barn.

Site 2: 6780 Rickreall Road (MP 18.80)

Property Description: a circa 1920 house.

Site 3: 6670 Rickreall Road (MP 18.80)

Property Description: a circa 1939 house and barn.

Site 4: Oak Knoll Golf Course (MP 19.45)

Property Description: may be eligible as a Designed Historic Landscape, and any vegetation removal would trigger a DOE that would include several acres of land.

Site 5: 6330 OR 22 (MP 19.45)

Property Description: a circa 1900 farmhouse.

Site 6: Across from ODOT weigh station (MP 21.50)

Property Description: store and house

Site 7: MP 21.77

Property Description: circa 1920 Eola School 13-K

Site 8: 3545 OR 22 (MP 22.71)

Property Description: a circa 1920 house.

Site 9: MP 22.8

Property Description: a circa 1900 house.

Site 10: MP 22.9

Property Description: a circa 1935 house located just south of the Bonneville Power Administration buildings.

[1] Mile points referenced on Rickreall Road are the closest associated mile point on OR 22.

Site 11: MP 23.00

Property Description: circa 1936 Bonneville Power Administration buildings and transformers.

Park resources are subject to provisions of Section 4(f) of USDOT Act of 1966. Holman Wayside, a recently closed State park and rest stop, is located just east of Doaks Ferry Road on the northside of OR 22. Recreational sites are also subject to provisions under Section 4(f). Oak Knoll Golf Course (MP 19.45) is considered a recreational site.

No archaeological sites have been inventoried in the study area.

Use of lands for highway improvements associated with either of these facilities would be subject to provisions of Section 4(f) of USDOT Act of 1966 and Section 106 of the National Historic Preservation Act, and as specified in SAFETEA-LU environmental provisions.

No specific legislation protects non-historic cemeteries; however, public interest and sensitivity dictate avoidance of non-historic cemeteries. A cemetery is adjacent to OR 22, at MP 20.00 near Brunk Corner.

Hazardous Materials

In January 2001, ODOT Region 2 Hazmat prepared a Hazardous Materials Report from a Limited Phase One Study Refinement Plan for a portion of OR 22 (Vicinity of Rickreall to Salem Bridges). The purpose of the study was to determine the potential for hazardous waste contamination due to past or present activities in properties located in the project area that might be impacted. The study identified 14 potentially contaminated sites, using historical aerial photographs (1936-94) and Polk County Clerk and Recorder's office records, as well as hazardous material inventories maintained by the Environmental Protection Agency, the Oregon Department of Environmental Quality, the Oregon Public Utilities Commission, and the State Fire Marshall.

Many of the properties identified by the study were contaminated from leaking underground storage tanks (USTs), mostly by gas stations. Other sources of potential contamination include industrial facilities with hazardous solvents, chemicals, and petroleum products. Twelve of the 14 sites listed below are adjacent to OR 22:

Site 1: AG West Supply Plant, 8870/9055 Rickreall Rd.

Property Description: Industrial facility.

Hazmat Concern: Potential soil and/or groundwater contamination from former USTs and the use and storage of various chemicals in this property.

Site 2: Rickreall Dairy, 8845 Rickreall Rd.

Property Description: Dairy facility with manure pond.

Hazmat Concern: Improper use and /or disposal of hazardous materials on this property.

Site 3: Chevron Station, 5322 OR 22 (Willamina-Salem Highway).

Property Description: Food mart and gas station.

Hazmat Concern: Soil and groundwater contamination detected beneath property.

Site 4: Former Old Traux Station, 5272 OR 22 (Willamina-Salem Highway).

Property Description: Abandoned structure, former gas station

Hazmat Concern: Potential soil and groundwater contamination from the former USTs.

Site 5: McCoullough Roofing, 5153 OR 22 (Willamina-Salem Highway)

Property Description: Industrial site

Hazmat Concern: This facility reported to the Fire Marshal's Office the presence of mastic in their premises. No hazmat concern is associated with this property.

Site 6: Bobcat Service Center, 5135 OR 22 (Willamina-Salem Highway)

Property Description: Loaders and Excavators—rental and service.

Hazmat Concern: Improper use and/or disposal of hazardous material on this property.

Site 7: CENEX/AG West Eola Station, 5082 OR 22 (Willamina-Salem Highway).

Property Description: Gas Station.

Hazmat Concern: Soil and groundwater contamination remaining beneath this property.

Site 8: Knorr Steel System International, 5073 OR 22 (Willamina-Salem Highway).

Property Description: Industrial facility.

Hazmat Concern: Contamination was discovered during the decommissioning of three 1,000-gallon USTs in December of 1989. Approximately 60 cubic yards of contaminated soil was removed from the excavation, treated on-site, and disposed of under the parking lot built on site. No hazmat concerns are associated with this property.

Site 9: Pipe Inc., 5032 OR 22 (Willamina-Salem Highway)

Property Description: Industrial facility. Concrete products (wholesale).

Hazmat Concern: Improper use and/or disposal of hazardous materials on this property.

Site 10: Tel Com Construction Company, 4800 OR 22 (Willamina-Salem Highway).

Property Description: Industrial site. Prior ownership by Tel-Com construction, the property was operated as the Shipler Logging Company.

Hazmat Concern: Residual soil contamination beneath this property.

Site 11: Northwest Spas, Inc., 4582 OR 22 (Willamina-Salem Highway).

Property Description: Industrial facility.

Hazmat Concern: Improper use and/or disposal of hazardous materials on this property.

Site 12: Robinson Well Drilling & Pumps, 4520 OR 22 (Willamina-Salem Highway).

Property Description: Well drilling company.

Hazmat Concern: Improper use and/or disposal of hazardous materials on this property.

Site 13: Mealue Excavating, Inc., 4490 OR 22 (Willamina-Salem Highway).

Property Description: Industrial facility.

Hazmat Concern: Improper use and/or disposal of hazardous materials on this property.

Site 14: BPA Electric Substation, 3105 OR 22 (Willamina-Salem Highway).

Property Description: Electric substation.

Hazmat Concern: Potential polychlorinated biphenyl (PCB) contamination.

5.2.3 Constraints Conclusions

Federal, state, and local regulations would apply regarding land use, hazardous materials, historic properties, public parks, water quality, and wetlands; permits would need to be obtained before the construction of particular highway improvements. Potential impacts would need to be avoided or mitigated, which appears feasible within the OR 22 corridor. Properties with hazardous materials would complicate right-of-way acquisition, if needed. Flood plain and wetland mitigation opportunities are available in the project area.

SAFETEA-LU Section 6009 (a) addresses findings of *de minimis* impacts to Section 4(f) properties under programmatic evaluations. Agencies with jurisdiction must concur in writing with the determination. Another potential programmatic 4(f) finding would be that the project provides a net benefit to an already impaired resource that would not accrue if the resource were avoided.

For historic properties, findings of “no adverse effect” or “no historic properties affected” are relevant for projects under Section 106 and Section 4 (f) where projects improve highways and use minor amounts of land (including non-historic improvements thereon) from historic sites that are adjacent to existing highways where the effect is determined not to be adverse. The same is true for parks, recreation areas, or wildlife and waterfowl refuges, where highways would be improved and only minor amounts of public lands would be used. Nevertheless, the programmatic Section 4(f) does not relax the Section 4(f) standards of feasible and prudent and minimization of harm.

In summary, environmental and land use constraints were found to be related to potential right-of-way acquisitions or roadway widening:

- Holman State Wayside – potential taking of public park land for right of way (Section 4(f)); in 2007 this facility was closed and property transfer for other uses is under consideration
- Harrison Brunk House – historic listed property (Section 4(f) and Section 106)
- Petroleum contamination of soil at three fueling station sites adjacent to OR 22; improper use and/or disposal of hazardous materials on six properties; potential PCB contamination at one electric substation (OAR 340-122)
- Wetlands in the vicinity of North Greenwood Road (Section 404)
- EFU zoned land along Greenwood Road and the northwest quadrant of OR 22/51; farm/forest zoned land in the southeast quadrant of OR 22/51.

5.3 Alternatives Identified and Dismissed After Preliminary Evaluation

Establishing an evaluation framework provides a tool to assist in assessing the relative desirability of the project alternatives. The framework, which is based upon one set of evaluation criteria, is a process consisting of two consecutive steps:

Screening: During screening, the criteria serve as "pass/fail" thresholds to eliminate from further consideration non-feasible alternatives. The thresholds represent minimum conditions of acceptance encompassing federal, state, and local parameters. Alternatives that do not meet the threshold criteria are dismissed from further consideration. Prior to the next step, these feasible solutions are refined further to account for local site conditions as well as to minimize adverse impacts. These thresholds will remain as considerations throughout the project; if data analysis completed in a later, more detailed alternative evaluation, indicates that an alternative does not meet a threshold criterion, it can be eliminated from further consideration at that point. These threshold criteria also would apply to alternative options created in later steps of evaluation.

Evaluation: During detailed evaluation, the criteria are used to evaluate the performance of feasible alternatives against a broad range of desired project characteristics. These characteristics represent the full range of stakeholder values and can be weighted accordingly. Evaluation criteria within each of the broad categories are selected to most effectively differentiate among potential alternative solutions for the highway. (The evaluation criteria do not include the full universe of potential criteria.)

5.3.1 Identified Alternatives

In 2001-2003, ODOT identified several improvement alternatives for the study area as part of efforts to develop a draft OR 22 Expressway Refinement Plan. These alternatives are listed below for the three principal study area locations.

OR 22 at Greenwoood Road (GWR) Alternatives

Possible solutions identified for Greenwood Road in 2001-2003 were:

- GWR-1: No build - Maintain access to ORE 22 – full access.
- GWR-2: Remove access completely to OR 22 – close road.
- GWR-3: Install raised median and make road right-in/out only.
- GWR-4a: Grade separate with westbound right-in/out access frontage road to OR 22 – overpass
- GWR-4b: Grade separate to allow north to south access without any OR 22 access – overpass.
- GWR-5: Grade separation and ramps all directions – full interchange.

OR 22 at OR 51 (Independence Highway) (INH) Alternatives

Possible solutions identified for Independence Highway in 2001-2003 were:

- INH-1: No-build, which would leave the at-grade intersection as is.

- INH-2: Eliminate the northbound to eastbound at-grade “on-ramp” from OR 51 to OR 22 and make the intersection stop-controlled.
- INH-3a: Eliminate all direct accesses to OR 22, build frontage roads on the north and south sides of OR 22 and an interchange at OR 22/51 without overpass at Doaks Ferry Road. The north frontage road would be connected to Doaks Ferry Road.
- INH-3b: Eliminate all direct accesses to OR 22, build frontage roads on the north and south sides of OR 22 and an interchange at OR 22/51 with an overpass at Doaks Ferry Road. The north frontage road would not be connected to Doaks Ferry Road.
- INH-3c: Eliminate all direct accesses to OR 22, build frontage roads on the north and south sides of OR 22 for traffic access to OR 22, interchange at OR 22/51 and overpass to connect Doaks Ferry Road to southside frontage road.

Frontage/Backage Roads

Various frontage and backage road options originally defined by the PMT in 2003-4 were refined at a later date by W&H Pacific for the County and reported in “Project 22: Hwy 22/51 Interchange Implementation Strategy” (June 2005). These frontage and backage roads are necessary to provide access to properties that would lose their existing access with construction of the OR 22/51 interchange and enhancements to improve the mobility and safety of the expressway mainline, such as installation of continuous median barrier and closing various public and private accesses.

The W&H Pacific report (Appendix G) included various frontage and backage road options/suboptions on the north and south sides of OR 22: five options in the northeast (NE) quadrant, five options in the southeast (SE) quadrant, two options in the southwest (SW) quadrant, and seven options in the northwest (NW) quadrant. Each of these 19 options were discussed and evaluated in Appendix A – Options & Estimates of the report in terms of advantages and disadvantages. Factors considered were existing roadway, right-of-way purchases, accesses, connectivity, circulation, residential and business displacements, environmental conditions, and needs for environmental assessment.

OR 22 at Doaks Ferry Road (DFR) Alternatives

During the earlier efforts (2001) at developing the OR 22 Refinement Plan, the PMT considered the following solutions for the Doaks Ferry Road intersection:

- DFR-1: No-build – no restrictions to access.
- DFR-2: Connection to a north frontage road and closure of access to OR 22 (as part INH-3a).
- DFR-3: An overpass “flyover” connecting OR 22 and Doaks Ferry Road but without connection to a north frontage road (as part of INH-3b).
- DFR-4: An overpass “flyover” connecting OR 22 and Doaks Ferry Road and a connection to a south frontage road (as part of INH-3c). .
- DFR-5: Raised median that would restrict Doaks Ferry Road to right-in/out only, as a short-term alternative until DFR-3 or -4 were built.
- DFR-6: Full interchange with ramps serving all directions.

5.3.2 Screening Process

During earlier efforts to develop a draft OR 22 Expressway Refinement Plan, the PMT used three principal criteria to narrow the list of potential improvements to OR 22. These screening criteria were used to identify alternatives that were infeasible or inappropriate on the basis of:

- Transportation Operations – Facility form and function ability to address the transportation problems of mobility, access, connectivity, safety, and standards
- Project Impacts – Natural environment, built environment (land use and social), and business (economic development/displacement) constraints
- Implementation – Federal, state, county, and city plans and policies consistency, flexibility (phasing, separability), and cost (competitiveness/affordability/benefit-cost)

These screening criteria were retained for the subsequent restarted effort in 2007.

5.3.3 Alternatives Dismissed by Screening

The 15 "build" alternatives and 3 no-build alternatives for the study area were considered during the screening process. Of these, the PMT dismissed seven build alternatives for the locations discussed below. Retained alternatives are depicted in diagrams included in Appendix H.

OR 22 at Greenwood Road

Closing access (GWR-2) was dismissed because it would add more traffic and increase farm vehicle conflicts at Oak Grove Road/OR 22 and 99W and be a significant detour for farm equipment.

Construction of an interchange (GWR-5) was dismissed because of the high cost to serve the low the amount of traffic that would use it and inadequate spacing between the recently constructed OR 22/OR 99W (Rickreall) interchange and a potential interchange at OR 22/51. The amount of money needed for right of way and construction of the structure and ramps yield a low benefit/cost ratio. OHP spacing standards between the start and end of tapers of adjacent interchanges cannot be met if an interchange is built at the OR 22/51 intersection, which is at a higher level for consideration, nor with the existing proximity of the OR 22/99W interchange.

- Maintaining full access to OR 22 (GWR-1) was retained as a short-term "no build" alternative. With future traffic growth, many of the gaps will be eliminated for traffic and slow moving vehicles (farm equipment) crossing OR 22, so drivers will increasingly take more unsafe gaps. Installing a median barrier and allowing right in/out traffic (GRW-3) was retained, even though it has many of the same connectivity problems of GWR-2. Retained was GWR-4a, the overpass with an OR 22 westbound right-in/out access frontage road that connects to Greenwood Road, as shown in Appendix H. Another alternative retained was the overpass only with no OR 22 access alternative (GWR-4b).

OR 22 at OR 51 (Independence Highway)

Two at-grade alternatives were considered for this intersection. One was the No-build which would leave it as is. The second would eliminate the northbound to eastbound "on-ramp" from OR 51 to OR 22. It would be replaced by directing all OR 51 traffic to a stop-controlled intersection. Both at-grade alternatives were rejected because they did not meet the OHP mobility policy.

The four grade-separated alternatives, variations of diamond and Parclo B types, were the remaining alternatives carried forward (Alternatives INH-3, -4, -5 and -6), as shown in Appendix H. These alternatives were later linked to alternative combinations of frontage/backage road legs on the north and south sides of OR 22 to provide properties with connectivity to the local system instead of direct access to OR 22. The plan concludes that an interchange is necessary to address congestion and safety issues at this intersection. The plan recommends no particular form for this interchange. Decisions on interchange form will be made through the preparation of an interchange area management plan (IAMP) which will be completed in a separate process.

Frontage/Backage Roads

The W&H Pacific report ("Hwy 22/51 Interchange Implementation Strategy," June 2005) recommended reducing the number of frontage/backage road options/suboptions to a four-phased implementation strategy involving 10 of the 19 initially identified: two options in the NE quadrant, two options in the SE quadrant, two options in the SW quadrant, and four options in the NW quadrant. The first three phases involve environmental analysis, engineering, right-of-way, and construction of the frontage and backage roads. The third phase also involves environmental analysis, engineering, and right-of-way for the interchange, while the fourth phase involves construction of the interchange. This phasing strategy was considered by the PMT to become part of the Preferred Alternative.

For the most recent effort developing the EMP, the PMT took the W&H Pacific report recommendations for frontage/backage roads and modified them slightly, all of which assume a barrier median on OR 22 and extensive closed accesses. The options based on the W&H Pacific report that were advanced by the PMT include six options in the NE quadrant, three options in the SE quadrant, one option in the SW quadrant, and three options in the NW quadrant. Appendix G (from W&H Pacific's Project 22 Report) includes figures depicting the location of these options:

NE Quadrant

- NE-1: new frontage road parallel and directly adjacent to OR 22 between 50th Avenue and Doaks Ferry Road with possible right-in/out connection to OR 22 at 50th Avenue (possible connections to Doaks Ferry Road are described in Doaks Ferry Road alternatives). This alternative follows NE-2 between 52nd Avenue and 50th Avenue.
- NE-2: new frontage road parallel to OR 22 between 52nd Avenue and Doaks Ferry Road with possible right-in/out connection to OR 22 at 50th Avenue (possible connections to Doaks Ferry Road are described in Doaks Ferry Road alternatives).
- NE-1a/NE-2a: extension from NE-1 or NE-2 on existing 52nd Avenue, Aspen Street, 53rd Avenue, and Aster Street to 55th Avenue.
- NE-1b/NE-2b: extension from NE-1 or NE-2 of a new road west then north to connect with existing 53rd Avenue and Aster Street to 55th Avenue.
- NE-1c/NE-2c: as described for Alternatives NE-1a/NE-2a with a new road connecting 53rd Avenue to 55th Avenue at Alternative NW-2 (does not extend north to Aster Street).
- NE-1d/NE-2d: as described for Alternatives NE-1b/NE-2b with a new road connecting 53rd Avenue to 55th Avenue at Alternative NW-2 (does not extend north to Aster Street).

SE Quadrant

- SE-1: new road extending east from OR 51 at least 1,320 feet from a new interchange ramp terminal, crossing McNary Creek, and extending to the existing access road to the RV Park. This alternative may include a right-in/out connection to OR 22 at the RV Park access road. North-south access road to private property will be located in consultation with property owners.
- SE-2: new road extending east from the OR 51/Oak Grove Road intersection to SE-1 then as described for SE-1.
- SE-3: Extension of SE-1 or SE-2 east along platted alignment of Main Street to vicinity of existing Eola Inn building with no connection to OR 22.

SW Quadrant

- SW-1: Existing Oak Grove Road north to OR 22, where it would disconnect.
- SW-2: A new frontage road adjacent to OR 22 extending west from the end of Oak Grove Road to the residence near the bike/pedestrian overcrossing. .

NW Quadrant

- NW-1: New road extending west from Aster Street/55th Avenue intersection to Oak Grove Road, south on Oak Grove Road to a new frontage road adjacent to OR 22 west to the golf course and adjacent residence (Oak Grove Road would be disconnected from OR 22).
- NW-2: New road extending west from 55th Avenue along the boundary between existing hazelnut orchard and vineyard to Oak Grove Road, then as described in NW-1.
- NW-3: New road extending from Oak Grove Road west along the northern boundary of the existing cemetery to an appropriate point where it would turn south and west to provide access to the golf course and adjacent residence.

NW-3 was dismissed by the PMT as an optional leg off of NW-1 and NW-2 for providing access to the cemetery, golf course, and residence. The option would require relocation of the golf course entrance and significant right-of-way purchase. Its location away from the highway and future ramp alignment was determined to be unnecessary.

During detailed evaluation, the PMT endeavored to combine the options to create at least two frontage/backage road build alternatives that would provide a complete route and connection between the proposed OR 22/51 interchange and properties losing direct access to OR 22.

OR 22 at Doaks Ferry Road

Connection to a north frontage road and closure of access to OR 22 (DFR-2) was modified to provide a relocated eastbound OR 22 access to Doaks Ferry Road via addition of a new left-in turn lane at Riggs Street (or vicinity west of Mill Street). Riggs Street would connect to a new backage road (NE-2) that would connect to Doaks Ferry Road. The existing westbound OR 22 right-in to Doaks Ferry Road would be improved with a deceleration lane and connection to the realigned Doaks Ferry Road/backage road. The direct access to OR 22 from Doaks Ferry Road would be closed. To provide an eastbound movement for traffic headed west from Riggs Street on OR 22, a U-turn lane could be provided in the vicinity of 50th Avenue/State Farm Road.

An overpass at OR 22/Doaks Ferry Road (DFR-3 and -4) was dismissed due to the additional cost of a topographically constrained structure and without significant improvement in traffic flows. Right-of-way impacts to Holman State Wayside were another consideration for dismissal of overpass alternatives; however, this issue diminished when Holman State Wayside was later permanently closed with property transfer under consideration.

DFR-4 was also rejected because of the grade necessary to connect to a frontage road on the southside of the highway (12-14%). However, the PMT realized the benefits of connectivity for local traffic between the north and south sides of the highway, and modified DFR-4 to provide an undercrossing farther west in the vicinity of Spring Street that would connect with backage roads NE-2 and SE-1. DFR-4 would keep the right-in only deceleration lane connection to Doaks Ferry Road but eliminate the northside Riggs Street intersection and replace it with a Southside intersection opposite Shaw Street. The south Shaw Street access would include deceleration and acceleration lanes for exiting and entering OR 22. South Shaw Street would connect with backage road SE-1, which would connect with the Spring Street undercrossing. Thus, the eastbound left-turn and westbound U-turn lanes near Riggs Street as proposed with DFR-2 would not be necessary. DFR-4 would require an exception to access management spacing standards if it were to be implemented without designation of this segment of the expressway as being in an urban area.

Construction of a full interchange at OR 22/Doaks Ferry Road (DFR-6) was dismissed because the topography would make it very costly if not impractical to construct. Also, OHP spacing standards of 2 miles between the start and end of tapers of adjacent interchanges could not be met (approximately a half-mile short) if an interchange were built at the OR 22/51 intersection, which is at a higher level for consideration. However, a full interchange farther east on OR 22 in the vicinity of College Drive, with a new connection to Doaks Ferry Road, was accepted by the PMT as a modified alternative for future study.

DFR-5, with installation of a continuous raised median barrier at the intersection, was dismissed because it would eliminate the well-used left-in movement onto Doaks Ferry Road from the eastbound left-turn lane on OR 22. The PMT recognized that Doaks Ferry Road serves as a major arterial providing access to OR 22 for nearby residents and as a short-cut for OR-22 travelers to Wallace Road (and OR 221) in West Salem. During the subsequent effort, the PMT considered other options. To preserve this connectivity, alternative DFR-7 was created to allow all movements at grade, except for the hazardous left-out from Doaks Ferry Road, which would be disallowed and discouraged by signage, some realignment of the intersection, and painted islands at the intersection as a short-term solution. The long-term solution is the restriction of this intersection to a westbound right-in only in conjunction with the relocation of the intersection described in DFR-4. A median barrier and concrete islands were considered as variants for preventing a left-out movement but were dismissed as potentially decreasing safety (problems from sight impairment and maneuvering around the barrier). Appendix H includes diagrams of the alternatives.

Improvements in the area of Doaks Ferry Road and farther east will ultimately be influenced by progress on three other improvement projects: the OR 22/51 interchange, the Salem River Crossing project, and Polk County's response to potential development proposals west of College Drive. The latter two projects could address the possibility of a new alternative Doaks Ferry Road connection with OR 22 between the BPA substation and College Drive. This new connection to Doaks Ferry Road also might have better topography for a flyover structure, as proposed in

DFR-3 and -4, or the full interchange (DFR-6), which would address the future lack of capacity for eastbound left-in movements under DFR-2 and DFR-7.

CHAPTER 6

Alternatives Evaluation

This chapter describes the evaluation criteria and range of alternatives evaluated by the PMT. This chapter also includes a summary of comments and key findings from the stakeholder meeting process.

6.1 Evaluation Criteria

The evaluation criteria used for screening alternatives also was used by the PMT for detailed evaluation of remaining OR 22(W) EMP alternatives. The PMT used the criteria to evaluate the performance of each alternative against a broad range of important project characteristics, representing a full range of stakeholder values. The evaluation criteria tie back to the project's problem statement and highlight differences among alternatives.

The evaluation criteria fall under three broad categories:

- Transportation Operations
  - Mobility
  - Access Management
  - Connectivity
  - Safety
- Project Impacts
  - Natural Environment
  - Built Environment (Land Use and Social)
  - Business (Economic Development/Displacement)
- Implementation
  - Plan Consistency
  - Phasing Flexibility
  - Cost

The evaluation process was based on a comparison of quantitative data, such as mobility, land use, economic data, and costs; and qualitative data with supporting facts, such as operations, environmental impacts, and construction phasing. Alternatives were ranked according to a "consumer reports" type of scale made up of the following four options:

●	Alternative directly and positively addresses the intent of the criterion.
◖	Alternative partially meets the intent of the criterion, addressing some but not all of the objectives.
○	Alternative does not support the intent of, or negatively impacts, the criterion.
N/A	Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

Guidelines for scoring alternatives with the evaluation criteria are described in further detail in Appendix F.

6.2 Evaluation Results

The remaining Build Alternatives are intended to provide access to developed land while ensuring adherence to expressway spacing standards of OAR 734-051, minimal environmental impacts, consistency with plans, and safe and efficient movement of traffic. The No Build Alternatives were not considered further except as necessary in the short-term in some cases. However, the No Build Alternatives would be revisited as necessary for an environmental permitting process.

The alternative evaluation process included a review of possible intersection and interchange forms and access control measures that might be applicable in the study area. In addition, alternatives for frontage/backage roads were evaluated relative to the evaluation criteria, access controls, and a four-phase construction plan (as proposed by W&H Pacific, 2005) with cost estimates. The PMT during the screening process had decided to incorporate and modify that study's alternatives for frontage/backage roads and link them to the alternatives for the OR 22/51 intersection.

Appendix I includes a table that summarizes the evaluation results for each alternative at each intersection according to the "consumer reports" type of score (see Appendix F). Appendix I also includes a benefit/cost analysis of the intersection alternatives. A discussion of the evaluation of alternatives and results follows.

6.2.1 OR 22 at Greenwood Road

After screening, the three remaining build alternatives include a median barrier with a right-in/right-out connection to OR 22 (GWR-3), an overpass with right-in/right-out connection to OR 22 (GWR-4a), and an overpass with no access to OR 22 (GWR-4b). Appendix H includes diagrams of the two overpass alternatives. GWR-3 was retained because mitigation could provide better connectivity between affected farm operations to the equipment undercrossing that is located under the railroad overcrossing at Derry; GWR-3 also could provide a grade-separated farm equipment crossing of OR 22 somewhere other than at Greenwood Road. Alternative GWR-4b would eliminate access to OR 22 and best support the function of an expressway.

- A new alternative considered during the most recent effort was offset dual-T intersections at South Greenwood Road and a new North Greenwood Frontage Road (close N. Greenwood Road access). This alternative, GWR-6, would provide an extra-wide (16 feet for farm equipment), two-way center left turn lane on OR 22 with right-in/out at intersections. A variant would be separate left-turn lanes with median barrier; however, accommodation of farm equipment would require even more widening with this variant. The advantage of this alternative is that it would provide a two-stage crossing movement incorporating a turn refuge. An associated disadvantage and implausibility is that rapid acceleration would be necessary for farm vehicles and school buses to access the turn refuge under congested conditions with limited breaks in traffic. This alternative would work best for farm equipment during early morning hours and other off-peak times.

- The GWR-6 alternative was dismissed as a proposed solution but was recognized as a possible short-term improvement. GWR-6 would not require installing median barrier to prevent crossing the intersection (GWR-3). (Median barrier should worsening traffic conditions or crash history necessitate action prior to implementation of other alternatives, such as construction of an overpass.)

The 1999 Oregon Highway Plan (OHP) requires operating at a volume to capacity (v/c) ratio equal to or less than 0.60 for the mainline and 0.70 for the minor unsignalized approaches. The No-Build and Build Alternatives satisfy this standard. Compared with the existing conditions, any of the Build Alternatives would improve safety.

The overpass alternatives (GWR-4a and 4b) would have minor impacts to farm land. The frontage road component of GWR-4a would have the most impact. The costs of median treatments as with GWR-3 and frontage road are substantially less than an overcrossing (Appendix I).

6.2.2 OR 22 at OR 51 (Independence Highway)

After screening, four grade-separated interchange alternatives were retained for further evaluation. These interchange forms included standard and tight diamond interchanges (INH-3 and -4), a dual-quadrant partial cloverleaf (PARCLO B) interchange (INH-5), and a single-quadrant PARCLO B interchange (INH-6). Appendix H includes diagrams of these interchange alternatives, while Appendix J provides detailed analysis of the future interchange traffic operations.

The detailed analysis was performed under two separate volume scenarios that looked at the possibility of eliminating the OR 22/Doaks Ferry intersection ("No Doaks Ferry Connection") or restricting access at the OR 22/Doaks Ferry intersection ("Limited Doaks Ferry Connection").

Under the diamond interchange alternative, the eastbound and westbound ramp terminals (as unsignalized intersections) do not have sufficient capacity to systematically accommodate future 2030 demand under the "No Doaks Ferry Connection". Assuming the "Limited Doaks Ferry Connection" and the associated reduction in interchange demand, the eastbound ramp terminal would operate at sufficient levels, however the westbound ramp terminal would exceed the 0.60 mobility standard. Given that the ramp terminals are not forecast to meet ODOT's planning level signal warrants, roundabout ramp terminal treatments were investigated. While the roundabout operations are sufficient for the eastbound ramp terminal, the westbound ramp terminal is still forecast to operate over capacity under the "No Doaks Ferry Connection" scenario. In general, the diamond interchange configuration is unable to efficiently accommodate the heavy westbound to southbound and eastbound to northbound demand under the "No Doaks Ferry Connection" scenario. Accordingly, other interchange forms were subsequently investigated including single quadrant and dual quadrant PARCLO B interchange forms.

Unlike the diamond interchange alternative, the westbound exiting loop ramp of the single quadrant PARCLO B is better able to accommodate the heavy westbound to southbound demand. However, under both of the volume scenarios, the westbound ramp terminal is still forecast to exceed the 0.60 design mobility standard under unsignalized conditions. In comparison, a roundabout intersection treatment at the westbound terminal would have sufficient capacity, but would also not have enough built in excess capacity to serve as a long-term interchange ramp terminal treatment.

Finally, with the addition of the eastbound existing loop ramp, the dual quadrant PARCLO B alternative does the best job at systematically accommodating the predominate/critical movements of the eastbound ramp terminal. Specifically, all predominate/critical movements are forecast to meet the 0.60 mobility standard under both volume scenarios as unsignalized intersections.

In summary, the preliminary operations analysis indicates that the westbound ramp terminal is not able to systematically accommodate the projected 2030 interchange demand (both with and without an OR 22/Doaks Ferry connection) as a standard diamond interchange off-ramp. As an exiting loop ramp under the single quadrant PARCLO B alternative, the westbound ramp terminal operations would improve significantly. Although the unsignalized and roundabout intersection treatments included in this analysis are not meeting the 0.60 mobility standard outright, this planning level analysis has shown that the exiting loop ramp terminal operations offer greater long-term capacity and come relatively close to meeting the mobility standards. This plan concludes that an interchange is necessary to address safety and operational concerns at this intersection. A more refined analysis of the interchange forms will be conducted as part of the future Interchange Area Management Plan study effort.

The feasibility of continuing the multi-use path through the proposed interchange was considered by the PMT. What is known as the “Bend Parkway style” bike crossing would be one feasible alternative at ramps on the south side of the interchange. The bike lanes would have a stained treatment to contrast it from the travel lanes and cross at near 90 degrees to the ramp. (The bike lane swings out and then hooks back across the ramp.) The structure over OR 22 should have at least one sidewalk, located most appropriately on the east side, same as the residences. Other alternatives would be addressed during the preliminary design and environmental phase of project development, including possible accommodation of public transit facilities.

Regarding the other evaluation criteria, no major differences were determined. All provide adequate access management, connectivity, and safety improvements. Impacts to the natural and built environment are minimal and attributable to losses of farm and forest lands and floodplain. Historic properties would be avoided. There could be minor impacts to wetlands and streams as proposed ramps would cross some creeks. There could be some minor business impacts in the southeast quadrant and residential impacts in the northeast quadrant. All alternatives would require amendments to the County and MPO transportation plans. Interchange construction itself would not be phaseable, but it could be a phase of a larger project that first builds local access roads. Cost elements are roughly identical for all alternatives; all would have multiple funding sources and cost competitiveness.

6.2.3 Frontage/Backage Roads

The PMT evaluated each of the options in the four quadrants separately by quadrant. The options were combined, modified, and renumbered from the W&H Pacific Project 22 Report as necessary for evaluation as feasible alternatives. Figure 6-1 depicts the combined options into alternatives for each quadrant. (Not shown on Figure 6-1 farther east is where NE-1 and NE-2 would connect to Doaks Ferry Road, and where SE-1 and SE-3 would potentially connect to eastbound OR 22 near the Eola Inn.)

INSERT FIGURE 6-1 F/B ROADS ALTERNATIVES 11x17

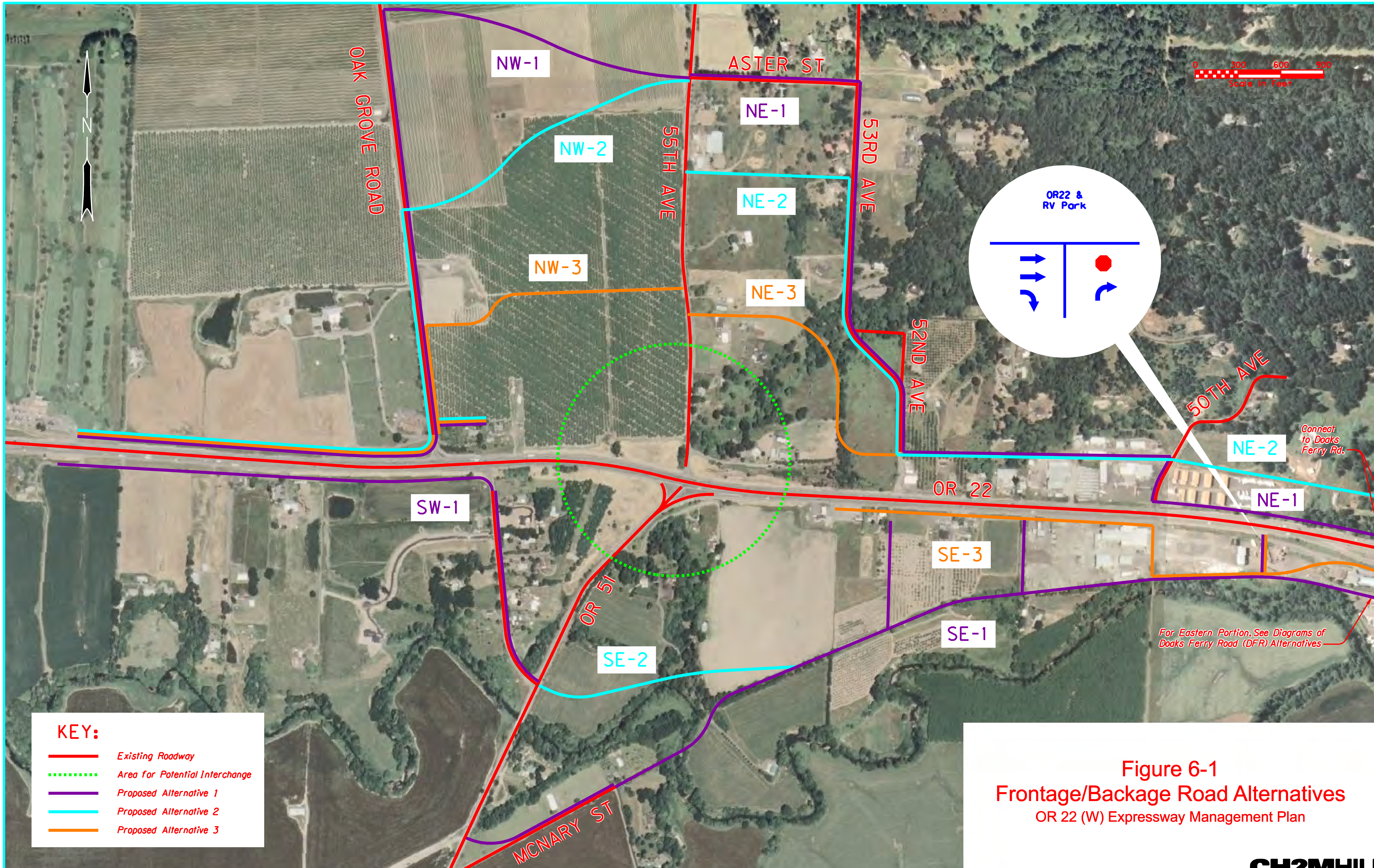

Figure 6-1
Frontage/Backage Road Alternatives
OR 22 (W) Expressway Management Plan

Backside of Figure 6-1

NE Quadrant

Between 52nd and 55th Avenues, NE-1 would use the existing Aster Street, whereas two other alternatives would require new road and right-of-way purchase through AR-5 zoned land. Two variants of option NE-3 from the W&H Pacific report were considered. The old NE-3 became NE-2 and would connect immediately east with 53rd Ave. instead of veering south to connect with 52nd Ave. Compared to NE-1, NE-2 would provide less out of direction travel and less property impact from an improved intersection with 55th Ave.

The new NE-3 as proposed would have even less out of direction travel. NE-3 would begin approximately 1,000 feet farther south on 55th Ave. than NE-2, follow an east-west property line, and then veer south as with the old NE-3 to connect with 52nd Avenue. Topography would require extensive cuts and costs would be high to construct new roadway west of 52nd Ave. Also, this alignment would cut through recently developed residential properties, necessitating dislocations, and require the most new roadway construction. In addition, the connection to 55th Ave. would be closer than the ¼-mile spacing standard to the end ramp of a likely OR22/51 interchange. Thus, this alternative was dismissed by the PMT.

Problematic with the NE quadrant is maintaining access to private properties with frontage on the southern end of 55th Avenue, near the location of the end ramps and overpass structure of a potential OR 22/51 interchange. There, closest to OR 22, a realignment of 55th Ave. and an elevated structure would likely eliminate the existing residential access to 55th Ave. An alternative was developed by ODOT as one of the north frontage loop options in July 2004. This alternative would use the southern end of the existing NE 55th and then run adjacent to OR 22 until connecting to 52nd. The PMT deferred resolution of this issue to the access management plan that would be developed for the interchange.

East of 50th Avenue, whether a frontage road (NE-1) or a backage road (NE-2) would be better, depends on comparing the right-of-way acquisition cost and feasibility at particular locations. If frontage road NE-1 were constructed, then right-of-way for future widening of the expressway would no longer be available. The existing multi-use path would be lost with a frontage road or widening of the highway to six lanes. Incorporation of new and better multimodal facilities could be easily accommodated with a new backage road. Most likely, facilities would be provided on the residential/commercial side of the road. These factors weigh heavily in favor of alternative NE-2.

NW Quadrant

As with the NE quadrant, the main difference between the three alternatives is the location of new east-west connections, in this quadrant between Oak Grove Road and 55th Ave. The farther north the connection, the greater out of distance travel there would be to reach the interchange. All three connections would traverse through EFU zoned land. NW-1 would bisect a vineyard, drastically affecting trellis configurations.

NW-2 would mostly follow property lines and edges of farm fields. The new roadway would affect some trellises and remove some orchard trees, depending on alignment and extent of cutting farm field corners. Final design also would determine whether NW-2 would follow a property line to connect with 55th Ave. south of Aster Street or veer north across existing trellises to form a T intersection with Aster Street.

A more southerly and direct connection between Oak Grove Road and 53rd Street became a new NW-3 for evaluation. This route would begin approximately ¼ mile north of OR 22 on Oak Grove Road and follow the southern edge of the filbert orchard and field away from the house and to the existing private service road through the center of the filbert orchard to the intersection with 55th Avenue. Some orchard trees would need to be removed for widening and right-of-way. NW-3 would provide the most direct route from OR 22 to the golf course and historic Brunk House west of the proposed OR 22/51 interchange. However, its intersection with 55th Ave. is only about half the required distance from the end of the proposed interchange ramps; this would require an exception to access management standards and is a disadvantage compared to NW-1 or NW-2.

SW Quadrant

Only one alternative is needed in this quadrant, and that is to combine SW-1 and SW-2 (renumbered as SW-1). The alternative would close Oak Grove Road access to OR 22 while extending the road west and parallel to OR 22 as a frontage road, to serve residences and farms. Oak Grove Road's existing intersection with OR 51 would remain and is expected to be nearly in compliance with the quarter-mile spacing requirement to the end of the proposed interchange ramps.

SE Quadrant

The main difference between alternatives SE-1 and SE-2 is the connection point of a backage road to OR 51. SE-1 would use the existing McNary Street, but it is farthest away from the interchange, approximately ½-mile from the ramp end. SE-2 would be ¼-mile closer but would require a new road through floodplain and farmland until it (and SE-1) would connect to the old railway bed and right-of-way. Both SE-1 and SE-2 would require a bridge over McNary or Rickreall Creek. SE-2 would have more direct impacts on actively farmed land (blueberry field). Backage road SE-1 follows the railroad right-of-way and would provide branch roads running north to access business and commercial facilities adjacent to OR 22. .

SE-1 was modified and SE-3 (a frontage road) was developed under the most recent effort to address in more detail the southside access issues. Either alternative in combination with alternatives for Doaks Ferry Road (see next section) would also improve connectivity between north and south of OR 22. Both alternatives propose one or two right-in/right-out access points for eastbound OR 22 traffic. Both alternatives also could provide an optional right-out at the Eola Inn location, should that property be acquired by the County or ODOT. With a provision for eastbound access from OR 22, either connection to OR 51 south of the proposed interchange via SE-1 or SE-2 would have little advantage (except for westbound access via the interchange) that would justify the costs of new roadway and environmental impacts/mitigation. Two Doaks Ferry Road alternatives provide a potential westbound access: an interchange near College Drive farther east, and an undercrossing at Spring Street (see DFR-4 diagram in Appendix H).

SE-1 and -3 propose direct access to OR 22 at the RV Park driveway, about 1-mile distant from the current intersection with OR 51, and connect commercial/industrial properties, as well as some residences, fronting OR 22 to the west and east. Thus, with construction of the proposed OR 22/51 interchange, it is unlikely the spacing requirement of one-mile would be met (though close) and would require a spacing exception. Also considered was access at State Farm Road, an existing County road that is 0.14 miles closer to the proposed interchange. Another alternative to the RV

Park driveway would be a half-mile farther east on the southside of OR 22 opposite Shaw Street (this location was considered by ODOT in July 2004). An advantage of this OR 22 access for SE-1 is its proximity to the proposed Spring Street undercrossing and connectivity to the north side.

An advantage of SE-3 is that as a frontage road it provides the most direct and visible access to commercial and industrial zoned properties adjacent to OR 22. However, acquiring enough right-of-way for both the frontage road and potential widening of OR 22 to six lanes could be difficult in some locations. Topography especially is a constraint for SE-1 and SE-3 from the RV park area all the way to the Eola Inn. Additional detailed technical investigations and survey of the area, focusing on costs, geotechnical, and floodplain issues, would enlighten decisions regarding specific feasibilities of either alternative or more likely some combination of both.

6.2.4 OR 22 at Doaks Ferry Road

Three modified build alternatives were retained. All three would include a right-in movement to Doaks Ferry Road for westbound OR 22 traffic. Both alternatives DFR-2 and DFR-7 would maintain a connection to Doaks Ferry Road via an eastbound OR 22 left-in movement and would allow the existing right-in/right out movements. The right-in movement for DFR-2 at Doaks Ferry Road would include a new deceleration lane and provide less out of direction travel for westbound travelers. The left-out movement for DFR-2 and DFR-7 would be prohibited by signage and discouraged with a painted island and road realignment that would channel traffic more directly westbound. Trying to restrict left-out movements with a raised barrier, while still allowing left-in movements, could create additional safety problems from drivers attempting to avoid the barrier. Appendix H includes diagrams of these alternatives.

DFR-4 would provide an undercrossing farther west in the vicinity of Spring Street that would connect with backage roads NE-2 and SE-1. DFR-4 would keep the right-in only deceleration lane connecting to Doaks Ferry Road but eliminate the northside Riggs Street intersection and replace it with a southside intersection opposite Shaw Street. The south Shaw Street access would include deceleration and acceleration lanes for exiting and entering OR 22. South Shaw Street would connect with backage road SE-1, which would connect with the Spring Street undercrossing. Thus, the eastbound left-turn and westbound U-turn lanes near Riggs Street as proposed with DFR-2 would not be necessary.

In regard to mobility, the left-in movement is forecast to operate above capacity under either alternative within the planning horizon of 2030. DFR-2 improves safety because the left-in turn movement is relocated to a straight stretch of highway with improved sight distance. Impacts to the natural and built environment and business are greater with DFR-2 because of the necessity of constructing the new north backage road, adding a deceleration lane, and improving a local street. DFR-2 and DFR-4 alternatives would require comprehensive plan amendments to the County and MPO transportation plans; both alternatives could be a phase of larger project but not phaseable by itself. Regarding cost, DFR-7 requires only minor additions of pavement, signage, and paint. DFR-7 is essentially a slightly modified no-build alternative. DFR-4 would be the most costly alternative because of the undercrossing and likely would require an exception to access management spacing standards.

6.3 Stakeholder Comments

Appendix K provides a summary of previous stakeholder meetings from earlier efforts as well as for more recent efforts: a presentation was made to Polk County Commissioners in August and an open house held in November of 2007.

The open house on November 28 was structured to encourage community members to learn more about the proposed alternatives, which was posted at several stations. Approximately 38 people attended the open house, which had been publicized through a mailing to 95 households in the project vicinity. The open house was also announced to the local media with a press release that was distributed during the second week of November. The purpose of the open house was to review the previous work that had been completed on the project two years ago and the proposed alternatives for the key intersections along OR 22. The project team also encouraged the public to complete a comment form or write down their thoughts on flip charts which were around the room. Comments by attendees and responses by ODOT are included in Appendix K.

In summary, attendees of the open house were eager to see an overpass constructed at Greenwood Road to facilitate a safe crossing for farm equipment, school buses, and other vehicles. The need for an interchange at OR 22/51 to improve safety also was expressed. Support for maintaining a connection to Doaks Ferry Road and a tunnel was expressed, including phased improvements and the possibility of an interchange in the vicinity of College Drive. People commented that the system of frontage and backage roads was hard to understand what was being proposed, but not all of it was needed. Staying on the old railroad right-or-way was thought a good idea. Some people wanted additional enforcement on OR 22 to slow traffic.

CHAPTER 7

Recommendations

7.1 Decision Process

The process for making decisions about recommendations involved four steps. First, the ODOT Project Coordinator presented at a Polk County Commissioners meeting the problem statement and evaluation criteria developed by the Project Management Team (PMT), the screened alternatives, and evaluation results. Stakeholders and the public, including the Polk County Citizen Involvement Committee and many individuals who had been involved in identifying and discussing alternatives during earlier OR 22 planning efforts, were invited to attend the meeting and comment. Second, the PMT considered the public and County comments, revised the alternatives as appropriate, and re-evaluated the alternatives as necessary before deciding on a preferred alternative. Third, the PMT held a public open house to help discern the public's desires regarding proposed improvements and the draft plan recommendations. Fourth, the PMT considered the public comments and developed final recommendations (below) for inclusion in this OR 22 (W) Expressway Management Plan. The Open House reaffirmed earlier evaluation results and public preferences. Additional public input opportunities are available during the Polk County and OTC adoption processes.

7.2 Recommendations

It is important to note that the recommended projects on the State of Oregon transportation system that are included in the OR 22 – Greenwood Road to Doaks Ferry Road Expressway Management Plan are not guaranteed funding and implementation through inclusion in this document. They cannot be considered to be reasonably likely to be constructed during the planning horizon. Consequently, these projects cannot be relied upon to support plan amendments or zone changes and achieve compliance with Oregon Administrative Rule 660-012-0060 unless or until they are included in the adopted Statewide Transportation Improvement Program (STIP) or a specific funding source is identified and supported by ODOT in writing or a funding plan that is supported by ODOT in writing is developed. The projects recommended in this document simply represent state and local agreement about transportation system needs in the project area that have been identified through extensive analysis. The process of funding recommended projects through the STIP is discussed in greater detail in the Funding section of this report (Section 7.2.2).

The final recommendations of the Project Management Team address the problem statement and goals (Chapter 2) of this Expressway Management Plan and constitute the Preferred Alternative. The recommendations support and enhance the function of the expressway to meet the needs of safety, mobility, capacity, and access during the next 20 years. In addition, the recommendations would mitigate impacts to the natural and built environment and fund projects under a constrained scenario of reasonably available revenues.

Implementation of the preferred alternative, consistent with the function of an expressway, would close most points of direct access to OR 22 between the Derry Overcrossing (MP 16.94) and College Drive (MP 23.67) over the next 20 years. A system of frontage/backage roads on the north and south sides of OR 22 connected to a proposed grade-separated interchange at OR 22/51 would provide new alternate accesses to properties adjacent to the expressway. To address community concerns of out-of-direction travel and access to commercial properties on the north and south sides of the highway, as well north-south connectivity, one or two direct access points between intersections with OR 51 and Doaks Ferry Road are proposed to link to the frontage/backage roads. An overcrossing would be constructed at Greenwood Road. Access to Doaks Ferry Road from OR 22 would be relocated to the west, where the highway straightens. In addition, west of the intersection with OR 51 to the Derry Overcrossing, there would remain some existing and limited points of unimproved access to agricultural properties. (Details of the Access Management Plan are addressed later in this chapter under section 7.3). New signage along OR 22 would direct travelers to commercial/industrial areas and roadside attractions (e.g., the historic Brunk House) served by the frontage/backage roads. OR 22 would be widened from the existing four lanes to six lanes (three in each direction) as necessary to meet mobility standards.

Table 7-1 provides a summary of the preferred alternative of this EMP over the short-, medium and long-term.

Conclusions of the expressway planning study and details of the recommendations forming the preferred alternative are presented below.

1. **OR 22 Mainline.** There is a need under present and future forecast traffic conditions to increase the safety and mobility of the section of OR 22 from Derry Overcrossing to Doaks Ferry Road. As a designated Statewide Expressway and Freight Route, this section functions primarily to move regional and statewide traffic, with limited local access. However, several existing local access points in this section create safety problems and mobility impediments. Consolidation and eventual **elimination of local access** points and restrictions to turning movements through the **placement of a median barrier** would improve expressway operations in this section and are proposed improvements. **Widening to a six-lane section** as needed to maintain mobility standards is also a proposed improvement during the plan period.

2. **Greenwood Road Intersection.** There is a need to preserve north-south access at Greenwood Road for school buses and movement of farm machinery essential to support existing and planned land uses in the area. However, such movements under present traffic conditions require driver caution and patience, and future traffic conditions are forecast to have reduced traffic openings and increased risk of crashes at this location. Therefore, a **grade separation** for Greenwood Road at OR 22 is a proposed improvement; the overcrossing structure would be two lanes with wide shoulders to accommodate farm machinery. In addition, a **westbound right-in right-out frontage road** connecting to Greenwood Road, with a decel/accel lane on OR 22, would be constructed with the overcrossing as needed.

Table 7-1. Summary of Preferred Alternative			
Facility	**Short Term (<5 yrs)**	**Medium Term (5-10 yrs)**	**Long Term (10-20 yrs)**
Greenwood Road (GWR)	No change	Acquire right of way for north frontage road and overpass	Construct overpass (GWR-4b); construct decel/accel lane and north frontage road as needed (GWR-4a)
Independence Highway – OR 51 (INH)	Prepare environmental assessment and interchange area management plan	Acquire right of way for interchange; construct arterial upgrades, local connections, and highway realignments	Construct interchange ramps and structure (INH grade separation alternative to be determined through an Interchange Area Mgmt Plan)
Doaks Ferry Road (DFR)	The short-term goal is to eliminate the left-turn move from Doaks Ferry Road to EB OR 22. Initially, this may be accomplished with non-structural measures (i.e., signing and striping). Structural measures (e.g., raised median, channelization, etc.) may need to be implemented based on safety, driver performance and compliance with the non-structural measures (DFR-7)	Construct new access at Riggs Street; connect to backage road; close LI/RO at DFR, construct decel lane (DFR-2)	Realign DFR to a point west of the BPA substation and connect to OR 22 – likely with an interchange(DFR-6); construct undercrossing at Spring Street (option) (DFR-4)
NE Quadrant (first) of OR 22/51	Acquire right of way for backage roads	Construct backage road parallel to hwy (NE-2)	Upgrade as needed
NW Quadrant (third) of OR 22/51	Acquire right of way for backage roads	Construct backage road (NW-2)	Upgrade as needed
SW Quadrant (fourth) of OR 22/51	Acquire right of way for frontage road	Construct frontage road (SW-1)	Upgrade as needed
SE Quadrant (second) of OR 22/51	Determine combination and phasing of SE-1, -2, -3; acquire right of way for frontage/backage roads	Construct frontage/backage roads; improve RV park access	Upgrade as needed; construct access at south Shaw St. or vicinity (DFR-4); construct EB on-ramp at Eola Inn (option)
Mainline & Access (OR 22)	Work with landowners on access closure plans and new connections	Install continuous median barrier as feasible; close accesses; connect to frontage/backage roads	Acquire right of way for lane additions; construct additional lanes as needed; install additional barrier

Note: EB = East Bound; WB = West Bound; RI/RO = Right In/Right Out; LI/LO = Left In/Left Out

3. **OR 51 Intersection.** There is a need to improve safety at the intersection of OR 22 and OR 51 under present conditions, as well as a need to improve mobility under future no-build traffic conditions. The existing multi-use path should be retained and incorporated

into improvements, as well as possible public transit improvements. Only a grade-separated interchange, constructed consistent with the mitigations and protections of an approved environmental assessment (EA) and interchange area management plan (IAMP), would provide the standard for safety and mobility, and is a proposed improvement.

4. **Local Access.** There is a need to provide a reasonable level of traveler access to commercial/industrial properties adjacent to OR 22 and local resident access to the highway for commuting. Construction of a **system of frontage and backage roads** would create new and consolidated local access and enable closure of existing access directly from OR 22 between Rickreall Road and Doaks Ferry Road. These roads would accommodate pedestrians and bicycles as well as vehicular traffic. Such local system improvements would provide opportunities for property development as well as support the function of the expressway and proposed OR 22/51 interchange during and after construction, and are proposed improvements on both sides of OR 22. Potential access points include Doaks Ferry Road, Riggs Street, the RV park driveway, and south Shaw Street (or vicinities).

5. **Doaks Ferry Road Intersection.** There is an existing need to improve safety at the intersection of OR 22 and Doaks Ferry Road, which was a Safety Priority Index System (SPIS) site for 2004-2006. Doaks Ferry Road is in an area planned for additional residential development and provides eastbound OR 22 travelers a short-cut to the West Salem area. Doaks Ferry Road is a major arterial that provides many local area residents access to OR 22 for travel eastbound and westbound. OR 22 used to provide traveler access to Holman State Wayside until the park facility was closed permanently in November 2007. To increase safety in the short-term while maintaining the utility of Doaks Ferry Road to serve the needs of local residents until an interchange/backage road connection to Doaks Ferry Road is constructed, the existing **eastbound left-in turn refuge should be retained**. The existing westbound **right-in and right-out turning moves also would be retained until an interchange/frontage road connection is constructed.** However; **left-out turns should be prohibited** from Doaks Ferry Road onto OR 22. This could be accomplished in the short-term by placement of signage, striping, and painted channelization islands. Based on driver performance and compliance with the non-structural measures, it may be necessary in the short-term to install structural measures (e.g., raised median, channelization) to physically eliminate the left turn movement. ODOT and Polk County will review safety records two years after non-structural measures are installed to determine of they are effective. Medium- and long-term improvements involve constructing a backage road (2nd Street), **relocating OR 22 access** to Riggs Street, constructing an undercrossing in the vicinity of Spring Street, and pursuing development of an interchange just west of College Drive with a new connection to Doaks Ferry Road.

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6. **Future Capacity.** There is a need under future forecast traffic volumes on OR 22 to provide additional capacity. Because the expressway in this section carries mostly regional traffic, transportation demand management strategies, such as additional transit facilities, would be ineffective and **additional lanes (one in each direction)** would be needed to meet mobility standards. Provision of a **transit park-and-ride area** in association with the OR 22/51 interchange should be considered during interchange planning. To preserve the potential and reduce the costs for constructing additional lanes in this section of OR 22, as

well as a system of frontage/backage roads, **acquisition of adequate right-of-way as soon as possible** by state and local governments is a proposed action. In addition**, no new accesses** shall be allowed unless approved by the Region Access Management Engineer.

7. **<u>Implementation.</u>** There is a need for state and local governments to work together to plan and implement improvements to this section of OR 22. A possible phased implementation of improvement is shown in Table 7-1. **Intergovernmental cooperation**, including agreements, land use actions, environmental analysis, traffic monitoring, access management, financing, and coordinated implementation schedules are proposed actions. Improvements over the project plan period (2007-2030) could ultimately result in a continuous median barrier from west of Greenwood Road to east of Doaks Ferry Road. an overpass for Greenwood Road, an interchange at OR 22/51, multimodal frontage and backage roads on both sides of the highway, and an undercrossing at Spring Street. Residential development in the hills east of the project area could create strong pressures for an interchange near College Drive. Construction of a system of frontage and backage roads in the project area would provide improved local circulation, a connection to OR 22 and OR 51 as well as access to local residences and businesses. Proposed actions **short-term** (<5 years) are acquisition of right-of-way, an intergovernmental agreement (IGA) and cooperation for local system improvements, environmental analysis, and land use actions (including TSP amendments and an IAMP), and development of a phased funding strategy from multiple sources (local, state, federal) so projects may appear on a constrained capital improvements list. Polk County, along with ODOT, SKATS, and the City of Salem as appropriate, would review land use development proposals to ensure that development in the area did not impinge on land needed for the planned highway facilities nor create excessive demands on the transportation system beyond those forecast.
8. **<u>Funding.</u>** There is a need to cost-effectively make improvements to OR 22 under a constrained-revenue forecast. A coordinated, phased implementation of improvements would provide a strategy to secure **construction funding from multiple sources** and is a proposed action.

Additional details for developing and funding the improvements and protecting the function of the expressway through access management are discussed below.

7.2.1 Phasing Strategy

Construction of the OR 22/51 interchange would severely disrupt normal traffic flow along the OR 22 mainline. Construction detours would be required. The existing local road system is not designed to handle the volume of traffic diverted from OR 22. Therefore, it makes sense to first build the local system of frontage/backage roads as detour routes that would be ultimately connected to the interchange. Acquisition of right-of-way would be an early development activity in the NE, NW, and SW quadrants. Development would proceed sequentially through four phases, the first three including environmental evaluation and permitting, engineering design, right-of-way acquisition, and construction work (as similarly proposed by W&H Pacific, Appendix G). The order of construction would be:

- Phase 1: NE Quadrant Backage Road and Doaks Ferry Road Improvements
- Phase 2: NW & SW Quadrants Backage Roads

- Phase 3: SE Quadrant Frontage/Backage Roads
- Phase 4: OR 22/51 Interchange Construction

Construction of improvements to the intersection with Greenwood Road would proceed as traffic volume increases on OR 22 and funding becomes available. Construction of a new interchange at College Drive and/or an undercrossing at Spring Street similarly would proceed as development proposals are made in the area, traffic impacts are assessed, and funding becomes available. These projects, prior to construction, would first go through phases involving environmental evaluation and permitting, engineering design, and right-of-way acquisition.

7.2.2 Funding Strategy

This EMP will be adopted as part of the SKATS Regional Transportation System Plan (RTSP). Proposed projects along OR 22 that are east of Oak Grove Road are within the MPO planning boundary (SKATS). Funding for these RTP projects must be based upon revenue levels that can reasonably be expected to be available. This is a federal requirement that also requires consideration of the need to adequately maintain and operate the transportation system with a portion of available revenues. The State of Oregon requires that the RTSP adequately serves the land use plan of the jurisdiction (Polk County) that is supported by a financing strategy that supports implementation of the plan. As projects are proposed for inclusion in the RTSP, other projects may be deleted or taken to a lower priority level if revenue expenditures are at the maximum. Otherwise, funding strategy must include actions to raise additional revenue, with reasonable expectation of availability, from federal, state, regional, and local sources. Appendix I includes a benefit/cost analysis for the intersection alternatives.

The 2031 RTSP contains a list of projects for which funding is reasonably anticipated over the 24-year life of the plan. A significant funding shortfall is anticipated. All non-transit project costs total $937 million, while only $436 million in regional revenues are reasonably anticipated, leaving a deficit of $501 million.

The SKATS Transportation Improvement Program FY 06-09 includes funding for the EA and right-of-way in 2009 in the amounts of $108,862 State Highway funds, $286,136 Polk County funds, $951.138 NHS funds, and a $2.5 million SAFETEA-LU earmark.

The W&H Pacific report estimated total permitting, design, and construction costs (in 2005 dollars) for each of the phases of the OR 22/51 interchange. Adjusted for inflation (2007 dollars), these costs would total $34.78 million, broken down as follows:

- Phase 1: Northeast Frontage/Backage Road Improvements - $4.88 million
- Phase 2: Northwest and Southwest Frontage/Backage Road Improvements - $5.19 million
- Phase 3: Southeast Frontage/Backage Road Improvements - $6.15 million
- Phase 4: Interchange Construction - $18.56 million

In 2004, ODOT estimated the cost (adjusted for inflation in 2007 dollars) of an overcrossing at Greenwood Road to be approximately $4 million to span a future possible six lanes. Most recently for this EMP, CH2M HILL prepared a conceptual-level cost estimate (in 2007 dollars) of the refined alternatives:

DFR-2	$ 1,215,448
DFR-4	$ 5,518,000
DFR-7	$ 516,683
GWR-3	$ 65,320
GWR-4a	$ 5,879,760
GWR-4b	$ 5,855,760
GWR-6	$ 1,584,242
INH-3	$17,553,910
INH-4	$16,248,370
INH-5	$18,932,480
INH-6	$18,645,200

North Backage Roadways (NE + NW)	$ 5,361,467
South Frontage/Backage Roadways (SE + SW)	$ 5,240,825

Thus, total cost of all phases (INH-5 + quadrant frontage/backage roads) of the OR 22/51 interchange project in 2007 dollars is estimated to be $29.54 million. Appendix I includes ODOT's Benefit/Cost calculation sheets based upon the above estimates for the alternatives.

Across the state, local jurisdictions have been delaying maintenance because of funding shortfalls, creating an overwhelming need for maintenance. Thus, maintaining the existing transportation system is a priority over building new facilities. Local jurisdictions have been integrating federal funds into their local plans, leaving inadequate funding for modernization projects unless the state or local jurisdictions develop other funding sources that would release federal funds. The region has two ways to receive federal funding: programs and earmarks.

Potential locally generated revenue sources that could help fund projects proposed in this EMP include municipal bond financing, system development charges, local fuel taxes, vehicle registration fee surcharges, transportation utility fees, property tax levies, and tolls.

At the state level, ODOT conducted a transportation needs analysis in 2005 that revealed a transportation funding shortfall for all highway related programs. Current annual needs are $1.27 billion versus a current annual funding level (including federal funds) of $786.5 million, yielding an annual funding gap of $480.5 million (2004 dollars). Beyond the identified needs, ODOT also has identified other critical investments, which do not currently include the proposed improvements of this EMP.

As noted earlier in the OR 22/Greenwood Road to Doaks Ferry Road Expressway Management Plan, the improvements listed in the Recommendations Section (Section 7.2) are not guaranteed future funding and cannot be considered reasonably likely to be funded during the identified planning horizon for purposes of addressing OAR 660-012-0060. For recommended projects to be considered reasonably likely to be funded during the identified planning horizon, they must either be selected for inclusion on the STIP, associated with a specific source of funding that is supported by ODOT in writing, or identified in a funding plan that is supported by ODOT in writing. The STIP is a project scheduling and funding document.

Unlike project lists contained in the STIP and Metropolitan Transportation Improvements Program (MTIP), the Expressway Management Plan project list is not required by federal or state laws to be "fiscally constrained". Fiscal constraint is defined as a *"demonstration of sufficient funds (federal, state, local, and private) to implement proposed transportation system improvements, as well as to operate and maintain the entire system, through the comparison of revenues and costs."*[1] This means that this plan can provide a single comprehensive list of regional transportation improvement needs and associated costs without having to provide a fiscal rationale as to how the respective projects will be funded. However, with this rationale, the projects cannot be used to support local land use changes.

The OR 22/Greenwood Road to Doaks Ferry Road Expressway Management Plan recommendations, therefore, act only as a reference for regional and local officials Polk County and SKATS to consult when (1) considering projects to propose to the State for inclusion in the STIP, (2) developing priorities for local funding, (3) determining project needs associated with private development proposals, and (4) determining projects needed to support publicly initiated plan amendments and zone changes. Because the cost of needed transportation improvements across the state far exceeds available funds, state officials must decide what projects to fund on the state system, through inclusion in the STIP, based on a thorough evaluation of all projects proposed statewide. This evaluation and process is detailed in the *STIP User's Guide* (ODOT, 2003).[2]

7.3 Access Management Plan

The intent of this AMP is to balance the local land use and economic development goals with state access management requirements to ensure that planned highway improvements will serve local needs and meet state standards. The goal of this AMP is to meet access management spacing standards—and at the very least to improve current conditions by moving in the direction of the access management spacing standards (Appendix C). Some access management measures need to be implemented near-term or when an improvement is constructed; others can be added later as conditions change. Appendix L is a table describing how the Access Management Plan of this OR 22 (W) Expressway Management Plan complies with the provisions of OAR 734-051-0155.

7.3.1 Plan Implementation

Existing accesses and proposed medium- to long-term actions are listed in Table 7-2 and shown in Figures 7-1 and 7-2.

[1] Source: Federal Highway Administration web page: http://www.fhwa.dot.gov/planning/fcdef62805.htm
[2] STIP User' Guide available on-line at: http://www.oregon.gov/ODOT/TD/TP/stipGuide.shtml

Table 7-2. Medium- to Long-Term OR 22 Access Management				
No.	**MP**	**Type**	**Comments/Land Uses Served**	**Proposed Action**
26	21.94 N	curb cut	Small business	Close – Provide access via new backage road.
27	21.93 N	curb cut	SF home adjacent to small business	
28	21.91 N	curb cut	Approach to back side of SF home – does not appear used	Close – Provide access via new backage road.
29	21.89 N	curb cut	Small RV (trailer) park and SF residence	Close – Provide access via new backage road.
30	21.86 N	radius	Shaw St.	Close – Provide access via new backage road.
31	21.79 N	radius	Mill St. – leads to school	Close – Provide access via new backage road.
32	21.76 N	curb cut	SF home with storage (junk) adjacent	Close – Provide access via new backage road.
33	21.73 N	curb cut	Access to adjacent (junk) storage	
34	21.66 N	radius	Riggs St. – extends well up the hill	Keep – Left In/Right In/Right Out
35	21.59 N	curb cut	Field access and adjacent SF home – uses short frontage road	Close – Provide access via new backage road.
36	21.52 N	curb cut	Eola Florist shop	Close – Provide access from new backage road.
37	21.50 N	curb cut	Florist access and SF home	
38	21.44 N	curb cut	Field access – gated	Close – Provide access from new backage rd.
39	21.29 N	curb cut	Approach to ditch, no property access	Close – Provide access via new backage road.
	21.19N		State Farm Road/50th Avenue	Close
40	21.07 N	curb cut	Knorr Plant – some truck activity	Close – Provide access via new backage road
41	21.01 N	curb cut	SF home	Close – Provide access via new backage road.
42	20.97 N	curb cut	Bob Cat sales lot and possible home up the hill	Close - Provide access via new backage road
43	20.95 N	curb cut	Roofing small business and home	Close – Provide access via new frontage road
44	20.93 N	curb cut	Field access – does not look used	Close – Provide access via new backage road
45	20.90 N	curb cut	SF home and field access	Close – Provide access via new backage road
46	20.87 N	curb cut	Field access – does not look used and adjacent to 52nd Ave.	Close – Provide access via new backage road.
	20.84N		52nd Ave. NW	Close – Provide access via new backage road.
47	20.46 N	curb cut	Field access – does not look used	Close
48	20.33 N	curb cut	Brunk House – historic property and field access	Close (Access off of Oak Grove Rd)

Table 7-2. Medium- to Long-Term OR 22 Access Management				
No.	**MP**	**Type**	**Comments/Land Uses Served**	**Proposed Action**
	20.03N		Oak Grove Rd.	Close
49	19.74 N	curb cut	Oak Knoll golf course – and SF home on east property	Close (Rt. In / Rt. Out)
50	19.51 N	radius/paved apron	Gated unused back entrance to Driving range	Close (Now Rt. In / Rt. Out)
51	19.15 N	paved apron	SF home w/ gate (possibly illegal approach)	Keep – Right In/Right Out Only
	18.61N		Greenwood Rd.	Keep – Right In/Right Out Only
52	18.42 N	paved apron	Field access – far east end of string of fields	Keep – Right In/Right Out Only
53	18.06 N	paved apron	Field access	Keep – Right In/Right Out Only
54	17.87 N	gravel	Field access	Close One. (Now Rt. In / Rt. Out)
55	17.49 N	paved apron	Field access	
56	17.31 S	paved apron	Field access	Close One. (Now Rt. In / Rt. Out)
57	17.88 S	paved apron	Field access	
58	18.24 S	paved apron	Field access – just west of guardrail for overflow structure	Keep – Right In/Right Out Only
	18.61S		Greenwood Rd.	Overcrossing
59	18.98 S	paved apron	Field access – field extends south to Old Rickreall Rd.	Close – access off of Old Rickerall Rd.
	19.2 S		Old Rickreall Rd.	Keep – Right In/Right Out Only
60	19.58 S	curb cut	Field access and SF home – utilizes short frontage road	Close – access via new roadway from 19.63 drwy.
61	19.63 S	curb cut	2 SF homes – large properties	Keep – Right In/Right Out
62	19.75 S	curb cut	SF home – large property	Close – access via new roadway from 19.85 drwy.
63	19.85 S	curb cut	Driving range and 2 SF homes – utilizes short frontage road	Keep – Right In/Right Out
	20.37 S		Hwy 51 Connection	Interchange
64	20.29S	curb cut	Field access – corner lot of Independence Hwy.	Close – access from Independence Hwy.
	20.49 S		Hwy 51 (Independence Hwy.)	Interchange
65	20.55 S	curb cut	Gas station – (MP eq. 20.56 = 20.75)	Close – Provide access via a new frontage road.
66	20.77 S	curb cut	Gas station – shared with adjacent business	Close – Provide access via a new frontage road.
67	20.79 S	curb cut	Small business – shared approach with adjacent properties	Close – Provide access via a new frontage road.
68	20.81 S	curb cut	Small business – shared approach (business looks closed)	Close – Provide access via a new frontage road.
69	20.83 S	curb cut	SF home	Close – Provide access via a new frontage road.

Table 7-2. Medium- to Long-Term OR 22 Access Management				
No.	**MP**	**Type**	**Comments/Land Uses Served**	**Proposed Action**
70	20.85 S	radius/ paved apron	Field access	Close – Provide access via new frontage road.
71	20.93 S	paved apron	Fruit stand, espresso stand, antique shop – large open frontage access	Close – Provide access via new frontage road.
72	21.03 S	paved apron	Field access with some buildings back part of property	Close – Provide access via new frontage road.
73	21.03 S	paved apron	Gas station – commercial filling access	Close – Provide access via new frontage road.
74	21.06 S	paved apron	Gas station	Close – Provide access via new frontage road.
75	21.06 S	paved	Begin Pipe Inc. property – open frontage extends to MP 4.05	Close – Provide access via new frontage road.
76	21.09 S	paved	Gated access for visitor, customer, and truck access – used	
77	20.11 S	paved	Gated access – closed does not look used	
78	20.13 S	paved	Building 1A and jump scales, some parking next to building	
79	20.14 S	paved	Exit from large scale	
80	21.20 S	paved apron	State Farm Road, access to Pipe Inc. storage and scales, truck access – road is public owned by county, but does not look like a road	Close? (Possible alternative to No. 81 and new backage road connection) Right In/Right Out Only.
81	21.34 S	paved apron	RV park, church, Pipe Inc. offices, and back door to Pipe Inc. storage	Keep – Right In/Right Out Only
82	21.68 S	paved apron	Several small industrial type businesses	Close? (Possible alternative to No. 83 and new frontage/backage road connection) Right In/Right Out Only
83	21.86 S	paved apron	Serves 2 properties both with gates, does not look heavily used	Keep – Right In/Right Out Only (Connection to new backage road)
84	21.93 S	paved apron	3 SF homes – served with private road	Close – Provide access via new frontage road.
85	21.99 S	paved apron	Salem Yacht club and SF home	Close – Provide access via new frontage road.
86	22.05 S	paved	First delineated approach to Eola Inn – generally open frontage with small curb island channelizing approaches	Close – Provide access via new frontage/backage road. Possible on-ramp from new frontage/backage road.
87	22.06 S	paved	2nd Eola Inn approach	

Note: For locations, see Figures 7-1 & 7-2. Numbers (No.) start at 26 as derived from a larger table.

The long-term plan is to eliminate all approaches where reasonable alternative access is or can be made available to serve the current and or planned use of the property, or through purchase of the property, if needed. These measures would correspond to construction of grade separations.

The medium-term plan is to construct a system of public frontage and backage roads that connect to OR 22 and OR 51 and Doaks Ferry Road, and which provide access to properties presently having approaches directly on OR 22. Median breaks would be eliminated during the medium-term, except at Greenwood Road, OR 51, and Riggs Street; in addition, there is a potential U-turn location for westbound to eastbound traffic at 50th Avenue/State Farm Road.

The short-term plan is to evaluate and install a median barrier with breaks at appropriate locations to serve traffic wishing to access properties on the opposite side of the expressway. Approaches to OR 22 that do not have reasonable alternate access to the local roadway network would be restricted to right in/right out only, where it serves the current or planned use of the property. Approaches would be planned for elimination by design of public access roads. Another short-term activity is to develop an access management plan specifically for the proposed interchange at OR 22/51.

7.3.2 Access Management Strategies

This AMP includes strategies to provide and manage access to and from properties in ways that preserve the safe and efficient flow of traffic on the state highway. AMP strategies include applying standards for spacing between intersections, driveways and ramps; consolidating or closing driveways; and restricting vehicular turning movements. Properties may be acquired when reasonable access cannot be provided. Appendix C of the Oregon Highway Plan provides access management spacing standards in tables and figures, as described below.

Interchanges on NHS expressways shall be spaced a minimum of 3 miles in rural areas and 1.9 miles in urban areas (OHP Table 12—Appendix C). The proposed interchange at OR 22/51 (MP 20.37) would be 4.25 miles from the next nearest interchange at OR 22/99W (MP 16.12). A new interchange near College Drive in the urban area would be approximately 3 miles from the OR22/51 interchange. The overcrossing project at Greenwood Road does not fit the definition of an interchange.

Access management spacing standards for statewide highways posted for 50-55+ mph is 5,280 feet for a rural expressway and 2,640 for an urban expressway with at-grade intersections (OHP Table 13—Appendix C).

An interchange at OR 22/51 would require 1,320 feet from the end of the offramp to the nearest approach road (see Table 18 and Figure 20—Appendix C). From the end of the onramp to the nearest approach road requires 5,280 feet (1 mile) in an urban area and 2 miles in a rural area. By the time of implementation of long-term improvements, it is possible the OR 22 segment between Doaks Ferry Road and OR 51 would be in an urban area. The Region Access Management Engineer can allow deviations to these standards under exceptional conditions. An Interchange Area Management Plan and Interchange Access Management Plan, including an access inventory by quadrant, will be prepared prior to approval of construction funds.

Direct access to OR 22 at the RV Park driveway (MP 21.34) is presently about 1-mile distant from the current intersection with OR 51 (MP 20.37). Thus, with construction of the proposed

INSERT FIGURE 7-1 ACCESSES WEST 11x17

Figure 7-1

Driveway Locations West of Oak Grove Road

LEGEND

- Study Area
- Highways and Roads
- Creeks and Streams
- Willamette River
- Counties
- Open Access
- Access to be Closed

SOURCE: POLK COUNTY GIS
ODOT Right of Way Section

N

0 500 1,000
Feet

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FIGURE 7-2 ACCESSES EAST 11x17

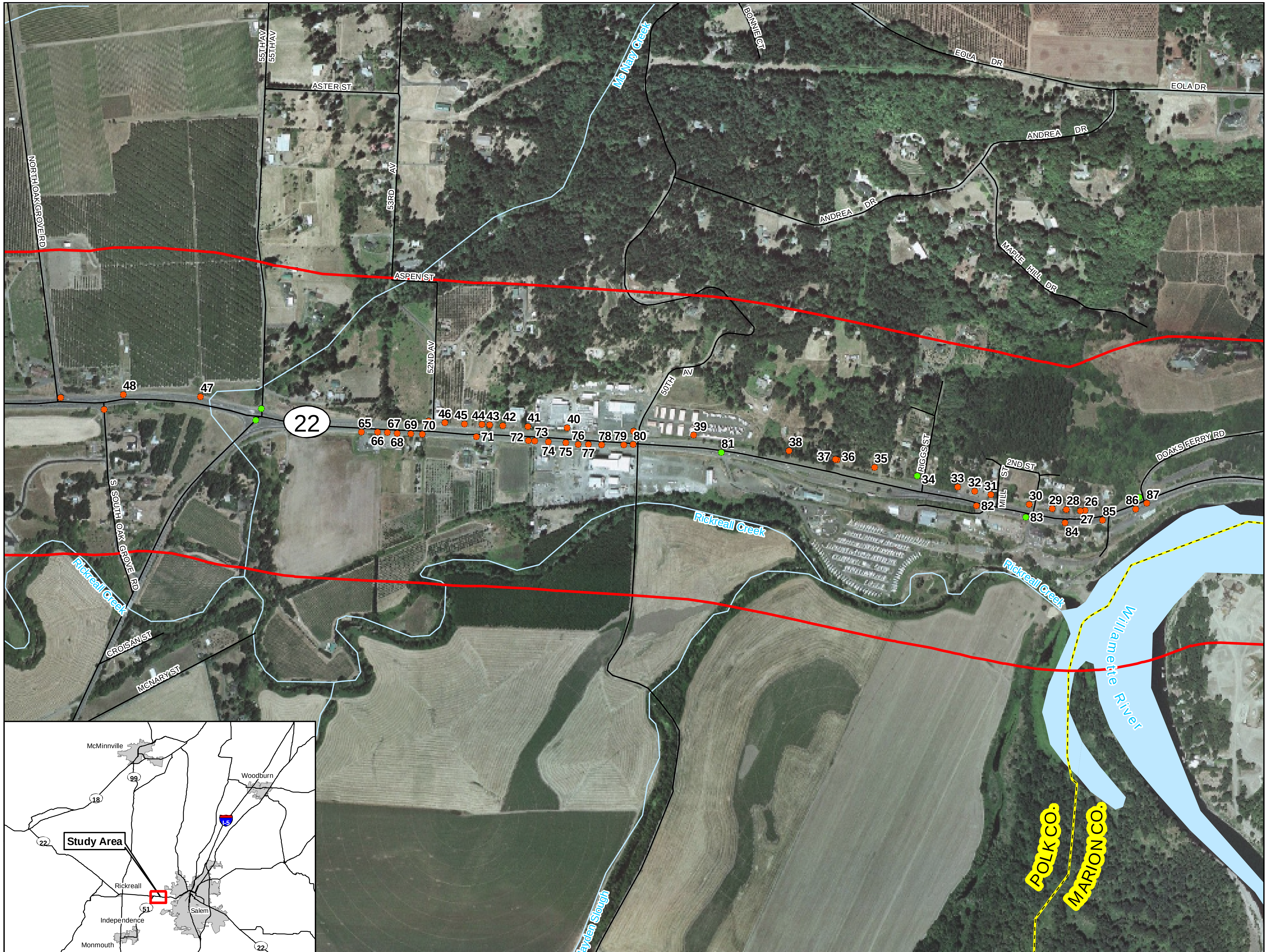

Figure 7-2

Driveway Locations East of Oak Grove Road

LEGEND

- Study Area
- Highways and Roads
- Creeks and Streams
- Willamette River
- Counties
- Open Access
- Access to be Closed

SOURCE: POLK COUNTY GIS
ODOT Right of Way Section

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OR 22/51 interchange, it is unlikely the spacing requirement of one-mile would be met (though close) and would require a spacing exception. An alternative location at State Farm Road, an existing County road, would be 0.14 miles closer to the proposed interchange. Another alternative to the RV Park driveway would be a half-mile farther east on the southside of OR 22 opposite Shaw Street (MP 21.86). On the northside of OR 22, an approach at Riggs Street (MP 21.66) would likely be close to meeting the spacing requirement.

Under these scenarios, and without an exception to standards, the approaches described in the Table 7-2 and shown in Figures 7-1 and 7-2 would be closed or restricted with implementation of the Access Management Plan and construction of an OR 22/51 interchange.

Access control either exists or will be purchased with new right-of-way within the operating area of each alternative. The Polk County zoning ordinance (112.175) establishes access spacing for arterials, specifically 1,200 feet between driveways on OR 22 and 500 feet on OR 51, and 1-3 miles for county or public use roads along OR 22 and 0.5 mile for OR 51 (Appendix C).

If any redevelopment proposals, or any proposals to change the comprehensive plan designations of residential or commercial parcels within the study area, are received, Polk County should look for opportunities to relocate approaches off of OR 22. Some existing accesses to single family homes and commercial properties may be limited to right-in/right-out movements if no reasonable alternative can be made available.

Deleted: ~~Polk County should limit any access requests into the adjacent EFU property to those uses allowed by the EFU Zone and any associated limited overlay zone only. ODOT and Polk County will also need to take whatever policy or ordinance measures are needed to ensure that any future accesses to the EFU property are limited to farm use only. Existing field accesses may be required to be gated, if not already, and limited to right-in/right-out movements if no reasonable alternative can be made available.¶~~

Polk County also should consider opportunities to close or relocate public or private approaches to OR 22 upon property redevelopment or road improvements, if reasonable alternate access off local streets can be made available to reasonably serve the planned use of the property.

A subsequent Interchange Area Management Plan (IAMP) and Access Management Plan must be developed and adopted by the Polk County and the Oregon Transportation Commission for the OR 22/51 interchange before completion of the Environmental Assessment.

OHP Policy 3C requires preparation of an IAMP that addresses land use and transportation factors when a new interchange is built. OAR 734-51-155 (Appendix C) also requires preparation of an IAMP and specifies what an IAMP should address. OAR 734-51-125 (1)(c)(C) requires that a new interchange project improve spacing and safety standards by moving in the direction of access management spacing standards with the goal of meeting or improving compliance with the access management spacing standards. The Region Access Management Engineer may grant deviations from these standards.

CHAPTER 8

Next Steps

8.1 Adoption and Implementation

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Adoption and implementation of the OR 22 (W) Expressway Management Plan will occur at several levels of government. After Polk County incorporates the EMP into its comprehensive plan and Transportation System Plan and SKATS adopts the EMP as a refinement element of the RTSP, the EMP will be presented to the Oregon Transportation Commission (OTC) for review and approval and adoption as an ODOT facility plan. With adoption of this OR 22 (W) Expressway Management Plan (Derry Overcrossing to Doaks Ferry Road), the Oregon Transportation Commission (OTC) is approving a facility plan that implements the Expressway designation described in the Oregon Highway Plan.

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Regulatory authority determines implementation of this EMP. Local agency authority comes from and through state statutes, city and county comprehensive plans, and development codes. State of Oregon authority comes in the form of policy and administrative rules governing authority over federal and state systems, as granted through the following:

- *State Agency Coordination (SAC) Rule and Agreement (SAC 1990 – OAR 731-015).* The purpose of this rule is to define which ODOT actions are land use actions and how ODOT will meet its responsibilities for coordinating those activities with the statewide land use program, other state agencies, and local government.

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- *Transportation Planning Rule (OAR 660-012).* The TPR is one of several statewide planning rules that protect the long-term livability if Oregon's communities for future generations. The rule requires multi-modal transportation plans to be coordinated with land use plans. In satisfying the goal, state and local governments must satisfy requirements that lead to the implementation of a transportation system that functions consistent with the planned land uses.

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- *Access Management Administrative Rule (OAR 734-051).* This rule applies to the locations, construction, maintenance, and use of approaches onto the state highway rights-of-way and properties under the jurisdiction of ODOT. These rules also govern the closure of existing approaches, spacing standards, medians, deviations, the appeal process, grants of access, and indentures of access.

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8.1.2 ODOT/State of Oregon Implementing Actions

ODOT/State of Oregon will perform the following actions:

1. After adoption of the EMP by Polk County, ODOT will submit the EMP to the Oregon Transportation Commission for adoption as an ODOT facility plan.

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2. ODOT, in concert with local government, shall develop an Interchange Area Management Plan (IAMP) for the OR 22/OR 51 intersection prior to, or concurrent with, completion of the environmental analysis for the project, which shall be consistent with the Oregon Highway Plan and following the provisions of OAR 731-051-0125 and 0155 and OAR 734-051-200 to protect resource lands, exception lands, and the safety and efficiency of the interchange and connecting roadways.

3. ODOT, in concert with local governments and the FHWA, shall conduct an environmental assessment (EA) for the OR 22/51 interchange project following the provisions of the National Environmental Policy Act.

4. ODOT shall apply for any required conditional use permits by Polk County necessary for /implementation of the EMP.

8.1.3 Polk County Implementing Actions

Polk County already has taken the following actions that support implementation of this EMP:

1. Polk County has adopted provisions called for in ORS 215.283 (3) and OAR 660-12-065 into its zoning ordinance. These provisions require ODOT to obtain a conditional use permit to replace at-grade intersections with interchanges. ODOT shall apply for this permit from Polk County using information from this plan and others, and the project development process. This permit must be approved prior to project construction.

2. Polk County has adopted an enhanced ODOT notification process by ordinance to ensure that ODOT is involved as early as possible in the assessment of any redevelopment or new development proposal with a trip generation potential that significantly exceeds the assumed levels.

3. Polk County has adopted a zoning ordinance (112.175) regulating access distances for state highways: 1,200 feet spacing for driveways on OR 22, and 1-3 miles for county or public use roads.

Polk County will perform the following additional actions:

1. Polk County shall adopt the OR 22 (W) Expressway Management Plan.

2. Polk County shall adopt comprehensive plan and ordinance amendments and other actions called for by the OR 22 (W) Expressway Management Plan.

3. Polk County will support ODOT and OTC adoption of the EMP.

4. Polk County agrees to accept and process any conditional use permits or other land use applications necessary to implement provisions of this EMP.

8.1.3 Salem Keizer Area Transportation Study Implementing Actions

1. Include applicable EMP-identified transportation system physical improvements on regional facilities initially in the SKATS RTSP "Illustrative Project List" and then move

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Deleted: <#>Polk County shall adopt the Interchange Area Management Plan and incorporate it into the Polk County Transportation System Plan. ¶
<#>Polk County will formalize its commitment in its Capital Improvements Program to fund construction of the local streets parallel to OR 22 and connecting with the interchange (system of frontage/backage roads). ¶
<#>The Interchange Area Management Plan shall be presented to the OTC for review and approval before funds for construction are released.¶

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them to the “Financially Constrained Committed or Included Projects” lists when funding is assured.

2. Adopt the EMP as a refinement element to the SKATS RTSP.
3. Support ODOT and OTC adoption of the EMP.

8.2 OHP Compliance

OR 22 (W) Expressway Management Plan Compliance with the 1999 Oregon Highway Plan

The 1999 Oregon Highway Plan (OHP—with amendments 1999-2006) contains policies with which local and regional transportation system plans must be consistent. Not all of these policies are relevant to the OR 22 (W) Expressway Management Plan. This overview addresses only those policies and associated actions that are relevant to this Plan.

Policy 1A requires the State to develop and apply the state highway classification system to guide ODOT priorities for system investment and management. **Action 1A.1** directs ODOT to use the categories of state highways listed under that item to guide planning, management and investment decisions regarding state highway facilities. ODOT has done so as part of this project. OR 22 is a statewide highway, freight route, and truck route from milepoint 0.00 to 25.97 inclusive of the study area, which under Action 1A.1 is intended to provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports and major recreation areas not directly served by Interstate Highways. OR 22 also is designated an expressway from milepoint 12.72 to 26.14. Within the study area, OR 22 is the Willamina-Salem Highway (State Highway No. 030) and connects to OR 51, the Independence Highway (State Highway No. 193), which is designated by the OHP as a highway having a District level of importance. OR 51 serves as a farm-to-market route for agricultural interests and support route for rural resource industries. Commuters also use the route to travel between Monmouth, and Independence to Salem (or vice-versa). Regionally, OR 22 provides mobility between Salem and Interstate 5 and OR 18, another statewide highway that connects to the central Oregon Coast. OR 22 also connects to OR 99W, a regional highway that provides mobility between the McMinnville area and Corvallis and Eugene to the south. OR 22 also provides a connection to Bend and Central Oregon. The transportation need for the improvement projects described in this plan includes the need to improve safety and operations along the OR 22 mainline, and especially at the intersections with Greenwood Road, OR 51, and Doaks Ferry Road. While the 1999 Oregon Highway Plan (OHP) mobility standards are currently being met in most locations, it is expected that traffic volume growth will reduce operations below these standards at some intersections within the 20-year planning horizon (year 2030). It is expected that safety will become a bigger issue in the future as traffic volumes and congestion increase on this highway. The identified OR 22/51 interchange project and other improvements identified in this plan will enable these highways to perform their designated functions, in compliance with operational and safety objectives, through the 2030 planning horizon.

Policy 1B recognizes the need for the State to work together with local governments to provide safe and efficient roads for livability and economic viability for all citizens, including collaborative work in planning and decision-making relating to transportation system

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<#>Any deviations to OAR Division 51 access management standards as may be included in the IAMP required for the OR 22/51 interchange will be evaluated using the provisions of OAR 734-51-0135 and approved by the Region Access Management Engineer.¶
<#>Polk County shall adopt the OR 22 (W) Expressway Management Plan. ¶
<#>Polk County shall adopt comprehensive plan and ordinance amendments and other actions called for by the OR 22 (W) Expressway Management Plan or OR 22/51 IAMP. ¶
<#>ODOT shall apply for and be granted any required conditional use permits by Polk County. ¶
<#>The OTC shall adopt the OR 22 (W) Expressway Management Plan and IAMP. ¶
8.2 OR 22 (W) Expressway Management Plan Adoption and Implementing Actions¶
The Polk County Transportation System Plan (TSP) identifies a number of conceptual road construction projects, including the construction of an interchange at the OR 22/51 intersection, associated frontage roads on both side of the highway between 52nd Ave. and Oak Grove Road, and a grade separation of OR 22 and Greenwood Road with no highway access. A Polk County TSP amendment is required to authorize the median treatments proposed for Greenwood Road and Doaks Ferry Road identified in the OR 22 (W) Expressway Management Plan. A variety of existing Polk County TSP policies and ordinance provisions will safeguard the operation of any improvements made to these intersections. These policies and provisions are shown in Appendix G of the TSP. The TSP states that the County will work with ODOT on any necessary studies related to these projects.¶
However, a number of other actions are needed to ensure the long-term viability of the transportation investments identified in this EMP. Once adopted/enacted, these actions will apply to subsequent planning and implementation decisions by ODOT and Polk County and those decisions must be consistent with this Expressway Management Plan and subsequent ... [1]

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management. In the background discussion to this policy, ODOT recognizes that communities have grown up historically along statewide travel routes, often converting the functions of those routes from serving statewide traffic needs to serving local traffic needs in the process. ODOT further recognizes that as a result of this process, the ability of state highways to move through traffic and provide connections between communities has been reduced and impaired; and ODOT notes the importance of maintaining the primary objective of connecting cities and moving people and goods between cities and regions.[1]

The overall goal and focus of Policy 1B is "to connect land use and transportation in a way that achieves long-term objectives for the state highway and the local community. In applying the policy, ODOT will recognize the regional and topographical differences of communities throughout Oregon."[2]

Policy 1B includes a variety of objectives, including (1) maintaining the mobility and safety of the highway system; (2) fostering compact development patterns in communities; (3) encouraging the availability of transportation alternatives; (4) enhancing livability and economic competition; and (5) supporting acknowledged transportation system plans that are consistent with the OHP.[3] The OR 22 (W) Expressway Management Plan and the related projects will help achieve all of these objectives. It will improve the mobility and safety of the region's highway system while facilitating continued compact development and preservation of farmland and create improved pedestrian and bicycle facilities in the project area. Also, the interchange improvement project is provided for in the Polk County TSP.

Action 1B.1 of Policy 1B provides for ODOT to "work with local governments to develop and implement plans that support compact development, especially within community centers and commercial centers." The focus of Action 1B.1 is lands in urban growth boundaries and unincorporated communities rather than rural unincorporated lands. This policy does not directly apply to this plan and project as they are located outside of any established Urban Growth Boundaries, although the plan area does lie within the SKATS area (MPO planning area).

Action 1B.1 also supports establishment of parallel and interconnected local roadways to encourage local trips off the state highway. The OR 22 (W) Expressway Management Plan does provide for new frontage/backage roads that will divert traffic from the state highway system.

Action 1B.2 of Policy 1B provides for ODOT to collaborate with local governments in developing land use ordinances that provide a process for coordinated review of future land use decisions affecting transportation facilities, corridors and sites, including a process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities and corridors. This policy has been addressed by the OR 22 (W) Expressway Management Plan and will be key in developing the subsequent OR 22/51 Interchange Area Management Plan (IAMP).

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[1] OHP at p. 44.

[2] OHP at p. 45.

[3] The background section to Policy 1B states that while this policy applies to all state highways, it is intended to provide "guidance to ODOT regarding system management planning and implementation activities" and "It is not proposed to be an administrative rule." Rather, the policy "is designed to clarify how ODOT will work with local governments and others to link land use and transportation in transportation system plans, corridor plans, plan amendments, access permitting and project development." OHP at p. 46. The policy calls for ODOT to establish cooperative working relationships with local governments to achieve accessibility and mobility goals for a balanced transportation system.

Action 1B.4 directs ODOT to work with local governments to maintain the highway mobility standards on state highways by limiting expansion of development along those highways. This can be done by developing an adequate local network of arterials, collectors and local streets; by limiting access to the state highway; and through local adoption of comprehensive plan policies and zoning that limits the nature and scale of development near interchanges. The actions described in Action 1B.3 will help maintain the mobility standards by ensuring that adjacent development does not intensify.

Action 1B.5 provides for ODOT to work with local governments to develop corridor and transportation system plans that protect existing limited access interchanges, emphasizing safe egress from freeways as the highest priority and regional access to freeways as the second highest priority. This policy also provides for consistency with local TSPs. ODOT already has worked cooperatively with Polk County to develop their TSP and update it to include related state facility plans.

Action 1B.14 directs ODOT to work with local governments to accommodate alternative modes on state highways. The OR 22 (W) Expressway Management Plan does provide for an improved bicycle and pedestrian facility in the plan area, which currently is an existing multiuse path on the northside of the highway. The construction of new frontage/backage roads to county standards on the north and south sides of the highway would include wide shoulders to accommodate bicycles. Pedestrian facilities would be included only on the north side, as at present.

Policy 1C seeks to balance the need for movement of goods with other uses of the highway system and to recognize the importance of maintaining efficient through movement on major truck freight routes. OR 22 in the study area is classified as a statewide highway, expressway, freight route, and truck route by the OHP. OR 51 is a district highway. By recommending a grade-separated interchange at OR 22/51 to replace the existing at-grade intersection, the OR 22 (W) Expressway Management Plan will better accommodate freight movement between Salem and the Oregon Coast and through the Willamette Valley. The improved safety, operations, and bicycle and pedestrian facilities will also better serve other transportation modes.

Policy 1E addresses lifeline routes. The policy seeks establishment of a secure lifeline of streets, highways and bridges to facilitate emergency services response and to support rapid economic recovery after a disaster. By providing for improved performance, the OR 22 (W) EMP and recommended projects supports the objectives of this policy.

Policy 1F addresses highway mobility standards. As described in the background section, this policy "establishes standards for mobility that are reasonable and consistent with the directions of other Highway Plan policies."[4] The policy carries out the directions of Policies 1A and 1C by establishing higher mobility standards for freight routes and Statewide Highways than for District or Regional Highways (where somewhat higher traffic congestion levels are tolerated).

According to the Background statement, the highway mobility standards in Policy 1F are intended to apply to transportation planning decisions. In accordance with Policy 1G, these standards can be met by actions that reduce highway volumes or increase highway capacities. The standards apply through the Transportation Planning Rule, which requires that regional and local TSPs be

4 OHP at p. 71.

consistent with plans adopted by the OTC. ODOT's intention is that these standards not be exceeded over the course of a reasonable planning horizon, defined as 20 years for the development of state, regional and local TSPs.[5]

Action 1F.1 provides that the highway mobility standards in OHP Table 6 be applied to all state highway sections outside the Portland metropolitan area. The minimum transportation performance standards applied to proposed improvements of this plan incorporate the standards in OHP Table 6, thereby satisfying Action 1F.1.

Action 1F.2 provides that the highway mobility standards be applied over a 20-year period. Because the planning horizon for this project is 2030, Action 1F.2 is met.

OHP **Policy 1G**, addressing major improvements, directs the State to work with local governments to address highway performance and safety needs. Policy 1G establishes priorities for developing corridor plans and TSPs, under which protecting the existing system comes first, followed by improving efficiency and capacity of existing highway facilities; adding capacity to the system; and adding new facilities to the system. These priorities are to be followed "unless a lower priority measure is clearly more cost-effective or better supports safety, growth management, or other livability or economic viability considerations."[6]

The proposed transportation improvements fall within the second lowest priority category, which is to add capacity to existing facilities. Nonetheless, they are consistent with Policy 1G because actions to protect and improve the efficiency and capacity of the existing system without adding capacity are not adequate in themselves to meet the identified purpose and need of the project. In making this determination, ODOT did consider a number of lesser improvements from simply adding turn lanes to lower forms of grade separation and found none of them adequate to address the long-term demand.

Action 1G.2 authorizes ODOT to support major improvements to state highway facilities only where the improvements meet all of the conditions listed under this action item. Those conditions include (1) the improvement is needed to satisfy a state transportation objective; (2) the scope of the project is reasonably defined; (3) the improvement was identified through a planning process that included thorough public involvement, evaluation of reasonable transportation and land use alternatives, and sufficient environmental analysis at the fatal flaw planning stage; (4) the project includes measures to manage the transportation system which alone could not satisfy highway needs during the planning period; (5) the improvement would be a cost-effective means to achieve ODOT objectives; (6) the proposed timing of the improvement is consistent with priorities established in corridor plans and regional transportation plans, and the financing program identifies construction as being dependent on the future availability of funds; (7) funding can reasonably be expected at the time the project is ready for development and construction; (8) the local government schedules funding for local street improvements in its local transportation financing program if needed to attain the objectives of the major improvement; and (9) the plan includes policies and implementing measures that protect the corridor and its intended functions.

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[5] See OAR 660-012-0030(3).
[6] OHP at p. 82.

The proposed major improvement of this plan (the interchange at OR 22/51) is needed to improve safety and alleviate traffic congestion that would significantly impede the efficient movement of people and goods on a Statewide highway, expressway, freight route, and truck route. Without these improvements, year 2030 traffic volumes within the study area would routinely exceed ODOT performance standards for the subject intersection.

The proposed project recommendations identified in the OR 22 (W) Expressway Management Plan resulted from a lengthy and ongoing public process that included an agency and local government project team and citizen involvement through a series of personal stakeholder meetings and open house workshops. These processes focused on and encouraged the consideration and selection of the best alternative that solves current and future transportation needs, avoids or minimizes impacts to the natural and built environments, and enhances community livability. Additional measures to manage and protect the highway system and environment will be set in place through the adoption of the subsequent OR 22/51 Interchange Area Management Plan and Environmental Assessment. The project's cost effectiveness in achieving ODOT objectives is demonstrated by the fact that no lesser improvement to the existing transportation network will address the identified problem and the project purpose and need.

Action 1G.3 provides for ODOT to implement a cost-sharing program through intergovernmental agreement (IGA) when a project has major benefits to the local system, especially when local project sponsors envision purposes beyond those needed to meet state transportation objectives. As part of project development, ODOT will engage in discussions with Polk County about the possible mutual benefits of an IGA.

Action 1G.4 provides for ODOT to design major improvements for limited access to protect through traffic movements. Consistent with this standard, the recommended alternatives will maintain or expand existing access management on all of the impacted state facilities. Action 1G.4 also requires development and implementation of access management intergovernmental agreements. This action is addressed in the access management plan of this EMP and will be part of the subsequent IAMP.

OHP Goal 2 includes a number of policies addressing system management. **Policy 2A** provides for the State of Oregon to establish cooperative partnerships with state and federal agencies, local governments and the private sector to make more efficient and effective use of limited resources to develop, operate and maintain the highway and road system. ODOT has worked closely with Polk County, City of Salem, SKATS, and the FHWA in determining the need for recommended alternatives.

Action 2A.1 directs ODOT to support planning and development of highway projects that enhance the seamless qualities of a transportation system which balances state, regional and local needs. The recommended interchange project does improve transportation service for all modes and ensures continuance of each highway's OHP classification and function.

Policy 2B provides for the State to provide financial assistance to local jurisdictions to develop, enhance and maintain improvements on local transportation systems when they are a cost effective way to improve the operation of the state highway system if certain criteria are met. In this case, ODOT would construct the interchange with federal earmark and state funds, and local frontage/ backage roads with Polk County and federal earmark funds.

Action 2B.3 provides for ODOT to continue to participate in local transportation and land use planning to identify and mitigate potential actions that will adversely affect the state highway system. This policy is satisfied through ODOT's ongoing work to address forecasted problems at Doaks Ferry Road.

Action 2B.4 directs ODOT to work with local governments to identify and evaluate off-system improvements that would be cost effective in improvement performance of the state highway. ODOT has done that through the OR 22 (W) Expressway Management Plan and will address these issues as proposed improvement projects move through the design stage.

Policy 2D requires ODOT to ensure opportunities for citizen participation in improvement projects that affect the state highway system. These include efforts to create opportunities for citizens, businesses, local governments, state agencies and others to obtain information on and comment on proposed projects. It also includes coordination with local governments and agencies to ensure that public involvement programs target affected citizens and businesses, as well as the public. The OR 22 (W) Expressway Management Plan complies with Policy 2D and its action items through its opportunities for citizen involvement through the stakeholder meetings and public open houses, as described in Appendix K.

Policy 2E directs ODOT to consider a broad range of Intelligent Transportation Systems (ITS) services to improve system efficiency and safety in a cost-effective manner. While this policy goes more to systems operations than planning, a variety of ITS actions were considered and were not found to be able to adequately address the problem statement.

Policy 2F directs ODOT to continually improve safety for all users of the highway system. A principal objective of the NDTIP is to protect human health and safety. **Action 2F.1** directs ODOT to develop and implement cost-effective solutions to high priority safety problems. **Action 2F.2** provides for the setting of goals and a process to evaluate the project selection and solution process from a safety standpoint. **Action 2F.3** provides for ODOT to consider a range of potential solutions to safety problems, including but not limited to public education, engineering improvements, constructing bicycle and pedestrian facilities, managing access to the highway, and developing incident response and motorist assistance programs.

Over the past several decades, many improvements have been made to the Willamina-Salem Highway, including establishing it as a safety corridor with increased enforcement, headlights on signing, and oversized traffic control signs. Despite these efforts, the OR 22/51 intersection is still a top 10 percent SPIS site, indicating a higher than average crash history. Because of the traffic volumes being served, it was determined that separating the conflicting movements through development of grade-separated interchange would be the best way to reduce future crashes in this area.

Policy 3A provides for ODOT to manage the location, spacing, and type of road and street intersections and approach roads on state highways to assure the safe and efficient operation of state highways consistent with the classification of highways. This EMP includes an access management plan for the mainline. This policy also will be addressed through the subsequent IAMP for the proposed OR 22/51 interchange.

Policy 3B concerns roadway medians. It states that it is the policy of the State of Oregon to plan for and manage the placement of median openings on state highways to enhance the efficiency and safety of the highways and to influence and support land use development patterns that are consistent with approved transportation system plans. **Action 3B.1** directs ODOT to plan for a level of median control for the safe and efficient operation of state highways consistent with the classification of the highway. **Action 3B.2** requires ODOT to design and construct non-traversable medians for all new multi-lane highways constructed on new alignments. The OR 22 (W) Expressway Management Plan provides for medians along all of OR 22 within the study area.

Policy 3C directs ODOT to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways. **Action 3C.1** directs ODOT to develop Interchange Area Management Plans to protect the function of interchanges to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges. As part of new interchange construction, **Action 3C.2** also requires that necessary supporting improvements such as road networks, channelization, medians and access control within the management area be identified in the local TSP and either be in place or be committed with an identified funding source. **Action 3C.6** directs ODOT to plan for and operate traffic controls within the interchange management area with a priority of moving traffic off the main highway or expressway and away from the interchange area. All of these actions will be addressed through development of the subsequent OR 22/51 IAMP.

Policy 3D allows for some flexibility in the state highway system by authorizing deviations from adopted access management standards and policies through an application process. Any requested deviations not already addressed in this EMP will be addressed through development of the subsequent OR 22/51 IAMP and will be approved by the ODOT Region 2 Access Engineer.

Policy 4A seeks to maintain and improve the efficiency of freight movement on state highways and to balance the needs of long distance and through freight movements with local transportation needs on highway facilities in both urban and rural communities. By processing passenger and truck traffic more safely and efficiently, the OR 22 (W) Expressway Management Plan and recommended improvements would implement this policy.

Policy 5A states that the design, operation and maintenance of the state highway system should maintain or improve the natural and built environment including air quality, fish passage and habitat, wildlife habitat and migration routes, sensitive habitats (i.e., wetlands, designated critical habitat, etc.), vegetation, and water resources where affected by ODOT facilities. Environmental analysis conducted will be factored into the project development process for the projects recommended by the plan. It is anticipated an environmental assessment under NEPA will be required for the OR 22/51 interchange project. Additionally, ODOT may need to obtain a conditional use permit for the OR 22/51 interchange project from Polk County by documenting that it has the least impact of any alternative that meets the project purpose and need.

Action 5A.3 directs ODOT to partner with state and federal agencies and local governments to identify sensitive habitat areas with high value that are affected by ODOT facilities and to incorporate design features that will avoid or minimize and, when this is not possible, mitigate impacts to sensitive habitats with high values. No sensitive habitats were identified with the recommended projects of this EMP.

To meet these conditions, the following actions shall be completed before the OR 22/51 interchange improvements are constructed:

Any deviations to OAR Division 51 access management standards as may be included in the IAMP required for the OR 22/51 interchange will be evaluated using the provisions of OAR 734-51-0135 and approved by the Region Access Management Engineer.

Polk County shall adopt the OR 22 (W) Expressway Management Plan.

Polk County shall adopt comprehensive plan and ordinance amendments and other actions called for by the OR 22 (W) Expressway Management Plan or OR 22/51 IAMP.

ODOT shall apply for and be granted any required conditional use permits by Polk County.

The OTC shall adopt the OR 22 (W) Expressway Management Plan and IAMP.

8.2 OR 22 (W) Expressway Management Plan Adoption and Implementing Actions

The Polk County Transportation System Plan (TSP) identifies a number of conceptual road construction projects, including the construction of an interchange at the OR 22/51 intersection, associated frontage roads on both side of the highway between 52nd Ave. and Oak Grove Road, and a grade separation of OR 22 and Greenwood Road with no highway access. A Polk County TSP amendment is required to authorize the median treatments proposed for Greenwood Road and Doaks Ferry Road identified in the OR 22 (W) Expressway Management Plan. A variety of existing Polk County TSP policies and ordinance provisions will safeguard the operation of any improvements made to these intersections. These policies and provisions are shown in Appendix G of the TSP. The TSP states that the County will work with ODOT on any necessary studies related to these projects.

However, a number of other actions are needed to ensure the long-term viability of the transportation investments identified in this EMP. Once adopted/enacted, these actions will apply to subsequent planning and implementation decisions by ODOT and Polk County and those decisions must be consistent with this Expressway Management Plan and subsequent related plans. Such actions by Polk County may involve overlay zoning for EFU lands, access restrictions and provisions, changes to the local roadway and pedestrian/bicycle systems, ordinance adoptions, funding, and other actions. ODOT actions may also involve access issues, business relocations, right-of-way acquisition, state highway system changes, funding, and other actions. Polk County adopted resolutions, ordinances, or plan amendments related to this Expressway Management Plan are attached to this EMP.

Intergovernmental agreements (IGAs) may be required to determine and settle project obligations, including establishing specific criteria for local land use and access management decisions affecting a transportation facility. These IGAs may include provisions that address work that the local government needs to authorize to occur as part of the project because it affects facilities or land under local jurisdiction. Depending on the nature of the local actions and the local code, amendments to the local transportation system plan or comprehensive plan may be required.

Polk County already has taken the following actions that support implementation of this EMP:

- Polk County has adopted provisions called for in ORS 215.283 (3) and OAR 660-12-065 into its zoning ordinance. These provisions require ODOT to obtain a conditional use permit to replace at-grade intersections with interchanges. ODOT shall apply for this permit from Polk County using information from this plan and others, and the project development process. This permit must be approved prior to project construction.
- Polk County has adopted an enhanced ODOT notification process by ordinance to ensure that ODOT is involved as early as possible in the assessment of any redevelopment or new development proposal with a trip generation potential that significantly exceeds the assumed levels.
- Polk County has adopted a zoning ordinance (112.175) regulating access distances for state highways: 1,200 feet spacing for driveways on OR 22, and 1-3 miles for county or public use roads.

APPENDIX A

PMT Meetings Summaries

PMT Meeting 1: OR 22(W) Expressway Management Plan

ATTENDEES:

Austin McGuigan, Polk County
Aaron Geisler, Polk County
Mark Becktel, City of Salem
Kelly Amador, ODOT
Dan Fricke, ODOT
Rod Thompson, ODOT
John Lucas, ODOT
Stephen Wilson, ODOT
Jamie Hollenbeak ODOT
Dorothy Upton, ODOT
Haregu Nemariam, CH2M HILL
Kent R. Belleque, ODOT
Sumi Malik, CH2M HILL
Matt Hughart, Kittelson & Assoc.
Brian Ray, Kittelson & Assoc.
Mike Jaffe, Mid-Willamette Valley COG
Dick Reynolds, ODOT
Larry Weymouth, CH2M HILL

FROM:

Sumi Malik/CH2M HILL
Larry Weymouth/CH2M HILL

DATE: March 15, 2007

Meeting Date: March 6, 2007

Purpose of Meeting

The purpose of the first meeting is to reconstruct history of previous planning efforts, obtain guidance on where the project team needs to go and to develop resources for the consultant team.

Many attendees have worked on project before:

Aaron Geisler
Mark Becktel
Kelly Amador
Dan Fricke
Dorothy Upton
Kent Belleque
Mike Jaffe

Project Background

The consultant team will validate previous analysis, alternatives, and make changes as necessary. Thus far, traffic counts have been requested. Those who have worked on the project before were asked to share about previous efforts and their thoughts on the project going forward.

Aaron – Board of Commissioners is interested in OR-22. Issues facing the project are access points, creating an interchange to access Independence, and moving the project towards construction.

Mark – the project needs to be integrated with plans eastward to the bridges; the existing at-grade intersections, for example at College, need to be made better; and there is interest in an interchange at Eola Drive and closing Rosemont; in the past ODOT has had difficulty with siting an interchange at Eola Drive.

Kelly – Public open house participation

Dan Fricke – the project has had a long history. Originally ODOT tried to do the project with all in-house resources, but the plan couldn't be finalized. The region is committed to finishing the process.

Dorothy – she looked at area when working on the Rickreal Interchange. Thanh Nguyen did most of the previous analysis on OR 22, and Dorothy updated it in 2006.

Kent – he thought the project extent should be Greenwood to Doaks Ferry. His office has been supportive, and has provided resources and support.

Mike Jaffe – the project has been assigned to various people at the MPO. They have maintained a stakeholders list. Mark did land use modeling work with Dorothy. SKATS' interest is in the OR 22/51 interchange. They want it to go into RTSP, which must show fiscal constraint. SKATS would like OR 22/51 of the project to be an "included" project. Oak Grove Road on the west side is the MPO boundary.

Polk County has the most current aerial which is from June 2004.

Previous alternatives development assumed a design year of 2025. The current planning effort will use a design year of 2030.

OR 22/51

Reviewing previously developed alternatives, Option 1, for OR-51 was the best interchange option in terms of how it served traffic; the WB-SB movement has the heaviest traffic.

Option 2, OR 51 had no connection to Doaks Ferry Road. Previous efforts looked at many options for Doaks Ferry Road, but couldn't make it work. Previous alternatives tried to use existing County roads as much as possible. A weigh station and RV park access on the south side are difficult to connect using a frontage road due to topography.

For the OR 22/51 intersection an at-grade solution that met Highway Design Manual (HDM) standards could not be found. Grade separation is needed for safety.

Doaks Ferry Road

It is likely, due to topographic constraints, that Doaks Ferry Road will be left alone and at the most would be made right-in/right-out only for safety reasons.

The State park, which was the site of a weigh station, is a constraint because it is a section 4f resource.

Greenwood Road

Five options were developed for Greenwood Road: leave as is; closed to right-in and right-out only; build an overpass; build an overpass with eastbound access limited to right-in and right-out only, and farmers wanted a full interchange, but volumes do not warrant, nor does the crash history support a full interchange. Sight distances are okay at the intersection and there is a half mile gap in the median divider. Farmers' desire to get farm equipment across the highway is the greatest concern. All options except for closing the intersection are okay to move forward.

Access drives

A fruit stand has two deeded accesses on OR 22. Hanson concrete pipe place has a deeded access because their yard was split by the highway. Eola Florist has two deeded accesses; however the flower shop is now closed. On the north side of OR 22, most accesses are off of County roads. Private accesses are mostly east of 51, in unincorporated areas of Eola.

Land Use

There has not been much development along OR 22 in the past few years. Eola is now connected to 55th and homes have been development off of 55th. At Aster and 55th the land owner has planted a vineyard and has plans to construct a winery.

Residential land uses have grown on Doaks Ferry Road and Eola Drive, with more homes, apartments, and lots of duplexes. The City is improving S of Eola Drive, making Eola property owners willing to give up property for right-of-way (ROW), which may enable the closing of Doaks Ferry Road access to OR 22 and an interchange could be built at College Drive instead. Significant land use changes are north of the study area, and previously developed alternatives are still valid and do not impact the new developments.

Previous Traffic Counts

Based on previous traffic counts, no left turns were made during the PM peak. Left turns were only observed during the non-peak hours. Drivers have modified their driving behavior recognizing that turning left on OR 22 during the peak is a safety risk.

Eola Drive and 55th are now connected which brings more traffic.

Project Statement & Goals

The existing project statement and goals are four years old. The consultant team will revise the project statement and goals and ask for PMT feedback and revisions. The project statement and goals do not need to be a National Environmental Policy Act (NEPA) purpose and need statement.

Goals

Previous goals relate to the refinement plan. This project is an Expressway Management Plan (EMP) which is new and less defined than an Interchange Area Management Plan (IAMP).

Project Overview

We are looking forward to the next phase, an Environmental Assessment (EA) and an IAMP.

The alternatives will have planning level cost estimates. No formal decision document from previous planning efforts exists. The best available information is from a Public decision meeting – the decision document is very rough and mostly has comments.

Public and Stakeholder Involvement

Stakeholders were on board at the drop off point. Updating on the alternatives, evaluation, and soliciting feedback on preferred alternative needs to be done.

Responsibilities of the PMT (TAC)

The PMT will also act as a Technical Advisory Committee (TAC). The PMT will likely have a role at the stakeholder meeting, and will be included to answer questions. The PMT will recommend one or more alternatives to forward to IAMP/EA process. Floating meetings poses a problem for most, and a standing meeting is easier to schedule around.

The existing evaluation framework could be improved. The consultant team will revise the evaluation criteria, suggested a new structure. The existing criteria use consumer report style measures, and the consultant team is not sure if this is the best approach.

Process Goals & Change Management

The PMT needs a plan for change management. If the PMT sees problem or concern, let Dan and/or Larry know so they may develop a plan to address it and to share at the next PMT meeting.

The EMP process goals relate to Statement of Work. The Environmental constraints map is to raise any red flags with respect to environmental permitting, access management, land use actions and other constraints mapping.

The County is to give information for local plan amendments and Comprehensive Plan changes made with the Rickreal Interchange. The Comprehensive Plan had findings that made land use permitting smooth.

If the press asks any questions, please refer them to ODOT's Public Information Officer, Lou Thomas.

The eastern boundary includes Doaks Ferry Road; however, possible solutions can extend to College Drive. Traffic counts for College Drive will also be collected.

Polk County has the most recent aerial (2004). Polk County has an inventory of land use, building size. Dean Anderson is the GIS contact. Aaron can obtain board approval for the data to be shared.

Kittelson and Associates wrote a traffic impact analysis (TIA) for a gravel pit at OR 22/51, J.C. Compton, River Bend Sand & Gravel. Wally Lean was the attorney. ODOT approved a conditional use permit for large parties for Rancho Nuevo. An access permit may be issued on event by event basis. A subdivision was built on 55^{th} and a TIA was done at that time (2003) for 55^{th} Street and OR 22, which may be helpful.

There is an automated traffic recorder station on OR 22 by the pedestrian bridge west of OR 51.

Project Boundaries

Greenwood Road is the west terminus, or more specifically a quarter mile west of Greenwood Road to the railroad overpass where the Rickreal IAMP study area ended. The cemetery, golf course and Brunk House (section 4F) are sensitive areas.

The eastern terminus of the study area is at College Drive, but project solutions will be considered only as far as Doaks Ferry Road.

ODOT does not want an interchange at College Drive right now, but will look into the possibility in the future. Polk County is interested and expects pressure from growth there in future.

Ideally an interchange would be sited at the Eola arterial and not Rosewood.

Next Steps

Review the problem statement/purpose and need, analysis methodology and draft evaluation criteria. Set a regular meeting time. The best time is the 3rd Tuesday of the month, 1:30 to 4:00 PM.

Also get an ODOT right-of-way representative for the PMT.

PMT Meeting 2: OR 22(W) Expressway Management Plan

ATTENDEES:	Austin McGuigan, Polk County Aaron Geisler, Polk County Kelly Amador, ODOT Dan Fricke, ODOT Rod Thompson, ODOT John Lucas, ODOT Stephen Wilson, ODOT Jamie Hollenbeak ODOT Dorothy Upton, ODOT	Haregu Nemariam, CH2M HILL Kent R. Belleque, ODOT Dave Warrick, ODOT Matt Hughart, Kittelson & Assoc. Thanh Nguyen, ODOT Ray Jackson, MWVCOG Julie Warnecke. City of Salem Larry Weymouth, CH2M HILL
COPIES:	Brian Ray, Kittelson & Assoc. Mark Becktel, City of Salem Dick Reynolds, ODOT Roxanne Hanneman, ODOT	Sumi Malik, CH2M HILL Mike Jaffe, Mid-Willamette Valley COG
FROM:	Larry Weymouth, CH2M HILL	
DATE:	October 20, 2010	

Meeting Date: April 17, 2007

Purpose of Meeting

The purpose of this meeting was to review the revised draft problem statement, collect information about OR 22/51 alternatives development history, review revised draft evaluation criteria, report on project progress, discuss stakeholder involvement plans, and raise change management issues. Handouts were provided to support agenda topics.

Draft Problem Statement

Comments included adding references under EMP goals to meeting applicable design and mobility standards of the Highway Design Manual.

Additional written comments are to be submitted to Dan Fricke by May 1st.

OR 22/51 Alternatives Development History

The consultant team needs to have a list of the interchange forms already considered, and the rationale for screening/evaluation (if available). Dan still has a few more places to look to find the drawings used in previous public involvement efforts. Dave Warrick, Dorothy Upton, Thanh Nguyen, and Kent Belleque will look to see what they can find, too.

Evaluation Criteria

Discussion centered on providing a range of quantifiable measures for each level of effectiveness for each criterion, as appropriate. The criteria will be most effective in revealing differences among the alternatives if ratings do not include absolutes that few if any alternatives could meet (e.g., all standards are met; no displacements).

The Mobility criterion should address the HDM and County Road Standards.

The Connectivity criterion should de-emphasize local trips. Quantify system travel time and mainline travel time.

The Phasing criterion should include being fundable. Cost must address the financial constraint requirement (identify a reasonably foreseeable funding source). Include the SKATS plan in Plan Consistency criterion.

Transportation Operations Report

Table 3 (handout) provides the unsignalized intersection analysis results and those intersections exceeding the 0.80 mobility standard. Results of Table 4 (handout) are based on SKATS model, ODOT future volumes tables data base, growth rate for 2030 conditions. Volumes are higher than what ODOT's previous effort showed because the latest data are 5 years since then; however, conclusions remain consistent with previous data. There is a need for a 6-lane section. The prudent action would plan to accommodate six lanes if not build them in the foreseeable future.

Crash Analysis Report

Severity and type of crashes (handout) was based on two OR 22 segments and one quarter-mile segment of OR 51. It was decided to also gather data for the most western portion of OR 22, Derry Oxing to Greenwood Road, in the study area. A check of the crash-rate calculations after the meeting revealed that the actual crash rates are:
MP 18.61-21.19 69 crashes; 2.58 mile section; ADT = 29,000; yields a 0.50 crashes per MVM
MP 21.19-22.15 38 crashes; 0.96 mile section; ADT = 35,900; yields a 0.60 crashes per MVM
The comparable statewide rates for Other Freeways/Expressways for 2001-2005 ranged from 0.76-0.87 with a 5 year average of 0.80. Therefore these sections are lower than comparable sections of other state highways.

Environmental and Land Use Constraints

GIS maps depicting exisiting land use and zoning have been produced to date.

Stakeholder Involvement

The scope and schedule calls for ODOt to re-engage the stakeholders in April/May, looking toward an open house in mid-June, when alternatives will be presented. Primary contacts will be with the Farm Bureau and the Polk County Committee for Citizen Involvement (Austin to give contact info to Dan). Another group to involve would be the West Salem Neighborhood Association.

Change Management

Need to add a representative from ODOT ROW to PMT (Roxanne Hanneman). Distribute meeting handouts as file attachments, when possible, to PMT meeting announcement/agenda.

Next Steps

Review the problem statement and draft evaluation criteria and send comments to Dan Fricke by May 1st. Next meeting will focus on approving those documents, reviewing the applicable plans and policies tech memo, reviewing the analysis and refinement of alternatives, and making plans for the open house. Meeting date is May 15th, 1:30 to 4:00 p.m. at ODOT Region 2 Planning, Rm. 116.

PMT Meeting 3: OR 22(W) Expressway Management Plan

ATTENDEES:	Austin McGuigan, Polk County Aaron Geisler, Polk County Dan Fricke, ODOT Rod Thompson, ODOT Dick Reynolds, ODOT Roxanne Hanneman, ODOT Jamie Hollenbeak ODOT Kent R. Belleque, ODOT Dave Warrick, ODOT	Thanh Nguyen, ODOT Kathi McConnell, ODOT R2 Anthony Boesen, FHWA Ray Jackson, MWVCOG/SKATS Julie Warncke, City of Salem Sumi Malik, CH2M HILL Larry Weymouth, CH2M HILL Matt Hughart, Kittelson & Assoc
COPIES:	Brian Ray, Kittelson & Assoc. Mark Becktel, City of Salem John Lucas, ODOT Stephen Wilson, ODOT	Dorothy Upton, ODOT Kelly Amador, ODOT Mike Jaffe, MWVCOG Haregu Nemariam, CH2M HILL
FROM:	Larry Weymouth, CH2M HILL	
DATE:	October 20, 2010	

Meeting Date: May 15, 2007

Purpose of Meeting

The purpose of this meeting was to review/comment on the final Problem Statement, final Evaluation Criteria, Environmental Constraints tech memo, Plans and Policies Review tech memo, and Traffic Operations tech memo. The meeting also included a discussion of previously identified and newly proposed alternatives, stakeholder involvement plans, and change management issues.

Document Review/Comment

Some participants had difficulty downloading documents from ODOT's ftp web site. Dan will e-mail files to those that need them. Additional figures to accompany the environmental constraints report will be coming from the consultants.

The Problem Statement will be revised to insert "statewide" before "expressway" and insert "and freight route" afterwards. Mobility of the Evaluation Criteria will be revised to read: "Relevant ODOT <u>OHP</u> mobility standards are….." And add, "Relevant ODOT HDM mobility standards for the expressway are 0.60 outside the MPO and 0.75 inside the MPO."

The Environmental Constraints and Plans and Policies Review tech memos need to mention the Willamette River Greenway Plan and show boundary on the map. Parcels in the greenway are already developed.

Additional written comments on Transportation Operations and Plans/Policies Revie are to be submitted to Dan Fricke by June 1st.

Previous Alternatives and New Ideas

Dan gave an overview of the previous alternatives. There is a working document he and Larry are preparing as a summary. The alternatives will be for Greenwood Road intersection, OR 22/51, OR 22 access and frontage/backage roads, and Doaks Ferry Road intersection. Figures of the previous alternatives were reconstructed by Kent Belleque, and copies were distributed. The EMP will need to include an access management plan. Dan will identify the interchange forms previously considered, and provide a brief rationale for screening.

A consensus was acknowledged that an all-PMT evaluation of alternatives would be cumbersome, and an intial evaluation would be performed by Dan and the consultant team. The next PMT meeting will be for input on their draft evaluation of alternatives.

Stakeholder Involvement/Change Management

Stakeholders will be re-engaged in the process by Dan. An Open House will be held in late June (instead of May) after the next PMT meeting to review the evaluation criteria and alternatives.

Next Steps

Review the Environmental Constraints and Plans/Policies Review tech memos and send comments to Dan Fricke by June 1st. Next meeting will focus alternatives evaluation and preparations for an Open House. The nest PMT meeting date is the regularly scheduled third Tuesday of the month: June 19th, 1:30 to 4:00 p.m. at ODOT Region 2 Planning, Rm. 116.

PMT Meeting 4: OR 22(W) Expressway Management Plan

ATTENDEES:	John Lucas, ODOT Dan Fricke, ODOT Rod Thompson, ODOT Dick Reynolds, ODOT Roxanne Hanneman, ODOT Dave Warrick, ODOT Kelly Amador, ODOT	Thanh Nguyen, ODOT Ray Jackson, MWVCOG/SKATS Jerry Sorte, Polk County Dave Battz, City of Salem Larry Weymouth, CH2M HILL Matt Hughart, Kittelson & Assoc
COPIES:	Brian Ray, Kittelson & Assoc. Mark Becktel, City of Salem Julie Warncke, City of Salem Stephen Wilson, ODOT Austin McGuigan, Polk County Aaron Geisler, Polk County Kathi McConnell, ODOT R2	Anthony Boesen, FHWA Dorothy Upton, ODOT Jamie Hollenbeak ODOT Kent R. Belleque, ODOT Mike Jaffe, MWVCOG Haregu Nemariam, CH2M HILL Sumi Malik, CH2M HILL
FROM:	Larry Weymouth, CH2M HILL	
DATE:	October 20, 2010	

Meeting Date: June 19, 2007

Purpose of Meeting

The purpose of this meeting was to review/comment on the draft Previous Public Involvement Timeline, draft EMP Outline, draft Alternatives Evaluation Matrix, and draft Preliminary Recommendations. The meeting also included a discussion of progress to date, stakeholder involvement plans and change management issues.

Progress Report

Last call for revisions to previously discussed/reviewed technical memoranda: Purpose and Need, Environmental Constraints, Traffic Operations, and Plans, Policies, and Standards.

CAD single-line diagrams of the interchange alternatives and frontage/backage roads alternatives on top of aerials are being drawn. Ready around the Fourth.

Document Review/Comment

Written comments on the following documents are due in 2 weeks to Dan Fricke.

No revisions to the Previous Public Involvement Timeline.

The draft EMP Outline indicated that the EMP will contain chapters typical of a facility plan; very similar to the Rickreall Junction Transportation Facility Plan. Dick Reynolds noted that Chapter 8, Next Steps, should include a schedule/timeline for future activities. Dan will send the electronic file to the PMT.

Discussion of the draft Alternatives Evaluation Matrix was largely focused on business access and impacts. Several evaluation criteria (i.e., connectivity, businesss, built environment) relate in various degrees to the viability of existing businesses along the highway frontage. Some tweaks to wording of the evaluation criteria might be needed. Additional notes in the matrix are needed to clarify ratings for the “Business” criterion. It would be helpful to list under the criteria a summary of the performance measures and impacts considered. The frontage/backage roads evaluation was simplified to the quadrants and focused on phasing, as there was little differentiation between alternatives/elements within each quadrant. However, the NE quadrant will receive further evaluation comparing existing and new roads use, and business and residential access.

Specific changes to be made to the matrix include:

- DFR-6: Mobility, change to empty circle, because the intersection is very near the mobility standard now.
- DFR-2: Connectivity, add “and businesses” to note.
- DFR-6: Connectivity, add “Better than DFR-5” to note
- INH-5: Change description to “Single Quadrant Parclo B Interchange”
- INH-6: Change description to “Parclo B Interchange”

Matt Hughart passed around a handout that presented findings of the interchange alternatives operations analysis. The PARCLO "B" (two loop ramps in the northwest and southeast quadrants—INH-6) will accommodate the projected 2030 volumes the best under unsignalized ramp terminals when access to/from OR 22 / Doaks Ferry Road is restricted. If the ramp terminals are signalized, then any of the interchange configurations will function at or at least close to the 0.70 mobility standard (depending upon lane configurations). If access to/from OR 22 / Doaks Ferry Road is <u>not</u> restricted, then the Single Quadrant PARCLO "B" (loop ramp in the northwest quadrant—INH-5) will function the best under unsignalized ramp terminal conditions. Overall, the findings don’t differ much from the previous ODOT analysis; 2030 projected volumes are a little higher, partly related to the additional 5 years on the plan’s horizon year, and the Doaks Ferry Road volumes are higher. Thanh noted there was a turning volume that seemed inconsistent, which wouldn’t change the conclusions, but Matt will double check to see if a number was copied wrong.

Discussion of the Draft Preliminary Recommendation was put in the context of getting ready for the stakeholder meeting next month. This document will be revised per comments received from the PMT during the next two weeks, reviewed again at the next PMT meeting, and then presented at the Open House for public comment. Suggested revisions included beginning the document with an introduction that sets the overall context (purpose and need) for the EMP, and beginning each recommendation with a topical heading; for example, "1. Mobility and Safety." Recommendation #4 should address access rather than economy in the first line. OK to discuss providing alternate access for businesses. Need to get list of Permitted/Unpermitted Accesses. Recommendation #5, regarding left-in and left-out barrier options at Doaks Ferry Road, will receive more study by ODOT (Dave Warrick and John Lucas) and reported on at next PMT meeting. Recommendation #8 should note that many of the proposed improvements would be in the MPO.

Change Management

Dave Battz will be attending PMT meetings as the City of Salem representative instead of Julie Warncke. Some PMT members now hava a scheduling conflict with another project's meetings that are scheduled to begin at 3 pm. We will try to set the agenda so we can adjourn by 3 pm in the future.

Next Steps

Review the documents (above) and send comments to Dan Fricke by July 6. Next meeting will focus on redrafts and decisions regarding the alternatives evaluation matrix, preliminary recommendations, and preparations for the Open House. The next PMT meeting date is the regularly scheduled third Tuesday of the month: July 17th, 1:30 to 3:00 p.m. (target adjournment) at ODOT Region 2 Planning, Rm. 116.

PMT Meeting 5: OR 22(W) Expressway Management Plan

ATTENDEES:

Dan Fricke, ODOT R2 Planning
Rod Thompson, ODOT R2 Env
Austin McGuigan, Polk County
Aaron Geisler, Polk County
Rox Hanneman, ODOT R/W
Dave Warrick, ODOT Tech Serv
Jamie Hollenbeak ODOT R2 Acc
Chris Bailey, ODOT Roadway
Thanh Nguyen, ODOT TPAU
Ray Jackson, MWVCOG/SKATS
Anthony Boesen, FHWA
Dave Battz, City of Salem
Larry Weymouth, CH2M HILL
Matt Hughart, Kittelson & Assoc

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Mark Becktel, City of Salem
Julie Warncke, City of Salem
Stephen Wilson, ODOT
Kathi McConnell, ODOT R2
Dorothy Upton, ODOT
Jerry Sorte, Polk County
Dick Reynolds, ODOT
John Lucas, ODOT
Kent R. Belleque, ODOT
Kelly Amador, ODOT
Mike Jaffe, MWVCOG
Haregu Nemariam, CH2M HILL
Sumi Malik, CH2M HILL

FROM: Larry Weymouth, CH2M HILL

DATE: October 20, 2010

Meeting Date: July 17, 2007

Purpose of Meeting

The purpose of this meeting was to review/comment on the alternatives evaluation matrix and alternatives single-line drawings and discuss upcoming public involvement. The meeting also included a progress update and related activities. Time expired before change management issues could be raised, if any.

Progress Report and Related Activities

The Holman State Wayside is OPRD property; it is being considered for closure and perhaps disposition. This could alleviate any future 4(f) issues if the property were sold or exchanged/transferred to ODOT. Work has begun on drafting chapters of the plan.

Document Review/Comment

Written comments (again) on the following documents are due in 2 weeks to Dan Fricke. Not many comments were received this past month.

The draft Alternatives Evaluation Matrix was revised to include a list of features and performance measures. Some minor formatting errors will be corrected in the final version. A new Greenwood Road alternative, GWR-6 Offset Dual "T" Intersections was added. Concerns were raised that the GWR-6 alternative would not be feasible for farm equipment without some lane widening and fairly immediate access to the turn lane refuge. This would provide some improved safety if the overcrossing alternative were not soon funded for construction. A similar concept from the HDM (p. 9-63)was presented by Chris Bailey for a non-freeway interchange example (Figure 9-29).

Matt Hughart passed around a handout that presented findings of the interchange alternatives operations analysis. The PARCLO "B" (two loop ramps in the northwest and southeast quadrants—INH-6) will accommodate the projected 2030 volumes the best under unsignalized ramp terminals when access to/from OR 22 / Doaks Ferry Road is restricted. If the ramp terminals are signalized, then any of the interchange configurations will function at or at least close to the 0.70 mobility standard (depending upon lane configurations). If access to/from OR 22 / Doaks Ferry Road is <u>not</u> restricted, then the Single Quadrant PARCLO "B" (loop ramp in the northwest quadrant—INH-5) will function the best under unsignalized ramp terminal conditions.

There was further discussion about connectivity issues associated with closing access to OR 22 from Doaks Ferry Road. DFR is a major arterial. If not there, then perhaps a connection farther east near College Drive is needed. Drivers on DFR could be inconvenienced by shunting traffic west to the proposed interchange on a new road.

Discussion shifted to the color-coded drawing of the frontage/backage road alternatives. The backage road (dark and light blue) is a better alternative than the frontage road (purple) in the NE quadrant. Parts of the backage road could follow an old right-of-way. If OR 22 were widened as proposed, there would be inadequate R/W for the frontage road and multiuse path. It was noted that the backage road would likely be needed as a detour during construction of the interchange; if extended east to DFR, it would be an alternative for west Salem traffic.

The dark blue backage road (NE) would cut through recently constructed houses that don't show on the aerial, and in the NW through the middle of the filbert orchard on an existing private farm dirt road. It also would come out too close by standards to the ramp end. The land owner has shown some receptivity in the past to the purple backage road even though it would sever existing vineyard trellising, whereas the light blue road would not.

In the SE quadrant, the light blue alternative would go through a blueberry orchard, whereas the purple alternative woud follow existing McNary Road until meeting up with Rickreall Creek and the old railroad right of way.

Access permits need to be researched. This is something Dan will do or perhaps the consultant could if the work order were amended. The plan will include an access management plan. The long-term goal is to close all direct private access to the expressway. Policy would be to not eliminate access until an alternative access was made available.

It was decided to resurrect consideration of the feasibility/constructability of the DFR flyover alternative, considering the possible acquisition of land now set aside for the Holman State Wayside.

Change Management

No time. Adjourned before addressing.

Next Steps

Review the documents (above) and send comments to Dan Fricke by August 3. Next meeting will focus on decisions regarding the alternatives, review of draft plan chapters, and preparations for the Open House in September. The next PMT meeting date is the regularly scheduled third Tuesday of the month: August 21st, 1:30 to 3:00 p.m. (target adjournment) at ODOT Region 2 Planning, Rm. 116.

PMT Meeting 6: OR 22(W) Expressway Management Plan

ATTENDEES:

Dan Fricke, ODOT R2 Planning
Rod Thompson, ODOT R2 Env
Austin McGuigan, Polk County
Aaron Geisler, Polk County
Dave Warrick, ODOT Tech Serv
Jamie Hollenbeak ODOT R2 Acc
Dick Reynolds, ODOT
Thanh Nguyen, ODOT TPAU
John Lucas, ODOT
Dave Baltz, City of Salem
Larry Weymouth, CH2M HILL
Matt Hughart, Kittelson & Assoc

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Mark Becktel, City of Salem
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Ray Jackson, MWVCOG/SKATS
Stephen Wilson, ODOT
Kathi McConnell, ODOT R2
Dorothy Upton, ODOT
Jerry Sorte, Polk County
Anthony Boesen, FHWA
Chris Bailey, ODOT Roadway
Rox Hanneman, ODOT R/W
Kent R. Belleque, ODOT
Kelly Amador, ODOT
Mike Jaffe, MWVCOG
Haregu Nemariam, CH2M HILL
Sumi Malik, CH2M HILL

FROM: Larry Weymouth, CH2M HILL

DATE: October 20, 2010

Meeting Date: August 21, 2007

Purpose of Meeting

The purpose of this meeting was to review/comment on previous plans for access management, current alternatives for the intersections and frontage/backage roads, draft recommendations, other chapters of the draft plan, and make plans for the open house. The meeting also included a progress update and related activities. Time expired before change management issues could be raised, if any.

Progress Report and Related Activities

Dan Fricke and Aaron Geisler made a presentation to the Polk County Commissioners (sans Commissioner Mike Probst, who was ill) on August 14th at 9 a.m. regarding progress on the plan. Copies of the drawings of alternatives were given to the commissioners and reviewed by Dan.

Document Review/Comment

Access Management Plan: Figures 7-1 and 7-2. These drawings are based on a field survey done by Dan Fricke and others back in 2001. What is shown is a short-term closure plan. However, as relevant for the current plan, access closures would be medium-term and after the frontage/backage roads were constructed. The long-term plan would be to close all private accesses to the expressway, unless and perhaps access could not be provided.

Dick Reynolds commented that whatever this plan proposes, it should be concrete, with definite actions, clarity about the sequence of events, and local commitments being made.

In Appendix L, the tble should be renumbered L-1 (not 6-1).

Alternative GWR-6 needs to accommodate farm vehicles if it is to be feasible. However, for safety, there's no beating the overcrossing if it can be funded. If the median is closed, so there is only right-in/right-out, drivers will adjust to a longer trip accessing the future proposed Independence Highway or Rickreall interchange to get to where they need to go. If that were done short-term, the long-term solution of an overcrossing may not be necessary later.

The NE-4 f/b road alternative should be dismissed because of it joins 55th St. opposite the end ramps. ODOT regulations do not allow that configuration because of the danger of wrong way entry onto the ramps by impaired drivers. Moving the intersection farther north would require use of 55th St. as a frontage road to the overpass and moving the interchange into the orchard more. The prevalent direction of travel is likely to be to/from the north hills residential areas, according to Aaron Geisler. The house near the corner of 55th St. and the highway may need to be taken for the interchange, so providing access to it is probably not an issue. The frontage road (labeled NE-1 on the drawing adjacent to the highway) would be taken when the highway is widened. Should renumber these alternatives differently (suggest NE-5 and NE-6). The little stub roads off of the SE backage roads should be deleted—add note that exact location will be determined later in cooperation with landowners. SE-2 would have to be a viaduct because of the change in elevation.

Dave Baltz mentioined that the City's is opposed to closing the Doaks Ferry Road approach to OR 22, even with a backage road connection to the interchange (DFR-2). A left-in is needed as well as a right-in/right out. Dave Warrick and John Lucas said visibility would be impaired by the barriers needed for DFR-6, the channelization alternative allowing a left-in. They suggested perhaps DFR-6 would work better if the access point were moved farther west, around the curve to the upland and straight stretch of highway, using the new backage road for an extension of Doaks Ferry Road. ODOT also will look again at the possibility of flyover ramps for OR 22 eastbound off/on traffic at the location. A better long-term solution might be to plan for an interchange in the vicinity of College Drive and make a connection to Doaks Ferry Road. ODOT also has some previously prepared conceptual plans for an interchange there. These drawings will be retrieved by ODOT and Dan will send them to the city and county. Discussion about the alternatives and possible new ones continued for the remainder of the meeting.

The PMT needs to decide on the Doaks Ferry Road and other recommended intersection alternatives and access controls at the next PMT meeting. Therefore, the Open House will be postponed for a month. A draft Open House meeting announcement was distributed for comment at the next meeting.

Written comments on the draft EMP chapters are due in 2 weeks (Sept. 7) to Dan Fricke. Not many comments were received so far, as the files were just distributed late Friday.

Change Management

No time. Adjourned late at 3:45 p.m.before addressing.

Next Steps

Review the documents (above) and send comments to Dan Fricke by Sept. 7. Next meeting will focus on selecting a preferred alternative, review of draft plan chapters, and preparations for the Open House in October. The next PMT meeting date is the regularly scheduled third Tuesday of the month: September 18th, 1:30 to 3:00 p.m. (target adjournment) at ODOT Region 2 Planning, Rm. 116.

PMT Meeting 7: OR 22(W) Expressway Management Plan

ATTENDEES:

Dan Fricke, ODOT R2 Planning
Austin McGuigan, Polk County
Aaron Geisler, Polk County
Dave Warrick, ODOT Tech Serv
Jamie Hollenbeak ODOT R2 Acc
Anthony Boesen, FHWA
Mike Jaffe, MWVCOG
Kelly Amador, ODOT
Kathi McConnell, ODOT R2
Dick Reynolds, ODOT
John Lucas, ODOT
Dave Baltz, City of Salem
Larry Weymouth, CH2M HILL

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Jerry Sorte, Polk County
Rod Thompson, ODOT R2 Env
Chris Bailey, ODOT Roadway
Rox Hanneman, ODOT R/W
Kent R. Belleque, ODOT
Thanh Nguyen, ODOT TPAU
Matt Hughart, Kittelson & Assoc
Haregu Nemariam, CH2M HILL
Sumi Malik, CH2M HILL

FROM: Larry Weymouth, CH2M HILL

DATE: October 20, 2010

Meeting Date: September 18, 2007

Purpose of Meeting

The purpose of this meeting was to discuss closure and acquisition options for access management, alternatives and recommendations for the intersections and frontage/backage roads, the draft plan, and make plans for the open house. The meeting also included a progress update and related activities. Time expired before change management issues could be raised, if any.

Progress Report and Related Activities

Dan Fricke reported he had a conversation with Bob Cortright/DLCD regarding land use issues. Bob thought some of the TPR issues had received short-shrift. Dan explained that more details and analysis would be included in the IAMP, as the EMP was not intended to provide land use findings. Dan will review the draft EMP to see if some additions would be appropriate.

Alternatives Comments

Greenwood Road: There is not much support in ODOT for the offset dual T alternative because of the design issues associated with accommodating farm equipment. ODOT's consensus is to dismiss it at this point. In the future, when increased traffic flow causes safety problems and there are no funds available to construct the overpass, this would leave few options but to close the intersection entirely or restrict movements to RI/RO. This would require significant out of direction travel via the Rickreall interchange.

Independence Hwy: The analysis indicated a grade separation is needed. Ramp performance depends on what happens at Doaks Ferry Road (access closed so all traffic must use interchange, or access remains).

Frontage/Backage Roads: NE-1 (frontage) is not feasible if the highway eventually is to be widened. NE-2 (backage) is preferred. Using the existing county roads, such as Aster, is favored. NW-1 would be the most direct route, although NW-2 also would work. SE-1 (McNary Road) is preferred over SE-2 because of no blueberry farm impacts. However, SE-1 is not very cost effective. A connection between the north and south sides would be good (tunnel) and an access to the expressway around 50th Avenue would provide more direct travel.

Doaks Ferry Road: Polk County and the City of Salem met to discuss the alternatives. Entirely closing DFR is not acceptable. Prohibiting/preventing the left-out movement is acceptable. ODOT presented a new alternative using Mill Street as a relocated access connected to the proposed backage road (NE-2) and then to DFR. Dave Baltz would like to have a drawing of this. Long-term the preferred solution for the city-county is a new connection (interchange) between the BPA station and College Drive. An interchange at DFR is not feasible due to topographic constraints. At either location, there could be geotechnical issues to deal with.

As the PMT lacked consensus on some alternative, the Open House will be postponed. Scheduling should be such so as not to conflict with the Salem River Crossing public meetings coming up (dates to be determined).

Written comments on the draft EMP chapters are due by the end of the month to Dan Fricke. Not many comments have been received so far.

Change Management

Larry Weymouth will be on vacation for two weeks in October 1-12.

Next Steps

Next meeting will focus on getting consensus on favored alternatives and preparing for the Open House in late October. The next PMT meeting date is the regularly scheduled third Tuesday of the month: October 16th, 1:30 to 3:00 p.m. (target adjournment) at ODOT Region 2 Planning, Rm. 116.

PMT Meeting 8: OR 22(W) Expressway Management Plan

ATTENDEES:

Dan Fricke, ODOT R2 Planning
Austin McGuigan, Polk County
Darrel James, ODOT R2
Dave Warrick, ODOT Tech Serv
Anthony Boesen, FHWA
Mike Jaffe, MWVCOG
Rod Thompson, ODOT R2 Env
Thanh Nguyen, ODOT TPAU
Kelly Amador, ODOT
Kathi McConnell, ODOT R2
Dick Reynolds, ODOT
Brent McCall, ODOT
Dave Baltz, City of Salem
Larry Weymouth, CH2M HILL

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Jerry Sorte, Polk County
Chris Bailey, ODOT Roadway
John Lucas, ODOT Rox
Hanneman, ODOT R/W
Kent R. Belleque, ODOT
Jamie Hollenbeak ODOT R2 Acc
Aaron Geisler, Polk County
Matt Hughart, Kittelson & Assoc
Haregu Nemariam, CH2M HILL
Sumi Malik, CH2M HILL

FROM: Larry Weymouth, CH2M HILL

DATE: October 20, 20107

Meeting Date: November 20, 2007

Purpose of Meeting

The purpose of this meeting was to discuss closure and acquisition options for access management, alternatives and recommendations for the intersections and frontage/backage roads, the draft plan, and make plans for the open house on November 28. The meeting also included a progress update and related activities.

Change Management

Aaron Geisler, Polk County Public Works Director, will be leaving his position at the end of the month to take a position with W&H Pacific. Austin McGuigan and Greg Hanson, Chief Administrative Officer, will be splitting Aaron's work until a replacement is hired. Tim Gerling, Salem Public Works Director, is retiring.

Progress Report and Related Activities

Plans are set for the Open House next week and newsletter/invitations have been mailed. Should bring drawings of alternatives, topo of area, and spacing standards graphic from OHP.

Alternatives Comments

A summary of the current recommendations was distributed.

The DFR short-term alternative should be to stripe and sign the intersection for no left-out. Medium-term would retain the right-in only but add a deceleration lane. Other movements would be relocated farther west in the vicinity of Mill Street. A tunnel/undercrossing at Spring Street would provide connectivity for the north and south sides of the highway and would be a long-term option along with an interchange at College Drive. Access east of the weigh station would provide a connection to the undercrossing.

The GWR medium-term would be ROW acquisition, and the long-term alternative would be an overpass, with addition of the north frontage road as a long-term alternative, if needed.

The INH alternative will be decided during the EA, but a grade separation is needed.

Frontage/Backage Roads: NW-1 is not feasible because of the vineyard trellising impacts. NE-1 (frontage) is not feasible if the highway eventually is to be widened. NE-2 (backage) is preferred. Using the existing county roads, such as Aster, is favored. SE-1 (McNary Road) is preferred over SE-2 because of no blueberry farm impacts. However, SE-1 is not very cost effective.

Dave Baltz distributed a copy of a letter from Scott Erickson, Chair of the West Salem Neighborhood Association, which invited an ODOT representative to the association's next meeting. Dan said he would look into scheduling it. The association is most interested in the DFR intersection and possible College Drive interchange.

Reboot: Written comments on the draft EMP chapters are due by the end of the month to Dan Fricke. Not many comments have been received so far.

Next Steps

Distribute Open House summary. Revise EMP and produce Final Draft. Complete project by end of March. Initiate EA project. The next PMT meeting date is the regularly scheduled third Tuesday of the month: December 18, 1:30 to 3:00 p.m. (target adjournment) at ODOT Region 2 Planning, Rm. 116.

APPENDIX B

Oregon Highway Plan Policies

The Oregon Highway Plan (OHP) is a modal element of the Oregon Transportation Plan (OTP). The OHP addresses efficient management of the system to increase safety, preserve the system, and extend its capacity; increased partnerships, particularly with local and regional governments; links between land use and transportation; access management; links with other transportation modes; and environmental and scenic resources. The OHP also establishes a variety of policies that are directly related to this Expressway Management Plan. Policies 1A, State Highway Classification System; 1B, Land Use and Transportation; and 1C State Highway Freight System, are included in this appendix for reference and convenience of the reader. Consult the OHP for other policies.

OREGON HIGHWAY PLAN

SECTION II

POLICY ELEMENT

II. Policy Element

Goal 1: System Definition

To maintain and improve the safe and efficient movement of people and goods and contribute to the health of Oregon's local, regional, and statewide economies and livability of its communities.

Overview

The state highway classification system divides state highways into five categories based on function: Interstate, Statewide, Regional, District, and Local Interest Roads. Supplementing this base are four special purpose classifications: land use, statewide freight routes, scenic byways, and lifeline routes. These address the special expectations and demands placed on portions of the highway system by land uses, the movement of trucks, the Scenic Byway designation, and significance as a lifeline or emergency response route. Information contained in these special designations supplement the highway classification system and will be used to guide management, needs analysis, and investment decisions on the highway system.

The System Definition section also includes policies on highway mobility standards and major improvements, which further define state highway management goals and objectives.

■ State Highway Classification System

Background

The 1991 Highway Plan's Level of Importance Policy classified the state highway system into four levels of importance (Interstate, Statewide, Regional and District) to provide direction for managing the system and a basis for developing funding strategies for improvements. Realizing that limited funding would not allow all the statewide highways to be upgraded, the 1991 Highway Plan also designated some of the statewide highways as the Access Oregon Highway system to focus needed improvements. The goal of the Access Oregon Highway system was to provide an efficient and effective system of highways to link major economic and geographic centers.

Congress adopted the highway routes in the National Highway System (NHS) as part of the National Highway System Designation Act of 1995. In Oregon, the National Highway System highways include all the Interstate and Statewide Highways and Access Oregon Highways except for Oregon Highway 82. To reduce the redundancy between Level of Importance, Access Oregon Highways and the National Highway System and to define a highway classification system that is consistent with the National Highway System, this Highway Plan has adopted the National Highway System as the primary classification and retained the Regional and District categories from the Level of Importance system. Oregon Highway 82 in Wallowa and Union Counties will remain a Statewide Highway. This ensures that every county in Oregon has a link to the rest of the state through the Statewide Highway network.

Congress also designated major intermodal connectors as part of the National Highway System. These roads, some owned by the state and some by local jurisdictions, are located in Astoria, Boardman, Coos Bay-North Bend, Eugene, Medford and Portland. (These roads are listed in Appendix D.) They link airports, ports, rail terminals, and other passenger and freight facilities to Interstate and Statewide Highways, and are of particular importance to Oregon's economy. State-owned intermodal connectors are either Regional or District Highways and are managed according to their state highway classification.

The classification system also recognizes that certain roads which are currently state highways function primarily as local roads. In cooperation with local governments, ODOT will develop a process to identify these roads which may be transferred to local jurisdictions in accordance with Policy 2C of this plan. The process will also consider the transfer of local highways and roads that serve primarily state interests to state jurisdiction.

ODOT will use the state highway classification system to guide management and investment decisions regarding state highway facilities. The system will be used in the development of corridor plans, transportation system plans, major investment studies, review of local plan and zoning amendments, periodic review of local comprehensive plans, highway project selection, design and development, and facility management decisions including road approach permits.

The broad classifications defined in Action 1A.1 will be complemented by specific subcategories and designations defined in other policies within this plan (see Policies 1B, 1C, 1D, 1E, 1F, and 3A). These subcategories and designations are policy-specific; the overall state highway classification defined in Policy 1A forms the basis for the classification system. The classification map in this plan and Appendix D detail the application of the state highway classification system to specific highways.

The categories recognize that different highway types have importance for certain areas and users. The categories are not the same as the federal government's functional classification system. It is the responsibility of the Oregon Transportation Commission to establish and modify the classification systems and the routes in them.

Policy 1A: State Highway Classification System

It is the policy of the State of Oregon to develop and apply the state highway classification system to guide ODOT priorities for system investment and management.

Action 1A.1

Use the following categories of state highways, and the list in Appendix D, to guide planning, management, and investment decisions regarding state highway facilities:

- **Interstate Highways (NHS)** provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas.
- **Statewide Highways (NHS)** typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (STAs), local access may also be a priority.
- **Regional Highways** typically provide connections and links to regional centers, Statewide or Interstate Highways, or economic or activity centers of regional significance. The management objective is to provide safe and efficient, high-speed, continuous-flow operation in rural areas and moderate to high-speed operations in urban and urbanizing areas. A secondary function is to serve land uses in the vicinity of these highways. Inside STAs, local access is also a priority. Inside Urban Business Areas, mobility is balanced with local access.
- **District Highways** are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements. Inside STAs, local access is a priority. Inside Urban Business Areas, mobility is balanced with local access.
- **Local Interest Roads** function as local streets or arterials and serve little or no purpose for through traffic mobility. Some are frontage roads; some are not eligible for federal funding. Currently, these roads are District

Highways or unclassified and will be identified through a process delineated according to Policy 2C. The management objective is to provide for safe and efficient, low to moderate speed traffic flow and for pedestrian and bicycle movements. Inside STAs, local access is a priority. ODOT will seek opportunities to transfer these roads to local jurisdictions.

Action 1A.2

By action of the Oregon Transportation Commission upon consultation with affected local governments, classify and/or develop Expressways as a subset of Statewide, Regional and District Highways.

a. Definition. Expressways are complete routes or segments of existing two-lane and multi-lane highways and planned multi-lane highways that provide for safe and efficient high speed and high volume traffic movements. Their primary function is to provide for interurban travel and connections to ports and major recreation areas with minimal interruptions. A secondary function is to provide for long distance intra-urban travel in metropolitan areas. In urban areas, speeds are moderate to high. In rural areas, speeds are high. Usually there are no pedestrian facilities, and bikeways may be separated from the roadway.

In this classification, "expressway" refers to the kind and number of accesses allowed on a highway segment. It does not refer to the ownership of access rights. Other characteristics include the following:

- Private access is discouraged;
  - There is a long-range plan to eliminate, as possible, existing approach roads as opportunities occur or alternate access becomes available;
  - Access rights will be purchased and a local road network may be developed consistent with the function of the roadway;
- Public road connections are highly controlled;
- Traffic signals are discouraged in rural areas;
- Nontraversible medians are encouraged; and
- Parking is prohibited.

b. Classification. Initiation of the process to classify Expressways will occur as a result of a corridor planning process, ODOT special study or action of the Transportation Commission.

Because of the importance of maintaining system mobility, the Transportation Commission will classify new Expressways as a subset of National Highway System (Interstate and Statewide) highways in consultation with local governments.

The Transportation Commission will classify new Expressways as a subset of Regional and District Highways with the agreement of directly affected local governments.

Highways that are already limited access will be automatically classified as Expressways by the Transportation Commission. These are highways where ODOT owns the access rights and direct access is not allowed and where users enter or exit the roadway only at interchanges.

c. Criteria. Highways proposed to be Expressways will be classified on the basis of the following criteria:

- Importance as an NHS route with high volumes of traffic;
- Designation as a part of the State Highway Freight System;
- Designation as a safety corridor; or
- Function as an urban bypass.

The process of classifying segments as Expressways will first focus on highway segments where posted speeds are 50 miles per hour or greater.

Action 1A.3

Conduct a study of highway classifications statewide to determine whether highways function as they are classified. Conduct this study after the adoption of the Highway Plan as a special study of the classification system or as a part of corridor planning. Consider changing the classification of a state highway if the function of the highway has changed significantly since its original classification or the function does not fit the classification description. The classification change will be effective when the Oregon Transportation Commission adopts the change as part of a corridor plan or other planning process.

■ Land Use and Transportation

Background

The federal Intermodal Surface Transportation Efficiency Act of 1991 requires the establishment of a National Highway System "to provide an interconnected system of principal arterial routes which will serve…Interstate and inter-regional travel." ODOT has an obligation to insure that the National Highway System (the routes designated Interstates, and most Statewide Highways and intermodal connectors) adequately performs this function of serving a larger geographic area. Historically, however, communities have grown up along statewide travel routes. This means that in addition to providing mobility for people, goods and services between communities, regions and states, the state highway system often also provides access to homes, businesses, industry and other destinations within communities.

The highway system's ability to fulfill these functions depends in large part on community land use patterns and the ways that land uses are served by the transportation system. Development with poorly designed accesses along highways and poorly developed street networks often focus local traffic on state highways and reduce the ability of state highways to move through traffic and provide connections between communities. Communities with compact urban designs that incorporate a transportation network of arterials and collectors reduce traffic impacts on state highways whose primary objectives are to connect cities and move people, goods and services between cities and regions.

The Land Use and Transportation Policy addresses the relationship between the highway and patterns of development both on and off the highway. It emphasizes development patterns that maintain state highways for regional and intercity mobility and compact development patterns that are less dependent on state highways than linear development for access and local circulation.

Policy 1B also recognizes that state highways serve as the main streets of many communities, and it strives to maintain a balance between serving these main streets and the through traveler. It emphasizes management of the transportation system for safety and efficient use of resources. It recognizes the main street function of state highways through designation of these areas as Special Transportation Areas.

The policy encourages compact development patterns for large-scale commercial development through the special designation of Commercial Centers on Statewide, Regional and District Highways, and recognizes existing and future commercial centers of activity called Urban Business Areas on urbanized low-speed Regional and District Highways and on Statewide Highways under certain circumstances.

Focusing growth in more compact development patterns can have the following transportation benefits:

- Reduction of local trips and travel on state highways;
- Shorter vehicle trips;
- More opportunity to walk, bicycle, or use available transit services;
- Increased opportunities to develop transit; and
- Reduction of the number of vehicle trips to shop and do business.

These measures can enhance air quality and conserve energy.

The overall goal and focus of the Land Use and Transportation Policy is to connect land use and transportation in a way that achieves long-term objectives for the state highway and the local community. In applying the policy, ODOT will recognize the regional and topographical differences of communities throughout Oregon.

ODOT acknowledges that the best way to implement the policy is to establish cooperative working relationships with local governments. This includes a commitment on ODOT's part to:

- Participate actively, early, and continuously in the development of transportation system plans and periodic review;
- Look for creative and innovative transportation and land use solutions to transportation problems;
- Work within the context of acknowledged land use plans and zoning; and

- Support planning and implementation of improvements within centers and Special Transportation Areas, including off-system improvements that benefit operation of the state highway system.

The policy recognizes that:

- Local governments are responsible for planning and zoning land uses within their jurisdictions and for developing and managing the local transportation system;
- ODOT is responsible for developing and managing the state highway system;
- ODOT and local and regional governments must work collaboratively to achieve accessibility and mobility goals for a balanced transportation system.

Policy 1B applies to all state highways. It provides guidance to ODOT regarding system management planning and implementation activities. It is not proposed to be an administrative rule. It is designed to clarify how ODOT will work with local governments and others to link land use and transportation in transportation system plans, corridor plans, plan amendments, access permitting, and project development.

ODOT recognizes that the policy will be applied under three different circumstances:

- Existing conditions which do not meet the policy objectives. In these circumstances, the policy will be used to gain closer levels of compliance with the objectives and/or actions.
- A mixture of existing non-compliant conditions and new proposals, projects or developments where higher levels of compliance with the objectives and/or actions would be desirable. In these circumstances, ODOT, the affected local government and/or affected parties need to work out a way to best achieve compliance with the objectives and/or actions.
- New conditions or development where there is an ability to fully comply with the policy objectives and/or actions.

Policy 1B implements the Oregon Transportation Plan's Urban Accessibility Policy to "assure balanced, multimodal accessibility to existing and new development within urban areas to achieve the state goal of compact, highly livable urban areas." The Highway Plan's policies on Major Improvements, Highway Mobility Standards, Partnerships, Off-system Improvements and Travel Alternatives complement the Land Use and Transportation Policy. "Nodal development" in the Eugene-Springfield *TransPlan* and "2040 concept areas" in Metro's *2040 Plan* are consistent with the policy direction of Policy 1B.

Policy 1B: Land Use and Transportation

This policy recognizes the role of both the State and local governments related to the state highway system:

- ***State and local government must work together to provide safe and efficient roads for livability and economic viability for all citizens.***
- ***State and local government must share responsibility for the road system.***

- ***State and local government must work collaboratively in planning and decision-making relating to transportation system management.***

It is the policy of the State of Oregon to coordinate land use and transportation decisions to efficiently use public infrastructure investments to:

- ***Maintain the mobility and safety of the highway system;***
- ***Foster compact development patterns in communities;***
- ***Encourage the availability and use of transportation alternatives;***
- ***Enhance livability and economic competitiveness; and***
- ***Support acknowledged regional, city and county transportation system plans that are consistent with this Highway Plan.***

Action 1B.1

Work with local governments to develop and implement plans that support compact development, especially within community centers and commercial centers. Support plans, strategies and local ordinances that include:

- Parallel and interconnected local roadway networks to encourage local automobile trips off the state highway;
- Transit, bicycle, and pedestrian facilities, including street amenities that support these modes;
- Design and orientation of buildings and amenities that accommodate pedestrian and bicycle use as well as automobile use;
- Provision of public and shared parking;
- Infill and redevelopment;
- Expansion of intensive urban development guided away from state highways rather than along state highways; and
- Other supporting public investments that encourage compact development and development within centers.

Action 1B.2

Work with local governments to help protect the state highway function by collaborating with local jurisdictions in developing land use and subdivision ordinances, specifically:

- 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 assuring that amendments to land use designations, densities and design standards are consistent with the functions, capacities, and

highway mobility standards of facilities identified in transportation system plans including the Oregon Highway Plan and adopted highway corridor plans;

- Refinement of zoning and permitted and conditional uses to reflect the effects of various uses on traffic generation;
- Standards to protect future operation of state highways and other roads; and
- Access control measures, for example, driveway and public road spacing, median control and signal spacing standards which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities.

Action 1B.3

To assist in implementing state access management standards and policies, work with local governments to develop an access management plan or access management component in comprehensive plans, corridor plans and/or transportation system plans involving the state and local system.

After the Oregon Transportation Commission has adopted administrative rules regarding access management and approach road permitting, ODOT and a local government may enter into an Intergovernmental Agreement setting provisions for and allowing the local government to issue approach road permits on state Regional and District Highways in accordance with all applicable standards and criteria contained in the Oregon Highway Plan, Oregon Administrative Rules and Oregon Revised Statutes, and the local adopted and acknowledged transportation system plan. This provision shall not apply to Regional and District Expressways.

Action 1B.4

Work with local governments to maintain the highway mobility standards on state highways by limiting the expansion of development along the highway through the following means:

- Developing an adequate local network of arterials, collectors, and local streets to limit the use of the state highway or interchanges for local trips;
- Reducing access to the state highway by use of shared accesses, access from side or back roads, and frontage roads and by development of local street networks as redevelopment along state highways occurs;
- Clustering development off of state highways in compact development patterns; and
- Avoiding the expansion of urban growth boundaries along Interstate and Statewide Highways and around interchanges unless ODOT and the appropriate local governments agree to an interchange management plan

to protect interchange operation or access management plan for segments along non-freeway highways.

Action 1B.5

Work with local governments to develop corridor and transportation system plans that protect existing limited access interchanges according to the following functional priorities:

- At all existing limited access highway interchanges, provide safe egress from freeways and Expressways as the first priority. This priority must be met.
- When an interchange connects a freeway or an Expressway to an Interstate, Statewide or Regional Highway, provide regional access to freeways and Expressways as the second highest priority.
- Establish the priority for travel across freeways and Expressways and the priority for access to property in the vicinity of the interchange consistently in both the local transportation system plan and the corridor plan.
- When an interchange connects a freeway or an Expressway to a District Highway or Local Interest Road, establish the priority for travel across freeways and Expressways and the priority for access to property in the vicinity of the interchange consistently in both the local transportation system plan and the corridor plan.

Action 1B.6

Develop design guidelines for highways that describe a range of automobile, pedestrian, bicycle or transit travel alternatives. The guidelines should include appropriate design features such as lighted, safe and accessible bus stops, on-street parking, ample sidewalks, pedestrian crossings, pedestrian scale lighting, street trees and related features.

Action 1B.7

To foster compact development patterns in communities, use the following highway segment designations and objectives to guide planning and management decisions for state highways. Use the highway segment designations to guide ODOT's position on local land use planning and development standards and actions and to define the application of access management standards and broad types of highway facility design. Work with local governments to apply these highway segment designations to segments of the state highway consistent with the local acknowledged comprehensive plan and/or transportation system plan. In plans and projects, work toward achieving specific objectives for each designation as listed in Table 4 (page 52).

- **Special Transportation Area[1]:** The primary objective of managing highway facilities in an existing or future Special Transportation Area is to provide access to community activities, businesses, and residences and to accommodate pedestrian movement along and across the highway in a downtown, business district and/or community center including those in unincorporated communities as defined by OAR 660-22. An STA is a highway segment designation that may be applied to a highway segment, when a downtown, business district or community center straddles the state highway within an urban growth boundary or in an unincorporated community in accordance with Action 1B.9. Direct street connections and shared on-street parking are encouraged in urban areas and may be encouraged in unincorporated communities. Direct property access is limited in an STA. Local auto, pedestrian, bicycle and transit movements to the business district or community center are generally as important as the through movement of traffic. Traffic speeds are slow, generally 25 miles per hour (40 kilometers per hour) or less.
- **Commercial Centers:** The primary objective of the state highway adjacent to a Commercial Center is to maintain through traffic mobility in accordance with its function. A Commercial Center is a highway segment designation which may apply to an existing or future center of commercial activity which may generally have 400,000 square feet (37,000 square meters) or more of gross leasable area or public buildings. The majority of the average daily trips to the center originate in the community in which the center is located. The buildings are clustered with limited direct access to the state highway to reduce the number of vehicle trips and to reduce conflicts with through traffic. They may be located on Statewide, Regional or District Highways within an urban growth boundary. They include a high level of regional accessibility and connections to a local road network. The Commercial Center accommodates pedestrian and bicycle access and circulation and, where appropriate, transit movements.
- **Urban Business Areas:** The Urban Business Area is a highway segment designation which may vary in size and which recognizes existing areas of commercial activity or future nodes or various types of centers of commercial activity within urban growth boundaries on District, Regional or Statewide Highways where vehicular accessibility is important to continued economic viability. The primary objective of the state highway in an Urban Business Area (UBA) is to maintain existing speeds while balancing the access needs of abutting properties with the need to move through traffic. A UBA is a highway segment designation that may apply to an existing area of commercial activity or future center or node of commercial activity in a community located on a District, Regional or Statewide Highway where speeds are 35 miles per hour (55 kilometers per hour) or less. The designation of UBAs on Statewide Highways shall be limited to only those special circumstances where, from a system wide

[1] Metro concepts for Central City, Town Center and Main Streets are consistent with STAs.

perspective, the need for local access clearly equals or is greater than the need for mobility for an existing designation, and for a new designation, the need for local access must be greater than the need for mobility. Vehicular accessibility is often as important as pedestrian, bicycle and transit accessibility. Safe and regular street connections are encouraged. Transit turnouts, sidewalks, and bicycle lanes are accommodated.

- **Urban:** The objective of an Urban segment designation is to efficiently move through traffic while also meeting the access needs of nearby properties. Access can be provided to and from individual properties abutting an Urban segment, but the strong preference is to limit such access, providing it instead on connecting local roads and streets. Transit turnouts, sidewalks, and bicycle lanes are accommodated.

<u>Action 1B.8</u>

Use the classifications and the objectives in Action 1B.7 in planning and decision making involving:

- Access management planning and permitting;
- Development and review of corridor plans;
- Review of metropolitan planning organization and local transportation system plans;
- Periodic review of local comprehensive plans;
- Review of local plan and zoning amendments;
- Review of major development designs within adopted comprehensive plans for commercial/industrial and subdivision development that has a significant impact on a state highway;
- Review of site acquisition and construction of proposed public facilities;
- Review of urban growth boundary amendments;
- Development of major investment studies; and
- Highway facility design and project development.

<u>Action 1B.9</u>

Based on a regional or local transportation system plan or comprehensive plan, ODOT and a local government may agree in writing to manage a downtown, business district, or community center inside an urban growth boundary or rural unincorporated community as a Special Transportation Area.

a. Characteristics. An STA has the following characteristics:

- An STA is a designated compact district located on a state highway within an urban growth boundary in which the need for appropriate local access outweighs the considerations of highway mobility except on designated Freight Highways where accessibility and mobility needs are balanced.

- While traffic moves through an STA and automobiles may play an important role in accessing an STA, convenience of movement within an STA is focused upon pedestrian, bicycle and transit modes. STAs have a plan for an interconnected local street network to facilitate local automobile and pedestrian circulation except where topography severely constrains the potential for street connections. Speeds typically do not exceed 25 miles per hour (40 kilometers per hour).
- People who arrive by car or transit find it convenient to walk from place to place within the area.
- Larger communities may have more than one STA.

b. Other Attributes. An STA has the majority, if not all, of the following attributes, either as existing or planned uses and infrastructure through an adopted management plan (see Action 1B.11).

- Mixed uses;
- Buildings spaced close together and located adjacent to the street with little or no setback;
- Sidewalks with ample width which are located adjacent to the highway and the buildings;
- Interconnected local street networks to facilitate local automobile and pedestrian circulation except where topography severely constrains the potential for street connections;
- On street parking and shared or general purpose parking lots which are located behind or to the side of buildings; and
- Convenient automobile and pedestrian circulation within the center and off the state highway.

An STA does not apply to an entire city or the majority of a city or to strip development areas along individual highway corridors. STAs are not located on freeways or Expressways. STAs may be located within established city limits or within an area between a city limit and an urban growth boundary where such a classification would result in redevelopment to eliminate an existing pattern of strip development.

An existing central business/commercial district in an unincorporated community as defined by OAR 660-22 that meets the definition of an STA may also be classified an STA.

Action 1B.10

Consider a proposal to establish a Special Transportation Area where compact development did not exist at the adoption of this Highway Plan only if the proposed STA is already planned in the local or regional adopted comprehensive plan. Through transportation system plans, corridor plans and/or off-system improvements, encourage any new development in an area proposed as an STA to be developed off of the highway or only on one side of the highway.

Action 1B.11

Work cooperatively with local governments to designate existing and future Special Transportation Areas.

a. Designation. The first step is to identify potential STAs in a corridor plan or regional or local transportation system plan.

The second step is for ODOT and the local jurisdiction to mutually develop and agree to the management plan, within an Intergovernmental Agreement or Memorandum of Understanding. The agreement for an STA in an unincorporated community shall be with the affected county government. The STA management plan may include less restrictive highway mobility standards (see Policy 1F) and may use flexible streetscape designs in order to improve local access and community functions. The agreement will be in effect when the STA is adopted as part of a local transportation system plan and comprehensive plan and in the corresponding corridor plan where a corridor plan exists.

b. Management Plan. The management plan for each STA in the local transportation system plan shall include:

- Goals and objectives;
- Clearly defined STA boundaries;
- Design standards that are to be applied to the STA to improve local access and community functions. These may include highway mobility standards, street spacing standards, signal spacing standards and street treatments, and must be reviewed by the Technical Services Manager or his/her designee;
- Strategies for addressing freight and through traffic including traffic speed, possible signalization, parallel or other routes, and actions in other parts of the corridor which address through traffic needs;
- Parking strategies, which address on and off street and shared parking;
- Provisions for a network of local traffic, transit, pedestrian, and bicycle circulation;
- An analysis of the regional and local traffic and safety impacts of the STA to determine the effects of the STA designation. All parties must agree to the analysis methodology, and it must be consistent with regional plans and ODOT analysis methods;
- Identification of needed improvements within the STA or improvements that will support access to the STA and designation of the party

responsible for implementation, likely funding source and anticipated time frame; and

- Identification of maintenance and operational strategies to be employed.

Action 1B.12

Whether an area qualifies for STA highway segment designation or not, encourage local governments to cluster commercial development in community centers or Commercial Centers with limited access to the state highway to reduce the number of vehicle trips and to reduce conflicts with through traffic.

a. Definition. Encourage a Commercial Center[2] to locate in a community that is the population center for the region, and where the majority of the average daily trips to the center originate in the community in which the Commercial Center is located. Generally these centers have 400,000 square feet (37,000 square meters) or more of gross leasable area or public buildings. These centers are intended for commercial or mixed commercial, retail and office activities. They may include public uses. The buildings are clustered with consolidated access to the state highway rather than developed along the highway with multiple accesses. Multi-family residential uses may be located within or adjacent to a center. Major metropolitan areas may have multiple Commercial Centers.

b. Attributes. Commercial Centers must be designated in a regional or local transportation system plan or comprehensive plan and referenced in a corridor plan, have clearly defined boundaries and include the following, or have a plan adopted by the affected local government(s) to provide the following, before the site is fully developed:

- Convenient circulation within the center, including pedestrian and bicycle access and circulation;
- Provisions for transit access in urban areas planned for fixed-route transit service;
- Shared parking and a reduction in parking to accommodate multimodal elements where alternate modes are available;
- A high level of regional accessibility;
- Accessibility by a variety of routes and modes and a local road network so that most of the traffic circulation may occur off of the state highway; and
- Compact development patterns.

In return for having the above characteristics and adhering strictly to access management spacing standards as provided in Policies 3A and 3C, consider allowing the highway mobility standard to be the same as that for Special Transportation Areas at the point of access to the state highway. The highway

[2] Metro's concept for a Regional Center is consistent with a Commercial Center.

mobility of any affected freeway interchange may not decline below the highway mobility standard for the interchange designated by Policy 1F (Table 6, page 68, and Table 7, page 69).

Action 1B.13

Work cooperatively with local governments to designate existing and future Urban Business Areas (UBAs) through a corridor plan and/or local transportation system plan. A UBA is a highway segment designation that may apply to existing areas of commercial activity or future nodes or various types of centers of commercial activity in a community located on a Statewide, Regional or District Highway within an urban growth boundary where speeds are 35 miles per hour (55 kilometers per hour) or less. The designation of UBAs on Statewide Highways shall be limited to only those special circumstances where, from a system wide perspective, the need for local access clearly equals or is greater than the need for mobility for an existing designation, and for a new designation, the need for local access must be greater than the need for mobility.

The highway segment designation must be made through a corridor plan and/or local transportation system plan with the agreement of both ODOT and the affected local government.

The designation provisions in the corridor plan and/or local transportation system plan shall include an interconnected local street and private drive network to facilitate local automobile and pedestrian circulation except where topography severely constrains the potential for street connections. New buildings in a UBA should be clustered in centers or nodes so that the facilities encourage people who arrive by car or transit to find it convenient to walk from place to place within the area.

Action 1B.14

Work to accommodate alternate modes on state highways according to the various types of land uses and highways. Work toward development of alternate mode facilities in Special Transportation Areas, Commercial Centers and Urban Business Areas according to the other actions in this policy and to Table 4 on page 52. Use the following objectives to guide project design and development in other areas:

a. Within Urban Growth Boundaries:

On Expressways:

- Accommodate bicycle lanes, if any, on shoulders or separated facilities.
- Although pedestrians are generally not accommodated on Expressways for safety reasons, analyze accommodation on a case by case basis.

On Other Urban Statewide, Regional and District Highways:

- Accommodate bicycle lanes and sidewalks and other pedestrian facilities, especially in commercial centers and community use areas.

- Provide convenient pedestrian crossings, especially at transit stops and other high-use generators.
- Design intersections to address the needs of pedestrians and bicyclists.

b. Outside Urban Growth Boundaries:

- In unincorporated communities, address pedestrian crossing safety. This may be addressed through traffic signals and medians designed to serve as pedestrian refuges.

Table 2: Potential Location of Highway Segment Designations[3]

Type of Highway	STA	Commercial Center/UBA
Interstate	None	None
Statewide Highway		
Urban (Within UGBs)		
Expressway	None[5]	Commercial Center
Other	Yes	Commercial Center/UBA (where there are specific circumstances and where speeds are 35 mph or less)
Rural (Outside UGBs)		
Expressway	None	None
Other	Yes	None
Regional Highway		
Urban (Within UGBs)		
Expressway	None[5]	Commercial Center
Other	Yes	Commercial Center/UBA (where speeds are 35 mph or less)
Rural (Outside UGBs)		
Expressway	None	None
Other	Yes	None
District Highway		
Urban (Within UGBs)		
Expressway	None[5]	Commercial Center
Other	Yes	Commercial Center/UBA (where speeds are 35 mph or less)
Rural (Outside UGBs)		
Expressway	None	None
Other	Yes	None

[3] The location criteria assume there is direct access to the highway facility. An STA or Commercial Center, for example, can be adjacent to an Interstate Highway, but the direct access to highway facilities will be to an urban arterial. An STA can be located on a highway segment between parts of an Expressway if there are transition zones between the traffic speeds of the Expressway and the STA.

Table 3: Highway Segment Designations and Designating Process

Highway Segment Designation	Designation Process	Designating Body
Commercial Center	Corridor plan Local transportation system plan	ODOT & local government in a plan
Urban Business Area	Corridor plan Local transportation system plan	ODOT & local government in a plan
Special Transportation Area	Corridor plan Local transportation system plan	ODOT & local government in an *IGA/MOU & plan

* IGA = Intergovernmental Agreement
MOU = Memorandum of Understanding

Table 4: Elements of Strategies to meet the Objectives of the Land Use and Transportation Policy

Land Use Type	Elements of Strategy			
	Land Use	Alternative Modes	Traffic Management	Access Management
Special Transportation Area	• Adjacent land uses that provide for compact, mixed-use development. "Compact" means that buildings are spaced closely together, parking is shared and sidewalks bind the street to the building. Mixed-use development includes a mixture of community places and uses. • Infill and redevelopment. • Design and orientation of buildings that accommodate pedestrian and bicycle circulation, as well as automobile use. • An adopted management plan as part of the comprehensive plan that shows the area as a compact district with development requirements that address local auto trips, street connectivity, shared parking, design and layout of buildings, parking and sidewalks that encourage a pedestrian-oriented environment.	• Well-developed transit, bicycle and pedestrian facilities, including street amenities that support these modes.	• A well-developed parallel and interconnected local roadway network. • A parking strategy that favors shared general purpose parking, preferably on-street parking and shared parking lots. • Streets designed for ease of crossing by pedestrians.	• Public road connections that correspond to the existing city block. • Private driveways discouraged.
Commercial Center	• Clustered development with shared parking.	• Facilities for bicycle and pedestrian access and circulation. • Provisions for transit movements.	• Connections to network of local streets.	• Joint access to state highways.
Urban Business Areas	• Businesses and buildings clustered in centers or nodes.	• Bicycle lanes and sidewalks and other pedestrian accommodations, especially in commercial centers and community use areas.	• Development of a strategy for good traffic progression. • An efficient parallel local street system where arterials and collectors connect to the state highway.	• Local ordinances that support shared driveway approaches and inter-parcel circulation.

Land Use Type	Elements of Strategy			
	Land Use	Alternative Modes	Traffic Management	Access Management
Urban Business Areas (continued from previous page)		• Convenient and safe pedestrian crossings, especially at transit stops and other high-use generators. • Intersections designed to address the needs of pedestrians and bicyclists. • Measures for addressing pedestrian crossing safety. These may include stop signs, traffic signals and medians designed to serve as pedestrian refuges.	• Improved traffic management strategies such as Advanced Traffic Management Systems.	

■ State Highway Freight System

Background

According to the 1993 *Commodity Flow Study*, most freight shipments originating in Oregon are moved by truck (64 percent of the value and 76 percent of the weight of commodities). To ensure that freight is able to move efficiently on the state's major trucking routes, this plan designates a state highway freight system (Table 5, page 56), using freight volume, tonnage, connectivity, and linkages to National Highway System intermodal facilities as the key criteria. The State Highway Freight System is intended to facilitate interstate, intrastate, and regional movements of trucks. This freight system, made up of the Interstate Highways and certain Statewide Highways on the National Highway System, includes routes that carry significant tonnage of freight by truck and serve as the primary interstate and intrastate highway freight connection to ports, intermodal terminals, and urban areas. It supersedes and replaces the designation of primary freight corridors in the Oregon Transportation Plan.

Freight depends upon timely and dependable movement of goods over the system; some industries structure their facilities and processes on just-in-time deliveries. Highway efficiency for goods movement in an expanding economy will require public and private investments in infrastructure as well as changes in road operations to reduce congestion on freight routes. Designating a network of freight routes of primary importance to the state will help ensure that these investments are coordinated in a way that reinforces the unique needs of the freight system.

Improving and maintaining the efficiency of highway operations requires balancing the needs of freight movement with the needs of other users of the highway system. Some state highways that are important goods movement corridors also serve as communities' main streets and may be designated as Special Transportation Areas. It may be the objective of local officials to reduce or slow traffic passing through the town, with potentially adverse impacts on long distance freight transportation. In such cases, system investment decisions and local land use planning should recognize the special significance of the designated statewide freight system and balance freight needs with local circulation and access needs. Regional and local jurisdictions may designate their own freight route systems, but these designations should be compatible with or complementary to the designation of routes in the State Highway Freight System.

The State Highway Freight System designation does not guarantee additional state investment in these routes. However, three special management strategies are available:

- Highways included in this designation have higher highway mobility standards than other Statewide Highways (see Policy 1F).
- The highway's function as a freight route should be balanced with local accessibility in Special Transportation Areas.
- Freight system routes may be treated as Expressways outside of urban growth boundaries and unincorporated communities. (See Action 1C.3 and the definition of Expressways in Action 1A.2.)

Policy 1C: State Highway Freight System

It is the policy of the State of Oregon to balance the need for movement of goods with other uses of the highway system, and to recognize the importance of maintaining efficient through movement on major truck freight routes.

Action 1C.1

Apply performance standards appropriate to the movement of freight on freight routes.

Action 1C.2

Prepare a statewide freight study to address the role of trucks and other freight modes in Oregon's economy, freight mobility and accessibility issues, current, near-term and long-term needs, and other topics.

Action 1C.3

In the development of corridor plans, work with local governments to examine options to:

- Treat designated freight routes as Expressways where the routes are outside of urban growth boundaries and unincorporated communities. Continue to treat freight routes as Expressways within urban growth boundaries where existing facilities are limited access or where corridor or transportation system plans indicate limited access; and
- Recognize and balance freight needs with needs for local circulation, safety and access in Special Transportation Areas.

Action 1C.4

Consider the importance of timeliness in freight movements in developing and implementing plans and projects on freight routes.

Table 5: Designated Freight Routes

Route	Description of Highway or Segment Included
I-5	Washington State Line to California State Line
I-82	Washington State Line to I-84
I-84	I-5 (Portland) to Idaho State Line
I-205	Washington State Line to I-5 (Portland)
I-405	I-5 (Portland) to I-5 (Portland)
US 20 / OR 34	US 101 (Newport) to I-5
US 26	US 101 to I-405 (Portland)
US 26	OR 212 to US 97 (Madras)
US 30	US 101 (Astoria) to I-405 (Portland)
US 97	Washington State Line to California State Line
US 101	OR 38 (Reedsport) to OR 42 (Coos Bay)
OR 18 / OR 99W	US 101 (Lincoln City) to I-5 (Tigard)
OR 22 / US 20 / OR 201 / US 30 BUS	I-5 (Salem) to I-84 (Ontario)
OR 38	US 101 (Reedsport) to I-5
OR 42	US 101 (Coos Bay) to I-5 (Roseburg)
OR 58	I-5 (Eugene) to US 97
OR 99E	I-84 (Portland) to OR 224 (Milwaukie)
OR 126 / I-105	Near West Eugene City Limits (Richmond St.) to I-5 (Eugene)
OR 217	US 26 (Beaverton) to I-5 (Tigard)
OR 224 / OR 212	OR 99E (Milwaukie) to US 26

APPENDIX C

Mobility and Spacing Standards and Access Management

This appendix includes relevant mobility and spacing standards from the Oregon Highway Plan and Polk County Transportation System Plan. Also included is OAR 734-051-0155, which provides requirements for Access Management Plans as part of highway segment facility plans.

Appendix C:[4]

Access Management Standards

Access Management Spacing Standards

The following tables show the access spacing standards for the access management classifications listed in Goal 3, Policy 3A: Classification and Spacing Criteria, Action 3A.1.

Table 12: Interchange Spacing [1]

Access Management Classification	Area	Interchange Spacing[2][3]
Interstate* and Non-Interstate Freeways (NHS)	Urban	3 miles (5 kilometers)
	Rural	6 miles (10 kilometers)
All Expressways (NHS), Statewide (NHS), Regional and District Highways	Urban	1.9 miles (3 kilometers)
	Rural	3 miles (5 kilometers)

Notes for Table 12:

* Interstate interchange spacing must be in conformance with federal policy.

(1) The spacing standards in Table 12 are for planning and design of new interchanges on freeways or expressways. A design exception is required to change these standards. A proposed design exception should also consider the spacing requirements in the Interchange Access Management Area Tables 16-19.

(2) Crossroad to crossroad centerline distance.

(3) A design exception is required to change these planning spacing standards.

[4] Appendix C was replaced as part of Technical Amendment 06 - 21 to include changes adopted as Amendments 04 - 13 and 05 - 16.

Table 13: Access Management Spacing Standards For Statewide Highways (1)(2)(3)(4)

(Measurement in Feet)*

Posted Speed(5)	Rural Expressway **	Rural	Urban Expressway ** ***	Urban ****	STA
≥55	5280	1320	2640	1320	
50	5280	1100	2640	1100	
40 & 45	5280	990	2640	990	
30 & 35		770		720	(6)
≤25		550		520	(6)

Notes: The numbers in parentheses refer to explanatory notes that follow tables 13-15.

* Measurement of the approach road spacing is from center to center on the same side of the roadway.

** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

*** These standards also apply to Commercial Centers.

**** The Urban standard applies in UBAs unless a management plan agreed to by ODOT and the local government(s) establishes a different standard. Spacing standards on access controlled facilities are also guided by those controls.

Table 14: Access Management Spacing Standards for Regional Highways (1)(2)(3)(4)

(Measurement in Feet)*

Posted Speed(5)	Rural Expressway **	Rural	Urban Expressway ** ***	Urban ****	STA
≥55	5280	990	2640	990	
50	5280	830	2640	830	
40 & 45	5280	750	2640	750	
30 & 35		600		425	(6)
≤25		450		350	(6)

Notes: The numbers in parentheses refer to explanatory notes that follow tables 13-15.

* Measurement of the approach road spacing is from center to center on the same side of the roadway.

** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

*** These standards also apply to Commercial Centers.

**** The Urban standard applies in UBAs unless a management plan agreed to by ODOT and the local government(s) establishes a different standard. Spacing standards on access controlled facilities are also guided by those controls.

Table 15: Access Management Spacing Standards for District Highways (1)(2)(3)(4)

(Measurement in Feet)*

Posted Speed(5)	Rural Expressway **	Rural	Urban Expressway ** ***	Urban ****	STA
≥55	5280	700	2640	700	
50	5280	550	2640	550	
40 & 45	5280	500	2640	500	
30 & 35		400		350	(6)
≤25		400		350	(6)

Notes: The numbers in parenthesis refer to explanatory notes that follow tables 13-15.

- * Measurement of the approach road spacing is from center to center on the same side of the roadway.
- ** Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.
- *** These standards also apply to Commercial Centers.
- **** The Urban standard applies in UBAs unless a management plan agreed to by ODOT and the local government(s) establishes a different standard. Spacing standards on access controlled facilities are also guided by those controls.

Notes on Tables 13, 14 and 15:

(1) These access management spacing standards are for unsignalized approaches only. Signal spacing standards supersedes access management spacing standards for approaches.

(2) These access management spacing standards do not apply to approaches in existence prior to April 1, 2000 except as provided in OAR 734-051-0115(1)(c) and 734-051-0125(1)(c).

(3) For in-fill and redevelopment, see OAR 734-051-0135(4).

(4) For deviations to the designated access management spacing standards see OAR 734-051-0135.

(5) Posted Speed: Posted speed can only be adjusted (up or down) after a speed study is conducted and that study determines the correct posted speed to be different than the current posted speed. In cases where actual speeds are suspected to be much higher than posted speeds, the Department reserves the right to adjust the access management spacing accordingly. A determination can be made to go to longer access management spacing standards as appropriate for a higher speed. A speed study will need to be conducted to determine the correct speed.

(6) Minimum access management spacing for public road approaches is the existing city block spacing or the city block spacing as identified in the local comprehensive plan. Public road connections are preferred over private driveways and in STAs driveways are discouraged. However, where driveways are allowed and where land use patterns permit, the minimum access management spacing for driveways is 175 feet (55 meters) or mid-block if the current city block is less than 350 feet (110 meters).

MAXIMUM VOLUME TO CAPACITY RATIOS OUTSIDE METRO[A,B,C,17]							
Highway Category	**Inside Urban Growth Boundary**					**Outside Urban Growth Boundary**	
	STA[D]	**MPO**	**Non-MPO Outside of STAs where non-freeway posted speed <= 35 mph, or a Designated UBA**	**Non-MPO outside of STAs where non-freeway speed > 35 mph**	**Non-MPO where non-freeway speed limit >= 45 mph**	**Unincorporated Communities**	**Rural Lands**
Interstate Highways[E]	N/A	0.80	N/A	0.70	0.70	0.70	0.70
Statewide Expressways	N/A	0.80	0.70	0.70	0.70	0.70	0.70
Freight Route on a Statewide Highway	0.85	0.80	0.80	0.75	0.70	0.70	0.70
Statewide (not a Freight Route)	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Freight Route on a Regional or District Highway	0.90	0.85	0.85	0.80	0.75	0.75	0.70
Expressway on a Regional or District Highway	N/A	0.85	N/A	0.80	0.75	0.75	0.70
Regional Highways	0.95	0.85	0.85	0.80	0.75	0.75	0.70
District / Local Interest Roads	0.95	0.90	0.90	0.85	0.80	0.80	0.75

Table 6: Maximum volume to capacity ratios for peak hour operating conditions

Notes for Table 6

[A] OHP Amendment 00-04 established alternative mobility standards for Portland Metro and the Rogue Valley MPO (RVMPO). For Metro, see Table 7, below. For RVMPO see note B, below and the OHP amendment establishing the RVMPO alternative standards located on the web at: *http://www.oregon.gov/ODOT/TD/TP/docs/orhwyplan/register/0004.pdf* . Where there is a conflict between the Table 6 standards and the established alternative mobility standards, the more tolerant standard (higher v/c ratio) applies.

[B] The maximum volume to capacity ratio at the Northbound and Southbound off-ramps of the South Medford Interchange is >1.0 for four hours daily until the new South Medford Interchange is constructed. The maximum v/c ratio at Highway 99 at Stewart Avenue is >1.0 for two hours daily. When the new interchange is completed, the mobility standards for the ramps will be those in Table 6.

[C] For the purposes of this policy, the peak hour shall be the 30th highest annual hour. This approximates weekday peak hour traffic in larger urban areas.

[D] Interstates and Expressways shall not be identified as Special Transportation Areas.

[E] National Highway System (NHS) highway design requirements are addressed in the Highway Design Manual (HDM).

[17] Table 6 was replaced in August 2005, part of OHP Amendment 05-16.

Table 18: Minimum Spacing Standards Applicable to Non-Freeway Interchanges with Two-Lane Crossroads

Category of Mainline	Type of Area	Speed of Mainline	Spacing Dimension				
			B	C	X	Y	Z
Expressways, Statewide, Regional and District Highways	Fully Developed Urban	45 mph (70 kph)	2640 ft (800 m)	1 mi (1.6 km)	750 ft (230 m)	1320 ft. (400 m)	990 ft. (300 m)
	Urban	45mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)
	Rural	55 mph (90 kph)	1 mi. (1.6 km)	2 mi (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft (400 m)

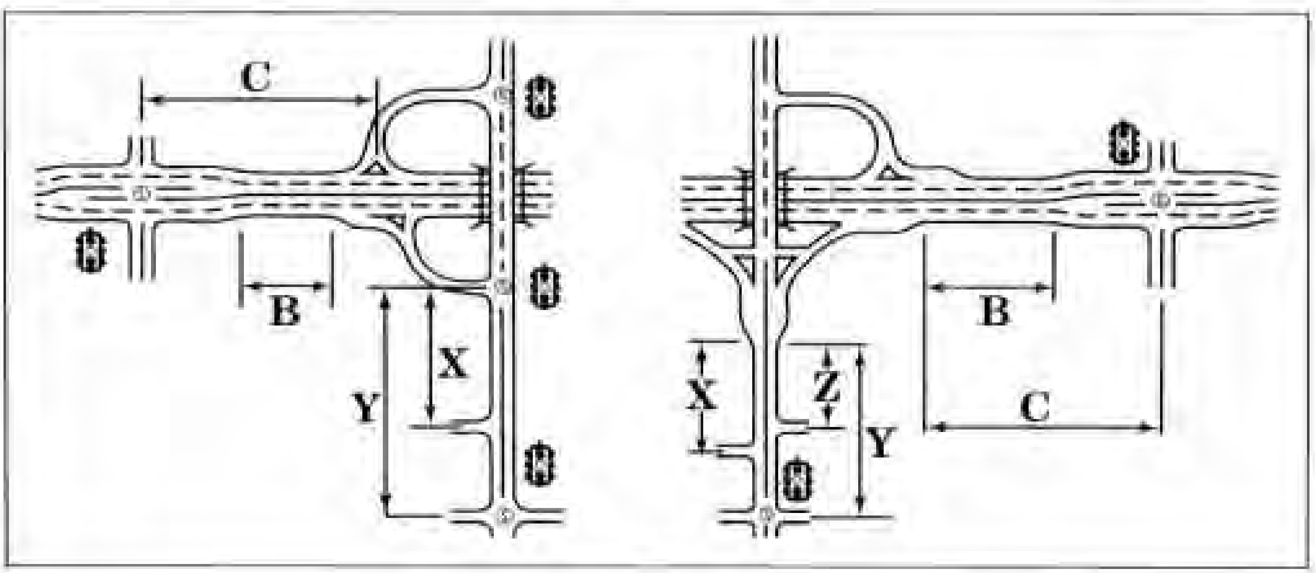
Notes:

1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
2) No four-legged intersection may be placed between ramp terminals and the first major intersection.
3) Use four-lane cross road standards for urban and suburban locations that are likely to be widened.
4) No at-grade intersections are permitted between continuous interchanges less than 5 miles apart.

Notes for Figure 20:

B = Distance between the start and end of tapers.
C = Distance between nearest at-grade and ramp terminal intersections or the end/start of the taper section.
X = Distance to first approach on the right, right in/right out only.
Y = Distance to first intersections where left turns are allowed.
Z = Distance between the last right in/out approach road and the start of the taper for the on-ramp.

Figure 20: Measurement of Spacing Standards for Table 18



2. Statewide Highways (NHS)

(Examples: Oregon Route 58, Oregon Route 42, US Route 30, US Route 97, and US Route 20)

a. Rural Expressways

- Expressways are to be designated by action of the Oregon Transportation Commission. (See Action 1A.2.)

- Expressways are existing two lane and multi-lane highways or planned highways that provide for safe and efficient high speed and high volume traffic movements.

- Private access is discouraged.

  - There is a long-range plan to eliminate, as possible, existing approach roads as opportunities occur or alternate access becomes available.

  - Access rights will be purchased and a local road network may be developed consistent with the function of the roadway.

- Public road connections are highly controlled and must be spaced appropriately. Future grade separations (interchanges) may be an option. Compatible land use actions may be necessary and shall be included in local comprehensive plans.

- Traffic signals are discouraged.

- Nontraversible medians must be constructed in the modernization of all multi-lane Expressways that have traversible medians.

- Parking is prohibited.

- The primary function of Expressways is to provide connections to larger urban areas, ports and major recreation areas with minimal interruptions.

b. Other Rural Highways[21]

- Statewide Rural Highways provide for high speed, continuous flow and through traffic movement.

- Direct access to the abutting property is a minor objective.

[21] Nomenclature for highways with no special designations ("other") has been changed here and throughout this section for consistency with Policy 1B changes made August 17, 2005, Amendment 05-16.

Table 8
Polk County Road Standards[1,2,3]

Functional Classification	Right-of-Way Urban/Rural	Developed Roadway Urban/Rural	Parking Urban/Rural	Bikeway Urban/Rural
Major Arterial	84 feet/N/A	70 feet/N/A	No/N/A	Bike Lane/N/A
Minor Arterial	68 feet/60 feet	44 feet/44 feet	No/No	Bike Lane/Shared Roadway
Major Collector	68 feet/60 feet	44 feet/36 feet	No/No	Bike Lane/Shared Roadway
Minor Collector	64 feet/60 feet	44 feet/30 feet	Yes/No	None/None
Resource Road	N/A	N/A	No	N/A/None
Local	60 feet/60 feet	44 feet/22 feet	Yes/Yes	None/None
Cul-de-Sac	60 feet/60 feet	34 feet/22 feet	Yes/No	None/None

Source: Polk County Road Standards and Subdivision Ordinance

[1] Within the UGB, the applicable city's standards apply.
[2] Roads which are designated as bike routes shall have a minimum of 4 foot paved shoulders, and the shared shoulder bikeway shall prevail.
[3] When volumes on county road exceed 1,000 ADT, shoulder bikeways will be used instead of shared roadway bikeways.

Access Management

Roads perform two basic functions–access to property for local traffic and allowing transit of through traffic. The functional classification of a road gives a clue as to its primary function. At the upper level, arterials are intended to primarily serve the through traffic, and at the lower end, local roads are intended to provide access to property. Collectors generally serve both purposes.

Since the majority of roads evolved from beginnings as local roads to a higher level of classification as an area grew, it is often difficult to attain the desired purpose without some reduction of service to residential, industrial, or commercial areas. A state highway which serves as the main street for a small town is often used for short trips and access to local businesses, industry, or even residences. But with increased traffic on the highway from growth in and/or out of the city, efficient service for both local and through travel becomes more and more difficult to attain. Lack of access management and insufficient coordination of land uses along the highway contribute to the degradation of the road network. Desire for traffic signals, new road approaches and driveways decrease speed and capacity while increasing both congestion and hazards. It has been estimated that the addition of a traffic signal will result in an almost automatic degradation of a road's level of service by one level.

Overall, access management is controlling vehicular access to a road. The simplest form of "management" is access denial which prohibits new accesses onto a major roadway. A related method of management is controlling where accesses are placed. Other forms include restricting left turns onto a highway, or not allowing cross traffic at intersections. Limits such as these provide a higher vehicle capacity on the major highway, which in turn allows higher speeds without requiring construction of additional traffic lanes. For several years, the state has placed access limits on its highway system. **Table 9** shows these limits for the state highways in Polk County.

On the majority of Polk County roads, congestion is not now, or for the next twenty years expected to be a problem. Therefore, access management has traditionally been to ensure safety, and Polk County's road permit process is primarily to satisfy that purpose.

The county access management program differentiates requirements based upon functional classification. The general requirement for locating accesses is that they shall be provided in a manner and location that shall protect public safety. In addition to the general requirement, the following standards govern accesses onto county roads:

- Every dwelling shall have access to a public road or an easement. An easement for access to two or more dwelling units on lots established after November 13, 1970 shall be at least 60 feet wide. (Polk County Zoning Ordinance)
- The maximum number of access points from a lot or parcel in an adopted Urban Growth Boundary is one, but no more than 40 percent of the frontage shall be used for the access. This standard does not apply to "flag lots" or lots or parcels located on a cul-de-sac which have less than 50 feet of road frontage. (Polk County Road Standards)
- The maximum number of access points from a lot or parcel outside an adopted Urban Growth Boundary is two. However, additional access points may be permitted by the Public Works Director. (Polk County Road Standards)
- The spacing for driveway accesses is dependent on minimum stopping sight distance, and varies from 125 feet at speeds of 20 mph to 525 feet at speeds of 60 mph. For intersections, the spacing distance ranges from 200 at speeds of 20 mph to 575 feet at speeds of 60 mph. Refer to the Polk County Road Standards for further details.
- For access distances within a UGB, the applicable city's standard shall apply. For ease of reference, they are repeated in **Table 9**. However, a permit applicant and/or permit approval authority should periodically review the standards with the city to ensure currency.

Table 9
Access Management Standards
State Highways

Access Category & Hwy.	Level of Importance[1]	Section (Urban/ Rural)	Intersection				Signal Spacing[4]	Median Control
			Public Road		Private Drive[3]			
			Type [2]	Spacing	Type	Spacing		
Cat. 3 Hwy. 18/22	Statewide	U	At grade/intch	1/2-1 mile	Right Turn	800 feet	1/2-1 mile	Partial
		R	At grade/intch	1-3 mile	Right Turn	1200 feet	None[5]	Partial[6]
Cat. 4 Hwy.99	Statewide/ Regional	U	At grade/intch	1/4 mile	Left & Right Turns	500 feet	1/2 mile	Partial/ None[7]
		R	At grade/intch	1 mile	Left & Right Turns	1200 feet	None[5]	Partial/ None[7]
Cat. 5 Hwy. 221	Regional/ District	U	At grade	1/4 mile	Left & Right Turns	300 feet	1/4 mile	None
		R	At grade	1/2 mile	Left & Right Turns	500 feet	1/2 mile	None
Cat. 6 Hwy. 51/223	District	U	At grade	500 feet	Left & Right Turns	150 feet	1/4 mile	None
		R	At grade	1/4 mile	Left & Right Turns	300 feet	1/2 mile	None

Source: 1991 Oregon Highway Plan

1. Level of Importance is an indicator of the area a highway is primarily to serve. It will generally correspond to certain access categories. When the access category is higher than the level of importance, existing levels of access control will not be reduced.
2. Type indicates an allowable intersection design option. The table above lists the basic options.
3. Private Drives:
   a. Generally, no signals will be allowed at private access points on statewide and regional highways.
   b. Allowed moves may be more restrictive than shown.
4. Signals should be spaced to minimize delay and disruptions to through traffic.
5. In some instances, signals may need to be required, but only after examining other options. Additionally, long range plans should find ways to eliminate the need for the signal in the future.
6. Partial median control will allow some breaks in the physical barrier, but only if no deterioration of highway operation will result.
7. Median barriers can be interspersed with segments of continuous left turn lanes.

112.175. ACCESS ONTO ARTERIALS.

(A) The number of access points onto arterial roads from any development shall be minimized whenever possible through the use of driveways common to more than one development, and interior circulation design, including frontage or marginal access roads, which further this requirement. Generally, no driveway or County or public road access will be permitted onto the rural portions of State Highways 18, 22, 51, 99W, 221, and 223 unless the following standards are met:

State Highway Access Distance

Access Type	Distance From Nearest Access Point					
	Hwy 18	Hwy 22	Hwy 51	Hwy 99W	Hwy 221	Hwy 223
Driveway	1,200 feet[1]	1,200 feet	500 feet	1,200 feet	500 feet	300 feet
County or Public Use Road	1-3 miles	1–3 miles	.5 mile	1 mile	.5 mile	.25 mile

[1] Right turn only access permitted

(B) Access onto arterials will require the approval, through the permit process, from the Oregon Department of Transportation. The applicant(s) will need to follow ODOT's construction requirements for that portion of the access within state-owned right-of-way.

(C) Where property, such as a reverse frontage lot, is located abutting a county or public use road, and a state highway, the preferred access will be onto the county or public use road. **[Adopted by Ordinance #98-5, dated July 8, 1998.]**

734-051-0155

Access Management Plans, Access Management Plans for Interchanges, and Interchange Area Management Plans

(1) The Department encourages the development of Access Management Plans, Access Management Plans for Interchanges, and Interchange Area Management Plans to maintain highway performance and improve safety by improving system efficiency and management before adding capacity consistent with the 1999 Oregon Highway Plan.

(2) Access Management Plans and Access Management Plans for Interchanges are developed for a designated section of highway with priority placed on facilities with high volumes or providing important statewide or regional connectivity where:

(a) Existing developments do not meet spacing standards;

(b) Existing development patterns, land ownership patterns, and land use plans are likely to result in a need for deviations; or

(c) An access management plan would preserve or enhance the safe and efficient operation of a state highway.

(3) Access Management Plans and Access Management Plans for Interchanges may be developed:

(a) By the Department;

(b) By local jurisdictions; or

(c) By consultants.

(4) Access Management Plans and Access Management Plans for Interchanges comply with all of the following:

(a) Are prepared for a logical segment of the state highway and include sufficient area to address highway operation and safety issues and development of adjoining properties including local access and circulation.

(b) Describe the roadway network, right-of-way, access control, and land parcels in the analysis area.

(c) Are developed in coordination with local governments and property owners in the affected area.

(d) Are consistent with any applicable adopted Transportation System Plan, Local Comprehensive Plan, Corridor Plan, or Special Transportation Area or Urban Business Area designation, or amendments to the Transportation System Plan unless the jurisdiction is exempt from transportation system planning requirements under OAR 660-012-0055.

(e) Are consistent with the 1999 Oregon Highway Plan.

(f) Contain short, medium, and long-range actions to improve operations and safety and preserve the functional integrity of the highway system.

(g) Consider whether improvements to local street networks are feasible.

(h) Promote safe and efficient operation of the state highway consistent with the highway classification and the highway segment designation.

(i) Consider the use of the adjoining property consistent with the comprehensive plan designation and zoning of the area.

(j) Provide a comprehensive, area-wide solution for local access and circulation that minimizes use of the state highway for local access and circulation.

(k) Are approved by the Department through an intergovernmental agreement and adopted by the local government, and adopted into a Transportation System Plan unless the jurisdiction is exempt from transportation system planning requirements under OAR 660-012-0055.

(l) Are used for evaluation of development proposals.

(m) May be used in conjunction with mitigation measures.

(5) The Department encourages the development of Interchange Area Management Plans to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways:

(a) Interchange Area Management Plans are developed by the Department and local governmental agencies to protect the function of interchanges by maximizing the capacity of the interchanges for safe

movement from the mainline facility, to provide safe and efficient operations between connecting roadways, and to minimize the need for major improvements of existing interchanges;
(b) The Department will work with local governments to prioritize the development of Interchange Area Management Plans to maximize the operational life and preserve and improve safety of existing interchanges not scheduled for significant improvements; and
(c) Priority should be placed on those facilities on the Interstate system with cross roads carrying high volumes or providing important statewide or regional connectivity
(6) Interchange Area Management Plans are required for new interchanges and should be developed for significant modifications to existing interchanges consistent with the following
(a) Should be developed no later than the time an interchange is designed or is being redesigned;
(b) Should identify opportunities to improve operations and safety in conjunction with roadway projects and property development or redevelopment and adopt strategies and development standards to capture those opportunities;
(c) Should include short, medium, and long-range actions to improve operations and safety in the interchange area;
(d) Should consider current and future traffic volumes and flows, roadway geometry, traffic control devices, current and planned land uses and zoning, and the location of all current and planned approaches;
(e) Should provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years;
(f) Should consider existing and proposed uses of the all property in the interchange area consistent with its comprehensive plan designations and zoning;
(g) Are consistent with any adopted Transportation System Plan, Corridor Plan, Local Comprehensive Plan, or Special Transportation Area or Urban Business Area designation, or amendments to the Transportation System Plan unless the jurisdiction is exempt from transportation system planning requirements under OAR 660-012-0055;
(h) Are consistent with the 1999 Oregon Highway Plan; and
(i) Are approved by the Department through an intergovernmental agreement and adopted by the local government, and adopted into a Transportation System Plan unless the jurisdiction is exempt from transportation system planning requirements under OAR 660-012-0055.
Stat. Auth.: ORS 184.616, 184.619, 374.310, 374.312 & 374.345; Ch. 972 & Ch. 974, OL 1999
Stats. Implemented: ORS 374.305 to 374.345 & 374.990; Ch. 974, OL 1999, Ch. 371, OL 2003
Hist.: TO 4-2000, f. 2-14-00, cert. ef. 4-1-00; HWD 2-2004, f. 2-18-04, cert. ef. 3-1-04, Renumbered from 734-051-0360

APPENDIX D

Crash and Operational Data (Existing and Future Conditions)

This appendix includes a technical memorandum analyzing safety and operations data for OR 22 (W). Also, attached are the raw traffic count data at intersections in the study area.

OR 22 West (Derry Overcrossing to Doaks Ferry Road) Expressway Management Plan -- Task 2 - Existing and Future Transportation Conditions

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DATE: April 18, 2008

PROJECT NUMBER: 356019.01.02

Executive Summary

Task 2 of the OR 22 (W) Expressway Management Plan for the segment located between Derry Overcrossing (MP 16.94) and Doaks Ferry Road (MP22.04) of the highway is divided into Tasks 2A and 2B. Task 2A examined the existing operational, safety and access conditions and Task 2B examined year 2030 operational conditions for the study area mentioned above.

Historical data and background planning documents provided by the Oregon Department of Transportation (ODOT) were reviewed and compared to the existing traffic conditions. The documents reviewed included:

- The September and August 2001 Willamette River Bridges to Greenwood Rd OR 22 Expressway Refinement Plan
- 1999 Oregon Highway Plan
- Oregon Administrative Rules Access Spacing Standards (OAR 734-051-0115)

The operational evaluation for Task 2A included traffic analyses for the existing traffic conditions for 3 segments and 12 unsignalized intersections along the highway.

Base year volume analysis was conducted using the Sychro model. The results of the analysis show that 3 of the 12 intersections analyzed currently fail and that the segment of OR 22 east of OR 51 experiences higher traffic volumes in the westbound direction resulting in a volume-to-capacity ratio that is at the 0.70 standard. West of OR 51, traffic volumes drop to a level that results in a significantly lower mainline volume-to-capacity ratio.

The safety evaluation for Task 2A included analysis of crash types and calculations of crash rates along OR 22 for the years 2002 through 2006. (The memo of 5/9/07 with 2001-2005 data has been updated.) The results of crash types analysis show high rear-end and angle/turning type crashes in the general vicinity of the intersection of OR 22/Independence Highway, which made it a top 10 percent Safety Priority Index System (SPIS) site for 2004-2006. The OR 22/51 and OR 22/Doaks Ferry Road intersections were listed in the top 5 percent SPIS sites for the years 2003-2005.

The 5-year average crash rates for the segments of OR 22 from the west-end of the study area to the SKATS urban study area (Oak Grove Road) and from the urban study area boundary to the eastern-end of the study area are 0.36 and 0.65 crashes per million vehicle miles, respectively. These crash rates are well below the 5-year statewide average crash rate for other freeways/expressways.

The existing access spacing along OR 22 within the study area was examined to determine whether or not the Oregon Administrative Rule (OAR 734-051-0115) spacing standards are met. Currently, none of the existing access spacing along OR 22 within the study area met the OAR access spacing standards.

The operational evaluation for Task 2B included developing year 2030 design hour volumes and conducting traffic analysis of these volumes for the No-Build condition of the study locations that were evaluated in Task 2A. The process used in developing and analyzing future year design hour volumes is described under Task 2B in this report.

OR 22 segments east of OR 51 and 10 of the 12 intersections evaluated are projected to exceed ODOT's capacity standard in the year 2030. The westbound OR 22 west of OR 51 is also expected to exceed ODOT's capacity. Capacity improvements for the failed segments and intersections will be discussed under Task 5 of this study.

Task 2A – Existing Traffic Conditions

The purpose of this task is to document the existing traffic conditions for the OR 22 (Willamina-Salem Highway) study corridor located between the Derry Overcrossing and Doaks Drive. The following discussion documents the data collection, study methodology and the findings of the operational analysis for the year 2007 existing traffic conditions.

Existing Traffic Volumes

Within the OR 22 study corridor, there are a number of intersecting roadways that include small local streets serving small business and rural homes located outside of the Salem city limits. In addition, there are larger arterials that provide regional access to rural properties and one other state highway (OR 51) that provide regional access to other nearby communities in Polk County. Based on discussions with ODOT staff, a number of these intersections are critical from the perspective of either providing access to adjacent properties or serving as local/regional connectors. As such, traffic data were gathered for the following intersections in developing the OR 22 Expressway Management Plan:

1. OR 22 / Rickreall Road
2. OR 22 / Oak Knoll Golf Course Driveway
3. OR 22 / N. Oak Grove Road
4. OR 22 / S. Oak Grove Road

5. OR 22 / OR 51
6. OR 22 / 52nd Avenue
7. OR 22 / 50th Avenue
8. OR 22 / Eola Bend RV Park Access
9. OR 22 / Mill Street
10. OR 22 / Shaw Street
11. OR 22 / College Drive

To assess the existing conditions at the intersections listed above, manual turning movement counts (3:00 – 6:00 p.m.) were obtained during typical mid-week days in March 2007. In addition to these new traffic counts, historical April 2006 traffic counts were obtained from ODOT staff at the following three intersections:

- OR 22/Greenwood Road
- OR 22/OR 51
- OR 22/Doaks Ferry Road

Given the historical nature of the three 2006 traffic counts, an analysis was performed to determine if any growth adjustments were necessary to reflect upstream and downstream volumes at the more recent 2007 study area traffic counts. From this analysis, it was found that there was no significant increase in traffic volumes that would warrant artificial growth adjustments. Accordingly, a cumulative assessment of all study area traffic counts revealed 4:30 – 5:30 p.m. to be the system peak hour. The traffic count sheets are provided in Attachment A.

Seasonal Variation Adjustment/30th Hour

It is recognized that certain highways in Oregon are prone to traffic volume fluctuations due to the effects of seasonal variation. Typically, the summer months experience higher traffic volumes due to additional traffic from recreation enthusiasts and vacationers, while non-summer months tend to experience lower traffic volumes. Using the methodology outlined by ODOT's Transportation Planning Analysis Unit, a seasonal adjustment factor of 1.09 was calculated for movements along the OR 22 study corridor, 1.07 for movements along the OR 51 corridor, and 1.06 for movements off of the remaining side-street study intersections[1]. These adjustment factors were applied to the weekday p.m. peak hour intersection turning movement counts to represent the 30th highest hour volume, or the base year volume. After accounting for seasonal variation in traffic, the adjusted turning movement counts were balanced and rounded to the nearest five vehicles per hour as shown in Figure 1. This figure is provided in Attachment B

Study Methodology

A Synchro model was constructed for the study corridor using the roadway geometries and the adjusted 30th hour traffic volumes. This model was used to assess existing operations along the study corridor.

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[1] Located within the study corridor is the Oak Knoll Permanent Automatic Traffic Recorder Station (27-006). Based on a historical review of average weekday traffic volumes, a seasonal adjustment factor of 1.09 was calculated for the OR 22 corridor. For OR 51, there is no representative ATR station nearby. Accordingly, the Seasonal Trend Methodology was utilized to generate a seasonal adjustment factor of 1.07. Finally, a fairly conservative adjustment factor of 1.06 was applied to all remaining movements on non ODOT highways to remain consistent with previous planning studies along the study corridor.

To ensure that the analyses are based on a worst-case scenario, the peak 15-minute flow rates during the peak hours were used in the evaluation of all intersection levels of service. For this reason, the analyses reflect conditions that are only likely to occur for the worst 15 minutes out of each typical peak hour. Traffic conditions during all other weekday time periods and throughout the weekend will likely operate under better conditions than described in this report. A summary of the existing lane configurations and traffic control devices are shown in Figure 2. The traffic operations summary worksheets and figures for the study intersections are also provided in Attachment B.

Performance Measures

The 1999 Oregon Highway Plan (OHP) outlines specific performance measures to be maintained along ODOT facilities as part of their Highway Mobility Standards. These standards are aimed at maintaining mobility along important road corridors and vary according to functional classification, location, and role within the National Highway System (NHS).

The following intersection performance measures are applicable for facilities within this study:

- Volume-to-capacity ratio of 0.70 for movements along OR 22 given its classification as a Statewide, NHS Expressway.
- Volume-to-capacity ratio of 0.80 for all movements along OR 22 that must stop or yield the right-of-way.

Traffic Operations Analysis

Unsignalized Intersection Analysis

All of the intersections along the OR 22 study corridor are currently unsignalized. For unsignalized intersections, the operations assessment is typically based on the intersection's ability to accommodate the worst or critical movement. This is typically the minor-street stop-controlled movement.

Table 1 provides a summary of the 12 stop-controlled or yield controlled intersection movements in order to determine how all of the critical intersection movements are operating during the existing 30th hour conditions.

Although the intersection of OR 22/College Drive is not part of the formal OR 22 study area, data for this intersection are presented in the appendices. The Project Management Team has noted that there is a potential to link Doaks Ferry Road and College Drive; thus, traffic counts were collected at OR 22/College Drive because this intersection may be a part of solutions for the study area.

The traffic operations summary worksheets and figures for the study intersections are provided in Attachment B.

Table 1. Year 2007 Existing Traffic Conditions, 30th Hour Traffic Volumes

Intersection	Direction	V/C Ratio	Adequate?
OR 22 / Greenwood Road	OR 22 EB Left-turn	0.01	Yes
	OR 22 WB Left-turn	0.06	Yes
	NB Approach	0.08	Yes
	SB Approach	0.19	Yes
OR 22 / Rickreal Road	NB Right-turn	0.04	Yes
OR 22 / Old Knoll GC DW	OR 22 EB Left-turn	0.01	Yes
	SB Approach	0.36	Yes
OR 22 / Oak Grove Road	OR 22 EB Left-turn	0.02	Yes
	SB Approach	0.28	Yes
OR 22 / S. Oak Grove Road	OR 22 WB Left-turn	0.03	Yes
	NB Approach	0.12	Yes
OR 22 / OR 51	OR 22 EB Left-turn	0.05	Yes
	OR 22 WB Left-turn	1.01	No
	NB Right-turn	0.72	Yes
	NB Through/Left-turn	>2.0	No
	SB Approach	>2.0	No
OR 22 / 52nd Ave	OR 22 EB Left-turn	0.01	Yes
	SB Approach	0.46	Yes
OR 22 / 50th Ave	OR 22 EB Left-turn	0.02	Yes
	OR 22 WB Left-turn	0.01	Yes
	NB Approach	0.01	Yes
	SB Approach	1.06	No
OR 22 / Eola Bend RV Park	OR 22 WB Left-turn	0.04	Yes
	NB Approach	0.47	Yes
OR 22 / Mill Street	OR 22 EB Left-turn	0.02	Yes
	SB Approach	0.10	Yes
OR 22 / Shaw Street	OR 22 EB Left-turn	0.01	Yes
	OR 22 WB Left-turn	0.01	Yes
	NB Approach	0.08	Yes
	SB Approach	0.04	Yes
OR 22 / Doaks Ferry Road	OR 22 EB Left-turn	0.80	Yes
	SB Approach	>2.0	No

As shown in Table 1, all intersections currently operate within acceptable volume-to-capacity ratios with the exception of the OR 22/OR 51, OR 22/50th Avenue, and OR 22/Doaks Ferry Road intersections. At the OR 22/51 intersection, the westbound left-turn, northbound through/left-turn, and shared southbound approach all operate above capacity. At the OR 22/50th Avenue and OR 22/Doaks Ferry Road intersections, the southbound approaches operate above capacity as well. The failing operations at these minor-street movements can be attributed to the heavy traffic demand along the OR 22.

The intersections of OR 22/50TH Avenue and OR 22/Doaks Ferry Road operated within the acceptable mobility standard in the 2001 OR 22 Expressway Refinement Plan.

Mainline Capacity Analysis

Analyses of the mainline volume-to-capacity ratio along three critical segments of OR 22 are provided in Table 2 below. These ratios were calculated using the HCM (Highway Capacity Manual) 2000 Multilane Highways Methodology.

Table 2. OR 22 Mainline Existing 30th Hour V/C Ratios

Segment	Direction	V/C*	Adequate?
Greenwood Road to OR 51	Eastbound	0.32	Yes
	Westbound	0.43	Yes
OR 51 to 50th Avenue	Eastbound	0.38	Yes
	Westbound	0.56	Yes
50th Avenue to Doaks Ferry Road	Eastbound	0.40	Yes
	Westbound	0.57	Yes

* Assumes a free flow speed of 55 mph and a maximum service flow rate of 2,100 pc/h/ln.

As shown in Table 2, the calculated volume-to-capacity ratios for the three critical segments of OR 22 meet the 0.70 performance standard. It should be noted that the segment of OR 22 east of OR 51 experiences higher traffic volumes in the westbound direction resulting in a volume-to-capacity ratio that is proportionally higher than the remainder of the study corridor. This can be attributed to the influence of OR 51. West of OR 51, traffic volumes drop to a level that results in a significantly lower mainline volume-to-capacity ratio. The mainline traffic operations summary worksheets for the three corridor segments are also provided in Attachment B.

Safety Analysis

This safety analysis provides an assessment of vehicular crash history for OR 22 and key intersections along the study area. The study area was divided into three segments to facilitate the crash analysis as shown below.

1. OR 22 from Derry Overcrossing (MP 16.94) to State Farm Road (MP 21.19)
2. OR 22 from State Farm Road (MP 21.19) to Doaks Ferry Road (MP 22.04)
3. OR 51: MP 0.00 to MP 0.25 (beginning at OR 22 and continuing south towards Independence).

Crash data for the most recent 5 years (years 2002 through 2006) available at the time of this analysis were provided by ODOT Crash Analysis Unit. This data was analyzed to calculate crash rates and identify existing deficiencies and needed improvements to reduce crash rates within the study area.

The following sections summarize the severity and type of crashes for the three segments listed above.

Severity and Type of Crashes for Segment 1

The severity and type of crashes for Segment 1 [OR 22 from Derry Overcrossing (MP 16.94) to State Farm Road (MP 21.19)] are summarized in Table 3. The land use of abutting properties within this segment is mostly farm land.

Table 3. Historical Crash Data 2002–2006 for OR 22 MP 16.94 to MP 21.19

Year	Severity of Crash			Total Crashes	Type of Crash				
	Fatality	Injury	Property Damage		Angle / Turning	Head-On	Rear-End	Fixed Object	Other
2002	0	13	7	20	6	0	2	8	4
2003	1	10	5	16	9	0	6	1	1
2004	0	8	5	13	4	0	5	3	1
2005	0	8	8	16	3	2	7	1	3
2006	0	7	8	15	2	1	7	1	4
Total	1	46	33	80	24	3	27	14	13

Source: ODOT, 2007

Crash reports for the years 2001 through 2005 show a total of 80 crashes on this segment. There were 1 fatal crash (1 percent), 46 injury crashes (58 percent), and 33 property damage only crashes (41 percent).

The most common types of crashes on OR 22 within this segment were angle/turning crashes (30 percent), and rear-end crashes (34 percent). These types of crashes are typical on segments of roadway with high-volume intersections, such as the intersection of OR 22 and OR 51. The majority of crashes on this segment occurred during day light on a dry surface.

The highest concentration (approximately 50 percent) of the turning movement crashes and rear-end crashes within this segment occurred within 500 feet of MP 20.4. This location is in the general vicinity of the intersection of OR 22 and OR 51.

Severity and Type of Crashes for Segment 2

The severity and type of crashes for Segment 2 (OR 22 from State Farm Road to the end of the study area) are summarized in Table 4. This segment is inside the SKATS urban study area.

Table 4. Historical Crash Data 2002–2006 for OR 22 MP 21.19 to MP 22.04

Year	Severity of Crash			Total Crashes	Type of Crash				
	Fatality	Injury	Property Damage		Angle / Turning	Head-On	Rear-End	Fixed Object	Other
2002	0	8	3	11	8	1	2	0	0
2003	0	4	4	8	6	1	1	0	0
2004	0	5	3	8	3	0	1	4	0
2005	0	1	2	3	2	0	1	0	0
2006	0	1	4	5	1	0	3	1	0
Total	0	19	16	35	20	2	8	5	0

Source: ODOT, 2007

Crash reports for the years 2002 through 2006 show a total of 35 crashes on this segment. There were 0 fatal crashes (0 percent), 19 injury crashes (54 percent), and 16 property damage only crashes (46 percent).

The most common types of crashes on OR 22 within this segment were angle/turning crashes (57 percent), and rear-end crashes (23 percent). The majority of crashes occurred during the day on a dry surface.

The highest concentration of the turning movement crashes (approximately 90 percent)and the majority of rear-end crashes within this segment occurred within 500 feet of MP 22.0. This location is in the general vicinity of the intersection of OR 22 and Doaks Ferry Road.

Severity and Type of Crashes for Segment 3

The safety analysis of OR 51 has one segment, beginning at OR 22 and continuing south towards Independence (OR 51, MP 0.00 to MP 0.25).

For the 5-year period, a total of 3 crashes were reported along OR 51 between MP 0.00 and MP 0.25. There was 1 injury crash and 2 crashes resulting in property damage only. Table 5 summarizes the crash history for OR 51 between MP 0.00 and MP 0.25 during the 5-year period.

Table 5. Historical Crash Data 2002–2006 for OR 51 MP 0.00 to MP 0.25

Year	Severity of Crash			Total Crashes	Type of Crash	
	Fatality	Injury	Property Damage		Fixed Object	Other
2002	0	1	1	2	2	0
2003	0	0	1	1	0	1
2004	0	0	0	0	0	0
2005	0	0	0	0	0	0
2006	0	0	0	0	0	0
Total	0	1	2	3	2	1

Source: ODOT, 2007

The most common types of crashes on OR 51 within the study area were fixed-object crashes (67 percent). Two crashes occurred in dry conditions during the day the third crash occurred in icy conditions at night.

Crash Rate Summary

The 5-year average crash rates for segments 1 and 2 were calculated and found to be equal to 0.36 and 0.65 crashes per million vehicle miles respectively. These crash rates are below the statewide average crash rate for other comparable freeways/expressways. See Attachment C for statewide average crash rate and OR 22 crash rate calculations data.

Safety Priority Index System (SPIS)

In addition to crash rates, ODOT also assesses roadway safety via the Safety Priority Index System (SPIS). The SPIS is used to calculate a relative score that takes into account crash frequency, crash rate, and crash severity. SPIS scores are computed for tenth (0.1) of a mile segments. SPIS scores can be compared to determine where safety improvement funds might best be spent. Typically, ODOT places the highest priority locations where SPIS scores fall within the top 10 percent in the entire state.

A roadway segment becomes a SPIS site if a location has three or more crashes; or one or more fatal crashes over a 3-year period.

There are two SPIS locations along OR 22 within the study area. These locations are shown in the top ten percent SPIS locations within the study area. The crash statistics and SPIS scores that are shown in Table 6 are based on crash data for the years 2003 through 2005.

Table 6. Top 10 Percent SPIS Locations within the Study Area (2007)

Highway	Beg. MP	End MP	Length	AADT	Total Crashes	Fatal	A*	B*	C*	PDO	% Rank	SPIS Score
OR 22	20.30	20.42	0.12	29,200	14	0	1	1	5	14	90	45.69

Source: ODOT, 2007 (2004-2006 data)
*Severity of Crashes: A = severe injury; B = moderate injury; C = minor injury

Access Conditions

The study area is designated as an expressway. The purpose of the expressway classification is to maintain mobility by providing for safe and efficient high-speed and high-volume traffic movements. Its primary function is to provide for interurban travel and connections to ports and major recreational areas with minimal interruptions. The existence of multiple access points into the study area represents interruptions or conflict points that hinder the roadway from functioning in the manner intended by the expressway designation. Conflict points are locations along a roadway at which a high user crossing, merging with, or diverging from a road or driveway conflicts with other motorist use the same road or driveway. Drivers make more mistakes and are more likely to have crashes when they are presented with complex driving situations created by numerous conflict points.

One of the most effective strategies for promoting increased safety and improved mobility is to manage access to the highway. Access management involves planning the location, design and operation of driveway, medians and intersections to provide access while, at the same time preserving safety and roadway efficiency. Access management involves:

- Restricting the number of direct access to major surface streets
- Providing reasonable indirect access
- Effectively designing driveways
- Enforcing safe and efficient spacing of driveways to limit the number and locations of conflict points

Currently there are approximately 56 private accesses and 14 public accesses to OR 22 within the study area. None of the access locations meet the applicable OAR access spacing standard for this highway, as shown in Table 7.

Table 7. Access Management Spacing Standards for Private and Public Approaches on Statewide Highways

Posted Speed (5)	Rural Expressway ** (Feet)*	Rural (Feet)*	Urban Expressway ** *** (Feet)*	Urban *** (Feet)*	STA (Feet)*
≥55	5280	1320	2640	1320	
50	5280	1100	2640	1100	
40 & 45	5280	990	2640	990	
30 & 35	770	720	(6)		
≤25	550	520	(6)		

Source: OAR 734-051-0115

NOTE: Refer to explanatory notes that follow Table 3 for the numbers in parenthesis; however, these notes are not relevant to the OR 22 study.
* Measurement of the approach road spacing is from center to center on the same side of the roadway.
** Spacing for Expressway at-grade intersections only. See the OHP for interchange spacing guidelines.
***These standards also apply to Commercial Centers.

Task 2B – Future Traffic Conditions

This memorandum documents the anticipated future 2030 No-Build traffic conditions for the OR 22 (W) Expressway Management Plan (EMP). Included in the memorandum are the travel forecasts and the results of the operational analyses of the future No-Build scenario for the corridor study area between Greenwood Road and Doaks Ferry Road.

Future Growth Forecasts

Future transportation demand estimates for the study area were based on a combination of forecasts from the Salem Keizer Area Transportation Study (SKATS) Transportation Planning Model, ODOT's Future Volume Tables, and a review of growth rates used in previous planning studies along the OR 22 corridor. The No-Build volumes were prepared assuming that no significant transportation improvements are made to the existing study corridor and study area intersections. The lane configurations at each of the study area intersections for the 2030 No-Build analysis are illustrated in Figure 3. This figure is provided in Attachment D.

Travel Forecasts

To forecast 2030 future traffic volumes along the OR 22 study corridor and study area intersections, base year (2005) and future year (2030) model runs were obtained from the SKATS model as an initial starting point. It should be noted that a large portion of the study corridor is on the edge of the SKATS modeling network. As such, not all of the intersecting corridor roadways are included in the model. For those roadways that are included, annual growth rates were calculated using the base year and future year model outputs. These annual growth rates are summarized in Table 8.

Table 8. SKATS Model Annual Growth Rate Calculations

Roadway Segment	Direction of Travel	
	Eastbound / Northbound	Westbound / Southbound
Oak Grove Road (north of OR 22)	13%	4.8%
OR 51 (south of OR 22)	1.1%	1.1%
OR 22 (west of Oak Grove Road)	3.9%	3.9%
OR 22 (east of Oak Grove Road)	3.9%	3.9%
Doaks Ferry Road (north of OR 22)	9.7%	5.9%
OR 22 (west of Doaks Ferry Road)	3.4%	3.5%

As shown in Table 8, annual growth rates along the OR 22 corridor are projected to range from approximately 3.5 percent at the east end of the study corridor to 3.9 percent at the west end of the study corridor. Growth along OR 51 is projected to occur at approximately 1.1 percent per year. Growth along Doaks Ferry Road is projected to be relatively high due to a significant amount of new development expected in the West Salem area. Growth along Oak Grove Road is also projected to be high; however it should be noted that base and future year traffic volumes in the model are still relatively low, which cause the growth rates appear to be more significant than they really are.

In addition to the SKATS model output, ODOT's Future Volume Tables were reviewed. These tables contain ADT values for all state highways and can be used to develop historic growth trends. Based on a review of these tables, annual growth rates of 3.1 percent to 3.6 percent were calculated at different points along the OR 22 study corridor. For OR 51, an annual growth rate of 1.4 percent was calculated along that section of highway just south of OR 22.

Comparing the SKATS model growth rates to the ODOT Future Volume Tables, the two sets of growth rates are relatively similar. As such, a combination of growth rates from the two sources were utilized for the purposes of developing 2030 No-Build traffic volumes along the OR 22 study corridor. Table 9 outlines the resulting 2030 No-Build annual growth rates used for different segments of the study corridor.

Table 9. 2030 No-Build Annual Growth Rates

Roadway Segment	Direction of Travel	
	Eastbound / Northbound	Westbound / Southbound
Oak Grove Road (north of OR 22)	13%	4.8%
OR 51 (south of OR 22)	1.4%	1.4%
OR 22 (west of OR 51)	3.2%	3.2%
OR 22 (east of OR 51)	3.6%	3.6%
Doaks Ferry Road (north of OR 22)	9.7%	5.9%
All other intersecting roadways	2.5%*	2.5%*

* With the exception of the previously noted roadways, the intersecting side streets are not included in the SKATS model. As such, an annual growth rate of 2.5% was applied to be consistent with previous planning efforts.

Because the application of growth rate estimates to turning movement counts can sometimes underestimate/overestimate future traffic volumes, traffic volume forecasts for some intersection turning movements were derived using the procedures outlined in National Cooperative Highway Research Program (NCHRP) Report 2-55. This procedure accounts for a combination of existing turning movement counts, and base and future year model forecasts as outlined below.

- Measured turning movement volumes and patterns are used as a starting point.
- The percentage change in the model's base and future year traffic volume for each movement is calculated.
- The numerical change (delta) in the model's traffic volumes is calculated.
- The results obtained from the percentage and numerical change calculations are averaged to obtain the 2025 analysis traffic volume.

As previously stated, the OR 22 (W) EMP study corridor essentially lies on the edge of the SKATS modeling network. As such, only the regionally significant OR 51 and Doaks Ferry Road segments are included in the model along with OR 22. The above outlined process was applied to the OR 22/OR 51 and OR 22/Doaks Ferry Road intersections. The balanced results of this procedure coupled with the application of the segment growth rate estimates outlined in Table 9 are illstrated in Figure 4. This figure is provided in Attachment D.

Year 2030 No-Build Traffic Operations Analyses

An operational analysis was conducted for the OR 22 study corridor to evaluate the future 2030 No-Build 30th Hour traffic conditions. This analysis was performed using Synchro to analyze the operations at the individual intersections. The OR 22 mainline volume-to-capacity ratios, unsignalized study intersections were analyzed using procedures described in the 2000 Highway Capacity Manual (HCM).

Performance Measures

The Oregon Highway Plan (1999) (OHP) outlines specific performance measures to be maintained along ODOT facilities as part of their Highway Mobility Standards. These standards are aimed at maintaining mobility along important road corridors and vary according to functional classification, location, and role within the National Highway System (NHS).

The following intersection performance measures are applicable for facilities within this study:

- Volume-to-capacity ratio of 0.70 for movements along OR 22 given its classification as a Statewide, NHS Expressway.
- Volume-to-capacity ratio of 0.80 for all movements along OR 22 that must stop or yield the right-of-way.

Unsignalized Intersection Analysis

All of the intersections along the OR 22 study corridor are assumed to remain unsignalized in the year 2030. For unsignalized intersections, the operations assessment is typically based on the intersection's ability to accommodate the worst or critical movement. This is typically the minor-street stop-controlled movement. Table 10 provides a summary of all stop-controlled or yield controlled intersection movements in order to determine how all of the critical intersection movements are operating during the existing 30th hour conditions.

Table 10. Unsignalized Intersection Analysis Results

Intersection	Direction	V/C Ratio	
		Existing 2007 Traffic Conditions	Future 2030 No-Build Traffic Conditions
OR 22 / Greenwood Road	OR 22 EB Left-turn	0.01	0.06
	OR 22 WB Left-turn	0.06	0.33
	NB Approach	0.08	>2.0
	SB Approach	0.19	>2.0
OR 22 / Rickreal Road	NB Right-turn	0.04	0.15
OR 22 / Old Knoll GC DW	OR 22 EB Left-turn	0.01	0.09
	SB Approach	0.36	0.41
OR 22 / Oak Grove Road	OR 22 EB Left-turn	0.02	0.12
	SB Approach	0.28	>2.0
OR 22 / S. Oak Grove Road	OR 22 WB Left-turn	0.03	0.15
	NB Approach	0.12	>2.0
OR 22 / OR 51	OR 22 EB Left-turn	0.05	0.36
	OR 22 WB Left-turn	1.01	>2.0
	NB Right-turn	0.72	>2.0
	NB Through/Left-turn	>2.0	>2.0
	SB Approach	>2.0	>2.0
OR 22 / 52nd Ave	OR 22 EB Left-turn	0.01	0.01
	SB Approach	0.46	0.85
OR 22 / 50th Ave	OR 22 EB Left-turn	0.02	0.23
	OR 22 WB Left-turn	0.01	0.05
	NB Approach	0.01	0.04
	SB Approach	1.06	>2.0
OR 22 / Eola Bend RV Park	OR 22 WB Left-turn	0.04	0.28
	NB Approach	0.47	>2.0
OR 22 / Mill Street	OR 22 EB Left-turn	0.02	0.60
	SB Approach	0.10	>2.0
OR 22 / Shaw Street	OR 22 EB Left-turn	0.01	0.01
	OR 22 WB Left-turn	0.01	0.10
	NB Approach	0.08	0.71
	SB Approach	0.04	1.36
OR 22 / Doaks Ferry Road	OR 22 EB Left-turn	0.80	>2.0
	SB Approach	>2.0	>2.0

Note: Shaded cells represent that the movement is forecast to exceed ODOT's 0.80 performance standard.

The traffic operations summary worksheets for the study intersections are provided in Attachment D.

As shown in Table 10, a projected increase in traffic volumes along the OR 22 corridor will result in a significant number of critical minor street approaches operating well above capacity. In addition, major street left-turns at the more regionally significant OR 22/OR 51 and OR 22/Doaks Ferry Road intersection are also projected to operate above capacity by the year 2030. These operational results are relatively consistent with previous long-term forecasts for the OR 22 study corridor and suggest that intersection improvements and access management techniques will need to be addressed.

Mainline Capacity Analysis

Year 2030 analyses of the mainline volume-to-capacity ratios along three critical segments of OR 22 are provided in Table 11. These ratios were calculated using the HCM (Highway Capacity Manual) 2000 Multilane Highways Methodology.

Table 11. OR 22 Mainline 2030 Future No-Build 30th Hour V/C Ratios

Segment	Direction	V/C*	
		Existing 2007 Conditions	Future 2030 No-Build Conditions
Greenwood Road to OR 51	Eastbound	0.32	0.64
	Westbound	0.43	0.78
OR 51 to 50th Avenue	Eastbound	0.38	0.74
	Westbound	0.56	0.99
50th Avenue to Doaks Ferry Road	Eastbound	0.40	0.76
	Westbound	0.57	1.00

Note: Shaded cells indicate that the highway segment is forecast to exceed to the 0.70 performance standard.
* Assumes a free flow speed of 55 mph and a maximum service flow rate of 2,100 pc/h/ln.

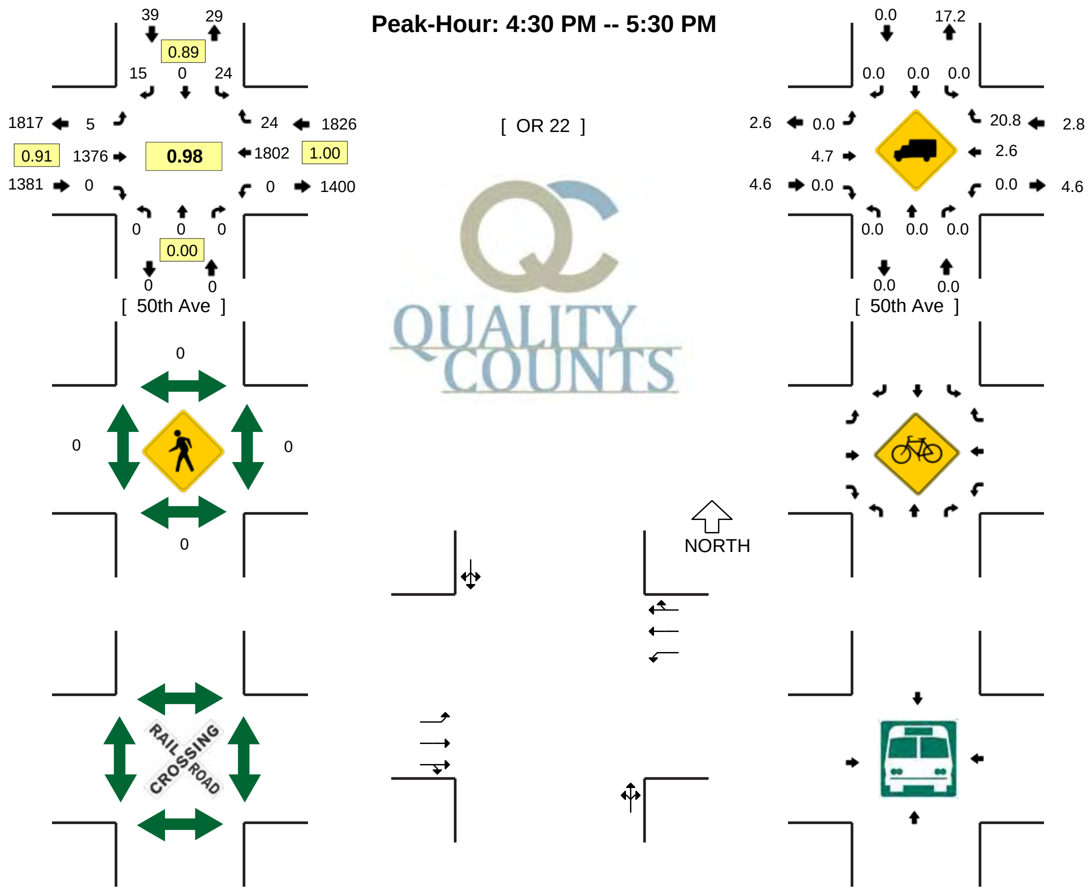
As shown in Table 11, the calculated volume-to-capacity ratios for the three critical segments of OR 22 are projected to operate near or slightly above the 0.70 performance standard in the eastbound direction. In the westbound direction, the segments located east of OR 51 are forecast to operate at or near the effective capacity of the highway. West of OR 51, traffic volumes drop to a level that results in a significantly lower volume-to-capacity ratio. However, the westbound direction is still forecast to operate just above the performance standard. These results indicate that mainline capacity improvements will need to be addressed for particular segments of the study corridor.

Attachment A
Traffic Counts

Type of peak hour being reported: User Defined | Method for determining peak hour: Total Entering Volume

INTERSECTION: 50th Ave--OR 22 | **QC JOB #:** 10236401
WEATHER: | **DATE:** 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	50th Ave (Northbound) Left	Thru	Right	U	50th Ave (Southbound) Left	Thru	Right	U	OR 22 (Eastbound) Left	Thru	Right	U	OR 22 (Westbound) Left	Thru	Right	U	TOTAL	HOURLY TOTALS
2:00 PM	0	0	1		6	0	1		3	235	0		0	236	1		483	1898
2:15 PM	0	0	0		3	0	1		1	248	0		0	263	1		517	1969
2:30 PM	1	0	2		3	0	1		0	259	0		1	286	3		556	2043
2:45 PM	0	0	1		1	0	4		2	267	0		0	280	3		558	2114
3:00 PM	0	0	0		3	0	2		2	267	0		0	301	3		578	2209
3:15 PM	0	0	0		1	0	2		1	294	0		1	338	5		642	2334
3:30 PM	1	0	2		1	0	1		0	341	0		3	333	4		686	2464
3:45 PM	0	0	1		4	0	2		2	418	0		0	391	5		823	2729
4:00 PM	0	0	1		6	0	3		2	304	0		1	412	4		733	2884
4:15 PM	0	0	0		6	0	2		2	367	0		0	464	5		846	3088
4:30 PM	0	0	0		5	0	6		0	379	0		0	428	7		825	3227
4:45 PM	0	0	0		3	0	3		2	309	0		0	465	9		791	3195
5:00 PM	0	0	0		8	0	5		1	324	0		0	474	4		816	3278
5:15 PM	0	0	0		8	0	1		2	364	0		0	435	4		814	3246
5:30 PM	0	0	0		2	0	2		2	295	0		0	433	2		736	3157
5:45 PM	0	0	0		2	0	4		1	278	0		0	393	4		682	3048
6:00 PM	0	0	0		2	0	0		3	230	0		0	371	1		607	2839
6:15 PM	0	0	0		4	0	1		0	234	0		0	313	4		556	2581
6:30 PM	0	0	0		1	0	0		1	209	0		0	272	3		486	2331
6:45 PM	0	0	0		1	0	1		1	178	0		0	267	1		449	2098
7:00 PM	0	0	0		0	0	0		0	147	0		0	210	1		358	1849
7:15 PM	0	0	0		1	0	0		0	154	0		0	199	2		356	1649
7:30 PM	0	0	0		2	0	0		0	137	0		0	207	4		350	1513
7:45 PM	0	0	0		0	0	2		1	103	0		1	166	2		275	1339

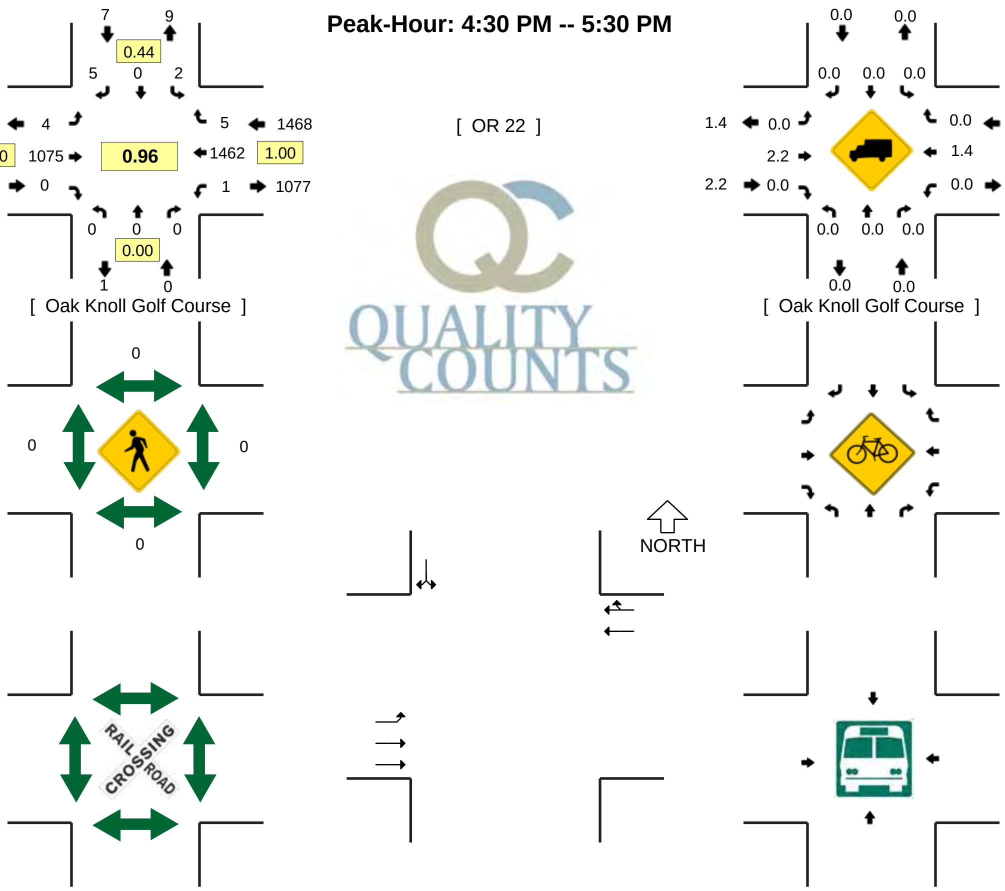
PEAK 15-MIN FLOW RATES	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	TOTAL
All Vehicles	0	0	0		20	0	24		0	1516	0		0	1712	28		3300
Heavy Trucks	0	0	0		0	0	0		0	64	0		0	80	0		144
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Type of peak hour being reported: User Defined | Method for determining peak hour: Total Entering Volume

INTERSECTION: Oak Knoll Golf Course--OR 22 | **QC JOB #:** 10236414
WEATHER: | **DATE:** 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Oak Knoll Golf Co... (Northbound)				Oak Knoll Golf Co... (Southbound)				OR 22 (Eastbound)				OR 22 (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0		1	0	1		0	222	0		0	226	0		450	
3:15 PM	0	0	0		0	0	0		2	222	0		0	287	1		512	
3:30 PM	0	0	0		0	0	0		5	278	0		0	278	2		563	
3:45 PM	0	0	0		1	0	0		3	282	0		0	307	2		595	2120
4:00 PM	0	0	0		2	0	1		2	244	0		0	334	2		585	2255
4:15 PM	0	0	0		4	0	2		3	285	0		0	361	4		659	2402
4:30 PM	0	0	0		2	0	2		1	300	0		1	360	1		667	2506
4:45 PM	0	0	0		0	0	1		0	237	0		0	372	1		611	2522
5:00 PM	0	0	0		0	0	0		3	256	0		0	378	2		639	2576
5:15 PM	0	0	0		0	0	2		0	282	0		0	352	1		637	2554
5:30 PM	0	0	0		1	0	1		0	246	0		0	359	2		609	2496
5:45 PM	0	0	0		3	0	4		1	227	0		0	318	1		554	2439

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0		8	0	8		4	1200	0		4	1440	4		2668
Heavy Trucks	0	0	0		0	0	0		0	20	0		0	36	0		56
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Type of peak hour being reported: User Defined

Method for determining peak hour: Total Entering Volume

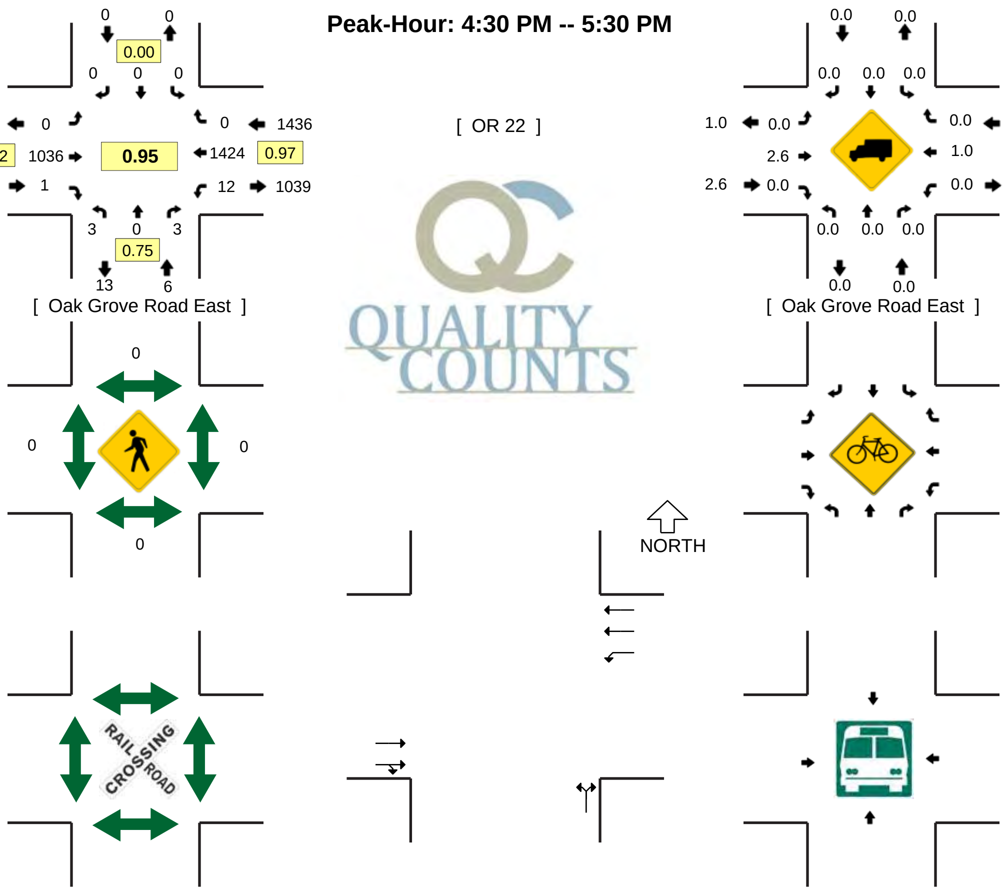
INTERSECTION: Oak Grove Road East--OR 22

WEATHER:

QC JOB #: 10236410

DATE: 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Oak Grove Road Ea... (Northbound) Left	Thru	Right	U	Oak Grove Road Ea... (Southbound) Left	Thru	Right	U	OR 22 (Eastbound) Left	Thru	Right	U	OR 22 (Westbound) Left	Thru	Right	U	TOTAL	HOURLY TOTALS
3:00 PM	0	0	2		0	0	0		0	216	1		0	227	0		446	
3:15 PM	3	0	1		0	0	0		0	224	0		0	278	0		506	
3:30 PM	0	0	2		0	0	0		0	252	1		1	272	0		528	
3:45 PM	0	0	0		0	0	0		0	277	0		1	301	0		579	2059
4:00 PM	1	0	1		0	0	0		0	231	2		1	324	0		560	2173
4:15 PM	1	0	2		0	0	0		0	280	1		1	331	0		616	2283
4:30 PM	0	0	2		0	0	0		0	282	0		3	332	0		619	2374
4:45 PM	1	0	0		0	0	0		0	235	1		1	348	0		586	2381
5:00 PM	1	0	0		0	0	0		0	237	0		3	379	0		620	2441
5:15 PM	1	0	1		0	0	0		0	282	0		5	365	0		654	2479
5:30 PM	0	0	1		0	0	0		0	224	1		3	366	0		595	2455
5:45 PM	1	0	0		0	0	0		0	225	0		0	337	0		563	2432

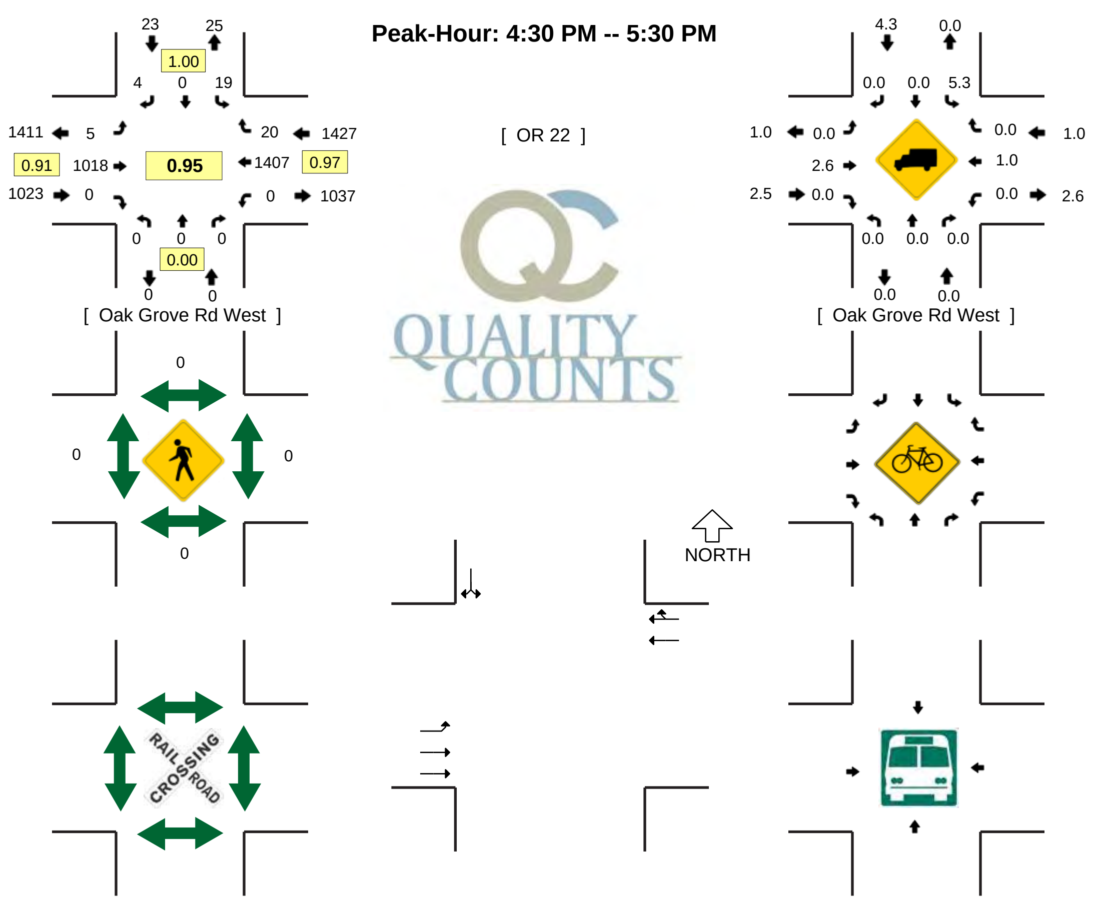
PEAK 15-MIN FLOW RATES	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	TOTAL
All Vehicles	4	0	4		0	0	0		0	1128	0		20	1460	0		2616
Heavy Trucks	0	0	0		0	0	0		0	44	0		0	8	0		52
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Type of peak hour being reported: User Defined — Method for determining peak hour: Total Entering Volume

INTERSECTION: Oak Grove Rd West--OR 22 — **QC JOB #:** 10236412
WEATHER: — **DATE:** 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Oak Grove Rd West (Northbound) Left	Thru	Right	U	Oak Grove Rd West (Southbound) Left	Thru	Right	U	OR 22 (Eastbound) Left	Thru	Right	U	OR 22 (Westbound) Left	Thru	Right	U	TOTAL	HOURLY TOTALS
3:00 PM	0	0	0		5	0	3		2	212	0		0	223	4		449	
3:15 PM	0	0	0		3	0	4		1	221	0		0	275	6		510	
3:30 PM	0	0	0		5	0	4		2	248	0		0	268	4		531	
3:45 PM	0	0	0		0	0	5		0	277	0		0	297	4		583	2073
4:00 PM	0	0	0		4	0	7		0	229	0		0	318	7		565	2189
4:15 PM	0	0	0		6	0	0		2	275	0		0	327	5		615	2294
4:30 PM	0	0	0		7	0	1		2	275	0		0	326	6		617	2380
4:45 PM	0	0	0		4	0	0		1	232	0		0	345	4		586	2383
5:00 PM	0	0	0		5	0	2		0	232	0		0	374	6		619	2437
5:15 PM	0	0	0		3	0	1		2	279	0		0	362	4		651	2473
5:30 PM	0	0	0		1	0	2		1	224	0		0	362	4		594	2450
5:45 PM	0	0	0		5	0	6		2	220	0		0	332	6		571	2435

PEAK 15-MIN FLOW RATES	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	TOTAL
All Vehicles	0	0	0		12	0	4		8	1116	0		0	1448	16		2604
Heavy Trucks	0	0	0		0	0	0		0	44	0		0	8	0		52
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

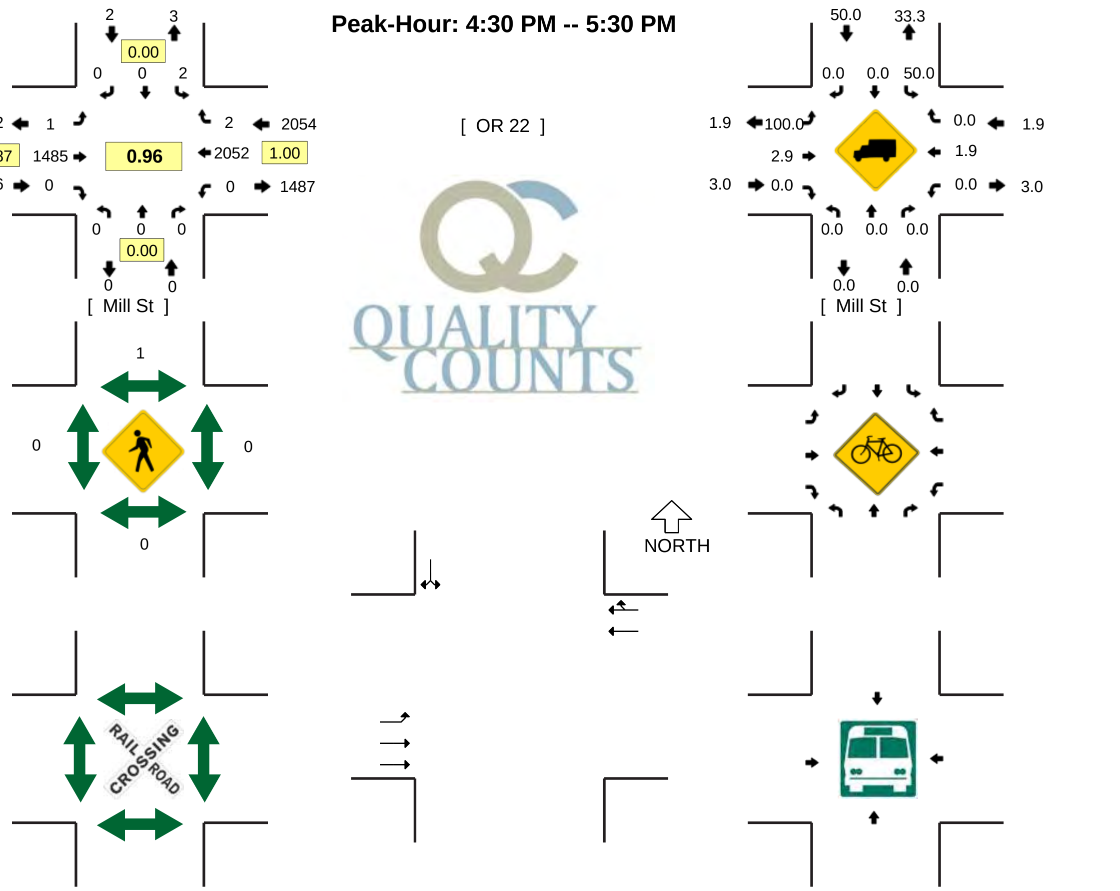
Counter Comments:

Report generated on 3/19/2007 — SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: User Defined — Method for determining peak hour: Total Entering Volume

INTERSECTION: Mill St--OR 22 — **QC JOB #:** 10236408
WEATHER: — **DATE:** 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	Mill St (Northbound) Left	Thru	Right	U	Mill St (Southbound) Left	Thru	Right	U	OR 22 (Eastbound) Left	Thru	Right	U	OR 22 (Westbound) Left	Thru	Right	U	TOTAL	HOURLY TOTALS
3:00 PM	0	0	0		0	1	0		1	274	0		0	314	0		590	
3:15 PM	0	0	0		0	0	0		0	310	0		0	385	0		695	
3:30 PM	0	0	0		0	1	0		0	342	0		0	342	0		685	
3:45 PM	0	0	0		0	3	0		0	447	0		0	422	0		872	2842
4:00 PM	0	0	0		0	2	1		0	324	0		0	455	0		782	3034
4:15 PM	0	0	0		1	0	0		0	378	0		0	480	0		859	3198
4:30 PM	0	0	0		0	0	0		0	425	0		0	499	0		924	3437
4:45 PM	0	0	0		1	0	0		1	323	0		0	525	0		850	3415
5:00 PM	0	0	0		0	0	0		0	344	0		0	515	0		859	3492
5:15 PM	0	0	0		1	0	0		0	393	0		0	513	2		909	3542
5:30 PM	0	0	0		0	0	0		0	307	0		0	471	0		778	3396
5:45 PM	0	0	0		0	0	0		0	293	0		0	441	0		734	3280

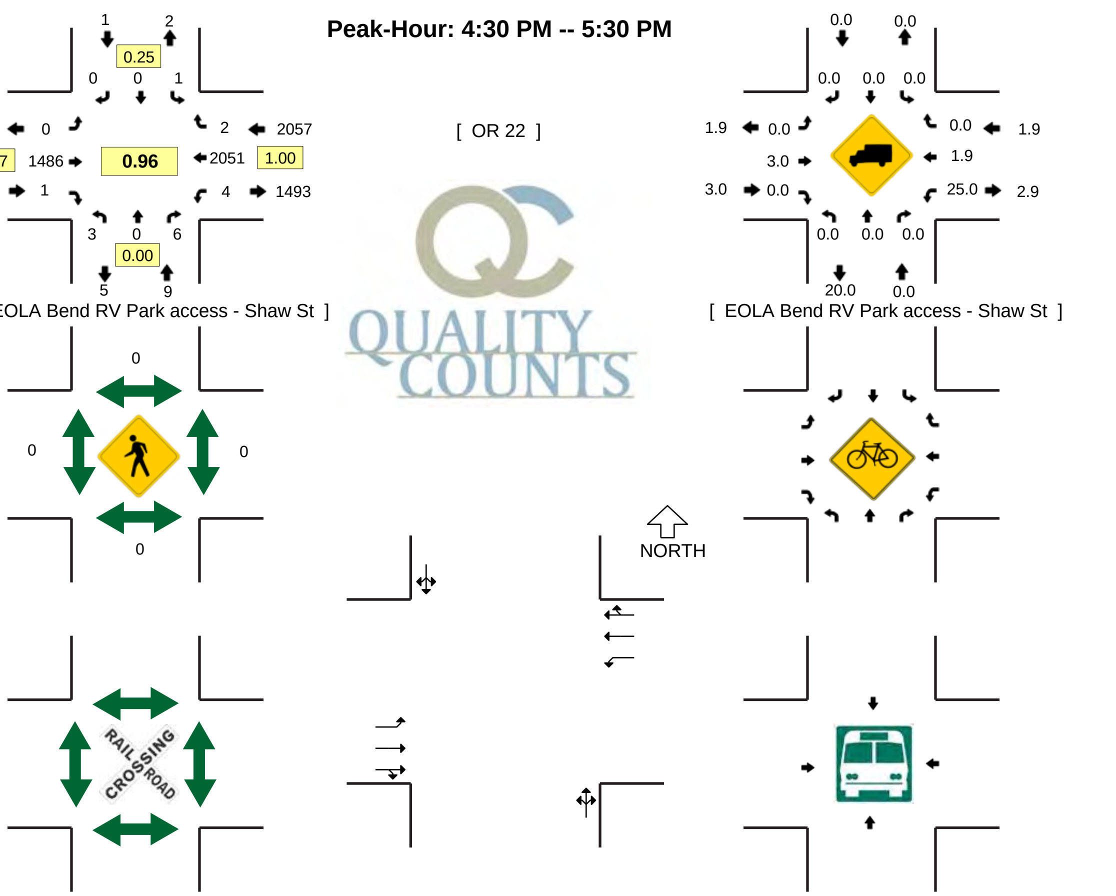
PEAK 15-MIN FLOW RATES	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	TOTAL
All Vehicles	0	0	0		0	0	0		0	1700	0		0	1996	0		3696
Heavy Trucks	0	0	0		0	0	0		0	36	0		0	60	0		96
Pedestrians		0				4				0				0			4
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Report generated on 3/19/2007 — SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: User Defined | Method for determining peak hour: Total Entering Volume

INTERSECTION: EOLA Bend RV Park access - Shaw St--OR 22 | **QC JOB #:** 10236406
WEATHER: | **DATE:** 3/7/2007



5-MIN COUNT PERIOD BEGINNING AT	EOLA Bend RV Park... (Northbound) Left	Thru	Right	U	EOLA Bend RV Park... (Southbound) Left	Thru	Right	U	OR 22 (Eastbound) Left	Thru	Right	U	OR 22 (Westbound) Left	Thru	Right	U	TOTAL	HOURLY TOTALS
3:00 PM	0	0	1		0	0	0		0	274	0		1	314	1		591	
3:15 PM	0	0	1		0	0	0		0	310	0		2	385	2		700	
3:30 PM	0	0	1		0	0	0		0	342	0		1	342	0		686	
3:45 PM	0	0	0		0	0	0		1	445	1		0	422	2		871	2848
4:00 PM	0	0	4		0	0	0		0	320	4		1	455	0		784	3041
4:15 PM	0	0	3		0	0	0		0	379	0		0	480	0		862	3203
4:30 PM	0	0	0		1	0	0		0	424	1		0	499	1		926	3443
4:45 PM	0	0	1		0	0	0		0	324	0		2	525	0		852	3424
5:00 PM	2	0	5		0	0	0		0	344	0		0	513	1		865	3505
5:15 PM	1	0	0		0	0	0		0	394	0		2	514	0		911	3554
5:30 PM	0	0	1		0	0	0		0	307	0		1	471	0		780	3408
5:45 PM	2	0	2		0	0	0		0	293	0		1	439	1		738	3294

PEAK 15-MIN FLOW RATES	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	TOTAL
All Vehicles	0	0	0		4	0	0		0	1696	4		0	1996	4		3704
Heavy Trucks	0	0	0		0	0	0		0	36	0		0	60	0		96
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

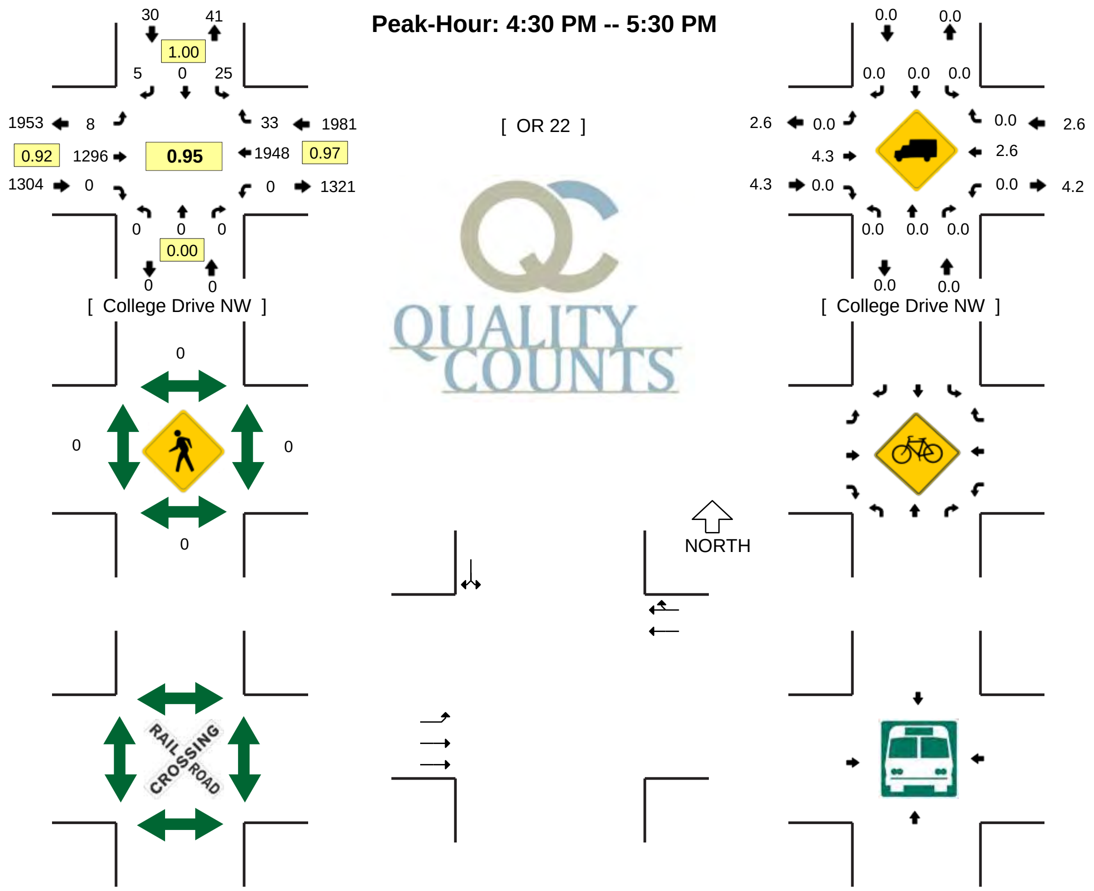
Counter Comments:

Report generated on 3/19/2007 | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of peak hour being reported: User Defined | Method for determining peak hour: Total Entering Volume

INTERSECTION: College Drive NW--OR 22 | **QC JOB #:** 10236417
WEATHER: | **DATE:** 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



5-MIN COUNT PERIOD BEGINNING AT	College Drive NW (Northbound) Left	Thru	Right	U	College Drive NW (Southbound) Left	Thru	Right	U	OR 22 (Eastbound) Left	Thru	Right	U	OR 22 (Westbound) Left	Thru	Right	U	TOTAL	HOURLY TOTALS
2:00 PM	0	0	0		2	0	0		3	219	0		0	257	4		485	1942
2:15 PM	0	0	0		5	0	2		0	251	0		0	275	3		536	2032
2:30 PM	0	0	0		5	0	0		0	250	0		0	300	9		564	2103
2:45 PM	0	0	0		1	0	0		1	277	0		0	290	8		577	2162
3:00 PM	0	0	0		4	0	4		0	251	0		0	325	13		597	2274
3:15 PM	0	0	0		8	0	3		4	310	0		0	355	13		693	2431
3:30 PM	0	0	0		4	0	2		0	310	0		0	347	9		672	2539
3:45 PM	0	0	0		7	0	0		4	436	0		0	410	5		862	2824
4:00 PM	0	0	0		3	0	2		0	306	0		0	456	9		776	3003
4:15 PM	0	0	0		5	0	0		1	340	0		0	460	8		814	3124
4:30 PM	0	0	0		6	0	1		2	354	0		0	468	9		840	3292
4:45 PM	0	0	0		5	0	1		4	302	0		0	470	8		790	3220
5:00 PM	0	0	0		8	0	2		1	287	0		0	507	8		813	3257
5:15 PM	0	0	0		6	0	1		1	353	0		0	503	8		872	3315
5:30 PM	0	0	0		2	0	0		1	297	0		0	447	8		755	3230
5:45 PM	0	0	0		3	0	0		5	265	0		0	439	11		723	3163
6:00 PM	0	0	0		3	0	0		1	201	0		0	375	0		580	2930
6:15 PM	0	0	0		7	0	3		0	244	0		0	321	7		582	2640
6:30 PM	0	0	0		2	0	0		2	194	0		0	269	9		476	2361
6:45 PM	0	0	0		4	0	0		4	148	0		0	261	26		443	2081
7:00 PM	0	0	0		3	0	0		0	155	0		0	224	17		399	1900
7:15 PM	0	0	0		2	0	0		1	128	0		0	203	1		335	1653
7:30 PM	0	0	0		1	0	1		2	135	0		0	194	5		338	1515
7:45 PM	0	0	0		3	0	1		0	107	0		0	175	5		291	1363

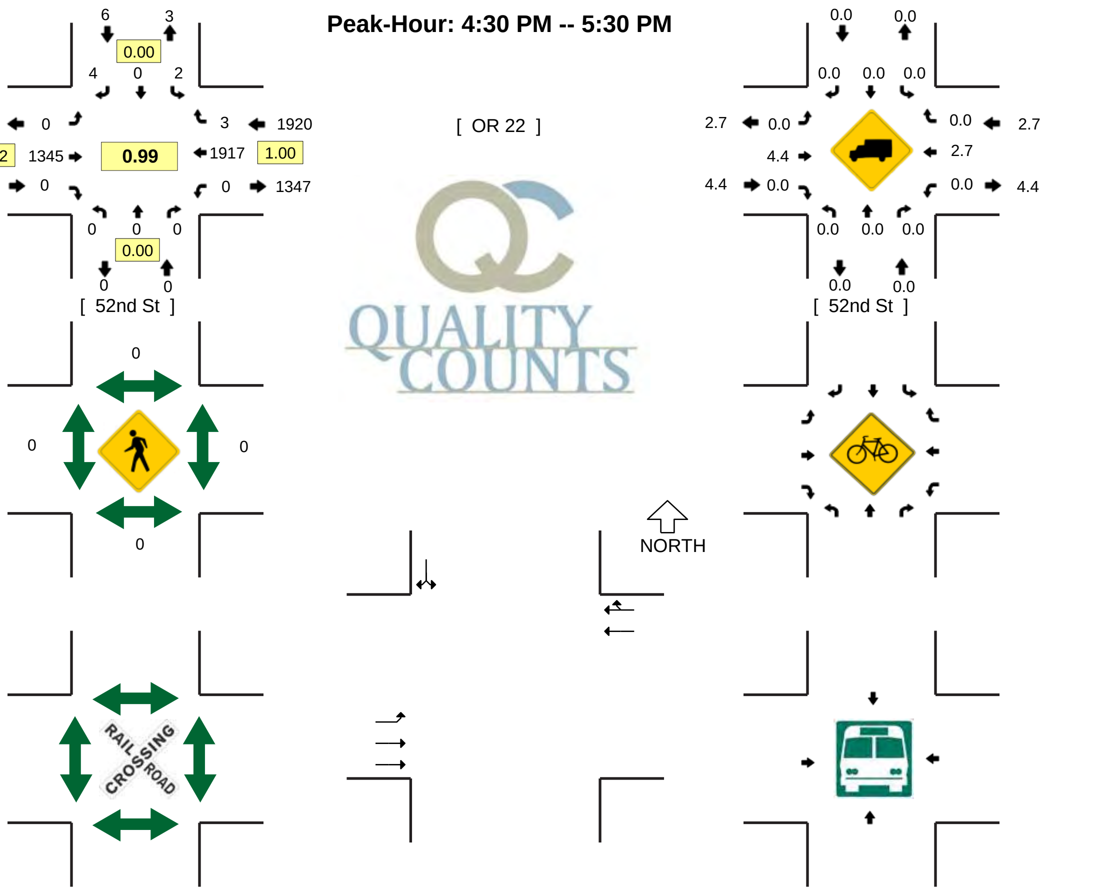
PEAK 15-MIN FLOW RATES	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	TOTAL
All Vehicles	0	0	0		24	0	4		4	1412	0		0	2012	32		3488
Heavy Trucks	0	0	0		0	0	0		0	48	0		0	48	0		96
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Type of peak hour being reported: User Defined
Method for determining peak hour: Total Entering Volume

INTERSECTION: 52nd St--OR 22
WEATHER:
QC JOB #: 10236404
DATE: 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



*SEE LEGEND SHEET

5-MIN COUNT PERIOD BEGINNING AT	52nd St (Northbound) Left	Thru	Right	U	52nd St (Southbound) Left	Thru	Right	U	OR 22 (Eastbound) Left	Thru	Right	U	OR 22 (Westbound) Left	Thru	Right	U	TOTAL	HOURLY TOTALS
3:00 PM	0	0	0		3	0	0		0	291	0		0	335	0		629	
3:15 PM	0	0	0		1	0	0		0	339	0		0	427	2		769	
3:30 PM	0	0	0		7	0	1		0	399	0		0	381	0		788	
3:45 PM	0	0	0		2	0	0		0	453	0		0	454	1		910	3096
4:00 PM	0	0	0		0	0	0		1	301	0		0	437	2		741	3208
4:15 PM	0	0	0		1	0	0		0	367	0		0	463	0		831	3270
4:30 PM	0	0	0		0	0	0		0	365	0		0	458	2		825	3307
4:45 PM	0	0	0		1	0	4		0	298	0		0	494	1		798	3195
5:00 PM	0	0	0		1	0	0		0	318	0		0	501	0		820	3274
5:15 PM	0	0	0		0	0	0		0	364	0		0	464	0		828	3271
5:30 PM	0	0	0		0	0	0		0	295	0		0	469	2		766	3212
5:45 PM	0	0	0		0	0	0		0	279	0		0	412	6		697	3111

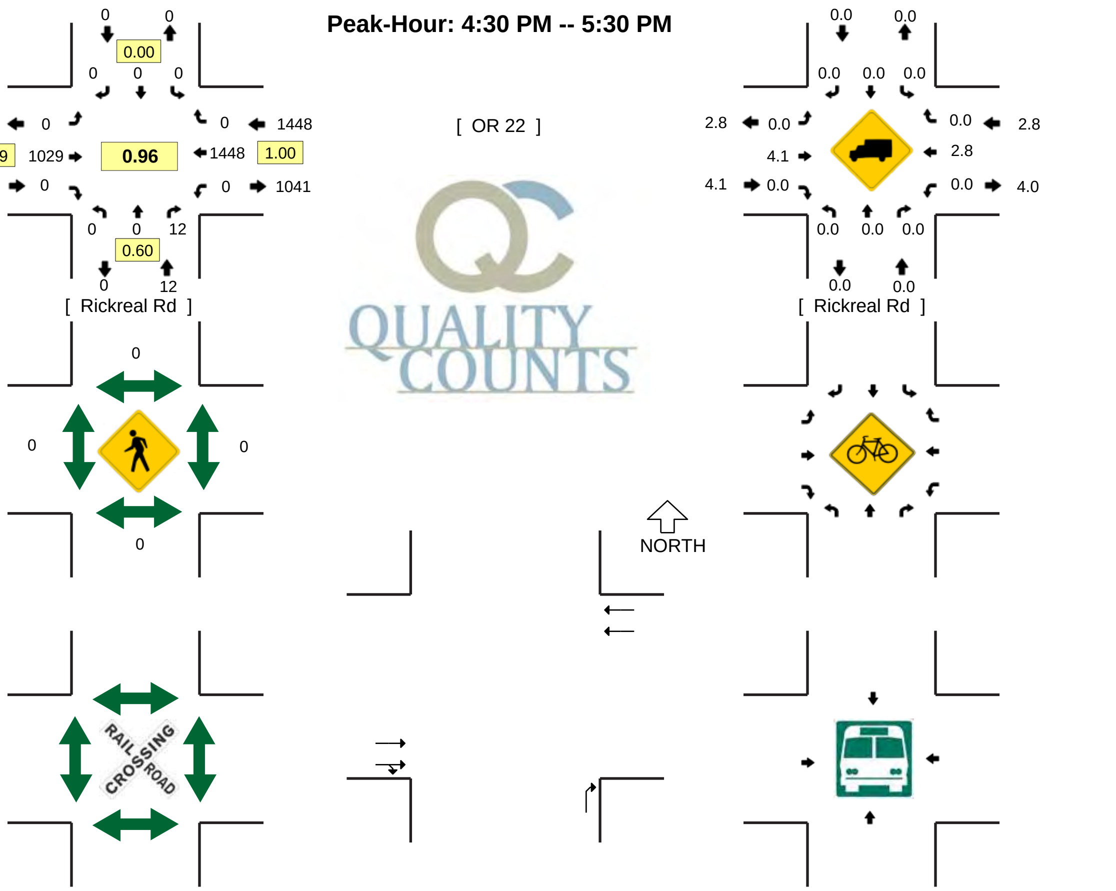
PEAK 15-MIN FLOW RATES	Northbound Left	Thru	Right	U	Southbound Left	Thru	Right	U	Eastbound Left	Thru	Right	U	Westbound Left	Thru	Right	U	TOTAL
All Vehicles	0	0	0		0	0	0		0	1456	0		0	1856	0		3312
Heavy Trucks	0	0	0		0	0	0		0	60	0		0	20	0		80
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Type of peak hour being reported: User Defined | Method for determining peak hour: Total Entering Volume

INTERSECTION: Rickreal Rd--OR 22 | **QC JOB #:** 10236416
WEATHER: | **DATE:** 3/7/2007

Peak-Hour: 4:30 PM -- 5:30 PM



5-MIN COUNT PERIOD BEGINNING AT	Rickreal Rd (Northbound)				Rickreal Rd (Southbound)				OR 22 (Eastbound)				OR 22 (Westbound)				TOTAL	HOURLY TOTALS
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	8		0	0	0		0	210	1		0	218	0		437	
3:15 PM	0	0	9		0	0	0		0	213	0		0	260	0		482	
3:30 PM	0	0	7		0	0	0		0	272	0		0	273	0		552	
3:45 PM	0	0	6		0	0	0		0	277	0		0	291	0		574	2045
4:00 PM	0	0	7		0	0	0		0	235	0		0	305	0		547	2155
4:15 PM	0	0	11		0	0	0		0	276	0		0	366	0		653	2326
4:30 PM	0	0	5		0	0	0		0	288	0		0	353	0		646	2420
4:45 PM	0	0	2		0	0	0		0	234	0		0	382	0		618	2464
5:00 PM	0	0	4		0	0	0		0	233	0		0	359	0		596	2513
5:15 PM	0	0	1		0	0	0		0	274	0		0	354	0		629	2489
5:30 PM	0	0	5		0	0	0		0	218	0		0	365	0		588	2431
5:45 PM	0	0	3		0	0	0		0	209	0		0	333	0		545	2358

PEAK 15-MIN FLOW RATES	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	20		0	0	0		0	1152	0		0	1412	0		2584
Heavy Trucks	0	0	0		0	0	0		0	44	0		0	52	0		96
Pedestrians		0				0				0				0			0
Bicycles																	
Railroad																	
Stopped Buses																	

Counter Comments:

Attachment B
HCM Existing Intersection Capacity

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑↑	Y	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1288	1	13	1730	3	3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	1356	1	14	1821	4	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1357		2294	678
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1357		2294	678
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		89	99
cM capacity (veh/h)			513		33	399

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	904	453	14	911	911	7
Volume Left	0	0	14	0	0	4
Volume Right	0	1	0	0	0	4
cSH	1700	1700	513	1700	1700	61
Volume to Capacity	0.53	0.27	0.03	0.54	0.54	0.12
Queue Length (ft)	0	0	2	0	0	9
Control Delay (s)	0.0	0.0	12.2	0.0	0.0	72.0
Lane LOS			B			F
Approach Delay (s)	0.0		0.1			72.0
Approach LOS						F

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	63.1%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	15	1275	1	492	1719	17	1	0	275	1	0	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	16	1342	1	518	1809	18	1	0	289	1	0	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1827			1343			3328	4237	672	3557	4229	914
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1827			1343			3328	4237	672	3557	4229	914
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			0			0	0	28	0	0	95
cM capacity (veh/h)	339			514			0	0	403	0	0	280

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	16	895	448	518	1206	621	1	289	15
Volume Left	16	0	0	518	0	0	1	0	1
Volume Right	0	0	1	0	0	18	0	289	14
cSH	339	1700	1700	514	1700	1700	0	403	0
Volume to Capacity	0.05	0.53	0.26	1.01	0.71	0.37	Err	0.72	Err
Queue Length (ft)	4	0	0	354	0	0	Err	138	Err
Control Delay (s)	16.1	0.0	0.0	70.0	0.0	0.0	Err	33.6	Err
Lane LOS	C			F			F	D	F
Approach Delay (s)	0.2			15.5			Err		Err
Approach LOS							F		F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	82.8%	ICU Level of Service	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1568	6	14	2223	4	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	1704	7	15	2416	4	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1711		2946	855
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1711		2946	855
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		61	92
cM capacity (veh/h)			367		11	301

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1136	575	15	1208	1208	28
Volume Left	0	0	15	0	0	4
Volume Right	0	7	0	0	0	24
cSH	1700	1700	367	1700	1700	60
Volume to Capacity	0.67	0.34	0.04	0.71	0.71	0.47
Queue Length (ft)	0	0	3	0	0	46
Control Delay (s)	0.0	0.0	15.2	0.0	0.0	110.1
Lane LOS			C			F
Approach Delay (s)	0.0		0.1			110.1
Approach LOS						F

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	80.5%	ICU Level of Service	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	160	1437	2186	35	3	66
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	168	1513	2301	37	4	78
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2338				3413	1169
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2338				3413	1169
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	20				0	59
cM capacity (veh/h)	211				1	189

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	168	756	756	1534	804	81
Volume Left	168	0	0	0	0	4
Volume Right	0	0	0	0	37	78
cSH	211	1700	1700	1700	1700	23
Volume to Capacity	0.80	0.44	0.44	0.90	0.47	3.51
Queue Length (ft)	143	0	0	0	0	Err
Control Delay (s)	66.9	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	6.7			0.0		Err
Approach LOS						F

Intersection Summary			
Average Delay	200.7		
Intersection Capacity Utilization	93.5%	ICU Level of Service	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱			✣			✣	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	1191	4	29	1682	4	1	0	11	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (veh/h)	3	1254	4	31	1771	4	1	0	13	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1775			1258			2210	3098	629	2480	3098	887
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1775			1258			2210	3098	629	2480	3098	887
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			95	100	97	92	89	100
cM capacity (veh/h)	355			538			22	11	430	14	11	291

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	836	422	31	1180	594	14	4
Volume Left	3	0	0	31	0	0	1	1
Volume Right	0	0	4	0	0	4	13	1
cSH	355	1700	1700	538	1700	1700	168	18
Volume to Capacity	0.01	0.49	0.25	0.06	0.69	0.35	0.08	0.19
Queue Length (ft)	1	0	0	4	0	0	7	14
Control Delay (s)	15.2	0.0	0.0	12.1	0.0	0.0	28.4	242.3
Lane LOS	C			B			D	F
Approach Delay (s)	0.0			0.2			28.4	242.3
Approach LOS							D	F

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	61.8%	ICU Level of Service	B

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑↱			↑↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1263	0	0	1715	0	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	1329	0	0	1805	0	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1329		2232	665
vC1, stage 1 conf vol					1329	
vC2, stage 2 conf vol					903	
vCu, unblocked vol			1329		2232	665
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			526		139	407

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1
Volume Total	886	443	903	903	15
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	15
cSH	1700	1700	1700	1700	407
Volume to Capacity	0.52	0.26	0.53	0.53	0.04
Queue Length (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	14.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.2
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	56.0%	ICU Level of Service	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	1272	1710	5	2	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	4	1339	1800	5	2	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1805				2481	903
vC1, stage 1 conf vol					1803	
vC2, stage 2 conf vol					678	
vCu, unblocked vol	1805				2481	903
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	98
cM capacity (veh/h)	346				94	284

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	669	669	1200	605	8
Volume Left	4	0	0	0	0	2
Volume Right	0	0	0	0	5	6
cSH	346	1700	1700	1700	1700	180
Volume to Capacity	0.01	0.39	0.39	0.71	0.36	0.05
Queue Length (ft)	1	0	0	0	0	4
Control Delay (s)	15.5	0.0	0.0	0.0	0.0	26.0
Lane LOS	C					D
Approach Delay (s)	0.0			0.0		26.0
Approach LOS						D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	62.7%	ICU Level of Service	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	1269	1711	22	20	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	5	1336	1801	23	24	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1824				2491	912
vC1, stage 1 conf vol					1813	
vC2, stage 2 conf vol					678	
vCu, unblocked vol	1824				2491	912
tC, single (s)	4.1				6.9	6.9
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				73	98
cM capacity (veh/h)	340				88	280

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	5	668	668	1201	624	28
Volume Left	5	0	0	0	0	24
Volume Right	0	0	0	0	23	5
cSH	340	1700	1700	1700	1700	99
Volume to Capacity	0.02	0.39	0.39	0.71	0.37	0.28
Queue Length (ft)	1	0	0	0	0	27
Control Delay (s)	15.8	0.0	0.0	0.0	0.0	55.1
Lane LOS	C					F
Approach Delay (s)	0.1			0.0		55.1
Approach LOS						F

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	63.3%	ICU Level of Service	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	1551	2224	3	2	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	0	1633	2341	3	2	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2344				3159	1172
vC1, stage 1 conf vol					2343	
vC2, stage 2 conf vol					816	
vCu, unblocked vol	2344				3159	1172
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	98
cM capacity (veh/h)	213				49	188

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	816	816	1561	784	7
Volume Left	0	0	0	0	0	2
Volume Right	0	0	0	0	3	5
cSH	1700	1700	1700	1700	1700	97
Volume to Capacity	0.00	0.48	0.48	0.92	0.46	0.07
Queue Length (ft)	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	45.0
Lane LOS						E
Approach Delay (s)	0.0			0.0		45.0
Approach LOS						E

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	78.4%	ICU Level of Service	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑			↑↱			✥			✥	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	1548	0	0	2211	26	0	0	0	26	0	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (veh/h)	5	1629	0	0	2327	27	0	0	0	31	0	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2355			1629			2823	3995	815	3166	3981	1177
vC1, stage 1 conf vol										2341	2341	
vC2, stage 2 conf vol										825	1640	
vCu, unblocked vol	2355			1629			2823	3995	815	3166	3981	1177
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)										6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	4	100	90
cM capacity (veh/h)	211			395			7	3	321	32	44	187

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	5	815	815	1552	803	0	49
Volume Left	5	0	0	0	0	0	31
Volume Right	0	0	0	0	27	0	19
cSH	211	1700	1700	1700	1700	1700	47
Volume to Capacity	0.02	0.48	0.48	0.91	0.47	0.00	1.06
Queue Length (ft)	2	0	0	0	0	0	112
Control Delay (s)	22.5	0.0	0.0	0.0	0.0	0.0	288.3
Lane LOS	C					A	F
Approach Delay (s)	0.1			0.0		0.0	288.3
Approach LOS						A	F

Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	78.8%	ICU Level of Service		C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	1589	2247	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	1	1673	2365	2	2	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2367				3205	1184
vC1, stage 1 conf vol					2366	
vC2, stage 2 conf vol					838	
vCu, unblocked vol	2367				3205	1184
tC, single (s)	6.1				7.8	6.9
tC, 2 stage (s)					6.8	
tF (s)	3.2				4.0	3.3
p0 queue free %	98				90	100
cM capacity (veh/h)	49				25	185

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	836	836	1577	791	2
Volume Left	1	0	0	0	0	2
Volume Right	0	0	0	0	2	0
cSH	49	1700	1700	1700	1700	25
Volume to Capacity	0.02	0.49	0.49	0.93	0.47	0.10
Queue Length (ft)	2	0	0	0	0	7
Control Delay (s)	80.4	0.0	0.0	0.0	0.0	166.3
Lane LOS	F					F
Approach Delay (s)	0.1			0.0		166.3
Approach LOS						F

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	79.1%	ICU Level of Service	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	1590	1	4	2246	2	3	0	6	1	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (veh/h)	0	1674	1	4	2364	2	4	0	7	1	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2366			1675			2865	4049	837	3218	4048	1183
vC1, stage 1 conf vol							1674	1674		2374	2374	
vC2, stage 2 conf vol							1191	2375		844	1675	
vCu, unblocked vol	2366			1675			2865	4049	837	3218	4048	1183
tC, single (s)	4.1			4.6			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.5			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			95	100	98	96	100	100
cM capacity (veh/h)	209			290			64	44	314	30	43	185

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	1116	559	4	1576	790	11	1
Volume Left	0	0	0	4	0	0	4	1
Volume Right	0	0	1	0	0	2	7	0
cSH	1700	1700	1700	290	1700	1700	137	30
Volume to Capacity	0.00	0.66	0.33	0.01	0.93	0.46	0.08	0.04
Queue Length (ft)	0	0	0	1	0	0	6	3
Control Delay (s)	0.0	0.0	0.0	17.6	0.0	0.0	33.4	130.0
Lane LOS				C			D	F
Approach Delay (s)	0.0			0.0			33.4	130.0
Approach LOS							D	F

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	79.1%	ICU Level of Service	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	9	1413	2123	36	27	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	9	1487	2235	38	32	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2273				3016	1136
vC1, stage 1 conf vol					2254	
vC2, stage 2 conf vol					763	
vCu, unblocked vol	2273				3016	1136
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	96				42	97
cM capacity (veh/h)	228				55	199

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	9	744	744	1490	783	38
Volume Left	9	0	0	0	0	32
Volume Right	0	0	0	0	38	6
cSH	228	1700	1700	1700	1700	62
Volume to Capacity	0.04	0.44	0.44	0.88	0.46	0.61
Queue Length (ft)	3	0	0	0	0	63
Control Delay (s)	21.5	0.0	0.0	0.0	0.0	129.1
Lane LOS	C					F
Approach Delay (s)	0.1			0.0		129.1
Approach LOS						F

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	76.5%	ICU Level of Service	C

CALCULATION/DESIGN RECORD

Kittelson & Associates, Inc.
Transportation Planning/Traffic Engineering
Baltimore • Ft. Lauderdale • Orlando • Portland
http://www.kittelson.com

DATE 4/10 PROJECT # 8439

PROJECT NAME OR 22

SUBJECT SEGMENT V/C OR 22 BY JXH SHEET # 1 OF 1

2007 EXISTING 30th HOUR VOLS

→ GREENWOOD TO OR 51

WB VOL = 1275
EB VOL = 1760

→ OR 51 TO 50th

WB VOL = 2220
EB VOL = 1500

→ 30th TO DOAKES FERRY

WB VOL = 2240
EB VOL = 1590

HCS2000: Multilane Highways Release 4.1f

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JXH
Agency/Co: Kittelson
Date: 4/10/2007
Analysis Period: Existing 2007 PM
Highway: OR 22
From/To: OR 51 to 50th Ave
Jurisdiction: ODOT
Analysis Year: 2007
Project ID:

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	5		6	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0*	mph	0.0*	mph
Access points adjustment, FA	1.3	mph	1.5	mph
Free-flow speed	58.8	mph	58.5	mph

VOLUME

Direction	1		2	
Volume, V	1275	vph	1700	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	336		447	
Trucks and buses	2	%	2	%
Recreational vehicles	1	%	1	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.988		0.988	
Flow rate, vp	679	pcphpl	905	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	679	pcphpl	905	pcphpl
Free-flow speed, FFS	58.8	mph	58.5	mph
Avg. passenger-car travel speed, S	58.8	mph	58.5	mph
Level of service, LOS	B		B	
Density, D	11.6	pc/mi/ln	15.5	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

$$V/c = \frac{V_p}{c}$$

EB

$$= \frac{679}{2100^*}$$

$= 0.32$ EB

WB

$$= \frac{905}{2100}$$

$= 0.43$ WB

* $C =$ BASED ON ASSUMED FREE FLOW SPEED OF 55 mph

- LOS E = CAPACITY

- MAXIMUM SERVICE FLOW RATE (pc/h/ln) = 2100

HCS2000: Multilane Highways Release 4.1f

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JXH
Agency/Co: Kittelson
Date: 4/10/2007
Analysis Period: Existing 2007 PM
Highway: OR 22
From/To: OR 51 to 50th Ave
Jurisdiction: ODOT
Analysis Year: 2007
Project ID:

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	6		6	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0*	mph	0.0*	mph
Access points adjustment, FA	1.5	mph	1.5	mph
Free-flow speed	58.5	mph	58.5	mph

VOLUME

Direction	1		2	
Volume, V	1500	vph	2220	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	395		584	
Trucks and buses	2	%	2	%
Recreational vehicles	1	%	1	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.988		0.988	
Flow rate, vp	798	pcphpl	1182	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	798	pcphpl	1182	pcphpl
Free-flow speed, FFS	58.5	mph	58.5	mph
Avg. passenger-car travel speed, S	58.5	mph	58.5	mph
Level of service, LOS	B		C	
Density, D	13.6	pc/mi/ln	20.2	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

$$v/c = \frac{v_p}{c}$$

EB

$$= \frac{798}{2100}$$

$= 0.38$ EB

WB

$$= \frac{1182}{2100}$$

$= 0.56$ WB

HCS2000: Multilane Highways Release 4.1f

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JXH
Agency/Co: Kittelson
Date: 4/10/2007
Analysis Period: Existing 2007 PM
Highway: OR 22
From/To: 50th Ave to Doaks
Jurisdiction: ODOT
Analysis Year: 2007
Project ID:

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	6		6	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0*	mph	0.0*	mph
Access points adjustment, FA	1.5	mph	1.5	mph
Free-flow speed	58.5	mph	58.5	mph

VOLUME

Direction	1		2	
Volume, V	1590	vph	2240	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	418		589	
Trucks and buses	2	%	2	%
Recreational vehicles	1	%	1	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.988		0.988	
Flow rate, vp	846	pcphpl	1193	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	846	pcphpl	1193	pcphpl
Free-flow speed, FFS	58.5	mph	58.5	mph
Avg. passenger-car travel speed, S	58.5	mph	58.5	mph
Level of service, LOS	B		C	
Density, D	14.5	pc/mi/ln	20.4	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

$$V/c = \frac{V_p}{c}$$

EB

$$= \frac{846}{2100}$$

$$= 0.40 \text{ EB}$$

WB

$$= \frac{1193}{2100}$$

$$= 0.57 \text{ WB}$$

6.3 Multi-Lane Highways

Analysis procedures for uninterrupted-flow multi-lane highways are provided in Chapter 21 of the *HCM*. Highways analyzed with this procedure must maintain a minimum of two travel lanes in each direction, would typically have direct access allowed through driveways and at-grade intersections, and must maintain uninterrupted flow. Highways with access limited to on-ramps and off-ramps should be analyzed using the Basic Freeway Segment methodology. In addition, highways experiencing interrupted flow from influences such as traffic signals and on-street parking should be analyzed using a different methodology, such as the Urban Streets methodology from the *HCM*.

These procedures are very similar to those previously described for basic freeway segments, with slightly different input data needs. The most notable differences include the need to account for median type and access density. For a complete description of the analysis methodology, refer to Chapter 21 of the *HCM*.

While the *HCM* methodology uses level of service as a performance measure (based on vehicle density in passenger cars per mile per lane), volume/capacity ratios can be calculated from this analysis for comparison against ODOT's adopted mobility standards by following the steps listed below. Note that separate volume/capacity ratios must be calculated for each direction of travel.

1. Assuming level of service E/F threshold represents capacity, determine the segment capacity by interpolating between the values for "maximum service flow rate" at level of service E displayed in Exhibit 21-2 of the *HCM* for the appropriate free-flow speed. Free-flow speed will be either calculated by this methodology or assumed.
2. Divide the calculated flow rate (v_p) by the interpolated capacity to obtain a volume/capacity ratio.

EXHIBIT 21-2. LOS CRITERIA FOR MULTILANE HIGHWAYS

		LOS				
Free-Flow Speed	Criteria	A	B	C	D	E
60 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	40
	Average speed (mi/h)	60.0	60.0	59.4	56.7	55.0
	Maximum volume to capacity ratio (v/c)	0.30	0.49	0.70	0.90	1.00
	Maximum service flow rate (pc/h/ln)	660	1080	1550	1980	2200
55 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	41
	Average speed (mi/h)	55.0	55.0	54.9	52.9	51.2
	Maximum v/c	0.29	0.47	0.68	0.88	1.00
	Maximum service flow rate (pc/h/ln)	600	990	1430	1850	2100
50 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	43
	Average speed (mi/h)	50.0	50.0	50.0	48.9	47.5
	Maximum v/c	0.28	0.45	0.65	0.86	1.00
	Maximum service flow rate (pc/h/ln)	550	900	1300	1710	2000
45 mi/h	Maximum density (pc/mi/ln)	11	18	26	35	45
	Average speed (mi/h)	45.0	45.0	45.0	44.4	42.2
	Maximum v/c	0.26	0.43	0.62	0.82	1.00
	Maximum service flow rate (pc/h/ln)	490	810	1170	1550	1900

Note:
The exact mathematical relationship between density and volume to capacity ratio (v/c) has not always been maintained at LOS boundaries because of the use of rounded values. Density is the primary determinant of LOS. LOS F is characterized by highly unstable and variable traffic flow. Prediction of accurate flow rate, density, and speed at LOS F is difficult.

The LOS criteria reflect the shape of the speed-flow and density-flow curves, particularly as speed remains relatively constant across LOS A to D but is reduced as capacity is approached. For FFS of 60, 55, 50, and 45 mi/h, Exhibit 21-2 gives the average speed, the maximum value of v/c, the maximum density, and the corresponding maximum service flow rate for each LOS.

As with other LOS criteria, the maximum service flow rates in Exhibit 21-2 are stated in terms of flow rate based on the peak 15-min volume. Demand or forecast hourly volumes generally are divided by the peak-hour factor (PHF) to reflect a maximum hourly flow rate before comparison with the criteria of Exhibit 21-2. Using the basic speed-flow curves (see Exhibit 21-3), the relationships between LOS, flow, and speed can be analyzed.

DETERMINING FFS

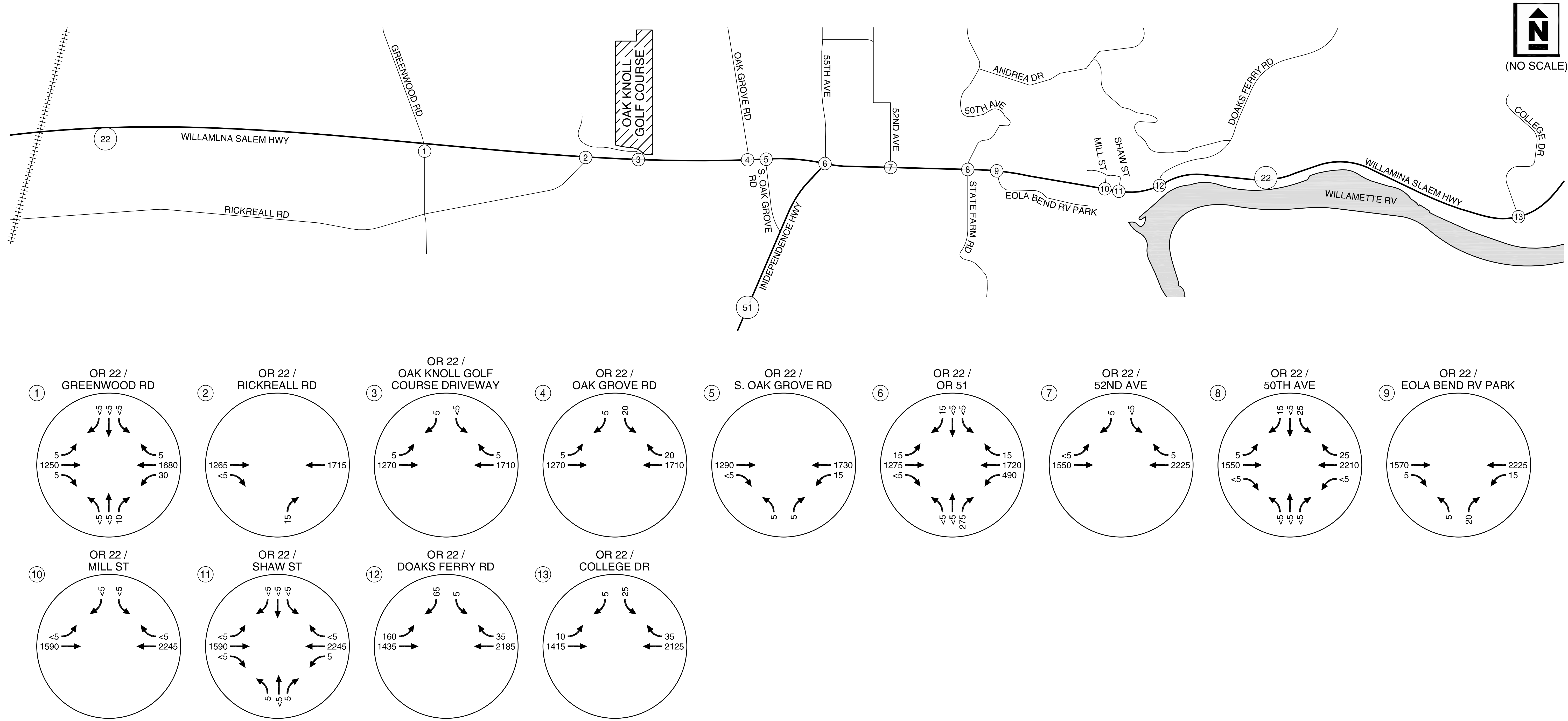
FFS is measured using the mean speed of passenger cars operating in low-to-moderate flow conditions (up to 1,400 pc/h/ln). Mean speed is virtually constant across this range of flow rates. Field measurement and estimation with guidelines provided in this chapter are methods that can be used to determine FFS.

The field measurement procedure is for those who prefer to gather data directly or to incorporate the measurements into a speed-monitoring program. However, field measurements are not necessary to apply the method.

The FFS of a highway can be determined directly from a speed study conducted in the field. If field-measured data are used, no adjustments need to be made to FFS. The speed study should be conducted along a reasonable length of highway within the segment under evaluation; for example, an upgrade should not be selected within a site that is generally level. Any speed measurement technique acceptable for other types of traffic engineering speed studies can be used.

FFS occurs at flow rates ≤ 1,400 pc/h/ln

The field study should be conducted in the more stable regime of low-to-moderate flow conditions (up to 1,400 pc/h/ln). If the speed study must be conducted at a flow rate of more than 1,400 pc/h/ln, the FFS can be found by using the model speed-flow curve, assuming that data on traffic volumes are recorded at the same time.



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

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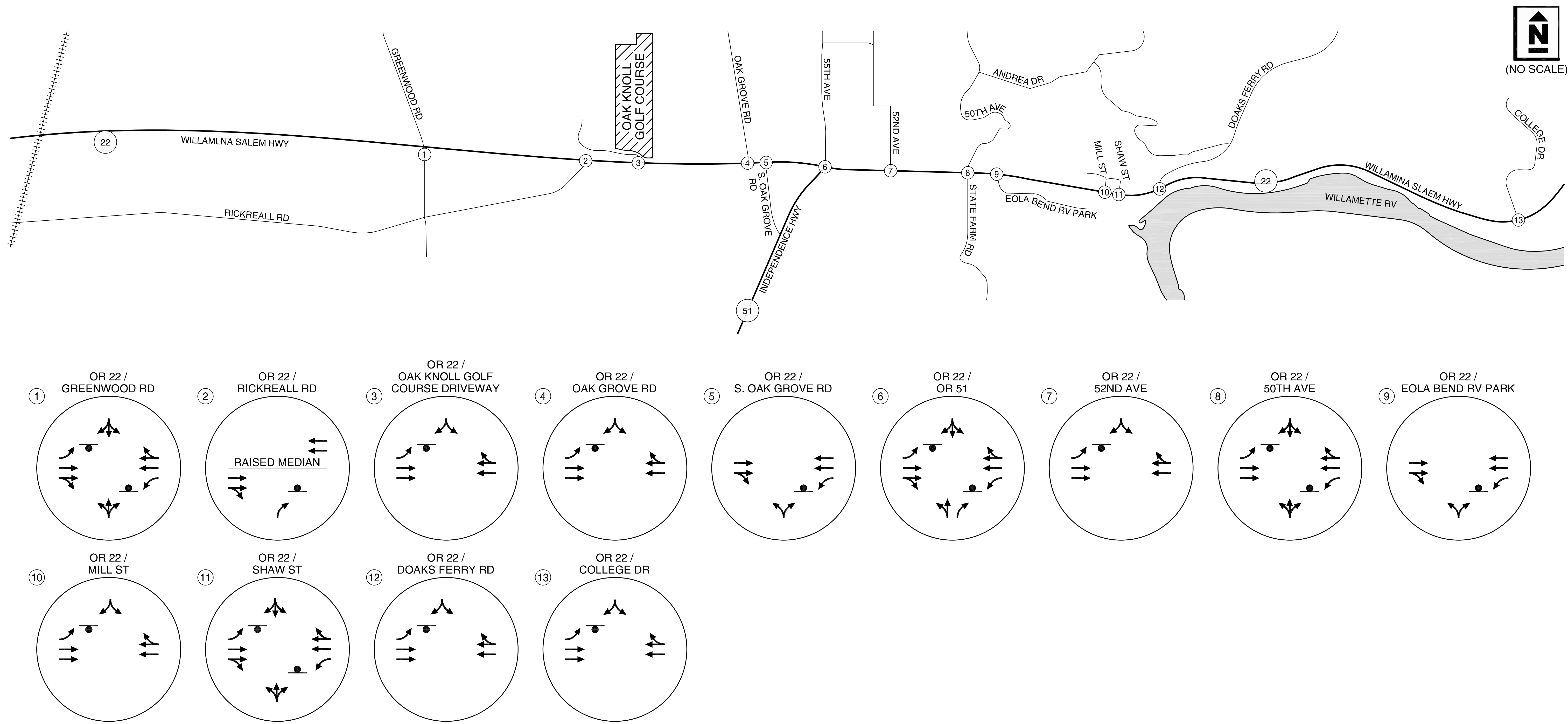
YEAR 2007 EXISTING TRAFFIC CONDITIONS
30TH HOUR BALANCED TRAFFIC VOLUMES

FIGURE 1



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

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EXISTING LANE CONFIGURATIONS & TRAFFIC CONTROL DEVICES

FIGURE 2

Attachment C
Crash Rate Information

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Willamina-Salem Hwy (Hwy 30, Route 22) mile point 16.94 to mile point 22.04
1-1-2002 through 12-31-2006

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2006														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FIXED / OTHER OBJECT	0	0	2	2	0	0	0	2	0	1	1	0	0	1
HEAD-ON	0	1	0	1	0	2	0	0	1	1	0	0	0	0
NON-COLLISION	0	1	0	1	0	1	0	1	0	1	0	0	0	0
REAR-END	0	5	5	10	0	6	0	7	2	9	1	3	0	0
SIDESWIPE - MEETING	0	2	1	3	0	3	1	1	2	1	2	0	0	1
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	2	0	1	0	0
2006 TOTAL	0	9	12	21	0	12	1	15	5	17	4	5	0	2
YEAR: 2005														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	1	0	0	0	1
HEAD-ON	0	2	0	2	0	3	0	0	2	2	0	2	0	0
NON-COLLISION	0	1	0	1	0	1	2	1	0	1	0	0	0	0
REAR-END	0	4	4	8	0	7	1	4	4	7	1	1	0	0
SIDESWIPE - OVERTAKING	0	1	1	2	0	3	0	1	1	0	2	0	0	0
TURNING MOVEMENTS	0	1	4	5	0	2	1	4	1	5	0	3	0	0
2005 TOTAL	0	9	10	19	0	16	4	11	8	16	3	6	0	1
YEAR: 2004														
ANGLE	0	2	0	2	0	4	0	2	0	2	0	2	0	0
FIXED / OTHER OBJECT	0	3	2	5	0	3	0	1	4	1	4	2	0	5
MISCELLANEOUS	0	0	1	1	0	0	0	1	0	0	1	0	0	0
REAR-END	0	2	4	6	0	3	0	4	2	6	0	1	1	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	1	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	4	1	5	0	8	0	4	1	4	1	4	0	0
2004 TOTAL	0	12	8	20	0	19	0	13	7	14	6	9	1	5
YEAR: 2003														
ANGLE	0	1	0	1	0	2	0	1	0	1	0	1	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	2	0	1	0	1	0	0	0	1
HEAD-ON	0	0	1	1	0	0	0	0	1	0	1	0	0	0
PARKING MOVEMENTS	0	1	0	1	0	2	0	1	0	1	0	0	0	0
REAR-END	0	4	3	7	0	6	0	3	4	5	2	3	0	0
TURNING MOVEMENTS	1	7	5	13	1	17	1	9	4	10	3	9	0	0
2003 TOTAL	1	14	9	24	1	29	1	15	9	18	6	13	0	1
YEAR: 2002														
ANGLE	0	1	0	1	0	1	0	0	1	1	0	1	0	0
FIXED / OTHER OBJECT	0	5	3	8	0	7	0	4	4	2	6	0	0	7
HEAD-ON	0	1	0	1	0	1	0	0	1	1	0	0	0	0
NON-COLLISION	0	1	0	1	0	3	0	1	0	0	1	1	0	0
PEDESTRIAN	0	1	0	1	0	1	0	1	0	1	0	0	0	1
REAR-END	0	2	2	4	0	6	0	2	2	3	1	0	0	1
SIDESWIPE - OVERTAKING	0	1	1	2	0	1	1	2	0	2	0	0	0	0
TURNING MOVEMENTS	0	9	4	13	0	19	1	11	2	6	7	9	0	0
2002 TOTAL	0	21	10	31	0	39	2	21	10	16	15	11	0	9

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Willamina-Salem Hwy (Hwy 30, Route 22) mile point 16.94 to mile point 22.04
1-1-2002 through 12-31-2006

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
FINAL TOTAL	1	65	49	115	1	115	8	75	39	81	34	44	1	18

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Independence Hwy (Hwy 193, Route 51) mile point 0.00 to mile point 0.25 in Polk County
1-1-2002 through 12-31-2006

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2003														
MISCELLANEOUS	0	0	1	1	0	0	0	1	0	1	0	0	0	0
2003 TOTAL	0	0	1	1	0	0	0	1	0	1	0	0	0	0
YEAR: 2002														
FIXED / OTHER OBJECT	0	1	1	2	0	1	0	1	1	1	1	0	0	2
2002 TOTAL	0	1	1	2	0	1	0	1	1	1	1	0	0	2
FINAL TOTAL	0	1	2	3	0	1	0	2	1	2	1	0	0	2

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

TABLE II: FIVE-YEAR COMPARISON OF STATE HIGHWAY CRASH RATES

Table II presents a comparison of state highway crash rates for the past five years, for urban and rural areas, by functional classification. Mileage is shown for the current data year only.

See Table IV for information on official highway mileage and VMT data.

JURISDICTION AND FUNCTIONAL CLASSIFICATION	MILES*	2006 Rate	2005 Rate	2004 Rate	2003 Rate	2002 Rate
TOTAL STATE HWY SYSTEM	**7,461.60**	**0.85**	**0.86**	**0.79**	**0.99**	**0.93**
Interstate Freeways	729.57	0.39	0.41	0.37	0.42	0.37
Other Fwys/Expressways	52.26	0.78	0.80	0.78	0.87	0.81
Non-Freeways (Combined)	6,679.77	1.26	1.24	1.13	1.46	1.39
Other Principal Arterials	3,283.55	1.29	1.27	1.16	1.53	1.48
Minor Arterials	1,966.58	1.14	1.14	1.02	1.20	1.07
Urban Collectors	8.86	0.68	1.19	1.23	2.08	5.66
Rural Major Collectors	1,383.18	1.11	1.14	0.93	1.26	1.09
Rural Minor Collectors	34.71	0.66	1.30	0.32	1.30	3.38
Rural Local	2.89	16.52	4.23	2.68	8.06	0.00
URBAN HWY SYSTEM	**826.58**	**1.14**	**1.16**	**1.08**	**1.47**	**1.37**
Interstate Freeways	176.15	0.48	0.51	0.50	0.61	0.50
Other Fwys/Expressways	52.26	0.78	0.80	0.78	0.87	0.81
Non-Freeways (Combined)	598.17	2.06	2.04	1.84	2.71	2.61
Other Principal Arterials	515.27	2.06	2.05	1.85	2.74	2.64
Minor Arterials	74.04	2.09	1.94	1.77	2.41	2.26
Urban Collectors	8.86	0.68	1.19	1.23	2.08	5.66
Urban Cities	**609.50**	**1.20**	**1.21**	**1.15**	**1.60**	**1.45**
Interstate Freeways	126.00	0.52	0.53	0.53	0.64	0.55
Other Fwys/Expressways	46.20	0.76	0.78	0.76	0.89	0.68
Non-Freeways (Combined)	437.30	2.24	2.26	2.05	3.14	2.86
Other Principal Arterials	388.71	2.23	2.25	2.04	3.15	2.88
Minor Arterials	46.94	2.38	2.38	2.21	2.98	2.55
Urban Collectors	1.65	1.84	1.78	1.51	1.68	7.46
Suburban Areas	**217.08**	**0.88**	**0.95**	**0.79**	**0.90**	**0.96**
Interstate Freeways	50.15	0.35	0.44	0.35	0.48	0.27
Other Fwys/Expressways	6.06	0.98	1.05	1.06	0.66	1.91
Non-Freeways (Combined)	160.87	1.45	1.39	1.17	1.29	1.48
Other Principal Arterials	126.56	1.45	1.44	1.22	1.34	1.51
Minor Arterials	27.10	1.52	1.04	0.71	0.60	1.19
Urban Collectors	7.21	0.42	0.94	0.84	3.10	1.04
RURAL HWY SYSTEM	**6,635.02**	**0.60**	**0.61**	**0.54**	**0.63**	**0.60**
Interstate Freeways	553.42	0.28	0.31	0.25	0.26	0.25
Non-Freeways (Combined)	6,081.60	0.80	0.80	0.72	0.87	0.82
Other Principal Arterials	2,768.28	0.72	0.69	0.64	0.77	0.76
Minor Arterials	1,892.54	0.95	1.00	0.88	1.03	0.90
Rural Major Collectors	1,383.18	1.11	1.14	0.93	1.26	1.09
Rural Minor Collectors	34.71	0.66	1.30	0.32	1.30	3.38
Rural Local	2.89	16.52	4.23	2.68	8.06	0.00
Rural Cities	**251.54**	**0.78**	**0.79**	**0.84**	**1.04**	**0.95**
Interstate Freeways	19.00	0.07	0.12	0.03	0.04	0.04
Non-Freeways (Combined)	232.54	1.04	1.01	1.11	1.40	1.23
Other Principal Arterials	127.92	0.94	0.90	0.99	1.28	1.16
Minor Arterials	59.52	1.23	1.23	1.62	1.67	1.43
Rural Major Collectors	44.85	1.35	1.40	0.95	1.68	1.48
Rural Minor Collectors	0.25	4.57	0.00	0.00	0.00	0.00
Rural Areas	**6,383.48**	**0.59**	**0.60**	**0.52**	**0.60**	**0.58**
Interstate Freeways	534.42	0.29	0.32	0.26	0.27	0.27
Non-Freeways (Combined)	5,849.06	0.78	0.78	0.69	0.82	0.78
Other Principal Arterials	2,640.36	0.70	0.68	0.62	0.72	0.72
Minor Arterials	1,833.02	0.93	0.98	0.84	0.97	0.86
Rural Major Collectors	1,338.33	1.08	1.11	0.93	1.20	1.04
Rural Minor Collectors	34.46	0.36	1.40	0.35	1.40	3.65
Rural Local	2.89	16.52	4.23	2.68	8.06	0.00

Five Year OR 22 Crash History by Segment
January 1, 2002 through December 31, 2006

Both Directions					Number of Crashes				
Segment Description	***Milepost From***	***To***	***Segment Length (Miles)***	***2003 Average Annual Daily Traffic (AADT)***	***Property Damage Only***	***Injury***	***Fatal***	***Total***	***Average Annual Crash Rate [1]***
Salem Rural Area	16.94	21.19	4.25	28,740					
5 Years					33	46	1	80	
(Average Annual)					7	9	0	16	0.36
Salem Suburban Area	21.19	22.04	0.85	34,600					
5 Years					19	16	0	35	
(Average Annual)					4	3	0	7	0.65
Total/Overall	38.13	43.23	5.10	63340					
5 Years					52	62	1	115	
(Average Annual)*					10	12	0	23	0.20

[1] Crashes per Million Vehicle Miles
Note: Average annual "total" column may not agree with component total due to rounding.

Five Year OR 51 Crash History by Segment
January 1, 2002 through December 31, 2006

Both Directions					Number of Crashes				
Segment Description	***Milepost From***	***To***	***Segment Length (Miles)***	***2003 Average Annual Daily Traffic (AADT)***	***Property Damage Only***	***Injury***	***Fatal***	***Total***	***Average Annual Crash Rate [1]***
Highway to Independence Rural Area	0.00	0.25	0.25	7,100					
5 Years					2	1	0	3	
(Average Annual)					0	0	0	1	0.93
Total/Overall	0.00	0.25	0.25	7,100					
5 Years					2	1	0	3	
(Average Annual)*					0	0	0	1	0.93

[1] Crashes per Million Vehicle Miles
Note: Average annual "total" column may not agree with component total due to rounding.

Attachment D
HCM Future Intersection Capacity

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2508	2	23	3269	5	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	2640	2	24	3441	6	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2642		4410	1321
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2642		4410	1321
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		0	96
cM capacity (veh/h)			163		1	150

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1760	882	24	1721	1721	12
Volume Left	0	0	24	0	0	6
Volume Right	0	2	0	0	0	6
cSH	1700	1700	163	1700	1700	2
Volume to Capacity	1.04	0.52	0.15	1.01	1.01	6.45
Queue Length (ft)	0	0	13	0	0	Err
Control Delay (s)	0.0	0.0	31.0	0.0	0.0	Err
Lane LOS			D			F
Approach Delay (s)	0.0		0.2			Err
Approach LOS						F

Intersection Summary			
Average Delay	19.3		
Intersection Capacity Utilization	110.4%	ICU Level of Service	G

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	26	2485	2	650	3274	31	1	0	364	1	0	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	27	2616	2	684	3446	33	1	0	383	1	0	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3479			2618			5781	7519	1309	6194	7504	1739
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3479			2618			5781	7519	1309	6194	7504	1739
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	64			0			0	0	0	0	0	77
cM capacity (veh/h)	75			164			0	0	152	0	0	78

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1
Volume Total	27	1744	874	684	2298	1181	1	383	19
Volume Left	27	0	0	684	0	0	1	0	1
Volume Right	0	0	2	0	0	33	0	383	18
cSH	75	1700	1700	164	1700	1700	0	152	0
Volume to Capacity	0.36	1.03	0.51	4.18	1.35	0.69	Err	2.51	Err
Queue Length (ft)	35	0	0	Err	0	0	Err	829	Err
Control Delay (s)	78.1	0.0	0.0	1486.6	0.0	0.0	Err	747.1	Err
Lane LOS	F			F			F	F	F
Approach Delay (s)	0.8			244.3			Err		Err
Approach LOS							F		F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	129.7%	ICU Level of Service	H

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2845	11	26	3957	6	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	3092	12	28	4301	7	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			3104		5305	1552
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3104		5305	1552
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			72		0	63
cM capacity (veh/h)			103		0	102

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	2062	1043	28	2151	2151	45
Volume Left	0	0	28	0	0	7
Volume Right	0	12	0	0	0	38
cSH	1700	1700	103	1700	1700	1
Volume to Capacity	1.21	0.61	0.28	1.27	1.27	40.65
Queue Length (ft)	0	0	26	0	0	Err
Control Delay (s)	0.0	0.0	53.0	0.0	0.0	Err
Lane LOS			F			F
Approach Delay (s)	0.0		0.3			Err
Approach LOS						F

Intersection Summary			
Average Delay	59.8		
Intersection Capacity Utilization	135.5%	ICU Level of Service	H

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	348	2542	3773	180	5	220
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	366	2676	3972	189	6	259
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	4161				6137	2081
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	4161				6137	2081
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	0				0	0
cM capacity (veh/h)	39				0	45

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	366	1338	1338	2648	1513	265
Volume Left	366	0	0	0	0	6
Volume Right	0	0	0	0	189	259
cSH	39	1700	1700	1700	1700	0
Volume to Capacity	9.50	0.79	0.79	1.56	0.89	Err
Queue Length (ft)	Err	0	0	0	0	Err
Control Delay (s)	4024.3	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	484.6			0.0		Err
Approach LOS						F

Intersection Summary				
Average Delay		Err		
Intersection Capacity Utilization		170.9%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	2442	7	50	3187	7	2	0	17	2	2	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (veh/h)	5	2571	7	53	3355	7	2	0	20	2	2	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3362			2578			4371	6052	1289	4779	6052	1681
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3362			2578			4371	6052	1289	4779	6052	1681
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			67			0	100	87	0	0	97
cM capacity (veh/h)	84			162			0	0	157	0	0	85

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	5	1714	864	53	2236	1126	22	7
Volume Left	5	0	0	53	0	0	2	2
Volume Right	0	0	7	0	0	7	20	2
cSH	84	1700	1700	162	1700	1700	0	0
Volume to Capacity	0.06	1.01	0.51	0.33	1.32	0.66	Err	50.74
Queue Length (ft)	5	0	0	33	0	0	Err	Err
Control Delay (s)	50.8	0.0	0.0	37.6	0.0	0.0	Err	Err
Lane LOS	F			E			F	F
Approach Delay (s)	0.1			0.6			Err	Err
Approach LOS							F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	108.1%	ICU Level of Service	F

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2461	0	0	3244	0	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	2591	0	0	3415	0	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					Raised	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2591		4298	1295
vC1, stage 1 conf vol					2591	
vC2, stage 2 conf vol					1707	
vCu, unblocked vol			2591		4298	1295
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	85
cM capacity (veh/h)			171		30	156

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1
Volume Total	1727	864	1707	1707	24
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	24
cSH	1700	1700	1700	1700	156
Volume to Capacity	1.02	0.51	1.00	1.00	0.15
Queue Length (ft)	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	32.2
Lane LOS					D
Approach Delay (s)	0.0		0.0		32.2
Approach LOS					D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	103.0%	ICU Level of Service	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	7	2474	3235	9	3	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	7	2604	3405	9	4	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3415				4727	1707
vC1, stage 1 conf vol					3410	
vC2, stage 2 conf vol					1317	
vCu, unblocked vol	3415				4727	1707
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	91				72	87
cM capacity (veh/h)	80				12	82

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	7	1302	1302	2270	1145	14
Volume Left	7	0	0	0	0	4
Volume Right	0	0	0	0	9	11
cSH	80	1700	1700	1700	1700	34
Volume to Capacity	0.09	0.77	0.77	1.34	0.67	0.41
Queue Length (ft)	7	0	0	0	0	34
Control Delay (s)	54.7	0.0	0.0	0.0	0.0	170.7
Lane LOS	F					F
Approach Delay (s)	0.2			0.0		170.7
Approach LOS						F

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	109.7%	ICU Level of Service	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	9	2468	3236	38	42	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	9	2598	3406	40	49	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3446				4744	1723
vC1, stage 1 conf vol					3426	
vC2, stage 2 conf vol					1318	
vCu, unblocked vol	3446				4744	1723
tC, single (s)	4.1				6.9	6.9
tC, 2 stage (s)					5.9	
tF (s)	2.2				3.5	3.3
p0 queue free %	88				0	88
cM capacity (veh/h)	77				11	80

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	9	1299	1299	2271	1175	59
Volume Left	9	0	0	0	0	49
Volume Right	0	0	0	0	40	9
cSH	77	1700	1700	1700	1700	13
Volume to Capacity	0.12	0.76	0.76	1.34	0.69	4.58
Queue Length (ft)	10	0	0	0	0	Err
Control Delay (s)	57.8	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	0.2			0.0		Err
Approach LOS						F

Intersection Summary			
Average Delay	96.3		
Intersection Capacity Utilization	110.9%	ICU Level of Service	G

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	2821	3887	5	3	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	0	2969	4092	5	4	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	4097				5579	2048
vC1, stage 1 conf vol					4094	
vC2, stage 2 conf vol					1485	
vCu, unblocked vol	4097				5579	2048
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				30	85
cM capacity (veh/h)	42				5	48

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	1485	1485	2728	1369	11
Volume Left	0	0	0	0	0	4
Volume Right	0	0	0	0	5	7
cSH	1700	1700	1700	1700	1700	12
Volume to Capacity	0.00	0.87	0.87	1.60	0.81	0.85
Queue Length (ft)	0	0	0	0	0	47
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	592.0
Lane LOS						F
Approach Delay (s)	0.0			0.0		592.0
Approach LOS						F

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	129.6%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	2815	0	0	3867	48	0	0	0	41	0	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (veh/h)	9	2963	0	0	4071	51	0	0	0	48	0	29
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage veh)											1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4121			2963			5047	7103	1482	5596	7078	2061
vC1, stage 1 conf vol										4096	4096	
vC2, stage 2 conf vol										1501	2982	
vCu, unblocked vol	4121			2963			5047	7103	1482	5596	7078	2061
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)										6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	77			100			100	100	100	0	100	37
cM capacity (veh/h)	41			117			0	0	114	2	5	47

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	9	1482	1482	2714	1407	0	78
Volume Left	9	0	0	0	0	0	48
Volume Right	0	0	0	0	51	0	29
cSH	41	1700	1700	1700	1700	1700	4
Volume to Capacity	0.23	0.87	0.87	1.60	0.83	0.00	21.75
Queue Length (ft)	19	0	0	0	0	0	Err
Control Delay (s)	117.3	0.0	0.0	0.0	0.0	0.0	Err
Lane LOS	F					A	F
Approach Delay (s)	0.4			0.0		0.0	Err
Approach LOS						A	F

Intersection Summary			
Average Delay	108.4		
Intersection Capacity Utilization	131.9%	ICU Level of Service	H

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	2878	3983	4	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	2	3029	4193	4	4	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	4197				5714	2098
vC1, stage 1 conf vol					4195	
vC2, stage 2 conf vol					1519	
vCu, unblocked vol	4197				5714	2098
tC, single (s)	6.1				7.8	6.9
tC, 2 stage (s)					6.8	
tF (s)	3.2				4.0	3.3
p0 queue free %	40				0	100
cM capacity (veh/h)	4				1	44

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	2	1515	1515	2795	1402	4
Volume Left	2	0	0	0	0	4
Volume Right	0	0	0	0	4	0
cSH	4	1700	1700	1700	1700	1
Volume to Capacity	0.60	0.89	0.89	1.64	0.82	2.61
Queue Length (ft)	20	0	0	0	0	32
Control Delay (s)	1475.3	0.0	0.0	0.0	0.0	4837.1
Lane LOS	F					F
Approach Delay (s)	1.0			0.0		4837.1
Approach LOS						F

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	132.5%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	2879	2	7	3982	4	5	0	9	2	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (veh/h)	0	3031	2	7	4192	4	6	0	11	2	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4196			3033			5142	7242	1516	5734	7241	2098
vC1, stage 1 conf vol							3032	3032		4208	4208	
vC2, stage 2 conf vol							2111	4211		1526	3033	
vCu, unblocked vol	4196			3033			5142	7242	1516	5734	7241	2098
tC, single (s)	4.1			4.6			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.5			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			39	100	90	0	100	100
cM capacity (veh/h)	38			72			10	5	110	2	4	44

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	2020	1012	7	2794	1401	16	2
Volume Left	0	0	0	7	0	0	6	2
Volume Right	0	0	2	0	0	4	11	0
cSH	1700	1700	1700	72	1700	1700	23	2
Volume to Capacity	0.00	1.19	0.60	0.10	1.64	0.82	0.71	1.36
Queue Length (ft)	0	0	0	8	0	0	52	24
Control Delay (s)	0.0	0.0	0.0	60.5	0.0	0.0	325.4	3303.5
Lane LOS				F			F	F
Approach Delay (s)	0.0			0.1			325.4	3303.5
Approach LOS							F	F

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	132.4%	ICU Level of Service	H

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	16	2583	3881	66	43	8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.85	0.85
Hourly flow rate (veh/h)	17	2719	4085	69	51	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					TWLTL	
Median storage veh)					1	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	4155				5513	2077
vC1, stage 1 conf vol					4120	
vC2, stage 2 conf vol					1393	
vCu, unblocked vol	4155				5513	2077
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	58				0	79
cM capacity (veh/h)	40				5	46

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	17	1359	1359	2724	1431	60
Volume Left	17	0	0	0	0	51
Volume Right	0	0	0	0	69	9
cSH	40	1700	1700	1700	1700	6
Volume to Capacity	0.42	0.80	0.80	1.60	0.84	10.76
Queue Length (ft)	37	0	0	0	0	Err
Control Delay (s)	150.5	0.0	0.0	0.0	0.0	Err
Lane LOS	F					F
Approach Delay (s)	0.9			0.0		Err
Approach LOS						F

Intersection Summary			
Average Delay	86.7		
Intersection Capacity Utilization	131.8%	ICU Level of Service	H

CALCULATION/DESIGN RECORD

Kittelson & Associates, Inc.
Transportation Planning/Traffic Engineering
Baltimore • Ft. Lauderdale • Orlando • Portland
http://www.kittelson.com

DATE 4/16 PROJECT # 8439

PROJECT NAME OR 22

SUBJECT SEGMENT v/c OR 22 BY JXH SHEET # OF

2030 NO-BUILD 30th HOUR

→ GREENWOOD TO OR 51
WB VOL = 3080
EB VOL = 2510

→ OR 51 TO 50th
WB VOL = ~~4100~~ 3920
EB VOL = ~~2850~~ 2910

→ 50th TO DOAKS FERRY
WB VOL = ~~4140~~ 3950
EB VOL = 2910 3000

HCS2000: Multilane Highways Release 4.1f

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JXH
Agency/Co: Kittelson
Date: 4/10/2007
Analysis Period: Future 2030 NoBuild PM
Highway: OR 22
From/To: Greenwood to OR 51
Jurisdiction: ODOT
Analysis Year: 2030
Project ID:

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	5		6	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	55.0	mph	55.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0*	mph	0.0*	mph
Access points adjustment, FA	1.3	mph	1.5	mph
Free-flow speed	53.8	mph	53.5	mph

VOLUME

Direction	1		2	
Volume, V	2510	vph	3080	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	661		811	
Trucks and buses	2	%	2	%
Recreational vehicles	1	%	1	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.988		0.988	
Flow rate, vp	1336	pcphpl	1640	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1336	pcphpl	1640	pcphpl
Free-flow speed, FFS	53.8	mph	53.5	mph
Avg. passenger-car travel speed, S	53.8	mph	52.5	mph
Level of service, LOS	C		D	
Density, D	24.9	pc/mi/ln	31.2	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1f

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	JXH
Agency/Co:	Kittelson
Date:	4/10/2007
Analysis Period:	Future 2030 NoBuild PM
Highway:	OR 22
From/To:	OR 51 to 50th Ave
Jurisdiction:	ODOT
Analysis Year:	2030
Project ID:	

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	6		6	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	55.0	mph	55.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0*	mph	0.0*	mph
Access points adjustment, FA	1.5	mph	1.5	mph
Free-flow speed	53.5	mph	53.5	mph

VOLUME

Direction	1		2	
Volume, V	2910	vph	3920	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	766		1032	
Trucks and buses	2	%	2	%
Recreational vehicles	1	%	1	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.988		0.988	
Flow rate, vp	1549	pcphpl	2087	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1549	pcphpl	2087	pcphpl
Free-flow speed, FFS	53.5	mph	53.5	mph
Avg. passenger-car travel speed, S	53.0	mph		mph
Level of service, LOS	D		F	
Density, D	29.2	pc/mi/ln		pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1f

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JXH
Agency/Co: Kittelson
Date: 4/10/2007
Analysis Period: Future 2030 NoBuild PM
Highway: OR 22
From/To: 50th Ave to Doaks
Jurisdiction: ODOT
Analysis Year: 2030
Project ID:

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	6		6	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0*	mph	0.0*	mph
Access points adjustment, FA	1.5	mph	1.5	mph
Free-flow speed	58.5	mph	58.5	mph

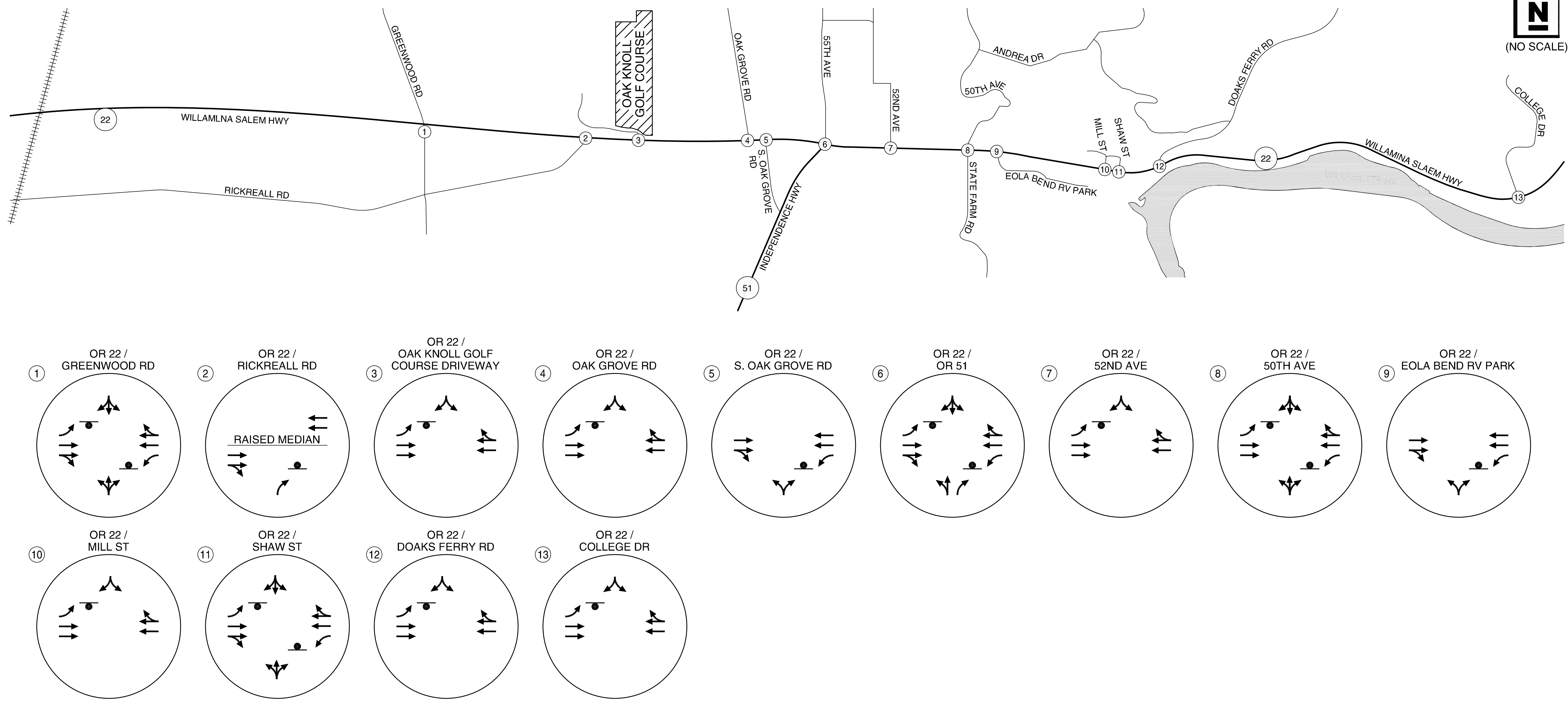
VOLUME

Direction	1		2	
Volume, V	3000	vph	3950	vph
Peak-hour factor, PHF	0.95		0.95	
Peak 15-minute volume, v15	789		1039	
Trucks and buses	2	%	2	%
Recreational vehicles	1	%	1	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.988		0.988	
Flow rate, vp	1597	pcphpl	2103	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1597	pcphpl	2103	pcphpl
Free-flow speed, FFS	58.5	mph	58.5	mph
Avg. passenger-car travel speed, S	57.7	mph	54.4	mph
Level of service, LOS	D		E	
Density, D	27.7	pc/mi/ln	38.7	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

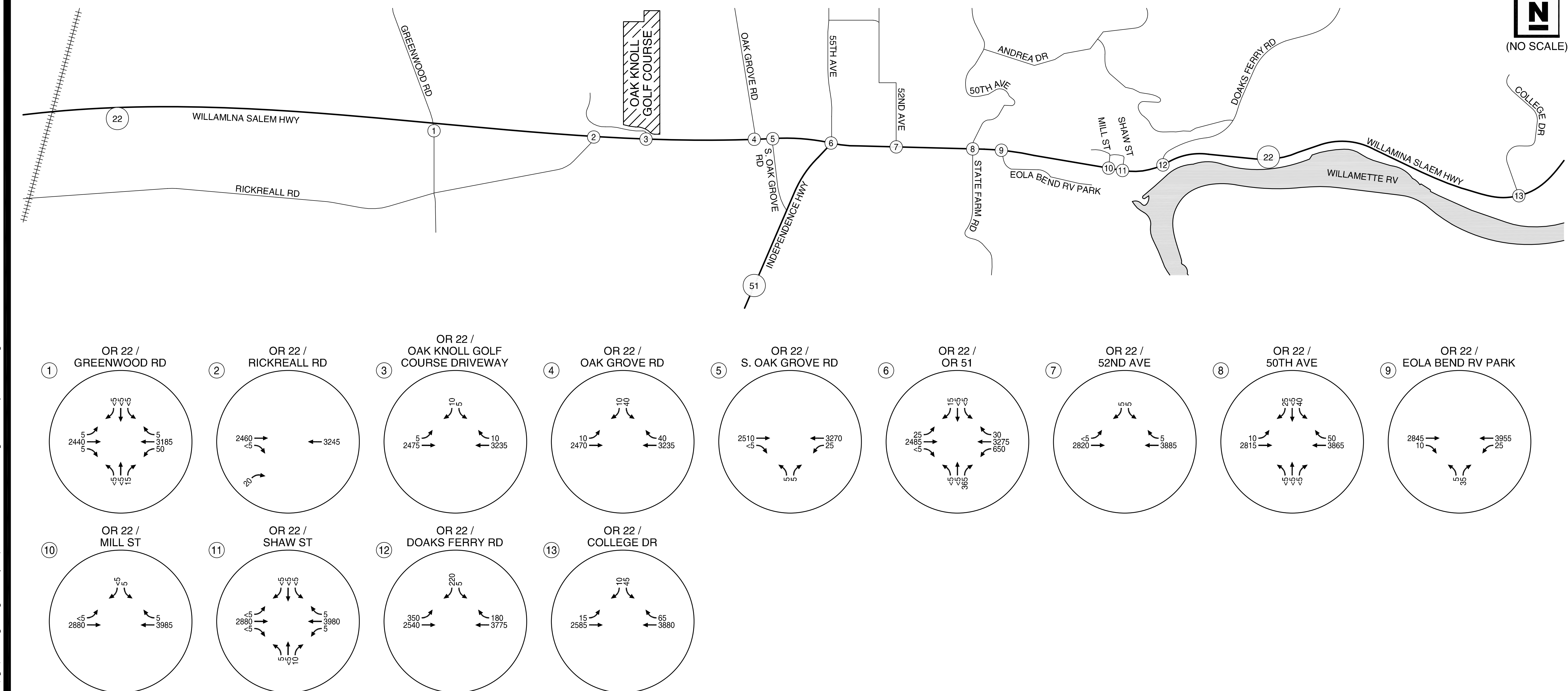


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2030 NO-BUILD ASSUMED LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES

FIGURE 3



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

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YEAR 2030 FUTURE TRAFFIC CONDITIONS
30TH HOUR BALANCED TRAFFIC VOLUMES

FIGURE 4

APPENDIX E

Lane Inventory and Geometry

This appendix includes data sheets on the lane inventory and horizontal geometry of OR 22.

Mile Point	Description	LN 4	LN 3	LN 2	LN 1
26.14	END WILLAMINA-SALEM HWY. 030	12	12	12	12
26.14	CENTER ST.	12	12	12	12
26.14	COMMERCIAL ST.	12	12	12	12
26.14	HWY. 072 CONN. (COMMERCIAL ST)M.P. 1C4.96	12	12	12	12
26.14	END PROJ BRF-47 (16) #9541	12	12	12	12
26.09	END STRUCTURE	12	12	12	12
26.05	HWY. 072 CONN. M.P. 1C5.01	12	12	12	12
26.05	HWY. 072 (FRONT ST. N.E.(NB)) M.P. (2)5.01	12	12	12	12
26.04	HWY. 072 (FRONT ST. N.E.(SB)) M.P. 5.01	12	12	12	12
26.04	END BIKE TRAIL(FOLLOWS CONNECTION)	12	12	12	12
26.04	CONN. NO. 2 M.P. 2C26.04	12	12	12	12
26.01	B.N.R.R.	12	12	12	12
26	MILEPOINT 26.00	12	12	12	12
25.98	WATER ST.	12	12	12	12
25.97	CONN. NO. 1 M.P. 1C25.97	12	12	12	12
25.9	WILLAMETTE RIVER	12	12	12	12
25.9	POLK-MARION COUNTY LINE	12	12	12	12
25.88	2270' 0123K CENTER ST. BR.	12	12	12	12
25.82	0000' OM554 SIGN BR	12	12	12	12
25.81	HWY. 030 M.P. (3)25.81	12	12	12	12
25.74	HWY. 150 CONN. (C LINE ONLY) M.P. 1C20.93	0	12	12	12
25.66	0000' 0M029 BEG. STRUCTURE (C LINE)	0	0	0	14
25.51	0000' 16425C SIGN BR	0	0	0	14
25.43	HWY. 030 M.P. (3)25.43	0	0	0	14
25.41	BEG. PROJ BRF-47(16) #9541	0	0	12	12
25.32		0	0	12	12
25.12	ENGSTA ATTACHED	0	0	12	12
25	MILEPOST 25.00	0	0	12	12
25	MILEPOINT 25.00	0	0	12	12
24.96	0000' 16425B SIGN BR	0	0	12	12
24.91	CONN. NO. 2 M.P. 2C24.91	0	0	12	12
24.86	BEG. PROJ #9541	0	0	12	12
24.53	ACCESS, TO BOAT MOORAGE	0	0	12	12
24.53	0029' 09055	0	0	12	12
24.49	SALEM	0	0	12	12
24.48		0	0	12	12
24.35	END CURBS RT. AND LT.	0	0	12	12
24.35	END STRUCTURE	0	0	12	12
24.33	ENGSTA ATTACHED	0	0	12	12
24.31	0500' 08889 CENTER E.B. STRUCTURE	0	0	12	12
24.29	CONN. NO. 1 M.P. 1C24.29	0	0	12	12
24.26	BEG. STRUCTURE	0	0	12	12
24.23	BEG. PROJ U322(5)	0	0	12	12
24.23	END PROJ F325(5)	0	0	12	12
24.21	MILEPOST 24.00	0	0	12	12
24.13	BEG. CURB RT.	0	0	12	12
24.08	HWY. NO. 030 M.P. (2)24.08	0	0	12	12
24.08	CONN. NO. 1 M.P. (1C24.08)	0	0	12	12

24.06 ENGSTA ATTACHED	13	12	11	13
24.06 ROSEWOOD DR.	13	12	11	13
24.06 BEG. PROJ F 325 (5)	13	12	11	13
24.06 END PROJ STATE 1964	13	12	11	13
24.04 BEG. PROJ TQF 47 (5)	13	12	11	13
24.03	13	12	11	13
24 ROAD, TO APPLEWOOD APTS.	13	12	11	13
24 MILEPOINT 24.00	13	12	11	13
23.92 STONEWAY DR.	13	12	11	13
23.84	13	12	11	13
23.67 COLLEGE DR.	13	12	11	13
23.65 END FRONTAGE RD. M.P. F23.66	13	12	11	13
23.62	13	12	11	13
23.61 SALEM	13	12	11	13
23.61 SALEM	13	12	11	13
23.61 SALEM (BEG. DALLAS HWY.)	13	12	11	13
23.5 FRONTAGE RD. M.P. F23.50	13	12	11	13
23.28 ROAD, TO SUBSTATION	13	12	11	13
23.2 MILEPOST 23.00	13	12	11	13
23.14 END FRONTAGE RD. M.P. F23.14	13	12	11	13
23.13 CONN. NO. 1 M.P. 1C23.13	13	12	11	13
23.09	13	12	11	13
23.07 BEG. FRONTAGE RD. M.P. F23.07	13	12	11	13
23 MILEPOINT 23.00	13	12	11	13
22.98 ENGSTA ATTACHED	13	12	11	13
22.89 END FRONTAGE RD. M.P. F22.91	13	12	11	13
22.83 FRONTAGE RD. M.P. F22.83	13	12	11	13
22.8	13	12	11	13
22.66 FRONTAGE RD. (CHERRY HILL LN.) M.P. F22.66	13	12	11	13
22.53 BEG. FRONTAGE RD. M.P. F22.53	13	12	11	13
22.5 ENGSTA ATTACHED	13	12	11	13
22.25 HOLMAN STATE PARK	14	13	13	12
22.17 MILEPOST 22.00	14	13	13	12
22.15 END FRONTAGE RD. M.P. F22.19	14	13	13	12
22.06 ENGSTA ATTACHED	14	13	13	12
22.04 FRONTAGE RD. (DOAKS FERRY RD.) M.P. F22.04	14	13	13	12
22 MILEPOINT 22.00	13	13	13	13
21.96 ROAD, TO SALEM YACHT AND BOATING CLUB	13	13	13	13
21.91 DURHAM ST.	12	12	12	12
21.85	12	12	12	12
21.85 STREET	12	12	12	12
21.85 SHAW ST.	12	12	12	12
21.85 "EOLA"	12	12	12	12
21.78 MILL ST.	12	12	12	12
21.77 END CURB RT.	12	12	12	12
21.77 FRONTAGE RD. M.P. F21.77	12	12	12	12
21.72 ENGSTA ATTACHED	12	12	12	12
21.7 CONN. NO. 1 M.P. 1C21.70	12	12	12	12
21.66 EXIT, ODOT WEIGH STATION	12	12	12	12
21.66 RIGGS ST.	12	12	12	12
21.53 ODOT WEIGH STATION	12	12	12	12

21.43 ENGSTA ATTACHED	12	12	12	12
21.41 END FRONTAGE RD. M.P. F21.41	12	12	12	12
21.4 BEG. CURB RT.	12	12	12	12
21.4 ENTRANCE, ODOT WEIGH STATION	12	12	12	12
21.33 BEG. CURB RT.	12	12	12	12
21.33 FRONTAGE RD. M.P. F21.33	12	12	12	12
21.19 50TH AVE. N.W.	12	12	12	12
21.19 STATE FARM RD.	12	12	12	12
21 MILEPOST 21.00 MISSING	12	12	12	12
21 MILEPOINT 21.00	12	12	12	12
20.84 52ND AVE. N.W.	12	12	12	12
20.83 END CURB RT.	12	12	12	12
20.75 AH = 20.56BK	12	12	12	12
20.56 END PROJ F-RF 325(7)	12	12	12	12
20.56 BK = 20.75AH	12	12	12	12
20.51 END FRONTAGE RD. M.P. F20.51	12	12	12	12
20.49 HWY. 193 CONN. M.P. 1C0.19	12	12	12	12
20.42	12	12	12	12
20.37 55TH AVE. N.W.	12	12	12	12
20.37 HWY. 193 M.P. 0.00	12	12	12	12
20.37 BEG. FRONTAGE RD. M.P. F20.37	12	12	12	12
20.35 CMP 36" MCNARY CREEK	12	12	12	12
20.33 CONN. NO. 1 M.P. 1C20.33	12	12	12	12
20.25 TRANSMISSION LINES	12	13	13	12
20.22 ENGSTA ATTACHED	12	13	13	12
20.1	12	13	13	12
20.1 S. OAK GROVE RD.	12	13	13	12
20.1 "BRUNKS CORNER"	12	13	13	12
20.03 OAK GROVE RD.	12	13	13	12
20 MILEPOINT 20.00	12	13	13	12
19.98	12	13	13	12
19.96 MILEPOST 20.00	12	13	13	12
19.83 ACCESS RD.	12	13	13	12
19.56 ACCESS DRIVEWAY	12	13	13	12
19.54 PEDESTRIAN WALKWAY	12	13	13	12
19.54 ACCESS RD. TO GOLF COURSE	12	13	13	12
19.5	12	12	12	12
19.43 U'XING OAK KNOLL BICYCLE TRAIL	12	12	12	12
19.4 HWY. 030 M.P.(2)19.40	12	12	12	12
19.32 BEG. CURBS RT. AND LT.	0	0	12	12
19.32 LEG, FROM RICKREALL RD.	0	0	12	12
19.04 CMP 48"	0	0	12	12
19.02 MILEPOST 19.00	0	0	12	12
19 MILEPOINT 19.00	0	0	12	12
18.84 HWY. 030 M.P.(2)18.84	0	0	12	12
18.82 CMP 24"	12	12	12	12
18.66	12	12	12	12
18.61 GREENWOOD RD.	12	12	12	12
18.6 CMP 18"	12	12	12	12
18.56	12	12	12	12
18.48 CMP 60"	12	12	12	12
18.38 HWY. 030 M.P.(2)18.38	12	12	12	12

18.32	END STRUCTURE	0	0	12	12
18.31	0120' 00351A MUD SLOUGH (BASKETT SLOUGH)	0	0	12	12
18.3	BEG. STRUCTURE	0	0	12	12
18.24	ROAD	0	0	12	12
18.01	CMP 24"	0	0	12	12
18	MILEPOST 18.00	0	0	12	12
18	MILEPOINT 18.00	0	0	12	12
17.67	CMP 18"	0	0	12	12
17.11	0000' 16051 RCBC 12'X12' EQUIPMENT PASS	0	0	12	12
17.05	MILEPOST 17.00	0	0	12	12
17	MILEPOINT 17.00	0	0	12	12
16.96	END STRUCTURE	0	0	12	12
16.94	ROAD	0	0	12	12
16.94	S.P. CO.	0	0	12	12
16.94	0183' 09872 DERRY O'XING	0	0	12	12
16.92	BEG. STRUCTURE	0	0	12	12
16.4	HWY. 030 M.P.(2)16.40	0	0	12	12
16.19		12	12	12	12
16.13	CMP 24"	12	14	12	12
16.12	HWY. 001W M.P. 57.43	12	14	12	12
16.05		12	14	12	12
16	MILEPOINT 16.00	12	12	12	12
26.18	END PROJ IX-BRF-47-13	0	13	13	13
26.13	END MARION ST. BR.	0	13	13	13
26.1	HWY. 072 (FRONT ST. N.E.(NB)) M.P. (2)4.93	0	13	13	13
26.09	HWY. 072 (FRONT ST. N.E.(SB)) M.P. 4.93	0	13	13	13
26.08	B.N.R.R.	0	13	13	13
26.07	HWY. 072 CONN. M.P. 1C5.13	0	13	13	13
26.03	WATER ST. N.E.	0	13	13	13
26.02	0000' 07253F SIGN BR	13	13	13	13
26	MILEPOST 26.00 MISSING	13	13	13	13
26	MILEPOINT 26.00	13	13	13	13
25.96	POLK-MARION COUNTY LINE	13	13	13	13
25.96	WILLAMETTE RIVER	13	13	13	13
25.91	2392' 07253B	13	13	13	13
25.81	CONN. NO. 1 M.P. 1C25.81	13	13	13	13
25.71	BIKE TRAIL	13	13	13	13
25.68	BEG. STRUCTURE	0	0	13	13
25.64	END STRUCTURE	0	0	13	13
25.64	ENGSTA ATTACHED	0	0	13	13
25.63	HWY. 150 CONN. M.P. 1C20.81	0	0	12	12
25.63	0149' 07366	0	0	12	12
25.62	BEG. STRUCTURE	0	0	12	12
25.61	BEG. PROJ IX-BRF-47-13	0	0	12	12
25.33	ENGSTA ATTACHED	0	0	12	12
25.08	CONN. NO. 1 M.P. 1C25.08	0	0	12	12
25	MILEPOST 25.00 MISSING	0	0	12	12
25	MILEPOINT 25.00	0	0	12	12
24.86	CONN. NO. 2 M.P. 2C24.85	0	0	12	12
24.86	0127' 08981	0	0	12	12
24.53	0029' 09055	0	0	12	12
24.53	ACCESS, TO BOAT MOORAGE	0	0	12	12

24.49	0	0	12	12
24.38 END STRUCTURE	0	0	12	12
24.33 0521' 08889W CENTER W.B. STRUCTURE	0	0	12	12
24.32 CONN. NO. 1 M.P. 1C24.31	0	0	12	12
24.31	0	0	12	12
24.28 BEG. STRUCTURE	0	0	12	12
24.21 MILEPOST 24.00	0	0	12	12
24.13 CONN. NO. 2 M.P. 2C24.13	0	0	12	12
24.08 HWY. NO. 030 M.P. 24.08	0	0	12	12
19.4 HWY. 030 M.P. 19.40	0	0	12	12
19.3 ROAD	0	0	12	12
19.03 CMP 48"	0	0	12	12
18.84 HWY. 030 M.P. 18.84	0	0	12	12
18.48	0	0	12	12
18.38 HWY. 030 M.P. 18.38	0	0	12	12
18.31 0120' 00351A MUD SLOUGH (BASKET SLOUGH)	0	0	12	12
18.01 CMP 24"	0	0	12	12
17.68 ROAD	0	0	12	12
17.67 CMP 18"	0	0	12	12
17.29 ROAD	0	0	12	12
17.11 0000' 16051 RCBC 12'X12' EQUIPMENT PASS	0	0	12	12
16.94 ROAD	0	0	12	12
16.94 S.P. CO.	0	0	12	12
16.4 HWY. 030 M.P. 16.40	0	0	12	12
25.81 HWY. 030 M.P. 25.81	0	0	0	12
25.8 BEG. BIKE TRAIL	0	0	0	12
25.64 HWY. 150 CONN. M.P. 1C21.56	0	0	0	12
25.62 BEG. STRUCTURE	0	0	0	12
25.51 ENGSTA ATTACHED	0	0	0	12
25.43 HWY. 030 M.P. 25.43	0	0	0	12

L S	R S	L T L	MEDIAN TYPE	MEDIAN WIDTH	L G S	R G S
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
4	4		9	999	0	0
6	10		9	999	0	0
6	10		9	999	0	0
6	10		9	999	0	0
4	6		6	10	0	0
4	6		6	10	0	0
4	10		6	10	0	0
4	10		2	18	0	0
4	10		2	18	0	0
4	10		2	18	0	0
4	10		2	18	0	0
4	10		2	18	0	0
4	10		2	18	0	0
4	10		2	18	0	0
4	10		2	18	0	0
4	10		2	18	0	0
8	10		6	18	0	0
8	10		6	18	0	0
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8	10		6	18	0	0
8	10		6	18	0	0
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8	10		6	18	0	0
4	10		6	10	0	0
4	10		6	10	0	0
4	10		6	10	0	0

10	10		1	16	0	0
10	10		1	16	0	0
10	10		1	16	0	0
10	10		1	16	0	0
10	10		0	0	0	0
10	10		0	0	0	0
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8	10		1	8	0	0
8	10		1	8	0	0
8	10		1	8	0	0
8	10		1	8	0	0
10	10		0	0	0	2
10	10		0	0	0	2
10	10	0	1	16	0	0
10	10	0	1	16	0	0
10	10	0	1	16	0	0
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10	10		1	16	1	1
10	10		1	16	1	1
10	10		1	16	1	1
10	10	1	0	0	1	1
10	10		1	16	0	0
10	10		1	16	0	0
8	10		6	16	0	0
8	10		6	16	0	0
8	10		6	16	0	0
8	10		6	16	0	0
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10	10		0	0	0	0
10	10		1	16	0	0
10	10		1	16	0	0

8	10		6	16	0	0
8	10		6	16	0	0
8	10		6	16	0	0
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10	10	1	0	0	0	0
10	8		1	16	0	0
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10	4		0	0	0	0

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10	6	0	0	0	0
2	2	0	0	0	0
2	2	0	0	0	0
2	2	0	0	0	0
10	6	0	0	0	0
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3	6	0	0	0	0
3	6	0	0	0	0
3	6	0	0	0	0
3	6	0	0	0	0
3	6	0	0	0	0
3	6	0	0	0	0

Mile Point	Description	LN 4	LN 3	LN 2	LN 1
26.14	END WILLAMINA-SALEM HWY. 030	12	12	12	12
26.14	CENTER ST.	12	12	12	12
26.14	COMMERCIAL ST.	12	12	12	12
26.14	HWY. 072 CONN. (COMMERCIAL ST)M.P. 1C4.96	12	12	12	12
26.14	END PROJ BRF-47 (16) #9541	12	12	12	12
26.09	END STRUCTURE	12	12	12	12
26.05	HWY. 072 CONN. M.P. 1C5.01	12	12	12	12
26.05	HWY. 072 (FRONT ST. N.E.(NB)) M.P. (2)5.01	12	12	12	12
26.04	HWY. 072 (FRONT ST. N.E.(SB)) M.P. 5.01	12	12	12	12
26.04	END BIKE TRAIL(FOLLOWS CONNECTION)	12	12	12	12
26.04	CONN. NO. 2 M.P. 2C26.04	12	12	12	12
26.01	B.N.R.R.	12	12	12	12
26	MILEPOINT 26.00	12	12	12	12
25.98	WATER ST.	12	12	12	12
25.97	CONN. NO. 1 M.P. 1C25.97	12	12	12	12
25.9	WILLAMETTE RIVER	12	12	12	12
25.9	POLK-MARION COUNTY LINE	12	12	12	12
25.88	2270' 0123K CENTER ST. BR.	12	12	12	12
25.82	0000' OM554 SIGN BR	12	12	12	12
25.81	HWY. 030 M.P. (3)25.81	12	12	12	12
25.74	HWY. 150 CONN. (C LINE ONLY) M.P. 1C20.93	0	12	12	12
25.66	0000' 0M029 BEG. STRUCTURE (C LINE)	0	0	0	14
25.51	0000' 16425C SIGN BR	0	0	0	14
25.43	HWY. 030 M.P. (3)25.43	0	0	0	14
25.41	BEG. PROJ BRF-47(16) #9541	0	0	12	12
25.32		0	0	12	12
25.12	ENGSTA ATTACHED	0	0	12	12
25	MILEPOST 25.00	0	0	12	12
25	MILEPOINT 25.00	0	0	12	12
24.96	0000' 16425B SIGN BR	0	0	12	12
24.91	CONN. NO. 2 M.P. 2C24.91	0	0	12	12
24.86	BEG. PROJ #9541	0	0	12	12
24.53	ACCESS, TO BOAT MOORAGE	0	0	12	12
24.53	0029' 09055	0	0	12	12
24.49	SALEM	0	0	12	12
24.48		0	0	12	12
24.35	END CURBS RT. AND LT.	0	0	12	12
24.35	END STRUCTURE	0	0	12	12
24.33	ENGSTA ATTACHED	0	0	12	12
24.31	0500' 08889 CENTER E.B. STRUCTURE	0	0	12	12
24.29	CONN. NO. 1 M.P. 1C24.29	0	0	12	12
24.26	BEG. STRUCTURE	0	0	12	12
24.23	BEG. PROJ U322(5)	0	0	12	12
24.23	END PROJ F325(5)	0	0	12	12
24.21	MILEPOST 24.00	0	0	12	12
24.13	BEG. CURB RT.	0	0	12	12
24.08	HWY. NO. 030 M.P. (2)24.08	0	0	12	12
24.08	CONN. NO. 1 M.P. (1C24.08)	0	0	12	12

24.06 ENGSTA ATTACHED	13	12	11	13
24.06 ROSEWOOD DR.	13	12	11	13
24.06 BEG. PROJ F 325 (5)	13	12	11	13
24.06 END PROJ STATE 1964	13	12	11	13
24.04 BEG. PROJ TQF 47 (5)	13	12	11	13
24.03	13	12	11	13
24 ROAD, TO APPLEWOOD APTS.	13	12	11	13
24 MILEPOINT 24.00	13	12	11	13
23.92 STONEWAY DR.	13	12	11	13
23.84	13	12	11	13
23.67 COLLEGE DR.	13	12	11	13
23.65 END FRONTAGE RD. M.P. F23.66	13	12	11	13
23.62	13	12	11	13
23.61 SALEM	13	12	11	13
23.61 SALEM	13	12	11	13
23.61 SALEM (BEG. DALLAS HWY.)	13	12	11	13
23.5 FRONTAGE RD. M.P. F23.50	13	12	11	13
23.28 ROAD, TO SUBSTATION	13	12	11	13
23.2 MILEPOST 23.00	13	12	11	13
23.14 END FRONTAGE RD. M.P. F23.14	13	12	11	13
23.13 CONN. NO. 1 M.P. 1C23.13	13	12	11	13
23.09	13	12	11	13
23.07 BEG. FRONTAGE RD. M.P. F23.07	13	12	11	13
23 MILEPOINT 23.00	13	12	11	13
22.98 ENGSTA ATTACHED	13	12	11	13
22.89 END FRONTAGE RD. M.P. F22.91	13	12	11	13
22.83 FRONTAGE RD. M.P. F22.83	13	12	11	13
22.8	13	12	11	13
22.66 FRONTAGE RD. (CHERRY HILL LN.) M.P. F22.66	13	12	11	13
22.53 BEG. FRONTAGE RD. M.P. F22.53	13	12	11	13
22.5 ENGSTA ATTACHED	13	12	11	13
22.25 HOLMAN STATE PARK	14	13	13	12
22.17 MILEPOST 22.00	14	13	13	12
22.15 END FRONTAGE RD. M.P. F22.19	14	13	13	12
22.06 ENGSTA ATTACHED	14	13	13	12
22.04 FRONTAGE RD. (DOAKS FERRY RD.) M.P. F22.04	14	13	13	12
22 MILEPOINT 22.00	13	13	13	13
21.96 ROAD, TO SALEM YACHT AND BOATING CLUB	13	13	13	13
21.91 DURHAM ST.	12	12	12	12
21.85	12	12	12	12
21.85 STREET	12	12	12	12
21.85 SHAW ST.	12	12	12	12
21.85 "EOLA"	12	12	12	12
21.78 MILL ST.	12	12	12	12
21.77 END CURB RT.	12	12	12	12
21.77 FRONTAGE RD. M.P. F21.77	12	12	12	12
21.72 ENGSTA ATTACHED	12	12	12	12
21.7 CONN. NO. 1 M.P. 1C21.70	12	12	12	12
21.66 EXIT, ODOT WEIGH STATION	12	12	12	12
21.66 RIGGS ST.	12	12	12	12
21.53 ODOT WEIGH STATION	12	12	12	12

21.43 ENGSTA ATTACHED	12	12	12	12
21.41 END FRONTAGE RD. M.P. F21.41	12	12	12	12
21.4 BEG. CURB RT.	12	12	12	12
21.4 ENTRANCE, ODOT WEIGH STATION	12	12	12	12
21.33 BEG. CURB RT.	12	12	12	12
21.33 FRONTAGE RD. M.P. F21.33	12	12	12	12
21.19 50TH AVE. N.W.	12	12	12	12
21.19 STATE FARM RD.	12	12	12	12
21 MILEPOST 21.00 MISSING	12	12	12	12
21 MILEPOINT 21.00	12	12	12	12
20.84 52ND AVE. N.W.	12	12	12	12
20.83 END CURB RT.	12	12	12	12
20.75 AH = 20.56BK	12	12	12	12
20.56 END PROJ F-RF 325(7)	12	12	12	12
20.56 BK = 20.75AH	12	12	12	12
20.51 END FRONTAGE RD. M.P. F20.51	12	12	12	12
20.49 HWY. 193 CONN. M.P. 1C0.19	12	12	12	12
20.42	12	12	12	12
20.37 55TH AVE. N.W.	12	12	12	12
20.37 HWY. 193 M.P. 0.00	12	12	12	12
20.37 BEG. FRONTAGE RD. M.P. F20.37	12	12	12	12
20.35 CMP 36" MCNARY CREEK	12	12	12	12
20.33 CONN. NO. 1 M.P. 1C20.33	12	12	12	12
20.25 TRANSMISSION LINES	12	13	13	12
20.22 ENGSTA ATTACHED	12	13	13	12
20.1	12	13	13	12
20.1 S. OAK GROVE RD.	12	13	13	12
20.1 "BRUNKS CORNER"	12	13	13	12
20.03 OAK GROVE RD.	12	13	13	12
20 MILEPOINT 20.00	12	13	13	12
19.98	12	13	13	12
19.96 MILEPOST 20.00	12	13	13	12
19.83 ACCESS RD.	12	13	13	12
19.56 ACCESS DRIVEWAY	12	13	13	12
19.54 PEDESTRIAN WALKWAY	12	13	13	12
19.54 ACCESS RD. TO GOLF COURSE	12	13	13	12
19.5	12	12	12	12
19.43 U'XING OAK KNOLL BICYCLE TRAIL	12	12	12	12
19.4 HWY. 030 M.P.(2)19.40	12	12	12	12
19.32 BEG. CURBS RT. AND LT.	0	0	12	12
19.32 LEG, FROM RICKREALL RD.	0	0	12	12
19.04 CMP 48"	0	0	12	12
19.02 MILEPOST 19.00	0	0	12	12
19 MILEPOINT 19.00	0	0	12	12
18.84 HWY. 030 M.P.(2)18.84	0	0	12	12
18.82 CMP 24"	12	12	12	12
18.66	12	12	12	12
18.61 GREENWOOD RD.	12	12	12	12
18.6 CMP 18"	12	12	12	12
18.56	12	12	12	12
18.48 CMP 60"	12	12	12	12
18.38 HWY. 030 M.P.(2)18.38	12	12	12	12

18.32	END STRUCTURE	0	0	12	12
18.31	0120' 00351A MUD SLOUGH (BASKETT SLOUGH)	0	0	12	12
18.3	BEG. STRUCTURE	0	0	12	12
18.24	ROAD	0	0	12	12
18.01	CMP 24"	0	0	12	12
18	MILEPOST 18.00	0	0	12	12
18	MILEPOINT 18.00	0	0	12	12
17.67	CMP 18"	0	0	12	12
17.11	0000' 16051 RCBC 12'X12' EQUIPMENT PASS	0	0	12	12
17.05	MILEPOST 17.00	0	0	12	12
17	MILEPOINT 17.00	0	0	12	12
16.96	END STRUCTURE	0	0	12	12
16.94	ROAD	0	0	12	12
16.94	S.P. CO.	0	0	12	12
16.94	0183' 09872 DERRY O'XING	0	0	12	12
16.92	BEG. STRUCTURE	0	0	12	12
16.4	HWY. 030 M.P.(2)16.40	0	0	12	12
16.19		12	12	12	12
16.13	CMP 24"	12	14	12	12
16.12	HWY. 001W M.P. 57.43	12	14	12	12
16.05		12	14	12	12
16	MILEPOINT 16.00	12	12	12	12
26.18	END PROJ IX-BRF-47-13	0	13	13	13
26.13	END MARION ST. BR.	0	13	13	13
26.1	HWY. 072 (FRONT ST. N.E.(NB)) M.P. (2)4.93	0	13	13	13
26.09	HWY. 072 (FRONT ST. N.E.(SB)) M.P. 4.93	0	13	13	13
26.08	B.N.R.R.	0	13	13	13
26.07	HWY. 072 CONN. M.P. 1C5.13	0	13	13	13
26.03	WATER ST. N.E.	0	13	13	13
26.02	0000' 07253F SIGN BR	13	13	13	13
26	MILEPOST 26.00 MISSING	13	13	13	13
26	MILEPOINT 26.00	13	13	13	13
25.96	POLK-MARION COUNTY LINE	13	13	13	13
25.96	WILLAMETTE RIVER	13	13	13	13
25.91	2392' 07253B	13	13	13	13
25.81	CONN. NO. 1 M.P. 1C25.81	13	13	13	13
25.71	BIKE TRAIL	13	13	13	13
25.68	BEG. STRUCTURE	0	0	13	13
25.64	END STRUCTURE	0	0	13	13
25.64	ENGSTA ATTACHED	0	0	13	13
25.63	HWY. 150 CONN. M.P. 1C20.81	0	0	12	12
25.63	0149' 07366	0	0	12	12
25.62	BEG. STRUCTURE	0	0	12	12
25.61	BEG. PROJ IX-BRF-47-13	0	0	12	12
25.33	ENGSTA ATTACHED	0	0	12	12
25.08	CONN. NO. 1 M.P. 1C25.08	0	0	12	12
25	MILEPOST 25.00 MISSING	0	0	12	12
25	MILEPOINT 25.00	0	0	12	12
24.86	CONN. NO. 2 M.P. 2C24.85	0	0	12	12
24.86	0127' 08981	0	0	12	12
24.53	0029' 09055	0	0	12	12
24.53	ACCESS, TO BOAT MOORAGE	0	0	12	12

24.49	0	0	12	12
24.38 END STRUCTURE	0	0	12	12
24.33 0521' 08889W CENTER W.B. STRUCTURE	0	0	12	12
24.32 CONN. NO. 1 M.P. 1C24.31	0	0	12	12
24.31	0	0	12	12
24.28 BEG. STRUCTURE	0	0	12	12
24.21 MILEPOST 24.00	0	0	12	12
24.13 CONN. NO. 2 M.P. 2C24.13	0	0	12	12
24.08 HWY. NO. 030 M.P. 24.08	0	0	12	12
19.4 HWY. 030 M.P. 19.40	0	0	12	12
19.3 ROAD	0	0	12	12
19.03 CMP 48"	0	0	12	12
18.84 HWY. 030 M.P. 18.84	0	0	12	12
18.48	0	0	12	12
18.38 HWY. 030 M.P. 18.38	0	0	12	12
18.31 0120' 00351A MUD SLOUGH (BASKET SLOUGH)	0	0	12	12
18.01 CMP 24"	0	0	12	12
17.68 ROAD	0	0	12	12
17.67 CMP 18"	0	0	12	12
17.29 ROAD	0	0	12	12
17.11 0000' 16051 RCBC 12'X12' EQUIPMENT PASS	0	0	12	12
16.94 ROAD	0	0	12	12
16.94 S.P. CO.	0	0	12	12
16.4 HWY. 030 M.P. 16.40	0	0	12	12
25.81 HWY. 030 M.P. 25.81	0	0	0	12
25.8 BEG. BIKE TRAIL	0	0	0	12
25.64 HWY. 150 CONN. M.P. 1C21.56	0	0	0	12
25.62 BEG. STRUCTURE	0	0	0	12
25.51 ENGSTA ATTACHED	0	0	0	12
25.43 HWY. 030 M.P. 25.43	0	0	0	12

L S	R S	L T L	MEDIAN TYPE	MEDIAN WIDTH	L G S	R G S
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APPENDIX F

Evaluation Criteria

This appendix includes a technical memorandum that describes the criteria used to screen and evaluate alternatives.

OR 22 (W) Evaluation Criteria for Alternatives

PREPARED FOR: Dan Fricke/ODOT Project Coordinator
Project Management Team

PREPARED BY: Larry Weymouth/CH2M HILL

COPIES: Consultant Team
File

DATE: June 28, 2007

PROJECT NUMBER: 356019.01.04

This technical memorandum is largely based upon an existing document developed during earlier efforts of the project management team. Criteria are grouped according to three categories: Transportation Operations, Project Impacts, and Implementation. New to the list of evaluation criteria are Plan Consistency and Flexibility.

Evaluation Critera

The evaluation criteria for the OR 22(W) EMP will be used by PMT/TAC to evaluate the performance of each alternative against a broad range of important project characteristics, representing a full range of stakeholder values. The evaluation criteria tie back to the project's problem statement, and need to highlight differences among alternatives.

The evaluation process is based on a comparison of quantitative data, such as for mobility, land use, economic data, and costs; and qualitative data with supporting facts, such as for operations, environmental impacts, and construction phasing. Alternatives will be ranked according to a "consumer reports" type of scale made up of the following four options:

●	Alternative directly and positively addresses the intent of the criterion.
◖	Alternative partially meets the intent of the criterion, addressing some but not all of the objectives.
○	Alternative does not support the intent of, or negatively impacts, the criterion.
N/A	Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

The final draft evaluation criteria are described as follows.

Transportation Operations

MOBILITY

Objective: To provide a viable transportation solution that accommodates future growth as described in the Salem and Polk County Comprehensive Plans, meeting appropriate mobility standards for the Statewide Expressway and Freight Route (measured as a ratio of volume to capacity (v/c) for state facilities), and addressing regional travel needs of residents, businesses, and industries. Relevant Oregon Highway Plan (OHP) mobility standards are 0.70 outside the MPO (west of the Oak Grove Road boundary) and 0.80 inside the MPO (east of the Oak Grove Road boundary); ODOT Highway Design Manual (HDM) mobility standards for the expressway are 0.65 outside the MPO and 0.75 inside the MPO.

Measure: OHP v/c for no-build, and HDM v/c for build alternatives.

●	Alternative improves expected future traffic flow along OR 22(W) corridor when compared to the future no-build alternative. The corridor and highway approaches at all study intersections meet the relevant mobility standards.
◖	Alternative improves expected future traffic flow along OR 22(W) corridor when compared to the future no-build alternative. The corridor and the majority of study intersections meet the relevant mobility standards.
○	Expected future traffic flow conditions along OR 22(W) corridor for alternative are the same or worse when compared to the future no-build alternative. The corridor and/or the majority of study area intersections do not meet the relevant mobility standards.
N/A	Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

ACCESS MANAGEMENT

Objective: Address relevant state access management standards as outlined in OAR 734-051 (Division 51) for the OR 22(W) corridor, including spacing between interchanges, between interchange tapers, between entrance and exit ramps along a highway segment, and between public and private approaches on statewide highways. The relevant spacing standards include 1.9 miles between interchanges (measured between crossroad centerlines), 1 mile between the start and end of tapers of adjacent interchanges, 1,320 feet between an interchange ramp terminal and the next access point, and 2,640 feet between public and private at-grade approaches along a statewide highway and expressway.

Measure: Spacing (feet) between interchanges and between access points.

●	New access or improvements recommended by the alternative are consistent with state highway access management standards.
◖	New accesses or improvements recommended by the alternative contain access spacing provisions, or improve access management over existing conditions. Though access spacing standards are not met, spacing is moving toward meeting the standard.
○	Alternative, through provision of new access or improvements, causes additional conflicts between the state highway, local roads, and/or private

driveways.

N/A Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

CONNECTIVITY

Objective: Support ODOT, Polk County, SKATS, and City of Salem goals for providing direct and efficient access to and between industrial and commercial centers, regional intermodal freight facilities, and statewide transportation corridors.
Measure: Travel distance.

● Alternative provides new connection or facility that provides direct and efficient access; or substantially improves access of an existing connection point or facility.

◖ Alternative has slight or no improvement to connection point or facility.,

○ Alternative limits or reduces transportation options or connectivity.

N/A Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

SAFETY

Objective: To reduce conflicts and improve operational safety for all current and future users of the corridor, including autos, freight, transit, bicyclists, and pedestrians. Minimize emergency response times.
Measure: Number of potential conflict points/movements, comparison of alternative with design standards, impact on Top 10% SPIS sites, qualitative assessment of change in emergency response times.

● Alternative addresses known operational safety issues, reduces potential conflicts, and does not add new operational safety concerns. Emergency response times are improved.

◖ Alternative does not add new operational safety concerns, does not directly address or minimally address known safety issues, and/or neither improves nor harms emergency response times.

○ Alternative adds conflict points or otherwise creates additional safety problems for users, and may increase emergency response times.

N/A Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

Project Impacts

NATURAL ENVIRONMENT

Objective: To avoid, minimize, and/or mitigate impacts to environmentally sensitive areas.
Measure: Qualitative assessment of alternative's impact to farm, forest, and wetlands; qualitative assessment of alternative's impact on wildlife and air quality.

● Alternative enhances or has no adverse impacts to environmentally sensitive areas, on wildlife habitat, and air quality.

◖ Alternative has minimal adverse impacts on environmentally sensitive areas, on wildlife habitat, and air quality, which are expected to be not difficult to mitigate.

○ Alternative has adverse impacts on environmentally sensitive areas, on wildlife habitat, and air quality that are considered substantial and/or may not easily be mitigated.

N/A Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

BUILT ENVIRONMENT (LAND USE AND SOCIAL)

Objective: To avoid, minimize, and/or mitigate impacts to the built environment, including impacts to developable lands, historic properties, and low income, elderly, or minority populations.
Measure: Number of acres of developable lands displaced; number of low income, elderly, or minority populations displaced; number of residences displaced; amount and level of impact on historic properties; ability to appropriately mitigate impacts.

● Alternative avoids or contains minimal impacts to developable lands; residential parcels, and historic properties.

◖ Alternative has minor impacts to developable lands, residential parcels, and/or historic properties, which are expected to be mitigated.

○ Alternative has impacts to developable lands, residential parcels, and/or historic properties that are considered substantial and/or may not easily be mitigated.

N/A Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

BUSINESS (ECONOMIC DEVELOPMENT/DISPLACEMENT)

Objective: Recommended transportation improvements that are supportive of, and provide access to, business and industry in the area and will minimize need for business relocation or elimination.
Measure: Number of businesses to be impacted by alternative, including impacts such as relocation or elimination, reduced parking, limited access, and lower employment .

● Results in no relocation/elimination or other harmful impacts to an existing operating business.

◖ Minimal relocation/elimination (<5) of operating businesses or vacant buildings; or reduces parking, access, or employment.

○ Significant relocation/ elimination (>5) of operating businesses or vacant buildings;or significantly reduces parking, access, or employment.

N/A Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

Implementation

PLAN CONSISTENCY

Objective: To implement project(s) consistent with federal, state, county, regional, and city plans.
Measure: Statement of consistency from government authorities or note of inconsistent elements.

●	Alternative is consistent with plans and no amendment is required.
◖	Alternative requires a straightforward plan amendment.
○	Alternative requires a goals exception.
N/A	Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

FLEXIBILITY
Objective: To implement project(s) withpotential for phasing or separable components and fundable.
Measure: Number of phases or separable components possible and fundable.

●	Alternative can be a phase of a larger project or separated into components in many ways and funded.
◖	Alternative can be a phase of a larger project or separated into components in only a few ways and funded.
○	Alternative cannot be a phase of a larger project nor separated into components and funded.
N/A	Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

COST

Objective: To serve as a strong steward of public funds, providing a balanced, fundable solution with opportunities for local funding leverage.
Measure: Planning-level cost estimates; comparison of project alternatives with other projects around the state for funding competitiveness purposes; cost-effectiveness; benefit-cost ratio.

●	Alternative provides a balanced, fundable solution with opportunities for local funding.
◖	Alternative may be balanced but funding competitiveness is uncertain.
○	Alternative is not competitive for state and/or federal funds, and/or does not provide opportunities to leverage local funds.
N/A	Alternative neither meets nor does not meet the intent of the criterion. Criterion does not apply.

APPENDIX G

Project 22 Report (W&H Pacific, June 2005)

This appendix includes the report and appendixes prepared in June 2005 by consulting firm W&H Pacific for the County, titled “Project 22: Hwy 22/51 Interchange Implementation Strategy.”.

PROJECT DELIVERY CONCEPTS AND STRATEGY REPORT

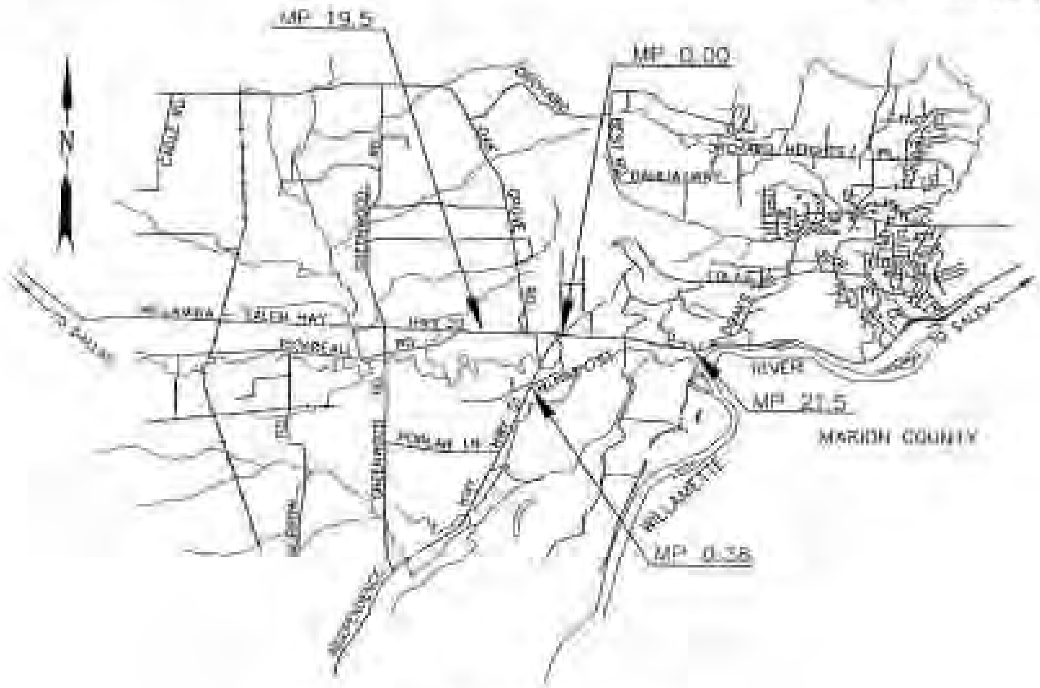
Project 22: Hwy 22/51 Interchange Implementation Strategy

Willamina-Salem Highway (ODOT No. 30 / OR22)

Independence Highway (ODOT No. 193 / OR51)

Polk County, Oregon

ODOT Region 2



Prepared for
Polk County, Oregon

Prepared by
W&H Pacific, Inc.
3470 Pipebend Place NE, Suite 170
Salem, OR 97301

May 17, 2005
Revised June 20, 2005

EXECUTIVE SUMMARY

Polk County officials have made Project 22 their top transportation priority. The County Commission has taken an active role in supporting the project, and has worked with the Oregon Congressional Delegation, the Oregon Department of Transportation, and MWACT in an effort to secure funding.

The first major project in the expressway corridor was the Rickreall Interchange Project at the intersection of Highway 99 and Highway 22. This $20 Million project began construction in 2005 and will be completed in 2006.

The next major project is the Independence Interchange where Highway 22 and Highway 51 intersect. The State and the County will shift their focus to delivering the project in phases. Financial and political support will be needed to successfully implement this project. ODOT and the MWVCOG are jointly developing an expressway management plan in which ODOT is establishing long range plans for the Highway 22 expressway corridor.

In the meantime, county officials feel that portions of the project can precede the interchange itself in development, as the County has secured some funding, a $3 million earmark from Borders and Corridors program, and $1 million from the Oregon Department of Transportation (ODOT) STIP. County has assigned W&H Pacific to develop a strategy to design and construct the expressway projects (frontage and backage roads) in the area of the interchange in smaller phases that, once constructed, can improve the operation and safety of the highway system.

This phased approach is based on an assumption that the environmental work for each phase is limited to the impacts of that work. However, if a larger, Independence Interchange all encompassing environmental document is required and includes the small project impacts, then the phases' design work must wait until completion of the overall environmental document.

This document concentrates on the local system portions of the Independence Interchange Project. This strategy provides coordination with the State's larger corridor project, but does not focus on performing work on the State system – only the minimum necessary for the County work to connect to the State system, and be compatible to long-term plans and requirements of the corridor expressway management plan.

With that said, the County work focuses on providing local frontage and backage roads and alternative access points to serve businesses and landowners in advance of the interchange project, and independent of the State system. Smaller project phases also set the stage for future interchange construction and closure of the single-point private accesses to the State system by providing the alternate access.

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PURPOSE AND NEED

In late April, 2005 Polk County commissioned W&H Pacific to develop a conceptual report to advance the Highway 22/51 Interchange Project from concept through construction. The genesis of the report effort is driven by the ownership Polk County officials have for the Highway 22 and Highway 51 corridors, and the notion the County should provide local area leadership to support the Oregon Department of Transportation's (ODOT) efforts to design and construct the project. County officials have publicly declared the project their top transportation priority, and are actively working with Oregon's Congressional Delegation to assist ODOT in securing Federal funding for the project.

In this report, Project 22: Highway 22/51 Interchange Implementation Strategy, County officials requested implementation concepts be investigated that would identify a clear, logical approach to fund, develop the design, perform environmental work, and construct the project in phases. *The sequence of project phases examined in this report does not include projects on the expressway roadway, but rather focuses on the delivery of the frontage road system projects necessary to safely operate the interchange after construction.* The phases individually would operate and function to support the needs and requirements of this urban and rural Highway 22 Expressway (Oregon Transportation Commission approval in June 1996), and be entirely compatible with the ODOT Highway 22 Expressway Management Plan requirements. This management plan is currently being developed jointly by ODOT Region 2 and the Mid Willamette Valley Council of Governments (MWVCOG), and should be completed in early 2006.

Equally important, the project phases must be included in the Salem-Keizer Area Transportation Study's (SKATS) Financially Constrained Transportation Plan. In this plan, projects listed must have funding or have reasonable expectations that funding will be secured, such as a listing in ODOT's Surface Transportation Improvement Program (STIP), Development or Construction Sections.

According to Richard Schmid of the MWVCOG, adding phases of a large project incrementally to the financially constrained plan in a logical sequence makes sense, and enables projects to become reality over time, rather than delaying a very large expensive project until fully funded. Historically, ODOT has successfully developed many large projects in phases, particularly interstate projects and projects in urban areas. Once in the financially constrained plan, the phase must meet the purpose, function, and operational needs of its respective role in the whole project. This assures compatibility with the MWVCOG planning process, to which Polk County is fully committed.

This report provides two primary deliverables in addition to the above strategy of phaseable project development that include:

1) Identify frontage or backage roads as project phases (Options in this report) that can be added to the MWVCOG financially constrained plan and to the Development Section of the ODOT STIP, and to build a "shelf" project ready for construction.

2) Identify complete frontage or backage roads that can be added to the MWVCOG financially constrained plan and programmed in the 2008 STIP for construction. These options, when built, collectively support the safe operation of an interchange at the intersection of Highway 22 and Highway 51 *in advance of the interchange, or included in the interchange project, depending on available funding.*

PROJECT BACKGROUND

Polk County is a small rural county that lies between the rapidly growing Willamette Valley and the Oregon Coast. Highway 22 West is the critical link that supports Polk County and connects the larger communities of Dallas, Salem, Monmouth, and Independence. Virtually every state highway within the County connects to or intersects this highway. Until recent years, the highway has adequately met the needs of the County and the State.

However, Polk County began experiencing a substantial increase in traffic volumes several years ago. From 1990 to 2000 the county population has grown at a rate of 26%, while the traffic rate has grown at an unprecedented 46%. Attractions along and at the end of the highway has generated a significant influx of high-speed traffic. The increase in traffic created a corresponding increase in the number of traffic accidents, injuries and fatalities (83% of the County's fatalities occur on this State highway alone).

Polk County and ODOT became aware of the dangerous situation and declared the highway a "Safety Corridor" in 1993. ODOT, in partnership with Polk County, has corrected many of the dangers on Highway 22 West through physical improvements and support programs, which were the result of ODOT Region 2's <u>1995 Interim Strategy for the Highway 22 Corridor</u>. Despite these ambitious efforts, the problem areas between Dallas and Salem continue to worsen.

Highway 22 West is no longer being used for the purpose for which it was originally designed. In reality, it is now comprised of two different roads, both competing for the same space. The first is a local transportation corridor serving local business traffic; school buses and slow moving farm equipment frequently cross it. The second is a high-speed expressway serving the central Willamette Valley and carrying millions of people intent upon visiting the Central Oregon Coast and the many regional attractions along the route. This situation creates a deadly combination often resulting in accidents, injuries, and the loss of human life. (The fatality rate in this particular section of the highway is 2.5 times greater than the national traffic fatality averages for a facility of this type.)

Polk County has identified several steps which must be taken to improve the safety of Highway 22 West. These steps collectively are known as Polk County - Project 22. The goals:

- Provide a safe means for local and expressway traffic to share the road. Where necessary, separate the traffic to substantially reduce the number of accidents caused by access, egress and speed differentials. (Frontage Roads and limited highway access)

- Divide traffic along the entire length of the road, thereby eliminating the incidence of head-on collisions. (Median Barrier separation of traffic)

Polk County has obtained a $3M earmark from the Borders and Corridors program and another $1M from the STIP. ODOT is using approximately $250,000 of the funding to complete an Expressway Management Plan, the first of its kind for ODOT, from Greenwood Road to Doaks Ferry Road. This is a joint effort by the MWVCOG and ODOT and should be completed in early 2006.

ODOT's current plan, approved by the Oregon Transportation Commission (OTC) on May 11, 2000, calls for the design and construction of a Highway 22 expressway from Salem to The Kings Valley Highway, near Dallas. A divided expressway will safely accommodate large volumes of traffic at high speeds, and require minimization and/or elimination of local at-grade access to the highway. Both a high volume divided roadway and limited access meet the Polk County goals noted above.

ODOT has evaluated several alignment and interchange alternatives and has made one public hearing presentation in September 2004. This consultant met with and reviewed ODOT's design effort to date, and agrees the design is solid in concept, operation and safety provisions, and solves local access issues. The design is well suited for the site culture and topography restrictions, and has been endorsed by Polk County.

ODOT's plan calls for the construction of an interchange at the intersection of Highway 51 with Highway 22. Highway 51 is presently an uncontrolled intersection. A single turn lane exists on Highway 22 eastbound allowing traffic to turn south onto Highway 51. Highway 22 westbound also has a turn lane that requires traffic to cross on-coming traffic. No turn lanes exist to assist access to the north of Highway 22. This dangerous intersection requiring cars to cross high speed on-coming traffic. Polk County considers the intersection of Highway 51 and Highway 22 as a critical and essential safety project and is the County's top transportation priority.

To that end, the County wants to use the remaining $3.75M of funds to get phaseable projects "shelf-ready" for construction as soon as possible. These "appendage" projects will support the interchange and the operation of the expressway subsequent to their construction. Polk County also wants to continue securement of funds for the construction of the interchange in 2008.

STRATEGY

Polk County understands that to complete all the expressway work as one project will be expensive and not likely to occur in the near future. (ODOT is currently estimating the expressway work to be in excess of $100M) The County realizes that to accomplish this work the project must be divided into smaller, more manageable pieces, or phases.

Since the construction of the interchange at the intersection of Highway 51 and Highway 22 is Polk County's highest transportation priority, the County would like to focus its efforts at this location.

Polk County has $3.75M currently available for use. They would like to use that $3.75M to "seed" the design and construction of the interchange by constructing useful portions (phases) of frontage roads as soon as possible that coordinate with ODOT's long-range plan. During this same time they want to secure approximately $30-35M to be used for constructing the interchange and/or the remaining frontage roads in 2008. (Two members of the Oregon Congressional Delegation have publicly declared their support for the corridor improvements and interchange project).

Polk County supports the interchange design concept developed by ODOT for the intersection of Highway 51 and Highway 22. ODOT estimated the construction costs fo the interchange to be $19.5M. This value does not include right-of-way acquisition or associated environmental costs.

ODOT's estimate for the frontage/backage roads in the project area is $80M. Polk County has asked this consultant to assess simple and practical frontage/backage road options that support the safe operation of a future interchange. Polk County has requested this consultant to identify and assess portions of those frontage/backage roads that could be constructed quickly.

Criteria considered when evaluating these options include:

- Section of Highway 22 from the Willamette River Bridges in Salem to the Kings Valley Highway, near Dallas, was approved by the OTC as an "Expressway" and will warrant a 6-lane configuration in the future.
- Per the Oregon Highway Plan (OHP), the functional classification for the Willamina-Salem Highway to MP 23.61 is "Rural Principal Arterial – Other" and from MP 23.61 to MP 26.14 it is Urban Principal Arterial – Other Freeway or Expressway.
- This report's evaluation limits along the Willamina-Salem Highway No. 30 are from MP 19.5 to MP 21.5, and along the Independence Highway No. 193 from MP 0 to MP 0.38, and 55th Ave from Highway 22 to Aster Road. This represents the area around the proposed interchange, and is shown on the vicinity map on this report's cover.
- The intersection of Highway 51 with Highway 22 is located at MP 20.37. This is 3.24 miles westerly of the urban designated functional classification for the roadway. There is little difference between the business district from MP 23.61 to MP 26.14 and that found from MP 20.37 to MP 23.61. The Salem UGB is located east of

Doaks Ferry Road which is near MP 22. A portion of the community of Eola is inside the MPO.

- There are several factors that suggest a significant change in character of the highway at the intersection of Highway 51 with Highway 22 at MP 20.37, rather than at MP 23.61. If this was the case, urban criteria would prevail east of the intersection and control the distance between access points.
- ODOT's findings indicate that a separated grade is required at the Highway 22/51 intersection to provide efficient operation and safety improvements.
- The expressway/interchange will require median barrier to be installed to separate eastbound and westbound traffic on Highway 22.
- Median barrier must be installed when the interchange is constructed.
- All accesses to Highway 22 will be closed and traffic diverted to frontage or backage roads when the interchange is constructed.

Until the interchange is constructed:

- Channel available funding for on "on-the-ground" construction vs. right-of-way or studies.
- Consider local roads (highway frontage and backage roads) that provide access to businesses and landowners, and connect to the existing local roads and state highways at acceptable locations, and within budget amounts on-hand.
- Maintain existing public access points along highway until projects are constructed. Completion of frontage/backage road projects will allow access at grade to be closed if properties are served by the frontage/backage roads.
- Consider right-in/right-out accesses for the interim.
- Avoid installing median barrier until interchange or frontage/backage roads are constructed.
- Construct permanent facilities that will not have to be revised when the interchange is built; no "throw-away".

RECOMMENDATIONS w/ estimated cost & schedule

W&H Pacific has reviewed ODOT's long-range "Expressway" plan as presented in the September 2004 Public Hearing. W&H Pacific has also reviewed ODOT's interchange design for the intersection of Highway 22 and Highway 51.

W&H Pacific and Polk County agree with and support ODOT's interchange design as appropriate for the traffic patterns and volumes at this location.

Several frontage/backage road options, with their associated "total cost" estimate to construct, were evaluated. The options are described in more detail in Appendix A.

To meet the goals of Polk County, W&H Pacific recommends the following phased construction of the frontage and/or backage roads in the vicinity of the planned interchange:

PHASE DESCRIPTION W/ ESTIMATED COST & SCHEDULE

		Est'd Cost	Year
Phase 1	NE Frontage Road Improvements		
1.1	Conduct Expressway Planning	$250,000	2006
1.2	Perform environmental work for Options NE-1b, NE-2a, NW-1a, NW-1b, NW-3a, NW-4, SW-1, and SW-2 that support ODOT's long-range frontage/backage road plan.	$800,000	2007
1.3	Perform engineering work for Options NE-1b, NE-2a, NW-1a, NW-1b, NW-3a, NW-4, SW-1, and SW-2 that support ODOT's long-range frontage/backage road plan.	$1,752,000	2007
1.4	Perform right-of-way work for Options NE-1b, NE-2a, NW-1a, NW-1b, NW-3a, NW-4, SW-1, and SW-2 that support ODOT's long-range frontage/backage road plan.	$377,000	2008
1.5	Construct Options NE-1b, NE-2a. Close private accesses to Highway 22 and leave open public road accesses at 50th Ave and 52nd Ave.	$1,485,000	2009
	Total	$4,664,000.00	
Phase 2	NW & SW Frontage Road Improvements		
2.1	Perform environmental work for Options SE-1a and SE-1b that support ODOT's long-range frontage/backage road plan.	$400,000	2007
2.2	Perform engineering work for Options SE-1a and SE-1b that support ODOT's long-range frontage/backage road plan.	$1,322,000	2007
2.3	Perform right-of-way work for Options SE-1a and SE-1b that support ODOT's long-range frontage/backage road plan.	$279,000	2008
2.4	Construct Options NW-1a, NW-1b, NW-3a, NW-4, SW-1, and SW-2. Close all accesses to Highway 22, including public accesses from Oak Grove Road and South Oak Grove Road.	$2,895,000	2009
	Total	$4,896,000.00	
Phase 3	SE Frontage Road Improvements		
3.1	Perform environmental work for the Interchange	$400,000	2010
3.2	Perform engineering work for the Interchange	$2,000,000	2011
3.3	Perform right-of-way work for the Interchange	$100,000	2012
3.4	Construct Options SE-1a and SE-1b. Note: construction of the SE backage road options and the Interchange are planned for the same year, therefore, all existing accesses to Highway 22 will be closed in conjunction with the opening of the interchange. Also close access in NE quadrant at 52nd Ave.	$3,306,000	2012
	Total	$5,806,000.00	
Phase 4	Interchange		
4.1	Construct the Interchange	$17,500,000	2012
	Total	$17,500,000.00	

REFERENCES

Highway Design Manual, 2003 English – Expressway Design Standards
OAR 734 Division 51 Rules, Access Control
ODOT Bridge Log, 2004
Oregon Highway Plan, 1999
Polk County – Project 22 (http://www.polkproject22.com)
Polk County Transportation Plan

APPENDIX A – OPTIONS & ESTIMATES

Refer to Options Map at the end of this Appendix for location of all options described herein.

SUMMARY

Option	Construction	Right-of-Way	Environmental	Engineering	Total
NE-1a	$100,000	$0	$0	$40,000	$140,000.00
NE-1b	$550,000	$85,000	$100,000	$220,000	$955,000.00
NE-2a	$935,000	$201,000	$200,000	$374,000	$1,710,000.00
NE-2b	$835,000	$105,000	$200,000	$334,000	$1,474,000.00
NE-3	$1,500,000	$1,266,000	$300,000	$600,000	$3,666,000.00
SE-1a	$1,600,000	$228,000	$100,000	$640,000	$2,568,000.00
SE-1b	$1,706,000	$51,000	$300,000	$682,000	$2,739,000.00
SE-1c	$2,800,000	$51,000	$300,000	$1,120,000	$4,271,000.00
SE-2a	$1,145,000	$375,000	$200,000	$458,000	$2,178,000.00
SE-2b	$1,485,000	$51,000	$300,000	$594,000	$2,430,000.00
SW-1	$100,000	$0	$0	$40,000	$140,000.00
SW-2	$725,000	$16,000	$100,000	$290,000	$1,131,000.00
NW-1a	$100,000	$0	$0	$40,000	$140,000.00
NW-1b	$80,000	$0	$0	$32,000	$112,000.00
NW-2	$1,200,000	$25,000	$200,000	$480,000	$1,905,000.00
NW-3a	$800,000	$4,000	$200,000	$320,000	$1,324,000.00
NW-3b	$1,250,000	$13,000	$200,000	$500,000	$1,963,000.00
NW-4	$1,090,000	$71,000	$200,000	$436,000	$1,797,000.00
NW-5	$2,100,000	$45,000	$200,000	$840,000	$3,185,000.00

NORTHEAST QUADRANT

Option NE-1a: 52nd/53rd/Aster Rd w/ Overlay

This option maintains the existing 52nd/53rd/Aster Road system, including the access of 52nd Ave to Highway 22. (The access at 52nd Ave will eventually be closed with the construction of the interchange at the intersection of Highway 51/55th Ave and Highway 22.) An AC overlay of the existing road surface is recommended to be constructed to provide a smooth riding surface. Existing right-of-way is 40' wide on 52nd and 53rd, and 60' wide on Aster. Additional right of way along 52nd and 53rd will need to be purchased to provide for 60' of width. This option is the same as one of ODOT's options shown in their long-range plan.

Since it is existing alignment and no improvements outside the existing edges of pavement are proposed it is anticipated that this option will not require any additional environmental compliance efforts.

Advantages:

- Uses the existing road system.
- Maintains the existing access of 52^{nd} Ave to Highway 22 to avoid more congestion at 55^{th} Ave. To be closed when interchange is constructed.

Disadvantages:

- Connection to 55^{th} Ave, and ultimately Highway 22, is a longer route than typical interchange frontage/backage road.
- Narrow road; portions gravel.

Estimate:		
Construction	$100,000	overlay existing surface
Right-of-Way	$0	
Environmental	$0	
Engineering	$40,000	40% of Construction
Total	$140,000.00	

Option NE-1b: 52^{nd}/53^{rd}/Aster Rd w/ Widening to 52^{nd} Ave & 53^{rd} Ave

This option is the existing 52^{nd}/53^{rd}/Aster Road system with the following improvements provided: widen 52^{nd} Ave and 53^{rd} Ave to 2-12' lanes w/ 4' shoulders, and overlay 52^{nd} Ave, 53^{rd} Ave, and Aster Road. Access from 52^{nd} Ave to Highway 22 will be maintained. (This access will eventually be closed with the construction of the interchange at the intersection of Highway 51/55^{th} Ave and Highway 22.) Existing right-of-way is 40' wide on 52^{nd} and 53^{rd}, and 60' wide on Aster. Additional right of way along 52^{nd} and 53^{rd} will need to be purchased to provide for 60' of width.

52^{nd} Ave. crosses McNary Creek. There are possible stream and wetland impacts. An environmental assessment will likely be required for the existing roadway ditches, seeps and tributary to McNary Creek along approximately 100 foot corridor on both sides of road.

Advantages:

- Uses the existing road system.
- Improves the existing road system.
- Maintains the existing access of 52^{nd} Ave to Highway 22 to avoid more congestion at 55^{th} Ave. To be closed when interchange is constructed.

Disadvantages:

- Connection to 55^{th} Ave, and ultimately Highway 22, is a longer route than typical interchange frontage/backage road.

Estimate:		
Construction	$550,000	Widen roadway, close access, overlay existing surface
Right-of-Way	$85,000	59,100 sf or 1.36 ac – AR-5 zoned
Environmental	$100,000	
Engineering	$220,000	40% of Construction
Total	$955,000.00	

Option NE-2a: 52nd Ave to 50th Ave backage road

This option will maintain the existing access at 50th Ave and construct a backage road from 50th Ave to 52nd Ave. The backage road would run parallel to and along the backside of several properties abutting Highway 22. All other accesses between 50th Ave and 52nd Ave will be closed and reconnected to the backage road. The backage road will require the purchase of new right-of-way 60' wide. This option would build a portion of the backage road option shown in ODOT's long-range plan.

This option will require an environmental assessment of roadside and other ditches, and area approximately 100 feet on both sides of corridor.

Advantages:

- Closes private accesses to Highway 22.
- Closes accesses to Highway 22 between 50th Ave and 52nd Ave.
- Will allow 50th Ave to remain open while still providing local connectivity of the county road system.

Disadvantages:

- Will use the driveway into the steel building business; may create proximity impacts to business.
- Connecting businesses along Highway 22 to backage road may require steep grades.

Estimate:		
Construction	$935,000	New backage road
Right-of-Way	$201,000	1040': 62,400 sf or 1.43 ac – EO-I zoned 880': 52,800 sf or 1.21 ac – AR-5 zoned
Environmental	$200,000	
Engineering	$374,000	40% of Construction
Total	$1,710,000.00	

Option NE-2b: 52nd Ave to 50th Ave frontage road

This option constructs a frontage road from 50th Ave to 52nd Ave. It will close all accesses between 50th Ave and 52nd Ave, including the closure of 50th Ave and 52nd Ave to Highway 22. The frontage road will use portions of existing ODOT right-of-way, however, it will still require the purchase of 30'± of new right-of-way. Right-of-way will be 60' wide. This option would build a portion of the frontage road shown in ODOT's long-range plan.

This option will require an environmental assessment of roadside and other ditches, and area approximately 100 feet on both sides of corridor.

Advantages:

- Closes private accesses to Highway 22.
- Abuts the existing Highway 22, having the least impact on existing businesses.

Disadvantages:

- Will not support Highway 22 future 6-lane configuration and pedestrian facilities.
- Requires closure of 50th Ave to Highway 22.

Estimate:		
Construction	$835,000	New frontage road
Right-of-Way	$105,000	1040': 62,400 sf or 1.43 ac – EO-I zoned 880': 52,800 sf or 1.21 ac – AR-5 zoned
Environmental	$200,000	
Engineering	$334,000	40% of Construction
Total	$1,474,000.00	

Option NE-3: 52nd Ave to 55th Ave New Alignment

This option constructs a new alignment from 52nd Ave to 55th Ave, bypassing the existing 52nd/53rd/Aster Road system. This alignment will require the purchase of new right-of-way 60 wide. This option would build a portion of the backage road shown in ODOT's long-range plan.

This option will require an environmental assessment at a 200 foot width on both sides of new the alignment.

Advantages:

- Creates closer connection to the Highway 51 interchange by approximately 500'.

Disadvantages:

- Requires new right-of-way purchases; dividing properties.
- Crosses through environmentally sensitive area.
- All new construction in close proximity to the existing 52nd/53rd/Aster Road system.
- Connection of existing Aster Road is only approximately 500' from proposed connection of this new alignment.
- A connection to 53rd Ave from the new alignment may be required.

Estimate:		
Construction	$1,500,000	New alignment
Right-of-Way	$1,266,000	2450'; 177,000 sf or 4.06 ac – AR-5 zoned
Environmental	$300,000	
Engineering	$600,000	40% of Construction
Total	$3,666,000.00	

SOUTHEAST QUADRANT

Option SE-1a: RV Park to Chevron Station (south alignment)

This option will maintain the existing access to the Eola Bend RV Park and construct a backage road from the RV Park's access point southwesterly along the old railroad alignment to a point south of the Chevron Station. At this point the backage road will turn north and access the Chevron Station. All other accesses to Highway 22 from the RV Park entrance to the Chevron Station will be closed. This option could be continued to Highway 51 using either Option SE-1b or SE-1c. This option's alignment is located in or near the old railroad alignment just north of Rickreall Creek. Providing two access points on this backage road is favorable to allow free circulation of traffic in and around this quadrant of the interchange and not overload the RV park access. Only a portion of the railroad right-of-way is still owned by the railroad. Other current owners include the RV park and the pipe company. The backage road will require the purchase of right-of-way 60' wide. This option would build a portion of the backage road shown in ODOT's long-range plan.

This option will require an environmental assessment be conducted along the backage road. This alignment follows Rickreall Creek. The environmental assessment will likely include a wetland delineation to determine jurisdictional boundaries, and impacts to wetlands, riparian areas, ditches, soil conditions and mitigation site planning. A DSL/Corps permit will likely be required and possibly ESA consultation depending upon listings in Rickreall Creek (and possibly Hayden Slough).

Advantages:

- Closes private accesses to Highway 22.
- Alignment runs in or near the footprint of the old railroad, and does not split the properties that currently abut Highway 22.
- Maintains larger lot sizes; possibly more favorable for future businesses that may locate here in the future.

Disadvantages:

- Backage road diverges away from highway and existing businesses.

Estimate:		
Construction	$1,600,000	Closes accesses; New backage road
Right-of-Way	$228,000	3880': 232,800 sf or 5.34 ac – FF zoned 1820': 109,200 sf or 2.51 ac – EO-IC zoned
Environmental	$100,000	
Engineering	$640,000	40% of Construction
Total	$2,568,000.00	

Option SE-1b: Chevron Station to Hwy 51 (south connection) (south alignment)
This option will continue Option SE-1a from a point south of the Chevron Station to a new access point opposite the intersection of South Oak Grove Road on Highway 51. Providing two access points on this backage road is favorable to allow free circulation of traffic in and around this quadrant of the interchange and not overload the RV Park access. This alignment will require the purchase of new right-of-way 60' wide. This design option was not considered in ODOT's long-range plan.

This option will require an environmental assessment be conducted along the backage road. This alignment follows Rickreall Creek and crosses McNary Creek near Highway 51. The environmental assessment will likely include a wetland delineation to determine jurisdictional boundaries, and impacts to wetlands, riparian areas, ditches, soil conditions and mitigation site planning. A DSL/Corps permit will likely be required and possibly ESA consultation depending upon listings in Rickreall and McNary Creeks (and possibly Hayden Slough).

Advantages:

- Does not cross Rickreall Creek.
- Intersects Highway 51 opposite current intersection of S. Oak Grove Road with Highway 51.

Disadvantages:

- Crosses McNary Creek; will require culvert or bridge.
- Crosses low-land area requiring large embankment fill.

Estimate:		
Construction	$1,706,000	New alignment
Right-of-Way	$51,000	2880': 172,800 sf or 3.97 ac – FF zoned
Environmental	$300,000	
Engineering	$682,000	40% of Construction
Total	$2,739,000.00	

Option SE-1c: Chevron Station to Hwy 51 (south connection) (south alignment)
This option will continue Option SE-1a from a point south of the Chevron Station to McNary Street, crossing Rickreall Creek. The existing intersection of McNary Street and

Highway 51 will be re-constructed to improve the intersection geometry. Providing two access points on this backage road is favorable to allow free circulation of traffic in and around this quadrant of the interchange and not overload the RV Park access. This alignment will require the purchase of new right-of-way 60' wide. This option would build a portion of the backage road shown in ODOT's long-range plan.

This option will require an environmental assessment be conducted along the backage road. This alignment follows Rickreall Creek and crosses Rickreall Creek near McNary Street. The environmental assessment will likely include a wetland delineation to determine jurisdictional boundaries, and impacts to wetlands, riparian areas, ditches, soil conditions and mitigation site planning. A DSL/Corps permit will likely be required and possibly ESA consultation depending upon listings in Rickreall and McNary Creeks (and possibly Hayden Slough).

Advantages:
- Avoids constructing roadway embankment in low-land.
- Uses existing McNary Street to connect to Highway 51.

Disadvantages:
- Crosses McNary and Rickreall Creeks.

Estimate:		
Construction	$2,800,000	New alignment
Right-of-Way	$51,000	2880': 172,800 sf or 3.97 ac – FF zoned
Environmental	$300,000	
Engineering	$1,120,000	40% of Construction
Total	$4,271,000.00	

Option SE-2a. RV Park to Chevron Station (north alignment)

This option will maintain the existing access to the Eola Bend RV Park and construct a backage road from this access point to the west to the back of the existing Chevron Station. All other accesses to Highway 22 from the RV Park entrance to the Chevron Station will be closed. A cul-de-sac could be constructed at this point, or it can be continued to Highway 51 using Option SE-2b. This option's alignment is located just to the back of the businesses along this portion of the highway. Providing two access points on this backage road is favorable to allow free circulation of traffic in and around this quadrant of the interchange and not overload the RV Park access. However, if due to funding and schedule shortages, stopping the backage road at the Chevron Station would still provide local access and alleviate access problems along Highway 22. The backage road will require the purchase of new right-of-way 60' wide. This design option was not considered in ODOT's long-range plan.

This option will require an environmental assessment be conducted along the backage road. This alignment follows Highway 22. The environmental assessment will likely include a wetland delineation to determine jurisdictional boundaries, and impacts to wetlands, riparian areas, ditches, soil conditions and mitigation site planning. A DSL/Corps permit will likely be required and possibly ESA consultation depending upon listings in Rickreall (and possibly Hayden Slough).

Advantages:
- Closes private accesses to Highway 22.
- Backage road is located parallel to Highway 22, and just behind existing businesses.

Disadvantages:
- Divides existing properties.
- Creates small parcels along highway.
- Parcels become unusable when Highway 22 expands to 6 lanes.

Estimate:		
Construction	$1,145,000	Closes accesses; New backage road
Right-of-Way	$375,000	1800': 108,000 sf or 2.48 ac – EO-IC zoned 1320': 79,200 sf or 1.82 ac – EO-CO zoned
Environmental	$200,000	
Engineering	$458,000	40% of Construction
Total	$2,178,000.00	

Option SE-2b: Chevron Station to Hwy 51 (south connection) (north alignment)
This option will continue Option SE-2a from the back of the Chevron Station to a new access point opposite the intersection of South Oak Grove Road on Highway 51. Providing two access points on this backage road is favorable to allow free circulation of traffic in and around this quadrant of the interchange and not overload the RV Park access. This alignment will require the purchase of new right-of-way 60' wide. This design option was not considered in ODOT's long-range plan.

This option will require an environmental assessment be conducted along the backage road. This alignment crosses McNary Creek near Highway 51. The environmental assessment will likely include a wetland delineation to determine jurisdictional boundaries, and impacts to wetlands, riparian areas, ditches, soil conditions and mitigation site planning. A DSL/Corps permit will likely be required and possibly ESA consultation depending upon listings in Rickreall and McNary Creeks (and possibly Hayden Slough).

Advantages:
- Does not cross Rickreall Creek
- Intersects Highway 51 opposite current intersection of S. Oak Grove Road with Highway 51.

Disadvantages:
- Crosses McNary Creek; will require culvert or bridge.
- Crosses low-land area requiring large embankment fill.

Estimate:		
Construction	$1,485,000	New alignment
Right-of-Way	$51,000	2880': 172,800 sf or 3.97 ac – FF zoned
Environmental	$300,000	
Engineering	$594,000	40% of Construction
Total	$2,430,000.00	

SOUTHWEST QUADRANT

Option SW-1: South Oak Grove Rd

This option closes the access of South Oak Grove Road to Highway 22, and maintains the existing road for local use to Highway 51. An AC overlay of the existing road surface will be constructed to provide a smooth riding surface. Existing right-of-way is 60' wide, and will not require any additional right-of-way for use with the interchange design. This option is the same as ODOT's long-range plan.

Since it is existing alignment and no improvements outside the existing edges of pavement are proposed it is anticipated that this option will not require any additional environmental compliance costs.

Advantages:

- Uses existing local road as access to the southwest quadrant.

Disadvantages:

- (no major disadvantages)

Estimate:		
Construction	$100,000	Close access; overlay existing surface
Right-of-Way	$0	
Environmental	$0	
Engineering	$40,000	40% of Construction
Total	$140,000.00	

Option SW-2: South Oak Grove frontage road

This option constructs a new frontage road approximately 2900' in length along the south side of Highway 22. This frontage road will sever all the current driveways with access onto Highway 22 and connect them to South Oak Grove Road. This option will use portions of existing ODOT right-of-way, however, it will require the purchase of some new right-of-way. This option would build a portion of the frontage road shown in ODOT's long-range plan.

This option will require an environmental assessment for wetlands, ponds, and streams along the existing roadway, 200 feet width on each side and adjacent property.

Advantages:

- Closes private accesses to Highway 22.

Disadvantages:

- (no major disadvantages)

Estimate:		
Construction	$725,000	New frontage road
Right-of-Way	$16,000	20,325 sf or 0.47 ac – AR-5 zoned 7,650 sf or 0.18 ac – FF zoned
Environmental	$100,000	
Engineering	$290,000	40% of Construction
Total	$1,131,000.00	

NORTHWEST QUADRANT

Option NW-1a: Oak Grove Rd. (Brunk Road)

This option closes the access of Oak Grove Road to Highway 22, and maintains the use of approximately 2000' of the existing road to the intersection of Option NW-2 for local access. This option will also close the access from Highway 22 to the Brunk House and construct a new access from Oak Grove Road. (Brunk House is a historic farm museum.) Existing right-of-way is 60' wide, and will not require any additional right of way for use with the interchange design. This option is the same as ODOT's long-range plan.

Since it is existing alignment and no improvements outside the existing edges of pavement are proposed it is anticipated that this option will not require any additional environmental compliance costs.

Advantages:

- Uses existing local road as access to the Brunk House, the cemetery, and possibly the golf course.
- Closes two accesses to Highway 22.

Disadvantages:

- (no major disadvantages)

Estimate:		
Construction	$100,000	Close accesses
Right-of-Way	$0	
Environmental	$0	
Engineering	$40,000	40% of Construction
Total	$140,000.00	

Option NW-1b: Oak Grove Rd. (Brunk Road)

This option preserves and maintains the use of an additional 2000' +/- of the existing road directly to the north of Option NW-1a and to the intersection of Option NW-4. Existing right-of-way is 60' wide, and will not require any additional right of way for use with the interchange design. This option is the same as ODOT's long-range plan.

Since it is existing alignment and no improvements outside the existing edges of pavement are proposed it is anticipated that this option will not require any additional environmental compliance costs.

Advantages:

- Uses the existing road for local access.

Disadvantages:

- (no major disadvantages)

Estimate:		
Construction	$80,000	
Right-of-Way	$0	
Environmental	$0	
Engineering	$32,000	40% of Construction
Total	$112,000.00	

Option NW-2: Oak Grove to 55th Ave (south alignment)

This option constructs a new backage road approximately 2700' in length from Oak Grove Road to 55th Ave. The backage road will require the purchase of new right-of-way 60' wide. This option would build the backage road shown in ODOT's long-range plan.

This option will require an environmental field check assessment for wetlands and other waters. DSL/CORPS permit likely for wetland impacts. No creek crossing.

Advantages:

- Alignment is located between the filbert orchard and the vineyard; minimizing impacts to both land parcels and businesses.
- Connects to 55th Ave just beyond the access limits of the interchange.

Disadvantages:

- Alignment contains reversing curves.
- Location does not align well with other proposed backage roads.

Estimate:		
Construction	$1,200,000	New backage road
Right-of-Way	$25,000	162,000 sf or 3.72 ac – EFU zoned
Environmental	$200,000	
Engineering	$480,000	40% of Construction
Total	$1,905,000.00	

Option NW-3a: Oak Grove Golf Course frontage road
This option constructs a new frontage road along the north side of, and at the same grade as, Highway 22 approximately 5350' in length from Oak Grove Road to the golf course. It will use portions of the existing ODOT right-of-way; however, it will require the purchase of some new right-of-way. The right-of-way to be 60' wide. This design option was not considered in ODOT's long-range plan.

This option will require an environmental assessment of cemetery property, pasture and ditches along the proposed roadway corridor, 100 feet width on each side of alignment. This option crosses McNary Creek at intersection of 55th.

Advantages:
- Abuts the highway alignment and requires the least amount of right-of-way for construction of a new access to the golf course.
- If necessary, the frontage road can be relocated when the interchange is constructed and the frontage road roadbed used for the Highway 22 6-lane configuration.

Disadvantages:
- Abuts the highway alignment and will be in close proximity to the new interchange ramp.
- May not support Highway 22 future 6-lane configuration without being relocated.

Estimate:		
Construction	$800,000	New frontage road
Right-of-Way	$4,000	22,350 sf or 0.51 ac – PC zoned
Environmental	$200,000	
Engineering	$320,000	40% of Construction
Total	$1,324,000.00	

Option NW-3b: Oak Grove Golf Course backage road (south alignment)
This option constructs a backage road from Oak Grove Road to the golf course approximately 2030' in length on the property adjacent to and along the backside of the cemetery. New right-of-way 60' in width will be required to be purchased. This option is the same as ODOT's long-term plan.

This option will require an environmental assessment, 100 feet width, both sides of existing roadway for impacts to cemetery property, ditches and pond area.

Advantages:

- Located away from the highway and the future ramp alignment.

Disadvantages:

- Requires relocation of the golf course entrance.
- Requires right-of-way purchase from either the undeveloped cemetery grounds (as shown) or from the golf course itself (not shown).

Estimate:		
Construction	$1,250,000	New backage road
Right-of-Way	$13,000	121,800 sf or 2.80 ac – EFU zoned
Environmental	$200,000	
Engineering	$500,000	40% of Construction
Total	$1,963,000.00	

Option NW-4: Oak Grove to 55th Ave (north alignment)

This option constructs a new backage road approximately 2400' in length from Oak Grove Road to 55th Ave, intersecting 55th Ave at Aster Road. The backage road will require the purchase of new right-of-way 60' wide. This design option was not considered in ODOT's long-range plan.

This option will require an environmental field check assessment for wetlands and other waters. DSL/CORPS permit likely for wetland impacts. No creek crossing.

Advantages:

- Location provides more direct route to 55th Ave for travelers out Oak Grove Road.
- Connects to 55th Ave at existing intersection of Aster Road and 55th Ave.

Disadvantages:

- Increased length of improvement to existing Oak Grove Road.
- Significant impact to vineyard.
- Divides land parcel.

Estimate:		
Construction	$1,090,000	New alignment
Right-of-Way	$71,000	144,000 sf or 3.30 ac – EFU zoned
Environmental	$200,000	
Engineering	$436,000	40% of Construction
Total	$1,797,000.00	

Option NW-5: Oak Grove Rd. Golf Course backage road (north alignment)
This option constructs a backage road from Oak Grove Road to the backside of the golf course property approximately 1700' in length. New right-of-way 60' in width will be required to be purchased. This design option was not considered in ODOT's long-term plan.

This option will require an environmental assessment, 100 feet width, both sides of existing roadway for impacts to cemetery property, ditches and pond area.

Advantages:
- Provides access to back of golf course, rather than in the middle.
- Intersects Oak Grove Road at same point as Option NW-4.
- Does not impact cemetery.

Disadvantages:
- Accesses golf course at back of parcel; opposite end as existing club house.

Estimate:		
Construction	$2,100,000	New alignment
Right-of-Way	$45,000	5000': 300,000 sf or 6.89 ac – EFU zoned
Environmental	$200,000	
Engineering	$840,000	40% of Construction
Total	$3,185,000.00	

APPENDIX B – DESIGN STANDARDS

Per ODOT Highway Design Manual, functional classification of the:
- Willamina-Salem Hwy No. 30 is:

MP 0.00 to MP 23.61	02-Rural Principal Arterial – Other
MP 23.61 to MP 26.14	12-Urban Principal Arterial – Other Fwy or Exp

- Independence Hwy No. 193 is:

MP 0.00 to MP 4.88	06-Rural Minor Arerial
MP 4.88 to MP 6.34	14-Urban Principal Arterial – Other

Per ODOT Highway Design Manual, access spacing standards per Oregon Highway Plan, Appendix C:

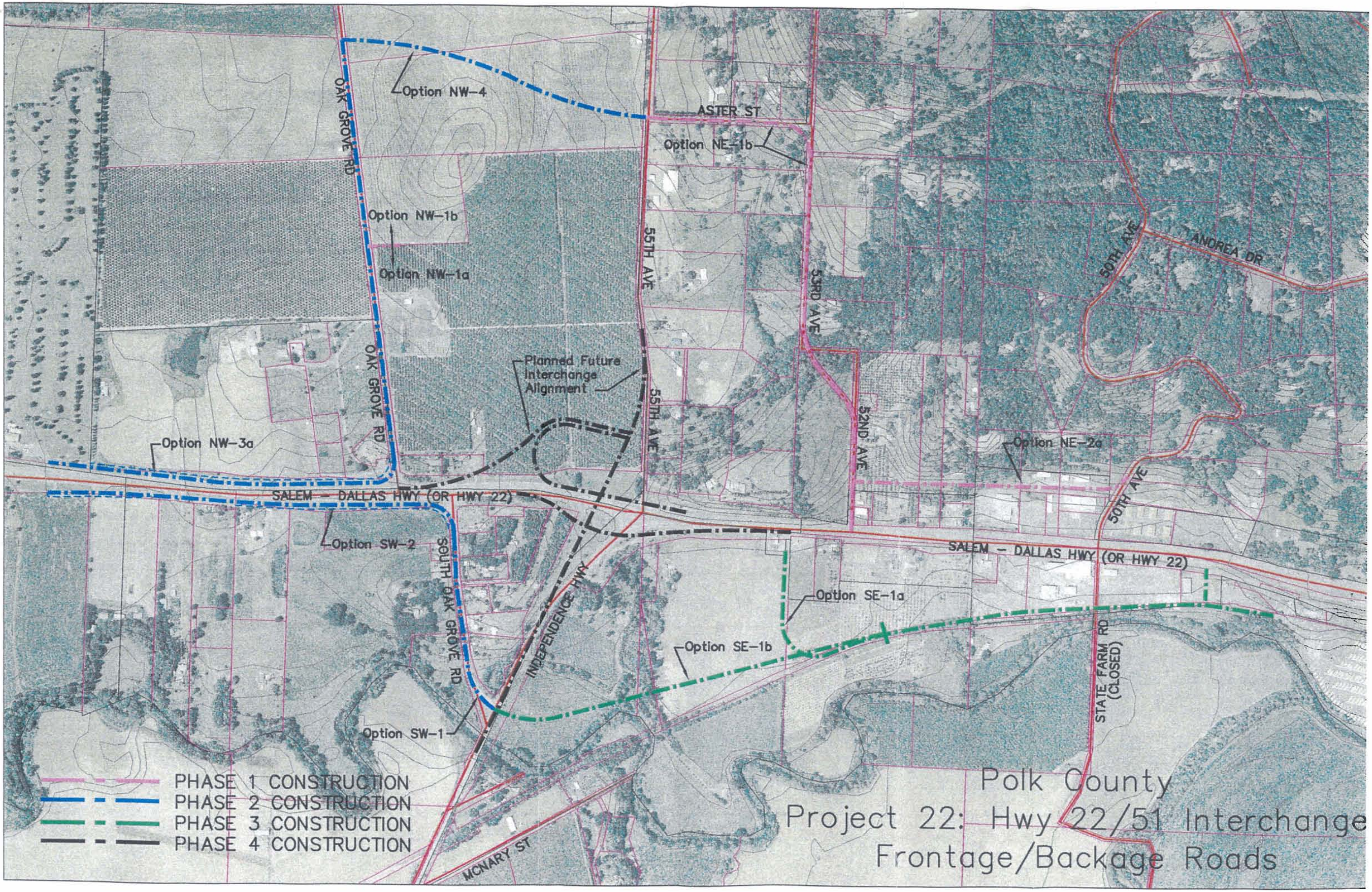
Interchange Spacing:		
Rural	3 miles	
Urban	1.9 miles	
Statewide Highways:		
Rural Expressway	5280'	Posted Speed >/= 55 mph
Urban Expressway	2640'	Posted Speed >/= 55 mph
Non-Freeway Interchange w/ Two-Lane Crossroads		
Rural Expressway	1 mile	Measured along Mainline
	1320'	Measured along Crossroad
Urban Expressway	2640'	Measured along Mainline
	1320'	Measured along Crossroad

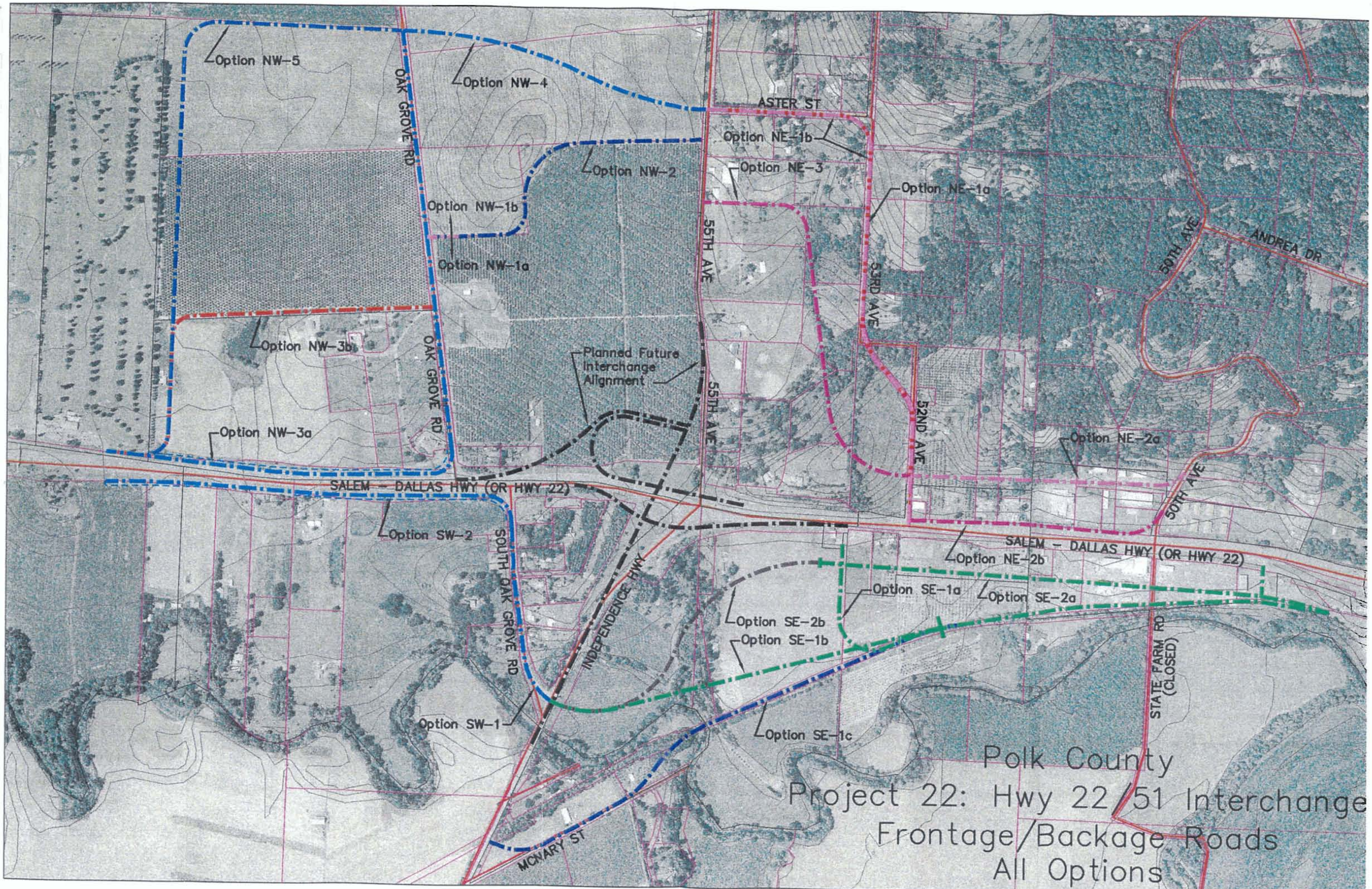
Design Speed	60-70 mph
Travel Lanes	12'
Right Turn Lane	12' + shoulder
Left Turn Lane	24' (4' shy – 4' separator – 12' lane – 4' shy)
Right Side Shoulder	8'
Median:	
Striped	10'
Raised Curb	20' travel to travel lane
Concrete Barrier	10' for 4 lanes 18' for 6 lanes
Max Superelevation	8.5% to 9.5%
Max Degree of Curve	3°15' to 15°00'
Max Grade	5%
Curbside Sidewalk	No
Separated Sidewalk	6'
On-Street Parking	No
Vertical Clearance	17'

Typical Sections:	
State Highways:	
Hwy 22 Expressway (ODOT)	
8' shld | 12' ln | 12' ln | 12' ln | 18' med w/ conc barrier | 12' ln | 12' ln | 12' ln | 8' shld	
Hwy 51 (ODOT)	
10' shld | 12' lane |12' lane |10' shld	
County Frontage Roads:	
Urban Major Collector (68' row; min pavement width = 34')	
min 5' shld | 12' lane | 12' lane | min 5' shld	
Rural Major Collector (60' row; min pavement width = 24')	
4'-6' gravel shld | min 12' lane | min 12' lane | 4'-6' gravel shld	
Frontage Road along Highway 22:	(Total Roadway Width = 148')
Curb | 8' shld | 12' ln | 12' ln | 12' ln | 18' md | 12' ln | 12' ln | 12' ln | 8' shld | 2' E | 2' conc barrier | 8' bike/shld | 12' ln | 12' ln | 6' shld | curb/barrier	

APPENDIX C - ACRONYMS

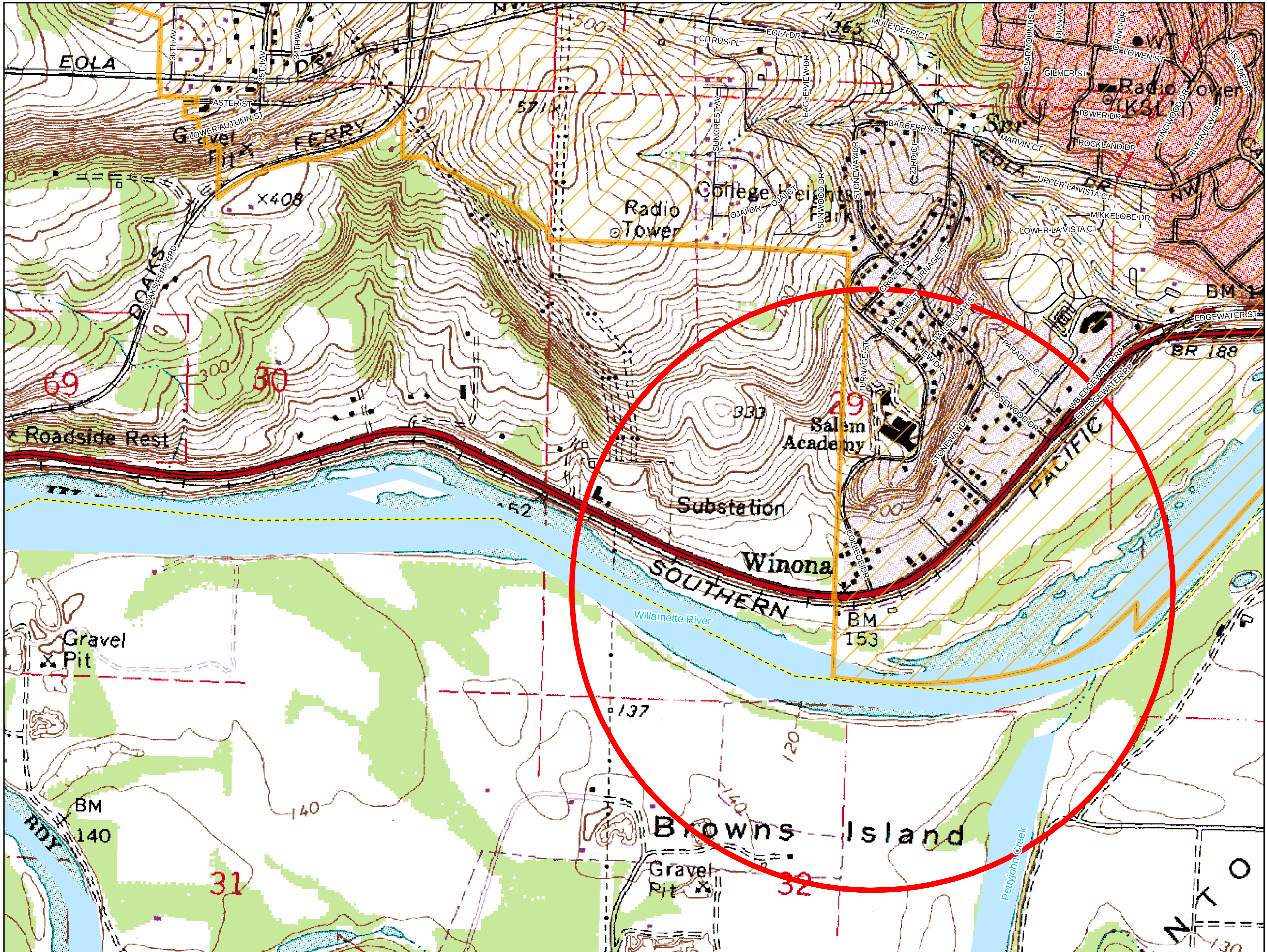
ac	Acres
AC	Asphaltic Concrete
Ave	Avenue
COE	U.S. Army Corps of Engineers
conc	Concrete
Corps	U.S. Army Corps of Engineers
DSL	Oregon Division of State Lands
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Hwy	Highway
ln	Lane
M	Million
med	Median
min	Minimum
MP	Mile Post or Mile Point
mph	Miles Per Hour
MPO	Metropolitan Planning Organization
MWACT	Mid-Willamette Valley Area Commission Transportation
MWVCOG	Mid-Willamette Valley Council of Governments
NE	Northeast
NEPA	National Environmental Policy Act
NW	Northwest
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
ORS	Oregon Revised Statutes
OTC	Oregon Transportation Commission
OTIA	Oregon Transportation Investment Act
Rd	Road
row	Right-of-Way
SE	Southeast
sf	Square Feet
shld	Shoulder
SHPO	State Historic Preservation Office
SKATS	Salem-Keizer Area Transportation Study
STIP	Statewide Transportation Improvement Program
SW	Southwest
TIP	Transportation Improvement Plan
UGB	Urban Growth Boundary
US	United States


Option NW-4
ASTER ST
Option NE-1b
OAK GROVE RD
Option NW-1b
Option NW-1a
55TH AVE
53RD AVE
50TH AVE
ANDREA DR
Planned Future Interchange Alignment
52ND AVE
Option NE-2a
Option NW-3a
SALEM - DALLAS HWY (OR HWY 22)
Option SW-2
SOUTH OAK GROVE RD
INDEPENDENCE HWY
Option SE-1a
Option SE-1b
STATE FARM RD (CLOSED)
Option SW-1
MCNARY ST
PHASE 1 CONSTRUCTION
PHASE 2 CONSTRUCTION
PHASE 3 CONSTRUCTION
PHASE 4 CONSTRUCTION
Polk County
Project 22: Hwy 22/51 Interchange
Frontage/Backage Roads


Option NW-5
Option NW-4
OAK GROVE RD
ASTER ST
Option NE-1b
Option NE-3
Option NE-1a
Option NW-2
Option NW-1b
Option NW-1a
55TH AVE
53RD AVE
50TH AVE
ANDREA DR
Option NW-3b
Planned Future Interchange Alignment
52ND AVE
Option NW-3a
Option NE-2a
SALEM - DALLAS HWY (OR HWY 22)
Option SW-2
SOUTH OAK GROVE RD
INDEPENDENCE HWY
Option NE-2b
Option SE-1a
Option SE-2a
Option SE-2b
Option SE-1b
STATE FARM RD (CLOSED)
Option SW-1
Option SE-1c
MCNARY ST
Polk County
Project 22: Hwy 22/51 Interchange
Frontage/Backage Roads
All Options

APPENDIX H

Alternatives Diagrams



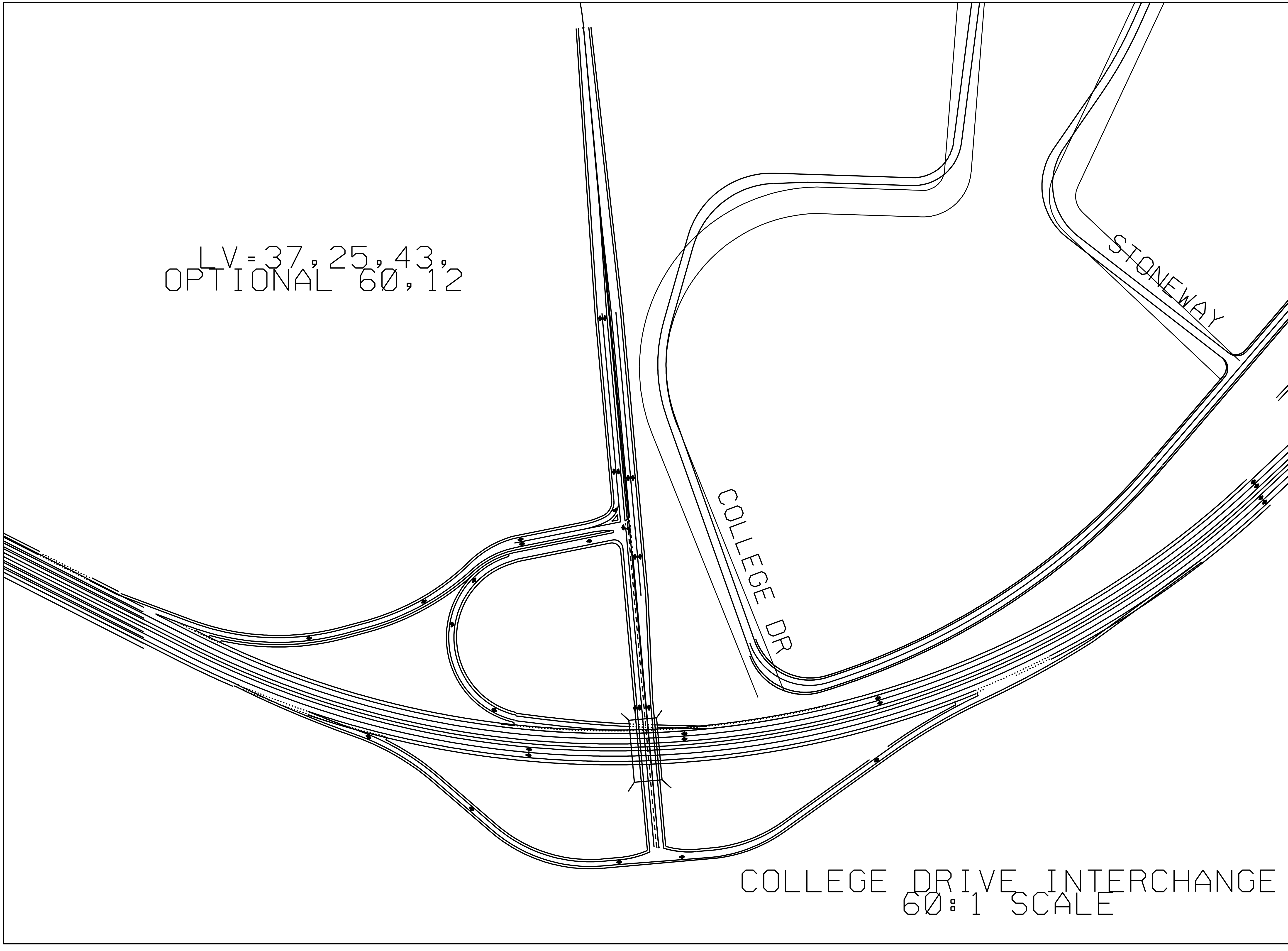
Alternative New OR 22 Connection for Doaks Ferry Road at College Drive

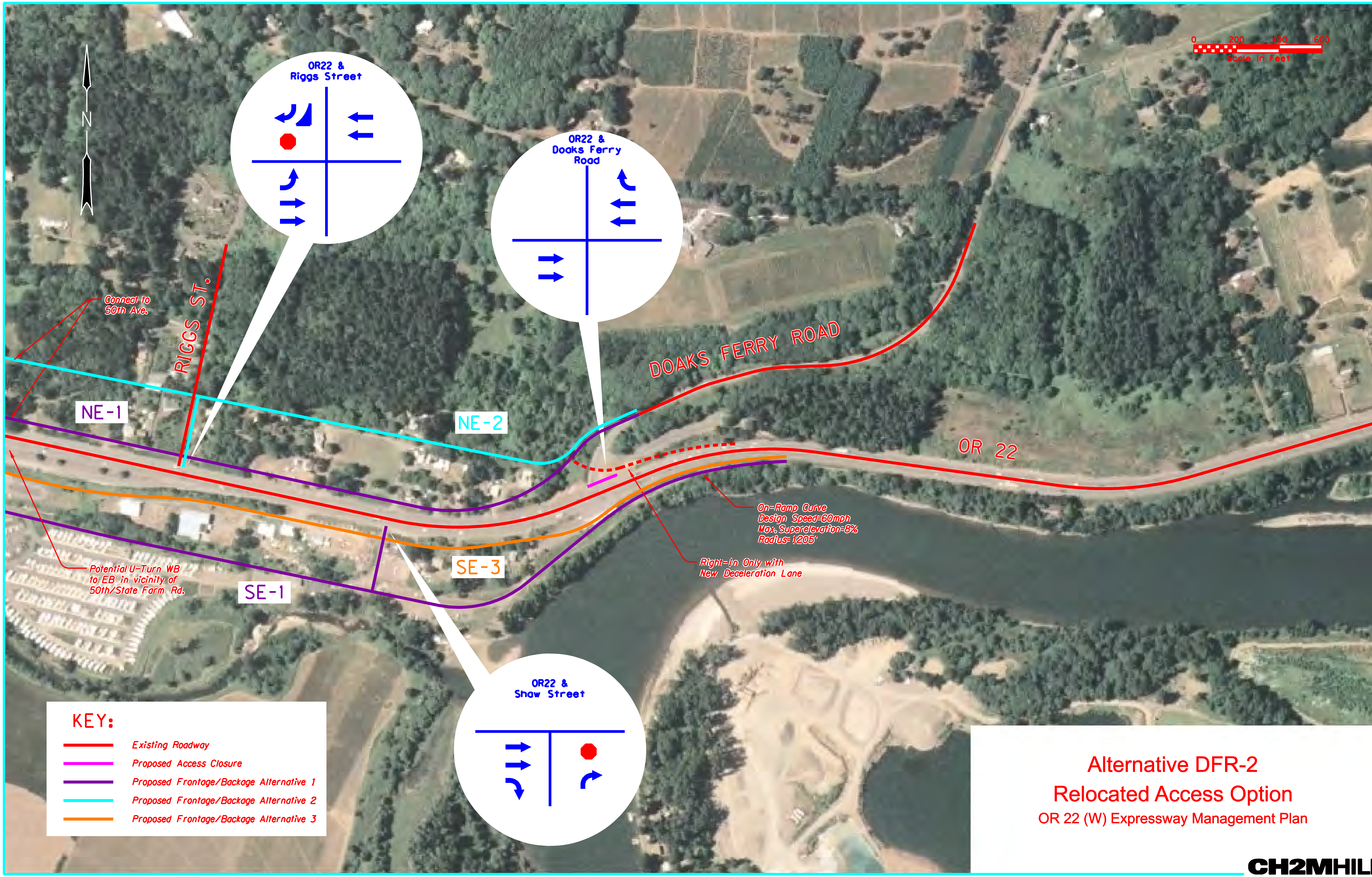
LEGEND

- Possible Interchange Area
- Highways and Roads
- Creeks and Streams
- Willamette River
- Urban Growth Boundary
- Counties

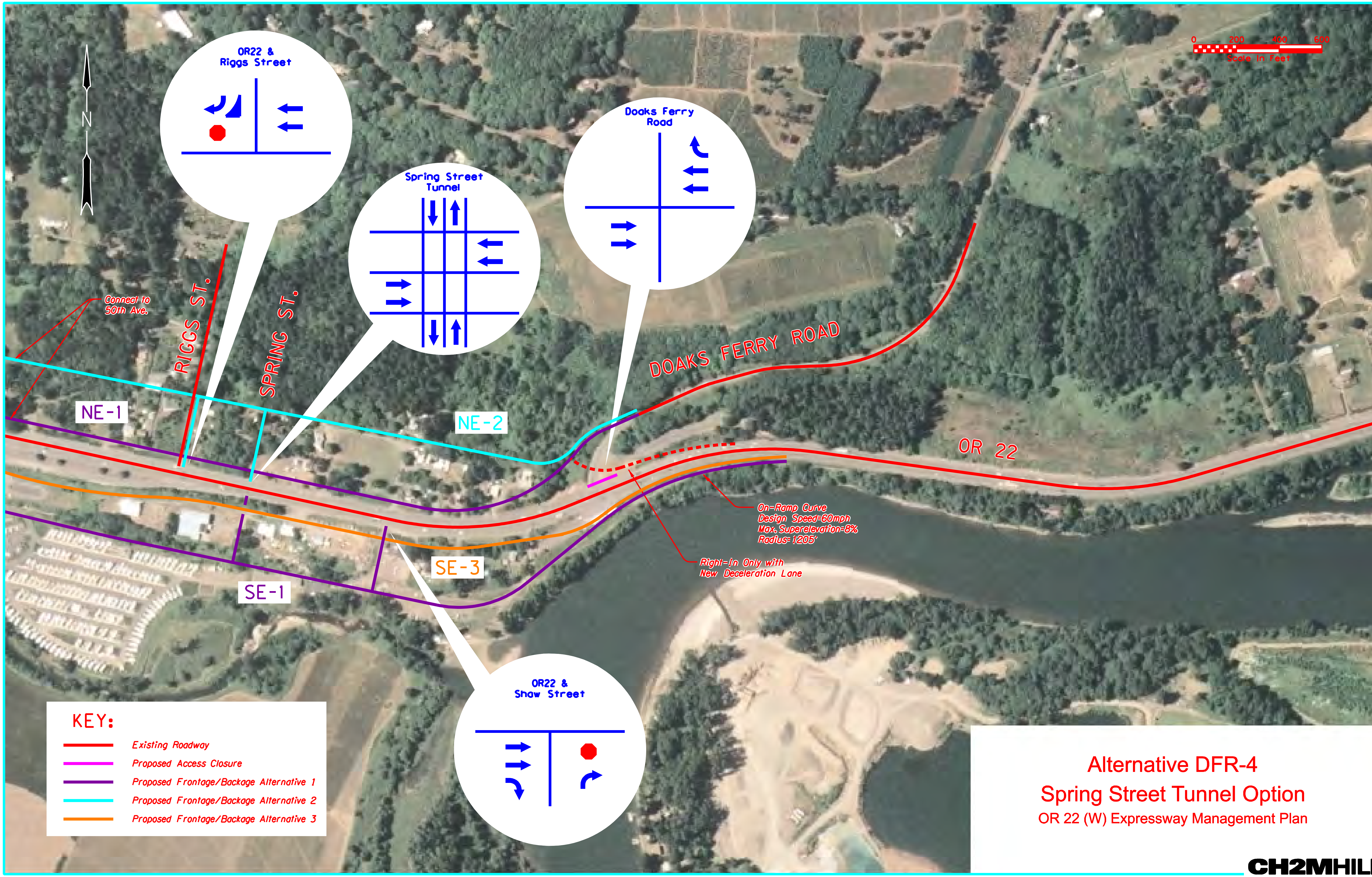
SOURCE: POLK COUNTY GIS

0 0.25
Miles


LV=37,25,43,
OPTIONAL 60,12
STONEWAY
COLLEGE DR
COLLEGE DRIVE INTERCHANGE
60:1 SCALE



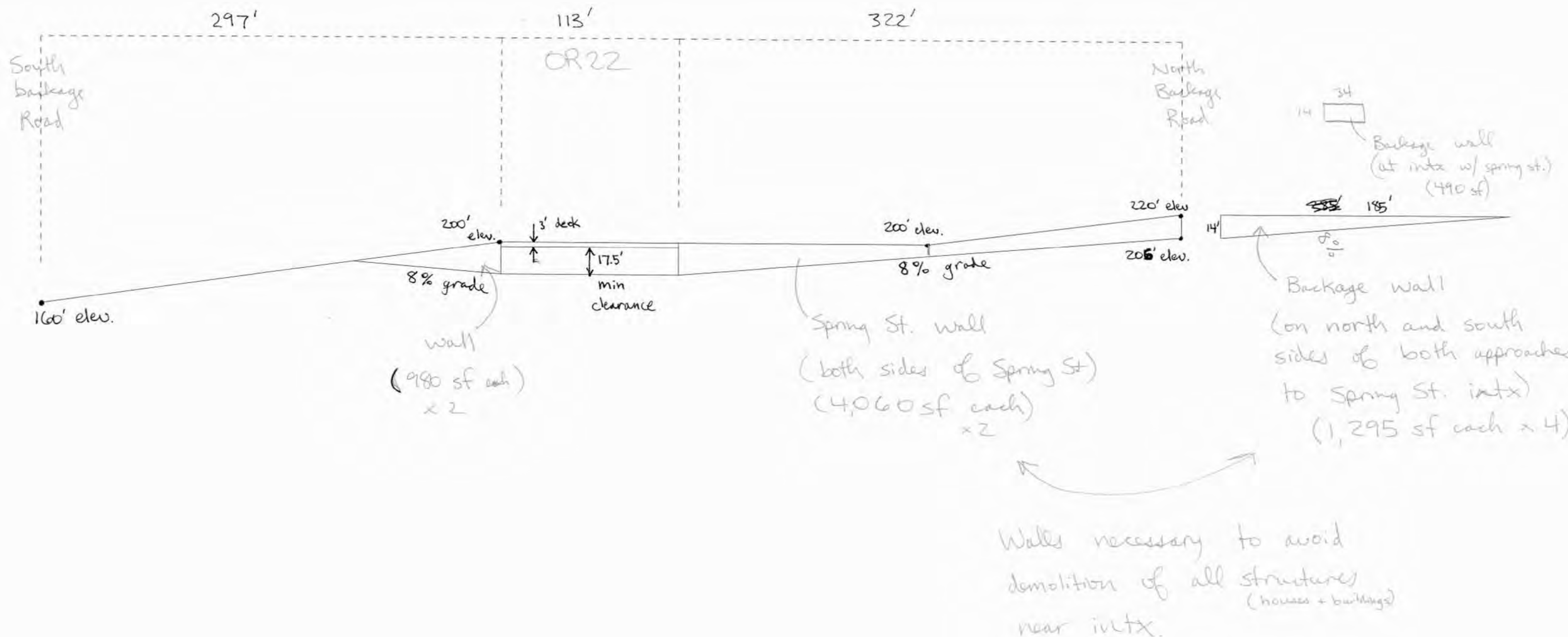
OR22 & Riggs Street
OR22 & Dooks Ferry Road
OR22 & Shaw Street
0 200 400 600
Scale in Feet
N
Connect to 50th Ave.
RIGGS ST.
NE-1
NE-2
DOAKS FERRY ROAD
OR 22
On-Ramp Curve
Design Speed=60mph
Max. Superelevation=8%
Radius=1205'
Right-In Only with New Deceleration Lane
Potential U-Turn WB to EB in vicinity of 50th/State Farm Rd.
SE-1
SE-3
KEY:
Existing Roadway
Proposed Access Closure
Proposed Frontage/Backage Alternative 1
Proposed Frontage/Backage Alternative 2
Proposed Frontage/Backage Alternative 3
Alternative DFR-2
Relocated Access Option
OR 22 (W) Expressway Management Plan
CH2MHILL


OR22 &
Riggs Street
Spring Street
Tunnel
Dooks Ferry
Road
OR22 &
Shaw Street
0 200 400 600
Scale in Feet
Connect to
50th Ave.
RIGGS ST.
SPRING ST.
DOAKS FERRY ROAD
OR 22
NE-1
NE-2
SE-1
SE-3
On-Ramp Curve
Design Speed=60mph
Max. Superelevation=8%
Radius=1205'
Right-In Only with
New Deceleration Lane
KEY:
Existing Roadway
Proposed Access Closure
Proposed Frontage/Backage Alternative 1
Proposed Frontage/Backage Alternative 2
Proposed Frontage/Backage Alternative 3
Alternative DFR-4
Spring Street Tunnel Option
OR 22 (W) Expressway Management Plan
CH2MHILL

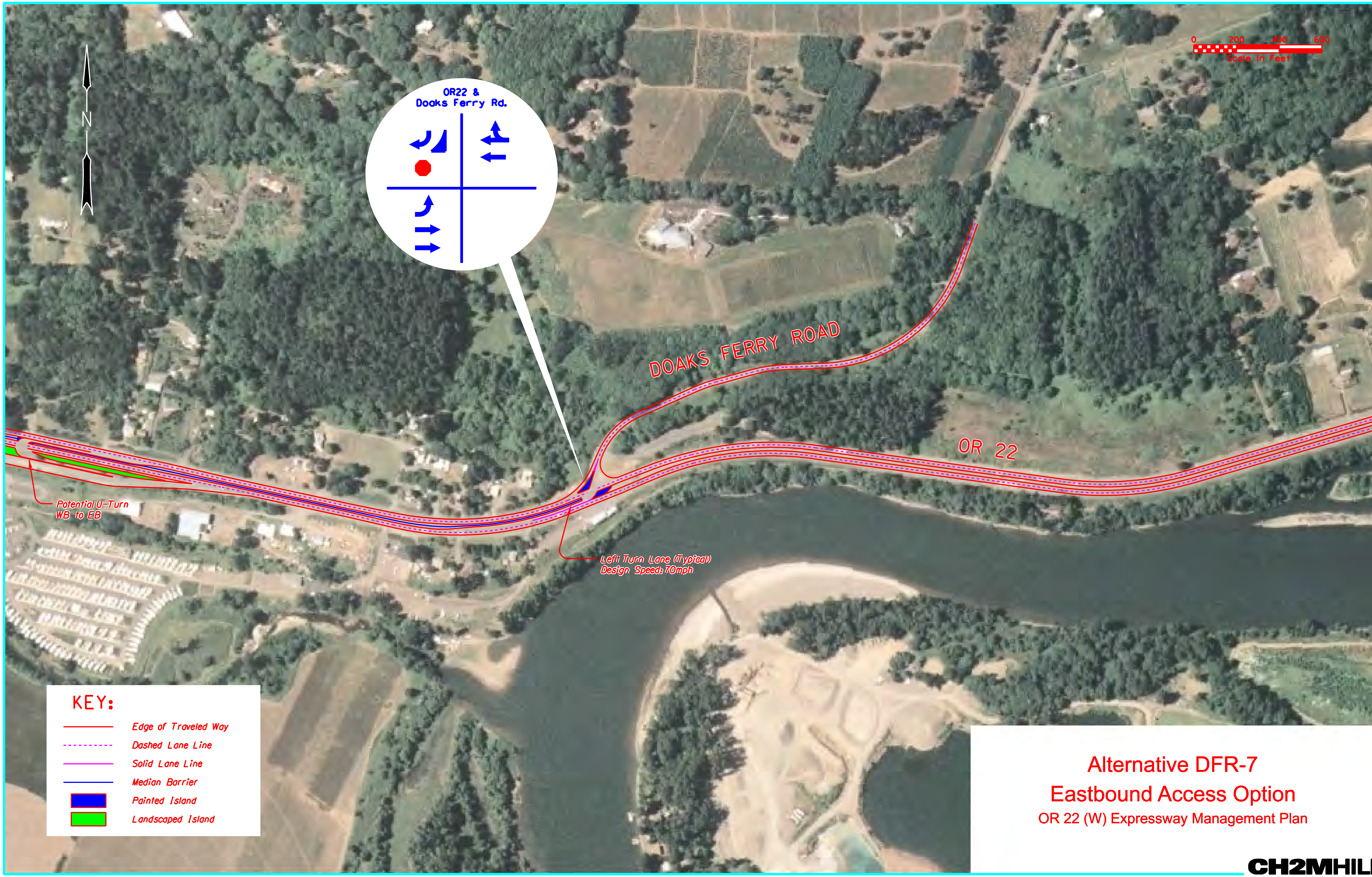
1-7-08

Approx. Cross Section

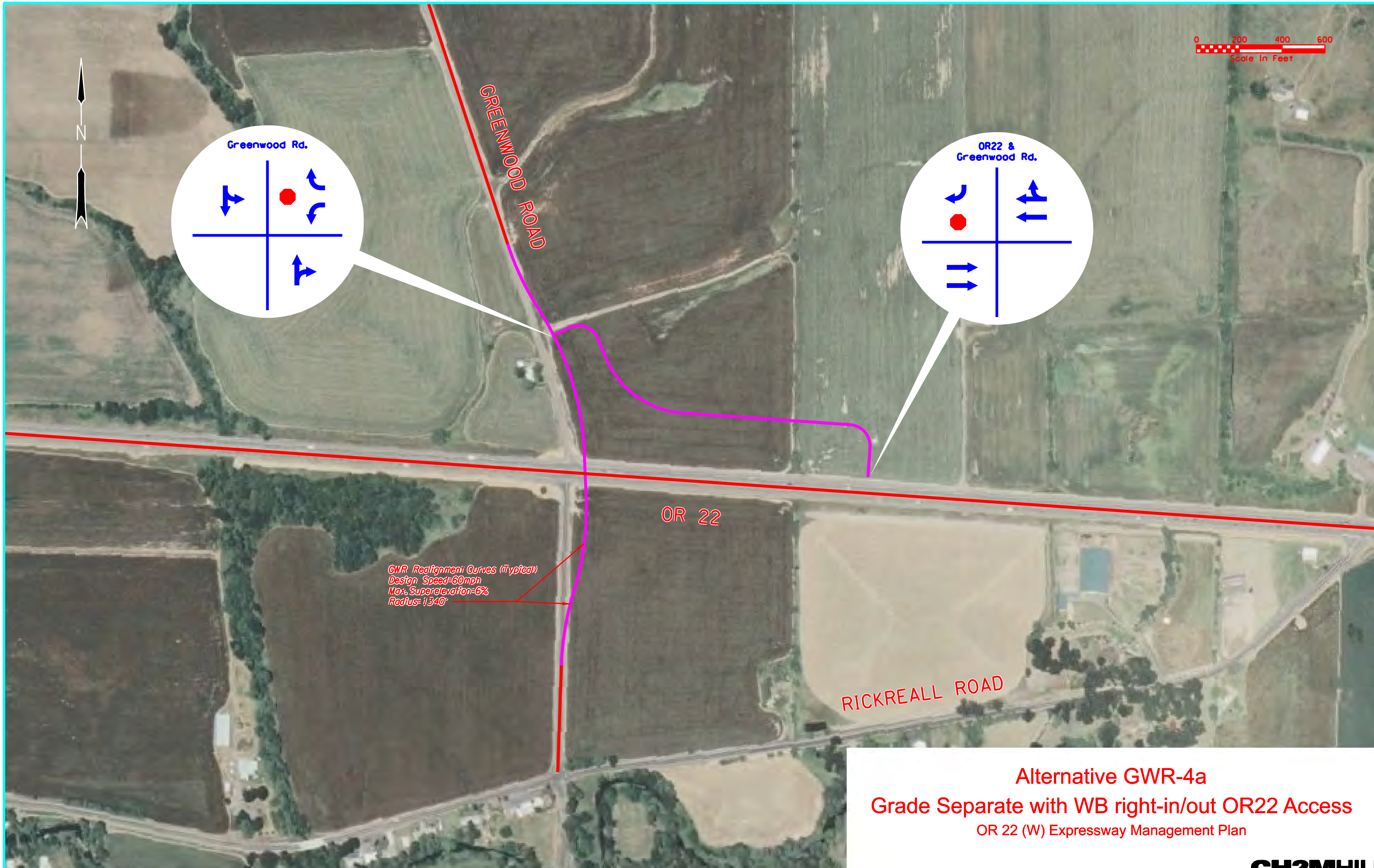
Spring St. Undercrossing



* Elevations from simple topo map (Rosa\Proj\ODOT\356019\GIS\Output\Basemp_w_Topo_.5Mile_Area.pdf)



Alternative DFR-7
Eastbound Access Option
OR 22 (W) Expressway Management Plan

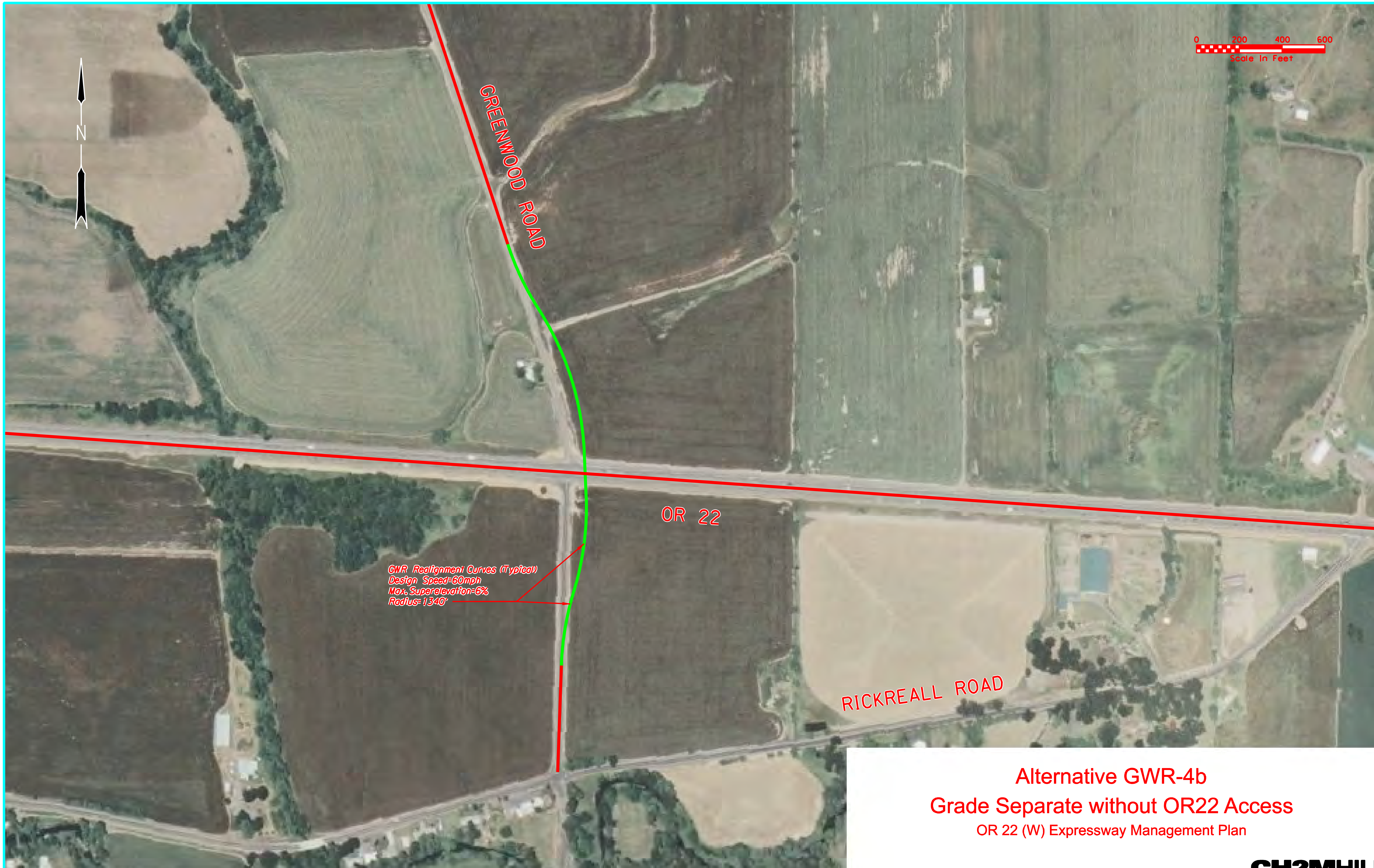


Alternative GWR-4a

Grade Separate with WB right-in/out OR22 Access

OR 22 (W) Expressway Management Plan

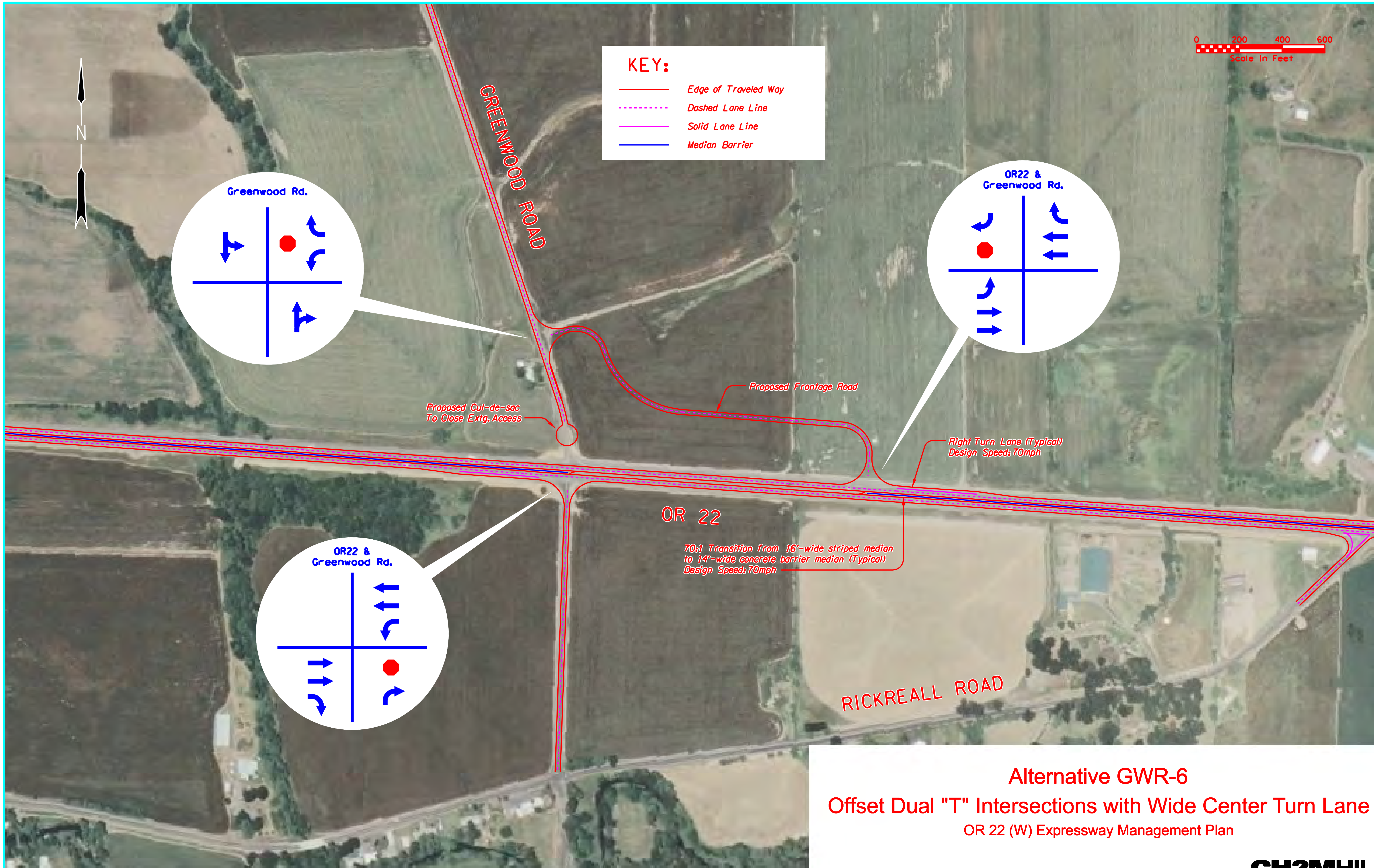
CH2MHILL



Alternative GWR-4b
Grade Separate without OR22 Access

OR 22 (W) Expressway Management Plan

CH2MHILL

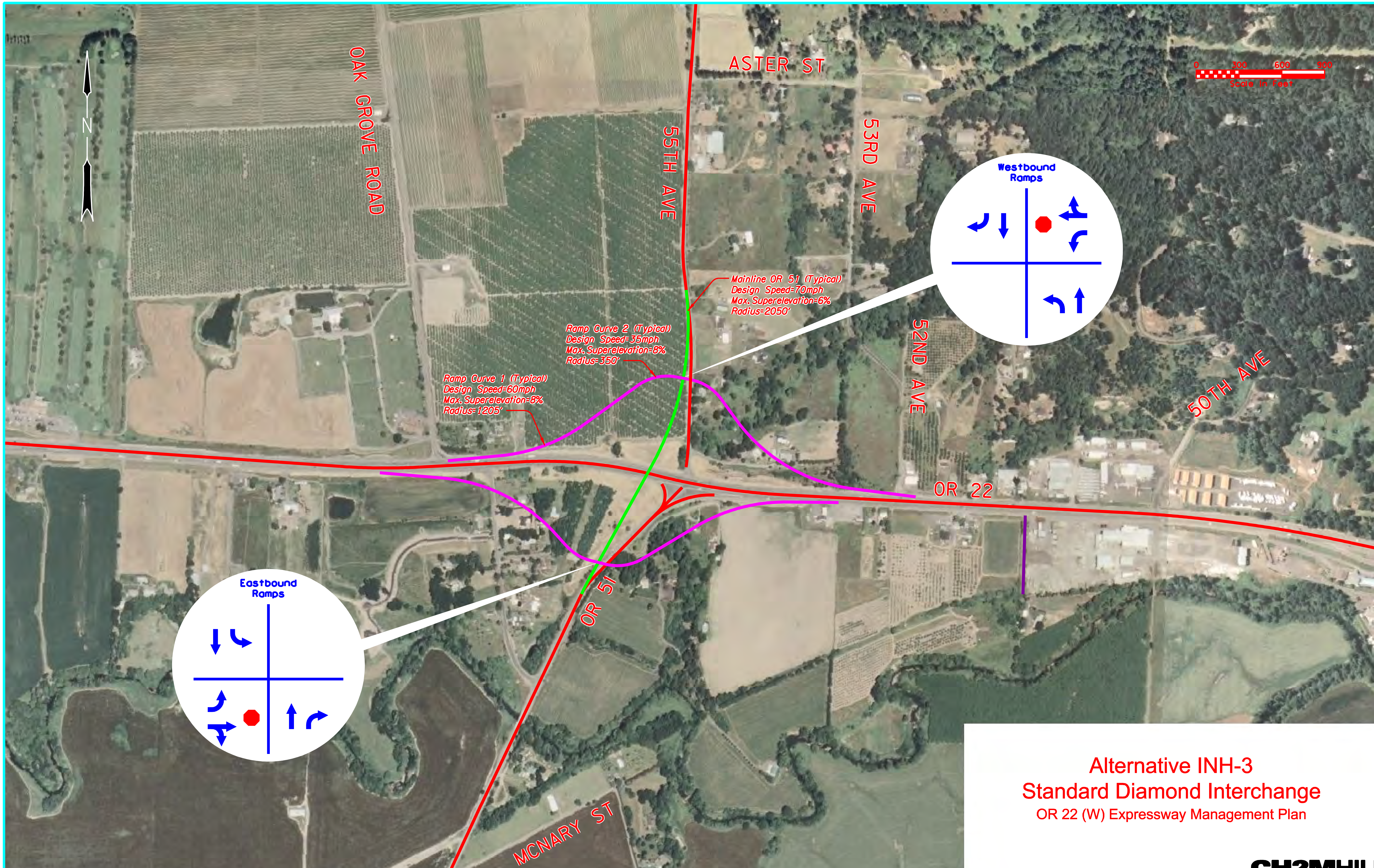


Alternative GWR-6

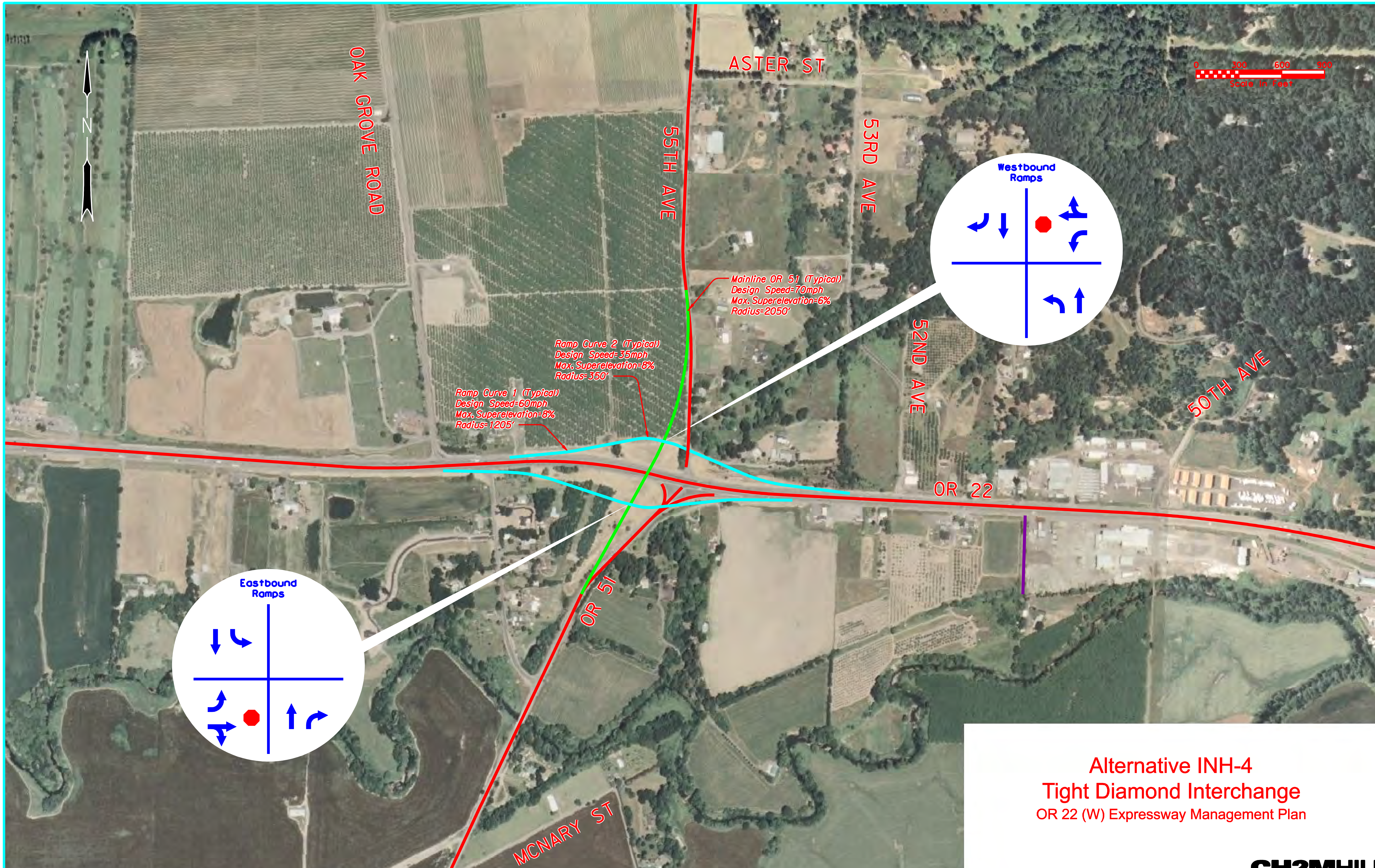
Offset Dual "T" Intersections with Wide Center Turn Lane

OR 22 (W) Expressway Management Plan

CH2MHILL

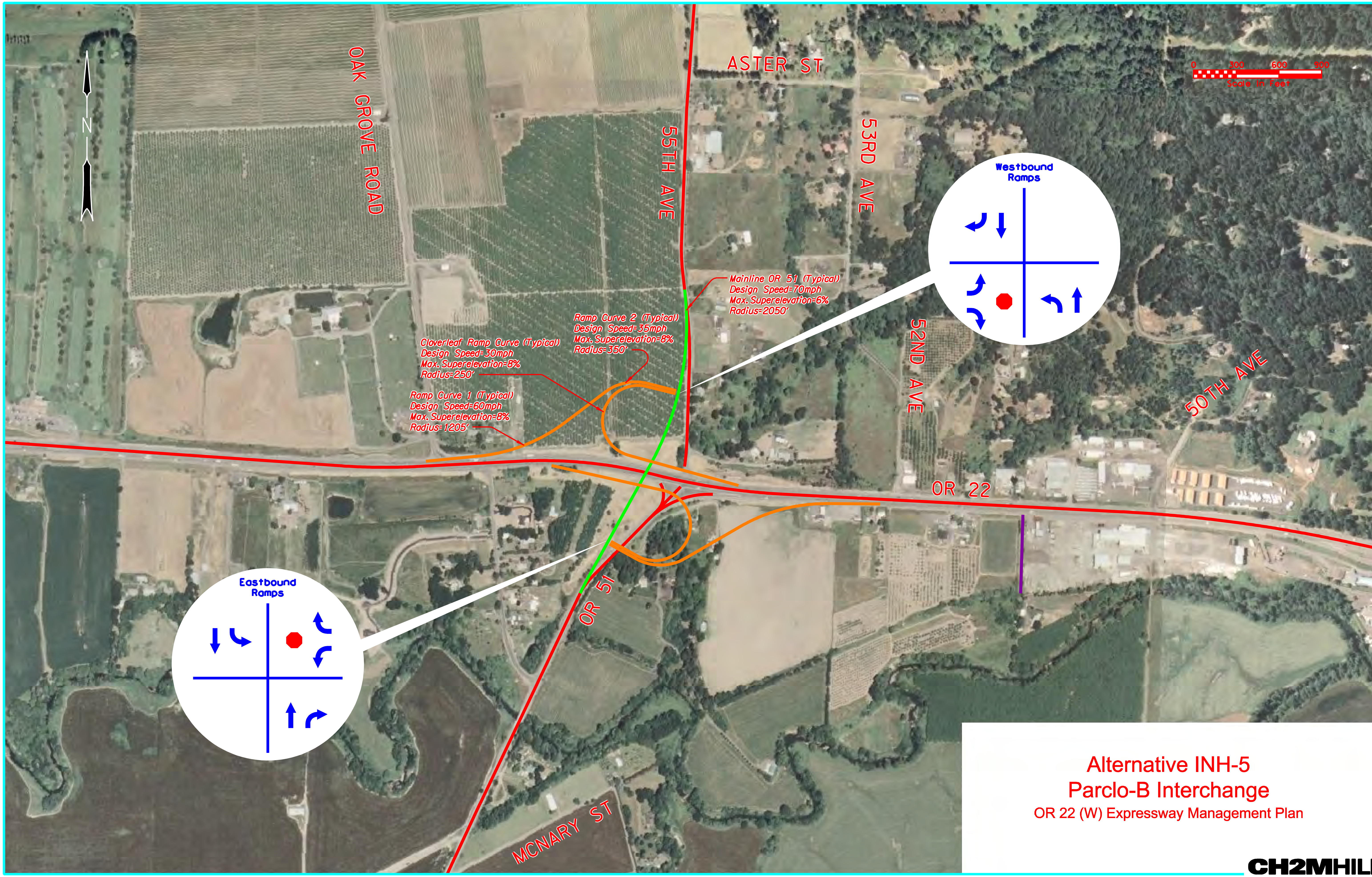


Alternative INH-3
Standard Diamond Interchange
OR 22 (W) Expressway Management Plan

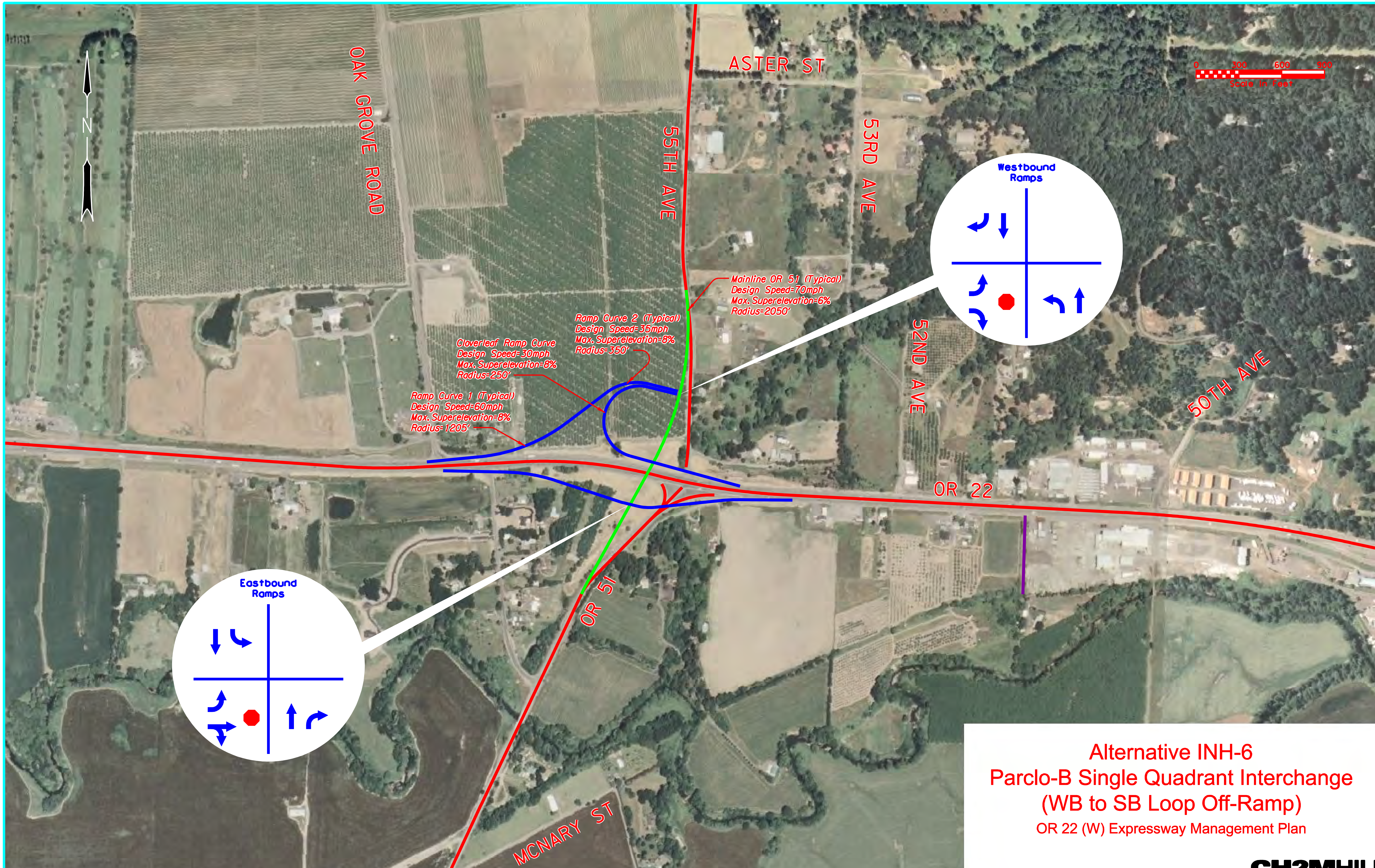


Alternative INH-4
Tight Diamond Interchange
OR 22 (W) Expressway Management Plan

CH2MHILL



Alternative INH-5
Parclo-B Interchange
OR 22 (W) Expressway Management Plan



Alternative INH-6
Parclo-B Single Quadrant Interchange
(WB to SB Loop Off-Ramp)

OR 22 (W) Expressway Management Plan

CH2MHILL

APPENDIX I

Alternatives Evaluation Summary for Intersections

Alternatives Cost Estimates

Alternatives Benefit/Cost Analysis Worksheets

OR 22 (W) Expressway Management Plan

Project Management Team Evaluation

As of: December 2007

● Directly/positively meets intent of criterion ◖ Partially meets intent of criterion ○ Does not support intent of criterion N/A Not applicable—neither meets/doesn't meet intent of criterion

	OR 22/OR 51 Interchange Alternatives				Doaks Ferry Road Alternatives			Greenwood Road Alternatives			
Evaluation Criteria —Features —Measures	**INH-3: Standard Diamond Interchange**	**INH-4: Tight Diamond Interchange**	**INH-5: Parclo-B**	**INH-6: Parclo-B Single Quadrant (WB to SB Loop)**	**DFR-2: Relocated Access Option—Riggs Street and RI only at DFR**	**DFR-4: Spring Street Undercrossing Option**	**DFR-7: Eastbound Access Option--center turn refuge; LI/RI/RO**	**GWR-3: Barrier median; RI/RO only**	**GWR-4a: Grade separate w/ WB RI/RO**	**GWR-4b: Grade separate w/o OR 22 access**	**GWR-6: Offset Dual "T" Intersections**
Mobility	◖	◖	●	◖	◖	●	◖	●	●	●	◖
—improves future flow —OHP standard for volume to capacity ratio	–Would require signalization of the ramp terminals to meet design mobility standards	–Would require signalization of the ramp terminals to meet design mobility standards	–Best accommodates the critical EB and WB left-turn movements at the ramp terminals under unsignalized conditions	–Would require signalization of the EB ramp terminal to meet the design mobility standard	–Does not eliminate the critical EB to NB left-turn which is forecast to operate above capacity through the 2030 horizon year.	–Eliminates need for center turn refuge for EB to left-in access	–Does not eliminate the critical EB to NB left-turn which is forecast to operate above capacity through the 2030 horizon year.	–Satisfies standard.	– Satisfies standard	– Satisfies standard	– Creates additional turning movements –Satisfies standard
Access Management	●	●	●	●	◖	◖	◖	●	●	●	◖
—fewer conflict points —spacing standards between ramps, public roads, and driveways	–Grade separated interchanges are consistent with the access management policy for Expressways.	–Grade separated interchanges are consistent with the access management policy for Expressways.	–Grade separated interchanges are consistent with the access management policy for Expressways.	–Grade separated interchanges are consistent with the access management policy for Expressways.	–Consistent with access management goals which call for highly controlled public road connections –Meets access spacing standards	–Consistent with access management goals which call for highly controlled public road connections –Meets access spacing standards	–Consistent with access management goals which call for highly controlled public road connections –Meets access spacing standards	–Consistent with access management goals which call for highly controlled public road connections.	–Consistent with access management goals which call for highly controlled public road connections. –Reduces conflict points from 40 to 2	–Goes above and beyond the access management standards by completely eliminating access to OR 22 –Best supports function of expressway.	–Not entirely consistent with access management goals. –Does not reduce conflict points but moves some to a different location.
Connectivity	●	●	●	●	◖	●	◖	○	●	◖	●
—direct, efficient access to industries and businesses —optional routes	–Connection to system of local frontage and backage roads provides access and optional routes	–Connection to system of local frontage and backage roads provides access and optional routes	–Connection to system of local frontage and backage roads provides access and optional routes	–Connection to system of local frontage and backage roads provides access and optional routes	–Eliminates SB to EB left turn, which is a minor move –Provides connection to local system on north side of highway –U-turn lane WB to EB provides optional route	–Provides access to properties on both sides of highway –Provides connections to local system on both sides of highway	–Eliminates SB to EB left turn, which is a minor move –Provides connection to local system on north side of highway –U-turn lane WB to EB provides optional route	–Eliminates north-south connectivity for farm equipment and school buses –Mitigation would be overcrossing at other location or improve informal farm equipment undercrossing at Derry (next to RR)	–Provides an efficient grade separated north/south crossing of OR 22 while still accommodating WB access to/from the highway. Will facilitate OR 22 detour route if there are problems on the highway.	–Provides an efficient grade separated north/south crossing of OR 22, but does not provide direct access to the highway	–Accommodates WB and EB access to/from the highway. Will facilitate OR 22 detour route if there are problems on the highway.

	OR 22/OR 51 Interchange Alternatives				Doaks Ferry Road Alternatives			Greenwood Road Alternatives			
Evaluation Criteria —Features —Measures	**INH-3: Standard Diamond Interchange**	**INH-4: Tight Diamond Interchange**	**INH-5: Parclo-B**	**INH-6: Parclo-B Single Quadrant (WB to SB Loop)**	**DFR-2: Relocated Access Option—Riggs Street and RI only at DFR**	**DFR-4: Spring Street Undercrossing Option**	**DFR-7: Eastbound Access Option--center turn refuge; LI/RI/RO**	**GWR-3: Barrier median; RI/RO only**	**GWR-4a: Grade separate w/ WB RI/RO**	**GWR-4b: Grade separate w/o OR 22 access**	**GWR-6: Offset Dual "T" Intersections**
Safety	●	●	●	●	◖	●	◖	●	●	●	◖
—reduces conflict points —minimizes emergency response times	–A grade separated interchange would improve the operational safety concerns of the existing at-grade intersection.	–A grade separated interchange would improve the operational safety concerns of the existing at-grade intersection.	–A grade separated interchange would improve the operational safety concerns of the existing at-grade intersection.	–A grade separated interchange would improve the operational safety concerns of the existing at-grade intersection.	–Relocation to straight segment reduces potential for intersection related crashes but does not fully address the operational and safety problems. –Out of direction travel required for return route for emergency vehicles.	–Eliminates the most difficult EB to NB and SB to WB left-turn movements. –Provides fairly direct return route for emergency vehicles.	–The allowance of the EB to NB left-turn movement only partially addresses the operational and safety problems of intersection turning movements. –Out of direction travel required for return route for emergency vehicles.	–A median barrier would restrict the intersection to RI/RO, thereby eliminating the difficult left-turn and crossing movements.	–A grade separated overpass would provide a safe crossing opportunity for farm equipment and school busses.	–A grade separated overpass would provide a safe crossing opportunity for farm equipment and school busses.	–Adds conflict points from turn movements but would relocate some movements to a different location.
Natural Environment	◖	◖	◖	◖	●	◖	●	●	◖	◖	◖
—Farm, forest, wetlands, wildlife, air quality —minimum impacts to sensitive areas	–McNary Creek in all quadrants to avoid –Floodplain in extreme SE and SW quadrants	–McNary Creek in all quadrants to avoid –Floodplain in extreme SE and SW quadrants –Smallest footprint	–McNary Creek in all quadrants to avoid –Floodplain in extreme SE and SW quadrants –Largest footprint	–McNary Creek in all quadrants to avoid –Floodplain in extreme SE and SW quadrants	–Not anticipated to have any adverse environmental impacts.	–Possible adverse environmental impacts from extensive excavations.	–Not anticipated to have any adverse environmental impacts.	–Not anticipated to have any adverse environmental impacts.	–T&E plant in NW quadrant that would have to be avoided –Floodplain in SW quadrant to avoid –Wetlands in NE quadrant to avoid	–T&E plant in NW quadrant that would have to be avoided –Floodplain in SW quadrant to avoid –Wetlands in NE quadrant to avoid	–T&E plant in NW quadrant that would have to be avoided –Wetlands in NE quadrant to avoid
Built Environment	◖	◖	◖	◖	◖	◖	◖	●	◖	◖	◖
—Developable properties, residential parcels, historic properties —Minimum land use, social, historic displacements	–Avoidance of Brunk House –Forest Zone in NE and SW quadrants to avoid –EFU Zone in NW and SW quadrants	–Avoidance of Brunk House –Forest Zone in NE and SW quadrants to avoid –Least land taken from EFU Zone in NW and SW quadrants	–Avoidance of Brunk House –Forest Zone in NE and SW quadrants to avoid –Most land taken from EFU Zone in NW and SW quadrants	–Avoidance of Brunk House –Forest Zone in NE and SW quadrants to avoid –EFU Zone in NW and SW quadrants	–Eliminates SB vehicle access from DFR to Holman Wayside –New roadway could impact existing land use	–Eliminates SB vehicle access from DFR to Holman Wayside –New roadway could impact existing land use	–Continues vehicle access to Holman Wayside –No change to land use	–	–Minor impacts to farm (EFU) lands –Frontage road impacts to EFU lands.	–Minor impacts to farm (EFU) lands	–Minor impacts to farm (EFU) lands –Frontage road impacts to EFU lands. –Turn lanes would need to accommodate farm equipment.
Business	◖	◖	◖	◖	●	◖	●	○	●	◖	◖
—Parking, access, jobs —Minimum business relocations or eliminations	–Would remove some acreage from producing hazelnut orchard	–Would remove least acreage from producing hazelnut orchard	–Would remove the most acreage from producing hazelnut orchard	–Would remove some acreage from producing hazelnut orchard	– U-turn could need more right-of-way	–Possible RV parking lost –Possible excavation impacts	–U-turn could impact weigh station	–Would prevent farm equipment movement across highway	–Supports farm operations and access	–Supports farm operations	–Supports farm operations

	OR 22/OR 51 Interchange Alternatives				Doaks Ferry Road Alternatives			Greenwood Road Alternatives			
Evaluation Criteria **—Features** **—Measures**	**INH-3: Standard Diamond Interchange**	**INH-4: Tight Diamond Interchange**	**INH-5: Parclo-B**	**INH-6: Parclo-B Single Quadrant (WB to SB Loop)**	**DFR-2: Relocated Access Option—Riggs Street and RI only at DFR**	**DFR-4: Spring Street Undercrossing Option**	**DFR-7: Eastbound Access Option--center turn refuge; LI/RI/RO**	**GWR-3: Barrier median; RI/RO only**	**GWR-4a: Grade separate w/ WB RI/RO**	**GWR-4b: Grade separate w/o OR 22 access**	**GWR-6: Offset Dual "T" Intersections**
Plan Consistency	◖	◖	◖	◖	◖	◖	●	◖	◖	◖	◖
—land use and transportation plans	–CPA required to incorporate into county and SKATS TSPs	–CPA required to incorporate into county and SKATS TSPs	–CPA required to incorporate into county and SKATS TSPs	–CPA required to incorporate into county and SKATS TSPs	–CPA required to incorporate into county and SKATS TSPs	–CPA required to incorporate into county and SKATS TSPs	–No CPA required to incorporate into county and SKATS TSPs	–CPA required to incorporate into county TSP	–CPA required to incorporate into county TSP –Goal exception	–CPA required to incorporate into county TSP –Goal exception	–CPA required to incorporate into county TSP –Goal exception
Flexibility	◖	◖	◖	◖	◖	◖	●	◖	◖	◖	●
—potential to phase or separate —constrained funding	–Interchange can be built as final phase after local access roads – interchange by itself probably not phaseable	–Interchange can be built as final phase after local access roads – interchange by itself probably not phaseable	–Interchange can be built as final phase after local access roads – interchange by itself probably not phaseable	–Interchange can be built as final phase after local access roads – interchange by itself probably not phaseable	–Component can be a phase of a larger project but not phaseable by itself	–Component can be a phase of a larger project but not phaseable by itself	–Component can be a phase of a larger project and is phaseable by itself	–component can be a phase of a larger project but not phaseable by itself	–component can be a phase of a larger project but not phaseable by itself	–component can be a phase of a larger project but not phaseable by itself	–component can be a phase of a larger project and also phaseable by itself
Cost	–●	–●	–●	–●	–●	–◖	–●	–●	–◖	–◖	–●
—multiple funding sources —benefit/cost ratio —cost effective	–Similar to others	–Similar to others	–Similar to others	–Similar to others	–Low cost –Pavement	–High cost –Excavation	–Low cost –Paint	–Median cost only	–Structure and frontage road costs	–Structure cost	–Provides movement without structure cost but requires frontage road

● Directly/positively meets intent of criterion ◖ Partially meets intent of criterion ○ Does not support intent of criterion N/A Not applicable—neither meets/doesn't meet intent of criterion

CH2M HILL
SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT:	OR22/51 Expressway Management Plan North Backage Roads	REFERENCE NAME/PHONE		SHEET
DESIGN LEVEL:	Preliminary			1 of 1
KIND OF WORK:	Roadway	LENGTH (MI.): 2.06	DATE 1/8/2008	NAME J. Sharrell

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	MI.	$543,000	0.00	$ -
2	Bike Boulevard	MI.	$102,000	0.00	$ -
3	New Roadway	Lane-MI.	$455,000	5.89	$ 2,681,466.67
4	Overlay Existing Roadway	Lane-MI.	$66,000	0.00	$ -
5	Reconstruct Existing Roadway	Lane-MI.	$483,000	0.00	$ -
6	Intersection Widening	EA	$46,000	0.00	$ -
7	Restriping Existing Roadway	Lane-MI.	$15,000	0.00	$ -
8	Interconnect Signal	LS	$30,000	0.00	$ -
9	New Signal	EA	$180,000	0.00	$ -
10	Signal Modifications	EA	$60,000	0.00	$ -
11	Transit Enhancements	EA	$25,000	0.00	$ -
12	Traffic Calming (See note 1)	%	-	0.0%	$ -
13	Illumination	MI.	$260,000	0.00	$ -
14	Landscaping	MI.	$225,000	0.00	$ -
15	Bridges (See note 2)	SF	$200	0.00	$ -
16	Walls	SF	$50	0.00	$ -
	SUBTOTAL				$ 2,681,466.67

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$ 67,000.00
	TP & DT		3.0-8.0%	8.0%	$ 215,000.00
	Mobilization		8.0-10.0%	10.0%	$ 268,000.00
	Erosion Control		0.5-2.0%	2.0%	$ 54,000.00
	Contingency		40.0%	40.0%	$ 1,073,000.00
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$ -
	TOTAL CONSTRUCTION COST				$ 4,358,466.67
	Design Engineering	13.0%	13.0%	13.0%	$ 567,000.00
	Construction Engineering	10.0%	10.0%	10.0%	$ 436,000.00
	TOTAL PROJECT COST				**$5,361,467**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT:	OR22/51 Expressway Management Plan South Backage Roads	REFERENCE NAME/PHONE	SHEET 1 of 1
DESIGN LEVEL:	Preliminary		
KIND OF WORK:	Roadway	LENGTH (MI.) 1.77 / DATE 1/8/2008	NAME J. Shamrell

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$ -
2	Bike Boulevard	Mi.	$102,000	0.00	$ -
3	New Roadway	Lane-Mi.	$455,000	5.02	$ 2,281,825.00
4	Overlay Existing Roadway	Lane-Mi.	$66,000	0.00	$ -
5	Reconstruct Existing Roadway	Lane-Mi.	$483,000	0.00	$ -
6	Intersection Widening	EA	$46,000	0.00	$ -
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$ -
8	Interconnect Signal	LS	$30,000	0.00	$ -
9	New Signal	EA	$180,000	0.00	$ -
10	Signal Modifications	EA	$60,000	0.00	$ -
11	Transit Enhancements	EA	$25,000	0.00	$ -
12	Traffic Calming (See note 1)	%	-	0.0%	$ -
13	Illumination	Mi.	$260,000	0.00	$ -
14	Landscaping	Mi.	$225,000	0.00	$ -
15	Bridges (See note 2)	SF	$200	1,700.00	$ 340,000.00
16	Walls	SF	$50	0.00	$ -
	SUBTOTAL				$ 2,621,825.00

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$ 66,000.00
	TP & DT		3.0-8.0%	8.0%	$ 210,000.00
	Mobilization		8.0-10.0%	10.0%	$ 262,000.00
	Erosion Control		0.5-2.0%	2.0%	$ 52,000.00
	Contingency		40.0%	40.0%	$ 1,049,000.00
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$ -
	TOTAL CONSTRUCTION COST				$ 4,260,825.00
	Design Engineering	13.0%	13.0%	13.0%	$ 554,000.00
	Construction Engineering	10.0%	10.0%	10.0%	$ 426,000.00
	TOTAL PROJECT COST				**$5,240,825**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT:	OR22/51 Expressway Management Plan GWR-3	REFERENCE NAME/PHONE			SHEET
DESIGN LEVEL:	Preliminary				1 of 1
KIND OF WORK:	Roadway/Structure	LENGTH (MI.): 0.4		DATE 6/1/2007	NAME Geoff Hunsaker

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$0
2	Bike Boulevard	Mi.	$102,000	0.00	$0
3	New Roadway	Lane-Mi.	$416,000	0.02	$8,320
4	Overlay Existing Roadway	Lane-Mi.	$66,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$445,000	0.00	$0
6	Intersection Widening	EA	$46,000	0.00	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$12,000	2.00	$24,000
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	Mi.	$260,000	0.00	$0
14	Landscaping	Mi.	$225,000	0.00	$0
15	Bridges (See note 2)	SF	$200	0.00	$0
16	Walls	SF	$50	0.00	$0
	SUBTOTAL				***$32,320***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$1,000
	TP & DT		3.0-8.0%	8.0%	$3,000
	Mobilization		8.0-10.0%	10.0%	$3,000
	Erosion Control		0.5-2.0%	2.0%	$1,000
	Contingency		40.0%	40.0%	$13,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$53,320***
	Design Engineering	13.0%	13.0%	0.0%	$7,000
	Construction Engineering	10.0%	10.0%	0.0%	$5,000
	TOTAL PROJECT COST				**$65,320**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT: OR22/51 Expressway Management Plan GWR-4a		REFERENCE NAME/PHONE			SHEET
DESIGN LEVEL: Preliminary					1 of 1
KIND OF WORK: Roadway/Structure		LENGTH (MI.): 0.4		DATE 6/1/2007	NAME Geoff Hunsaker

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$0
2	Bike Boulevard	Mi.	$102,000	0.00	$0
3	New Roadway	Lane-Mi.	$1,637,000	0.08	$130,960
4	Overlay Existing Roadway	Lane-Mi.	$66,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$1,665,000	0.72	$1,198,800
6	Intersection Widening	EA	$46,000	0.00	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$12,000	1.00	$12,000
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	Mi.	$260,000	0.00	$0
14	Landscaping	Mi.	$225,000	0.00	$0
15	Bridges (See note 2)	SF	$200	8,000.00	$1,600,000
16	Walls	SF	$50	0.00	$0
	SUBTOTAL				***$2,941,760***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$74,000
	TP & DT		3.0-8.0%	8.0%	$235,000
	Mobilization		8.0-10.0%	10.0%	$294,000
	Erosion Control		0.5-2.0%	2.0%	$59,000
	Contingency		40.0%	40.0%	$1,177,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$4,780,760***
	Design Engineering	13.0%	13.0%	0.0%	$621,000
	Construction Engineering	10.0%	10.0%	0.0%	$478,000
	TOTAL PROJECT COST				**$5,879,760**

CH2M HILL
SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT	OR22/51 Expressway Management Plan GWR-4b	REFERENCE NAME/PHONE		SHEET
DESIGN LEVEL:	Preliminary			1 of 1
KIND OF WORK:	Roadway/Structure	LENGTH (MI.): 0.4	DATE 6/1/2007	NAME Geoff Hunsaker

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$0
2	Bike Boulevard	Mi.	$102,000	0.00	$0
3	New Roadway	Lane-Mi.	$1,637,000	0.08	$130,960
4	Overlay Existing Roadway	Lane-Mi.	$66,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$1,665,000	0.72	$1,198,800
6	Intersection Widening	EA	$46,000	0.00	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$12,000	0.00	$0
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	Mi.	$260,000	0.00	$0
14	Landscaping	Mi.	$225,000	0.00	$0
15	Bridges (See note 2)	SF	$200	8,000.00	$1,600,000
16	Walls	SF	$50	0.00	$0
	SUBTOTAL				***$2,929,760***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$73,000
	TP & DT		3.0-8.0%	8.0%	$234,000
	Mobilization		8.0-10.0%	10.0%	$293,000
	Erosion Control		0.5-2.0%	2.0%	$59,000
	Contingency		40.0%	40.0%	$1,172,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$4,760,760***
	Design Engineering	13.0%	13.0%	0.0%	$619,000
	Construction Engineering	10.0%	10.0%	0.0%	$476,000
	TOTAL PROJECT COST				**$5,855,760**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT:	OR22/51 Expressway Management Plan GWR-6	REFERENCE NAME/PHONE			SHEET
DESIGN LEVEL:	Preliminary				1 of 1
KIND OF WORK:	Roadway/Structure	LENGTH (MI.):		DATE 1/8/2008	NAME J. Shamrell

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	MI.	$543,000	0.00	$0
2	Bike Boulevard	MI.	$102,000	0.00	$0
3	New Roadway	Lane-MI.	$455,000	1.40	$638,723
4	Overlay Existing Roadway	Lane-MI.	$66,000	2.34	$154,519
5	Reconstruct Existing Roadway	Lane-MI.	$483,000	0.00	$0
6	Intersection Widening	EA	$46,000	0.00	$0
7	Restriping Existing Roadway	Lane-MI.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$12,000	0.00	$0
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	MI.	$260,000	0.00	$0
14	Landscaping	MI.	$225,000	0.00	$0
15	Bridges (See note 2)	SF	$200	0.00	$0
16	Walls	SF	$50	0.00	$0
	SUBTOTAL				***$793,242***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$20,000
	TP & DT		3.0-8.0%	8.0%	$63,000
	Mobilization		8.0-10.0%	10.0%	$79,000
	Erosion Control		0.5-2.0%	2.0%	$16,000
	Contingency		40.0%	40.0%	$317,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$1,288,242***
	Design Engineering	13.0%	13.0%	13.0%	$167,000
	Construction Engineering	10.0%	10.0%	10.0%	$129,000
	TOTAL PROJECT COST				**$1,584,242**

CH2M HILL
SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT: OR22/51 Expressway Management Plan INH-3	REFERENCE NAME/PHONE		SHEET 1 of 1
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway/Structure	LENGTH (MI.): 1.52	DATE 6/1/2007	NAME Darren Hippenstiel

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	1.52	$825,360
2	Bike Boulevard	Mi.	$102,000	0.00	$0
3	New Roadway	Lane-Mi.	$835,000	5.61	$4,684,350
4	Overlay Existing Roadway	Lane-Mi.	$66,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$863,000	0.00	$0
6	Intersection Widening	EA	$46,000	0.00	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$25,000	0.00	$0
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	Mi.	$260,000	1.52	$395,200
14	Landscaping	Mi.	$225,000	1.52	$342,000
15	Bridges (See note 2)	SF	$200	12,300.00	$2,460,000
16	Walls	SF	$50	1,500.00	$75,000
	SUBTOTAL				***$8,781,910***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$220,000
	TP & DT		3.0-8.0%	8.0%	$703,000
	Mobilization		8.0-10.0%	10.0%	$878,000
	Erosion Control		0.5-2.0%	2.0%	$176,000
	Contingency		40.0%	40.0%	$3,513,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$14,271,910***
	Design Engineering	13.0%	13.0%	0.0%	$1,855,000
	Construction Engineering	10.0%	10.0%	0.0%	$1,427,000
	TOTAL PROJECT COST				**$17,553,910**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT:	OR22/51 Expressway Management Plan INH-4	REFERENCE NAME/PHONE			SHEET 1 of 1
DESIGN LEVEL:	Preliminary				
KIND OF WORK:	Roadway/Structure	LENGTH (MI.): 1.23		DATE 6/1/2007	NAME Darren Hippenstiel

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	1.23	$667,890
2	Bike Boulevard	Mi.	$102,000	0.00	$0
3	New Roadway	Lane-Mi.	$927,000	4.59	$4,254,930
4	Overlay Existing Roadway	Lane-Mi.	$65,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$955,000	0.00	$0
6	Intersection Widening	EA	$46,000	0.00	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$25,000	0.00	$0
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	Mi.	$260,000	1.23	$319,800
14	Landscaping	Mi.	$225,000	1.23	$276,750
15	Bridges (See note 2)	SF	$200	12,300.00	$2,460,000
16	Walls	SF	$50	3,000.00	$150,000
	SUBTOTAL				***$8,129,370***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$203,000
	TP & DT		3.0-8.0%	8.0%	$650,000
	Mobilization		8.0-10.0%	10.0%	$813,000
	Erosion Control		0.5-2.0%	2.0%	$163,000
	Contingency		40.0%	40.0%	$3,252,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$13,210,370***
	Design Engineering	13.0%	13.0%	0.0%	$1,717,000
	Construction Engineering	10.0%	10.0%	0.0%	$1,321,000
	TOTAL PROJECT COST				**$16,248,370**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT	OR22/51 Expressway Management Plan INH-5	REFERENCE NAME/PHONE			SHEET 1 of 1
DESIGN LEVEL:	Preliminary				
KIND OF WORK:	Roadway/Structure	LENGTH (MI.): 1.81		DATE 6/1/2007	NAME Darren Hippenstiel

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	1.81	$982,830
2	Bike Boulevard	Mi.	$102,000	0.00	$0
3	New Roadway	Lane-Mi.	$835,000	6.08	$5,076,800
4	Overlay Existing Roadway	Lane-Mi.	$66,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$863,000	0.00	$0
6	Intersection Widening	EA	$48,000	0.00	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$25,000	0.00	$0
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	Mi.	$260,000	1.81	$470,600
14	Landscaping	Mi.	$225,000	1.81	$407,250
15	Bridges (See note 2)	SF	$200	12,300.00	$2,460,000
16	Walls	SF	$50	1,500.00	$75,000
	SUBTOTAL				***$9,472,480***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$237,000
	TP & DT		3.0-8.0%	8.0%	$758,000
	Mobilization		8.0-10.0%	10.0%	$947,000
	Erosion Control		0.5-2.0%	2.0%	$189,000
	Contingency		40.0%	40.0%	$3,789,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$15,392,480***
	Design Engineering	13.0%	13.0%	0.0%	$2,001,000
	Construction Engineering	10.0%	10.0%	0.0%	$1,539,000
	TOTAL PROJECT COST				**$18,932,480**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT: OR22/51 Expressway Management Plan INH-6		**REFERENCE NAME/PHONE**			**SHEET** 1 of 1
DESIGN LEVEL: Preliminary					
KIND OF WORK: Roadway		**LENGTH (MI.):**		**DATE** 1/9/2008	**NAME** Darren Hippenstiel

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	1.68	$912,240
2	Bike Boulevard	Mi.	$102,000	0.00	$0
3	New Roadway	Lane-Mi.	$836,000	6.06	$5,066,160
4	Overlay Existing Roadway	Lane-Mi.	$66,000	0.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.	$864,000	0.00	$0
6	Intersection Widening	EA	$46,000	0.00	$0
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$0
8	Interconnect Signal	LS	$30,000	0.00	$0
9	New Signal	EA	$180,000	0.00	$0
10	Signal Modifications	EA	$60,000	0.00	$0
11	Transit Enhancements	EA	$25,000	0.00	$0
12	Traffic Calming (See note 1)	%	-	0.0%	$0
13	Illumination	Mi.	$260,000	1.68	$436,800
14	Landscaping	Mi.	$225,000	1.68	$378,000
15	Bridges (See note 2)	SF	$200	12,300.00	$2,460,000
16	Walls	SF	$50	1,500.00	$75,000
	SUBTOTAL				***$9,328,200***

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$233,000
	TP & DT		3.0-8.0%	8.0%	$746,000
	Mobilization		8.0-10.0%	10.0%	$933,000
	Erosion Control		0.5-2.0%	2.0%	$187,000
	Contingency		40.0%	40.0%	$3,731,000
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$0
	TOTAL CONSTRUCTION COST				***$15,158,200***
	Design Engineering	13.0%	13.0%	0.0%	$1,971,000
	Construction Engineering	10.0%	10.0%	0.0%	$1,516,000
	TOTAL PROJECT COST				**$18,645,200**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT: OR22/51 Expressway Management Plan DFR-2	REFERENCE NAME/PHONE			SHEET 1 of 1	
DESIGN LEVEL: Preliminary					
KIND OF WORK: Roadway	LENGTH (MI.):		DATE 1/8/2008	NAME J. Sharrrell	

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$ -
2	Bike Boulevard	Mi.	$102,000	0.00	$ -
3	New Roadway	Lane-Mi.	$455,000	1.00	$ 455,735.35
4	Overlay Existing Roadway	Lane-Mi.	$66,000	2.31	$ 152,712.50
5	Reconstruct Existing Roadway	Lane-Mi.	$483,000	0.00	$ -
6	Intersection Widening	EA	$46,000	0.00	$ -
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$ -
8	Interconnect Signal	LS	$30,000	0.00	$ -
9	New Signal	EA	$180,000	0.00	$ -
10	Signal Modifications	EA	$60,000	0.00	$ -
11	Transit Enhancements	EA	$25,000	0.00	$ -
12	Traffic Calming (See note 1)	%	-	0.0%	$ -
13	Illumination	Mi.	$260,000	0.00	$ -
14	Landscaping	Mi.	$225,000	0.00	$ -
15	Bridges (See note 2)	SF	$200	0.00	$ -
16	Walls	SF	$50	0.00	$ -
	SUBTOTAL				$ 608,447.85

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$ 15,000.00
	TP & DT		3.0-8.0%	8.0%	$ 49,000.00
	Mobilization		8.0-10.0%	10.0%	$ 61,000.00
	Erosion Control		0.5-2.0%	2.0%	$ 12,000.00
	Contingency		40.0%	40.0%	$ 243,000.00
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$ -
	TOTAL CONSTRUCTION COST				$ 988,447.85
	Design Engineering	13.0%	13.0%	13.0%	$ 128,000.00
	Construction Engineering	10.0%	10.0%	10.0%	$ 99,000.00
	TOTAL PROJECT COST				**$1,215,448**

CH2M HILL
SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT:	OR22/51 Expressway Management Plan DFR-4	REFERENCE NAME/PHONE			SHEET 1 of 1
DESIGN LEVEL:	Preliminary				
KIND OF WORK:	Roadway	LENGTH (MI.):		DATE 1/8/2008	NAME J. Shamrell

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	MI.	$543,000	0.00	$ -
2	Bike Boulevard	MI.	$102,000	0.00	$ -
3	New Roadway	Lane-MI	$715,000	0.39	$ 278,850.00
4	Overlay Existing Roadway	Lane-MI	$66,000	0.00	$ -
5	Reconstruct Existing Roadway	Lane-MI	$743,000	0.00	$ -
6	Intersection Widening	EA	$46,000	0.00	$ -
7	Restriping Existing Roadway	Lane-MI.	$15,000	0.00	$ -
8	Interconnect Signal	LS	$30,000	0.00	$ -
9	New Signal	EA	$180,000	0.00	$ -
10	Signal Modifications	EA	$60,000	0.00	$ -
11	Transit Enhancements	EA	$25,000	0.00	$ -
12	Traffic Calming (See note 1)	%	-	0.0%	$ -
13	Illumination	MI.	$280,000	0.00	$ -
14	Landscaping	MI.	$225,000	0.00	$ -
15	Bridges (See note 2)	SF	$300	5,650.00	$ 1,695,000.00
16	Walls	SF	$50	15,736.00	$ 786,800.00
	SUBTOTAL				$ 2,760,650.00

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$ 69,000.00
	TP & DT		3.0-8.0%	8.0%	$ 221,000.00
	Mobilization		8.0-10.0%	10.0%	$ 276,000.00
	Erosion Control		0.5-2.0%	2.0%	$ 55,000.00
	Contingency		40.0%	40.0%	$ 1,104,000.00
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$ -
	TOTAL CONSTRUCTION COST				$ 4,485,650.00
	Design Engineering	13.0%	13.0%	13.0%	$ 583,000.00
	Construction Engineering	10.0%	10.0%	10.0%	$ 449,000.00
	TOTAL PROJECT COST				**$5,517,650**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT: GR22/51 Expressway Management Plan DFR-7	REFERENCE NAME/PHONE			SHEET 1 of 1
DESIGN LEVEL: Preliminary				
KIND OF WORK: Roadway	LENGTH (MI.):		DATE 1/8/2008	NAME J. Shamrell

NO.	ITEM	UNIT	UNIT COST	QUANTITY	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$ -
2	Bike Boulevard	Mi.	$102,000	0.00	$ -
3	New Roadway	Lane-Mi.	$455,000	0.61	$ 277,641.92
4	Overlay Existing Roadway	Lane-Mi.	$66,000	3.49	$ 230,625.00
5	Reconstruct Existing Roadway	Lane-Mi.	$483,000	0.00	$ -
6	Intersection Widening	EA	$46,000	0.00	$ -
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$ -
8	Interconnect Signal	LS	$30,000	0.00	$ -
9	New Signal	EA	$180,000	0.00	$ -
10	Signal Modifications	EA	$60,000	0.00	$ -
11	Transit Enhancements	EA	$25,000	0.00	$ -
12	Traffic Calming (See note 1)	%	-	0.0%	$ -
13	Illumination	Mi.	$260,000	0.00	$ -
14	Landscaping	Mi.	$225,000	0.00	$ -
15	Bridges (See note 2)	SF	$200	0.00	$ -
16	Walls	SF	$50	0.00	$ -
	SUBTOTAL				$ 508,266.92

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construstion Surveying		1.0-2.5%	2.5%	$ 13,000.00
	TP & DT		3.0-8.0%	8.0%	$ 41,000.00
	Mobilization		8.0-10.0%	10.0%	$ 51,000.00
	Erosion Control		0.5-2.0%	2.0%	$ 10,000.00
	Contingency		40.0%	40.0%	$ 203,000.00
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$ -
	TOTAL CONSTRUCTION COST				$ 826,266.92
	Design Engineering	13.0%	13.0%	13.0%	$ 107,000.00
	Construction Engineering	10.0%	10.0%	10.0%	$ 83,000.00
	TOTAL PROJECT COST				**$1,016,267**

CH2M HILL

SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE

PROJECT:	OR22/51 Expressway Management Plan DFR-7 **Doaks Ferry Left Turn**	**REFERENCE NAME/PHONE**			**SHEET**
DESIGN LEVEL:	Preliminary				1 of 1
KIND OF WORK:	Roadway	**LENGTH (MI.):**		**DATE** 1/8/2008	**NAME** J. Shamrell
NO.	**ITEM**	**UNIT**	**UNIT COST**	**QUANTITY**	**COST**
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$ -
2	Bike Boulevard	Mi.	$102,000	0.00	$ -
3	New Roadway	Lane-Mi.	$455,000	0.32	$ 143,370.96
4	Overlay Existing Roadway	Lane-Mi.	$66,000	1.75	$ 115,312.50
5	Reconstruct Existing Roadway	Lane-Mi.	$483,000	0.00	$ -
6	Intersection Widening	EA	$46,000	0.00	$ -
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$ -
8	Interconnect Signal	LS	$30,000	0.00	$ -
9	New Signal	EA	$180,000	0.00	$ -
10	Signal Modifications	EA	$60,000	0.00	$ -
11	Transit Enhancements	EA	$25,000	0.00	$ -
12	Traffic Calming (See note 1)	%	-	0.0%	$ -
13	Illumination	Mi.	$260,000	0.00	$ -
14	Landscaping	Mi.	$225,000	0.00	$ -
15	Bridges (See note 2)	SF	$200	0.00	$ -
16	Walls	SF	$50	0.00	$ -
	SUBTOTAL				$ 258,683.46

	ADDITIONAL COSTS		**RANGE**	**PERCENTAGE**	COST
	Construction Surveying		1.0-2.5%	2.5%	$ 6,000.00
	TP & DT		3.0-8.0%	8.0%	$ 21,000.00
	Mobilization		8.0-10.0%	10.0%	$ 26,000.00
	Erosion Control		0.5-2.0%	2.0%	$ 5,000.00
	Contingency		40.0%	40.0%	$ 103,000.00
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$ -
	TOTAL CONSTRUCTION COST				$ 419,683.46
	Design Engineering	13.0%	13.0%	13.0%	$ 55,000.00
	Construction Engineering	10.0%	10.0%	10.0%	$ 42,000.00
	TOTAL PROJECT COST				**$516,683**

CH2M HILL SUMMARY - ORDER-OF-MAGNITUDE ESTIMATE					
PROJECT:	OR22/51 Expressway Management Plan DFR-7 **Weigh Station U-Turn**	**REFERENCE NAME/PHONE**			**SHEET** 1 of 1
DESIGN LEVEL:	Preliminary				
KIND OF WORK:	Roadway	**LENGTH (MI.):**		**DATE** 1/8/2008	**NAME** J. Shamrell
NO.	**ITEM**	**UNIT**	**UNIT COST**	**QUANTITY**	**COST**
1	Curb, Gutter, Sidewalks & Drainage	Mi.	$543,000	0.00	$ -
2	Bike Boulevard	Mi.	$102,000	0.00	$ -
3	New Roadway	Lane-Mi.	$455,000	0.30	$ 134,270.96
4	Overlay Existing Roadway	Lane-Mi.	$66,000	1.75	$ 115,312.50
5	Reconstruct Existing Roadway	Lane-Mi.	$483,000	0.00	$ -
6	Intersection Widening	EA	$46,000	0.00	$ -
7	Restriping Existing Roadway	Lane-Mi.	$15,000	0.00	$ -
8	Interconnect Signal	LS	$30,000	0.00	$ -
9	New Signal	EA	$180,000	0.00	$ -
10	Signal Modifications	EA	$60,000	0.00	$ -
11	Transit Enhancements	EA	$25,000	0.00	$ -
12	Traffic Calming (See note 1)	%	-	0.0%	$ -
13	Illumination	Mi.	$260,000	0.00	$ -
14	Landscaping	Mi.	$225,000	0.00	$ -
15	Bridges (See note 2)	SF	$200	0.00	$ -
16	Walls	SF	$50	0.00	$ -
	SUBTOTAL				$ 249,583.46

	ADDITIONAL COSTS		RANGE	PERCENTAGE	COST
	Construction Surveying		1.0-2.5%	2.5%	$ 6,000.00
	TP & DT		3.0-8.0%	8.0%	$ 20,000.00
	Mobilization		8.0-10.0%	10.0%	$ 25,000.00
	Erosion Control		0.5-2.0%	2.0%	$ 5,000.00
	Contingency		40.0%	40.0%	$ 100,000.00
	Escalation (per year)		0.5-2.0%	0.0%	
	-Current Year			0	$ -
	TOTAL CONSTRUCTION COST				$ 405,583.46
	Design Engineering	13.0%	13.0%	13.0%	$ 53,000.00
	Construction Engineering	10.0%	10.0%	10.0%	$ 41,000.00
	TOTAL PROJECT COST				**$499,583**

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HEP File Code: PRO 08 ________

OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **OFR 2** Region: 2 Date: 6/3/07

Project on State Highway

Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **MP 21.94** to **MP 22.14**

Road Classifctn: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **POLK** City: **Salem** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **Connection to north backage road, deceleration lane, and center turn refuge for left-in at Riggs Street with painted island channel**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes	Year Cleared & Countermeasures (life)	Number of Target Crashes				Number of Preventable Crashes	Economic Value per Crash		Total Economic Value
PDO Crashes	14	<---Total PDO Crashes				7.8	$13,000	=	$ 102,000
	CF %					Type of Crash Prevented			
Countermeasure 1 Concrete Median Barrier (2-6 Sht)	1.0		-10%	3.9		All Crash Types			
Countermeasure 2 Spacing 500-1000 feet	20.0		60%	3.9		All Crash Types			
Countermeasure 3	No		0%	0.0					
Countermeasure 4	No		0%	0.0					
Countermeasure 5	No		0%	0.0					
Moderate (Injury B) and Minor (Injury C) Injury Crashes	13	<---Total Injury B&C Crashes				8.5	$55,000	=	$ 468,000
	CF %					Type of Crash Prevented			
Countermeasure 1 Concrete Median Barrier (2-6 Sht)	1.0		10%	4.2		All Crash Types			
Countermeasure 2 Spacing 500-1000 feet	20.0		60%	4.2		All Crash Types			
Countermeasure 3	No		0%	0.0					
Countermeasure 4	No		0%	0.0					
Countermeasure 5	No		0%	0.0					
Fatal and Severe (Injury A) Injury Crashes		<---Total Fatal & InjA Crashes				0.0	$1,350,000	=	$
	CF %					Type of Crash Prevented			
Countermeasure 1	No		0%	0.0					
Countermeasure 2	No		0%	0.0					
Countermeasure 3	No		0%	0.0					
Countermeasure 4	No		0%	0.0					
Countermeasure 5	No		0%	0.0					

27 <---**Crashes** **Total Crash Value for** 60 Months = $ 560,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO[3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury[4]		
Interstate or Freeway	$39,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury[4]		
Interstate or Freeway	$694,000	$1,352,000
Other Highway	$639,000	$1,350,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 112,000

Estimated Project Cost = $ 1,215,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

B/C Ratio = $ 112,000 x 13.59 / $ 1,215,000 **1.25**

Notes

1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

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HEP File Code: PRO 06-

OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: DFR 4 — Region: 2 — Date: 6/2/07

Project on State Highway
Route Number: 22 — Hwy Name: WILLAMINA-SALEM — MP From: 21.94 to 22.14

Road Character: RURAL — Facility Type: OTHER HIGHWAY

County: MORROW — City: Salem — Crash Data From: 8/1/1999 to 7/31/2004

Project Description: New roadway and undercrossing at Spring Street connecting north and south side backage roads.

Prepared By: Haregu Nemariam — Title: Transportation Engineer

Type of Target Crashes		Total Crashes & Countermeasure ID No.	Number of Target Crashes			A Number of Preventable Crashes	B Economic Value per Crash		A×B Total Economic Value
PDO Crashes		14	<—Total PDO Crashes			[1] 9.4	$13,000	=	$ 122,000
		ID No.				Type of Crash Prevented			
Countermeasure 1	Concrete Median Barrier (3-8' Shy)	1.0		-10%	4.7	All Crash Types			
Countermeasure 2	Left-Turn Bay, Unsignalized, 4-Leg, Curbed/Raised	7.0		70%	4.7	All Crash Types			
Countermeasure 3		No.		0%	0.0				
Countermeasure 4		No.		0%	0.0				
Countermeasure 5		No.		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes		13	<—Total Injury B&C Crashes			[1] 10.7	$55,000	=	$ 586,000
		ID No.				Type of Crash Prevented			
Countermeasure 1	Concrete Median Barrier (3-8' Shy)	1.0		10%	5.3	All Crash Types			
Countermeasure 2	Left-Turn Bay, Unsignalized, T-Intersection	9.0		80%	5.3	All Crash Types			
Countermeasure 3		No.		0%	0.0				
Countermeasure 4		No.		0%	0.0				
Countermeasure 5		No.		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes			<—Total Fatal & InjA Crashes			[1] 0.0	$1,389,000	=	$ -
		ID No.				Type of Crash Prevented			
Countermeasure 1		No.		0%	0.0				
Countermeasure 2		No.		0%	0.0				
Countermeasure 3		No.		0%	0.0				
Countermeasure 4		No.		0%	0.0				
Countermeasure 5		No.		0%	0.0				

27 <—Crashes — **Total Crash Value for** 60 Months = $ 708,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 142,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$30,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$284,000	$1,202,000
Other Highway	$585,000	$1,389,000

Estimated Project Cost = $ 5,518,000

B/C Ratio = Annual Benefits x Present Worth Factor (10 or 20 years) / Estimated Project Cost

B/C Ratio = $ 142,000 x [2] 13.59 / $ 5,518,000 = **0.35**

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

Notes

1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs" T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: DFR 7 — Region: 2 — Date: 9/2/07

Project on State Highway
Route Number: 22 — Hwy Name: WILLAMINA-SALEM — MP From: 21.94 to: 22.14

Road Character: RURAL — Facility Type: OTHER HIGHWAY

County: MORROW — City: Salem — Crash Data From: 8/1/1999 to: 7/31/2004

Project Description: Realigned right-out connection, painted island, center turn refuge for left-in at DFR; WB center turn refuge and U-turn lane at wei

Prepared By: Ilaregu Nemaniam — Title: Transportation Engineer

Type of Target Crashes		Total Crashes & Countermeasure (CRF)	Number of Target Crashes			Number of Preventable Crashes[1]	Economic Value per Crash[4]		Total Economic Value[3]
PDO Crashes		14	<==Total PDO Crashes			9.4	$13,000	=	$ 122,000
		CRF%				Type of Crash Prevented			
Countermeasure 1	Concrete Median Barrier (3-6' Sty)	1.0		10%	4.7	All Crash Types			
Countermeasure 2	Left-Turn Bay, Unsignalized, 4-Leg, Curbed/Raised	7.0		70%	4.7	All Crash Types			
Countermeasure 3		No		0%	0.0				
Countermeasure 4		No		0%	0.0				
Countermeasure 5		No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes		13	<==Total Injury B&C Crashes			10.7	$55,000	=	$ 586,000
		CRF%				Type of Crash Prevented			
Countermeasure 1	Concrete Median Barrier (3-6' Sty)	1.0		10%	5.3	All Crash Types			
Countermeasure 2	Left-Turn Bay, Unsignalized, T-Intersection	9.0		80%	5.3	All Crash Types			
Countermeasure 3		No		0%	0.0				
Countermeasure 4		No		0%	0.0				
Countermeasure 5		No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes			<==Total Fatal & Inj A Crashes			0.0	$1,359,000	=	$
		CRF%				Type of Crash Prevented			
Countermeasure 1		No		0%	0.0				
Countermeasure 2		No		0%	0.0				
Countermeasure 3		No		0%	0.0				
Countermeasure 4		No		0%	0.0				
Countermeasure 5		No		0%	0.0				

27 <==Crashes — Total Crash Value for 60 Months = $ 708,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO[3]		
All facilities	$10,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury[4]		
Interstate or Freeway	$39,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury[4]		
Interstate or Freeway	$594,000	$1,352,000
Other Highway	$589,000	$1,359,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 142,000

Estimated Project Cost = $ 1,016,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

B/C Ratio = $ 142,000 x [2] 8.11 / $ 1,016,000 = 1.13

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

Notes
1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1996-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994" updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **DFR 7 (U-Turn Only)** Region: **2** Date **6/2/07**

Project on State Highway
Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **21.94** to **22.14**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **MORROW** City: **Salem** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **WB center turn refuge and U-turn lane at weigh station.**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes		Total Crashes & Countermeasure ID No.	Number of Target Crashes			A Number of Preventable Crashes	B Economic Value per Crash		A*B Total Economic Value
PDO Crashes		14	<==Total PDO Crashes			[1] 9.4	$13,000	=	$ 122,000
		ID No.				Type of Crash Prevented			
Countermeasure 1	Concrete Median Barrier (3-6' Shy)	1.0		-10%	4.7	All Crash Types			
Countermeasure 2	Left-Turn Bay, Unsignalized, 4-Leg, Curbed/Raised	7.0		70%	4.7	All Crash Types			
Countermeasure 3		No.		0%	0.0				
Countermeasure 4		No.		0%	0.0				
Countermeasure 5		No.		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes		13	<==Total Injury B&C Crashes			[1] 10.7	$55,000	=	$ 586,000
		ID No.				Type of Crash Prevented			
Countermeasure 1	Concrete Median Barrier (3-6' Shy)	1.0		10%	5.3	All Crash Types			
Countermeasure 2	Left-Turn Bay, Unsignalized, T-Intersection	9.0		80%	5.3	All Crash Types			
Countermeasure 3		No.		0%	0.0				
Countermeasure 4		No.		0%	0.0				
Countermeasure 5		No.		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes			<==Total Fatal & InjA Crashes			[1] 0.0	$1,359,000	=	$ -
		ID No.				Type of Crash Prevented			
Countermeasure 1		No.		0%	0.0				
Countermeasure 2		No.		0%	0.0				
Countermeasure 3		No.		0%	0.0				
Countermeasure 4		No.		0%	0.0				
Countermeasure 5		No.		0%	0.0				

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$39,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$694,000	$1,352,000
Other Highway	$689,000	$1,359,000

27 <==Crashes **Total Crash Value for** 60 Months = $ 708,000

Annual Benefits = $\frac{\text{Total Crash Value}}{\text{Total Months / 12}}$ = $ 142,000

Estimated Project Cost = $ 500,000

B/C Ratio = $\frac{\text{Annual Benefits X Present Worth Factor (10 or 20 years)}}{\text{Estimated Project Cost}}$

B/C Ratio = $\frac{\$ 142{,}000 \times {}^{2}\ 8.11}{\$ 500{,}000}$ = **2.30**

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

Notes

1 Composite crash reduction factor calculated if more than one countermeasure is applied
2 Select a PWF for the life of countermeasure. See instructions
3 PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4 Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **DFR 7 (Doaks Ferry Left Turn Only)** Region: **2** Date: **6/2/07**

Project on State Highway

Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **21.94** to **22.14**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **MORROW** City: **Salem** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **Realigned right-out connection, painted island, center turn refuge for left-in at DFR**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes	Total Crashes & Countermeasure ID No.	Number of Target Crashes			A: Number of Preventable Crashes	B: Economic Value per Crash		A*B: Total Economic Value
PDO Crashes	14	<==Total PDO Crashes			[1] 9.4	$13,000	=	$ 122,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Concrete Median Barrier (3-6' Shy)	1.0		-10%	4.7	All Crash Types			
Countermeasure 2 Left-Turn Bay, Unsignalized, 4-Leg, Curbed/Raised	7.0		70%	4.7	All Crash Types			
Countermeasure 3	No.		0%	0.0				
Countermeasure 4	No.		0%	0.0				
Countermeasure 5	No.		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	13	<==Total Injury B&C Crashes			[1] 10.7	$55,000	=	$ 586,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Concrete Median Barrier (3-6' Shy)	1.0		10%	5.3	All Crash Types			
Countermeasure 2 Left-Turn Bay, Unsignalized, T-Intersection	9.0		80%	5.3	All Crash Types			
Countermeasure 3	No.		0%	0.0				
Countermeasure 4	No.		0%	0.0				
Countermeasure 5	No.		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes		<==Total Fatal & InjA Crashes			[1] 0.0	$1,359,000	=	$ -
	ID No.				Type of Crash Prevented			
Countermeasure 1	No.		0%	0.0				
Countermeasure 2	No.		0%	0.0				
Countermeasure 3	No.		0%	0.0				
Countermeasure 4	No.		0%	0.0				
Countermeasure 5	No.		0%	0.0				
	27	<==Crashes			Total Crash Value for 60 Months		=	$ 708,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$39,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$694,000	$1,352,000
Other Highway	$689,000	$1,359,000

Annual Benefits = $\frac{\text{Total Crash Value}}{\text{Total Months / 12}}$ = $ 142,000

Estimated Project Cost = $ 517,000

B/C Ratio = $\frac{\text{Annual Benefits X Present Worth Factor (10 or 20 years)}}{\text{Estimated Project Cost}}$

B/C Ratio = $\frac{\$\ 142{,}000 \times {}^{2}\ 8.11}{\$\ 517{,}000}$ = **2.23**

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

Notes

1 Composite crash reduction factor calculated if more than one countermeasure is applied

2 Select a PWF for the life of countermeasure. See instructions

3 PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.

4 Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **GWR 3 Install Raised Median (GWR Right in/Out)** Region: **2** Date: **6/2/07**

Project on State Highway

Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **MP 18.41** to **MP 18.62**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **POLK** City: **OUT SIDE SALEM UBG** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **Install raised median and make Greenwood Road right in/out**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes	Total Crashes & Countermeasure ID No.	Number of Target Crashes			Number of Preventable Crashes	Economic Value per Crash		Total Economic Value
PDO Crashes		<— Total PDO Crashes			0.0	$13,000	=	$ -
	ID No.				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	4	<— Total Injury B&C Crashes			0.4	$55,000	=	$ 22,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Concrete Median Barrier (>6' 9in)	1.0		10%	0.4	All Crash Types			
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes		<— Total Fatal & InjA Crashes			0.0	$1,359,000	=	$ -
	ID No.				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				

4 <— **Crashes** **Total Crash Value for** 60 Months = $ 22,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 4,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$39,000	$57,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$694,000	$1,352,000
Other Highway	$989,000	$1,359,000

Estimated Project Cost = $ 40,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

Uniform Series Present Worth Factor (4%)	
10 Years	20 Years
8.11	13.59

B/C Ratio = $\frac{\$\ 4{,}000 \times 13.59}{\$\ 40{,}000}$ = **1.36**

Notes

1. Composite crash reduction factor calculated if more than one countermeasure is applied
2. Select a PWF for the life of countermeasure. See instructions
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council 2000 estimates of value per crash
4. Economic costs per crash are calculated using 1996-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs" T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **GWR 4a** Region: **2** Date: **5/3/07**

Project on State Highway

Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **MP 18.41** to **MP 18.62**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **POLK** City: **OUT SIDE SALEM UBG** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **Grade Separate with westbound right in/out access to OR 22 overpass**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes	Total Construct. if Countermeasure (5 %)	Number of Target Crashes			Number of Preventable Crashes [1]	Economic Value per Crash [4]		Total Economic Value [2,3]
PDO Crashes		<== Total PDO Crashes			0.0	$13,000	=	$ -
	(3 %)				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	4	<== Total Injury B&C Crashes			3.1	$55,000	=	$ 171,000
	(3 %)				Type of Crash Prevented			
Countermeasure 1 Concrete Median Barrier (3-4' Sty)	1.0		10%	1.6	All Crash Types			
Countermeasure 2 Construct Grade Separation	37.0		75%	1.6	All Crash Types			
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes		<== Total Fatal & InjA Crashes			0.0	$1,359,000	=	$ -
	(3 %)				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$39,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$694,000	$1,352,000
Other Highway	$569,000	$1,359,000

4 <==Crashes **Total Crash Value for** 60 Months = $ 171,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 34,000

Estimated Project Cost = $ 5,880,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

Uniform Series Present Worth Factor (4%) [2]	
10 years	20 years
8.11	13.59

B/C Ratio = $ 34,000 x [2] 13.59 / $ 5,880,000 = **0.08**

Notes

1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994, updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **GWR 4b** Region: **2** Date: **6/2/07**

Project on State Highway

Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **MP 18.41** to **MP 18.62**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **POLK** City: **OUT SIDE SALEM UBG** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **Grade Separate to allow north to south access without OR 22 access - overpass**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes	Total Crashes & Countermeasure ID No	Number of Target Crashes			Number of Preventable Crashes	Economic Value per Crash		Total Economic Value
PDO Crashes		<—Total PDO Crashes			0.0	$13,000	=	$ -
	ID No				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	4	<—Total Injury B&C Crashes			3.1	$55,000	=	$ 171,000
	ID No				Type of Crash Prevented			
Countermeasure 1 Concrete Median Barrier (3-6' Sh)	1.0		40%	1.6	All Crash Types			
Countermeasure 2 Construct Grade Separation	37.0		75%	1.6	All Crash Types			
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes		<—Total Fatal & InjA Crashes			0.0	$1,359,000	=	$
	ID No				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				

4 <—Crashes **Total Crash Value for** 60 Months = $ 171,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$39,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$694,000	$1,362,000
Other Highway	$689,000	$1,359,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 34,000

Estimated Project Cost = $ 5,856,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

B/C Ratio = $ 34,000 x 13.59 / $ 5,856,000 = **0.08**

Notes

1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. FDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **GWR 5 Offset Dual T Intersections** Region: **2** Date: **6/2/07**

Project on State Highway
Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **MP 18.41** to **MP 18.62**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **POLK** City: **OUT SIDE SALEM UGB** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **Install extra wide (16 ft) dual direction center turn lane between south Greenwood Rd and north frontage road; install decel lanes**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type or Target Crashes	Total Crashes in Countermeasure (if No)	Number of Target Crashes			Number of Preventable Crashes	Economic Value per Crash		Total Economic Value
PDO Crashes		<==Total PDO Crashes			0.0	$13,000	=	$ –
	(if No)				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	4	<==Total Injury B&C Crashes			3.1	$55,000	=	$ 171,000
	(if No)				Type of Crash Prevented			
Countermeasure 1 Construct Median Barrier (3.0 ft/y)	1.0		10%	1.6	All Crash Types			
Countermeasure 2 Construct Grade Separation	37.0		75%	1.6	All Crash Types			
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes		<==Total Fatal & Inj A Crashes			0.0	$1,359,000	=	$ –
	(if No)				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				

4 <==Crashes **Total Crash Value for** 60 Months = $ 171,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO[3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury[4]		
Interstate or Freeway	$38,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury[4]		
Interstate or Freeway	$684,000	$1,352,000
Other Highway	$660,000	$1,359,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 34,000

Estimated Project Cost = $ 1,584,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

B/C Ratio = ($ 34,000 x 13.59) / $ 1,584,000 = **0.29**

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

Notes
1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1996-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs," T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: INH 3 | Region: 2 | Date: 6/2/07

Project on State Highway

Route Number: 22 | Hwy Name: WILLAMINA-SALEM | MP From: MP 20.27 to MP 20.81

Road Character: RURAL | Facility Type: OTHER HIGHWAY

County: POLK | City: OUT SIDE SALEM UBG | Crash Data From: 8/1/1999 to 7/31/2004

Project Description: Standard diamond interchange

Prepared By: Haregu Nemariam | Title: Transportation Engineer

Type of Target Crashes	Total Crashes & Countermeasure ID No.	Number of Target Crashes			A: Number of Preventable Crashes	B: Economic Value per Crash		A*B: Total Economic Value
PDO Crashes	14	<---Total PDO Crashes			0.0	$13,000	=	$
	ID No.				Type of Crash Prevented			
Countermeasure 1	No		0%	0.0				
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	21	<---Total Injury B&C Crashes			15.8	$55,000	=	$ 869,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		75%	15.8	All Crash Types			
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes	1	<---Total Fatal & InjA Crashes			1.0	$1,359,000	=	$ 1,359,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		100%	1.0	All Crash Types			
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				

36 <---Crashes | **Total Crash Value for** 60 Months = $ 2,228,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 445,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$39,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$694,000	$1,362,000
Other Highway	$608,000	$1,369,000

Estimated Project Cost = $ 17,554,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

B/C Ratio = $ 445,000 x [2] 13.59 / $ 17,554,000 = **0.34**

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

Notes
1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1996-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs," T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **INH 4** Region: **2** Date: **6/2/07**

Project on State Highway

Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **MP 20.27** to **MP 20.61**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **POLK** City: **OUT SIDE SALEM UBG** Crash Data From: **8/1/1999** to **7/31/2004**

Project Description: **Tight diamond interchange**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes	Crash Clusters in Countermeasure ID No.	Number of Target Crashes			A Number of Preventable Crashes	B Economic Value per Crash		A x B Total Economic Value
PDO Crashes	14	<==Total PDO Crashes			[1] 10.5	$13,000	=	$ 137,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		75%	10.5	All Crash Types			
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	21	<==Total Injury B&C Crashes			[1] 15.8	$55,000	=	$ 866,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		75%	15.8	All Crash Types			
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes	1	<==Total Fatal & InjA Crashes			[1] 1.0	$1,359,000	=	$ 1,359,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		100%	1.0	All Crash Types			
Countermeasure 2	No		0%	0.0				
Countermeasure 3	No		0%	0.0				
Countermeasure 4	No		0%	0.0				
Countermeasure 5	No		0%	0.0				

36 <==Crashes **Total Crash Value for** 60 Months = $ 2,362,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO[3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury[4]		
Interstate or Freeway	$38,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury[4]		
Interstate or Freeway	$894,000	$1,282,000
Other Highway	$880,000	$1,359,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 472,000

Estimated Project Cost = $ 16,248,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

B/C Ratio = $ 472,000 x [2] 13.59 / $ 16,248,000 = **0.39**

Notes

1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs," T 7570.2, October 31, 1994, updated to 2001 dollars with GDP implicit price deflator.

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OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: **INH 5** Region: **2** Date: **6/2/07**

Project on State Highway

Route Number: **22** Hwy Name: **WILLAMINA-SALEM** MP From: **MP 20.27** to: **MP 20.61**

Road Character: **RURAL** Facility Type: **OTHER HIGHWAY**

County: **POLK** City: **Out side Salem UBG** Crash Data From: **8/1/1999** to: **7/31/2004**

Project Description: **Replace intersection with partial cloverleaf interchanges**

Prepared By: **Haregu Nemariam** Title: **Transportation Engineer**

Type of Target Crashes	Total Crashes & Countermeasure ID No.	Number of Target Crashes			A Number of Preventable Crashes	B Economic Value per Crash		A*B Total Economic Value
PDO Crashes	**14**	<---Total PDO Crashes			10.5	$13,000	=	$ 137,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		75%	**10.5**	All Crash Types			
Countermeasure 2	No		0%	**0.0**				
Countermeasure 3	No		0%	**0.0**				
Countermeasure 4	No		0%	**0.0**				
Countermeasure 5	No		0%	**0.0**				
Moderate (Injury B) and Minor (Injury C) Injury Crashes	**21**	<---Total Injury B&C Crashes			15.8	$55,000	=	$ 866,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		75%	**15.8**	All Crash Types			
Countermeasure 2	No		0%	**0.0**				
Countermeasure 3	No		0%	**0.0**				
Countermeasure 4	No		0%	**0.0**				
Countermeasure 5	No		0%	**0.0**				
Fatal and Severe (Injury A) Injury Crashes	**1**	<---Total Fatal & Inj A Crashes			1.0	$1,359,000	=	$ 1,359,000
	ID No.				Type of Crash Prevented			
Countermeasure 1 Construct Grade Separation	37.0		100%	**1.0**	All Crash Types			
Countermeasure 2	No		0%	**0.0**				
Countermeasure 3	No		0%	**0.0**				
Countermeasure 4	No		0%	**0.0**				
Countermeasure 5	No		0%	**0.0**				

36 <---Crashes **Total Crash Value for** 60 Months = $ 2,362,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 472,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO [3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury [4]		
Interstate or Freeway	$38,000	$51,000
Other State Highway	$41,000	$55,000
Fatal and Severe (Injury A) Injury [4]		
Interstate or Freeway	$604,000	$1,352,000
Other Highway	$680,000	$1,359,000

Estimated Project Cost = $ 18,932,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

Uniform Series Present Worth Factor (4%)	
10 years	20 years
8.11	13.59

B/C Ratio = $ 472,000 x [2] 13.59 / $ 18,932,000 = **0.34**

Notes

1. Composite crash reduction factor calculated if more than one countermeasure is applied.
2. Select a PWF for the life of countermeasure. See instructions.
3. PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4. Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994 updated to 2001 dollars with GDP implicit price deflator.

OREGON DEPARTMENT OF TRANSPORTATION
HAZARD ELIMINATION PROGRAM
BENEFIT/COST ANALYSIS WORKSHEET

Project Name: INH 6 Region: 2 Date: 5/22/07

Project on State Highway

Route Number: 22 Hwy Name: WILLAMINA-SALEM MP From: MP 20.27 to MP 20.61

Road Character: RURAL Facility Type: OTHER HIGHWAY

County: POLK City: Out side Salem UGB Crash Data From: 8/1/1999 to 7/31/2004

Project Description: Replace intersection with diamond interchange that includes westbound to southbound loop off-ramp from OR 22

Prepared By: Haregu Nemariam Title: Transportation Engineer

Type of Target Crashes		Total Crashes & Countermeasure ID No.	Number of Target Crashes			A Number of Prevented Crashes	B Economic Value per Crash		A x B Total Economic Value
PDO Crashes		14	<==Total PDO Crashes			10.5	$13,000	=	$ 137,000
		ID No.				Type of Crash Prevented			
Countermeasure 1	Construct Grade Separation	37.0		75%	10.5	All Crash Types			
Countermeasure 2		No		0%	0.0				
Countermeasure 3		No		0%	0.0				
Countermeasure 4		No		0%	0.0				
Countermeasure 5		No		0%	0.0				
Moderate (Injury B) and Minor (Injury C) Injury Crashes		21	<==Total Injury B&C Crashes			15.8	$56,000	=	$ 866,000
		ID No.				Type of Crash Prevented			
Countermeasure 1	Construct Grade Separation	37.0		75%	15.8	All Crash Types			
Countermeasure 2		No		0%	0.0				
Countermeasure 3		No		0%	0.0				
Countermeasure 4		No		0%	0.0				
Countermeasure 5		No		0%	0.0				
Fatal and Severe (Injury A) Injury Crashes		1	<==Total Fatal & InjA Crashes			1.0	$1,359,000	=	$ 1,359,000
		ID No.				Type of Crash Prevented			
Countermeasure 1	Construct Grade Separation	37.0		100%	1.0	All Crash Types			
Countermeasure 2		No		0%	0.0				
Countermeasure 3		No		0%	0.0				
Countermeasure 4		No		0%	0.0				
Countermeasure 5		No		0%	0.0				

36 <==Crashes **Total Crash Value for** 60 Months = $ 2,362,000

Comprehensive Economic Value per Crash		
Highway/Street Type	Urban	Rural
PDO[3]		
All facilities	$13,000	$13,000
Moderate (Injury B) and Minor (Injury C) Injury[4]		
Interstate or Freeway	$38,000	$51,000
Other State Highway	$41,000	$56,000
Fatal and Severe (Injury A) Injury[4]		
Interstate or Freeway	$694,000	$1,262,000
Other Highway	$688,000	$1,359,000

Annual Benefits = Total Crash Value / Total Months / 12 = $ 473,000

Estimated Project Cost = $ 18,645,000

B/C Ratio = Annual Benefits X Present Worth Factor (10 or 20 years) / Estimated Project Cost

Uniform Series Present Worth Factor (PWF)	
10 years	20 years
8.11	13.59

B/C Ratio = $ 473,000 x 13.59 / $ 18,645,000 = **0.34**

Notes

1 Composite crash reduction factor calculated if more than one countermeasure is applied.
2 Select a PWF for the life of countermeasure. See instructions.
3 PDO value is $6,500 per crash adjusted with an under reporting factor of 2.0. National Safety Council, 2000 estimates of value per crash.
4 Economic costs per crash are calculated using 1998-2000 Oregon crash data and FHWA's Technical Advisory "Motor Vehicle Accident Costs, T 7570.2, October 31, 1994" updated to 2001 dollars with GDP implicit price deflator.

APPENDIX J

OR 22/51 Build Alternatives
Future Interchange Operations Analysis

Appendix J
OR 22/OR 51 Interchange Operations

Build Alternatives

Operations analyses were performed at three grade separated interchange forms for the OR 22/OR 51 intersection. These interchange forms included the following:

- Diamond Interchange – interchange ramps spaced anywhere from 500 feet (tight diamond) to 1000 feet (standard diamond).
- Single-Quadrant PARCLO B – conventional interchange with a westbound exiting loop ramp in the northwest quadrant.
- Dual-Quadrant PARCLO B – conventional interchange with westbound and eastbound exiting loop ramps in the northwest and southeast quadrants.

Performance Measures

The Highway Design Manual (HDM) outlines specific design performance measures for all new state highway facilities. These standards are in place to ensure the availability of long-term mobility along important road corridors and vary according to functional classification, location, and role within the overall highway system. According to the HDM, the 20-year design mobility standard for the OR 22/OR 51 ramp terminal intersections is a volume to capacity ratio of 0.60.

Diamond Interchange Operations

Interchange Forecast Volumes

Figure J-1 illustrates a preliminary layout of the Diamond Interchange Alternative. To assess the performance of this interchange alternative, forecast 2030 30th highest hour volumes were projected at the interchange ramp terminals assuming the potential limited access characteristics of OR 22. Two sets of interchange ramp terminal volumes were utilized in this performance assessment. The first set of volumes assumes that there would be no connection between OR 22 and Doaks Ferry Road (herein referred to as the "No Doaks Ferry Connection" scenario. Under this scenario, it is assumed that the end of Doaks Ferry Road would be rerouted onto one of the north side frontage road alternatives where access to OR 22 would then occur via the OR 22/OR 51 interchange. The second set of volumes assumes that there would continue to be access between OR 22 and Doaks Ferry Road; however the intersection would be modified to right-in/right-out/left-in movements only (herein referred to as the "Limited Doaks Ferry Connection" scenario. Both sets of interchange ramp terminal volumes are summarized in Figure J-1. As shown in the figure, the elimination of the OR 22/Doaks Ferry Road intersection has the potential to add a significant amount of traffic to the OR 22/OR 51 interchange, particularly that portion of OR 22 traffic with an origin/destination located west of the OR 22/OR 51 intersection.

Based on the 0.60 design mobility standard, various diamond interchange lane configuration and traffic control alternatives were evaluated to determine how the interchange ramps would perform under the projected 2030 future volume forecasts. Base lane configuration scenarios at the ramp terminal intersections included separate left- and right-turn lanes for each of the interchange off-ramps, a single through travel lane for OR 51, and separate left- or right-turn lanes along OR 51 at the ramp terminal intersections. The results of the operations analysis are summarized in the following paragraphs.

Unsignalized Ramp Terminal Operations

As unsignalized ramp terminal intersections, Figure J-1 illustrates that the critical left-turn movements from both the eastbound and westbound off-ramps are forecast to operate over capacity under the "No Doaks Ferry Connection" scenario. However, under the "Limited Doaks Ferry Connection" scenario, the westbound left-turn movement from the westbound off-ramp is forecast to operate at a volume to capacity ratio of 0.93. While operating under capacity, this intersection is still forecast to exceed the 0.60 design mobility standard by a considerable margin. As such, a planning level analysis of the diamond interchange configuration indicates that the interchange ramp terminals cannot operate as unsignalized intersections and still meet the design mobility criteria.

Based on the results of the unsignalized operations, a planning level signal warrant analysis was conducted under the "No Doaks Ferry Connection" and "Limited Doaks Ferry Connection" forecast traffic volume scenarios. From this analysis, it was found that only the eastbound ramp terminal would meet the preliminary signal warrant under the "No Doaks Ferry Connection" scenario. As a result of these findings, ODOT's TPAU unit encouraged the investigation of alternative ramp terminal treatments. One such treatment involves the use of roundabouts as the ramp terminal intersections.

Diamond Interchange Preliminary Signal Warrant Summary

Intersection	Meets ODOT's Preliminary Traffic Signal Warrant?
"No Doaks Ferry Connection" Scenario	
Westbound Ramp Terminal	No
Eastbound Ramp Terminal	Yes
"Limited Doaks Ferry Connection" Scenario	
Westbound Ramp Terminal	No
Eastbound Ramp Terminal	No

Roundabout Operations

Based on the results of the unsignalized operations, the interchange ramp terminals were investigated under the assumption that they could be developed as roundabout intersections. Assuming a single lane roundabout as shown in Figure J-1, the westbound roundabout approach to the westbound off-ramp terminal is forecast to operate over capacity under the "No Doaks

Ferry Connection" scenario. Under the "Limited Doaks Ferry Connection" scenario, the operations would improve significantly for this same approach and operate under capacity.

Diamond Interchange Operations Summary

As shown in the operations analysis, the eastbound and westbound ramp terminals (as unsignalized intersections) do not have sufficient capacity to systematically accommodate future 2030 demand under the "No Doaks Ferry Connection" and "Limited Doaks Ferry Connection" scenarios. Operations improve assuming roundabouts at the ramp terminals, however the westbound ramp terminal is still forecast to operate over capacity. In general, the diamond interchange configuration is unable to efficiently accommodate the heavy westbound to southbound and eastbound to northbound demand. As such, alternative interchange configurations were investigated as outlined in the following sections.

Single Quadrant PARCLO B Operations

Figure J-2 illustrates a preliminary layout of the Single Quadrant PARCLO B Interchange Alternative. This alternative would provide for a westbound exiting loop ramp in the northwest quadrant of the interchange with conventional exit/entrance ramps serving the other interchange movements. To assess the performance of this interchange alternative, forecast 2030 30th highest hour volumes were estimated at the interchange ramp terminals. As with the diamond interchange, two sets of interchange ramp terminal volumes were developed for this interchange alternative that reflect the "No Doaks Ferry Connection" and "Limited Doaks Ferry Connection" scenarios. Both sets of interchange ramp terminal volumes are summarized in Figure J-2.

Unsignalized Operations

With the addition of the westbound exiting loop ramp, Figure J-2 illustrates that the critical right-turn movement from the westbound off-ramp would operate at a volume to capacity ratio of 0.74 under both the "No Doaks Ferry Connection" and "Limited Doaks Ferry Connection". Although this movement would not meet the 0.60 design mobility standard, this is a substantial improvement compared to the unsignalized diamond interchange terminal. This improvement can be attributed to the loop ramp's ability to more efficiently accommodate the projected west to south demand. As with the diamond interchange scenario, a signal warrant analysis was performed at the single quadrant PARCLO B westbound loop ramp terminal. As shown in the following table, the ramp terminal is not forecast to meet ODOT's preliminary signal warrants. Accordingly, a roundabout operations analysis was performed.

PARCLO B Interchange Preliminary Signal Warrant Summary

Intersection	Meets ODOT's Preliminary Traffic Signal Warrant?
"No Doaks Ferry Connection" Scenario	
Westbound Ramp Terminal	No
"Limited Doaks Ferry Connection" Scenario	
Westbound Ramp Terminal	No

Roundabout Operations

As with the diamond interchange scenario, roundabout treatments were investigated for the single quadrant PARCLO B ramp terminals. As shown in Figure J-2, a single-lane roundabout is forecast to operate under capacity for both of the volume scenarios.

Single Quadrant PARCLO B Operations Summary

As shown in the operations analysis, the westbound exiting loop ramp is better able to accommodate the heavy westbound to southbound demand; however the ramp terminal is still not forecast to meet the 0.60 design mobility standard. Unlike the diamond interchange ramp, a roundabout intersection treatment would operate under capacity.

Dual Quadrant PARCLO B Operations

Figure J-3 illustrates a preliminary layout of the Dual Quadrant PARCLO B Interchange Alternative. This alternative includes westbound and eastbound exiting loop ramps in the northwest and southeast quadrants. To assess the performance of this interchange alternative, forecast 2030 30th highest hour volumes were estimated at the interchange ramp terminals. As with the previous two alternatives, two sets of interchange ramp terminal volumes were developed for this interchange alternative that reflect the “No Doaks Ferry Connection” and “Limited Doaks Ferry Connection” scenarios. Both sets of interchange ramp terminal volumes are summarized in Figure J-3.

Unsignalized Operations

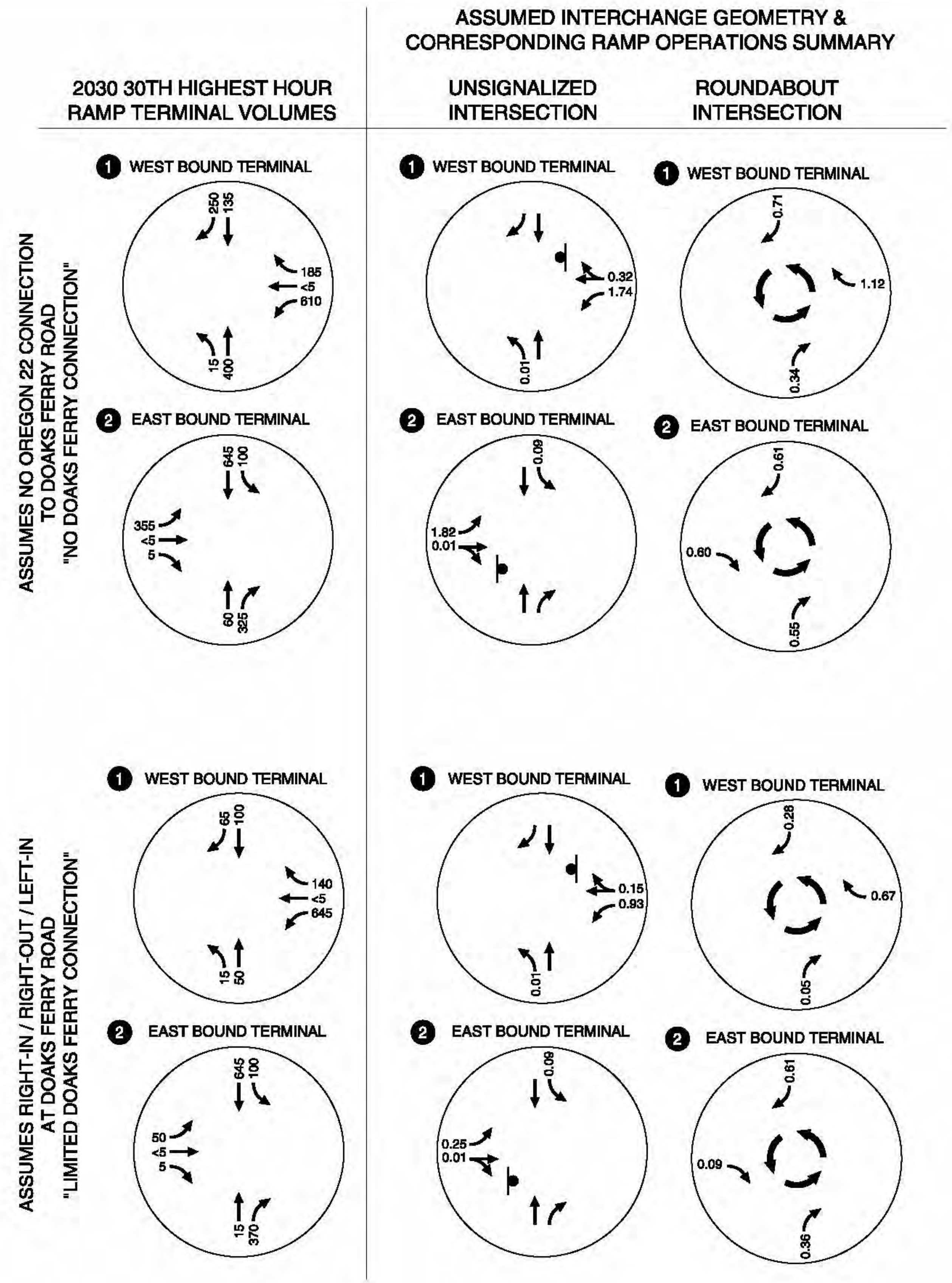
With the addition of the eastbound exiting loop ramp, Figure J-3 illustrates that the critical right-turn movement from the eastbound off-ramp would operate at a volume to capacity ratio of 0.39 under the “No Doaks Ferry Connection” and at 0.05 under the “Limited Doaks Ferry Connection”. Compared to the diamond ramp terminal, this is a substantial improvement that can be attributed to the exiting loop ramp’s ability to more efficiently accommodate the projected east to north demand. Although this terminal would operate at sufficient levels, a roundabout operation was prepared for comparison purposes.

Roundabout Operations

As with the previous two interchange scenarios, the dual quadrant PARCLO B design was investigated as a potential roundabout intersection. As shown in Figure J-3, a roundabout interchange terminal at the eastbound ramp terminal is forecast to operate with sufficient long-term capacity under both of the volume scenarios.

(Figures J-1 through J-3 attached)

(NO SCALE)



(NO SCALE)

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

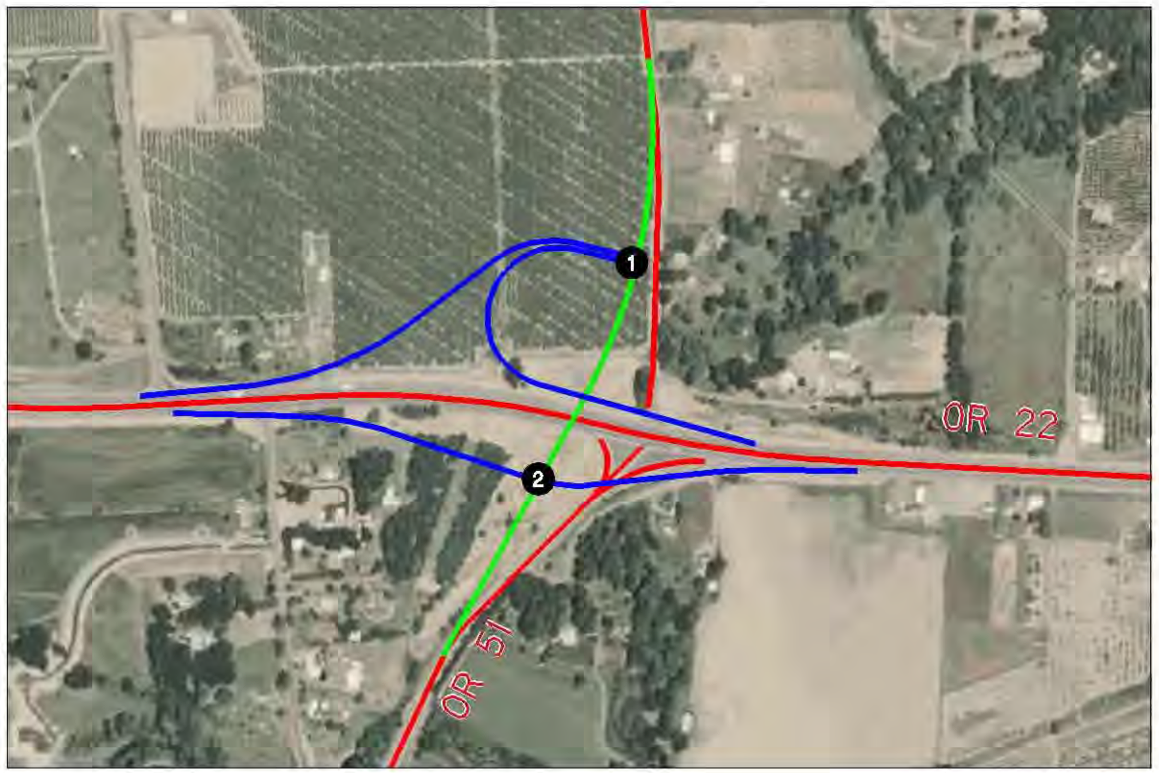
FUTURE 2030 INTERCHANGE OPERATIONS
DIAMOND INTERCHANGE ALTERNATIVE

FIGURE
J-1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

FILE: H:\projfile\8439 – Oregon 22 & Oregon 51 EMP\Traffix\Future\2030.out
MODE: PM Lane Configuration
DATE: 10/19/2007 16:35 BY: mhughart

H:\projfile\8439 - Oregon 22 & Oregon 51 EMP\dwgs\figs\8439Figs2.dwg Nov 12, 2007 - 4:47pm - mhughart Layout Tab: FIG_J-1



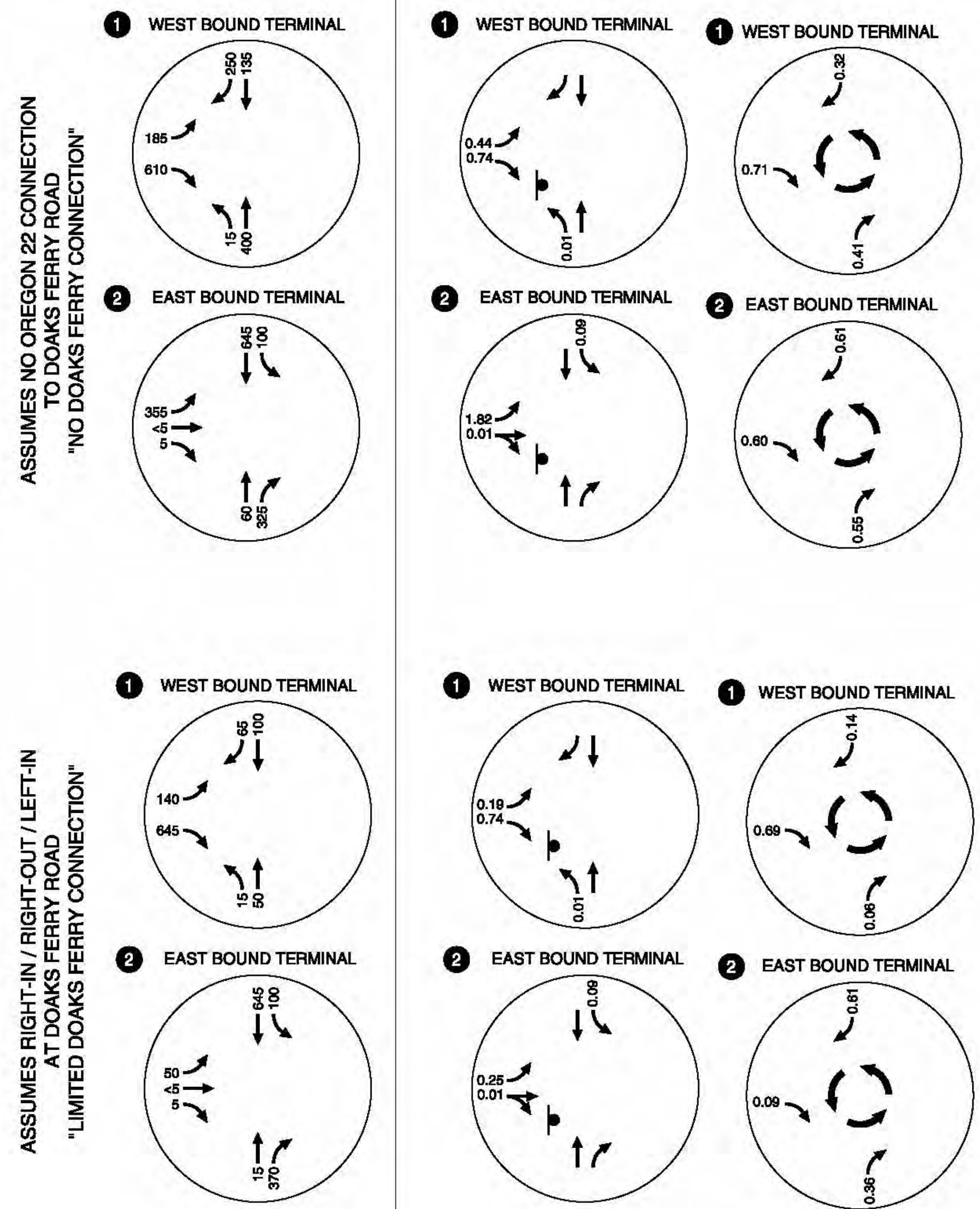
YEAR 2030 30TH HIGHEST HOUR RAMP TERMINAL VOLUMES

ASSUMED INTERCHANGE GEOMETRY & CORRESPONDING RAMP OPERATIONS SUMMARY

UNSIGNALIZED INTERSECTION

ROUNDABOUT INTERSECTION

(NO SCALE)

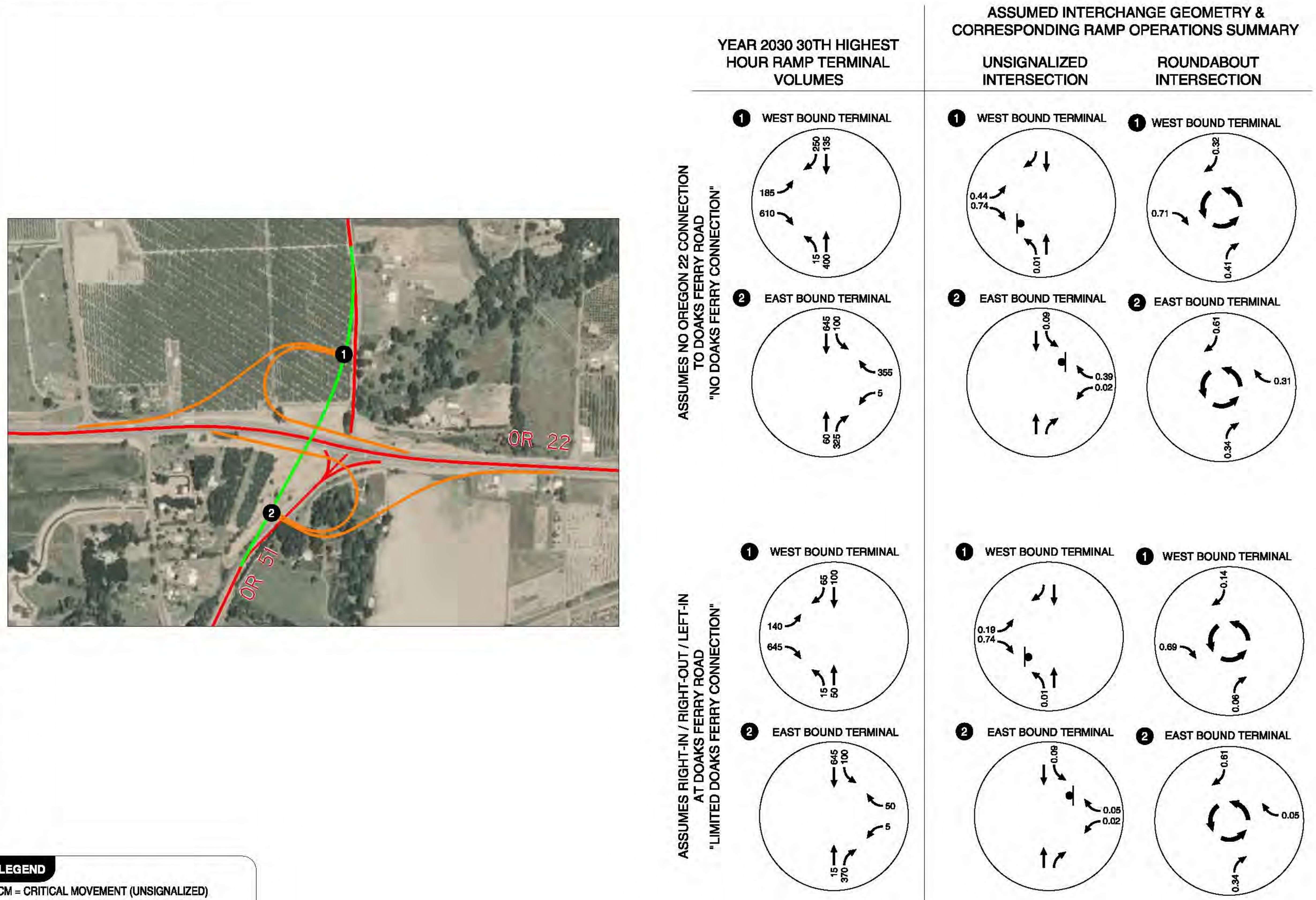


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

FUTURE 2030 INTERCHANGE OPERATIONS
SINGLE QUADRANT PARCLO-B INTERCHANGE ALTERNATIVE

FIGURE J-2



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

FUTURE 2030 INTERCHANGE OPERATIONS
DUAL-QUADRANT PARCLO-B INTERCHANGE ALTERNATIVE

FIGURE J-3

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

FILE: H:\projfile\8439 – Oregon 22 & Oregon 51 EMP\Traffix\Future\2030.out
MODE: PM Lane Configuration
DATE: 10/22/2007 10:46 BY: mhughart

H:\projfile\8439 - Oregon 22 & Oregon 51 EMP\dwgs\figs\8439Figs2.dwg Nov 12, 2007 - 4:47pm - mhughart Layout Tab: FIG_J-3

APPENDIX K

Stakeholder Meetings and Open House Summaries

Previous Public Involvement Efforts for OR 22/51

PREPARED FOR:	Dan Fricke/ODOT Region 2
PREPARED BY:	Brandy Steffen
COPIES:	Larry Weymouth/CH2M HILL
DATE:	May 14, 2007

The purpose of this memo is to summarize the previous efforts and work performed by ODOT for the OR 22/51 Expressway Management Plan (EMP) from Doaks Ferry Road to Greenwood Road. Included in this memo:

- Timeline of previous outreach activities
- Stakeholder information from previous projects
- Printed materials, including project materials and news articles about the previous projects

Timeline

Year	Activity
Project 22: Highway 22/51 Interchange Implementation Strategy	
June 2005	No known public involvement activities by time of project delivery concepts and strategy report. Mentions using information from a September 2004 public hearing.
OR Highway 22 Expressway Management Plan	
September 30, 2004	Public Open House to present alternatives and gather public comments (OR 22 from Doaks Ferry to Greenwood Road)
OR Highway 18/22 Safety Projects	
Spring 2002	Develop Purpose and Need/Problem Statement
November 7, 2002	Public hearing on plans to improve Highway 18/22 from Steel Bridge Road to the Van Duzer Corridor. Environmental assessment of Highway 18/22.
Willamina to Salem Corridor Oregon Highway Route 22 Project	
January 1996	Final plan is published
May 17, 1995	Open House to discuss the draft Strategy. Held from 4:30 – 7:30 at the Willamina Middle School.
May 16, 1995	Open House to discuss the draft Strategy. Held from 4:30 – 7:30 at the Walker School Cafeteria.
May 16, 1995	Open House to discuss the draft Strategy. Held from 11:30 am – 1:00 pm at the ODOT Region 2 District Office.
May 15, 1995	Open House to discuss the draft Strategy. Held from 4:30 – 7:30 pm at the Polk County Fair Grounds.

May 1995	Ad placed in Itemizer Observer and Statesman Journal inviting the public to attend a series of open houses to discuss the draft Strategy.
May 1995	A newsletter was mailed to announce the May open houses and provide information on the results of the previous open houses and project's process (additional information not available).
January/February 1995	Open Houses held (additional information not available). The May newsletter states that over 250 people commended on the project, through various mediums.
February 1995	Ads published in the Polk County Itemizer Observer, Statesman Journal, and Goal Latino (in Spanish) soliciting comments on the project. Questions included travel direction, travel mode, major concerns, and joining the mailing list
January 1995	A newsletter was mailed that included an introduction to the project and asked basic questions that were repeated in ads run during February 1995.

Stakeholder Information

Name	Organization	Contact Information	Collected From
	Andy's Fruit Stand	5152 Salem-Dallas Hwy. NW Salem OR 97304 503-362-1363	Other Contacts (October 2001 or unknown dates)
	Bobcat of Salem	5135 Salem-Dallas Hwy. NW Salem, OR 97304 503-566-7172	Other Contacts (October 2001 or unknown dates)
	Brunk House	5705 Salem-Dallas Hwy. NW Salem, OR 97304 503-371-8586	Other Contacts (October 2001 or unknown dates)
	Capital Manor Retirement Center	1955 Salem-Dallas Hwy. NW Salem, OR 97304 503-362-4101	Other Contacts (October 2001 or unknown dates)
	Chevron	5322 Salem-Dallas Hwy. NW Salem, OR 97304 503-365-0557	Other Contacts (October 2001 or unknown dates)
	Classic Cabinets	2625 Salem-Dallas Hwy. NW Salem, OR 97304 503-378-7301	Other Contacts (October 2001 or unknown dates)
	Confederated Tribes of Grand Ronde	PO Box 39 Grand Ronde, OR 97347	Highway 22W Corridor Planning Citizens Advisory Group
	Confederated Tribes of the Grand Ronde		Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
	Cruisen Classics	2655 Salem-Dallas Hwy. NW Salem, OR 97304 503-378-7883	Other Contacts (October 2001 or unknown dates)
	Eola Bend RV Park	4700 Salem-Dallas Hwy. 22 Salem, OR 97304	Other Contacts (October 2001 or

		503-364-7714	unknown dates)
	Eola Trailer Park	3485 Salem-Dallas Hwy. NW Salem, OR 97304 503-364-9482	Other Contacts (October 2001 or unknown dates)
	Fisher Implement Co., Inc.	111 50th Avenue NW Salem, OR 97304 503-581-5033	Other Contacts (October 2001 or unknown dates)
	Knorr Steel Framing Systems	5073 Salem-Dallas Hwy. NW Salem, OR 97304 503-371-8038	Other Contacts (October 2001 or unknown dates)
	Leisureland Homes, Inc.	2535 Salem-Dallas Hwy. NW Salem, OR 97304 503-399-0127	Other Contacts (October 2001 or unknown dates)
	McCullough Roofing	5153 Salem-Dallas Hwy. NW Salem, OR 97304 503-363-1968	Other Contacts (October 2001 or unknown dates)
	Oak Knoll Golf Course	6335 Salem-Dallas Hwy. 22 Salem, OR 97304 503-378-0344	Other Contacts (October 2001 or unknown dates)
	Oregon Department of Administrative Services		Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
	Pentacle Theater	324 52nd Avenue NW Salem, OR 97304 503-364-7121	Other Contacts (October 2001 or unknown dates)
	Pipe, Inc of Salem	5032 Salem-Dallas Hwy. NW Salem, OR 97304 503-585-7350	Other Contacts (October 2001 or unknown dates)
	Restlawn Funeral Home and Cemetery	201 Oak Grove Road NW Salem, OR 97304 503-585-1373	Other Contacts (October 2001 or unknown dates)
	Robinson Well Drilling and Pumps, Inc.	4520 Salem-Dallas Hwy. NW Salem, OR 97304 503-371-1844	Other Contacts (October 2001 or unknown dates)
	Salem Youth Commission		SKATS Committee (August 2000)
	Salem-Keizer School District		Salem Joint Advisory Subcommittee on Transportation (JASC) (August 2000)
	SAMTD Senior and Disabled		SKATS Committee (August 2000)
	Touch of Mink	2485 Salem-Dallas Hwy. NW Salem, OR 97304 503-399-0127	Other Contacts (October 2001 or unknown dates)
	Valley Recycling and Disposal	2515 Salem-Dallas Hwy. NW Salem, OR 97304 503-585-4300	Other Contacts (October 2001 or unknown dates)

	West Salem Foursquare Church	4750 Salem-Dallas Hwy. NW Salem, OR 97304 503-391-4346	Other Contacts (October 2001 or unknown dates)
	Westside Driving Range	6050 Highway 22 Salem, OR 97304 503-364-3615	Other Contacts (October 2001 or unknown dates)
	Westside Mini-Storage	2401 Salem-Dallas Hwy. Salem, OR 97304 503-585-0285	Other Contacts (October 2001 or unknown dates)
Airport Supervisor	McNary Field	2990 25th Street SE Salem, OR 97302	Highway 22W Corridor Planning Citizens Advisory Group
Al Barnhill	Central School District	1610 Monmouth Independence, OR 97351	Highway 22W Corridor Planning Citizens Advisory Group
Ann Gavin Sample, Chair	City of Salem Councilor		Salem Joint Advisory Subcommittee on Transportation (JASC) (August 2000)
Barbara Michels	West Salem Neighborhood Association	355 Kingwood Avenue NW Salem, OR 97304	Highway 22W Corridor Planning Citizens Advisory Group
Bart McElroy	School District		Policy Committee (August 2000)
Bill Lahmann, Manager Customer Relations	US Postal Service	PO Box 14000 Salem, OR 97309	Highway 22W Corridor Planning Citizens Advisory Group
Bill Smaldone	City of Salem Councilor		Salem Joint Advisory Subcommittee on Transportation (JASC) (August 2000)
Bob Newton	City of Keizer		Policy Committee (August 2000)
Bob Royer	Marion County	3599 Dogwood Drive S Salem, OR 97302 503-362-3502	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Charla Richards-Kreitzberg	South Salem Neighborhood Association	3733 Dogwood Drive S Salem, OR 97302	Highway 22W Corridor Planning Citizens Advisory Group
Charley Waters	Salem Neighborhoods Inc.		Salem Joint Advisory Subcommittee on

			Transportation (JASC) (August 2000)
City Manager	City of Independence	PO Box 7 Independence, OR 97351	Highway 22W Corridor Planning Citizens Advisory Group
Councilor Ken Woods, Jr.	City of Dallas	1130 Main Street Dallas, OR 97338	Highway 22W Corridor Planning Citizens Advisory Group
Craig Hanneman	Polk County Business	4350 Gibson Road Salem, OR 97304 503-362-5812	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Dale Peterson, President	HUT Development Corporation	4800 Salem-Dallas Hwy. 22 Salem, OR 97304 503-364-0506	Other Contacts (October 2001 or unknown dates)
Dan Voigt	Voigt Paving	3574 Eola Drive NW Salem, OR 97304 503-364-7783	Other Contacts (October 2001 or unknown dates)
Dave Bishop	ODOT		Policy Committee (August 2000)
Dave Haugeberg	Yamhill County	PO Box 480 McMinnville, OR 97128 503-472-5141	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Dave Kittrell	BPA	2715 Tepper Lane Keizer, OR 97303 503-392-2071	Other Contacts (October 2001 or unknown dates)
David Schuerman	Rickreall Derry Area Advisory Committee	503-623-7567	Other Contacts (October 2001 or unknown dates)
Deane Funk	Salem Chamber of Commerce	4245 Kale Street NE Salem, OR 97305	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Dennis Kilfiol	Salem Area Mass Transit District Senior and Disabled Consumer Advisory Committee	1362 Moonbeam Court NW Salem, OR 97304 503-585-0320	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Dennis Koho	Salem-Keizer Area Transportation Study Policy Committee	1142 Larchwood Street NE Keizer, OR 97303 503-393-2906	Policy Committee (August 2000)
Denny Nielsen	Salem Hospital	665 Winter Street SE Salem, OR 97309	Highway 22W Corridor Planning Citizens Advisory Group
Doris Heavner	City of Salem Citizens Advisory Traffic	3895 Ash Avenue SE Salem, OR 97302	Willamette River Crossing Capacity

	Commission	503-585-2660	Study Task Force (1999)
Eb Engelmann	Environmental Interest	c/o 355 Capitol Street NE Salem, OR 97310 503-986-3481	Willamette River Crossing Capacity Study Task Force (1999)
Ed Greenwood, Chair	Eola Area Advisory Group	503-399-1092	Other Contacts (October 2001 or unknown dates)
Edward Jochums	Community Services Department, City of Salem	555 Liberty Street SE #300 Salem, OR 97301	Highway 22W Corridor Planning Citizens Advisory Group
Eleanor Miller	Salem Neighborhood Involvement	1675 Atta View Drive S Salem, OR 97302 503-363-7706	SKATS Committee (August 2000)
Garth Larson	West Salem Business Association	3094 Glen Creek Road Salem, OR 97304 503-363-1436	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Gary Anderson	Private Provider		SKATS Committee (August 2000)
Gary Viehdorfer	Salem-Keizer Schools Community Advisory Committee	5564 Sugarplum Street SE Salem, OR 97306 503-378-8689 x 230	SKATS Committee (August 2000)
Gene Miller	Polk County Citizen at Large	320 Fir Villa Road Dallas, OR 97338 503-623-6875	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Gerry Bartz	Salem Downtown Development Advisory Board	3145 Winslow Way NW Salem, OR 97304	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Grafe		1328 Dogwood Drive Woodburn, OR 97071	Highway 22W Corridor Planning Citizens Advisory Group
Greg Gilmor	Salem-Keizer Area Transportation Study, Goods Movement Advisory Committee (Agricultural Interest)	2255 Madrona Avenue SE Salem, OR 97302 503-399-8019	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Janet Taylor	Salem Economic Development Corporation	PO Box 13999 Salem, OR 97309 503-581-8338	SKATS Committee (August 2000)
Jason Smith	J&J Stump and Tree Removal	4305 Salem-Dallas Hwy. NW Salem, OR 97304 503-585-2443	Other Contacts (October 2001 or unknown dates)
Jerry Thompson	Salem Area Transit District Board of Directors		Salem Joint Advisory Subcommittee on

			Transportation (JASC) (August 2000)
Jerry Watson	City of Keizer	1237 Manzanita Way NE Keizer, OR 97303 503-393-8160	Willamette River Crossing Capacity Study Task Force (1999)
John Rich		536 Oregon Avenue NE Salem, OR 97301	Highway 22W Corridor Planning Citizens Advisory Group
John Whittington	Salem Area Transit	3140 Del Webb Avenue NE Salem, OR 97303	Highway 22W Corridor Planning Citizens Advisory Group
Karen Trucke	City of Keizer Neighborhoods	6330 14th Avenue NE Keizer, OR 97303 503-390-1234	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Keith Miller	Senior Trooper, OSP	3710 Portland Road NE Salem, OR 97310	Highway 22W Corridor Planning Citizens Advisory Group
Kelly Munger	City of Salem Planning Commission		Salem Joint Advisory Subcommittee on Transportation (JASC) (August 2000)
Kevin Johnston	SKATS Citizen Advisory Committee	5250 Faircrest Court SE Salem, OR 97306 503-378-3956	Willamette River Crossing Capacity Study Task Force (1999)
Linda Bierly	West Salem Neighborhoods	2308 Ptarmigan Street Salem, OR 97304 503-362-6860	SKATS Committee (August 2000)
Lucia Norris	SKATS Pedestrian Interest	170 Superior Street SE Salem, OR 97302 503-378-4128	SKATS Committee (August 2000)
Margie Monk	Eola Inn	1265 Acacia Drive S Salem, OR 97302	Other Contacts (October 2001 or unknown dates)
Mark Cusick	Keizer Chamber of Commerce	PO Box 21344 Keizer, OR 97307 503-585-1677	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Martin Gage	City of Salem	2115 Bruce Street NE Salem, OR 97303 503-363-0017	Willamette River Crossing Capacity Study Task Force (1999)
Michael Kerr	Capitol Farms, Inc.	9015 Windsor Island Road N Salem, OR 97303	Highway 22W Corridor Planning

			Citizens Advisory Group
Mike Guyer	Marion-Polk Building Industries Association	2865 Grayhawk Court NW Salem, OR 97304 503-362-8676	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Mike Sauerwein, City Manager	City of Sheridan	120 SW Mill Street Sheridan, OR 97378	Highway 22W Corridor Planning Citizens Advisory Group
Nick Fortey	West Salem Traffic Chair		Policy Committee (August 2000)
Orella Chadwick	Tillamook Farm Bureau	7650 Fairview Road Tillamook, OR 97141	Highway 22W Corridor Planning Citizens Advisory Group
Paul Thorp	Polk County Farm Bureau	16750 Airlie Road Monmouth, OR 97361	Highway 22W Corridor Planning Citizens Advisory Group
Phil Cogswell	City of Salem	3537 Homestead Road S Salem, OR 97302 503-585-4650	Willamette River Crossing Capacity Study Task Force (1999)
Phil Walker	Polk County Agriculture	4789 Brush College Road NW Salem, OR 97304 503-585-6437	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Ralph Blanchard		750 James Howe Road Dallas, OR 97338	Highway 22W Corridor Planning Citizens Advisory Group
Randy Franke	Marion County		Policy Committee (August 2000)
Randy Morgan	Salem Area Mass Transit District Senior and Disabled Consumer Advisory Committee	1115 Madison Street NE #513 Salem, OR 97303	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Randy Osman	Polk/Marion-Salem Tourism Alliance	PO Box 1 Falls City, OR 97344	Highway 22W Corridor Planning Citizens Advisory Group
Rich Guadajno	US Fish and Wildlife Service, Baskett Slough	10995 Highway 22 Dallas, OR 97338	Highway 22W Corridor Planning Citizens Advisory Group
Robin Barney	Salem Downtown Association	350 Commercial Street NE Salem, OR 97301 503-371-4000	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)

Robin Roberts	OR Economic Development Department	775 Summer Street NE Salem, OR 97310	Highway 22W Corridor Planning Citizens Advisory Group
Ruyji Torihara	Tokyo International University	PO Box 14040 Salem, OR 97309	Highway 22W Corridor Planning Citizens Advisory Group
Scott Cantonwine	Cascade Warehouse, Inc.	1625 Front Street NE Salem, OR 97303	Highway 22W Corridor Planning Citizens Advisory Group
Sonny Ortiz	Hispanic Representative	3180 Center Street NE Salem, OR 97301 503-399-3440	SKATS Committee (August 2000)
Susan Adams	Bonneville Power Administration	86000 Hwy 99 South Eugene, OR 97405	Other Contacts (October 2001 or unknown dates)
Ted Litchfield	SKATS Bicycle Advisory Committee (BAC)	1483 Brenner Street NE Salem, OR 97301 503-581-3086	SKATS Committee (August 2000)
Terry Kelly	Salem Downtown Development Advisory Board	PO Box 5588 Salem, OR 97304 503-362-3601	Willamette River Crossing Capacity Major Investment Study Task Force (March 1999)
Tim Kirsch		317 Juniper Lane Lyons, OR 97358	Highway 22W Corridor Planning Citizens Advisory Group
Tom Fenel		48278 Kingwood Avenue Mill City, OR 97360	Highway 22W Corridor Planning Citizens Advisory Group
Tom Ritchey	Polk County	Polk County Courthouse Dallas, OR 97338 503-623-8173	Policy Committee (August 2000)
Tony Nielsen	City of Salem Planning Commission		Salem Joint Advisory Subcommittee on Transportation (JASC) (August 2000)
Wayne Lierman, Chair	North Santiam Hwy 22 Association	1015 West Regis Stayton, OR 97383	Highway 22W Corridor Planning Citizens Advisory Group
Wayne Trucke	City of Keizer Neighborhoods		SKATS Committee (August 2000)
Wes Bennett	City of Salem Councilor		Salem Joint Advisory Subcommittee on Transportation

			(JASC) (August 2000)

Printed Materials

OR 22 EXPRESSWAY MANAGEMENT PLAN
FACT SHEET

FUNDING

- Key No. 13188 (obligated in 2003) $3,000,000
- Key No. 13591 (obligation sched. 2009) $1,060,000
- SAFETEA-LU Earmark $2,500,000
  (NOTE: will be put in STIP once it is incorporated into the MTIP)

SCOPE

- Project limits are the railroad overpass east of Rickreall east through Doaks Ferry Road on OR 22 (Willamina-Salem Highway)
- Intent is to develop a plan to implement the "expressway" designation of the highway. This includes access management, intersection improvements, and land use.
- OR 22 in the study area is a high speed expressway with several public and many private access points. Speed and number of accesses have been identified as one of the causes of safety issues in the corridor. There are two top 10% SPIS sites in the study area (OR 22/51 intersection and Doaks Ferry Road intersection)
- Development of a purpose and need/problem statement and a scope of work for the plan was started in **Spring 2002**. The Project Management Team, comprised of ODOT, Polk County, City of Salem, SKATS, and FHWA participated in development of, and approved the scope and problem statement. All agreed the plan was a necessary precursor to any environmental process – especially when we hadn't done enough analysis to identify a project to start an environmental document on.
- A public open house to present alternatives and gather public comments was held in **October 2004**.

SCHEDULE

- Region 2 negotiating scope of work with CH2M-Hill to complete the expressway management plan. Execution of the work order contract expected by **October 15, 2006**
- Public involvement session to present the staff-recommended alternative – **January 2007**
- Draft plan prepared and ready to begin local adoption process – **April 2007** (*this includes adoption by SKATS and incorporation into the RTSP*)
- Adoption of final plan by OTC – **August 2007**

LOCAL INVOLVEMENT

- Polk County Public Works Director has requested to be involved in development of scope of work. We will accommodate that request.

- Polk County, City of Salem, and SKATS staff have been and will continue to be members of the project management team that will guide development of the plan
- Regular updates will be provided to the Polk County Commission and other elected officials through e-mail messages and in-person meetings.

ADDITIONAL TASKS/COSTS

- Environmental Assessment for OR 22/OR 51 interchange
  - Cost estimate - $300,000-$500,000
  - Time to complete – up to 36 months

  (NOTE: cost and time estimate provided by Norm Rauscher/Elton Chang)
- EA can be started anytime after local plan adoption process completed
- IAMP will be prepared concurrently
- Interchange is within the MPO boundary and will, therefore, be subject to financial constraint requirements

We need your help!

The Oregon Department of Transportation (ODOT) is developing an Expressway Management Plan for the portion of Oregon Highway 22 from Doaks Ferry Road to Greenwood Road.

We need your input to determine proposed improvements along Highway 22.

Stop by and learn more about the Expressway Management Plan and tell us what you think.

Transportation Open House for the Highway 22 Expressway Management Plan

Thursday, September 30, 2004

3 p.m. to 7 p.m.

Eola Bend RV Park 4700 Salem-Dallas Highway

Oregon Department of Transportation

If you have any questions or need additional information, please call Dan Fricke, ODOT Project Manager (503) 986-2663 or Mark Fancey, Mid-Willamette Valley Council of Governments (503) 588-6177.

The location of the of the frontage road north of Hwy 22 directly affects me.

I would not favor the “blue alt” because this would run right through my house.

Utilizing Second Street as the frontage road would be ok. The red alternate.

I am also in favor of Hwy 22 access points closer to Doakes Ferry Road going east and west.

Don Schrecher
4535 Salem Dallas Hwy NW
Salem OR 97304

Greenwood: Right in, right out, east and westbound. A thought to consider – when Hwy 51 construction begins if Greenwood is already in place the 4-way access would be a excellent conduit to detour traffic off Hwy 51 to 22. Not that I personal desire such traffic, but would be an excellent facilitator of traffic with great amount of safety to construction workers and drivers alike.

Hwy 51: Folded standard looks good and something that would be in budget with least amount of negative impact to current business and residents. Folded diamond looks very good as well. No doubt a increased cost but would appear to be best long term design to benefit the community as a whole.

Brian & Johanna Hewitt
525 Greenwood Road

I like the red frontage road. Having access to 50th street via the frontage road would be safe for our up and coming (children) drivers. Going to school in West Salem. Or combo of blue and red running in front of our driveway.

Jennifer Pittman
5149 Dallas Hwy NW
Salem

I understand the following options at Greenwood are being considered.

1. No overpass, blocking access from north and south. This option is not workable. It is extremely inconvenant for south Greenwood and completely land locks north Greenwood. There are farms that operate both sides of the Highway and causes them to travel about 10 miles to cross to highway.

2. No change. If live of no value this is ok.

3. Overpass with on, off ramps from east and west. This is Cadillac but off ramp from west and on ramp going east are already serviced on Rickreall Rd.

4. Overpass with exit from the east is workable.

Kenneth B. Quiting
815 Greenwood Rd S
Independence, OR 97351

I'd like to thank you for having this informational meeting. I certainly understand that ODOT can not solve the world problems. But I would like to suggest as a part of the process that current changes in land use and infrastructure be a more active part of the process. These are life changes concepts and need to be more refined than simply ideas or conceptions. Sincerely,

Pat Williams
320 55th Ave NW
Salem OR 97304

I am writing these comments regarding the Greenwood Rd interchange at Hwy 22. While data may not support that this point is a "safety concern", it in truth is such a point. In my opinion, this will bear out once the 22x99 interchange at Rickreall is completed. I strongly support a Greenwood road overpass with in/out access. In addition, emergency/rescue vehicles must have access to both North and South Greenwood Rd.

If ODOT decides to close Greenwood Road to Hwy 22 access or leaves things the way theya re, I would not stay. The current safety issues at this site already have me wondering, "why live here?"

Richard Regan
820 Greenwood Rd
Rickreall OR 97371

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1. North frontage should go straight into interchange. (22/51) not up 52nd and down 55th.

2. East bound ability to turn north on Doaks Ferry is essential.

3. Access at Greenwood is essential in addition to overpass. West bound traffic needs to be able to get over to Rickreall Rd.

Phil Walker
580 Main Street 4780 Brush College Rd NW
Dallas OR 97338 Salem OR 97304

Regarding your plans for a frontage road. I am hoping you can stay close to the hiway. But if not please consider using Aster St NW which is already available. I have lived and worked as a professional horse trainer at Holiday Rose Ranch for over 25 years. I hope to continue with my stable and living until I can no longer function. Please let our neighborhood stay somewhat calm and keep the frontage road form going to 52 or 55th. Sincerely,

Marty Brown
410 55th Ave NW
Salem OR 97304

---

1. For us it might be more attractive to go up Orchard Hts. Rd to get to West Salem than to go thru what could be a confusing use of frontage roads to get on Hwy 22 east bound. If others opted for the same the load on Orchard Hts. Might increase more than it can easily handle. Any estimates made on this scenario?

2. I don't understand how folks on Greenwood Rd can easily get to Hwy 22, either east or west bound. What did I miss?

Dick and Nancy Daniel
980 Oak Grove Rd NW

Appreciate the education but I'm 80 years old and would hope to have the couple of houses considered but will try to understand the costs.

I have a home at 4383 2nd NW in Old town plat of Eola. Entrance now to Hwy 22 form Shaw Street certainly needs help to enter 22 and turn is close to curve of Hwy 22 and appears dangerous. We use the exit to Hwy next to the Schoolhouse as it is westerly from Shaw and gives us a bit more clearance. The alternate access just north of Hwy would be more suitable. Old 2nd Street is very close to our front. Appreciate the opportunity for comment!

Robert Groves
3100 Turner Rd SE #326
Salem OR 97302

We don't like closing 50th Ave at Hwy 22.

Why not make 50th Ave right in and right out only similar to Oak Knoll Golf Course by adding a wider off ramp to 50th.

It's a straight section of Hwy 22 supporting several acres of industrial zoned businesses on 50th plus several subdivisions.

At least have a frontage road form the Hwy 51 interchange back to 50th without having to go way north on 55th St. Good luck.

Bob and Roxanne Weirick
651 50th Ave
Salem OR 97304

Own 4344 Salem Dallas Hwy and 4300 Salem Dallas Hwy.

In favor of access road right next to Hwy22, but this does not give access to Doaks Ferry Rd.

There for you have to build access road below (blue dashes) which does not give access to either 4344 or 4300 Salem Dallas property.

William Jeskey
14620 Kings Valley Hwy
Monmouth OR 97361

---

1. Frontage road looks good

2. must include 55th

Gerald Freeman
3750 Oak Grove Rd
Rickreall OR 97371

Re: North Frontage Road options

I am concerned about the elimination of access to Doakes Ferry north by west bound traffic on Highway 22 as the drawings now indicate. This will force unnecessary traffic of a significant count either to go past Doaks to the proposed new interchange, then proceed east bound to Doaks Ferry, or worse year to the local traffic and other traffic who become familiar with this problem to access areas formerly accessed by this intersection via local West Salem streets atop the hill to the north, sending unnecessary traffic on minor collectors.

The issue of the Willamette Greenway was brought up as a reason for the current approach, viewing the park as "untouchable." I have worked with the Willamette Greenway overlay zone in my work pertaining to Chemeketa's property on Doaks, and it is <u>not</u> unapproachable. Use fo this land would provide a safe ramp from 22 to Doaks north. Another alternative would be to move the structure further west, and not using the park property for the ramp. This would have a minor benefit in moving the exit further from the curve in 22 east of this intersection. Eliminating west bound access to Doaks/forcing traffic to a frontage road 1.5 miles past would be a serious mistake. This land accessed by Doaks will probably be inside the UGB someday, and that would force significantly larger numbers of vehicles on the frontage road. The issue of future growth and its impact on this proposal needs more attention. Not good to force traffic to choose minor collectors.

Jerry Vessello, Director of Facilities
Chemeketa Community College
PO Box 14007
Salem OR 97309-7070
vess@chemeketa.edu
503-399-2590

I believe a clover leaf interchange at 50th, State Farm Road and Hwy 22 with frontage roads to feed from Doaks Ferry Rd, Independence Hwy and 55th would be more economical than 2 interchanges and would serve everyone better.

William l. Knorr
PO Box 5267
Salem OR (7304

See about the possibility of getting rid of the park at Doaks Ferry and Hwy 22.

Dale Gilson

Open House Comments from Stations

GREENWOOD TO OAK GROVE

- Construction of Rickreall Interchange will eliminate gaps. Greenwood safety issue.
- General support for overpass with right in/out access to highway
- Life safety access issues
- Provide full move access at Rickreall Rd. during construction of 99W
- Interchange at Greenwood – close Rickreall Rd.
- Need illumination and better delineation at Greenwood

OAK GROVE TO DOAKS FERRY

- Blue alt – affects stable facility and several residences – 35 year resident

INTERCHANGE OPTIONS OR 22 AT OR 51
[included sketches of options]

- Slide flyover SB and maintain Hwy 51/22 intersection
- Bypass to south from west of Oak Grove to Eola (leave 22 for local access)

E-MAILS FROM ODOT STAFF

-----Original Message-----
From: SWANSON Bill T
Sent: Friday, October 01, 2004 7:39 AM
To: FRICKE Daniel L
Cc: BELLEQUE Kent R; AMADOR Kelly L; JAMES Derryl D
Subject: Hwy 22 open house (Thursday 30th)

Hello Dan,
Here is what I was hearing at the open house.

1. Doaks Ferry rd needed to have access from west Salem (not closing) along with the over crossing structure.

2. No concrete barriers w/o having frontage roads in first (Their concerns are that maint. would start putting in median barrier w/o notice, like they did down the road)

3. Too far out of direction and business would be forced out. (several mention the up coming ballot measure: property rights)

4. The frontage (n side) is not in the right place, takes out too many business and homes, did not want it in there front yard.

Other than few heated discussions on access control, median barrier and out of direction, it went pretty good.

It will be interesting comparing there written comments with what they where voicing.

-----Original Message-----
From: BELLEQUE Kent R
Sent: Friday, October 01, 2004 8:20 AM
To: FRICKE Daniel L
Cc: AMADOR Kelly L; JAMES Derryl D; SWANSON Bill T
Subject: RE: Hwy 22 open house (Thursday 30th)

Dan/Kelly

Noted comments from the interchange station

* Reroute Highway 22 south of the existing Hwy 22 between Oak Grove Road and around the Eola Inn location. This would allow the existing Hwy 22 to serve as the frontage road.

* Move the flyover interchange to the South (along Hwy 51) and keep the intersection of Hwy 51/55th/Hwy 22 open for left turns at Hwy 51 for the moves that are not included in the flyover.

Verbal Comments

* As Bill mentioned there was discussion on not installing a median. I sent the gentleman your way Dan on the median being installed "over night". I am not sure if this is the same person that made the comment at each station but it is a valid comment. In project team meetings we did discussed the short term option of installing a median with u-turns at certain locations, knowing that we would like to do more (interchange) but available dollars may not allow a more longer term solution

* Some people like that flyover, but didn't realized that 55th and other movements were not allowed. Still, one person thought that other roads could be used to accommodate the frontage road and 55th traffic that would not be able to get to the interchange.

* Most people that voiced a preference like either the standard diamond or the folded diamond that fits the traffic projects. There were a couple comments about the impact to the orchards with some of the interchanges.

* A lot of people wanted to know when the project would be built.

From a interchange standpoint, I spent quite a bit of time showing people how the interchange would work and that the interchange options shown fit in with the frontage road concepts at the other station. Some people thought the on and off ramps were the frontage roads. After explaining the interchanges and how they worked, many of my visitors understood how the interchanges fit with the frontage road ideas.

Overall- I though the open house went well. Many people were thankful for the opportunity to come and see what was going on.

Kent

-----Original Message-----
From: AMADOR Kelly L
Sent: Friday, October 01, 2004 7:46 AM
To: SWANSON Bill T; FRICKE Daniel L
Cc: BELLEQUE Kent R; JAMES Derryl D; CALLAWAY Regina A
Subject: RE: Hwy 22 open house (Thursday 30th)

I agree with Bill. I heard a lot about no concrete barriers and a lot of concerns about the barriers being installed without any notice to the public. I also heard people wanting the overpass at Greenwood but with access to the highway.

I thought we had a good meeting and a good turn out. The last time I counted there were over 60 people signed in.

I too am interested in see the comments.

Project Summary Sheet
for the
Highway 22 Expressway Improvement Project
February 16, 2001

The project would include the creation of a divided highway from the Willamette River to Highway 99W (including the Dallas Cutoff). Local roads and frontage roads will funnel local traffic to intersections at Highway 99W, Highway 51, the West Salem interchange near Eola Drive, and a new interchange serving the College Drive area on the western edge of Salem. The project will include the construction of roadway connections to serve local businesses and residential areas.

This action will prevent accidents that frequently occur from turning movements and local traffic entering the highway. A complete list of improvements and the optimal alignments of the local access roads will be fully developed as the project progresses. Based on the preliminary investigations of the corridor, the improvements currently listed are the best option for achieving the project goal of saving lives. Oregon Department of Transportation (ODOT) and stakeholders from the local area are currently developing a Corridor Refinement Plan that will develop improvement scenarios and evaluate them for safety, transportation, and cost effectiveness.

The anticipated improvements include:

- **Centerline Barrier:** Placement of a concrete centerline barrier to prevent accidents due to vehicle crossover into opposing traffic. Removal or revisions of existing accesses to provide connectivity to local roads rather than directly onto the expressway.
- **West Salem Improvements:** Construction of an interchange at a new intersection of Highway 22 and College Drive. Construction of frontage road improvements to make the connections to surrounding neighborhoods. Removal of direct access to the highway from several local streets serving West Salem. Selected improvements to the existing West Salem streets to provide better connectivity between Eola Drive and Wallace Road to Highway 22.
- **Improvements at the intersection of Highway 22 and Highway 51:** Construction of an interchange at the intersection of Highway 22 and Highway 51 including frontage road improvements to make connections to surrounding neighborhoods.
- **Greenwood Road:** Construction of an overpass "fly-over" bridge at Greenwood Road to allow local traffic and farm equipment to safely cross Highway 22.
- **Improvements at the intersection of Highway 22 and Highway 99W:** Construction of an interchange at the intersection of Highway 22 and Highway 99W including the intersection of Highway 22 and Dallas-Rickreall Highway 223 (Dallas Cutoff). Improvements within the community of Rickreall on Highway 99W including the Rickreall Road intersection.

These improvements will reduce life threatening, high-speed, turning movement conflicts by converting these intersections from unsignalized "rural" intersections to "expressway" intersections which are appropriate for the traffic volume.

Thank you for your consideration and support on this critical effort. Questions can be directed to Mike Propes of the Polk County Board of Commissioners 503-623-8173, or Tony Snyder, Polk County Public Works Director at 503-623-9287.

HIGHWAY 22 TASK CHECKLIST

TASKS & SUBTASKS	MY VISION (OF COG WORK)	COMMENTS
in GIS format		
Future Case analysis based on SKATS EMME/2 model in the MPO. 2025 no-build scenario	Yes	Double check with Dorothy, but Dan's assumption is just basic information. Do a quick check with the City/County to see if there are any development proposal in progress, but otherwise do not make any assumptions about what the corridor will look like as far as development. A big box store on Hutmaker's property(City's feel?) No V-Sim
Alternatives Identification	ODOT. COG participates in discussions only	
Alternatives Evaluation	ODOT. COG participates in discussions only	
Plan Packaging (COG Lead)		
Write Plan	COG	
Draft Refinement Plan – 50 black & white copies	COG	
Produce Electronic Version	COG	See I-5 Conditions Report. Mike has the CD. Expectation is a mini-version (less elaborate). Lori & Sandra alerted for a few months from now. Lori has been to school on this. Dan wants a meet with Terry Cole, Mark Fancey and Rob & I to coordinate the Rickreall electronic version. Expect many aerial views. When making up figures (see mapping above) Consider that work will be in PDF format for Adobe Acrobat.
Final --25 color copies	COG	
Adoption	ODOT	We may have to show up at meetings to hold ODOT's hand, and maybe do preliminary findings, but otherwise nothing
Agreement No. 18239 expires on 30 June, 2001		Expect renewal to begin NLT 1 June. Will wait to be surer of what is needed. At this time only a date change is anticipated, so change can be done quickly.

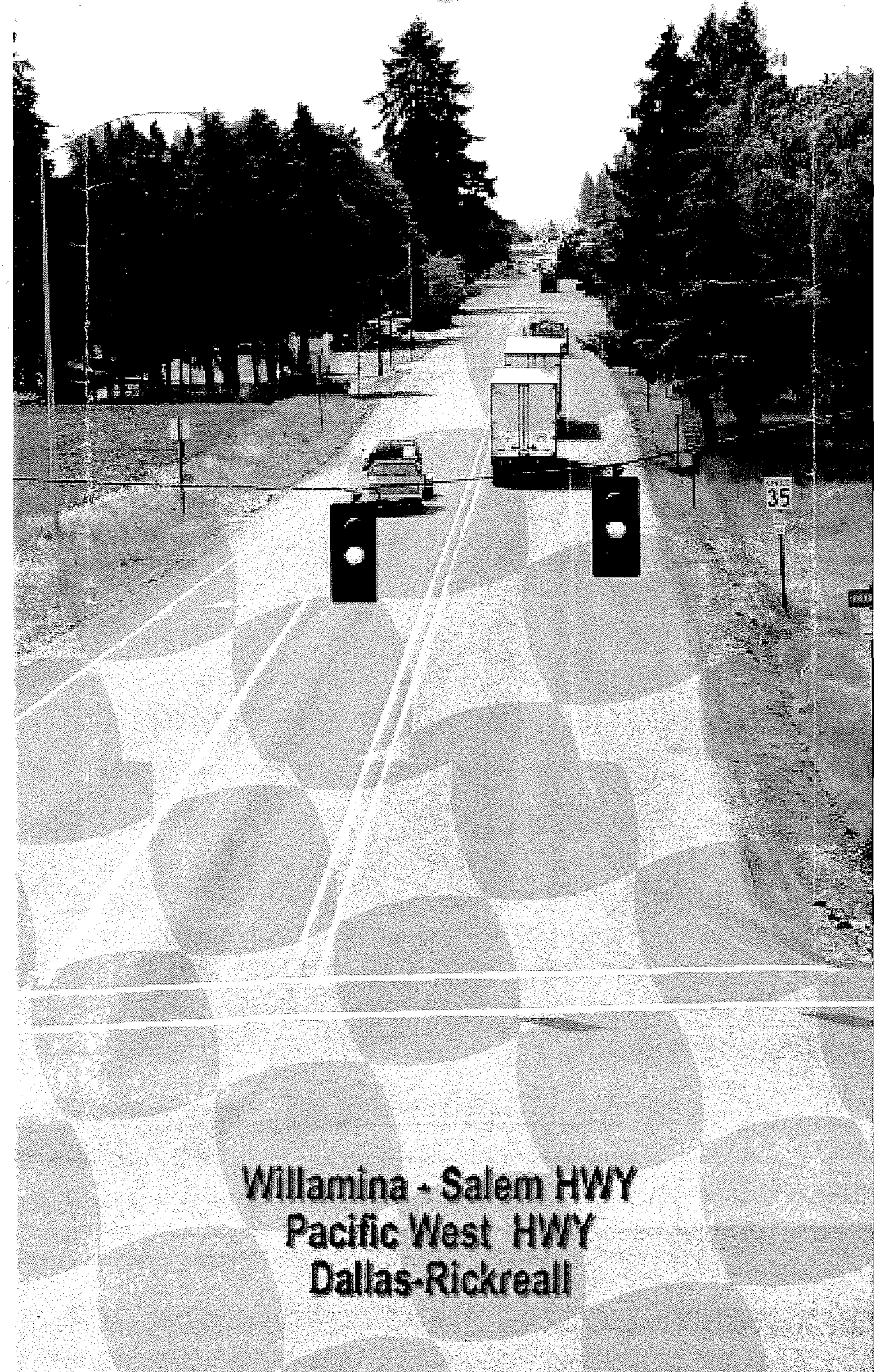
Project Goals

The Technical Advisory Committee also developed goals for the Rickreall Junction project. The goals are based on the Oregon Transportation Plan and the Oregon Highway Plan approved by the state Transportation Commission. Local citizens and the Polk County Board of Commissioners have reviewed these project goals.

- Meet Oregon Highway Plan Mobility Policy to ensure efficient traffic flow.
- Meet Oregon Highway Plan Major Improvement Policy to ensure that the project is properly sized to meet travel demands for the next 20 years.
- Meet Oregon Highway Plan Access Management Policy to the maximum extent possible. This includes controlling highway access and using medians to ensure that intersections and interchanges operate safely and efficiently.
- Meet Oregon Highway Plan Safety Policy.
- Meet ODOT Highway Design Manual standards or agree on design exceptions.
- Minimize impacts on Rickreall and adjacent farm and sensitive lands. Provide for off-highway traffic circulation according to Oregon Highway Plan policy.
- Minimize overall costs including engineering, right of way purchasing and construction.

Notes:

Rickreall Interchange Project



Department of Transportation (ODOT)
Rickreall Junction Interchange Project — Open House Overview June 11, 2002

The Rickreall Interchange project Open House is designed to:

- Show the design options for improving the intersections of Ore. 22 with Ore. 99W and Ore. 223.
- Listen to your concerns and answer your questions about the design options.
- Gather your comments to help ODOT with a final decision about what to design and build.

There are four information stations — one for each design option.

- The stations have pictures and handouts about the interchange design options.
- Please use the handouts to compare the design options as you go from station to station.
- ODOT staff is available at each station to answer your questions.

Please take the time to look at and learn about each option. Then tell us which option you prefer and why.

- After considering all the options, please use a comment form to tell us which you prefer and why you feel it is the best solution for Rickreall and for travelers on Ore. 22, Ore. 99W and Ore. 223.
- Please place your comment form in the comment box before you leave.
- If you prefer, ODOT staff can take notes for you.

Project Background

The Polk County Transportation System Plan identifies Ore. 22 and Ore. 99W as principal arterials (major roads).

- The plan identifies needed road projects. The plan includes building an interchange at the Ore. 22-Ore. 99W intersection and at the Ore. 22-Ore. 223 intersection.
- The Ore. 22 Corridor Strategy developed by ODOT in 1997 also identifies the long-term need for these improvements.

Ore. 22 is the primary route connecting Salem-Keizer and the mid-Willamette Valley to the Oregon coast, including Lincoln City and Tillamook.

- Recreational travelers, industrial and commercial businesses, local farmers and businesses all use Ore. 22.
- The corridor also is a vital link for area residents who need health care and emergency services and for commuting to jobs in Salem and Corvallis.

A Technical Advisory Committee helped to develop an approach for addressing the problems at these intersections. The TAC included local, state, and federal officials. The committee developed the following problem statement:

- "The intersections of Ore. 22 with Ore. 99W and the Dallas Rickreall Highway are experiencing a high number of accidents typically associated with traffic signals and high-speed turning movements on rural highways. Left as is, this problem is expected to worsen as traffic volumes increase. Current traffic volumes exceed Oregon Highway Plan mobility standards. It is expected that traffic volume growth will continue to reduce operational performance, causing operational failure during the 20-year planning horizon. The entire Ore. 22 corridor from Salem to Dallas suffers from current safety problems and will suffer from future safety and mobility problems. The problem is too big to be addressed all at once and must be solved incrementally. The problems at Ore. 22, Ore. 99W and the Dallas-Rickreall Highway, by state and local consensus, are the most immediate of these incremental challenges."

Design Options

ODOT staff met with Rickreall residents and area business owners last year. At that time, the design options that best addressed the identified problems were freeway-type interchanges.

- Many people said they would like to see a traffic signal on Ore. 99W as part of the design. They believe that a signal would cause gaps in traffic using Ore. 99W through town, making it easier to cross or enter the highway.
- Installing a traffic signal at the southern ramp terminal on Ore. 99W originally was considered to address this concern.
- ODOT engineers have since determined that this traffic signal would not meet engineering standards.

A recent development is that a diamond-style design for the Ore. 22-Ore. 99W interchange has been reconsidered and added back to the design options. This is an alternative to looping ramps.

- With a diamond ramp, a traffic signal is justified on the off-ramp from Ore. 22 westbound to Ore. 99W. This signal would be at the ramp north of the interchange.

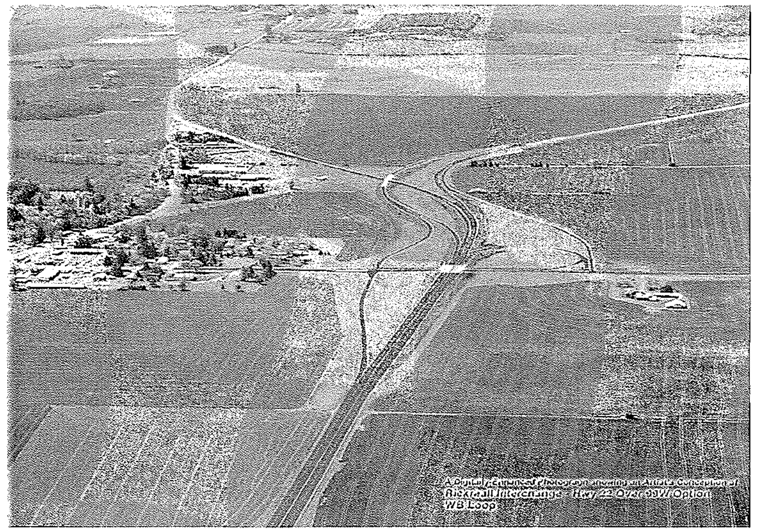
Last year, people also favored designs that carried Ore. 22 over Ore. 99W, rather than having Ore. 99W go over Ore. 22.

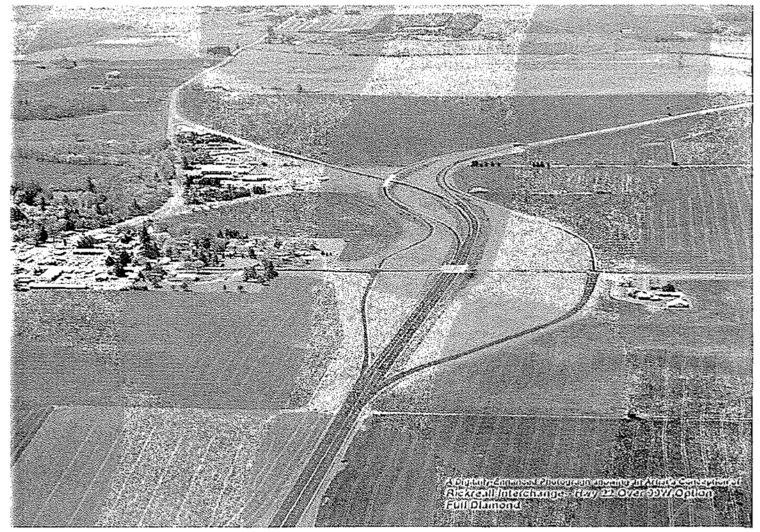
- Building Ore. 99W over Ore. 22 would result in southbound traffic on Ore. 99W approaching Rickreall on a downhill grade.
- ODOT also has determined that construction costs would be lower if Ore. 99W cross over Ore. 22.
- Some cost savings may also be possible with a diamond ramp option for Ore. 99W going over Ore. 22 if the interchange has to be upgraded in the future.

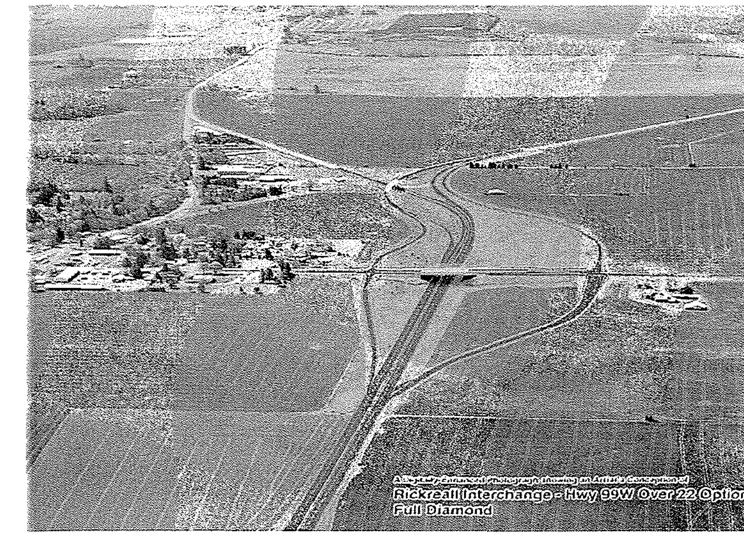
These possible changes in the designs previously presented to the community are shown and described in more detail at each of the information stations.

- Please keep these differences in mind as you consider the merits of each design option.
- Please remember to write your comments and concerns on the comment form and to turn it in before you leave the Open House today.

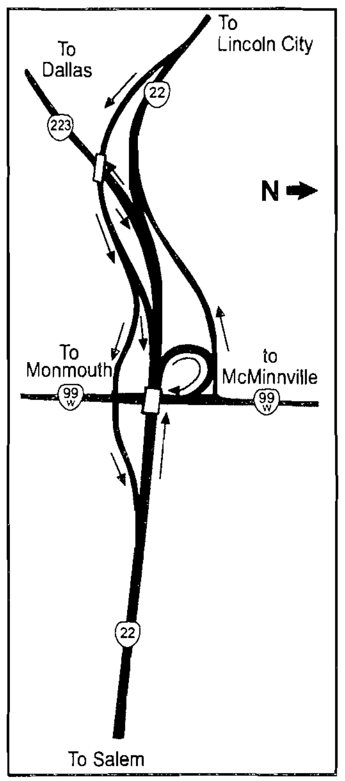
Thank you.





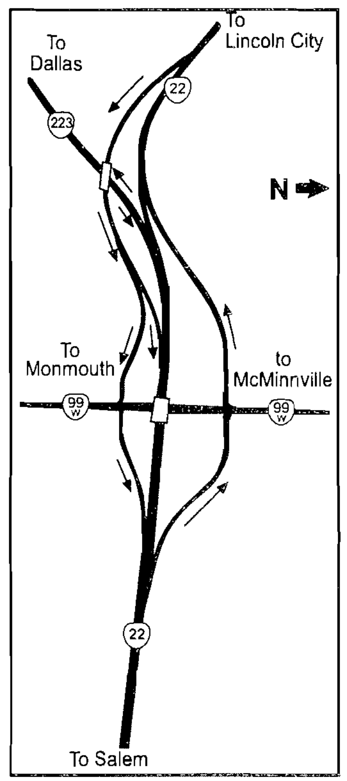


Ore. 22 Over - WB Loop Exit Option



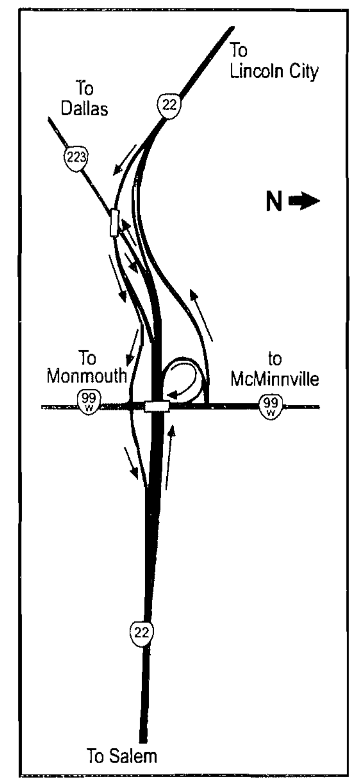
- Ore. 99W stays on its existing grade along its current alignment.
- Ore. 22 is rebuilt to north of its current alignment.
- Parallel deceleration lane and loop exit to Ore. 99W.
- Left exit to Ore. 223, with both Ore. 22 traffic lanes continuing toward coast.
- Two foot narrower median and shoulder widths on Ore. 22.
- Raised median between Church Street and the southern ramp terminal.

Ore. 22 Over - Full Diamond Option



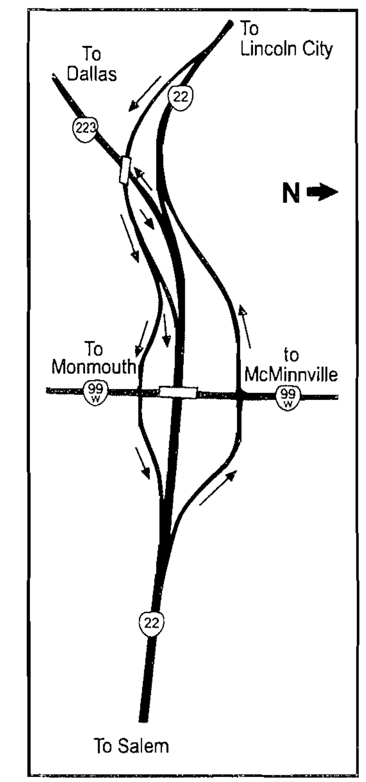
- Ore. 99W stays on its existing grade along its current alignment.
- Ore. 22 is rebuilt to north of its current alignment.
- Two foot narrower median and shoulder widths on Ore. 22.
- Raised median between Church Street and the southern ramp terminal.
- Includes traffic signal at northern ramp terminal.

Ore. 99W Over - WB Loop Exit Option



- Ore. 22 stays on its existing grade along its current alignment.
- Ore. 99W overpass returns to its existing grade at the north edge (approximately) of elementary school .
- Additional design features like landscaping and pedestrian lighting along Ore. 99W are included to help slow down traffic coming into Rickreall from the overpass.
- Raised median from north of the interchange to Church Street.

Ore. 99W Over - Full Diamond Option



- Ore. 22 stays on its existing grade along its current alignment.
- Ore. 99W overpass returns to its existing grade at the north edge (approximately) of elementary school.
- Additional design features such as landscaping and pedestrian lighting along Ore. 99W are included to help slow down traffic coming into Rickreall from the overpass.
- Raised median from north of the interchange to Church Street.
- Includes traffic signal at northern ramp terminal.

All Options

- Improve safety by separating Ore. 22/Ore. 99W and Ore. 22/Ore. 223 traffic movements.
- Interchanges provide enough lane capacity to meet 20- to 25-year traffic demand.
- Provide improved school crossing with center-median pedestrian refuge area, enabling pedestrians to cross street in two stages (crossing just one direction of traffic at a time).
- Pageant Street is closed and converted to a cul-de-sac.
- Primary access to elementary school, Grange, and Mason Lodge will be provided by a new county road running north from Rickreall Road along the eastern community boundary.

The photo enhancements below illustrate the amenities available on the two "99W OVER OPTIONS" above

PMT #2-PROPERTY OWNER CONTACTS BRIEFING

February 23,2001

1. On 14 November 2000; I sent a letter to 31 businesses, 2 groups, and 2 individuals (The PMT has these lists),. A few had incorrect addresses and were remailed, and three individuals have been added since the 14th as a result of neighbor's input. The letter to the Brunk House has been returned twice.

2. The letter mentioned the start of the plan, area under study, that data was being gathered, gave an idea of what type alternatives might be explored with an emphasis on access management, and asked recipients to contact me if they had special requirements they wanted to be sure the designers were aware of.

3. Eight people eventually contacted me, five of who felt they may have special requirements and/or ideas of what was needed. Ttheir comments were all forwarded via e-mail to the Green River Project Management Team. Dale Kittell of BPA and Dan Voight passed on information regarding large vehicle operations. Dean Freeborn had his comments on Greenwood Road. Clyde Aspenwall, Aspenwall Produce & Coffee Place, and Rich Rinehard, Chevron station passed on their concepts for what should not be done. The Pentacle Theater contact, Dave Davis, passed on his name as POC and Phillip Simmons (owns property next to Aspenwall) called with his name and contact information. One other, can't recall who, also called with a correction to his address

4. All of the interested people have been told that when alternative have been developed, and if they affect them, either myself or someone else from the PMT would sit with them one-on-one and discuss the alternative(s) with them. As one fellow said, *"I just want to be sure that I don't come to work one day and find barricades and people starting work, without me knowing about it."* I think that sums up the general sentiment on knowing what is going on. I have guaranteed them, that with the exception of regular type maintenance and repair, that won't happen.

    a. Along this line, I got a very worried call from Aspenwall one day referencing my assurances and concerned about a formally drawn out plan showing an interchange and other changes through his property. Turned out to be the option Tony is submitting to try and get funding for work. I believe Aspenwall is ok with that, now, but am not sure.

5. Generally, the public involvement is proceeding as outlined in the early e-mail suggestions sent to the PMT after our first meeting.

    a. However, there are always other efforts underway that are not directly aligned with the corridor refinement plan, and these inadvertently can cause credibility difficulties. Some of these can simply be discussions with individuals about options, confusion over maintenance, efforts to obtain funding, fatality bandwagon drives (lots of articles/editorials/letters in Polk County newspapers about one meeting. study, or another). I have no infallible solution to preventing any public misconceptions, and, in fact in my opinion they will probably occur regardless of the number of contacts, or public blitz undertaken. It is best to simply remember that for every action there is a reaction , and to expect it.

6. On another aspect of the COG's work. We have made zoning maps for the area under study and provided a set to Erik for reference as needed during design. We also have a list of owners associated with each property, so as to be able to contact them when the time comes. Erik also has this list. The maps are generally no good for inclusion in a future document. It was necessary to make them very large to show the small lots and property that occur as one gets further east of the Hwy. 51intersection. I do have a copy (there are only two sets) with me if anyone is curious about certain areas.

Highway 22 Corridor
Greenwood Road to West Salem Bridgeheads Refinement Study

Draft Public and Stakeholder Involvement Process
10/25/01

Efforts to date:

- Wayne drafted a Public Participation memo on Aug 16, 2000
- Wayne sent out a letter (on COG letterhead) on 14 Nov 2000 to roughly 22 businesses describing the beginning of the study.
- Wayne did some follow-up with people who called him, has done some public outreach to businesses.

Where we go from here:

1. Develop up to 4 alternatives per the 4 segments - Ongoing
    a. Pacific overcrossing to Oak Grove
    b. Oak Grove Road to ODOT Weigh Station
    c. ODOT Weigh Station to PGE Substation
    d. PGE Substation to West Salem Bridgeheads

2. Map them and look for red flags - lots of work left to do
    a. PMT meeting to review this in early December?

3. January SKATS Policy Committee review – they don't meet in December

4. Public showing of initial alternatives (February)
    a. What were showing:
        i. Single line drawings over aerial photos – both feasible and non-feasible
        ii. Do we have separate short-term and long-term concepts?
        iii. ?? Matrix showing feasible and non-feasible evaluation
            1. E.g. Alternative 1.c is not feasible because of topography or wetland encroachment
    b. Locations were maps are posted
        i. Rickreal – Polk County Fairgrounds
        ii. Dallas City Hall
        iii. Post Office – West Salem, other
        iv. Grocery Stores? Roths in West Salem, Aspenwall, other??
    c. Newsletter # 1
        i. Send to 22 businesses on list, Groups, e.g. Polk Commisioners (see 8/16/00 memo for list)
        ii. Property owners – list of several hundred, (but need to find the electronic file)
        iii. Newsletter cannot show all alternatives, so it directs them to the locations

iv. Need to decide layout, text, budget for newsletter
v. Contact: Jaffe. What about Dan Fricke & Tony Snyder?

d. Web Page
   i. Need to decide if we have budget to simply list the locations or actually show the alternatives
   ii. Does web page ask for public input via a form or just an e-mail. E-mail's to Jaffe

5. COG - One-on-one personal visits or small group meetings with Businesses (and other land owners, as needed)
   a. May want Tony or Dan to help with these, at least the initial ones.

Erik needs to be there   Terry Bole [illegible]

6. COG - Summarize Public Comment
   a. Summaries sent to PMT
   b. SKATS Policy Committee meeting to review initial alternatives and public comments

7. ODOT to develop draft recommended improvements for the 4 segments
   a. Short term and long term recommendations
   b. SOW calls for "functional plans" up to 2 alts. per segment — will be in [illegible]
      i. Refine layouts
      ii. Operational analysis
      iii. How long for ODOT PD and TPAU to do this? — look in Erik's scope
   c. PMT meeting

8. Public Showing of Draft Refinement Plan Recommendations (April? May?)
   a. New maps (at same locations)
   b. Newsletter #2
   c. Summarize public comment
   d. Work Sessions with:
      i. Polk Commissioners
      ii. Polk Planning Commission
      iii. SKATS Policy Committee
      iv. MWACT
   e. Briefs to:
      i. City of Independence
      ii. Polk County Mayors
      iii. West Salem Neighborhood Association
   f. Salem Staff to brief Salem Council and Commission

9. Final PMT meetings before production of Draft Plan

10. Production of Draft Refinement Plan - COG
    a. Draft plan – 50 copies, black&white format

11. Final Refinement Plan – COG
    a. Final Plan – 25 color copies
    b. Electronic Version on CD

[illegible] Salem + Polk [illegible]

start process to amend TSPs

+ Region Planning Managers
+ Craig Greenleaf

MEMORANDUM

TO: Business Owners and Operators-Highway 22

FROM: Wayne L. Rickert Jr

SUBJECT: Corridor Refinement Planning 14 November 2000

This note is to let you know that the Oregon Department of Transportation is beginning a corridor refinement plan for Highway 22. The corridor refinement process will determine the highway's twenty-year needs and document the solutions needed. The corridor refinement plan is the follow-on step to the interim strategy completed a few years ago. The refinement plan is scheduled to be complete by 1 July 2001.

The portion of the highway covered by the plan is from the overcrossing (by the dairy's lagoon) of the railroad east of the 99W/22 intersection to the west end of Salem's Willamette River bridges.

Soon you will notice crews gathering traffic information to update data on the number of vehicles on the highway and which direction they travel. The information may be gathered a variety of ways; automatic counting with tubes across the highway and/or connecting streets, visual observations, and possible, but not planned at this time, surveys. This is likely to be the only obvious early signs of the planning process.

But, gathering raw traffic data is not the only work underway. Among other tasks, accidents will be analyzed, traffic volumes projected to twenty-years, and congestion analysis accomplished. The highway will be divided into sections for determining solutions to problems, four solution alternatives for each segment will be developed and from those, the preferred solution determined.

So, what can you expect from this plan? Its difficult to predict for every place along the highway, but there are only a limited number of successful ways to solve the kinds of problems the highway has and is expected to have. Based on my experience, I anticipate some of the solutions could involve horizontal sight distance improvements, medians, interchanges, and access management. Horizontal sight distance improvements are those which allow vehicles to see and be seen further away, especially at intersections. Medians are the dividers between opposing traffic. There are traversable medians and non-traversable. Non-traversable prevent crossing over, into or in front of opposing traffic. Interchanges are well known to everyone, and there are different types. Some of these types are relatively inexpensive and used at places with fairly low numbers of entering and exiting traffic. Other are used in areas, usually urban, with high numbers of vehicles.

I want to discuss access management separately because it is anticipated to be a significant part of the work and one which could potentially involve you directly. A few months ago this portion of Highway 22 was designated as an Expressway. Other than Interstates, Expressways have the toughest policies regarding accesses. Access management is the also usually the most inexpensive way to solve accident and some congestion problems. Almost all of you have businesses connecting directly to the highway. The others connect close to the highway by using an intersecting road or street. I would expect that many accesses will be planned to someday be closed, or rerouted. Any that are closed will have to leave some way for getting vehicles to the highway. That is usually accomplished by using a local street system, either existing or by constructing frontage roads. For many of you, this will not be a problem, but for others because of the nature of the business or type of equipment used, it may present difficulties.

If you use large equipment or haul oversized loads please contact me so I can pass on that information to the people who will be developing alternatives. If you have other concerns please let me know of those as well. The folks working on the plan are experienced, and may have ideas about difficulties you will face, but sometimes the difficulties are not obvious or are overlooked. The earlier we are aware of potential pitfalls, the more opportunity we are given to avoided them.

You all drive the highway often so you are aware of the growth in traffic and difficulties getting onto the highway, the increasing accidents, and the need for improvements. But this is a twenty-year plan and the improvements identified during this process will not come quickly. The growing backlog of needed work around the state will cause delays in those that should be done soon, and other improvements are only needed as additional traffic growth occurs.

I do not expect we will have the first set of alternatives for each segment developed until very late winter or early spring. As we identify those alternatives, or are far enough along with them to believe they might affect you, one of the individual working on the project, probably me, will call and make an appointment to discuss the ideas being developed. Often this contact can result in making adjustments which benefit everyone. If there is a preferred person to contact, please let them know of the plan, and pass me their name and how I can reach them.

My address and phone number are on the letterhead. My e-mail is wrickert@open.org

Thank you

MEETING SUMMARY

OR 22 Expressway Management Plan Open House

DATE: December 12, 2007

TIME: 6:00 to 8:00 pm

LOCATION: Polk County Fairgrounds, Arts and Crafts Building

The first public open house for the current phase of the OR 22 Expressway Management Plan was held on Wednesday, November 28, 2007 from 6:00 to 8:00 pm at the Polk County Fairgrounds Arts and Crafts Building. The open house was structured to encourage community members to learn more about the proposed alternatives, which was posted at several stations. Approximately 38 people attended the open house, which had been publicized through a mailing to 95 households in the project vicinity. The open house was also announced to the local media with a press release that was distributed during the second week of November.

The purpose of the open house was to review the previous work that had been completed on the project two years ago and the proposed alternatives for the key intersections along OR 22. The project team also encouraged the public to complete a comment form or write down their thoughts on flip charts which were around the room. The meeting was staffed by members of the consulting team and staff members from ODOT, Polk County, and the Mid-Willamette Valley Council of Governments.

Meeting participants were welcomed at a sign-in table by a staff member and encouraged to complete a comment card before leaving. As community members signed in they were also encouraged to visit the open house stations, which included:

- What to expect tonight
- Background
- Draft Implementation Plan
- Proposed Alternatives

Most attendees appreciated the open house format, but a few asked if there would be a presentation with a question and answer period. Only a few comments were written down onto flip charts:

- Carts - access to Rickreall Road headed west
- Why was golf course given 2 access points (full movement) when Rickreall Road was restricted
- Emergency vehicle access to Rickreall Road
- Out of direction travel to get to properties on Rickreall Road

Comment Form Summary

Comment forms were available to all open house attendees, both at the sign-in table and at a table specifically for filling out comment forms. Nine forms were turned in to project staff at the meeting and one was mailed to project manager Dan Fricke by December 7. Six of the ten forms returned checked that they heard about the open house from the project mailing, the others heard about the event via word of mouth.

1. Where is it hard for you to get onto OR 22? Have you seen any near misses or crashes at these spots?

1.1 Doaks Ferry Road – no accidents

1.2 Mill Street/Shaw Street – Green Thumb Lawn Care is on the south side of Highway 22. We now enter and exit Mill and Shaw Street nose to nose with Lawn Care vehicles.

1.3 OR 22 and 51 Intersection and gas stations along OR 22

1.4 Greenwood Road, Oak Grove Road, and Doaks Ferry Road

1.5 Greenwood Road is used by our farm on a daily basis, both by vehicles of equipment. It is not uncommon for us to wait 10+ minutes with equipment to safely cross, especially with the recent completion of the Rickreall interchange allowing a free flow of eastbound traffic. People do not slow down at all for vehicles or equipment crossing, and near misses are a daily occurrence (which is especially concerning when they are with the school buses that cross at Greenwood twice daily).

1.6 Oak Grove Road – Was not hard before Casino and new intersection at Rickreall. No near misses or crashes seen.

1.7 At Greenwood and OR 22 Yes/Yes. You're going through agricultural land and you need to respect the need of this as well as your through traffic. We live there, most of the through traffic doesn't.

1.8 Hwy 22 and Greenwood Road is a hardship, anti-agribusiness. It also hurt business in general.

2. Do you have any ideas for short-, medium-, or long-term changes that could improve OR 22?

2.1 Not at this time. The proposals are not clear enough to comment.

2.2 Close Shaw and Mill Streets and move the Highway entrance to Riggs Street. Continue 2nd Street to Riggs Street. If you close Shaw Street, build a burm across the entrance.

2.3 Short- and Medium-term: The frontage Roads with a tunnel so right on and right off can be done from OR 22. OR 22 and 51 Junction interchange should be a very high priority.

2.4 We are in the farm equipment business and rely on wide adequate road systems for slow moving vehicles, commerce, and the movement of production machinery needs to be well though out when devising interchanges and access. Signage and warning lights can be used more effectively and I want to discourage long re-routes around arterials.

2.5 Spend some of the money proposed for these projects to pay patrol officers to help maintain a constant speed – speed traps once a month do not establish in someone's mind that they should obey the speed limit in a particular area. If people weren't going anywhere from 50 to 80 mph, many of the problems wouldn't exist. Overpass with access at Greenwood! ***Signs warning of farm equipment crossing at 22 (we can't cross fast enough with tractors and loaded trucks when people are going 65+. They at least need a warning).

2.6 I would much prefer park and ride spots, frequent public transportation opportunities, and a significant hike in gas taxes. In light of both "peak oil" and "global warming" we don't want more cars driving more miles which an expressway would encourage. Think ahead to real solutions for the long term.

2.7 Mainly 2 – More traffic control to slow speeds. And an {drawing of loop} overpass at Greenwood to solve that problem and lessen farm equipment and tracks on Highway 99-W that is sometimes at Greenwood and 22.
2.8 Short-term – an overpass over Highway 22 at Greenwood Road with west off and east off.

3. Do you have any comments about the proposed alternatives?

Greenwood Road Intersection

3.1 Overpass – We have over 350 signatures supporting this, which we turned in to ODOT about a year ago and to the Polk County Commission.
3.2 A tighter on/off road, no need to cross two owner properties! Need to be done sooner than 10 years!
3.3 Access point needs to be included, and a close to overpass as possible to not unnecessarily eat up farmland. Overpass wide enough and good enough visibility for wide equipment to travel over.
3.4 Right-off in both directions.
3.5 How about a tunnel and access to 22 by Rickreall Road and none from Greenwood.

Independence Highway Junction

3.6 The overpass, the green lines look a lot more doable than some of the other!
3.7 Stay on railroad right of way too. Hwy 51 and stay off low ground and blueberries.
3.8 Priority
3.9 When is this planned to be built?

Doaks Ferry Road Intersection

3.10 I think that area should be up to the people who use it.
3.11 Use railroad right of way east and west of Eola Inn.
3.12 Combine with a tunnel
3.13 Needs work
3.14 Overpassing the eastbound lane of OR22 for Doak's Ferry Rd. access may cost less than any other option.

Frontage/Backage Roads and Access

3.15 Some might be needed but certainly not the entire that's proposed on two or three of the examples!
3.16 Combine with a tunnel
3.17 Needs work

4. Do you have anything else that you would like to tell the project team?

4.1 I saw no proposal where the Doaks Road would come out at College Drive.
4.2 Much of this "expressway" goes through EFU land, so consideration needs to be heavily given to equipment and truck traffic and movement when creating plans. Engineers themselves need to directly meet with public and business owners who are heavily impacted by plans.
4.3 We/I want to encourage fewer vehicles, less driving, more public transportation opportunities and real land use planning so that people live closer to where they work, shop, etc. Not sprawl – good planned communities. Thank you.
4.4 It would be good to meet with some of the engineers even if they don't think we know anything! There might be surprises since we live in the area. I have been on local fire department and rescue teams.
4.5 Overpass Greenwood Road-Hwy. 22, support business.

4.6 I appreciate the chance to give input on OR 22. Here are suggestions for the most hazardous section of OR 22:

1. Rosemont Intersection: Rosemount Street enters OR 22 at a point where sight distance is restricted. The situation is particularly bad if a car exist Rosemount and wishes to go to West Salem, as the entering car must cross 5 lanes of traffic to dive into the West Salem eastbound exit lane. I have observed drivers literally dive across the road immediately ahead of oncoming traffic. This high risk intersection lends itself to a simple, inexpensive, immediate fix. Extend the present median barricade another 50 feet. Nothing else is needed as Rosemont already connects directly to Stoneway which enters SR 22 at a safer location several hundred feet westward. This change is important as drivers on Stoneway use Rosemont as a shortcut to OR 22.

2. Rosemont and Stoneway intersections: Both intersections could be eliminated by routing their traffic across the south side of the Capitol Manor parking lot to the safe Capitol Manor intersection. This route presently exists but may be barricaded.

3. College Drive intersection: I see three alternatives of increasing cost:

   a. Place a stoplight at College drive intersection.

   b. Connect a frontage road to Stoneway to make use of the Capitol Manor intersection.

   c. Convert OR 22 into a frontage road between College drive and Capitol Manor. Bypass the mentioned frontage road with level direct connection between College drive and a point on OR 22 behind Pumilite. Some savings could be made by using the abandoned overpass as fill.

4. Transportation tax dollars should be prioritized and the Hwy 22 expressway is not the most important transportation project we face. I am against wasting any more money on this plan until more pressing issues are completed first, such as the third Salem bridge, OR 18, and Hwy 99 at Dundee.

MEMORANDUM

OR 22 Expressway Management Plan Open House – Response to Comments

DATE: December 17, 2007

TO: Project Management Team
File

FROM: Larry Weymouth/CH2M HILL
Dan Fricke/ODOT Region 2

This memorandum is ODOT's response to comments received at the first public open house for the current phase of the OR 22 Expressway Management Plan that was held on Wednesday, November 28, 2007 from 6:00 to 8:00 pm at the Polk County Fairgrounds Arts and Crafts Building. The open house was structured to encourage community members to learn more about the proposed alternatives, which was posted at several stations. Approximately 38 people attended the open house, which had been publicized through a mailing to 95 households in the project vicinity. The open house was also announced to the local media with a press release that was distributed during the second week of November. For additional information about the meeting's purpose, content, and participation, see the Meeting Summary (12/12/07). Comments from the meeting are included below with ODOT's response.

Comment Form Summary

1. Where is it hard for you to get onto OR 22? Have you seen any near misses or crashes at these spots?

1.1 Doaks Ferry Road – no accidents
RESPONSE: ODOT crash data have in the recent past shown 27 crashes at this location from 2001 to 2006.

1.2 Mill Street/Shaw Street – Green Thumb Lawn Care is on the south side of Highway 22. We now enter and exit Mill and Shaw Street nose to nose with Lawn Care vehicles.
RESPONSE: A center two-way left turn lane with accesses directly on opposite sides of the highway is a recognized problem. The medium-term alternative in the EMP would install a median barrier and close the Lawn Care access while keeping the left-in movement to Mill Street for east bound highway traffic.

1.3 OR 22 and 51 Intersection and gas stations along OR 22
RESPONSE: The direct access to the gas station from OR 22 would be closed and alternate access provided via a frontage road, under the medium-term phase.

1.4 Greenwood Road, Oak Grove Road, and Doaks Ferry Road
RESPONSE: The safety issues at these locations are they primary focus of the EMP and would be improved by any of the alternatives considered.

1.5 Greenwood Road is used by our farm on a daily basis, both by vehicles of (and) equipment. It is not uncommon for us to wait 10+ minutes with equipment to safely cross, especially with the recent completion of the Rickreall interchange allowing a free flow of eastbound traffic. People do not slow down at all for vehicles or equipment crossing, and near misses are a daily occurrence (which is especially concerning when they are with the school buses that cross at Greenwood twice daily).

RESPONSE: ODOT recognizes the safety issues at this location and is proposing in the EMP an overpass for vehicles and farm equipment.

1.6 Oak Grove Road – Was not hard before Casino and new intersection at Rickreall. No near misses or crashes seen.

RESPONSE: A continuous median barrier proposed in the EMP would separate directional traffic and eliminate left-out movements at this location.

1.7 At Greenwood and OR 22 Yes/Yes. You're going through agricultural land and you need to respect the need of this as well as your through traffic. We live there, most of the through traffic doesn't.

RESPONSE: See response for comment 1.5.

1.8 Hwy 22 and Greenwood Road is a hardship, anti-agribusiness. It also hurt business in general.

RESPONSE: See response for comment 1.5. ODOT recognizes the need for its highways to accommodate agribusiness-related machinery and vehicles in rural areas. The EMP proposes an overcrossing at this location.

2. Do you have any ideas for short-, medium-, or long-term changes that could improve OR 22?

2.1 Not at this time. The proposals are not clear enough to comment.

RESPONSE: Comment noted. Handouts and drawings attempted to explain the proposed changes. ODOT welcomes additional inquiries.

2.2 Close Shaw and Mill Streets and move the Highway entrance to Riggs Street. Continue 2nd Street to Riggs Street. If you close Shaw Street, build a burm across the entrance.

RESPONSE: Comment noted. The exact access in this vicinity still has to be decided but will provide a connection to a new backage road under the medium-term improvements of the EMP.

2.3 Short- and Medium-term: The frontage Roads with a tunnel so right on and right off can be done from OR 22. OR 22 and 51 Junction interchange should be a very high priority.

RESPONSE: The EMP is consistent with this comment.

2.4 We are in the farm equipment business and rely on wide adequate road systems for slow moving vehicles, commerce, and the movement of production machinery needs to be well though out when devising interchanges and access. Signage and warning lights can be used more effectively and I want to discourage long re-routes around arterials.

RESPONSE: ODOT generally does not favor out-of-direction travel because of the negative impacts on traveler convenience and energy use. However, longer routes than would be ideal are sometimes unavoidable to implement safety improvements.

2.5 Spend some of the money proposed for these projects to pay patrol officers to help maintain a constant speed – speed traps once a month do not establish in someone's mind that they should obey the speed limit in a particular area. If people weren't going anywhere from 50 to 80 mph, many of the problems wouldn't exist. Overpass with access at Greenwood! ***Signs warning of farm equipment crossing at 22 (we can't cross fast enough with tractors and loaded trucks when people are going 65+. They at least need a warning).

RESPONSE: Studies have shown that enforcement actions if not regular and ongoing (essentially permanent) have little long-term effect on changing driver behavior. Warning signs serve to only alert drivers to hazardous situations but are ineffective in slowing most vehicles and creating more safe conditions for cross traffic. The EMP proposes an overcrossing at Greenwood Road as the solution to improve safety.

2.6 I would much prefer park and ride spots, frequent public transportation opportunities, and a significant hike in gas taxes. In light of both "peak oil" and "global warming" we don't want more cars driving more miles which an expressway would encourage. Think ahead to real solutions for the long term.

RESPONSE: ODOT agrees that expansion of public transit and an increase in gas taxes would help to reduce congestion on OR 22. The EMP should address potential improvements to public transit in more detail. The environmental assessment for the proposed OR 22/51 interchange will address energy and air quality impacts.

2.7 Mainly 2 – More traffic control to slow speeds. And an {drawing of loop} overpass at Greenwood to solve that problem and lessen farm equipment and tracks on Highway 99-W that is sometimes at Greenwood and 22.

RESPONSE: See response to comment 2.5.

2.8 Short-term – an overpass over Highway 22 at Greenwood Road with west off and east off.

RESPONSE: District FHWA guidelines for highway development in rural areas restrict interchanges to a minimum of 3 miles apart. Provision for west off and east off traffic at Greenwood Road (milepost 18.61) would create an interchange that would be closer than 3 miles to the Rickreall/ Hwy 99 interchange (milepost 16.20) and the proposed OR 22/51 interchange (milepost 20.37). Thus, these proposed improvements are unlikely to be approved for federal funding, which would be necessary for construction. In addition, ODOT's interchange spacing standards for rural expressways is 2 miles apart.

3. Do you have any comments about the proposed alternatives?

Greenwood Road Intersection

3.1 Overpass – We have over 350 signatures supporting this, which we turned in to ODOT about a year ago and to the Polk County Commission.

RESPONSE: ODOT has retained the public comments from previous efforts associated with this EMP.

3.2 A tighter on/off road, no need to cross two owner properties! Need to be done sooner than 10 years!

RESPONSE: The location of the westbound off-ramp to Greenwood Road is conceptual on the drawing. Final design will determine the best location, which will consider property ownerships with other engineering design factors. Implementation will depend on the availability and prioritization of funding.

3.3 Access point needs to be included, and a close to overpass as possible to not unnecessarily eat up farmland. Overpass wide enough and good enough visibility for wide equipment to travel over.

RESPONSE: See responses to comments 1.5 and 3.2.

3.4 Right-off in both directions.

RESPONSE: See response to comment 2.8.

3.5 How about a tunnel and access to 22 by Rickreall Road and none from Greenwood.

RESPONSE: This alternative was discussed during earlier efforts but was not advanced for further consideration.

Independence Highway Junction

3.6 The overpass, the green lines look a lot more doable than some of the other!

RESPONSE: Comment noted.

3.7 Stay on railroad right of way too. Hwy 51 and stay off low ground and blueberries.

RESPONSE: ODOT agrees that there are benefits to using existing right of way and avoiding agricultural and wetlands impacts whenever possible.

3.8 Priority

RESPONSE: The EMP incorporates improvements to OR 22/51 as a priority.

3.9 When is this planned to be built?

RESPONSE: Construction must be preceded by environmental assessment, a plan for funding, and engineering design. Those actions could take at least 3 years.

Doaks Ferry Road Intersection

3.10 I think that area should be up to the people who use it.

RESPONSE: The purpose of the open house is to get input from people who use these roads. It is the responsibility of Polk County to maintain Doaks Ferry Road, while ODOT has authority to control access to OR 22.

3.11 Use railroad right of way east and west of Eola Inn.

RESPONSE: See response to comment 3.7.

3.12 Combine with a tunnel

RESPONSE: Comment noted. An underpass (or tunnel) is part of a proposed improvement.

3.13 Needs work

RESPONSE: Comment noted. The final EMP will provide additional clarity; however, engineering design will address remaining issues of feasibility.

3.14 Overpassing the eastbound lane of OR22 for Doak's Ferry Rd. access may cost less than any other option.

RESPONSE: An overpass at this location was considered but was found infeasible due to topographic constraints and excessive grades.

Frontage/Backage Roads and Access

3.15 Some might be needed but certainly not the entire that's proposed on two or three of the examples!

RESPONSE: Implementation would be phased and as necessary to provide access to businesses, both current and future.

3.16 Combine with a tunnel

RESPONSE: See response to comment 3.12.

3.17 Needs work

RESPONSE: See response to comment 3.13.

4. Do you have anything else that you would like to tell the project team?

4.1 I saw no proposal where the Doaks Road would come out at College Drive.

RESPONSE: This improvement was raised as a long-term alternative to anticipated future growth in the area east of Doaks Ferry Road. The location of the connection from the vicinity of an interchange at College Drive to Doaks Ferry Road would be decided during development permitting process of Polk County. The intent of the EMP is to have Polk County amend its Transportation System Plan to include such a connection as a basis for allowing development.

4.2 Much of this "expressway" goes through EFU land, so consideration needs to be heavily given to equipment and truck traffic and movement when creating plans. Engineers themselves need to directly meet with public and business owners who are heavily impacted by plans.

RESPONSE: See response to comments 1.5 and 1.8. Public involvement in design issues will be ongoing and is always welcome.

4.3 We/I want to encourage fewer vehicles, less driving, more public transportation opportunities and real land use planning so that people live closer to where they work, shop, etc. Not sprawl – good planned communities. Thank you.

RESPONSE: The Transportation Planning Rule (OAR 660-012) governs ODOT and Polk County actions and addresses these issues.

4.4 It would be good to meet with some of the engineers even if they don't think we know anything! There might be surprises since we live in the area. I have been on local fire department and rescue teams.

RESPONSE: ODOT especially values the input of citizens who have first-hand experience and knowledge of local transportation issues.

4.5 Overpass Greenwood Road-Hwy. 22, support business.
RESPONSE: Comment noted. See response to comments 1.5 and 1.8.

4.6 I appreciate the chance to give input on OR 22. Here are suggestions for the most hazardous section of OR 22:

1. Rosemont Intersection: Rosemount Street enters OR 22 at a point where sight distance is restricted. The situation is particularly bad if a car exist Rosemount and wishes to go to West Salem, as the entering car must cross 5 lanes of traffic to dive into the West Salem eastbound exit lane. I have observed drivers literally dive across the road immediately ahead of oncoming traffic. This high risk intersection lends itself to a simple, inexpensive, immediate fix. Extend the present median barricade another 50 feet. Nothing else is needed as Rosemont already connects directly to Stoneway which enters SR 22 at a safer location several hundred feet westward. This change is important as drivers on Stoneway use Rosemont as a shortcut to OR 22.

RESPONSE: Comment noted. This EMP only addresses the area to the east as far as College Drive. The comment will be retained for future studies.

2. Rosemont and Stoneway intersections: Both intersections could be eliminated by routing their traffic across the south side of the Capitol Manor parking lot to the safe Capitol Manor intersection. This route presently exists but may be barricaded.

RESPONSE: Comment noted. This EMP only addresses the area to the east as far as College Drive. The comment will be retained for future studies.

3. College Drive intersection: I see three alternatives of increasing cost:

a. Place a stoplight at College drive intersection.

RESPONSE: Installation of stop lights is contrary to the defined function of an expressway. Grade separations and interchanges are the preferred traffic engineering method for handling cross traffic at intersections. Studies show that stop lights can increase rear-end crashes on expressways.

b. Connect a frontage road to Stoneway to make use of the Capitol Manor intersection.

RESPONSE: Comment noted. This EMP only addresses the area to the east as far as College Drive. The comment will be retained for future studies.

c. Convert OR 22 into a frontage road between College drive and Capitol Manor. Bypass the mentioned frontage road with level direct connection between College drive and a point on OR 22 behind Pumilite. Some savings could be made by using the abandoned overpass as fill.

RESPONSE: Comment noted. This EMP only addresses the area to the east as far as College Drive. The comment will be retained for future studies.

APPENDIX L

AMP Compliance with OAR 734-051-0155 (5)

APPENDIX L

Access Management Plan Compliance with OAR 734-051-0155 (5)

The table below indicates how the Access Management Plan, which is included in sections of the OR 22 (W) Expressway Management Plan, meets the requirements of OAR 734-051-0155 (5).

OAR 734-051-0155 (5) CRITERIA	HOW ADDRESSED IN EMP	WHERE
(a) Include sufficient area to address highway operation and safety issues and development of adjoining properties including local access and circulation.	The study area was defined as extending 6.73 miles from the Derry Overcrossing to College Drive and 1/4 mile on either side of the highway to address local development, access, and circulation issues. The termini of the study area adjoin previously completed or anticipated plan areas for OR 22.	Sec. 1.4.3 Figure 1-1
(b) Describe the roadway network, right-of-way, access control, and land parcels in the analysis area.	The roadway network, right-of-way, and surrounding land uses were identified and mapped, as were all affected accesses. These factors led to the plan's project improvement recommendations and to the identification and implementation of the Polk County land use measures and the ODOT access control measures.	Sec. 1.4 Sec. 5.2.1 Figure 5-2 Sec. 7.3 Figure 7-1, 7-2
(c) Be developed in coordination with local governments and property owners in the affected area.	This planning effort began in 2000, stopped in 2004, and was restarted in 2007. Previous and current efforts have included coordination with Polk County and City of Salem, and public outreach and meetings to the Farm Bureau, citizen involvement committees, and local property owners.	Sec. 1.4.4 Sec. 6.3 Sec. 7.1 App. A App. K
(d) Be consistent with any applicable Interchange Area Management Plan, corridor plan, or other facility plan adopted by the Oregon Transportation Commission.	The EMP includes a review of existing plans, policies, and standards that are relevant to the study area. Several of these plans have been adopted by the OTC. Planning efforts for this section of OR 22 have been cognizant of related efforts for other parts of the transportation system in West Salem, which are anticipated to eventually receive OTC adoption.	Chapter 3 Chapter 7 Sec. 8.4
(e) Include polices, provisions and standards from local comprehensive plans, transportation system plans, and land use and subdivision codes that are relied upon for consistency and that are relied	The EMP includes a review of existing plans, policies, and standards that are relevant to the study area, including local plans and codes. Based upon past practices, Polk County will likely adopt the EMP directly into its comprehensive plan, and take whatever actions are required by their ordinances and policies to authorize the proposed improvements.	Chapter 3 Chapter 8

upon to implement the Access Management Plan.		
(f) Contain short, medium, and long-range actions to improve operations and safety and preserve the functional integrity of the highway system.	The projects selected for development as part of the Preferred Alternative are the ultimate long-term actions identified to improve safety and operations at the intersections of Greenwood Road, OR 51, and Doaks Ferry Road with Oregon 22 in Polk County. A range of other actions taken by ODOT and Polk County through the adoption of this plan to control access and regulate surrounding land uses will be implemented in the short-term and mid-term, but have long-term benefits. Additionally, this plan identifies further planning opportunities for coordination with potential residential developments east of Doaks Ferry Road, outside and adjacent to the current study area, to address access and connection problems with OR 22 and the larger West Salem area	Chapter 5 Chapter 6 Sec. 7.2
(g) Consider whether improvements to local street networks are feasible.	Construction of a system of frontage and backage roads is proposed before existing accesses are closed. Such a system uses several existing local streets, extending some and closing highway access for others. Topographic constraints and acquisition costs were considered in developing alternatives.	Chapter 5 Chapter 6
(h) Promote safe and efficient operation of the state highway consistent with the highway classification and the highway segment designation.	The Problem Statement of the EMP addresses the function of an expressway. Goals and objectives for the study and alternative evaluation criteria included increased safety and efficient operation. The forecast analysis does show that improved safety and operations on OR 22 will be achieved through 2030 with construction of the improvement projects.	Chapter 2 Chapter 5 Chapter 6 App. J
(i) Consider the use of the adjoining property consistent with the comprehensive plan designation and zoning of the area.	An analysis of surrounding land uses and land use potentials was performed. This analysis resulted in recommendations for implementing access controls and minimizing impacts to commercial, residential, and resource zoned properties.	Chapter 5 Chapter 6 Chapter 7
(j) Provide a comprehensive, area-wide solution for local access and circulation that minimizes use of the state highway for local access and circulation.	The plan calls for a phased implementation of access controls as frontage and backage roads are constructed for local circulation and alternative access in the entire study area. Many private accesses will be closed and public road approaches reduced in number. Some farm accesses will remain open.	Sec. 7.3 Table 7-2