CHAPTER 1

Background

1.1 Transportation Facility Plan Purpose

This report documents the results of the transportation facility planning process conducted by the Oregon Department of Transportation (ODOT) for the intersection of Oregon Route 22 and Oregon Route 99W at Rickreall. The Oregon 22/Dallas-Rickreall Highway intersection was also included in the facility planning process. As the facility process progressed and various alternatives were reviewed, potential impacts to the unincorporated community of Rickreall and the Oregon 99W/Rickreall Road intersection were also assessed. The Oregon 22 and Oregon 99W corridors and the project study area are shown in Figure 1.1.1

Facility plans 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 also constitute the first phase of the formal NEPA or non-NEPA project development process.

The purpose of the Rickreall Junction Facility Plan 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 2025 was the original focus of this effort. However, with the approval of construction funding for this project through the Oregon Transportation Investment Act (OTIA) in late 2001, this facility plan was expanded to include an Interchange Area Management Plan (IAMP) as required by Oregon Administrative Rule (OAR) 734-0051-0200.

The conclusions in this document have provided direction to the project development process by defining the key features of the alternative that has been chosen for construction. This report also provides a basis for the ODOT to work with Polk County to amend its Comprehensive Plan, Transportation Systems Plan (TSP) and Zoning Ordinance. These amendments will acknowledge the project development decisions that have been made and the short- 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.

This project recommendation made by this facility plan defines the alternative that is now included in the State Transportation Improvement Program (STIP) as a result of the OTIA process. However, the Oregon Transportation Commission (OTC) made the OTIA approval with several conditions prior to granting construction approval. These conditions are addressed by this facility plan.

1.2 Facility Plan Context

The Oregon Transportation Plan (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.

The Oregon Highway Plan (OHP) designates Oregon 22 as having a Statewide Level of Importance (LOI). Oregon 22 has also been designated by the OTC as an expressway and is included as part of the National Highway System. 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 Oregon 99W as having a Regional LOI.

Based on LOI designations, the 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.

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 Oregon 22 Corridor Strategy (West) identified the Oregon 22 and Oregon 99W and Oregon 22 and Dallas-Rickreall Highway intersections as areas that needed further solution development work. This corridor strategy covered the portion of Oregon 22 from its intersection with Oregon 18 at Willamina to the Deer Park/Gaffen Road Interchange approximately four miles east of Interstate 5. These recommendations were further supported by a corridor safety analysis performed in 1999.

The Polk County TSP identifies both Oregon 22 and Oregon 99W 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 Oregon 22/Oregon 99W intersection. The TSP states that the county will work with ODOT on any necessary studies related to these projects.

This facility plan is ODOT's first step in the project development process needed to meet the OTIA objectives. Where this facility plan fits within the ODOT's hierarchy of planning, programming, and project development processes is shown in Figure 1.2.1.

INSERT FIGURE 1.1.1—Map in a map showing project study area and corridors

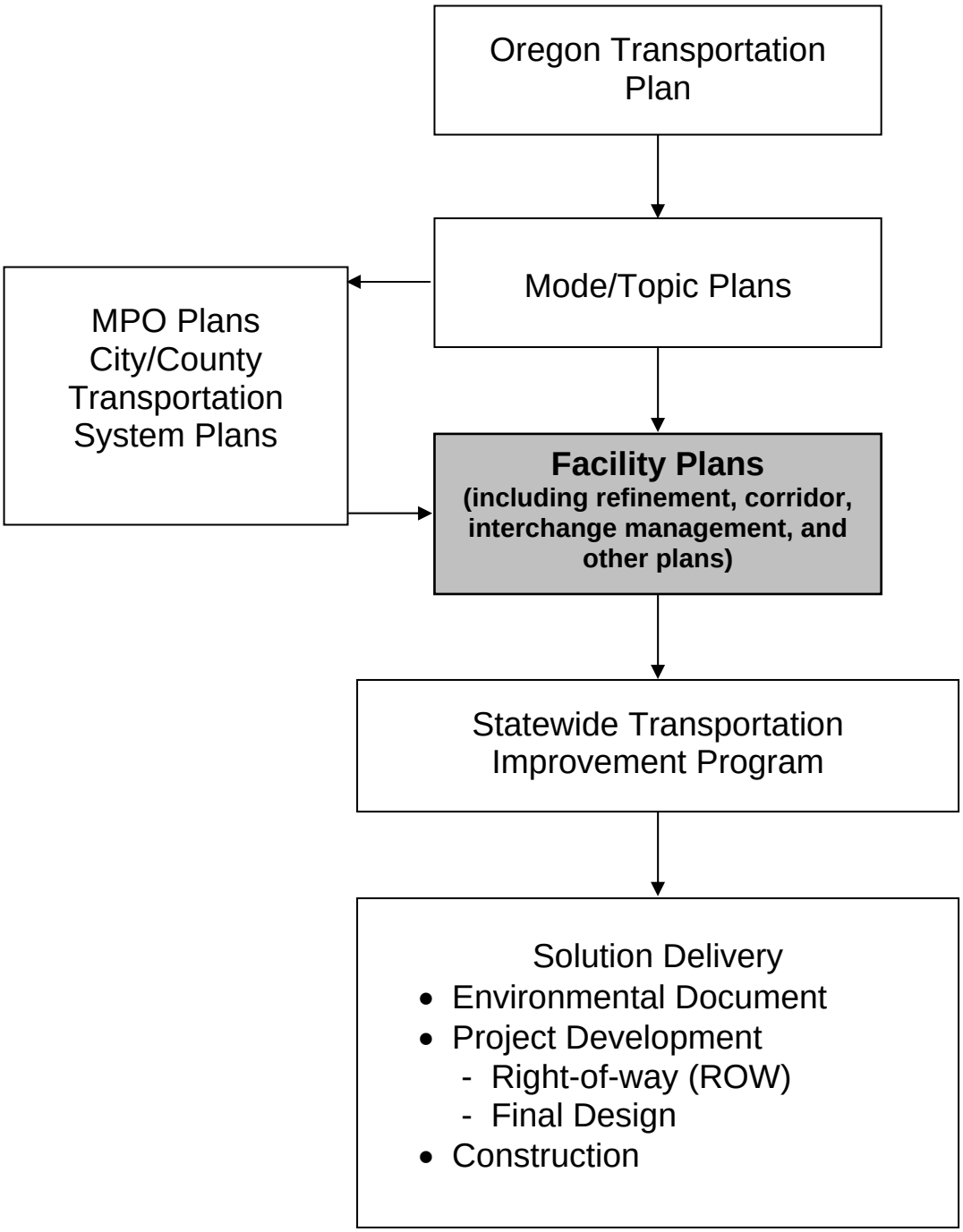

FIGURE 1.2.1 - ODOT Planning, Programming, and Project Development Context

1.3 Facility Plan Process

This facility plan process consisted of the following phases:

- **Technical Advisory Committee Formation -** A Technical Advisory Committee (TAC) was formed to develop the facility plan. The TAC consisted of federal, state, and local representatives including Federal Highway Administration (FHWA) staff, ODOT staff, Department of Land Conservation and Development (DLCD) staff, MWVCOG staff, and representatives from Polk County and the City of Dallas. The TAC was responsible for developing project goals and problem statement, data collection and analysis, alternative identification and evaluation, and recommendations. The TAC meeting summaries are included as Appendix A.

- **Scoping and Inventory -** The TAC conducted a review of all existing plans, policies, and study documentation related to the existing intersection to identify pertinent policies and determine data collection needs.

- **Conditions Assessment -** The TAC conducted 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 are identified.

- **Alternative Identification -** The TAC identified a range of improvement alternatives and conducted screening to select the most feasible alternatives for evaluation.

- **Alternative Evaluation -** The TAC evaluated the operational performance and geometric feasibility of the selected alternatives using the traffic volumes for the years 2015 and 2025.

- **Stakeholder Input -** The project team conducted a series of meetings with key stakeholders. These included Rickreall community residents and local business owners, officials from Dallas, Monmouth, and Independence, local legislators, Dallas School District personnel, and emergency response personnel. The purpose of the meetings was to review preliminary evaluation results and improvement concepts and receive stakeholder feedback. The stakeholder outreach process culminated with an open house at the Polk County Fairgrounds in June 2002. The acceptability of the project concept recommended by this facility plan was affirmed at this open house. Additional public input can also be provided through the Polk County and OTC adoption processes.

- **Facility Plan Preparation -** The project team prepared the facility plan including documenting the previous steps, investment requirements, and recommendations for adoption.

Figure 1.3.1 illustrates the facility plan process.

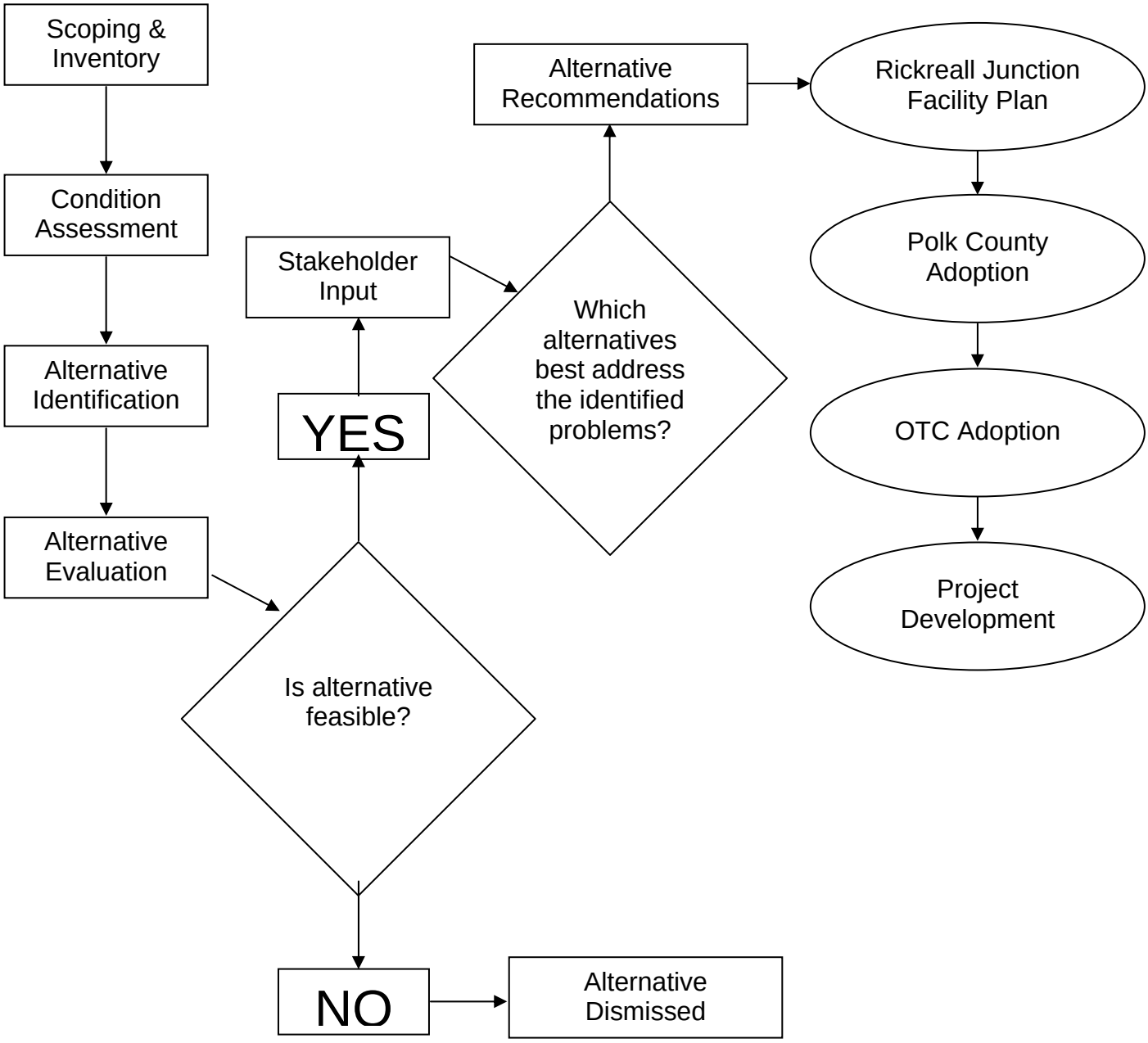

Figure 1.3.1 - Facility Plan Process Flowchart

1.4 Transportation Context

1.4.1 Oregon 22 Characteristics and History

The Oregon 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 Oregon 20. Between Salem and Willamina, the corridor primarily runs through farmland with little development occurring outside of Salem. Oregon 22 is of critical importance to a wide range of statewide, regional, and local users and is 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.

Oregon 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 Oregon 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.

Originally, Oregon 22 intersected Oregon 99W at the south end of the Rickreall community. The highway alignment was shifted to its current location, north of Rickreall, in 1972. The original highway through Rickreall is now called Rickreall Road and is part of the Polk County road system.

1.4.2 Oregon 99W Characteristics and History

Originally built as US Highway 99, Oregon 99W originated as one of the major north-south highways in the US highway system. It went from the Canadian Border at Blaine, Washington to Mexico at Calexico, California, in the Imperial Valley. When US 99 was the main Pacific Coast route between Canada and Mexico, it split in two for most of the length of the Willamette Valley - between Portland and Junction City. Oregon 99E now exists only in pieces, having been covered over in places by Interstate 5.

Oregon 99W was constructed through the community of Rickreall in the early 1920s following an existing road. A covered bridge was originally constructed over Rickreall Creek in the 1910s, but was replaced by a concrete slab bridge in 1923. That bridge was replaced in 1960.

Unlike Oregon 99E, Oregon 99W, is still a major route on the west side of the Willamette Valley. Going southwest from Portland, it passes through Tigard and Newberg before turning south close to McMinnville. Passing some 20 miles west of Salem, it goes through Monmouth and Corvallis before turning southeast at Monroe and converging with Oregon 99E at Junction City.

While Interstate 5 now serves as the primary north-south corridor in the Willamette Valley, Oregon 99W functions as an important regional highway. Similar to Oregon 22, Oregon 99W also 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 McMinnville and Salem and from Salem, Monmouth, and Independence to Corvallis (or vice-versa).

1.4.3 Study Area

The purpose of identifying the study area is to define the transportation analysis area. While the improvements identified in this document will affect other areas on Oregon 22 and Oregon 99W, the project study area begins at milepost 15.0 on Oregon 22 and extends past the Oregon 22/Dallas-Rickreall Highway intersection to milepost 16.5. The Oregon 22/99W intersection is located at milepost 16.2. The study area extends north of the Oregon 22/99W intersection approximately 0.2 miles. To the south, the study area includes the southernmost boundary of the community of Rickreall, located south of the Polk County Fairgrounds. The study area also includes the Dallas-Rickreall Highway west of Oregon 22. The project study area is shown in detail in Figure 1.1.1.

1.5 Document Structure

This first chapter, Background, describes the content and purpose of the *Rickreall Junction Facility Plan.* The chapter also describes how the document is organized and how the project was staffed.

Chapter 2 defines the problems this facility plan is intended to address and outlines project goals.

Chapter 3 provides an overview of the plans, policies, and studies related to the Rickreall Junction intersection. This chapter is organized into sections that address federal, state, and local (county) information. Hyperlinks embedded in the chapter go to related federal and state web sites.

Chapter 4 provides an assessment of year 2000 conditions and deficiencies within the study area. These include geometric, operations, and safety deficiencies for the Oregon 22/Oregon 99W intersection, the Oregon 22/Dallas-Rickreall Highway intersection, and within the Rickreall community. This chapter also includes an assessment of future conditions (year 2025) for each of these areas. Based on the assessment of deficiencies, the chapter concludes with a validated transportation problem statement.

Chapter 5 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 TAC after preliminary evaluation.

Chapter 6 describes the range of alternatives evaluated by the TAC. Seven levels of alternatives were considered by the TAC - from lower cost "soft" engineering techniques such as improved signage and use of Intelligent Transportation Systems (ITS activities) through a range of at-grade and grade-separated interchange alternatives. This chapter also includes a summary of key findings from the stakeholder meeting process.

As project team analyzed the range of possible alternatives for the Oregon 22/Oregon 99W intersection, it became apparent that projected traffic increases as well as some design options for the intersection would have impacts to the Rickreall community. Chapter 6 also describes the range of alternatives developed by the TAC to address the long-range deficiencies, safety problems, and operational needs of the section of Oregon 99W through the Rickreall community. Alternatives for access management, local street network improvements, and Polk County land use actions in and around Rickreall are also presented in the context of the Interchange Area Management Plan.

Chapter 6 concludes with the recommendation for improving the subject intersections and protecting the transportation facility function throughout the 20-year planning horizon.

Chapter 7 provides a summary of actions and responsibilities that will be taken by ODOT and Polk County prior to project construction.

The appendices include relevant plans and reports, references, technical information, including diagrams and analysis, and TAC and stakeholder meeting summaries.

CHAPTER 2

Transportation Problem Statement and Facility Plan Goals

2.1 Initial Transportation Problem Statement

Extensive discussion took place at the initial Technical Advisory Committee meetings about what problems this project is intended to address. The state and local participants offered a variety of problem statements based on previous work and their own observations.

- The Oregon 22/Oregon 99W intersection is too closely spaced to the Oregon 22/Dallas-Rickreall Highway intersection
- Numerous left-turn and rear-end accidents occur at Oregon 99W and Oregon 22 intersection
- Severe head-on accident potential is high at Oregon 22 and Dallas-Rickreall Highway intersection
- Speeds of oncoming vehicles are hard to judge for eastbound through and westbound turning vehicles at the Oregon 22 and Dallas-Rickreall Highway intersection
- Entire Oregon 22 corridor from Salem to Dallas is dangerous
- Cannot afford to upgrade entire corridor at one time—issues must be addressed incrementally
- These intersections are the most immediate problems on the corridor
- Traffic volumes currently near OHP mobility standards and are expected to exceed them over the planning horizon
- Truck traffic associated with aggregate operation is expected to increase
- A number of top ten percent SPIS sites are located in this area
- Signal phasing from Oregon 99W to Oregon 22 is not a separate phase
- Orientation of Oregon 22 creates AM and PM visibility problem on sunny days
- Lack of “roadside culture” provides no visual signal for drivers to anticipate the change in traffic conditions at both subject intersections
- Confusing environment for driver expectations

Based on these data and observations the following problem statement was developed:

The intersections of Oregon 22 with Oregon 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 OHP mobility standards. It is expected that traffic volume growth will further reduce operational performance below OHP standards during the 20-year planning horizon. The entire Oregon 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 Oregon 22 and Oregon 99W, by state and local consensus, are the most immediate of these incremental challenges.

The TAC agreed that this initial problem statement would be validated through subsequent analysis and public input and modified, if necessary, if subsequent information warranted changes - see Chapter 4.

2.2 Facility Plan Goals

The goals for the Rickreall Junction Facility Plan were directly derived from the Oregon Transportation Plan (OTP) and the Oregon Highway Plan (OHP). Additional project-specific goals to minimize impacts and costs were also developed. The goals have been presented to the Technical Advisory Committee, stakeholders, and the Polk County Board of Commissioners.

The Facility Plan Goals are as follows:

- Use local Comprehensive Plans and background traffic growth rates on Oregon 22/Oregon 99W intersection as the basis for travel demand forecasting for 2015 and 2025.

- Conduct credible analysis of problems at the Oregon 22/99W intersection and the Oregon 22/Dallas-Rickreall Highway intersection.

- Conduct sufficient environmental analysis to identify potential “red-flag” constraints and validate alternative feasibility.

- Identify, analyze, and narrow the number of operationally feasible alternatives for addressing the geometric, safety, and operational problems that can then be forwarded into an environmental documentation process, if necessary.

- Meet OHP Mobility Policy

- Meet OHP Major Improvement Policy

- Meet OHP Access Management Policy to the maximum extent possible, including access control and use of medians.

- Meet OHP Safety Policy

- Meet geometric standards as per ODOT Highway Design Manual or receive concurrence on design exceptions.

- Minimize impacts on the Rickreall community and adjacent farm and sensitive lands and provide for off-highway traffic circulation in accordance with OHP policy.

- Minimize overall costs including: engineering, right-of-way acquisition, and construction.

CHAPTER 3

Existing Policy, Plans, and Standards

3.1 Purpose and Organization

The purpose of this chapter is to document the previous work that provides the planning and policy background for this Facility Plan. 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 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. It also requires federal agencies to use an interdisciplinary approach in planning and decision-making for actions that impact the environment. Finally, NEPA requires the preparation of an EIS on all major federal actions significantly affecting the human environment.

NEPA has influenced all federal agencies, including the Federal Highway Administration (FHWA). 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 Rickreall Junction Facility Plan 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 for OTIA funding it was determined by the ODOT Environmental Section that a NEPA environmental document would

not be needed to advance this project. This categorical exclusion does not exempt this project from obtaining any necessary permits or approvals (as determined during project development) prior to construction.

3.2.2 TEA-21

Summary

On June 9, 1998, the Transportation Equity Act for the 21st Century (TEA-21) was signed into law. This act authorizes highway, highway safety, transit, and other surface transportation programs for the next six (6) years. TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation. 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.

TEA-21 assures a guaranteed level of federal funds for surface transportation through FY 2003. The core metropolitan and statewide transportation planning requirements remain intact under TEA-21, 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 2004.

Relevance

TEA-21 provides a significant funding source for transportation improvements on the National Highway System, of which Oregon 22 is a part. The Act establishes requirements for the planning process used to identify needed improvements.

3.2.3 Oregon Transportation Plan, 1992

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 OTP does not specifically address improvements to Oregon 22 or Oregon 99W, but does show commuter transit service between Salem and Dallas as part of the preferred transportation system for the year 2012.

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.

3.2.4 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 Oregon 22 as a Statewide Highway. Oregon 22 has also been designated by the OTC as an Expressway and is included as part of the National Highway System. Expressways are a subset of Statewide, Regional, and District highways.

The OHP designates Oregon 99W as a Regional Highway. Neither highway is identified as a designated freight route.

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. Inside Special Transportation Areas (STAs), local access may be a priority.

Regional Highways typically provide connections and links to regional centers, Statewide and 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.

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.

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 non-freight routes, including Oregon 22, and regional highways, including Oregon 99W the v/c ratio is 0.75 in unincorporated communities, such as Rickreall. In rural areas, the v/c ratio is 0.70.

3.2.5 Oregon Public Transportation Plan, 1997

Summary

The Oregon Public Transportation Plan (OPTP) is a modal element of the OTP. The OPTP 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 Oregon 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.

3.2.6 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. Both Oregon 22 and Oregon 99W are 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.

3.2.7 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. Included in the list of transportation facilities permitted on rural lands is replacement of an intersection with an interchange. A Polk County conditional use permit will be required prior to constructing an interchange.

3.2.8 Access Management Rule

Summary

The Access Management Rule (OAR 734-051-000) 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. This rule will be addressed as part of this plan 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 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 completed with this Facility Plan. The Interim Corridor Strategy is included as Appendix C.

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 Highway 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.3: Evaluate solutions to the safety concerns at the intersections of Oregon 22 and Oregon 99W and Oregon 22 and Oregon 223 near Rickreall.

    - Safety Objective D.5: Analyze alternatives to reduce accident risk near the intersections with a high number of turning vehicles, including Oregon 223, Oregon 99W, and Oregon 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 Oregon 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 Oregon 22 corridor transportation systems on neighborhoods, parks, and community facilities.

- Provide a transportation system throughout the Oregon 22 corridor that is environmentally responsible and encourages protection of natural resources.

- Environmental Impacts Objective G.1: Avoid highway improvements near Baskett Slough National Wildlife Refuge that have significant adverse impacts to the Refuge. If impacts are unavoidable, strive to minimize those impacts.

- Environmental Impacts Objective G.2: Consider enhancements or management techniques that maintain or enhance the visual quality of the corridor, particularly in the scenic rural sections west of Dallas.

- 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 Mill Creek, Salt 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 Objectives D.3 and D.5 identify the need to identify alternatives to address safety issues at the Oregon 22/Oregon 99W 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 will 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 Area Commission on Transportation (1998)

Summary

The purpose of the Mid-Willamette 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 Oregon 22/Oregon 99W 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 Facility Plan.

3.3.4 Moving Toward Action - The Marion and Polk Counties Regional Transportation Enhancement Plan - A Strategy for Improving Special Needs Mobility and Beyond, 1998

Summary

The Regional Transportation Enhancement Plan (R-TEP) was developed by the Salem Area Mass Transit District's Special Transportation Advisory Committee as a way of improving mobility choices for the area's senior and disabled populations. This plan is intended to restructure the area's services to these populations as a means of better utilizing Special Transportation Fund (STF) revenues. The goals of the R-TEP are to increase transportation choices; enhance local community autonomy; create a customer-oriented focus for planning and development; enhance community sustainability, and use, where possible, technology to maximize efficiency of operations, planning, and administrative functions.

The R-TEP work program includes:

- Creating two transit routes serving north Marion County and central Polk County;
- Creating preliminary design and cost allocation for a regionally coordinated transportation system for inclusion in the 2000-2005 Statewide Transportation Improvement Program (STIP);
- Developing a regional "brokerage" to coordinate non-emergency medical trips; and
- Completing a needs assessment to quantify needs and estimate demand for services within the region.

Relevance

Two transit routes have been developed that currently serve Polk County. Chemeketa Area Regional Transportation Service (CARTS) provides van service to Dallas, Rickreall, and Salem via Oregon 22, Oregon 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. Route schedules and maps for the CARTS van service to Dallas, Monmouth, Independence, Rickreall, and Salem are in Appendix D.

Although public transit service in the area is currently limited, improvements to the intersection will support potential increases in service in the future.

3.4 Local Plans

3.4.1 Polk County Transportation Systems Plan, 1997

Summary

The Polk County Transportation Plan (TSP) identifies both Oregon 22 and Oregon 99W as principal arterials in the County road system. The TSP identifies a number of conceptual road construction projects including the construction of an interchange at the Oregon 22/Oregon 99W intersection. The TSP states that the County will work with ODOT on any necessary studies related to these projects.

The TSP also states that the County will work with the city of Dallas to identify the location of a limited-access collector located north of Dallas. This road would link Ellendale Road with Oregon 223 north of the city and would be intended to alleviate some traffic congestion at the Ellendale Road/Oregon 223 intersection. Construction of this road would shift some Salem-bound traffic from Dallas and outlying rural areas from Ellendale Road onto Oregon 223 and ultimately the Oregon 22/Oregon 223 intersection. The TSP states that the County will begin work with the City in 2000 on the approximate location of the road, but does not provide any timetable for construction of the road, projects costs, or funding sources.

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 Oregon 22/Oregon 99W intersection. The possible construction of the limited-access collector road north of Dallas should be factored into future traffic projections and analysis. 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 to address the increasing concerns over the safety problems on Oregon 18 and Oregon 22. Recommendations in the report were based on an accident 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 Oregon 18 and Oregon 22 including the Oregon 22/Oregon 99W intersection (Site 11). During a five-year study period from January 1, 1994 to December 31, 1998, approximately 55 potentially preventable accidents occurred at or near the intersection. Nearly half were rear-end accidents between two vehicles and about half involved

vehicles making turning movements. Of these collisions, 25 accidents resulted in injuries, 29 were property-damage-only accidents, and one accident involved a fatality.

The study concludes by observing that the accident data suggests that a fully directional, grade-separated interchange is the only alternative that is likely to significantly decrease accidents at this location. A partial at-grade jug-handle intersection is unlikely to reduce the risk of collisions, but could be included as one phase of a full grade-separated intersection. The study includes a grade-separated jug-handle design with the off-ramps in the northwest and southeast quadrants as a possible alternative, but notes that additional study would be needed to select a preferred alternative. The Safety Report is included as Appendix E.

Relevance

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

3.5 Conclusions

Existing plans and policies provide the basis to evaluate proposed alternatives for the Oregon 22/99W and the Oregon 22/Dallas-Rickreall Highway (Oregon 223) intersections. Safety and operational conditions have been diminished at both intersections due to increased traffic that has largely resulted from regional growth and commuting between Salem, Corvallis, Monmouth, Independence, Dallas, and destinations on Ore 18 and the Oregon Coast. Forecasted growth trends indicate traffic will continue to grow into the future and cause additional safety and operational problems. Currently, both intersections fail to meet Oregon Highway Plan standards for mobility and spacing. Recommended alternatives should meet these standards and be consistent with the other relevant plans and policies as identified in this Chapter.

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:

- Geometric Design: For this assessment, "As constructed" information of existing roadway elements was compared with current design standards to determine deficiencies. Design standards are based on physical characteristics of vehicles, research of crash data, and user behavior.

- Safety: For this assessment, ODOT crash data for the Rickreall study area was used to determine deficiencies.

- Transportation Operations: For this assessment, existing traffic counts were used, in combination with local land use plans, and travel demand characteristics, 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 and in the Rickreall Junction Facility Plan are The Safety Priority Index System (SPIS) and the PRC database of all crashes on state facilities (PRC refers to the initials of the individual who created the report form).

The Safety Priority Index System (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 0.1-mile segments during a three-year period. 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 PRC 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 Appendix F.

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 operations. 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 locations,
- ODOT's permanent recorder stations,
- ODOT's Traffic Volume Tables,
- Maps depicting land use and development potential in the study area,
- Anticipated major traffic generators within the region,
- Proposed expansion of major traffic generators within the region,
- Polk County Fairgrounds traffic information,
- Alternative mode current operations levels and projected service levels,
- Bridgehead Engineering Study, and
- Population projections.

Future year traffic projections are typically developed using cumulative analysis, historic growth trends, or transportation models. Historic growth trends were determined to be the most accurate method to use for this project.

The v/c ratios for the signalized Oregon 22/Oregon 99W intersection were developed using ODOT's computer program SIGCAP2. The v/c ratios for both the unsignalized intersections and multilane highways were analyzed using McTrans HCS Version 3.2 software. The v/c ratios for the rural two-lane highways calculated using HCS Release 1.5. These v/c ratios are compared with the v/c mobility standards listed in the 1999 Oregon Highway Plan (OHP) based on highway classification and surrounding land use.

ODOT's transportation Volume Tables contain the tabulation listing of ADT values for state highways. Information from these tables provides a basis for the current ADT values and historical growth trends.

Within the operations category, consideration is given to automobile oriented and non-auto modes of transportation.

The operational analysis process consisted of the following basic steps:

Highway Facilities –

1. Determine possible operational deficiency locations using ADT and hourly traffic counts.
2. Conduct more accurate determination of operational deficiency locations using analysis of specific movements.

Alternative (non-auto) Modes & Freight –

1. From modal plans, identify desired levels of service.
2. Establish inventory of current coverage and service levels.
3. Determine gap between desired and existing service.

The full highway operational analysis is presented in Appendix G. The modal considerations made for this report are described in Appendix H.

4.1.3 Facility Geometrics

The project team used a standards-based approach to identify geometric deficiencies. ODOT's Highway Design Manual provides geometric design standards used to determine geometric deficiencies. 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.

Geometric Assessment Process:

1. Determine if geometric standards are met for:

   - Cross section
   - Design speed
   - Horizontal alignment and super elevation
   - Vertical alignment
   - Stopping sight distance
   - Length and weaving section
   - Tapers and turning radii
   - Road cross section
   - Bike/pedestrian crossing
   - Access control/management

2. Determine if there is a geometric correlation with safety deficiencies.
3. Determine if there is a potential conflict with future traffic volumes and areas of potential growth.

The full geometric assessment conducted for this report is presented in Appendix I.

4.2 Existing Condition Summary

4.2.1 Oregon 22/Oregon 99W Intersection

Safety Conditions

Crashes were summarized from ODOT's PRC crash database from January 1, 1995 through December 31, 2000. This crash data and an analysis of the Safety Priority Index System (SPIS) records revealed the following:

- The Oregon 22/Oregon 99W intersection (Oregon 22 MP 16.12 and Oregon 99W MP 57.43) is in the top 10 percent of the Safety Priority Index System (SPIS) listing. The SPIS is a composite ranking of locations that considers frequency, crash rate, and crash severity.

- Crash Severity: 58 crashes, 55 injuries

- Crash Type: 74 percent of the crashes were either rear-end (43 percent) or turning (31 percent)

- The high crash figures are typically associated with the combination of a traffic signal and a high-speed facility.

Operational Conditions

Using the methods described, the 2000 traffic volumes and v/c ratio results are shown in Appendix G. The following deficiencies were noted:

- The Oregon 22/Oregon 99W intersection does not meet OHP mobility standards based on 1999 traffic counts. The existing signalized Oregon 22/Oregon 99W intersection operates at a v/c ratio of 0.84.

Geometric Conditions

The following geometric deficiencies were identified:

- On Oregon 22, the distance between the Dallas-Rickreall Highway and Oregon 99W intersections is only 400 meters (0.25 miles) where 800 feet is the desired standard. The intersections are too closely spaced and, at times, traffic backs up from the westbound

- The high westbound to southbound traffic volume at the Oregon 22/Oregon 99W intersection cannot be accommodated by a single left-turn lane.

- The turning radius at the southwest and southeast corners of the Oregon 22/Oregon 99W intersection is 16 meters which does not accommodate trucks well. The desired radius standard is 20 meters.

- The width of the paved shoulder on Oregon 22 is 1.8 meters where 2.4 meters is the desired standard.

- The vertical alignment on Oregon 22 over the railroad structure has a crest of 463 meters where 600 meters is the desired standard.

4.2.2 Oregon 22/Dallas-Rickreall Highway

Safety Conditions

Crashes were summarized from ODOT's PRC crash database from January 1, 1995 through December 31, 2000. This crash data reveals the following:

- The Oregon 22/Dallas-Rickreall Highway intersection (westbound Salem to Dallas at Oregon 22 MP 15.83) had four crashes with seven injuries. Crashes were split equally between rear-end and turning movements.

- The Oregon 22/Dallas-Rickreall Highway intersection (eastbound Dallas to Salem at Oregon 22 MP 15.87) had nine crashes with 13 injuries. Five of the crashes were turning movements.

- Speeds of oncoming vehicles are hard to judge for eastbound through and westbound turning vehicles at this intersection.

- Severe head-on crash potential is high at this intersection.

Operational Conditions

The following operational deficiency was identified:

- The westbound Oregon 22 to Dallas-Rickreall Highway traffic movement at the existing unsignalized intersection does not currently meet OHP mobility standards. This movement operates at a v/c ratio of 0.92 based on 2000 traffic counts. A v/c ratio of 0.80 is the desired OHP performance level.

Geometric Conditions

The following geometric deficiencies were identified:

- The existing length of the left-turn storage at this intersection, 45 meters, should be lengthened or a double left-turn constructed. The recommended standard for left-turn storage is 300 meters.

- At times, traffic backs up from the westbound Oregon 22/Dallas-Rickreall Highway intersection left-turn storage approximately 75 percent of the way back toward the Oregon 22/Oregon 99W intersection creating both speed differential and safety concerns.

4.2.3 Rickreall Community

Safety Conditions

Crashes were summarized from ODOT's PRC crash database from January 1, 1995 through December 31, 2000. This crash data reveals the following:

- The free-flow section of Oregon 99W through Rickreall (MP 57.42 to MP 59.0) had 53 crashes with 42 injuries.

- Crash Type: 74 percent of the crashes were either rear-end (53 percent) or angle (21 percent)

- Crash Location: 49 percent of the crashes occurred at intersections.

Operational Conditions

The following deficiencies were identified:

- Oregon 99W through Rickreall currently operates at an acceptable v/c ratio, based on OHP mobility standards.

Geometric Conditions

The following geometric deficiencies were identified:

- A left-turn refuge is warranted at the Oregon 99W and Rickreall Road intersection (from Oregon 99W to Rickreall Road) due to the relatively high Oregon 99W traffic volume through the community.

4.3 Future Condition Summary

4.3.1 Oregon 22/Oregon 99W Intersection

Safety Conditions

Projected traffic volumes show that, by 2025, traffic will back up from the westbound Oregon 22/Dallas-Rickreall Highway intersection into the Oregon 22/Oregon 99W intersection on a regular basis. In this situation, it is reasonable to expect that rear-end collisions associated with heavy congestion will increase. Deteriorated operating conditions will also likely lead to more frustration and result in more turning vehicles violating the traffic signal control. It is logical to assume that this will, in turn, result in greater numbers of turning crashes.

Operational Conditions

The 2025 base case v/c ratios, with no intersection improvements are shown in Appendix G. Traffic volumes on Oregon 22 (within the study area) are projected to increase between 60 and 72 percent during the PM peak hour between the years 2000 and 2025. During this period, projected traffic volumes on Oregon 99W will increase between 64 and 95 percent.

Future operational deficiencies include the following:

- The Oregon 22/Oregon 99W and Oregon 22/Dallas-Rickreall Highway intersections will not meet mobility standards. Demand for traffic movement will greatly exceed available capacity. The projected v/c ratio for both intersections will exceed 1.0 (1.36 and 1.92, respectively).

It should be noted that an intersection or road segment couldn't actually operate much beyond a v/c ratio of 1.0. A v/c ratio of 1.0 means that 100 percent of the assumed capacity available is being used during the analysis period, in this case, the PM peak hour of operation. It is possible for actual capacity to slightly exceed assumed capacity, depending on conditions and driver behavior. However, when actual demand exceeds actual available capacity in a peak hour, the resulting congestion will be constant through the peak hour and will spread beyond the peak hour. This condition will potentially result in congestion that exceeds OHP mobility standards and/or use most or all of the available capacity for more than one hour or for multiple hours. Consequently, v/c ratios reported as greater than 1.0 simply indicate that the congested condition being analyzed is severe and will last for more than the peak hour being analyzed.

- The free flow section of Oregon 22 will operate at a v/c ratio of 0.79 in the westbound direction east of the Oregon 22/Oregon 99W intersection. This slightly exceeds OHP mobility standards.

Geometric Conditions

The following future geometric deficiencies were identified:

- On Oregon 22, the distance between the Dallas-Rickreall Highway and Oregon 99W intersections is only 400 meters (0.25 miles) where 800 feet is the desired standard. By the year 2025, traffic will back up from the westbound Oregon 22/Dallas-Rickreall Highway intersection into the Oregon 22/Oregon 99W intersection on a regular basis.

- The high westbound to southbound traffic volume at the Oregon 22/Oregon 99W intersection cannot be accommodated by a single left-turn lane.

- The turning radius at the southwest and southeast corners of the Oregon 22/Oregon 99W intersection is 16 meters which does not accommodate trucks well. The desired radius standard is 20 meters.

- The width of the paved shoulder on Oregon 22 is 1.8 meters where 2.4 meters is the desired standard.

- The vertical alignment on Oregon 22 railroad bridge east of Ore 99W has a crest of 463 meters. 600 meters is the desired standard. This issue does not impact this project.

4.3.2 Oregon 22/Dallas-Rickreall Highway

Safety Conditions

With the projected increase in traffic volumes, left-turn queues at the westbound Oregon 22/Dallas-Rickreall Highway intersection will lengthen. As this occurs, drivers will become impatient and may begin to make left-turns without sufficient gaps in the oncoming eastbound traffic on Oregon 22. This will significantly increase the chances for serious head-on collisions at this location. People can currently be observed taking gap opportunities that are smaller than advisable on a regular basis.

Operational Conditions

Projected traffic volumes on Dallas-Rickreall Highway (within the study area) show an increase of 38 percent for eastbound traffic and 63 percent for westbound traffic in the PM peak hour between the years 2000 and 2025.

The following deficiencies were identified:

- The Oregon 22/Dallas-Rickreall Highway intersection will not meet mobility standards. The v/c ratio for the intersection will exceed 1.0.

- Within 15 to 20 years, the two-lane free-flow section of Dallas-Rickreall Highway will not meet mobility standards. The v/c ratio for this section will exceed 1.0.

Geometric Conditions

The following future geometric deficiencies were identified:

- By 2025, traffic will back up from the westbound Oregon 22/Dallas-Rickreall Highway intersection into the Oregon 22/Oregon 99W intersection on a regular basis.

- The spiral length on Oregon 22 (the curve) west of this intersection is 91.4 meters where 150 meters is the desired standard.

4.3.3 Rickreall Community

Safety Conditions

Without expansion of Oregon 99W through Rickreall to a four-lane section, congestion will increase. Gaps in the traffic on Oregon 99W will decrease. Drivers will become impatient and angle collisions may increase as drivers making left turns from the access points in the community between Oregon 22 and Rickreall Road attempt to force their way into Oregon 99W traffic.

Rear-end collisions can also be expected to increase as drivers on Oregon 99W attempt to make left-turns from the through travel lane. As gaps in the oncoming traffic become less frequent, these left-turn movements will become more difficult and result in increased angle collisions.

Similarly, without signalization at the Oregon 99W/Rickreall Road intersection, drivers will become frustrated while waiting to make left-turns. They may take chances while forcing their vehicles into traffic and increase the risk of angle collisions.

Traffic on local streets and secondary roads may also increase as drivers look for alternate routes during peak hour traffic periods, although the lack of direct alternatives provided by the simple local road system will limit the attractiveness of these kinds of maneuvers.

Operational Conditions

Projected traffic volumes on Oregon 99W through Rickreall will increase between 64 and 95 percent during the PM peak hour between the years 2000 and 2025. The greatest increase during the PM peak hour will occur in southbound traffic.

The following future deficiencies were identified:

- Within 15 to 20 years, the free-flow section of Oregon 99W between the Oregon 22/Oregon 99W intersection and the Oregon 99W/Rickreall Road intersection will not meet mobility standards. The v/c ratio will exceed a v/c ratio of 1.0.

- Due to heavy through volumes on Oregon 99W, the unsignalized Oregon 99W/Rickreall Road intersection will not meet mobility standards. The v/c ratio for all left-turn movements at this intersection will exceed 1.0.

Geometric Conditions

The following future geometric deficiencies were identified:

- The one-lane approaches at the Oregon 99W/Rickreall Road intersection will not provide enough capacity to meet future demand. Left turn lanes will be needed on all approaches.

- Unless some alternative is developed to reduce demand in the Ore 99W corridor, the two-lane section in Rickreall will not provide enough capacity to meet future demand.

4.4 Deficiency Assessment Summary

Safety and operational conditions have been diminished at both the Oregon 22/Oregon 99W and Oregon 22/Dallas-Rickreall Highway intersections by increased traffic flows associated with local and regional growth.

The Oregon 22/Oregon 99W intersection is in the top 10 percent of the Safety Priority Index System listing. The high crash figures at this intersection are commonly associated with the combination of a traffic signal and a high-speed facility.

Currently, both intersections fail to meet Oregon Highway Plan standards for mobility and spacing. In addition, left-turn storage for westbound traffic at the Oregon 22/Dallas-Rickreall Highway intersection is insufficient. By 2025, traffic volumes at both intersections will greatly exceed available capacity with traffic from the westbound Oregon 22/Dallas-Rickreall Highway intersection backing into the Oregon 22/Oregon 99W intersection on a regular basis. AM and PM peak hour congestion will exceed OHP mobility standards, occur for more than a single peak hour, and may last for multiple hours.

The projected increase in traffic volume in this area will also impact Oregon 99W in Rickreall. The existing two-lane section of Oregon 99W currently operates without serious problems. However, as regional traffic volumes increase, congestion will adversely impact local traffic circulation, particularly the left-turn movements from Rickreall Road to Oregon 99W.

4.5 Validated Transportation Problem Statement

Based on data and observations, the TAC developed the initial problem statement presented previously in Chapter 2. The TAC agreed that this initial problem statement would be validated through subsequent analysis and public input and modified, if subsequent information warranted changes.

Based on the subsequent analysis and information gathered from public outreach, additional problems were revealed within the community of Rickreall and at Greenwood Road, which intersects with Oregon 22 east of the study area.

Within Rickreall, the analysis revealed that traffic growth on Oregon 99W through 2025 would result in operational problems at the Oregon 99W/Rickreall Road intersection. It also showed that traffic volumes on Oregon 99W would increase to levels that could not be served by the current two-lane cross section. This congestion due to the growth forecasted in the region and along Oregon 99W, mostly outside Rickreall, became part of the problem statement.

Discussions with the public, and subsequently within ODOT and on the TAC, revealed a concern that improvements to the Oregon 22/Oregon 99W intersection would impact Greenwood Road. Specifically, concerns were raised that, an interchange at Oregon 22 and Oregon 99W would create a free-flow condition on Oregon 22 that would effectively eliminate gaps currently provided in the eastbound Oregon 22 traffic. This would, make it much more difficult for farm vehicles and school buses on Greenwood Road to cross Oregon 22.

The data and analysis have validated the original problem statement regarding conditions at the intersections of Oregon 22 with Oregon 99W and the Dallas Rickreall Highway. However, with the subsequent data and observations regarding impacts to the community of Rickreall and the Oregon 22/Greenwood Road intersection, the problem statement is modified to read as follows:

The intersections of Oregon 22 with Oregon 99W and the Dallas Rickreall Highway are experiencing a high number of crashes 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 OHP mobility standards. It is expected that traffic volume growth will further reduce operational performance below OHP standards during the 20-year planning horizon. The entire Oregon 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 Oregon 22 and Oregon 99W, by state and local consensus, are the most immediate of these incremental challenges.

As traffic volumes increase along the Oregon 22 and Oregon 99W corridors, the community of Rickreall will experience impacts associated with this increase in traffic. Peak hour congestion on Oregon 99W through the community will lead to increased operational and safety problems. In particular, traffic volumes along Oregon 99W and at the Oregon 99W/Rickreall Road intersection will exceed available capacity.

Construction of an interchange that results in a free-flow condition on Oregon 22 may reduce gaps currently provided in the eastbound Oregon 22 traffic. This could, in turn, make it more difficult for farm vehicles and school buses on Greenwood Road to move across Oregon 22. While the situation at Greenwood Road is being addressed through another facility planning process being conducted by ODOT, it is an issue that may best, if possible, be resolved in conjunction with implementing a solution at Oregon 22 and Oregon 99W.

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
- Anticipated new major traffic generators within the region
- Proposed expansion of major traffic generators within the region

All of these factors were evaluated to determine their current and future effects on the operation of the Oregon 22/99W and Oregon 22/Dallas-Rickreall Highway intersections and the section of Oregon 99W within the Rickreall community.

The final alternative identification step was to preliminarily assess how well the concepts address the transportation problem and identify those concepts 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 J. Several designs, including a roundabout and a single-point urban diamond interchange, were dismissed after this preliminary assessment. These are described in Section 5.4. Seven levels of alternatives were identified for further evaluation and are described in Section 5.5

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 describes existing conditions and constraints that were identified for the Rickreall Junction Study Area. These conditions and constraints were identified by reviewing the following documents and maps.

- Polk County Comprehensive Plan and Zoning Map
- National Wetlands Inventory (NWI) maps
- FEMA maps
- Soil Survey of Polk County, Oregon
- State Historic Preservation Office (SHPO) records
- ODOT Environmental Section records and reports
- ODOT Region 2 Geology/Hazmat Section report

Study area constraints maps are found in Appendix K.

5.2.1 Land Use

The entire study area for this project is outside an urban growth boundary in what are considered rural lands. As such, adding turn lanes or replacing an at-grade intersection with a grade-separated intersection are allowed activities under the Transportation Planning Rule (OAR 660-12-065). It would not be necessary to take an exception to any of Oregon's planning goals to advance an intersection improvement or interchange alternative within the study area.

The land directly abutting the Highway 22/99W intersection is zoned Exclusive Farm Use (EFU). The areas zoned EFU include all portions of the study area located north and east of the intersection. Because of the limited number and intensity of land uses allowed in EFU zones, it is reasonable to assume that no significant source of traffic generation will be developed in these areas. Several homesites that access Oregon 99W are located in these portions of the study area.

The zoning map for the study area is found in Appendix K.

South of the Oregon 22/99W intersection is the unincorporated community of Rickreall. Polk County adopted a comprehensive plan for this unincorporated area in June 2001. This plan affirms and continues the land use designations that have been in place for this community for many years. The community includes a mixture of residential commercial, industrial, and public uses. The portion of Rickreall nearest the intersection includes a residential area west of Oregon 99W and the Rickreall Elementary School to the east. Commercial development in the community is focused just north of the Oregon 99W/Rickreall Road intersection. South of this intersection, on the eastside of Oregon 99W is the Polk County Fairgrounds and Polk County Museum. A second commercial area is located south of this area along Oregon 99W.

The primary industrial areas in the study area are located in the western portion of Rickreall along Rickreall Road. Oregon 223 (the Dallas-Rickreall Highway) abuts the rear of these properties. None of these properties have direct access to the Dallas-Rickreall Highway. Approximately 6.5 vacant acres of industrial land is available for development in this area. Another developed industrial area is located along Rickreall Road approximately 0.5 mile east of Rickreall in the unincorporated community of Derry.

The overall development potential in this area is limited by a number of factors. First among these factors is the absence of a sewer system and the lack of any plan or intention by the county to construct such a system. This limits new development in Rickreall to that which can be accommodated by septic systems. This effectively limits the trip generation potential of the few undeveloped industrial and large lot (one-acre +) properties remaining in Rickreall.

Second, many of the Exclusive Farm Use land use and zoning designations that surround the interchange are actually applied to what are termed “high value” agricultural lands. The net effect of the high value designation is that the kinds of activities that are allowable in these zones are even more restricted than in EFU zones without the designation. Specifically, churches, schools, kennels, golf courses, composting operations, and solid waste processing facilities are not allowed in the “high value” farmland EFU zones. The EFU zoned property that is not on the “high value” agricultural land is on land that is largely within the 100-year flood plain. This also effectively limits the already extremely low trip generation potential of these properties.

In a resolution (#01-31) passed in November 2001, the Polk County Board of Commissioners expressed their intention to maintain the EFU zoning adjacent to the Oregon 22/Oregon 99W intersection/interchange and the Oregon 22/Oregon 223 intersection/interchange. The properties affected by this resolution will be recognized in the Polk County Comprehensive Plan through text amendments that will be initiated when Polk County adopts this document as an ODOT/Polk County Interchange Management Plan.

In addition, ODOT will also request that Polk County adopt a provision in their implementing ordinances to provide ODOT with special notice of any development proposal in the Rickreall area that may have the potential to adversely affect interchange operations. This will enable ODOT to participate in the County’s proposal review and approval process and request mitigation, if advisable and appropriate. The “trigger” for this special notice will be whether a development proposal has trip generation potential that can be expected to significantly exceed

the expected trip generation for the community based on existing zoning. A special trip generation analysis was conducted in the fall of 2002 to estimate the full development and redevelopment potential of every parcel in Rickreall, based on existing zoning. This analysis will be used as the baseline for determining whether a proposal significantly may significantly exceed the expected trip generation potential. This enhanced notification procedure will be adopted into the Polk County Comprehensive Plan and implementing ordinance.

Polk County Resolution 01-31, a list of the existing policies in the Polk County Comprehensive Plan and Transportation System Plan, and the zoning-based trip generation analysis are provided in Appendix L.

5.2.2 Environmental and Cultural Resources

Natural Environment

The study area is characterized by flat agricultural land, much of it farmed wetland, including a creek to the south. Rare plants, fish and wildlife, wetlands, soils, and floodplain information sources were reviewed and are discussed in the following paragraphs. Environmental constraints within the study area are shown in Appendix K.

FISH AND WILDLIFE

The project area has been surveyed for fish. Rickreall Creek has had Coho, cutthroat, steelhead, and possibly Chinook. The Coho and cutthroat Evolutionarily Significant Units (ESUs) are not listed or proposed for listing, but the steelhead and Chinook are part of the Upper Willamette River ESUs, which are on the federal threatened list. The current presence of the fish is unknown. The project reach of Rickreall Creek is in poor condition with high temperatures, poor 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.

PLANTS

The study area includes an ODOT Special Management Area (SMA) for Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*) and an ODOT SMA for meadow sidalcea (*Sidalcea campestris*). A botanical clearance survey, completed by ODOT on May 5, 2000, found meadow sidalcea, but no Kincaid's lupine in the area. This was reaffirmed in the summer of 2002. Meadow sidalcea is relatively common in the Willamette Valley, but is also State listed Critical, and on the Oregon Natural Heritage Program (ONHP) List 4 (Species of concern which need to be watched). No other rare plants were found in this area

The ODOT botanical clearance report for the study area recommended avoidance of the meadow sidalcea sites located on Oregon 22, milepost 15.4 (existing SMA), and Rickreall Road, 100 feet southeast of Oregon 223 (new record).

WETLANDS

A wetland biologist from ODOT surveyed the subject area in March 2000. The current alignment of Oregon 22 was found to mostly pass through cultivated grass seed fields with Cove silty clay loam soils, a Natural Resource Conservation Service (NRCS) identified hydric soil. No wetland hydrology was found within the project area, probably due to tiling of the fields to manage drainage. Wetland vegetation was also absent in the area. The biologist recommended that a formal wetland delineation of the project area be conducted.

Another significant feature in the project area is Rickreall Creek. The ODOT wetlands biologist described the stream as having a "well-defined wooded riparian corridor" with "excellent hydrology and riverine morphology conducive to use by game fish." However, it was also noted that the stream has significant water quality problems indicated 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 the likely cause of the stream's current water quality problems.

Old bridge piers remain from the old alignment of Oregon 99W, just west of the present bridge. The ODOT biologist recommends that, if needed, a temporary detour structure be built on the old bridge alignment of Oregon 99W because it would minimize riparian impacts and avoid impacting wetlands. After the detour is removed, it is recommended that the riparian area be restored.

If the project impact to wetlands or the stream is significant, several permits may be required. Through an administrative agreement, permits for removal and filling are obtained jointly through the U.S. Army Corps of Engineers (USACE) and the Oregon Division 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 U.S. Environmental Protection Agency (EPA). A Section 404 permit issued by the USACE is necessary, according to the federal Clean Water Act, if jurisdictional wetlands and water will be affected by any proposed project.

SOILS

Most of the study area consists of three soil types: Cove, Coburg, and Malabon silt clay loam. Cove silty clay loam is on the NRCS list of hydric soils. Coburg and Malabon are moderately to well drained and are not hydric. These soil types offer some obstacles to development. Cove silty clay loam has a high shrink-swell potential, seasonally high water table, and is susceptible to flooding. Malabon and Cove silty clay loam are low in strength.

South of the study area, along Rickreall Creek, is a small section of loamy Xerofluvent soils. This soil type is excessively to well-drained and found along active flood plains. Development is limited on these soils due to slow runoff rates, high erosion, and the risk of frequent overflows.

FLOODPLAINS

FEMA maps indicate a 100-year floodplain along Rickreall Creek that encompasses most of the northern and eastern portions of the study area.

The Rickreall Creek 100-year floodplain also includes areas south of Rickreall Road. Development in these floodplains is regulated by the Polk County Floodplain Overlay Zone.

Cultural Resources

The project area has not been formally surveyed for archeological resources, but the ODOT archeologist identified the area as high probability for having archeologically significant sites. It was recommended that enough time and money be allocated during the planning process to test for and avoid archeological sites. The archeologist advised that if it is impossible to avoid archaeological resources, recovery costs could reach several hundred thousand dollars.

While archeological resources were not surveyed, ODOT did conduct an historic resource inventory. In April 2000, an ODOT cultural resources specialist completed the inventory. The Area of Potential Effect (APE) included the unincorporated community of Rickreall, the Oregon 22/99W intersection, the Oregon 99W/Rickreall Road intersection, and all the area between the railroad tracks at Derry to the east, a farm complex to the north at mile post 57, to Rickreall Creek to the south and the intersection of Oregon 22 to the west.

After conducting a field reconnaissance, a historical records search, and interviewing local historians, the cultural resources specialist identified 16 sites within the APE that could be eligible for the National Register of Historic Places. A number of the sites identified are included in the State Historic Preservation Office (SHPO) list of significant resources. The potential National Register sites include:

Seven (7) properties on Main St. in Rickreall are potentially eligible for the National Register of Historic Places:

- 115 Main St. – Mini Mart-circa 1941/47 grocery store
- 1140 Main St. – 1947 gas station
- 205 Main St. – Dallas-Rickreall Highway - Italianate Style house, known as the A.L. Foreman House (SHPO #380)
- 200 Main St. – 1928 Bungalow Style house, known as the Dempsey House (SHPO #377)
- 280 Main St. – circa 1916 Grange #671 (SHPO #378)
- 300 Main St. – 1928 Grade School (SHPO # 379)
- 301 Main St. – circa 1872 Vernacular Style house, known as the S.T. Burch House (SHPO #37).

One property on Ford Street that is potentially eligible for the National Register:

- 305 Ford St. – circa 1870 Vernacular Style house, known as the Ford House (SHPO #381)

Eight properties located on Rickreall Road are potentially eligible for the National Register:

- 9300 Rickreall Rd. (old Highway 22) – circa 1865 Colonial Style house, known as the James Nesmith House (SHPO #360). Nesmith was a very significant early pioneer in the area.
- 9300 Rickreall Rd. – circa 1900 barn (SHPO #373)
- 9300 Rickreall Rd. – circa Dallas-Rickreall Highway - barn (SHPO #373)
- 9525 Rickreall Rd. – circa 1880 Vernacular Style house, known as the Richard Nesmith House (SHPO # 261)
- 9810 Rickreall Rd. – circa 1880 Italianate Style house, known as the Samuel T. Burch House (SHPO # 260)
- 10045 Rickreall Rd. – circa 1881 Italianate Style house, known as the Joshua McDaniel House (SHPO #387)

Hazardous Materials

In April 2000, ODOT Region 2 Hazmat prepared a Hazardous Materials Report from a Limited Phase One Study of the Rickreall Refinement Plan. 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 10 potentially contaminated sites, using historical aerial photographs (1936-94) and Polk County Assessor's 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. The ten sites are listed below:

Site 1: Burelbach Industries Inc., 10135 Rickreall Rd.
Property Description: Industrial facility.
Hazmat Concern: Potential spills and improper use and/or disposal of hazardous materials.

Site 2: Western Interlock Inc., 10095 Rickreall Rd.
Property Description: Industrial facility.
Hazmat Concern: Potential spills and improper use and/or disposal of hazardous materials.

Site 3: OK's Imported Car Service, 9855 Rickreall Rd.
Property Description: Auto repair shop, former gas station.
Hazmat Concern: Potential soil and/or groundwater contamination from former gas station.

Site 4: Roger Potter Construction, 9805 Rickreall Rd.

Property Description: Single residential house.
Hazmat Concern: Potential spills and improper use and/or disposal of hazardous materials.

Site 5: Meier Plumbing Inc./The Hudson Property, 1 Main St./9750 Rickreall Rd.
Property Description: Warehouse, former gas station.
Hazmat Concern: Potential soil and/or groundwater contamination from former gas station.

Site 6: The Henry Delores Property, 120 Main St.
Property Description: Single residential house.
Hazmat Concern: Potential soil and/or groundwater contamination from former gasoline UST.

Site 7: Rickreall Farm Supply, Inc., 130 Main St.
Property Description: Gas station and bulk fuel facility.
Hazmat Concern: Potential soil and/or groundwater contamination beneath this property from former or active fuel tanks.

Site 8: Dallas School District/Rickreall Grade School, 300 Main St.
Property Description: School facility.
Hazmat Concern: Potential spills and improper use and/or disposal of hazardous materials.

Site 9: Killen Construction/Rickreall Farms, 9525 Rickreall Rd.
Property Description: Single family house.
Hazmat Concern: Diesel contamination caused by UST remaining in the property.

Site 10: Polk County Farmer's Co-op/Ag West Supply Plant, 8870 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 the property.

5.3 Constraint Conclusions

No fatal flaws were identified in the analysis of land use and environmental constraints within the study area. Based on these assessments, this project was afforded categorical exclusion status and will not be required to produce an Environmental Assessment or Environmental Impact Statement. Appropriate regulations will still apply and all necessary permits must be obtained before construction. All necessary approvals will be identified during project development.

5.4 Alternatives Identified and Dismissed After Preliminary Evaluation

Over twenty "build" alternatives were considered during the course of this analysis. Of these, the TAC dismissed 12 alternatives after preliminary evaluation. Information about all of these dismissed alternatives can be found in Appendix G. The alternative identification process began by reviewing all of the possible intersection and interchange forms that might work in these

areas. Beyond simple turn lane additions, the interchange forms deemed most appropriate for these locations were a simple fly-over structure at Oregon 22 and Oregon 223, and folded quadrant diamond (or jug-handle forms) and/or conventional diamond alternatives at the intersection of Oregon 22 and Oregon 99W. These alternatives are listed in Section 5.6 and described in further detail in Chapter 6.

Two alternatives that were considered in some additional detail, but not advanced, were a roundabout intersection and a single-point urban diamond interchange. These alternatives did not provide significant safety and/or additional capacity advantages at the Oregon22/Oregon 99W intersection as compared to the other alternatives that were advanced for further consideration. The options had several other safety or operational implications that were also felt to be less desirable than the other alternatives that were advanced. These dismissed alternatives are discussed in greater detail below.

5.4.1 Roundabout at Oregon 22/Oregon 99W intersection

Roundabout intersection control was evaluated for both the intersections of Oregon 22/99W and Oregon 22/Dallas-Rickreall Highway. Transportation analysis provided by ODOT's Transportation Planning and Analysis Unit (TPAU) showed that the traffic volumes forecasted at each intersection would require two-lane roundabout designs. This analysis shows that OHP mobility standards would not be met at either intersection, even with the two-lane configuration. In addition to the traffic analysis there are several safety and geometric concerns that would suggest roundabout intersection control is not appropriate at either of these intersections.

ODOT recently adopted interim siting criteria for roundabouts. TPAU analysis shows that the proposed locations do not meet several of the adopted criteria. For example:

- Roundabouts are best suited to environments with a posted speed of 35 miles per hour or less. The study area intersections are located in rural high-speed environments with a posted speed of 50 miles per hour with actual speeds closer to 60 miles per hour.

- Roundabout intersections require every entering vehicle to slow and yield to traffic already within the circulatory roadway. In some cases, entering vehicles will be required to stop. Either a slow yielding entry or a stopped vehicle produces a large speed differential from the traveling speeds of the highway. A high percentage of the rear-end collisions at the Oregon 22/Oregon 99W intersection can be attributed to the high-speed differential.

- In addition, drivers in rural environments do not expect to encounter situations that provide high-speed differentials, thus exacerbating the potential for such accidents.

- Any roundabout design at these locations would need to provide mitigation measures to reduce the speed differential. This means physical adjustments to all highway segments approaching the roundabout to transition traffic speeds from high speed to low speed.

- However, these types of physical modifications can also lead to an increase in some types of accidents, particularly rear-end collisions. Therefore, the area where such accidents are prone to occur would be extended to include the highway speed transition segments approaching the roundabout.

- Roundabouts also do not function well at intersections with high truck traffic volumes. Truck volumes at the Oregon 22/Oregon 99W intersection are high with an average volume of approximately 2,000 vehicles per day.

- Further, the size of the turning radii in roundabouts necessitates that moderate to large trucks must travel at slower speeds than auto traffic to safely maneuver. Two-lane roundabouts have larger turning radii, but may result in large trucks using both circulatory lanes due to the trailer off tracking. This can create safety as well as operational efficiency problems.

The ODOT interim siting criteria recommend that only single-lane roundabouts be considered at this time. As roundabouts are a relatively new form of intersection control in the USA and particularly in Oregon, drivers need to understand the basic operating principles of single lane roundabouts before they can be expected to use a multi-lane roundabout efficiently and safely. The complexity of multi-lane roundabouts increases with the number of entering legs.

As stated previously, the TPAU analysis shows that current traffic volumes would necessitate multi-lane roundabouts at both intersections. A multi-lane roundabout at either of these locations can create several internal conflicts, including:

- Truck traffic will use most, if not all, of the circulatory roadway. Vehicles on the inside may be sideswiped by the trailer off-tracking.

- Additionally, there are high volumes of left-turning traffic at these intersections. Proper use of the roundabout requires left-turning traffic to use the inside portion of the roundabout and leave from the inside as well. This will be difficult for many drivers to comprehend.

- As a result, some drivers may attempt a left turn from the outside lane resulting in safety problems and reduced operational efficiency.

- Roundabouts do not operate effectively where traffic volumes at one or two entry points are significantly higher than volumes at other. Traffic volumes on Oregon 22 are significantly higher than on Oregon 99W.

- Additionally, roundabouts are less effective with high left turn volumes. Both the Oregon 22/Oregon 99W and Oregon 22/Dallas-Rickreall Highway intersections accommodate heavy left-turn traffic from westbound to southbound. The large volumes would reduce the effectiveness and safety of a roundabout intersection.

Roundabout intersection control was also considered in conjunction with one of the intersections being signalized. Additionally, a roundabout was proposed at Oregon 22/Dallas-Rickreall Highway intersection in conjunction with development of an interchange at the Oregon 22/Oregon 99W intersection. Both of these proposals create significant operational issues, including:

- Queuing, or storage problems at either the roundabout or signalized intersection could affect the operations at one or both intersections.

- Additionally, there would be operational problems for westbound traffic traveling to Dallas from an interchange at Oregon 22/Oregon 99W to a roundabout intersection at the Oregon 22/Dallas-Rickreall Highway.

- Traffic will be accelerating to highway speeds and merging, drivers will not expect an intersection control closely spaced that requires them to slow to 20 mph or even stop. Therefore, roundabout intersection control at both intersections would be necessary to ensure proper vehicle interaction between the two intersections.

Roundabout intersection control is not recommended at either intersection due to the numerous safety and operational problems. These problems include large speed differentials, truck volume, truck-vehicular conflicts, unequal traffic volumes, complexity of multi-lane operation, lack of compatibility with other design options, and the inability to meet highway mobility standards in the design year.

For these reasons, the TAC dismissed this alternative from further consideration.

5.4.2 Single-point urban diamond at Oregon 22/Oregon 99W intersection

A single-point interchange alternative was evaluated for the Oregon 22/Oregon 99W intersection. Because this style of interchange has a smaller “footprint” than many other interchange forms, this alternative was discussed as a design technique that could reduce the impacts of an interchange to the Rickreall community.

The alternative analyzed in this case included building a single-point diamond interchange at the Oregon 22/Oregon 99W intersection as well as grade separating the Oregon 22/Dallas-Rickreall Highway intersection. The single-point diamond design is a tight or compressed design where the ramps are closely spaced to the highway and curve inward towards each other to form one singe intersection underneath the overcrossing structure.

Due to the close proximity of the two intersections, the ramps to the Dallas-Rickreall Highway need to be separated from the interchange ramps at the Oregon 22/99W intersection. This would require the exit ramps for westbound traffic bound for Dallas to be located east of the Oregon 22/99W intersection. The ramp roadway would then cross over both Oregon 99W and Oregon 22 before connecting with Dallas-Rickreall Highway.

For eastbound traffic entering Oregon 22 from Dallas-Rickreall Highway, two options were considered. The first option is to realign the eastbound portion of Dallas-Rickreall Highway to run parallel to and south of Oregon 22. Eastbound traffic would then cross over Oregon 99W before merging onto Oregon 22 just west of the railroad structure. The second option is to braid the eastbound portion of Dallas-Rickreall Highway with the eastbound exit ramp to Oregon 99W. This option may result in smaller overall footprint than the first option.

The TAC found that this alternative has higher overall construction costs, right-of-way impacts, lack of compatibility of phasing, and the no distinct advantages over any of the other long-term design alternatives.

For these reasons, the TAC dismissed this alternative from further consideration.

5.5 Intersection Alternatives Identified for Additional Evaluation

The TAC developed seven levels of potential improvement alternatives at the Oregon 22/99W and Oregon 22/Dallas-Rickreall Highway intersections for more detailed evaluation. The more detailed evaluation included both preliminary design concepts and traffic analysis. In general, as the level of design alternatives increase so does the cost and impacts of implementing. The alternatives evaluated include:

Level 1 Immediate improvements such as striping, signing, visibility enhancements, Intelligent Transportation Systems (ITS), etc.

Level 2 Channelization improvements to the existing Oregon 22/99W intersection and potential signalization of Oregon 22/Dallas-Rickreall Highway intersection.

Level 3 At-grade jug-handle designs for indirect left turns through a traffic signal at the existing Oregon 22/99W intersection.

Level 4 Build a grade separation for westbound traffic to Dallas at the Oregon 22/Dallas-Rickreall Highway intersection.

Level 5 Jug-handle style interchange options at the Oregon 22/99W intersection.

Level 6 Jug-handle style interchange at the Oregon 22/99W intersection with grade separation to westbound traffic at Oregon 22/Dallas-Rickreall Highway intersection (Level 4 plus Level 5).

Level 7 Full interchange concepts at the Oregon 22/99W intersection with freeway style ramps including connections to Dallas-Rickreall Highway.

5.6 Rickreall Community Alternatives Identified for Additional Evaluation

As the project team analyzed the range of possible alternatives for the Oregon 22/99W intersection, it became apparent that projected traffic increases over the 20-year planning horizon, as well as the design options for the intersection/interchange, would result in significant impacts to Oregon 99W and the Rickreall community. Subsequently, the project team developed and evaluated a range of alternatives to address the long-range deficiencies, safety problems, and operational needs of the section of Oregon 99W through the Rickreall community. These alternatives include:

Alternative A	No build (this is addressed in Chapter 4)
Alternative B	Construct a 3–Lane Section on Oregon 99W
Alternative C	Construct a 4-Lane Section on Oregon 99W
Alternative D	Construct 4-Lanes Plus Median on Oregon 99W
Alternative E	Construct an off-set 'T' at the Oregon 99W/ Rickreall Road intersection
Alternative F	Construct a jug-handle connection to eliminate left turns from Rickreall Road onto Oregon 99W
Alternative G	Construct a roundabout at the Oregon 99W/ Rickreall Road Intersection

CHAPTER 6

Alternatives Evaluation and Interchange Area Management Plan

6.1 Evaluation Approach

The evaluation approach has three steps: alternative development, detailed evaluation, and stakeholder validation. As mentioned previously, of the alternatives identified, the project Technical Advisory Committee (TAC) advanced seven (7) levels of potential improvement alternatives at the Oregon 22/Oregon 99W and Oregon 22/Oregon 223 (Dallas-Rickreall Highway) intersections for more detailed evaluation.

Assumptions used to develop and evaluate alternatives were based on local, state, and federal policy applications and information gathered during the conditions assessment phase of the process.

Several standard assumptions were used to evaluate alternatives. These assumptions include:

- Future travel demand is based on traffic projections derived from historic travel growth rates. An assessment of the potential of area land uses to generate traffic growth that could exceed the historical averages was also conducted. No outstanding growth potential was discovered.

- Access control either exists or will be purchased with new right-of-way within the operating area of each alternative. No new accesses are assumed within these areas. With the grade-separated alternatives, some compromise of the interchange spacing standard within Rickreall may be needed to serve pre-existing uses and facilitate future project development on Oregon 99W.

- The Rickreall School (currently closed—may reopen in future) will remain in its current location, although student drop-off and pick-up will be moved off Oregon 99W. A new connector road between Rickreall Road and the school will be developed by the county to provide off-highway access to the school. This roadway may also provide alternative future access to properties abutting Oregon 99W. An improved pedestrian crossing from the west side of Oregon 99W to the school will also be developed during the design phase of which ever alternative is advanced for construction.

- Oregon 22 will remain as a 55-mph facility.

- The grade-separated alternatives with Oregon 22 crossing over Oregon 99W all assume that Oregon 22 will be shifted slightly to the north on its approaches to Oregon 99W in order to increase spacing between the interchange and the Rickreall community and to improve its horizontal alignment to the west of the interchange.

- The OHP Major Improvement Policy establishes priorities for infrastructure investment. The highest priority is to preserve the functionality of the existing highway system. The second priority is to make minor improvements to existing highway facilities. The third priority is to make major roadway improvements to existing highway facilities. The final priority is to add new transportation facilities such as a new highway or bypass when other alternatives fail to address the identified problem. The evaluation process addresses this policy. The need to address the OHP Access Management Policy and Mobility Policy is also factored into the assessment of each alternative's performance. The text of these OHP policies is included in Appendix B.

- When improved (either with this project, or with future projects), Oregon 99W in Rickreall will be reconstructed with sidewalks, improved pedestrian crossings and, where necessary and appropriate, medians.

The detailed alternative evaluation results were quantified, where practical, based on the level of data available. Where quantifiable data were not available, qualitative data has been provided to address the transportation objective categories, evaluation criteria, and performance measures detailed in Appendix J. A tabular summary of how the alternatives recommended for possible consideration meet the various evaluation criteria used in this analysis is provided in Appendix M. The results of the detailed alternative transportation operations evaluation are summarized in Appendix G.

6.2 Oregon 22, Oregon 99W, and Dallas/Rickreall Highway Intersection Alternatives Evaluated

The seven levels of intersection alternatives for the Oregon 22 intersections with Oregon 99W and the Dallas/Rickreall Highway that were advanced from the alternative identification phase for further analysis and subsequently recommended for possible consideration are described in this section. In this section, these alternatives are referred to by the alpha-numeric identifiers developed during the identification phase. The full operational analysis for these alternatives and those that were not recommended for possible consideration is included in Appendix G. Summary tables showing how the alternatives recommended for possible consideration meet the evaluation criteria used in this analysis is provided in Appendix M. Illustrations of these alternatives are provided in Appendix N. The recommended design configuration is provided in Appendix N. The levels and their location in this chapter are referenced below.

6.2.1 Level 1 - Immediate improvements such as striping, signing, visibility enhancements, Intelligent Transportation Systems (ITS), etc.

6.2.2 Level 2 - Channelization improvements to the existing Oregon 22/Oregon 99W intersection and potential signalization of Oregon 22/Dallas-Rickreall Highway intersection.

6.2.3 Level 3 - At-grade jug-handle designs for indirect left turns through a traffic signal at the existing Oregon 22/Oregon 99W intersection.

6.2.4 Level 4 - Provide grade separation for the westbound traffic at the Oregon 22/Dallas-Rickreall Highway intersection.

6.2.5 Level 5 - Jug-handle style interchange options at the Oregon 22/Oregon 99W intersection.

6.2.6 Level 6 - Jug-handle style interchange at the Oregon 22/Oregon 99W intersection with grade separation for westbound traffic at Oregon 22/Dallas-Rickreall Highway intersection.

6.2.7 Level 7 - Full interchange concepts at the Oregon 22/Oregon 99W intersection with freeway style ramps including connections to Dallas-Rickreall Highway.

6.2.8 Alternative 7 Refinements after Oregon Transportation Investment Act (OTIA) Funding was Allocated for Construction

6.2.1 Level 1 - Immediate improvements such as striping, signing, visibility enhancements, Intelligent Transportation Systems (ITS), etc.

This alternative is composed of low cost, easy to implement features meant to improve safety in the area. While no specific features were identified as part of this planning activity, concepts discussed included rumble strips for shoulders and median areas, glare shield on signals to reduce impacts from the sun, ITS reader boards for traffic conditions and accidents, possible signing or striping modifications.

No operational analysis was performed for this alternative, as none of these measures would significantly affect capacity or roadway geometrics. This alternative will not adequately address the defined transportation problem.

However, the TAC acknowledged the potential for more immediate safety benefits from this alternative and recommends that ODOT consider implementation of some of all of these measures to provide interim safety benefits if funding to advance a longer-term solution to the broader operational and geometric transportation problem was not forthcoming.

6.2.2 Level 2 - Channelization improvements to the existing Oregon 22/Oregon 99W intersection and potential signalization of Oregon 22/Dallas-Rickreall Highway intersection.

Alternative 2C: Channelization improvements to the existing Oregon 22/Oregon 99W intersection constructing dual westbound to southbound left turn lanes, a right turn lane for eastbound to southbound traffic, and adding separate left turn lanes for northbound to westbound traffic and southbound to eastbound traffic.

This alternative channelizes all four approaches at this intersection. The construction of dual left turn lanes reduces the length of storage for westbound to southbound traffic on Oregon 22. This shortens the area of speed reduction conflicts and slightly improves the intersection's operational efficiency. Alternative 2C is illustrated in Appendix N – Figure 1.

This alternative also provides an eastbound to southbound traffic deceleration lane from Oregon 22 to Oregon 99W. This feature would lower the potential for crashes resulting from conflicts between vehicles slowing to turn and those continuing through the intersection.

As with the modifications to Oregon 22, the separate left turn lanes on both Oregon 99W approaches serve two purposes. They will slightly improve intersection operations by removing the through traffic conflict currently created when vehicles stop in the single lane to wait for a gap to turn left. The reduction in conflicts between through traffic and left-turn movements should also improve safety.

Even though this alternative provides a short-term improvement in intersection v/c ratio, from 0.89 to 0.84, the improvements will not provide for long-term operations. The intersection will exceed capacity around 2012. The OHP Mobility Policy standard is not met now and would not be met under this alternative at any time. Assuming that it could be built in 2004 or 2005, the net result of this alternative would be to forestall complete peak hour intersection failure for approximately 5 years (from approximately 2007 to approximately 2012).

However, due to the high traffic demand for vehicles using the Oregon 22/Dallas-Rickreall Highway (westbound) intersection to travel to Dallas, this alternative will not address the lane imbalance problem that results from the close proximity of the Oregon 22/Oregon 99W intersection with the Oregon 22 and Dallas/Rickreall Highway intersection. As traffic grows and trips between Salem and Dallas become an even greater proportion of the total trips on Oregon 22, the lane balance in the Oregon 22 westbound through lanes at the Oregon 22/Oregon 99W intersection will become more uneven. This will likely make the intersection operate even worse than projected by the analysis, which does not totally account for this lane balance factor.

With higher traffic volumes in the future, the number of angle and rear-end accidents at this location, the predominant types currently experienced, will likely increase disproportionate to traffic growth, although their potential severity may be diminished through the addition of the turn lanes. However, even with channelization, a traffic signal in rural areas will always pose potential safety problems due to higher speed differentials between stopped vehicles and those approaching the signal from the rear of traffic queues.

In summary, while this alternative could provide some short-term relief at the Oregon 22/Oregon 99W intersection, it does not adequately address the fundamental transportation problems at these locations over the 20-year planning horizon.

6.2.3 Level 3 - At-grade jug-handle designs for indirect left turns through a traffic signal at the existing Oregon 22/Oregon 99W intersection.

While the Level 3 alternatives were evaluated in greater detail, none were advanced for further consideration. As with all dismissed alternatives, these alternatives are shown and described in Appendix G.

6.2.4 Level 4 - Provide a grade separation for westbound traffic at the Oregon 22/Dallas-Rickreall Highway intersection.

Alternative 4B - Provide grade-separation at the Oregon 22/Dallas-Rickreall Highway intersection through construction of a flyover (overpass structure) on the eastbound leg of Oregon 22.

This alternative physically separates the Salem to Dallas traffic from eastbound Oregon 22 traffic by elevating Oregon 22 eastbound over the Dallas-Rickreall Highway. Oregon 22 westbound would split with two lanes becoming the Dallas-Rickreall Highway (and passing under the Oregon 22 eastbound flyover) and two lanes continuing westbound towards the coast (merging back to one lane west of the split). Alternative 4B is illustrated in Appendix N – Figure 2.

In its current configuration, this critical left turn movement at this intersection is near capacity and well beyond OHP Mobility Standards. Because all movements would become free-flow, this alternative will provide very good service through 2025. Separating the Dallas-Rickreall Highway turning movements from the Oregon 22 traffic will improve safety of the section. The design is compatible with several other short and mid-range alternatives and one long-range alternative for the Oregon 22/99W intersection.

It should be noted that as a stand-alone alternative, this alternative also includes the channelization improvements at the Oregon 22/Oregon 99W intersection described in Alternative 2C. However, in this alternative (as opposed to the lane configuration in 2C), an additional through lane would be added in the eastbound and westbound directions on Oregon 22 east of the Oregon 22/Oregon 99W intersection to carry through traffic flows through the signalized Oregon 22/Oregon 99W intersection. The third westbound Oregon 22 through lane would distribute vehicles traveling from Salem to Dallas into two (2) lanes instead of one lane at the Oregon 22/Oregon 99W intersection. These lane additions result in significant operational improvements at the Oregon 22/Oregon 99W intersection, extending its ability to meet OHP mobility standards to approximately 2013 and forestalling complete failure until approximately 2020. However, this modification would do very little to improve the inherent safety problems associated with the placement of a traffic signal on a high-speed rural facility.

This design would also eliminate two low-volume movements from the existing intersection. The moves eliminated would be the left and right turns onto Oregon 22 from the stop sign at the short road section that connects to both Oregon 22 and Dallas-Rickreall Highway. This would result in some minor out-of-direction travel, but would also increase safety and simplify construction.

6.2.5 Level 5 - Jug-handle style interchange options at the Oregon 22/Oregon 99W intersection.

Alternative 5C - Grade-separated jug-handle style intersection at the Oregon 22/Oregon 99W intersection with jug-handles in the northwest and southeast quadrants.

Alternative 5C is the least expensive type of grade-separated interchange design analyzed and could be phased with improvements at the Oregon 22/Dallas-Rickreall Highway intersection (Alternative 4B) and with full interchange options (Level 7). This alternative consists of building a grade-separated jug-handle style interchange at the Oregon 22/Oregon 99W intersection with Oregon 22 passing over Oregon 99W. Jug-handles would be located in the northwest and southeast quadrants. The heavy westbound to southbound traffic movements can be accommodated without installing a traffic signal at the westbound ramp terminals (north of Oregon 22) through the 20-year planning horizon. Alternative 5C is illustrated in Appendix N – Figure 3.

While it is not projected to meet technical traffic signal warrants until 2015-2020, a traffic signal was analyzed at the eastbound ramp terminal (south of Oregon 22) as part of the initial construction of this alternative. This signal was examined as a way to create gaps in traffic flow that could improve intersection operations and safety at the Oregon 99W/Rickreall intersection and at the Oregon 99W intersection with the interchange ramp terminal north of Oregon 22. This signal would enable the southern ramp terminal to function within OHP mobility standards through 2025.

This alternative could be built as a stand-alone project and later combined with Alternative 4B or modified to become Alternative 7A. However, without construction of improvements to the Oregon 22/Dallas-Rickreall Highway described in the discussion Alternative 4B, the existing westbound to southbound traffic movement at that intersection will continue to worsen and exceed OHP mobility standards. This will result in significant queuing of vehicles waiting to turn left from Oregon 22 westbound onto the Dallas-Rickreall Highway.

To reduce potential conflicts that could occur between this queue and the interchange, it will be necessary to locate the entrance of the ramp that connects southbound Oregon 99W to westbound Oregon 22 west of the Oregon 22/Dallas-Rickreall Highway intersection. This will eliminate the potential for unsafe westbound weave maneuvers between the interchange and the Dallas-Rickreall Highway. This will also eliminate the ability for drivers to travel from Oregon 99W southbound to the Dallas-Rickreall Highway via Oregon 22. As a result, drivers traveling from McMinnville to Dallas can either continue southbound on Oregon 99W to the Oregon 99W/Rickreall Road intersection and then turn west to the Dallas/Rickreall Highway or travel westbound on Oregon 22 to the Oregon 22/Kings Valley Highway intersection and then turn south.

With this alternative, the spacing between the southern ramp terminal and Rickreall Road is approximately 450 meters (~1500 feet) which does meet the OHP ramp to local street spacing standard of 400 meters (1320 feet). Rickreall Road is the closest major street to the ramp terminal. However, the closest local roadway to this ramp terminal is Pageant Street. Pageant Street is approximately 120 meters (~400 feet) away from the southern ramp terminal. Direct Pageant Street access to Oregon 99W will need to be closed in order for the interchange to function safely.

Currently opposite Pageant Street, on the east side or Oregon 99W between Church Street and the southern ramp terminal, are the Rickreall Elementary School, the local Grange Hall, and the Rickreall Mason's Lodge. The school has a school bus drop off area adjacent and parallel to Oregon 99W. The Grange and Mason's Lodge have several graded, unpaved, and undefined parking spaces that are directly adjacent to Oregon 99W. These accesses will also need to be closed in order to protect the interchange area function. To provide alternative access to these facilities, Polk County will fund construction of a new access road from Rickreall Road north to the school property, roughly along the community boundary with the EFU property to the east of Rickreall. This road will provide alternative access that will improve safety in the interchange area. It will also be a key facility to improve local circulation if and when local properties fronting the east side of Oregon 99W in Rickreall develop or redevelop.

The next local street between the proposed southern ramp terminal and Rickreall Road is Church Street. Church Street is approximately 230 meters (~750 feet) from the southern ramp terminal.

Even with the closure of Pageant Street, this is a very low volume local road serving approximately 13 residential properties. The local fire station also has access to Oregon 99W at this point.

It is the position of ODOT Region 2 that Church Street can safely remain open as a full movement access at this time. However, when turn lanes or travel lanes are added to Oregon 99W as traffic volumes grow, consideration should be made to limiting the Church Street access to right-in, right-out movements through use of a median. Any median provided in this vicinity would need to be "mountable" (i.e., designed to allow Fire and Emergency vehicles to cross over).

It is anticipated that the need to add lanes to and/or implement more stringent access management on Oregon 99W will occur within an approximately 15-20-year horizon. It is also anticipated that warrants for a traffic signal at Rickreall Road will also be met in approximately this same time period if not sooner. When signalized, Rickreall Road will be better able to handle additional traffic diverted from residences and businesses whose access may be affected by installation of a median.

Detailed planning for what to do about forecast capacity problems Oregon 99W south of Oregon 22 will begin in 2005. This process will produce preliminary recommendations about future access within this part of the Oregon 99W corridor. Specific decisions about the disposition of the accesses to the three businesses and the two residential accesses between Church Street and Rickreall Road should be determined by the Project Development Team (Access Management Sub-Team) during the project development process when Oregon 99W is improved south of Church Street. This determination should include considering the installation of a median between Church Street and Rickreall Road. It may be appropriate to limit these accesses to right-in, right-out movements through use of a median or to close them completely and provide alternative access.

Dealing with this area will ultimately depend on whether or not alternatives to widening Oregon 99W can be developed, shared access negotiations with abutting property owners, and the design of the county frontage road needed to provide access from Rickreall Road to the Rickreall Elementary School (as described in Section 6.3.4).

6.2.6 Level 6 - Jug-handle style interchange at the Oregon 22/Oregon 99W intersection with grade separation to westbound traffic at Oregon 22/Dallas-Rickreall Highway intersection.

Alternative 6C - Grade-separated jug-handle style intersection at the Oregon 22/Oregon 99W intersection with grade-separation at the Oregon 22/Dallas-Rickreall Highway intersection.

Alternative 6C combines the Alternative 5C interchange configuration at the Oregon 22/Oregon 99W intersection with the Alternative 4B grade separation at the Oregon 22 and Dallas-Rickreall Highway intersection. By combining 4B and 5C, all of the problems that were identified in the project problem statement can be adequately addressed through the 20-year planning horizon. Furthermore, the problems that would remain or be created by constructing either alternative independently would also be largely eliminated. Access management on Oregon 99W within Rickreall on the approach to the eastbound ramps at the interchange with Oregon 22 would be the

same as described in Alternative 5C. Alternative 6C alternative can also be modified in the future in to the Alternative 7A design with a minimal loss of the initial investment. Alternative 6C is illustrated in Appendix N – Figure 4.

With this combination of Alternatives 4B and 5C, the distance between the exit ramp from Oregon 22 eastbound to Oregon 99W and the proposed merge of Oregon 22 eastbound and the Dallas-Rickreall Highway eastbound is shorter than called for by the OHP interchange ramp spacing standards. The distance between these two points is approximately 300 meters (~990 feet) as opposed to the OHP spacing standard of 1.6 km (5280 feet) between interchange ramps. However, this configuration is not a conventional ramp spacing situation.

In this alternative, the intersection at Oregon 22 and the Dallas-Rickreall Highway would become a directional interchange where the eastbound lanes of two highways merge into one single highway (the Dallas-Rickreall Highway eastbound merges with Oregon 22 eastbound, becoming just Oregon 22 eastbound). In this case, the heavier merged movement would be from the Dallas-Rickreall Highway. The principal concern with this configuration would be for vehicles merging with Oregon 22 eastbound from the Dallas-Rickreall Highway eastbound weaving across the Oregon 22 eastbound traffic to reach the ramp in the southeast quadrant of the interchange that serves the eastbound to northbound traffic flow. However, this is a very low volume movement (less than 10% of eastbound vehicles in a typical peak hour in 2025 even if all eastbound to northbound movements came from Dallas-Rickreall Highway and none came from Oregon 22—it is likely that most will come from Oregon 22). This factor is not considered to be a fatal flaw by ODOT Preliminary Design.

6.2.7 Level 7 - Full interchange concepts at the Oregon 22/Oregon 99W intersection with freeway style ramps including connections to Dallas-Rickreall Highway.

Alternative 7A - Full interchange concepts at the Oregon 22/Oregon 99W intersection with freeway style ramps including connections to the Dallas-Rickreall Highway

Alternative 7A combines both the Oregon 22/Oregon 99W and Oregon 22/Dallas-Rickreall Highway intersections into a single interchange with more conventional diamond-style freeway-ramps south of Oregon 22. Like Alternative 6C, this alternative incorporates the grade-separation that elevates Oregon 22 over Oregon 99W and a loop ramp in the northwest quadrant and a long diamond westbound entrance ramp that does not allow connection to Dallas-Rickreall Highway. Alternative 7A is illustrated in Appendix N – Figure 5.

For eastbound traffic, the exit to Oregon 99W north or southbound splits from Oregon 22 at the structure that would flyover the Dallas-Rickreall Highway and connects directly to Oregon 99W. The eastbound entrance to Oregon 22 from Oregon 99W northbound is a normal diamond style ramp.

Alternative 7A has a one-lane structure over Dallas-Rickreall Highway for eastbound Oregon 22 vehicles traveling from the coast to Salem. Traffic signals would not be needed through and the 20-year planning horizon at either eastbound or westbound ramp terminals if an add-lane is constructed at the westbound ramp terminals for the westbound to southbound right turning traffic.

This interchange configuration will not provide a direct route for McMinnville to Dallas or Dallas to McMinnville traffic flows via the Dallas-Rickreall Highway. These drivers will have to reroute to the Oregon 99W/Rickreall Road intersection to reach their destinations or in, the case of McMinnville to Dallas traffic travel on Oregon 22 westbound to Oregon 223 (Kings Valley Highway). In the worst case, this shift of traffic through Rickreall only amounts to about 100 vehicles in the peak hour of highway operation (in contrast to the 2600 vehicles that are otherwise forecasted to be on Oregon 99W during a typical 2025 peak hour). While only constituting an approximately 4% change in Oregon 99W traffic flow in Rickreall (worst case), this shift will help to cause the Oregon 99W/Rickreall Road intersection to meet traffic signal warrants within about 10 years. Additionally, as a measure to lower the number of vehicles that might shift through Rickreall as a result of this design, ODOT will provide signage in Dallas and north of Oregon 22 on Oregon 99W that identifies Oregon 22 and the King's Valley Highway as the best route between Dallas and McMinnville.

The interchange portion of this alternative will meet mobility standards for more through the 2025 planning horizon. This alternative also meets most spacing standards, except within the community of Rickreall. The same access and spacing situation described for Alternative 5C and 6C would exist within Rickreall with the exception that, by virtue of having the diamond-style ramps south of Oregon 22, the spacing between the southern ramp terminals and Church would lengthen to approximately 850 feet.

6.2.8 Alternative 7 Refinements after Oregon Transportation Investment Act (OTIA) Funding was Allocated for Construction

In January 2002, the Oregon Transportation Commission approved $16.1 million funding to replace the two intersections analyzed in this Facility Plan with grade-separated interchanges. Their approval was based on staff work, which, at that time, indicated that Alternative 6C was the best alternative from a cost, traffic operations, and community impact basis.

Shortly after the OTC approval was granted and a project development team was assigned move the project concept into construction; new questions were raised by ODOT staff about the sufficiency of the funding allocated to actually construct the 6C design as initially conceived. A re-examination of the cost assumptions that had been developed in 2000 revealed that the OTIA funds would not be adequate to fully fund Alternative 6C as originally conceived.

In addition, upon further discussion about early installation of a traffic signal at the southern ramp terminal as called for with Alternative 6C, the ODOT Traffic Section determined that they would not be able to allow installation of a signal so far in advance of signal warrants being met. The Traffic Section did, however, offer their support for analyzing a traffic signal at northbound ramp if a diamond-style ramp configuration requiring a double left turn lane (from WB Oregon 22 to SB Oregon 99W) were constructed on the north side of the Oregon 22 and Oregon 99W interchange.

Because of these issues, a further round of alternative analysis was initiated in the spring of 2002. As noted above, the ODOT Traffic Section had decided not to support a new traffic signal at the southern ramp. Because of this and because the new cost estimates did not reveal as great a

difference between the level 6 and level 7 alternatives as previously indicated, the new analysis focused on variations of the level 7 alternatives.

Both new alternatives featured fewer lanes on Oregon 22 on the approaches to and from the Oregon 99W interchange and kept a single lane into Dallas on the Dallas-Rickreall Highway from Oregon 22 WB. Both designs featured diamond-style ramps on the south side of the Oregon 22 and Oregon 99W interchange.

There were two issues that defined and differentiated the two basic designs assessed in this supplemental round of analysis. The first issue was whether or not the northern ramps would remain in the loop configuration in the NW quadrant of the Oregon 22 and Oregon 99W interchange shown in Alternatives 5C, 6C, and 7A or whether they would be constructed in a diamond-style configuration. With the north side diamond configuration, traffic signals would be warranted, but would provide acceptable operations throughout the planning horizon. The loop configuration also operates acceptably through the year 2025 planning horizon.

The second issue was whether or not to elevate Oregon 99W over Oregon 22. Because of the cost concerns noted above, the design team assigned after OTIA funding approval looked at ways to lower project costs and noted that elevating Oregon 22 over Oregon 99W would be about $1 million more expensive than taking Oregon 99W over Oregon 22. The operational characteristics were essentially unchanged between regardless of whether or not Oregon 99W was elevated.

Based on earlier analysis and discussions with area residents, all options analyzed and advanced prior to the approval of OTIA funding had assumed that Oregon 99W would remain at-grade. This approach was assumed for several reasons that had, prior to approval of OTIA funding, been felt to outweigh the cost issue. These issues are summarized below:

- By keeping Oregon 99W on the ground, visual and noise intrusion into the Rickreall Community would be minimized (as opposed to having the toe of an overpass slope land at the community's northern boundary).

- It was felt that traffic would be more easily slowed as it approached Rickreall from the north because it would not be approaching on a downhill grade.

- With Oregon 99W traffic going under an Oregon 22 overpass was also felt to be a strong visual signal for motorists to slow down as they approached Rickreall.

- Both of these features were expected to reduce possible pedestrian conflicts, particularly because the Rickreall Elementary School is located at the north end of Rickreall.

- Finally, with the Oregon 22 "over" design, Oregon 22 is aligned slightly to the north in order to facilitate construction phasing and flatten its horizontal curvature to the west. This realignment would increase spacing between the southern ramp terminal and the local street network and better meet OHP spacing goals.

The results of these considerations were four variations on the Level 7 Alternatives. Alternative 7.A.1, with reduced lanes on Oregon 22 and a loop ramp for Oregon 22 WB to SB traffic was considered with Oregon 99W elevated over Oregon 22 and with Oregon 22 elevated over Oregon 99W. These two variations of Alternative 7A.1 are illustrated in Appendix N – Figure 6 and Figure 7.

Alternative 7C, with a diamond-style ramp (and a traffic signal) in the NE quadrant of the Oregon 22 and Oregon 99W interchange (as opposed to a loop ramp in the NW quadrant) was also considered with Oregon 99W over and under Oregon 22. These two variations of Alternative 7C are illustrated in Appendix N – Figure 8 and Figure 9.

In order to mitigate the perceived community impact associated with the Oregon 99W overcrossing coming to grade at the north end of Rickreall, additional "traffic calming" measures were considered with Alternative 7C. These measures included increased landscaping and advance signing, flashing lights, colored pavers on Oregon 99W as it enters Rickreall (as a visual clue to slow down), and striping treatments designed to further slow traffic. Taken collectively, it is believed that these or similar measures will cause drivers to slow as the approach Rickreall and create a very safe pedestrian environment.

Alternative 7A.1 - Full interchange concepts at the Oregon 22/Oregon 99W intersection with freeway style ramps including connections to the Dallas-Rickreall Highway and auxiliary lane modifications to reduce initial construction costs

Alternative 7C - Full interchange concepts at the Oregon 22/Oregon 99W intersection with diamond-style freeway ramps north and south of Oregon 22 including connections to the Dallas-Rickreall Highway and auxiliary lane modifications to reduce initial construction costs

In May 2002, ODOT staff believed that any one of these four alternatives could be constructed with the available funding. While not fully meeting OHP mobility standards for certain weave and turning movements in the year 2025 planning horizon, staff also determined that each would also provide acceptable operational performance (worst case V/C ratios of about 0.80 as opposed to the desired 0.70 or 0.75).

The design preference expressed previously by most community stakeholders had been for Oregon 99W to stay at grade. Stakeholders had also expressed a preference for keeping a traffic signal on Oregon 99W near Rickreall to create gaps in the traffic flow through the community. Both of these features (99W at-grade and a signal) were elements that had been discussed publicly for about 18 months as part of the preferred approach. Consequently, ODOT Management decided to check in with local stakeholders before making a final alternative selection decision that could do away with one or both of these preferred features.

The four Alternative 7A.1 and 7C Alternatives were shared with the Rickreall community in June 2002 at a public open house that was attended by over 100 people. Based upon a questionnaire that was filled out by many of the attendees, the previous preferences expressed by local stakeholders were both affirmed and reversed.

There was almost no support shown for either of the Alternative 7C variations, largely because of the impact that it would have on the farm property that is north and east of Oregon 22 and Oregon 99W. Rejection of this alternative meant that the traffic signal it offered was also rejected, or at least felt to be of less importance than avoiding impact to the farm property. Likely aiding this change in preference was a simulation that ODOT staff had prepared to demonstrate the likelihood of traffic gaps with and without a signal. This analysis showed that a traffic signal as shown with Alternative 7C would provide very few additional gap opportunities when compared to the Alternative 7A.1 loop ramp design without a traffic signal.

A slight majority of those responding to the questionnaire and particularly those living in Rickreall (as opposed to people identifying themselves as being from Dallas or elsewhere in Polk County) did affirm their preference for keeping Oregon 99W at-grade. The preference to keep Oregon 99W on the ground and to elevate Oregon 22 was supported by the Polk County Commission in a July 2002 letter to ODOT.

Based on this input from the community and the County, in July 2002, ODOT Management decided to move ahead with the Alternative 7A.1 variation that keeps Oregon 99W at-grade (with the NW quadrant loop ramp) as the design alternative.

In the year that followed, ODOT project development staff began refining the preferred design using a digital terrain model. This more detailed analysis led to yet another crossroads for this project. The more refined 30% design estimate showed that, for a variety of reasons, the cost of the Alternative 7A.1 with Oregon 99W at grade would be approximately $21.3 million, as opposed to a cost of $18.8 million for the variation that makes Oregon 99W the overcrossing. Additionally, the decision was made in early 2003 to close the Rickreall School, indefinitely, due to School District budget problems.

Because ODOT management believed that it would be difficult to find an additional $2.7 million needed to construct the less expensive alternative and nearly impossible to find the more than $5 million needed to construct the more expensive alternative, an additional public meeting was held on September 29, 2003. The purpose of the meeting was to inform the public that, due to budget constraints, ODOT would only be able to deliver the option with Oregon 99W as the overcrossing within the time provided to use the OTIA funding. ODOT's goal was to determine if the public could accept this change with the guarantee that full range of traffic calming measures would be employed.

The consensus of those attending the public meeting was that the change would be acceptable, particularly given that the school had closed its daily operation and in consideration of the traffic calming measures that would be included with the project. The Polk County Commissioners also attended and were in support of this budget driven change.

The subsequent discussion of interchange area management planning in Section 6.3.3 is predicated on the eventual construction of Alternative 7A.1 with Oregon 99W crossing over Oregon 22.

6.3 Rickreall Community Alternatives

The Rickreall community transportation alternatives that were advanced from the alternative identification phase for further analysis and are recommended for possible consideration as part of a Oregon 99W (from Oregon 22 to Monmouth) Facility Plan are described in this section. In this section, the alphabetic identifiers developed during the identification phase are used to refer to these alternatives. The full operational traffic analysis for these alternatives and those that are not recommended for additional consideration is included in Appendix G. The Interchange Area Management Plan for the recommended improvements is also described in Section 6.3.3.

6.3.1 Oregon 99W Improvements

Alternative A - No Build (this alternative is addressed in Chapter 4, Condition and Deficiency Assessment)

Alternative B - Construct a 3-Lane Section on Oregon 99W

This alternative would add either a continuous two-way left turn lane to Oregon 99W between Oregon 22 and Rickreall Road or a separate left turn lane at the Rickreall Road/Oregon 99W intersection in both the north and southbound directions. This alternative would improve traffic flow by removing left turning vehicles from the through traffic stream.

The existing right-of-way width for Oregon 99W through Rickreall is 60 feet. This would provide almost enough space to build a continuous left turn lane or a left turn lane on both Oregon 99W approaches at Rickreall Road. This may also be adequate to construct minimal bike and lanes and sidewalks. In the case of the variation that just includes the turn lane at Rickreall Road, the center turn lane could include portions of or a full raised median to facilitate pedestrian crossings, reduce potential vehicle conflicts, and, as a result, improve safety. This alternative assumes that the Rickreall Road intersection is a conventional intersection either with or without a traffic signal.

While the left turn lane at Rickreall Road could provide some short-term benefit, this alternative, overall, will not provide acceptable long-term operations on the highway through Rickreall. By approximately 2015 to 2020, through traffic volumes on the highway will exceed the 2-lane roadway through capacity, even with the turn lane. In addition, even with a traffic signal installed, this alternative would not provide for acceptable long-term operations at the Rickreall Road intersection. It should be noted that because of the increase in roadway width needed to construct this or any of the Oregon 99W alternatives that add lanes or turn lanes, the bridge over Rickreall Creek, just south of Rickreall Road, will need to be widened or replaced in order to fully meet Oregon Design Manual Standards.

Alternative C - Construct a 4-Lane Section on Oregon 99W

This alternative would add one travel lane each direction on Oregon 99W from the Oregon 22/Oregon 99W intersection/ interchange south past the Rickreall Creek bridge. The additional travel lanes on Oregon 99W could almost be constructed (perhaps needing an additional 4 feet), with minimal sidewalks, within the existing right-of-way, although bike lanes could not be provided within the existing ROW. This alternative was evaluated with and without a traffic signal at the Rickreall Road intersection.

On paper, this alternative provides adequate long-term Oregon 99W through capacity through the community with lower right-of-way impact. However, traffic flow would often be interrupted by left-turning traffic at Rickreall Road (at a minimum, depending on median control) that will stop in the left-hand through travel lane waiting for a gap in opposing traffic. This would result in both operational and safety impacts. Consequently, ODOT does not recommend further consideration because, in actual practice the theoretical through movement performance is over-estimated by the analysis procedure, it will not address the projected long-term deficiencies at the Oregon 99W/Rickreall Road intersection (with or without a traffic signal).

Alternative D - Construct 4-Lanes Plus Median on Oregon 99W

This alternative also includes an added travel lane in each direction like Alternative C. However, this alternative also includes a median, which would be a raised non-traversable median, with a left-turn opening at a key intersection(s). As with Alternatives B and C, this alternative was evaluated both with and without a traffic signal at Rickreall Road.

This alternative will provide acceptable long-term operations on Oregon 99W and at the Oregon 99W/Rickreall Road intersection, if a traffic signal is installed. However, even in combination with the recommended interchange at Oregon 22/Oregon 99W, the Oregon 99W/Rickreall Road intersection may not meet signal warrants until approximately 2010. Prior to signal installation, the v/c ratios for the left turns from the minor Rickreall Road approaches will be very poor, despite the relatively low turning volumes, because of the high through traffic volumes.

The raised median section would improve pedestrian crossing and safety and might improve community appearance if the median provided for trees or other low-maintenance landscaping. The alternative enables smooth traffic flow and increases safety by allowing left-turning traffic to move out of the through traffic stream. The alternative is compatible with all long-term alternatives for the Oregon 22/Oregon 99W intersection.

This alternative has the largest cross-section of any of the Rickreall community alternatives and will require significant additional right-of-way. It is also the most expensive of the Rickreall community alternatives. It will have a significant impact on existing properties and buildings in the community and will require some property takings.

Because of its ability to address the longer-term traffic demands on Oregon 99W, the Facility Plan Project Team believes that this is currently the best alternative identified to date for eventual implementation. However, the need for a four-lane section is not projected to occur until at least 2015. There is a significant potential community impact from this kind of project, but there is also a significant period of time before the need becomes critical. Therefore, the TAC recommends that, before updating local plans and advancing this alternative, ODOT and Polk County take advantage of the time available, monitor traffic growth, and work with area residents to determine how to best balance community needs with the need to meet state, regional, and local traffic demand.

To this end, ODOT Region 2 has budgeted for development of an Oregon 99W Facility Plan to assess the Oregon 99W corridor from Oregon 22 south to at least Monmouth and potentially to Corvallis. This effort will begin in 2004. Because the vast majority of travel demand in this corridor comes from those communities and Salem and not from Rickreall, ODOT believes that it is important to explore all other possible options for addressing travel demand on Oregon 99W before deciding on an approach that may greatly impact Rickreall.

6.3.2 Oregon 99W/Rickreall Road Intersection Improvements

In addition to the mainline capacity improvements on Oregon 99W and conventional intersection improvements at the Oregon 99W/ Rickreall Road intersection, a number of other alternatives were further analyzed specifically for the Oregon 99W/Rickreall Road intersection. These were as follows:

- Alternative E - Construct an off-set 'T' at the Oregon 99W/Rickreall Road intersection
- Alternative F - Construct a jug-handle connection to eliminate left turns from Rickreall Road onto Oregon 99W
- Alternative G - Construct a roundabout at the Oregon 99W/Rickreall Road Intersection

The additional analysis revealed that none of these alternatives presented any operational or safety advantages over the more conventional intersection improvements (turning lanes and traffic signals) described in the previous section. In fact, because of the nature of the traffic flow and the layout of the community, many aspects of the more unconventional alternatives had significant disadvantages. Consequently, none of these alternatives is recommended for any further consideration. A more complete discussion of these alternatives is provided in Appendix G.

6.3.3 Interchange Area Management Plan

As described in Sections 6.2.5, 6.2.6, 6.2.7, and 6.2.8, a variety of actions are needed to ensure acceptable operations with any of the grade-separated interchange alternatives described in this report. OHP Policy 3C requires preparation of an Interchange Area Management Plan (IAMP) that addresses land use and transportation factors when a new interchange is built. OAR 734-51-155 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. Section 5.2.1 describes the land use conditions and actions that will support management of this area when the interchange is built. This section (6.3.3) describes the short- and long-term transportation facility management strategy for this project area. All proposed management measures (transportation and land use) are also summarized in Chapter 7. Table 6.3.1 describes how this IAMP addresses OHP Policy 3C and OAR 734-51-155 and 125. A figure illustrating the various elements of the IAMP as part of Alternative 7A.1 is also included in Appendix P.

With the exception of several farm crossing accesses, full access control is already present on Oregon 22 east of Oregon 99W. One farm crossing access also exists on Oregon 22 west of the Dallas-Rickreall Highway. One full access serving two residences and several farm properties exists on the north side of the Oregon 22 west of the Dallas-Rickreall Highway. The Project Team (Access Management Sub-Team) should relocate this access further to the west or east to Oregon 99W during the project development process to avoid conflicts with the interchange ramps near the Oregon 22 and Dallas-Rickreall Highway connection. One farm access also exists on Oregon 99W within the interchange operational area north of Oregon 22. This access would be close enough to the ramp terminal north of Oregon 22 (about 200 feet or 60 meters) to make relocation of this access further to the north absolutely necessary. The Access Management Sub-Team will determine the specific point of relocation. When relocated and re-permitted, these accesses should be deed-restricted to limit the property served by the access to uses allowed by the current Exclusive Farm Use (EFU) zoning and associated limited use overlay zone.

The majority of access issues associated with this project are south of the interchange on Oregon 99W within Rickreall. In Rickreall, there is a very simple grid street network west of Oregon 99W and north of Rickreall Road. Only private driveways currently exist east of Oregon 99W and north of Rickreall Road.

The spacing between the southern ramp terminal of Alternative 7A.1 and Rickreall Road is approximately 420 meters (~1400 feet). Rickreall Road is the closest major street to the ramp terminal. The closest public street to this ramp terminal is Pageant Street. Pageant Street is about 100 meters (~330 feet) away from the southern ramp terminal. Direct Pageant Street access to Oregon 99W will need to be closed in order for the interchange to function safely.

The next street between the proposed southern ramp terminal and Rickreall Road is Church Street. Church Street is approximately 230 meters (~750 feet) from the southern ramp terminal and connects Oregon 99W with Ford Street. Even with the closure of Pageant Street, Church Street will remain a very low volume local road serving approximately 13 residential properties. The local fire station also has access to Oregon 99W at this point. Two other public street accesses exist between Church Street and Rickreall Road, Beck and Burch Street.

It is the position of ODOT that the local roads (Church, Beck, and Burch Street) and the five private accesses between Church Street and Rickreall Road can safely remain open with full movement upon initial construction of the interchange.

Also needed in conjunction with the initial construction of an interchange is the County access road east of Oregon 99W between Rickreall Road and the Rickreall School. Development of this street

will enable the existing direct accesses to the Rickreall School (including the bus drop site on Oregon 99W) and the Grange Hall and Mason's Lodge to be removed from Oregon 99W. This will improve the safety of access to the school and the interchange operational area.

When completed, Polk County should limit any access requests into the adjacent EFU property to those uses allowed by the EFU Zone and the 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 northwest of Rickreall, east of the Dallas Rickreall Highway, and north of Rickreall Road are limited to farm use only.

In the longer-term, several other measures should be implemented on Oregon 99W between Oregon 22 and Rickreall Road. It is anticipated that the need to add lanes to and implement more stringent access management on Oregon 99W south of Church Street may occur within the 15-20-year horizon as traffic volumes grow. Turn lanes and/or travel lanes will likely need to be added to Oregon 99W within this time frame unless some alternative means of meeting this demand can be found. Traffic signal warrants at Oregon 99W and Rickreall Road may also be met within a 10 year time frame. When or if new lanes are added to Oregon 99W north of Rickreall Road and when a traffic signal is installed at Oregon 99W and Rickreall Road, direct accesses to Oregon 99W between Church Street and Rickreall Road may be limited to right-in, right-out movements through use of a raised median. Any median provided in the vicinity of Church Street would need to be "mountable" (i.e., designed to allow Fire and Emergency vehicles to cross over).

When signalized, Rickreall Road will be better able to handle traffic diverted from residences and businesses whose access may be affected by installation of a median. The access road from Rickreall Road to the Elementary School will also be key in facilitating circulation to and from the east side of Oregon 99W, as will improvements to Ford, Church, Beck, and Burch Streets west of Oregon 99W.

Addressing access options for the private properties in this area will ultimately depend on how, when, or if Oregon 99W is widened over time, on shared access negotiations with property owners, and on the final design of the county road needed to provide access from Rickreall Road to the Elementary School. Local road circulation improvements could also be implemented incrementally—first in conjunction with the addition of left turn lanes the Oregon 99W/Rickreall Road intersection and second in conjunction with the addition of through lanes of Oregon 99W and signalization of the Oregon 99W/Rickreall Road intersection. It should be noted that any widening to add turn lanes or general-purpose lanes on Oregon 99W at Rickreall Road will also necessitate widening/replacement of the small bridge over Rickreall Creek just south of Rickreall Road, unless exceptions to the Oregon Design Manual Standards are granted.

The long-term transportation issues that need to be addressed along Oregon 99W in addition to extending the median south of Church Street are:

- the potential for continued right-in, right-out movement from accesses currently on Oregon 99W,
- possible full or partial closure of direct accesses to Oregon 99W between Oregon 22 and Rickreall Road,

- possible reorientation of business and residential accesses to the new road connecting the school to Rickreall Road and to Ford Street (which parallels Oregon 99W west of Oregon 99W and north of Rickreall Road,
- the potential for combining and sharing accesses,
- sidewalk and pedestrian crossing locations and design,
- the appropriate cross-section for Oregon 99W north of Rickreall Road,
- the extent and nature of transportation facility, and improvements needed on Oregon 99W south of Rickreall
- the timing and phasing of recommended solutions.

The nature of the businesses operating in this area in the long-term time frame will also help guide what access management treatments are most effective and appropriate. The basic approach for addressing these issues will be resolved through development of an Oregon 99W Facility Plan that covers the corridor between Oregon 22 and, at a minimum, Monmouth. This plan will be started in 2004. Specific long-term design plans for the two public streets, three businesses and two residential accesses between Church Street and Rickreall Road will ultimately be determined by the Project Development Team (Access Management Sub-Team) when a project to address Oregon 99W south of Church Street is initiated.

Table 6.3.1 – How the Rickreall Junction Facility Plan Meets OAR 734-051-0155 (Interchange Area Management Plan)

OAR 734-0051-0155 ISSUE	HOW ADDRESSED	WHERE
Should be developed no later than the time the interchange is being developed or redeveloped -0155(6)(a)	This document was produced before and during project design. It is being adopted in advance of final plans and construction.	
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 -0155(6)(b)	This planning effort began prior to project development and was coordinated with project development when funding was approved in January 2002. The land use controls and access management elements identified in this plan and incorporated into the project design or identified for implementation with future property redevelopment or project development activities will constitute significant operational and safety improvements.	Chapter 4 Chapter 5 Chapter 6 Chapter 7
Should include short, medium, and long-term actions to improve operations and safety in the interchange area -0155(4)(c)	The project selected for development is the ultimate long-term action identified to improve safety and operations at the intersections of Oregon 99W and the Dallas/Rickreall Highway 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, but have long-term benefits. Additionally, this plan identifies further planning steps that must be taken in and south of Rickreall along Oregon 99W outside and adjacent to the current project area to address problems identified by this project. Some potential actions to address these problems were identified by this plan, but their potential	Chapter 5 Chapter 6 Chapter 7

	consequences are so significant and the urgency of the problems is low enough (2015-2020) that this plan recommends a short and medium-term strategy to conduct a follow-on planning process to make sure all possible alternatives are identified and understood and to develop a joint state and local consensus about the best course of action to pursue to improve Oregon 99W south of this project area.	
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 -0155(4)(d)	A full analysis of existing and forecast (2025) operational, geometric, and safety conditions was conducted for this planning effort. All surrounding land use was also identified, 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.	Chapter 3 Chapter 4 Chapter 5 Chapter 6 Chapter 7
Should provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years -0155(4)(e)	The forecast analysis does show that safe operations will be achieved for the interchange projects through 2025. Capacity deficiencies on Oregon 99W south of Oregon 22 were also projected to occur between 2015 and 2020. These deficiencies will extend at least to the City of Monmouth, approximately 3 miles to the south. While this project does not solve this problem, widening Oregon 99W is identified as one possible way to address the problem. However, because the need for this improvement is not immediate, and because the impact of widening in Rickreall will be significant, ODOT Region 2 will take the time needed to further analyze the issue and determine if there is an option to widening by developing a facility plan for this highway segment. The Oregon Transportation Commission endorsed this approach at their April 2003 meeting.	Chapter 6
Should consider existing and proposed uses of all property in the interchange area consistent with its comprehensive plan designations and zoning -155(4)(f)	A thorough analysis of surrounding land uses and land use potentials was performed. This analysis resulted in recommendations for implementing access controls and Polk County policies and ordinances to ensure protection of EFU lands and implementation of the land use plan for the Rickreall community.	Chapter 5 Chapter 6 Chapter 7
Is 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 -155(4)(g)	This plan and the project being implemented are consistent with the Polk County Transportation System Plan as it does call for interchanges to deal with these intersections. Further compliance will be ensured through securing a conditional use permit as is required by the Polk County Development Code and through adoption of the Rickreall Junction Facility Plan and associated Interchange Area Management Plan into the Polk County Comprehensive Plan.	NA
Is consistent with the 1999 Oregon Highway Plan	The Rickreall Junction Facility Plan and associated Interchange Area Management Plan is consistent with the	Chapter 7

-0155(4)(h)	1999 OHP.	
Is approved by ODOT 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 -155(4)(i)	The Rickreall Junction Facility Plan and associated Interchange Area Management Plan are being adopted into the Polk County Comprehensive Plan and Transportation System Plan.	NA
THE PLAN WILL DETERMINE		
OAR 734-051-0155 ISSUE	**DETERMINATION**	**WHERE**
Driveway and roadway spacing and connections	• There are no driveways or approaches on westbound ORE 22 as it approaches ORE 99W or the Dallas Rickreall Highway. • There are no driveways or approaches on the eastbound ORE 22 approach to ORE 99W. • There is one farm driveway on the southbound ORE 99W approach to ORE 22. This driveway will need to be located further north of the interchange to a safe distance as determined by the project development team during the design phase. The new access permit for this approach and deed restriction should limit future use to those uses allowed by the EFU zoning and associated limited use overlay zone. • There is one farm driveway on the eastbound ORE 22 approach to the Dallas Rickreall Highway. This driveway will need to be located west of its current location. A new access permit for this approach and deed restriction should limit future use to those uses allowed by the EFU zoning and associated limited use overlay zone. • There are no driveways or approaches to the Dallas Rickreall Highway between ORE 22 and Rickreall Road. • There are no driveways or approaches between the Rickreall unincorporated community's northern boundary and ORE 22. • Within the Rickreall unincorporated community between Church Street and the community's northern boundary, there is one public street approach, Pageant Street, and an access that is shared between the Rickreall Elementary School and the Rickreall Grange Hall. The southern ramp terminal will be approximately 850 feet from Church Street. Parking and drop-off areas exist in front the school and the Grange Hall. With initial interchange construction,	Chapter 6 Appendix N Appendix P

	• The disposition of the access at Church Street and those further south will be addressed when the ORE 99W cross-section and improvements to the ORE 99W/Rickreall Road intersection are addressed (analysis beginning in 2005 as part of an Ore 99W Facility Plan with improvements needed in an approximately 15-20 year time frame).	
Local street connections to ensure adequate access to properties and off-highway circulation	As part of initial interchange construction, Polk County shall fund and ODOT shall construct a public access road from Rickreall Road north to the school. This road will provide access to the school property and Grange Hall and may serve additional properties as part of a future access strategy on ORE 99W. Improvements to Ford Street west of ORE 99W may also be needed in the medium to long-term, depending on how traffic volume growth on ORE 99W and intersection operations at ORE 99W and Rickreall Road are addressed.	Chapter 6
Median treatments	Upon initial interchange construction, a full median will be installed between the southern ramp terminal at ORE 22 and ORE 99W and Church Street. The median should be extended, including potential closure of full access to Church Street (making Church Street right-in, right-out only), to the ORE 99W/Rickreall Road intersection. Median treatment between Church Street and Rickreall Road will need to be determined within the context of potential improvements to ORE 99W and its intersection with Rickreall Road as part of an Ore 99W Facility Plan.	Chapter 6
Location and type of traffic control devices needed to ensure safe and efficient operations in the operational area of the interchange	Upon initial interchange construction, the northern interchange ramp at Ore 22 and Ore 99W will be free flow and the southern ramp will be stop controlled. A separate project will signalize the Oregon 99W and Rickreall Road intersection to the south. This signal project will not provide for the full improvement that will likely be needed in the long-term. This intersection will be further analyzed as part of the Oregon 99W Facility Plan. The improvement to ORE 22 and the Dallas Rickreall Highway will not have any stop signs or signals.	Chapter 4 Chapter 6 Appendix N
Location of sidewalks and bicycle lanes	Sidewalks and bicycle lanes are called for on ORE 99W from Church Street north through the project limits. Bicycle lanes are called for on all ORE 22 and Dallas Rickreall Highway portions of the project. Sidewalks are called for on the ORE 22 and Dallas Rickreall Highway structures. Full sidewalks and bicycle lanes on ORE 99W south of Church Street should be developed in the medium to long-term, as appropriate, when determinations of cross-section and intersection improvements at ORE 99W and	Chapter 6

	Rickreall Road are finalized through the Oregon 99W Facility Plan and implemented through a future project when funding is secured.	
Sidewalk and bicycle lane crossings (highway and ramp crossings)	Sidewalk and bicycle crossings shall be designed in accordance with current ODOT standards at the northern and southern ramp terminals of the ORE 22/ORE 99W interchange. A pedestrian/school crossing, with a median pedestrian refuge, shall be developed to provide safe access from the west side of ORE 99W to the Rickreall Elementary School property in the vicinity of the closed Pageant Street.	Chapter 6
Location of potential transit facilities (turnouts, shelters, park and ride areas)	A gravel park and ride lot currently exists on Rickreall Road between ORE 99W and the Dallas Rickreall Highway. This facility should be considered for improvement when ORE 99W and Rickreall Road intersection improvements are made. Similarly, when improvements are made to ORE 99W south of Church Street and at the ORE 99W/Dallas Rickreall Highway, improvements should be designed to support transit service (turnouts, shelters, etc.).	Chapter 3 Appendix N
Is new policy language needed in the Polk County Comprehensive Plan to support adequate long-term interchange operations?	• Polk County has agreed, by resolution, to limit the use of the EFU lands in the vicinity of the proposed improvements and the land uses within the portion of the Rickreall unincorporated community to the current levels. This commitment will be adopted into the Polk County Ordinance.	Chapter 5
Are any land use changes/comprehensive plan (including TSP) amendments needed to implement the Interchange Area Management Plan?	• Based on conditions specified by the Oregon Transportation Commission on January 16, 2002, only Polk County adoption of the Interchange Area Management Plan by the resolution adopting the IGA is needed to proceed with development of the interchange improvements at ORE 22/ORE 99W and ORE 22/Dallas Rickreall Highway. Polk County has chosen to adopt the Facility Plan and Interchange Area Management Plan directly into its comprehensive plan, bypassing the need for an IGA. • Polk County will commit, through formal adoption into its comprehensive plan and ordinance, to take whatever actions are required by their ordinances and policies to authorize construction of the access road from Rickreall Road to the Rickreall Elementary School. • Polk County will also commit, through adoption to take whatever actions are required by their ordinances and policies, to authorize ODOT in the closure of Pageant Street and removal of the turn out and parking in front of the school and the Grange Hall.	Chapter 5
Are any deviations from OHP and OAR 731-051 standards and requirements needed?	A deviation to spacing standards will be needed to maintain the accesses from Church Street to Rickreall Road. Deviations are also needed for several farm approaches on	Chapter 6

	ORE 99W north of ORE 22 and the farm approach on ORE 22. The concurrence of the Region 2 Access Management Engineer and adoption of the Facility Plan and Interchange Area Management Plan by the OTC will constitute approval of these access deviations.	

6.4 Improvement Phasing Compatibility

Table 6.4.1 Phasing Compatibility

	1A	2A	2B	2C	2D	3A	3B	3C	4A	4B	5A	5B	5C	6A	6B	6C	7A	7B	7C
1A		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2A	Y		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2B	Y	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2C	Y				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2D	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3A	Y	Y	Y	Y	Y		N	N	Y	Y	N	N	N	N	N	N	N	N	N
3B	Y	Y	Y	Y	Y	N		N	Y	Y	N	N	N	N	N	N	N	N	N
3C	Y	Y	Y	Y	Y	N	N		Y	Y	N	N	N	N	N	N	N	N	N
4A	Y	Y	Y	Y	Y	Y	Y	Y		N	N	N	Y		N	N	N	Y	N
4B	Y	Y	Y	Y	Y	Y	Y	Y	N		N	N	Y	N			Y	N	Y
5A	Y	Y	Y	Y	Y	N	N	N	N	N		N	N	N	N	N	N	N	N
5B	Y	Y	Y	Y	Y	N	N	N	N	N	N		N	N	N	N	Y	Y	Y
5C	Y	Y	Y	Y	Y	N	N	N	Y	Y	N	N					Y	Y	Y
6A	Y	Y	Y	Y	Y	N	N	N		N	N	N			N	N	N	Y	N
6B	Y	Y	Y	Y	Y	N	N	N	N		N	N		N			Y	N	Y
6C	Y	Y	Y	Y	Y	N	N	N	N		N	N		N	N			Y	
7A	Y	Y	Y	Y	Y	N	N	N	N	Y	N	Y	Y	N	Y	N		N	
7B	Y	Y	Y	Y	Y	N	N	N	Y	N	N	Y	Y	Y	N	Y	N		N
7C	Y	Y	Y	Y	Y	N	N	N	N	Y	N	Y	Y	N	Y	N		N	

Y–Alternatives that can be phased based on compatibility of geometry and operations.
N–Alternatives that cannot be phased based on incompatibility of geometry and operations.

6.5 Phasing Approach

With the approval of Oregon Transportation Investment Act (OTIA) funding for Alternative 7A.1 (with the Oregon 99W overcrossing), the basic interchange elements described by this plan will be constructed. This makes phasing less complicated than would have other wise been the case all of the basic elements could not have been funded as one project. The only remaining phasing issues are associated with (1) the work potentially needed in and south of Rickreall and (2) interchange modifications to achieve the full 7A alternative concept.

With respect to the work within Rickreall, the timing for addressing all remaining issues (beyond what is achieved with the initial OTIA construction) will be addressed through the Oregon 99W Facility Plan effort described in Section 6.3. and the success of ODOT and Polk County in securing the funds that will be needed for construction. It is estimated that the additional improvements in Rickreall and the Oregon 99W corridor will be needed within a 15-20 year timeframe.

The additional modifications needed to achieve the full 7A.1 design concept include an additional lane from Oregon 22 westbound onto the Dallas/Rickreall Highway. These modifications are needed to facilitate weaving movements that will not be able to meet OHP mobility thresholds as traffic grows. These modifications will likely be needed in approximately 20 years.

6.6 Stakeholder Input

The stakeholder validation process consisted of presenting an overview of the Facility Plan process, project goals, problem statement, alternative identification process, and evaluation of recommended alternatives to a variety of interested parties in Rickreall and Polk County. Participants in the stakeholder review process included Rickreall community members, including local business and property owners along Oregon 99W, emergency service providers, local farmers, elected officials, Dallas School District staff, and staff from the cities of Monmouth, Independence, and Dallas. A summary of the key issues raised in these meetings is included in Appendix O.

The purpose of these meetings was to present the preliminary recommendations from the TAC to the participants and receive feedback about them. Staff also used these meetings as an opportunity validate the technical findings from the detailed evaluation and to identify additional ideas and concerns that may have been overlooked during the evaluation process.

Key findings from the stakeholder meetings include the following:

- Several stakeholders, including the Polk County Farm Bureau and County Commissioners raised concerns during the stakeholder review about the possible impact that removing the traffic signal at the Oregon 22/Oregon 99W intersection would have on Oregon 22 traffic east of Rickreall. Their concern is that this will lead to an increase in free flow traffic conditions on Oregon 22. Specifically, the concern raised is that an interchange at the Oregon 22/Oregon 99W intersection will reduce gap opportunities for farm vehicles and school buses on Greenwood Road to cross Oregon 22. These stakeholders have requested that an Oregon 22 overpass on Greenwood Road be constructed prior to, or in conjunction with the Rickreall Junction Interchange Project. The Facility Plan Project Team acknowledged this concern and will raise this related issue when presenting the findings of this report to policymakers. The Greenwood Road issue is being studied as part of another ODOT Facility Plan addressing Oregon 22 from the Marion and Center Street Bridges in Salem to Greenwood Road. This issue will also be noted in that project's final report.

- Community members raised concerns regarding the eventual expansion of Oregon 99W to a five-lane facility (four through lanes plus a median) through Rickreall. With the additional of sidewalks on this section, the community would have a much more urban appearance.

- Although Alternative 7A.1 is the most viable long-term solution to traffic and safety problems at the Oregon 22/Oregon 99W and Oregon 22/Dallas-Rickreall Highway intersections, concerns were raised that the free flow right turns at both the eastbound and westbound ramp terminals would eliminate gaps in southbound traffic on Oregon 99W through Rickreall. The concern was raised that this could, in turn, make it very difficult for people to access property from Oregon 99W, even with right-in, right-out accesses and would negatively impact pedestrian safety. Community members expressed a desire that a traffic signal be maintained at the southern ramp terminal or at Rickreall Road to create gaps in traffic on Oregon 99W.

- Similarly, construction of a roundabout at the Oregon 99W/Rickreall Road intersection, rather than installation of a traffic signal, would reduce gaps in the northbound traffic on Oregon 99W through Rickreall. Community members were not in favor of the roundabout alternative at either the Oregon 22/Oregon 99W intersection or at the Oregon 99W/Rickreall intersection.

This input helped to establish the initial direction for the project that led up its selection for OTIA funding. As described in Section 6.2.8, several cost considerations were raised after OTIA funding was approved in January 2002. Consequently, because of the preferences previously expressed by the community, ODOT Management decided to check in with local stakeholders before making a final alternative selection decision that could do away with one or both of the preferred elements.

The four Alternative 7A.1 and 7C Alternatives were shared with the Rickreall community in June 2002 at a public open house that was attended by over 100 people. Based upon a questionnaire that was filled out by many of the attendees, the previous preferences expressed by local stakeholders were both affirmed and reversed. There was almost no support shown for either of the Alternative 7C variations, largely because of the impact that it would have on the farm property that is north and east of Oregon 22 and Oregon 99W. Rejection of this alternative meant that the traffic signal it offered was also rejected, or at least felt to be of less importance than avoiding impact to the farm property. Likely aiding this change in preference was a simulation that ODOT staff had prepared to demonstrate the likelihood of traffic gaps with and without a signal. This analysis showed that a traffic signal as shown with Alternative 7C would provide very few additional gap opportunities when compared to the Alternative 7A.1 loop ramp design without a traffic signal.

The majority of those responding to the questionnaire and particularly those living in Rickreall (as opposed to people identifying themselves as being from Dallas or elsewhere in Polk County) did affirm their preference for keeping Oregon 99W at-grade. The preference to keep Oregon 99W on the ground and to elevate Oregon 22 was supported by the Polk County Commission in a July 2002 letter to ODOT.

Additional funding concerns that developed in the Summer of 2003 caused ODOT to revisit the question of whether to keep Oregon 99W at-grade or make it cross over Oregon 22. It was determined that adequate funding could not be secured to continue with the Oregon 99W at-grade

variation of Alternative 7A.1. Consequently, the decision was made to finish developing and construct the project with Oregon 99W crossing over Oregon 22. Plans for this approach were shared with the public at a public meeting held in Rickreall on September 29, 2003. Feedback received at that meeting affirmed that, although many still felt the Oregon 99W at-grade option was still preferable, a majority of community members and the Polk County Commission could support ODOT constructing the project with Oregon 99W crossing over Oregon 22.

6.7 Recommendation Summary

Without improvements, traffic and safety conditions at the Oregon 22 and Oregon99W and Oregon 22 - Dallas-Rickreall Highway intersections will continue to worsen. These intersections have two primary deficiencies. They are too closely spaced and they are subject to higher traffic volumes than they were designed to handle. These deficiencies result in a variety of safety and operational problems.

These intersections are currently operating at levels that exceed Oregon Highway Plan mobility standards. By approximately 2012, peak hour traffic volumes at both of these intersections will exceed available capacity. Left-turn queues from the Oregon 22/Dallas-Rickreall Highway intersection currently back up approximately 75 percent of the way to the Oregon 22/Oregon 99W intersection during peak periods. Numerous left-turn and rear-end accidents occur at Oregon 99W and Oregon 22 intersection. At the Oregon 22 and Dallas-Rickreall Highway intersection there is a potential for severe head-on accidents, because of the vehicles speeds, traffic volumes, an acute intersection angle.

The TAC developed a range of alternatives for these intersections for review and analysis by ODOT's Transportation Planning Analysis Unit (TPAU) and Preliminary Design Unit (PDU).

Alternatives 1A and 2C were short build alternatives that did not meet either mobility or spacing standards at any time during the planning horizon. Alternative 2C would simply forestall complete intersection failure for approximately 5-7 years (from approximately 2007 to approximately 2012).

These alternatives had limited merit because they improve the safety and the operation of the transportation system in the near future at minimal cost. The kind of activities described in Alternative 1A should be implemented, as appropriate, under any implementation scenario. 2C would only have been worthwhile as a stop-gap measure, if it had been determined that there was no possibility to fund one of the mid- to long-term alternatives. It should be noted that any investment made in Alternative 2C would be completely replaced when one of the mid- to long-term alternatives is constructed.

The more expensive mid- to long-term alternatives (Alternatives 4B, 5C) were designed as separate improvements to the Oregon 22/Dallas-Rickreall Highway intersection and the Oregon 22/99W intersection respectively, in the event that improvements could only be funded incrementally. It would be technically feasible to implement either of these alternatives without the other. They are also incrementally compatible—that is, one can be built first and the other later, and without having to lose much of the investment made in the first. However, implementing either alternative individually with leave significant problems unresolved.

Alternative 6C was initially thought to be the best mid- to long-term alternative. Alternative 6C combined alternatives 4B and 5C as a single improvement project and, as a result, would address the defined problems at these intersections through the 20-year planning horizon at what had originally been thought to be a substantially lower cost than Alternative 7A. However, in early 2002, two key factors changed this initial direction. First, it was determined that the ODOT Traffic Section would not approve a traffic signal for at least 10 years at the southern ramp terminal of Alternative 6C. Second, Alternative 7A, particularly with some strategic weaving lane reductions with the initial construction (a.k.a. 7A.1) was found to be comparable in cost to Alternative 6C.

Consequently, aside from the potential system management activities described in Alternative 1A, in June 2002, ODOT Management decided to advance Alternative 7A.1, with Oregon 99W at-grade, as the project that will be built with the OTIA funding approved in January 2002. Further funding complications that arose in 2003 subsequently caused a reconsideration of the Oregon 99W at-grade issue. Due to project cost increases, ODOT decided, with community support, to advance the Alternative 7A.1 variation with Oregon 99W as the overcrossing as the final preferred alternative. This variation, while still more than $2 million more expensive that the original funding provided for this project, is still more than $2.5 million less expensive than the variation that kept Oregon 22 at-grade. Construction is anticipated in 2005.

Alternative 7A.1 has the least impact on adjacent farmland of any of the alternatives that fully addresses the identified problems. Because of the additional separation on Oregon 99W between the southern ramp terminal and Rickreall and keeping Oregon 99W at-grade, this alternative also has the least impact on Rickreall. This alternative will require one deviation to interchange spacing standards between Oregon 99W and the Dallas-Rickreall Highway and one within Rickreall. Neither deviation is expected to create operation problems. Approving both will result in operating conditions that are an improvement over current conditions.

Within the Rickreall community, projected traffic volumes on Oregon 99W will exceed the capacity of the existing 2-lane section between 2015 and 2020. At a minimum, left turn lanes should be developed on the approaches to the Oregon 99W/Rickreall intersection within the 10-year timeframe, along with a traffic signal and increased access management. Within the 15-20 year timeframe, additional travel lanes and access management, including a median, may be needed on Oregon 99W in Rickreall to maintain OHP mobility standards. This should be decided as soon as possible through development of an Oregon 99W Facility Plan from Oregon 22 to Monmouth (and perhaps to Corvallis, depending on subsequent analysis). When improvements are made in Rickreall, transit vehicle amenities, including shelters and turnouts, should be provided on Rickreall Road, near Oregon 99W.

CHAPTER 7

Next Steps

7.1 Implementation Process Steps and Responsibilities

On January 16, 2002, the Oregon Transportation Commission (OTC) conditionally approved funding for constructing interchanges at the Oregon 22/Oregon 99W and Oregon 22/Dallas Rickreall Highway intersections. The OTC conditions of approval were:

1. ODOT, in concert with local government, shall develop an Interchange Area Management Plan for the project consistent with the Oregon Highway Plan and following the provisions of OAR 731-051-0125 and 0155. Polk County shall adopt the Interchange Area Management Plan as part of a legally binding, enforceable intergovernmental agreement between Polk County and ODOT as provided in Oregon Law. The intergovernmental agreement shall include the following elements:

    a) Polk County shall adopt plan provisions that restrict development of any new land use in the Rickreall Unincorporated Community or the EFU lands adjacent to Oregon 22 north of the community so that traffic generation from the land use will not cause the interchange to exceed the OHP mobility standards.

    b) If the agreement is to be terminated that Polk County give notice to ODOT in advance of a public hearing on the matter and that the public hearing be held prior to the expiration of the agreement.

    c) Changes or termination of the agreement in advance of expiration shall require formal affirmative action by the Oregon Transportation Commission and Polk County.

    d) The agreement can expire if Polk County includes the Interchange Area Management Plan in its Transportation System Plan.

    e) The intergovernmental agreement will call for any amendments to the local plan and Oregon Highway Plan needed for this to be accomplished.

2. Protection of resource lands will be addressed in the Interchange Area Management Plan.

3. The Interchange Area Management Plan will also include measures to prevent growth-induced development on exception lands or urban growth boundary expansion in the vicinity of the interchange.

4. The Interchange Area Management Plan will provide for the protection of safe and efficient operation of the interchange between connecting roadways and will minimize the need for major improvements to existing interchanges.

5. The Interchange Area Management Plan shall be presented to the OTC for review and approval before funds for construction are released.

After discussions with Polk County and members of the OTC, ODOT Region 2 decided not to seek an intergovernmental agreement as an interim or final measure. Instead, Polk County will formally adopt this document (the Rickreall Junction Transportation Facility Plan), including the Interchange Area Management Plan component and other policy recommendations that are part of the Plan and serve to address the OTC conditions. A formal adoption is more binding and enforceable than an IGA. In addition to the OTC conditions, Polk County will formalize its commitment in its Capital Improvements Program to fund construction of the local street parallel to and east of Oregon 99W that is called for in Chapter 6.

To meet these conditions, the following actions shall be completed before the Rickreall Junction Improvements described in this Facility Plan are constructed:

1. The Rickreall Junction Facility Plan shall serve as the Interchange Area Management Plan and Access Management Plan as called for by the OTC and OAR 734-051-200. The deviations to OAR Division 51 access management standards required for initial construction of the Rickreall Interchange project will be evaluated using the provisions of OAR 734-51-0135 and approved by the Region Access Management Engineer.

2. Polk County shall adopt the Rickreall Junction Facility Plan.

3. Polk County shall adopt comprehensive plan and ordinance amendments and other actions called for by the Rickreall Junction Facility Plan.

4. ODOT shall apply for and be granted a conditional use permit by Polk County.

5. The OTC shall adopt the Rickreall Junction Facility Plan.

7.2 Rickreall Junction Facility Plan Adoption and Implementing Actions

The existing Polk County Transportation System Plan (TSP) specifically identifies the need for interchanges at the existing Oregon 22/Oregon 99W and Oregon 22/Dallas Rickreall Highway intersections. A Polk County TSP amendment is not required to authorize the improvements identified in the Rickreall Junction Facility 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 L.

However, a number of other actions are needed to ensure the long-term viability of this transportation investment. 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 Facility Plan. These actions are listed below:

1. The Polk County Commission shall adopt the Rickreall Junction Facility Plan as part of the Polk County Comprehensive Plan and Transportation System Plan. This Plan shall serve as the Interchange Area Management Plan and Access Management Plan for the area and facilities that are specifically addressed in the Plan.

2. Polk County resolution (#01-31) passed in November 2001, expresses the Polk County Commission's intention to maintain the EFU zoning adjacent to the Oregon 22/Oregon 99W intersection/interchange and the Oregon 22/Oregon 223 intersection/interchange. This intent shall be expanded to include properties adjacent to the Dallas Rickreall Highway and south of Oregon 22 and shall be included as a specific policy in the Polk County Comprehensive Plan.

3. Polk County shall adopt overlay zoning for each EFU property listed in the EFU/interchange protection policy. This overlay will prohibit the following land uses that could otherwise be allowed on the portions of these properties that are not classified as high value or 100-year floodplain: kennels, golf courses, composting operations, and solid waste processing facilities. Because the area is within 3 miles of the Dallas UGB, churches and schools are already prohibited.

4. 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 the project development process. This permit must be approved prior to project construction.

5. This Plan calls for construction of a local access road parallel to and east of Oregon 99W. This road is needed to reduce local access and traffic on Oregon 99W and to minimize the impact of local vehicle traffic on interchange operations. Polk County is responsible for funding construction of this local access road and ODOT will construct it as part of the interchange improvement project. Polk County shall limit access to the adjacent EFU land from this new road to uses allowed by the current EFU zoning and associated overlay zone. The general location of this roadway is shown in the Alternative 7A.1 graphic in Appendix N.

6. Polk County will take whatever actions are needed to support closure of Pageant Street and the turn-outs and parking in front of the school and Grange Hall. These actions will be needed in conjunction with initial OTIA project construction.

7. ODOT will continue to enforce the access control that is already in place along Oregon 22 east of Oregon 99W. No additional accesses shall be allowed within the existing access controlled area (which extends beyond the ¼ mile interchange management area).

8. ODOT will continue to enforce the access control that is already in place along Oregon 22 west of Oregon 99W. No additional access will be allowed within the ¼ mile interchange management area along Oregon 99W.

9. ODOT will relocate the one farm and farm residence access road to Oregon 22 that is north of Oregon 22 and west of the Dallas/Rickreall Highway further west from the interchange area, as determined by the access management sub-committee of the project team. Using a deed restriction, ODOT will limit the farm property served by this access to uses allowed by the current EFU zoning and associated overlay zone (including activity associated with the existing residences served by the accesses).

10. ODOT will relocate the farm access on Oregon 99W north of Oregon 22 and east of Oregon 99W further away from the interchange area as determined by the access management sub-committee of the project team. Using a deed restriction, ODOT will limit the farm property served by this access to uses allowed by the current EFU zoning and associated overlay zone (including activity associated with the existing residences served by the accesses).

11. ODOT will purchase access control at a location on Rickreall Road for the purpose of limiting, through use of a deed restriction, any new access from Rickreall Road to the vacant property north of Rickreall Road and west of Oregon 99W (tax lot 7-4-30-507) to uses allowed by the current EFU zoning and associated overlay zone.

12. Polk County will draft and adopt an events management policy and ordinance that specifies a procedure for coordinating traffic management issues that may arise as a result of events at the Polk County Fairgrounds.

13. Polk County will adopt 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 assumptions in Appendix L. The assumptions in Appendix L are based on the existing zoning and land use classifications adopted in June 2001.

14. ODOT will evaluate the potential benefits of designating Oregon 99W north of Oregon 22 as an expressway and seek such a designation if the evaluation indicates the value in doing so outweighs the negative implications.

15. In order to resolve the long-term travel demand issues on Oregon 99W in Polk County (south of Oregon 22), Region 2, in cooperation with Polk County, shall complete a Facility Plan for the portion of the Oregon 99W corridor from Oregon 22 south to Monmouth, at a minimum. This work will begin in 2004 is planned for completion before the interchange construction is finished. When completed, Polk County will adopt the Plan's conclusions into its TSP in order to guide subsequent planning and project development decisions along Oregon 99W between Oregon 22 and Monmouth. These decisions will include access and facility design issues.

7.3 Investment Requirements

In January 2002, the OTC approved $16.1 million in OTIA funding to construct improvements at the intersections of Oregon 22 with Oregon 99W and the Dallas/Rickreall Highway. Current estimates indicate that Alternative 7A.1, with Oregon 99W crossing over Oregon 22 will cost approximately $20 million. ODOT Region 2 will supplement the original OTIA funding so that the alternative selected to be built as the result of the analysis process described by this document, can be constructed.

7.4 OHP and Division 51 Compliance

Rickreall Junction Facility Plan
Compliance with the 1999 Oregon Highway Plan

The 1999 Oregon Highway Plan (OHP) contains policies with which local and regional transportation system plans must be consistent. Not all of these policies are relevant to the Rickreall Junction Facility 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. Oregon 22 is a statewide highway, 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. Oregon 99W is a regional highway, which under Action 1A.1 is intended to provide connections and links to regional centers, Statewide or Interstate highways, or economic or activity centers of regional significance. Oregon 223 (the Dallas/Rickreall Highway) is a district highway, which under Action 1A.1 is intended to provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. Oregon 22 provides mobility between Salem and Interstate 5 and Oregon 18, another statewide highway that connects to the central Oregon Coast. Oregon 22 also provides a connection to Bend and Central Oregon. As a regional highway, Oregon 99W provides mobility between the McMinnville area and Corvallis and Eugene to the south. The Dallas/Rickreall Highway provides a connection between Oregon 22 and US 20 to the south and serves as the main highway through the City of Dallas. The transportation need for the interchange project described in this plan includes the need to improve safety and operations at the Oregon 22 cross roads with Oregon 99W and the Dallas/Rickreall Highway which have become hampered by the increasing traffic volumes associated the growth of tourism on the Oregon Coast and the Oregon 18 corridor and with the continued growth of Salem, Corvallis, Dallas, Monmouth, and Independence and the traffic increases that have occurred through increased economic activity (commuting and commercial traffic). The identified interchange project will enable these highways to perform their designated functions, in compliance with operational and safety objectives through the 2025 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 management. In the background discussion to this policy, ODOT recognizes that historically, communities have grown up 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 primarily 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 Rickreall Junction Facility 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." Because 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.

Action 1B.1 also supports establishment of parallel and interconnected local roadways to encourage local trips off the state highway. The Rickreall Junction Facility Plan and the interchange improvement project does provide for new and improved local facilities that will reduce travel on the state highway system, particularly on Oregon 99W.

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[1] OHP at 44.

[2] OHP at 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 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.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 Rickreall Junction Facility Plan and, in particular, by its associated Interchange Area Management Plan (IAMP), which will be adopted into the Polk County TSP and development code. The IAMP calls for access management, events management at the Polk County Fairgrounds, protection of the Rickreall exception areas from land uses that are more intense than currently called for in the Polk County comprehensive plan, and protection of surrounding EFU lands through policy and an overlay zone.

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 (despite the fact that adjacent development contributes less than 5% of the total traffic that uses the state highways in the plan area (an amount less than the accepted error of the mobility analysis used to quantify the state highway performance).

Action 1B.4 also seeks to avoid UGB expansions along Statewide Highways and around interchanges unless ODOT and the appropriate local governments agree to an IAMP to protect interchange operation or access management for segments along the highways. As stated above, this plan and project area are well outside any established UGB and UGB expansion into this area is not anticipated in the foreseeable future.

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 the Rickreall Junction Facility Plan.

Action 1B.14 directs ODOT to work with local governments to accommodate alternative modes on state highways. The Rickreall Junction Facility Plan does provide for improved bicycle and pedestrian facilities in the plan area and calls for the retention of the nearby park and ride area on Rickreall Road.

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. Oregon 22 is classified as a statewide highway by the OHP. Oregon 99W is classified as a regional highway and parallels I-5 through the Willamette Valley. Oregon 223 is a district highway. By recommending a grade separated interchanges to replace the existing over-capacity at-grade intersection, The Rickreall Junction Facility Plan will better

accommodate freight movement between Salem and the Oregon Coast and through the Wilamette Valley. The improved safety, operations, and bicycle and pedestrian facilities will alsi 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 Rickreall Junction Facility Plan 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 consistent with plans adopted by the Oregon Transportation Commission (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 Table 6 be applied to all state highway sections outside the Portland metropolitan area. The minimum transportation performance standards applied to this project incorporate the standards in Table 6, thereby satisfying Action 1F.1.[6]

Action 1F.2 provides that the highway mobility standards be applied over a 20 year period. Because the planning horizon for this project is 2025, Action 1F.2 is met.

Action 1F.3 allows local governments to consider adopting alternate highway mobility standards "where it would be infeasible to meet the standards in this policy." Because it is feasible to meet these standards, Action 1F.3 does not apply. These standards can be met through construction of the recommended interchanges that are the subject of the Rickreall Junction Facility Plan. The areas noted within Rickreall just outside the recommended project area and south to Monmouth can also meet the required mobility standards through widening Oregon 99W. As noted in the document, this is not yet recommended as the scope of the Rickreall Junction Facility Plan was not sufficient to fully deal with this issue outside of the immediate intersection/interchange areas. The need for improvements to deal with this forecasted mobility deficiency also is not expected to occur for approximately 15 or more years. Consequently, with the concurrence of the OTC in April 2003, ODOT Region 2 will conduct an additional facility plan for the area south of the

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[4] OHP at 71.

[5] See OAR 660-012-0030(3).

[6] See Section VII.F of this document.

project area in Rickreall south to Monmouth to determine if any feasible alternatives exist to meet mobility standards without the impact that widening Oregon 99W in Rickreall would have.

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."[7]

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.

Here, the proposed major improvements (the interchanges of Oregon 22 with Oregon 99W and Oregon 223) are needed to alleviate traffic congestion that would significantly impede the efficient movement of people and goods on a Statewide, Region, and District Highway. Without these improvements, year 2025 traffic volumes within study area would routinely exceed ODOT performance standards for both subject intersections.

The need for the proposed improvements was first identified in a ODOT Corridor Strategy and subsequently in the Polk County TSP. The proposed project recommendations identified in the

[7] OHP at 82.

Rickreall Junction Facility 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.

The scope of the project was originally to address the problem Oregon 22 intersections with Oregon 99W and Oregon 22 identified in the Corridor Strategy and Polk County TSP. As the analysis evolved it was determined that a several mile stretch of Oregon 99W south of Rickreall would also experience problems within the latter years of the 20 year planning horizon. Rather than expand the scope of this project, a second project to address this need was scheduled. No action recommended by this plan or taken through implementation of the project recommendation will inhibit implementation of any alternative for improving Oregon 99W south of the Rickreall Junction Facility Plan project recommendation area.

Additional measures to manage and protect the highway system will be set in place through the adoption the Interchange Area Management Plan (IAMP) and the Rickreall Junction Facility Plan by ODOT and Polk County and through amendments to the Polk County comprehensive plan and zoning ordinance. These measures will help manage and protect the transportation system in terms of its function, its capacity and its ability to remain in compliance with the OHP highway performance standards. They include access control and management measures, limitations on land uses near interchanges, and other provisions as deemed necessary to protect this significant state investment and described in Chapter 7.

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.

As of January 2002, the project recommended in the Rickreall Junction Facility Plan had received OTIA construction funding from the OTC. Polk County has programmed funding for ODOT to construct the backage road east of Rickreall called for in the Plan.

Action 1G.3 provides for ODOT to implement a cost-sharing program through intergovernmental agreement 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 this project, ODOT has entered into an IGA with Polk County to fund the backage road needed to implement the access management strategy and IAMP.

Action 1G.4 provides for ODOT to design major improvements for limited access to protect through traffic movements. Consistent with this standard, the recommended 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. Rather than take this step, which is to precede adoption of policies and ordinances, ODOT and Polk County are proceeding directly to plan and ordinance adoption.

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. Here, ODOT has worked closely with Polk County, the Federal Highway Administration and DLCD in determining need for this project and in determining a preferred alternative.

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 is constructing the interchange with ODOT funds and a local road with Polk County fund.

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 south of Oregon 22 and Rickreall on Oregon 99W.

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 Rickreall Junction Facility Plan and will address these issues as the project moves 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 Rickreall Junction Facility Plan complies with Policy 2D and its action items through its opportunities for citizen involvement through the stakeholder meetings and public open houses described in detail in Chapter 6.

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 Oregon 22 including establishing it as a safety corridor with increased enforcement, headlights on signing, and oversized traffic control signs. Despite these efforts, the Oregon 22 and Oregon 99W intersection is still a top 10% SPIS site, indicating a higher than average crash history. The intersection of Oregon 22 and the Dallas Rickreall Highway, because of its high speed turning movements and acute turning angle, has a high crash potential, even though its crash history is not as great as Oregon 22 and Oregon 99W. In both of these circumstances, 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 is thoroughly addressed through the IAMP and the alternative analysis and recommendation in Chapters 6 and 7. The IAMP is also summarized in Appendix P.

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 project recommendation provides for medians along all of Oregon 22 within the project area and from the WB ramp terminals south to the southern extent of the recommended project at Church Street.

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. All of these actions are provided for with the Rickreall Junction Facility Plan.

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. Because of the direction of traffic flow, the recommended

interchanges will not require signalization within the planning horizon. Traffic control will consist of stop, merge, and yield signs.

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. Deviations are needed to accommodate several farm accesses and the access at Church Street. All requested deviations are described in Appendix P and, with adoption of the Rickreall Junction Facility Plan and IAMP, are 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 Rickreall Junction Facility Plan and related project implements 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. This project is classified as a Category 2 project meaning that it has been granted a categorical exclusion from NEPA requirements. However, environmental analysis conducted will be factored into the project development process for the project recommended by the plan. Additionally, ODOT will obtain a conditional use permit for the recommended 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 project. Because the recommended project will impact a floodplain area, a floodplain permit will also be obtained from Polk County.

Rickreall Report Appendices

Appendix A – TAC meeting summaries

Appendix B - OHP Policies

Appendix C – Interim Corridor Strategy

Appendix D - Chemeketa Area Regional Transit System - Central Polk Connector Schedules and Route Map

Appendix E – OR 18 & 22 Safety Report

Appendix F - Crash data

Appendix G – Operational analysis

Appendix H – Modal considerations

Appendix I – Geometric analysis

Appendix I - Evaluation criteria summary

Appendix J – Polk County Resolutions, Comprehensive Plan and Transportation System Plan Policies, and Zoning Ordinance Provisions

Appendix K – Evaluation Table for Recommended Alternatives

Appendix L - Improvement Design Concepts

Appendix M – Stakeholder Validation Process

Appendix N – Compliance Matrix for OAR 734-051-0155

APPENDIX N

Improvement Design Concepts

The following figures show the design concepts recommended by the Technical Advisory Committee for implementation. The concepts show the general design and location of recommended improvements. The actual location and design of any improvements will be determined during the project design phase.

APPENDIX N

Improvement Design Concepts

The following figures show the design concepts recommended by the Technical Advisory Committee for implementation. The concepts show the general design and location of recommended improvements. The actual location and design of any improvements will be determined during the project design phase.

Stakeholder Meeting Summaries

During May through July 2001, ODOT staff conducted a series of meetings with interested stakeholders. Participants included Rickreall community members, including local business and property owners along OR 99W, emergency service providers, local farmers, elected officials, Dallas School District staff, and staff from the cities of Monmouth, Independence, and Dallas.

The stakeholder validation process consisted of presenting an overview of the facility plan process, project goals, problem statement, alternatives identification process, and evaluation of recommended alternatives to a variety of interested parties. The purpose for the stakeholder process was to validate the technical findings from the detailed evaluation and to identify additional ideas and concerns.

The key issues identified during this process are described below:

Date	Attendees	Key Issues
May 23, 2001	Rickreall Area Advisory Committee	• Participants asked about the Plan adoption process and how they could be involved. • Concerns were raised about impacts to properties along OR99W in Rickreall if the highway is widened to a four-lane section with sidewalks on either side. • Participants raised concerns regarding the impacts to the rural nature of the community if OR 99W is expanded to 4-lanes with sidewalks on either side.
May 29, 2001	Mel Sutter - City of Dallas Roger Jordan - City of Dallas Jeff Hecksel - City of Monmouth Tony Snyder - Polk County Ken Carter - City of Dallas Gary Wilson - City of Monmouth	• The City of Dallas would litigate any land use change in Rickreall. • The City of Dallas will not support any improvements at the OR22/99W intersection that is less than an interchange (Alternatives 6C or 7A). • The City of Dallas feels that improvements should focus first on the OR22/99W intersection, rather than improvements on OR99W through Rickreall. • A roundabout at the OR99W/Rickreall Road intersection is not desirable.
May 30, 2001	Randy Brown - Station Chief, Southeast Polk Rural Fire District	• A median barrier on OR 99W would add approximately two (2) minutes to the District's response time for calls to the north.

June 4, 2001	Brian Dalton - Dalton Rock, Dallas, also Dallas City Council Ron Blessing - Rickreall property owner Bob White - Rickreall Dairy & White's Hauling Al Greenway - Rickreall Farm Supply Gene Stephens - Willamette Industries, also Polk County Planning Commission	• City of Dallas would like to see OR223 (Kings Valley Highway) serve as the primary entrance to the community rather than Dallas-Rickreall Highway. Dallas hopes to develop Webb Lane and Kings Valley Highway as a "parkway". • Rickreall Farm Supply supports lowering speed on OR99W to 35 mph through Rickreall.
June 6, 2001	Cindy Dale Gwynne Slade Maxine Kahn Mike Stewart - Grange	• Concerned about project timing - will construction begin in the next several years and impacts to the rural nature of the community if OR 99W is expanded to 4-lanes with sidewalks on either side.
June 7, 2001	Dave Voves - School District 13J Superintendent	• The Rickreall School is expected to operate through the planning horizon for this study. • Any re-design of the access to the School from the southeast will need to provide adequate area for a school bus turnaround - no backing up allowed by law.
June 20, 2001	Tina Anderson, Polk County Fairgrounds Manager Shelly Gillins, Rickreall resident Frank Pender, Rickreall Watershed Council BobWolfe, Polk County Sheriff Lieutenant Richard Manning, Polk County Sheriff's office Dean Freeborn, Polk County Farm Bureau Douglas Freeman Ray Steele – Polk County Fair Board Mike Propes - Polk County Commissioner	• Improvements to the OR 22/99W intersection that reduce gaps in the traffic on OR 22 eastbound directly impacts traffic on Greenwood Road that must cross OR 22. Improvements to the OR 22/99W intersection should be coordinated with additional improvements at the Greenwood Road/OR 22 intersection, such as an overpass. • Construction of an interchange alternative, such as Alternative 7A, that does not require signalized off-ramps may adversely impact local traffic, by reducing gaps in the traffic stream on OR99W through Rickreall. • Construction of a roundabout at the OR99W/Rickreall Road intersection n interchange alternative, may adversely impact local traffic, by reducing gaps in the traffic stream on OR99W through Rickreall. • Construction of a possible pedestrian

		undercrossing on OR99W serving Rickreall School was discussed.
June 25, 2001	State Representative Lane Shetterley State Senator Cliff Trow Tom Ritchey Polk County Commissioner Dean Freeborn - Polk County Farm Bureau	• Improvements to the OR 22/99W intersection that reduce gaps in the traffic on OR 22 eastbound directly impacts traffic on Greenwood Road that must cross OR 22. Improvements to the OR 22/99W intersection should be coordinated with additional improvements at the Greenwood Road/OR 22 intersection, such as an overpass.
July 3, 2001	Dawn Meier - Meier Plumbing	• Concerned about potential property impacts if a roundabout is constructed at the OR 99W/Rickreall Road intersection.
July 16, 2001	Elbert Ragsdale Frances Ragsdale Joy Ragsdale	• Concerned about potential loss or re-design of property access to OR99W north of the OR 22/99W intersection.

APPENDIX P

Rickreall Interchange Area Management Plan

The Rickreall Interchange Area Management Plan has been developed, which complies with the standards of Oregon Administrative Rules Chapter 734, Division 51. ODOT encourages development of 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.

HOW THE RICKREALL JUNCTION FACILITY PLAN MEETS OAR 734-051-0155
(Interchange Area Management Plan)

THE PLAN ADDRESSES		
OAR 734-0051-0155 ISSUE	**HOW ADDRESSED**	**WHERE**
Should be developed no later than the time the interchange is being developed or redeveloped -0155(6)(a)	This document was produced before and during project design. It is being adopted in advance of final plans and construction.	
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 -0155(6)(b)	This planning effort began prior to project development and was coordinated with project development when funding was approved in January 2002. The land use controls and access management elements identified in this plan and incorporated into the project design or identified for implementation with future property redevelopment or project development activities will constitute significant operational and safety improvements.	Chapter 4 Chapter 5 Chapter 6 Chapter 7
Should include short, medium, and long-term actions to improve operations and safety in the interchange area -0155(4)(c)	The project selected for development is the ultimate long-term action identified to improve safety and operations at the intersections of Oregon 99W and the Dallas/Rickreall Highway 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, but have long-term benefits. Additionally, this plan identifies further planning steps that must be taken in and south of Rickreall along Oregon 99W outside and adjacent to the current project area to address problems identified by this project. Some potential actions to address these problems were identified by this plan, but their potential consequences are so significant and the urgency of the problems is low enough (2015-2020) that this plan recommends a short and medium-term strategy to conduct a follow-on planning process to make sure all possible alternatives are identified and understood and to develop a joint state and local consensus about the best course of action to pursue to improve Oregon 99W south of this project area.	Chapter 5 Chapter 6 Chapter 7
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 -0155(4)(d)	A full analysis of existing and forecast (2025) operational, geometric, and safety conditions was conducted for this planning effort. All surrounding land use was also identified, 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.	Chapter 3 Chapter 4 Chapter 5 Chapter 6 Chapter 7
Should provide adequate assurance of the safe operation of the facility through the design traffic forecast period, typically 20 years -0155(4)(e)	The forecast analysis does show that safe operations will be achieved for the interchange projects through 2025. Capacity deficiencies on Oregon 99W south of Oregon 22 were also projected to occur between 2015 and 2020. These deficiencies will extend at least to the City of Monmouth,	Chapter 6

	approximately 3 miles to the south. While this project does not solve this problem, widening Oregon 99W is identified as one possible way to address the problem. However, because the need for this improvement is not immediate, and because the impact of widening in Rickreall will be significant, ODOT Region 2 will take the time needed to further analyze the issue and determine if there is an option to widening by developing a facility plan for this highway segment. The Oregon Transportation Commission endorsed this approach at their April 2003 meeting.	
Should consider existing and proposed uses of all property in the interchange area consistent with its comprehensive plan designations and zoning -155(4)(f)	A thorough analysis of surrounding land uses and land use potentials was performed. This analysis resulted in recommendations for implementing access controls and Polk County policies and ordinances to ensure protection of EFU lands and implementation of the land use plan for the Rickreall community.	Chapter 5 Chapter 6 Chapter 7
Is 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 -155(4)(g)	This plan and the project being implemented are consistent with the Polk County Transportation System Plan as it does call for interchanges to deal with these intersections. Further compliance will be ensured through securing a conditional use permit as is required by the Polk County Development Code and through adoption of the Rickreall Junction Facility Plan and associated Interchange Area Management Plan into the Polk County Comprehensive Plan.	NA
Is consistent with the 1999 Oregon Highway Plan -0155(4)(h)	The Rickreall Junction Facility Plan and associated Interchange Area Management Plan is consistent with the 1999 OHP.	Chapter 7
Is approved by ODOT 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 -155(4)(i)	The Rickreall Junction Facility Plan and associated Interchange Area Management Plan are being adopted into the Polk County Comprehensive Plan and Transportation System Plan.	NA
THE PLAN WILL DETERMINE		
OAR 734-051-0155 ISSUE	**DETERMINATION**	
Driveway and roadway spacing and connections	• There are no driveways or approaches on westbound ORE 22 as it approaches ORE 99W or the Dallas Rickreall Highway.	Chapter 6 Appendix N

	• There are no driveways or approaches on the eastbound ORE 22 approach to ORE 99W. • There is one farm driveway on the southbound ORE 99W approach to ORE 22. This driveway will need to be located further north of the interchange to a safe distance as determined by the project development team during the design phase. The new access permit for this approach and deed restriction should limit future use to farm related uses with one residence. • There is one farm driveway on the eastbound ORE 22 approach to the Dallas Rickreall Highway. This driveway will need to be located west of its current location. A new access permit for this approach and deed restriction should limit future use to farm related uses with one residence. • There are no driveways or approaches to the Dallas Rickreall Highway between ORE 22 and Rickreall Road. • There are no driveways or approaches between the Rickreall unincorporated community's northern boundary and ORE 22. • Within the Rickreall unincorporated community between Church Street and the community's northern boundary, there is one public street approach, Pageant Street, and an access that is shared between the Rickreall Elementary School and the Rickreall Grange Hall. The southern ramp terminal will be approximately 850 feet from Church Street. Parking and drop-off areas exist in front the school and the Grange Hall. With initial interchange construction, Pageant Street will be closed, a median will be constructed between Church Street and the southern ramp terminal, and the parking/drop-off areas will be removed from ORE 99W. • The disposition of the access at Church Street and those further south will be addressed when the ORE 99W cross-section and improvements to the ORE 99W/Rickreall Road intersection are addressed (analysis beginning in 2003 as part of an Ore 99W Facility Plan with improvements needed in an approximately 15-20 year time frame).	Appendix P
Local street connections to ensure adequate access to properties and off-highway circulation	As part of initial interchange construction, Polk County shall fund and ODOT shall construct a public access road from Rickreall Road north to the school. This road will provide access to the school property and Grange Hall and may serve additional properties as part of a future access strategy on ORE 99W. Improvements to Ford Street west of	Chapter 6

	ORE 99W may also be needed in the medium to long-term, depending on how traffic volume growth on ORE 99W and intersection operations at ORE 99W and Rickreall Road are addressed.	
Median treatments	Upon initial interchange construction, a full median will be installed between the southern ramp terminal at ORE 22 and ORE 99W and Chruch Street. The median should be extended, including potential closure of full access to Church Street (making Church Street right-in, right-out only), to the ORE 99W/Rickreall Road intersection. Median treatment between Church Street and Rickreall Road will need to be determined within the context of potential improvements to ORE 99W and its intersection with Rickreall Road as part of an Ore 99W Facility Plan.	Chapter 6
Location and type of traffic control devices needed to ensure safe and efficient operations in the operational area of the interchange	Upon initial interchange construction, the northern interchange ramp at Ore 22 and Ore 99W will be free flow and the southern ramp will be stop controlled. A separate project will signalize the Oregon 99W and Rickreall Road intersection to the south. This signal project will not provide for the full improvement that will likely be needed in the long-term. This intersection will be further analyzed as part of the Oregon 99W Facility Plan. The improvement to ORE 22 and the Dallas Rickreall Highway will not have any stop signs or signals.	Chapter 4 Chapter 6 Appendix N
Location of sidewalks and bicycle lanes	Sidewalks and bicycle lanes are called for on ORE 99W from Church Street north through the project limits. Bicycle lanes are called for on all ORE 22 and Dallas Rickreall Highway portions of the project. Sidewalks are called for on the ORE 22 and Dallas Rickreall Highway structures. Full sidewalks and bicycle lanes on ORE 99W south of Church Street should be developed in the medium to long-term, as appropriate, when determinations of cross-section and intersection improvements at ORE 99W and Rickreall Road are finalized through the Oregon 99W Facility Plan and implemented through a future project when funding is secured.	Chapter 6
Sidewalk and bicycle lane crossings (highway and ramp crossings)	Sidewalk and bicycle crossings shall be designed in accordance with current ODOT standards at the northern and southern ramp terminals of the ORE 22/ORE 99W interchange. A pedestrian/school crossing, with a median pedestrian refuge, shall be developed to provide safe access from the west side of ORE 99W to the Rickreall Elementary School property in the vicinity of the closed Pageant Street.	Chapter 6
Location of potential transit facilities (turnouts, shelters, park and ride areas)	A gravel park and ride lot currently exists on Rickreall Road between ORE 99W and the Dallas Rickreall Highway. This facility should be considered for improvement when ORE 99W and Rickreall Road intersection improvements are made. Similarly, when improvements are	Chapter 3 Appendix N

	made to ORE 99W south of Church Street and at the ORE 99W/Dallas Rickreall Highway, improvements should be designed to support transit service (turnouts, shelters, etc.).	
Is new policy language needed in the Polk County Comprehensive Plan to support adequate long-term interchange operations?	• Polk County has agreed, by resolution, to limit the use of the EFU lands in the vicinity of the proposed improvements and the land uses within the portion of the Rickreall unincorporated community to the current levels. This commitment will adopted into the Polk County Ordinance.	Chapter 5
Are any land use changes/comprehensive plan (including TSP) amendments needed to implement the Interchange Area Management Plan?	• Based on conditions specified by the Oregon Transportation Commission on January 16, 2002, only Polk County adoption of the Interchange Area Management Plan by the resolution adopting the IGA is needed to proceed with development of the interchange improvements at ORE 22/ORE 99W and ORE 22/Dallas Rickreall Highway. Polk County has chosen to adopt the Facility Plan and Interchange Area Management Plan directly into its comprehensive plan, bypassing the need for an IGA. • Polk County will commit, through formal adoption into its comprehensive plan and ordinance, to take whatever actions are required by their ordinances and policies to authorize construction of the access road from Rickreall Road to the Rickreall Elementary School. • Polk County will also commit, through adoption to take whatever actions are required by their ordinances and policies, to authorize ODOT in the closure of Pageant Street and removal of the turn out and parking in front of the school and the Grange Hall.	Chapter 5
Are any deviations from OHP and OAR 731-051 standards and requirements needed?	A deviation to spacing standards will be needed to maintain the accesses from Church Street to Rickreall Road. Deviations are also needed for several farm approaches on ORE 99W north of ORE 22 and the farm approach on ORE 22. The concurrence of the Region 2 Access Management Engineer and adoption of the Facility Plan and Interchange Area Management Plan by the OTC will constitute approval of these access deviations.	Chapter 6

Oregon Department of Transportation

Region 2

OR 99W/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Project Organization/Chartering Meeting
ODOT Region 2- Room 209
Friday March 10, 2000
9AM-Noon

TAC MEETING #1A--SUMMARY

ATTENDEES

Jim Buettner- Preliminary Design
Harlen Nale-Transportation Planning and Analysis Unit
Scott McKanna-Preliminary Design (on loan to TPAU)
Mark Fancey-Mid-Willamette Valley COG
Richard Schmid -Mid-Willamette Valley COG
Jim Allen-Polk County Planning
Tony Snyder-Polk County Public Works
Anthony Boesen-Federal Highway Administration
Dave Bishop-ODOT Area 3 Manager
Jerry Erickson-ODOT District 3
Erik Havig-Preliminary Design
Dan Fricke-Region 2 Planning
Rich McSwain-Region 2 Traffic
Terry Cole-Region 2 Planning/Project Manager

Project Background/Overview

Participants described events leading to the development of the Refinement Plan. The general sequence of events began with the long-standing state and local recognition of a developing accident history in the area of the 22/99W intersection and the 22/Dallas-Rickreall Highway (DRH) intersection. The problems with these intersections were also acknowledged during the development of the Highway 22 Corridor Strategy in 1995 and 1996. In 1997 and 1998, the Polk County TSP also identified the need to address the growing safety problems in this area. The problems were further documented in 1999 through the Highway 18 and 22 Safety Report, a project undertaken by ODOT at the request of the Mid-Willamette Area Commission on Transportation (MWACT).

During this time (from 1996 to 1999), the urgency of these problems was heightened by a 60% increase in traffic, driven in part by regional growth and the opening of the casinos in Grande Ronde and Lincoln City. Based on this information, a consensus began developing at MWACT and in Polk County that eventual grade separation on Highway 22 from Salem to Dallas would be needed to ensure long term corridor safety. Consensus also developed that addressing this problem, as the most pressing of the various issues along the corridor, should be a high MWACT priority in the most recent round of STIP development. The same consensus also

held during the development of the bonding project list in the wake of the 1999 legislative process.

As part of the OTC approval process, which affirmed the projects that would be pursued if the bonding package was authorized by voters, a variety of questions were raised about the appropriateness of the proposed interchange to address the problems at this intersection. The Rickreall Junction Refinement Plan has been initiated to define the nature of the improvements needed to respond to these concerns.

Extensive discussion was held about what problems this project is intended to address. A variety of problem statements were offered.

- Spacing of Highway 22 and the DRH is too close
- Numerous left-turn and rear-end accidents at 99W and 22 Severe head-on accident potential high at 22 and DR Highway
- Speeds of oncoming vehicles hard to judge for eastbound through and westbound turning vehicles at the 22 and DRH intersection
- Entire 22 corridor from Salem to Dallas is dangerous
- Cannot afford to upgrade entire corridor at one time-issues must be addressed incrementally
- These intersections are the most immediate problems on the corridor
- Traffic volumes currently near OHP mobility standards and are expected to exceed them over the planning horizon
- Truck traffic associated with aggregate operation is expected to increase
- A number of top ten percent SPIS sites are located in this area
- Signal phasing from 99W to 22 is not a separate phase
- Orientation of Highway 22 creates AM and PM visibility problem on sunny days
- Lack of "roadside culture" provides no visual signal for drivers to anticipate the change in traffic conditions at both subject intersections
- Confusing environment for driver expectations

Based on these data and observations the following problem statement was developed:

The intersections of Highway 22 with Highway 99W and the Dallas-Rickreall Highway are experiencing a high number of accidents typically associated with traffic signals and highspeed turning movements on rural highways. Left as is, this problem is expected to worsen as traffic volumes increase. Current traffic volumes do not exceed OHP mobility standards, but are very close. It is expected that traffic volume growth will reduce operational performance below OHP standards during the 20-year planning horizon. The entire Highway 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 22 and 99W are, by state and local consensus, the most immediate of these incremental challenges.

THIS INITIAL PROBLEM STATEMENT WILL BE VALIDATED, SUPPORTED WITH SPECIFIC TECHNICAL FINDINGS, AND MODIFIED, IF NECESSARY, PRIOR TO THE COMPLETION OF THE FIRST DRAFT OF THE REFINEMENT PLAN.

Determine Project Committee Approach

Two standing project committees will be created for this project.

The Technical Advisory Committee will be composed of the following members:
Jim Buettner- Preliminary Design
Harlen Nale-Transportation Planning and Analysis Unit
Scott McKanna-Preliminary Design (on loan to TPAU)
Mark Fancey-Mid-Willamette Valley COG
Jim Allen-Polk County Planning
Tony Snyder-Polk County Public Works
Dave Shea-Dallas Public Works
Anthony Boesen-Federal Highway Administration
Jerry Erickson-ODOT District 3
Dan Fricke-Region 2 Planning
Rich McSwain-Region 2 Traffic
Terry Cole-Region 2 Planning/Project Manager

The ODOT Project Leadership Team will be composed of the following members:
Gary Johnson-Region 2 Manager
Dave Bishop-District 3 Area Manager
Don Jordan-District 3 Maintenance Manager
John deTar-Region 2 Planning Manager
Erik Havig-Preliminary Design

In addition to these new groups, the Mid Willamette Valley Area Commission on Transportation will serve as principle stakeholders for this project and will also provide a policy advisory function to the TAC.

In addition to these groups, participation from the following ODOT units will be requested as necessary:

UNIT	TAC CONTACT
Environmental	Terry Cole/Molly Cary
Mapping	Preliminary Design
Geometronics	Preliminary Design
Geo/Hydro	Preliminary Design
Bridge	Preliminary Design
Right of Way	Region 2/Preliminary Design
Traffic	TPAU

The TAC may also make the following external contacts, as necessary:

School District
OSP/County Sheriff
Farm Bureau
Local Water District
Department of Fish and Wildlife
Rural Fire District/Emergency Services

Determine Outreach Approach

The outreach approach for this project will be a combination of pro-active outreach to specific stakeholders, presentations to elected and appointed officials, and one or two public workshops. Potential stakeholders identified so far include the following:

- State Representative Lane Shetterly
- Penny Cox, Rickreall Community Representative
- Roger Jordan, Dallas City Manager
- Gary Wilson, Monmouth Public Works
- Chris Harriman, Willamette Industries
- Representative from Dalton Rock
- Owner of the large dairy near the intersection
- A Grange representative
- Adjacent land owners

Elected and appointed officials will be addressed through the Polk County Commission, the Polk County Planning Commission, The Dallas City Council, and the Mid Willamette Valley Area Commission of Transportation. These presentations will be made at key project milestones as determined by the TAC.

One general public workshop will be held upon the completion of the first draft of the Refinement Plan. A follow-up workshop may be held, if deemed necessary by the TAC, PLT, and MWACT.

Due to time constraints, the remainder of the agenda was suspended until the next meeting, scheduled for March 30, 2000, from 8 to Noon, Room 209, Region 2 HQ. The items remaining for discussion at TAC Meeting 1 B on March 30 are as follows:

- Determine Data Needs and Sources
  - -land use
  - -mapping/photogrammetry
  - -ROW
  - -traffic/operations
  - -safety
  - -environmental
  - -geometric
- Define Analysis Approach
  - -geometric/ops/safety methods
  - -growth rates/land use
  - -models
  - -simulations
  - -modal influence
  - -environmental
- Define Evaluation Criteria and Screening Approach
- Define Roles and Responsibilities
- Establish Change Management Expectations
- Next meetings/agendas

Oregon Department of Transportation

OR 99W/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Project Organization/Chartering Meeting—Part 2

ODOT Region 2—Room 209
Thursday, March 30, 2000
8AM-Noon

TAC MEETING #1B--SUMMARY

ATTENDEES

Jim Buettner—Preliminary Design
Harlen Nale—Transportation Planning and Analysis Unit
Scott McKanna—Preliminary Design (on loan to TPAU)
Mark Fancey—Mid-Willamette Valley COG
Richard Schmid—Mid-Willamette Valley COG
Jim Allen—Polk County Planning
Tony Snyder—Polk County Public Works
Anthony Boesen—Federal Highway Administration
Jerry Erickson—ODOT District 3
Erik Havig—Preliminary Design
Dan Fricke—Region 2 Planning
Rich McSwain—Region 2 Traffic
Terry Cole—Region 2 Planning/Project Manager

AGENDA REVIEW

It was noted that John deTar attended the first TAC meeting on March 10. It was also noted that Bob Cortright of DLCD would be included as a member of the TAC.

PROJECT AND PROCESS GOALS

Based on the brief goal discussion that took place on March 10, a draft set of project and process goals was distributed for discussion. As modified by the discussion the initial set of project goals is as follows:

PROJECT GOALS

- Conduct credible analysis of problems at Highway 99W and 22 intersection and intersection of Highway 22 and the Dallas/Rickreall Highway
- Identify, analyze, and narrow the number of operationally feasible alternatives for addressing the geometric, safety, and operational problems that can then be forwarded into an environmental documentation process
- Conduct sufficient environmental analysis to identify potential “red-flag” constraints and validate alternative feasibility
- Meet OHP policies (Mobility, Major Investment, Access, Safety, etc.)

- Meet geometric standards as per ODOT Highway Design Manual
- Minimize impact on the Rickreall community
- Seek alternatives that provide the highest overall short- and long-term value per dollar invested

PROCESS GOALS

- Gain early land use approvals, if feasible and appropriate
- Provide information that the County can use to amend their comprehensive plan to ensure its consistency with subsequent EA work
- Establish that the County TSP amendment to acknowledge feasible project concepts will be the first formal decision in the project development process and will set the parameters for the environmental documentation process
- Use the County TSP amendment process to gain public agreement with the range of alternatives forwarded to the environmental documentation process
- Establish project work as a legitimate pre-cursor to the EA and NEPA process
- Establish understanding that the purpose of the project is to narrow the range of alternative solutions—it is not expected to yield a final NEPA or design decision
- Complete the project in Calendar 00
- Conduct targeted outreach, stakeholder briefings and one general workshop/open house, not formal public hearings
- Establish outcome of public involvement as simply gaining insight into potential community perspectives (as opposed to a sanction or mandate for any particular action)

These initial goals are open to modification throughout the course of the project.

DETERMINE DATA NEEDS AND SOURCES

LAND USE

MWVCOG will collect information on vacant land and proposed development in the environmental analysis area (as defined on the aerial photo presented in the first TAC meeting) and in the Rickreall community area. MWVCOG will also review Dallas and Polk County Comprehensive Plans and OEA population projections. Potential for future growth “anomalies” like the casino will also be assessed. Using this information, MWVCOG will develop 25-year growth rates to support traffic forecasting. MWVCOG will also develop maps depicting land use and development potential in the study area.

MAPPING/PHOTOGRAMMETRY

MWVCOG will develop generalized land use and location maps. These maps will include parcel data, as needed. TPAU will develop intersection operational maps (volumes, movements, V/C). Preliminary Design will develop air photo composites and CAD drawings to depict alternatives, as appropriate, at various stages of the project.

ROW

PD will gather ROW information needed to support design efforts from R2 ROW unit. R2 Project Manager will obtain ROW cost estimate for alternatives evaluated in detail during the latter stages of the project.

TRAFFIC/OPERATIONS

TPAU has somewhat recent 14-hour intersection counts (10/99) at 99W and 22 and a PM peak count (12/99) at 22 and the DR Highway. These counts can be used to begin the analysis.

However, HPMS counts do not exist to adequately support the project. New 7-day, full classification counts are needed on all four legs of the 99W/22 intersection and on all three legs of the 22/DR Highway intersection. New 14-hour full movement counts are needed at both intersections. The new counts will be used to validate the counts that the initial analysis will be based upon. New counts should be taken after the 4th of July to best simulate a 30th highest hour condition. TPAU will arrange for counts from the TDD data section, or contact the R2 Project Manager to make other arrangements if TDD's contract will not support counting for this project.

SAFETY
Region 2 Traffic Unit will collect PRC data between 1994/5 and 1999/2000 and provide it to PD so that they can analyze the relationship between crashes and physical/operational problems. Region 2 Traffic Unit will also conduct a literature search to determine how similar problems have been addressed elsewhere. PD will contact the author of the Highway 18 and 22 Safety Report and collect any pertinent information. PD will contact the Polk County Sheriff's department for any additional information that they can provide.

ENVIRONMENTAL
R2 Environmentalist will initiate and coordinate the environmental "red-flag" analysis at a "recon" level of effort to identify showstoppers and design constraints. ODOT's environmental staff will produce these analyses.

GEOMETRIC
PD will collect or develop all necessary geometric information.

DEFINE ANALYSIS APPROACH
GEOMETRIC/OPERATIONS/SAFETY METHODS
The geometric, operations, and safety methods will be in line with the approaches and evaluation criteria paper distributed in TAC meeting 1A. The geometric deficiency analysis approach is a "standards-based" approach that compares existing and forecast conditions to current standards as defined by the OHP Design Manual. This assessment will be coordinated with the operational analysis. The operational deficiency analysis approach will compare existing and forecast traffic volumes and available storage to OHP mobility standards and storage requirements. The tools used for the operational analysis will include SigCap, Unsig 10, and possibly Synchro. The safety deficiency analysis approach will involve a review of current SPIS lists and PRC data and a determination if documented crashes can be correlated to geometric or operational conditions. The likelihood of crashes increasing, given existing geometric conditions and forecasted operational conditions will also be assessed.

GROWTH RATES/LAND USE
Traffic growth rates will be derived through blending expected population and employment growth in the local area (as defined by local comprehensive plans) with background traffic growth rates developed through trend analysis. These growth rates may be adjusted to reflect known or anticipated traffic growth anomalies (like casino expansion) as identified and acknowledged by the TAC. The rates may also be adjusted to reflect any development potentials as determined by the MWVCOG analysis of specific land in the immediate area.

MODELS/SIMULATIONS
Aside from the ODOT Statewide model, which is not an appropriate tool for analysis at this scale, there are no traffic models available for use in this area. Micro simulation packages like

TrafNetSim may be employed during the alternative evaluation phase if deemed necessary by the TAC.

MODAL ISSUES
An assessment of the potential impact of non-private passenger vehicle modes will be conducted. This assessment will include a review of the Oregon Public Transportation Plan and the plans of local transportation service providers and compare the levels of service goals of those plans to the level of service currently being provided. Possible increases in the use of area park and ride lots will also be examined. The likelihood of meeting long-range transit goals will be determined and used to adjust traffic-forecast numbers, if warranted. The same approach will be used to assess the potential affect of rail service on future travel demand. Based on existing classification counts, trend line forecasting, and whatever can be discerned about future business plans in the area, the potential impact of truck freight will be defined. Bicycle and pedestrian demand will not be analyzed directly—bicycle and pedestrian facilities will simply be included as design features for any alternative identified.

ENVIRONMENTAL
Input from the Region 2 Environmentalist since TAC Meeting 1B states the following:

A level 1 Hazardous Materials survey will be conducted. For archaeology, something between a level 1 and 2 survey will be conducted. For Historic resources a visual survey of area buildings will be conducted to identify potentially significant historic resources. For plants, an on the ground survey will be conducted to identify locations of populations. Most of the undisturbed area is ODOT right-of-way (but there are known populations in the vicinity). Existing information will be used when possible. It will be determined if there are any listed fish in Rickreall Creek. For wetlands, most everything is farmed or developed. It will be determined if there are farmed wetlands that are jurisdictional.

DEFINE EVALUATION CRITERIA AND SCREENING APPROACH

Alternatives will be developed to address the deficiencies documented and the problems that are attributed to the deficiencies. The alternatives selected for detailed analysis will be evaluated on a range of criteria dealing with issues from safety to environmental impact. This range of criteria was discussed in detail and the Project Manager was given the go ahead to document the results of the discussion. The full evaluation criteria matrix will be provided to the TAC in a separate attachment (by the end of April).

DEFINE ROLES AND RESPONSIBILITIES

- ODOT Preliminary Design
  1) Safety analysis based on information provided by Region 2 and collected from Polk County Sheriff
  2) Suggestion and development of design concepts to address problems identified through deficiency analysis
  3) Development of design concepts suggested by other TAC members
  4) ROW impact definition
  5) Development of report graphics, at an appropriate level of detail, depicting alternatives considered and evaluated—provided to MWVCOG in a reproducible format
  6) Text summary of geometric and safety evaluations—provided to MWVCOG for editing and placement in draft and final document

- ODOT Transportation Planning and Analysis Unit

1) Collection and processing of traffic count data
2) Existing and future operational analysis
3) Development of graphics to illustrate operational analysis, at an appropriate level of detail, depicting existing and future no build and future alternative conditions—provided to MWVCOG in a reproducible format
4) Text summary of operational evaluations—provided to MWVCOG for editing and placement in draft and final document

- Mid-Willamette Valley COG
  1) Attend meetings and develop minutes
  2) Assist Region 2 Project Manager to develop Agendas
  3) Coordinate and conduct public outreach
  4) Conduct modal analysis and define relationship to highway operations
  5) Conduct land use, population, and economic analysis and provide traffic growth rates to TPAU for operational analysis
  6) Compile technical memos and reports and develop report text
  7) Compile technical graphics and prepare for inclusion in draft and final document
  8) Produce land use and location maps for draft and final documents
  9) Produce other illustrative report figures and tables, as required (org. charts, timeline, process charts, population forecasts, etc.)
  10) Produce draft and final documents

- ODOT Region 2 Traffic
  1) Collect SPIS information and provide to PD for analysis
  2) Collect PRC information and provide to PD for analysis
  3) Develop crash diagrams, as required, and provide to PD for analysis
  4) Conduct literature search and provide information to TAC about how similar situations have been addressed elsewhere (if such information exists)

- ODOT Region 2 Environmentalist
  1) Coordinate use of ODOT resource experts to conduct appropriate “red-flag” analysis
  2) Provide technical memos to ODOT Region 2 Project Manager

- ODOT Region 2 Project Manager
  1) Provide project administration (budget, agendas, timelines, etc)
  2) Coordinate various project elements
  3) Communicate with stakeholders
  4) Communicate with ODOT Project Leadership Team (PLT)
  5) Develop evaluation criteria
  6) Obtain cost estimates from Region 2 ROW for alternatives analyzed in detail
  7) Review all project documents and graphics and provide project direction

- Polk County
  1) Provide any available land use or traffic count data to MWVCOG and TPAU

- All TAC Members
  1) Provide initial project direction and goals
  2) Develop and screen alternatives
  3) Provide direction for, review, and validate work products

4) Recommend one or more alternatives to the PLT, MWACT, and Local Governments for advancement into an environmental documentation process

- Mid-Willamette Area Commission on Transportation
  1) Review and comment to TAC and PLT on draft and final report

- ODOT Project Leadership Team
  1) Validate project goals
  2) Resolve issues as requested by the TAC
  3) Determine if and when presentation of products to the Oregon Transportation Commission will take place
  4) Approve draft and final work product

CHANGE MANAGEMENT EXPECTATIONS

It is agreed that change management protocols will be simple. All project participants should communicate as directly as possible with each other or other contributors when carrying out assignments developed through TAC discussions. The ODOT Region 2 Project Manager should be informed if any substantive deviation from TAC assignments is needed.

NEXT MEETINGS/AGENDAS

The next meeting will be held on Wednesday, May 24, from 10 to 4, in room 209 at Region 2. The agenda focus for the next TAC meeting (#2) and subsequent meetings is as follows:

- TAC #2 – Conduct Alternative Identification
  - ✓ Review Policies and Previous Plans
  - ✓ Validate Base Case Analysis and Problem Statement
  - ✓ Affirm Evaluation and Screening Criteria
  - ✓ Identify all Possible Alternatives (brainstorm and describe)

- TAC #3 – Conduct Alternatives Screening
  - ✓ Review Applied Pros and Cons for each Concept
  - ✓ Identify Issues and Stakeholders
  - ✓ Dismiss as many Flawed or Ineffective Alternatives as Possible
  - ✓ Define and Assign Detailed Evaluation Tasks

- TAC #4 – Review Alternatives Evaluation

✓ Validate alternative evaluation
✓ Identify considerations for implementation phasing and coordination
✓ Define Presentation Materials

- TAC #5 – Review Draft Plan
  - ✓ Review comment and issue (outreach) resolution recommendations
  - ✓ Define Next Steps
  - ✓ Acknowledge participation and dismiss TAC

Oregon Department of Transportation

Region 2

OR 99W/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Conduct Alternative Identification

Division of State Lands Building - Mill Creek Room
Wednesday, May 24, 2000
10AM - 4PM

TAC MEETING #2 -SUMMARY

ATTENDEES

Jim Buettner—Preliminary Design
Harlan Nale—Transportation Planning and Analysis Unit
Scott McKanna—Preliminary Design (on loan to TPAU)
Mark Fancey—Mid-Willamette Valley COG
Jim Allen—Polk County Planning
Anthony Boesen—Federal Highway Administration
Rick Williams - DLCD
Mel Sutter - City of Dallas Public Works
Erik Havig—Preliminary Design
Dan Fricke—Region 2 Planning
Rich McSwaim—Region 2 Traffic
Terry Cole—Region 2 Planning/Project Manager

REVIEW POLICIES and PREVIOUS PLANS

Population projections through 2025 have been developed. These are based on the 2020 projections that are adopted as part of the Polk County TSP and meet the requirements of Oregon Revised Statutes 195.036 for coordinated projections. Average annual growth rates for Dallas and Monmouth between 2000 and 2025 are 2.00 and 3.03 percent respectively.

Vacant lands analysis within the study area shows approximately 6.5 acres zoned for industrial development available within Rickreall. No vacant residential or commercial-zoned is found within the study area. Other vacant land in the area is zoned for Exclusive Farm Use (EFU). Uses in these areas will not produce major traffic impacts.

The Polk County Transportation Plan (TSP) states that the County will work with the city of Dallas to identify the location of a limited access collector located north of Dallas. This road would link Ellendale Road with Highway 223 north of the city and would be intended to alleviate some traffic congestion at the Ellendale Road/Highway 223 intersection. Construction of this road would shift some Salem-bound traffic from Dallas and outlying rural areas from the Ellendale Road connection to Highway 22 onto the Highway 223/22 intersection.

Major traffic generators:

- In Dallas, an increase in commercial growth in the next five (5) years including the addition of a second major grocery store in town. More commercial development is expected along Ellendale Road and Kings Valley Highway. The City hopes to have wastewater treatment facility expansion complete by August 2003 and is not under any type of moratorium.

- In Monmouth, several new developments could potentially impact the intersection. Development of a 9-acre commercial area along Monmouth-Independence Highway (at the S-curve) is expected within the next several years. In addition, development of a recently annexed residential property (approximately 80 acres) would add some 800 new residential units.

- Spirit Mountain Development Casino is in the process of studying the feasibility of adding an additional 100 rooms to the existing 100-room overnight facility. No expansion of the Casino is planned or anticipated through the planning period due to two reasons: (1) physical constraints at the site limit growth and (2) the Tribe is required, by law, to conduct gaming on no more than five (5) acres.

- The potential exists for Willamette Industries truck traffic to increase anywhere from 30 to 60 percent in the next few years as the sawmill facility is retooled.

- Willamina Lumber (Hampton) trucks travel from Willamina to Portland via Salem on Highway 22, rather than use Highway 18. A steady increase in truck traffic from the Willamina plant will occur. At present, 13 to 15 rail cars filled with lumber are shipped daily from the plant. Each car holds the equivalent of 4-5 trucks. If this rail line closes this material would then be shipped by truck. MWVCOG staff will contact ODOT rail and Willamina Lumber to obtain more information regarding the future of rail service to the area.

Modal Analysis:

MWVCOG is to review the OPTP and contact local transit service and carpool providers to identify current and anticipated levels of service and the impacts associated with meeting projected needs. MWVCOG will provide this analysis to ODOT staff as soon as possible.

<u>VALIDATE BASE CASE ANALYSIS and PROBLEM STATEMENT</u>

The initial problem statement was presented to the TAC:
The intersections of Highway 22 with Highway 99W and the Dallas-Rickreall Highway are experiencing a high number of crashes 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 do not exceed OHP mobility standards, but are very close. It is expected that traffic volume growth will reduce operational performance below OHP standards during the 20-year planning horizon. The entire Highway 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 22 and 99W are, by state and local consensus, the most immediate of these incremental challenges.

Is that statement still valid?

- Intersection as a whole has a .84 v/c ratio. Statement should be modified to show that Mobility standards are currently being exceeded.
- Through capacity is adequate.
- Intersection exceeds the current mobility standard because of left-turns vs. eastbound turns.

The group agreed that the problem statement was still valid, with modification of the Mobility issue. It now reads as follows.

The intersections of Highway 22 with Highway 99W and the Dallas-Rickreall Highway are experiencing a high number of crashes 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 currently exceed OHP mobility standards. It is expected that traffic volume growth will further reduce operational performance during the 20-year planning horizon. The entire Highway 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 22 and 99W are, by state and local consensus, the most immediate of these incremental challenges.

<u>Crash analysis data (1995-99):</u>

- Usually 17-18 crashes per year with little variation.
- Rear-end is the predominant crash. Of these, westbound and eastbound rear-end most common. Most occur during afternoon and early evening - 5-7 PM. Afternoon sun may be a factor.
- Second most common are crashes involving turning movements, including some where the turn is protected. Most are daytime crashes during commuting peaks.
- No fatalities during this time period - 2 fatalities during 1993-94.
- No rear-end crashes at Dallas cutoff during this time period.
- Question raised as to the day of week for crashes - Friday afternoon/evening westbound rear-end and Sunday afternoon/evening for eastbound rear-end. Rich McSwain will try and obtain time of day/day-of-week data.
- Six type A (incapacitation) injury crashes during 1996-99.

Conclusions:

- Through movement crashes may be correlated to sun angle.
- Driver experience, including weekend drivers, may be a factor in crashes.
- The turning angle from all directions may be a factor in crashes.

Rich McSwaim and Jim Buettner will coordinate on write-up for delivery to MWVCOG.

<u>Literature Review:</u>

- Adequate warning, maximizing visibility of signal heads, consider left turn phasing are techniques that have been used elsewhere.
- Flashing advance signs may be of some value. Flashing yellow “Prepare to Stop” sign may cause drivers to speed up.
- Offset left-turn refuges to improve sight lines.

- Use of traffic calming measures - channelization, center island, narrowing lanes, “roadside culture” etc., may be appropriate here.

Environmental Analysis:

- Historic, plant, and archaeology data will be available in the next week.
- A number of potential hazardous materials sites are located on Main Street (Rickreall) and on Rickreall road.
- A farmed wetland on Cove soil is located northwest of the intersection - 1:1 mitigation could be used.
- Riparian area on Rickreall Creek. Creek has water quality issues - but is at some distance from the intersection.

Conclusion:

- No insurmountable issues have been raised at this point.

Right-of-Way review:

- On the south side of Highway 22, ODOT owns several hundred extra feet of right-of-way.
- No excess right-of-way currently available on the north side of Highway 22.

Operations:

- May 17, 2000 manual counts used to supplement earlier counts. Peak hour volumes were seasonally adjusted and balanced. Exponential projections to 2025 were used.
- Highway 99 signal (v/c .84) and Dallas cutoff (v/c .95) are current problem areas. Future traffic volumes exceed (theoretically) capacity in these two areas.
- Questions and concerns were raised regarding the use of exponential rates to determine future traffic volumes. This analysis does not include any non-construction alternative (to SOVs) mode shifts, that reduce traffic volumes and is only partially based on past performance and trends. It was agreed that true linear straight-line projections would be developed. These may then be adjusted based on assumptions regarding future growth or the success of non-construction transportation alternatives.

Queuing Analysis:

- Scott McKanna will look at distances and requirements for turning queues.
- If the Highway 22 westbound signal phase is extended then the peak hour queuing for left turns from Highway 99 will increase.
- Concern raised about impacts to Rickreall if Highway 22 westbound signal phase is lengthened.

Geometrics:

- Everything is constructed to current design standards.
- No access issues are present - several farm accesses in the area and First Street (Rickreall) located 800-900 feet south on Highway 99.

- Scott McKanna will look at the weave distance available for cars traveling from Dallas to McMinnville (DRH to 99W Northbound).

Based on the base case analysis, the problem statement was again revisited and affirmed.

AFFIRM EVALUATION and SCREENING CRITERIA

The group again reviewed the evaluation approach and criteria handed out at the last meeting. No modifications to the problem statement were raised.

IDENTIFY ALL POSSIBLE ALTERNATIVES

During the brainstorming session, the group identified the following list of alternative ideas for further consideration:

IDEA #1-Anthony Boesen's suggestion
- Construct some form of grade separation at Highway 99W/22 intersection
- T-up or develop flyover at Dallas-Rickreall Highway and move Dallas-Rickreall Highway 800 to 1000 feet west

IDEA #2- Rich McSwaim Safety/TSM Options
- More (and place larger) signal heads/increase signal head backing to mitigate glare
- Improve warning lights on approaches
- Install permanent Variable Message Signs (VMS) on approaches to 99/22W with radar to alert speeding drivers of speed and upcoming signal (sign shows speed and reads "SLOW DOWN" or something similar when warranted)
- Develop some sort of rumble strip treatment
- Increase intersection visibility through innovative shoulder striping
- Use paint to narrow lanes and force slowing
- Employ other means to increase roadside culture and create different "look and feel" for intersection approaches

IDEA #3-Idea 2 with improved channelization on Highway 99W

IDEA #4-Idea 2 with improved channelization on Highway 22

IDEA #5-Idea 2 with improved channelization on Highway 99W and Highway 22

IDEA #6-Improved channelization at Dallas-Rickreall Highway as per Scott McKanna
- Decrease skew
- Reduce throat of landing area for left-turn movements from Highway 22 WB to the Dallas-Rickreall Highway
- Develop "pork chop" on Dallas-Rickreall Highway to help delineate entrance to DRH from Highway 22
- Use paint on Highway 22 to channelize and delineate left turn and reduce left turn "exposure"

IDEA #7-Dallas-Rickreall Highway TSM
- Reduce speed on westbound Highway 22 approach to Dallas-Rickreall Highway
- Install VMS to advise of speed and upcoming intersection

IDEA #8-At-grade interchange

- Develop various jughandle (or similar) treatments to accommodate turning movements
- Analyze jughandle variations with and without signals

IDEA #9-Roundabout variations at Highway 22/99 intersection and/or Dallas-Rickreall Highway

IDEA #10-Develop and fund (continue to fund?) an enforcement plan

IDEA #11-Grade Separation at 22/99 and DRH using 1965 design

IDEA #12-Grade Separation at Highway 22/99 intersection and Dallas-Rickreall Highway -the Scott McKanna Variation, maintaining primary route continuity for Highway 22

IDEA #13-Grade Separation at DRH using the McKanna Variation flyover only

IDEA #14-Grade Separation at Highway 22/99 intersection and Dallas-Rickreall Highway using the Scott McKanna Variation flyover and an at-grade jughandle loop for the 22 westbound to southbound movement

IDEA #15-Grade Separation at Highway 22/99 intersection and Dallas-Rickreall Highway-the Jim Buettner Variation, establishing primary route continuity for the Highway 22 to Dallas-Rickreall Highway (and vice-versa) movements

<u>ASSIGNMENTS</u>

- ODOT Preliminary Design
  7) Document assessment of existing geometric conditions in a tech memo
  8) Work with TPAU and Region 2 to package improvement concepts and develop pro and con assessments for each package
  9) Develop rough cost estimates to compare shifting of highway alignment to development of a larger Hwy 99 overcrossing that would shift grade impacts north, away from Rickreall
  10) Develop graphics, at an appropriate level of detail, to depict improvement concept packages in a form suitable for inclusion in draft and final reports
  11) Work with Region 2 traffic to incorporate supplemental crash analysis data into pro and con evaluation

- ODOT Transportation Planning and Analysis Unit
  5) Work with PD and Region 2 to package improvement concepts and develop pro and con assessments for each package
  6) Develop true linear traffic forecast numbers and redo mobility and queuing analyses for 2000 and 2025 (no build)
  7) Develop 2015 forecast numbers and conduct mobility and queuing analysis (no build)
  8) Evaluate weave issues for vehicles making a right turn from the DRH and a left turn onto Hwy 99 NB.
  9) Work with Mid-Willamette Valley COG and develop forecast adjustments, if appropriate, to reflect alternative mode assumptions or other demand management potentials
  10) Apply new forecast numbers to improvement package concepts and analyze operational performance in 2015 and 2025 (at a level of detail sufficient to develop pro and con statements)

11) Develop graphics, at an appropriate level of detail, to depict the revised forecast numbers and their application to the improvement concept packages in a form suitable for inclusion in draft and final reports

- Mid-Willamette Valley COG
  11) Develop meeting minutes
  12) Conduct modal analysis and define relationship to highway operations
  13) Compile technical memos and reports and begin developing report text
  14) Compile technical graphics and begin preparation for inclusion in draft and final document

- ODOT Region 2 Traffic

5) Conduct further analysis of crash data to determine if (and what) correlation between crashes and time of day/day of week exists and, if so what the implications are for potential design options

- ODOT Region 2 Environmentalist

3) Complete collection of requested environmental analyses

- ODOT Region 2 Project Manager

8) Work with PD and TPAU to package improvement concepts and develop pro and con assessments for each package

- Polk County

2) Provide any available land use or traffic count data to MWVCOG and TPAU

- All TAC Members

5) Review and comment of TAC minutes and assignments

- Mid-Willamette Area Commission on Transportation

2) Review and comment to TAC and PLT on draft and final report

NEXT MEETING

The agenda for the next meeting is as follows:

TAC #3 – Conduct Alternatives Screening

- Review Applied Pros and Cons for each Concept Analyzed and Presented
- Dismiss as many Flawed or Ineffective Alternatives as Possible (document reasoning)
- Identify Issues and Stakeholders
- Define and Assign Detailed Evaluation Tasks for Remaining Alternatives

Next meeting is scheduled for June 27, 2000 - 8AM-12PM in Room 209 at ODOT Region 2 HQ at State Street and Airport Road in Salem.

Oregon Department of Transportation

Region 2

OR 99W/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Conduct Alternatives Screening

ODOT Region 2 Headquarters - Room 209
Tuesday, June 27, 2000
8AM - 12PM

TAC MEETING #3 -SUMMARY

ATTENDEES

Tony Snyder—Polk County Public Works
Bob Cortright - DLCD
Mel Sutter - City of Dallas Public Works
Dave Shea - City of Dallas Public Works
Mark Fancey—Mid-Willamette Valley COG
Jim Buettner—Preliminary Design
Harlan Nale—Transportation Planning and Analysis Unit
Scott McKanna—Preliminary Design (on loan to TPAU)
John deTar - Region 2 Planning
Erik Havig—Preliminary Design
Dan Fricke—Region 2 Planning
Rich McSwaim—Region 2 Traffic
Dave Bishop - Region 2
Terry Cole—Region 2 Planning/Project Manager

REVIEW EXISTING PLANS and POLICIES

Oregon Transportation Plan (1992)
The OTP does not specifically address improvements to Highway 22 or Highway 99W, but does show commuter transit service between Salem and Dallas as part of the preferred transportation system for the year 2012.

Oregon Highway Plan (1999)
The OHP designates Highway 22 as a Statewide Highway. This Highway has also been designated by the OTC as an expressway and is included as part of the National Highway System. The OHP designates Highway 99W as a Regional Highway. Neither highway is designated as a freight route.

For statewide non-freight routes, including Highway 22, and regional highways, including Highway 99W the v/c ratio is 0.75 at unincorporated communities, such as Rickreall. In rural areas, the v/c ratio is 0.70. Relevant OHP policies and standards will be included as an appendix to the final report.

Oregon Public Transportation Plan (1997)
The Oregon Public Transportation Plan (OPTP) provides for implementation in 2015 at three levels. Level 1 would essentially freeze ridership at current (1997) levels. Level 2 increases services such as senior and disabled public transportation, intercity bus service, and rideshare and transportation demand management (TDM).

Level 3 would expand services to meet numerous state and federal mandates and goals. 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 persons living in these communities. There are no specific recommendations for this corridor in the OPTP.

Oregon Bicycle and Pedestrian Plan (1995)
The Oregon Bicycle and Pedestrian Plan (OBPP) states that pedestrian activity in rural areas is limited because travel distances tend to be great. The Plan mentions that most people will feel comfortable walking and bicycling along a roadway if well-designed facilities are available. Both Highway 22 and Highway 99 are identified as having 4-foot wide shoulders, which the Plan considers suitable for bicycling. Implementing Strategy 1A 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.

Willamina to Salem Corridor - Oregon Highway Route 22 - Interim Corridor Strategy (1996)
The Interim Corridor Strategy 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. Pertinent objectives include:

-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 Highway 22, such as Highway 223.

-Develop all transit, park-and-ride and park-and-pool facilities with pedestrian amenities and secure bicycle parking in order to promote connection between those modes and transit.

-Continue to provide continuous bike facilities (bike lanes or highway) throughout the Highway 22 Corridor.

- Ensure that pedestrian facilities are replaced, added or upgraded to desired conditions in conjunction with other highway construction.

- 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.

- Maintain existing travel times throughout the planning period.

- West of the Willamette River, avoid installation of additional traffic signals.

- 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.

- Manage highway facilities in a manner that does not result in conditions that are less than the following for highway traffic. LOS for Hwy 22 west of Highway 51 is B-C.

- 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% 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.

- Evaluate solutions to the safety concerns at the intersections of Highway 22 and Highway 99W and Highway 22 and Highway 223 near Rickreall.

- Analyze alternatives to reduce accident risk near the intersections with a high number of turning vehicles, including Highway 223, Highway 99W, and Highway 51.

- Provide opportunities for the use of alternative modes of transportation in conjunction with special events on or near the corridor.

- Improve pedestrian crossing opportunities, particularly in the urban sections of Highway 22, to reduce the “barrier” effect of the roadway and to foster good pedestrian connections between both sides of the road.

- Examine methods to reduce negative impacts and increase the positive impacts of Highway 22 corridor transportation systems on neighborhoods, parks, and community facilities.

- Avoid highway improvements near Baskett Slough National Wildlife Refuge that have significant adverse impacts to the Refuge. If impacts are unavoidable, strive to minimize those impacts.

- Consider enhancements or management techniques that maintain or enhance the visual quality of the corridor, particularly in the scenic rural sections west of Dallas.

- Evaluate and mitigate, as needed, the impact of Highway 22 corridor transportation improvements on water quality for adjacent streams and rivers, such as Mill Creek, Salt Creek, Rickreall Creek, and the Willamette River.

- 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.

- Prepare an inventory of hazardous material sites on the corridor that should be avoided when transportation improvements are proposed.

- Energy Impacts Objective H.1 Give priority to those projects that reduce energy consumption and vehicle miles traveled.

Polk County Transportation Systems Plan (1997)
The Polk County Transportation Plan (TSP) identifies both Highway 22 and Highway 99W as principal arterials in the County road system. The TSP identifies a number of conceptual road construction projects including the construction of an interchange at the Highway 22/Highway 99W intersection. The Plan states that the County will work with ODOT on any necessary studies related to these projects.

Moving Toward Action - The Marion and Polk Counties Regional Transportation Enhancement Plan - A Strategy for Improving Special Needs Mobility and Beyond (1998)

The Regional Transportation Enhancement Plan (R-TEP) work program includes creating two transit routes serving north Marion County and central Polk County; creating preliminary design and cost allocation for a regionally coordinated transportation system for inclusion in the 2000-2005 Statewide Transportation Improvement Program (STIP); developing a regional "brokerage" to coordinate non-emergency medical trips; and complete a needs assessment to quantify needs and estimate demand for services within the region.

Bob Cortright raised the issue that any analysis of alternatives should consider the benchmark in the Oregon Highway Plan (p.23) that sets a 2010 target of 38 percent of persons commuting to and from work during peak hours using means other than single-occupancy vehicles.

Harlan was asked to conduct sensitivity analysis regarding the reduction in single-occupancy vehicles needed to meet this benchmark for the various alternatives considered.

Assignments:
MWVCOG will review and summarize the Willamette Valley Transportation Strategy and the MWACT Strategy.

Note: Subsequent to the end of the meeting, MWVCOG staff reviewed the SKATS Origin and Destination Study (1994) and found that the percentage of single-occupancy vehicles traveling westbound from Salem across the Willamette during the PM commute period was about 67 percent, nearly meeting the OHP-referenced benchmark. MWVCOG staff reviewed this information with Terry Cole. Based on this information, it was determined that there is no need to conduct a sensitivity analysis to demonstrate the potential impact of meeting the benchmark in 2020. However, Region 2 will arrange for an SOV count in the vicinity of the 99/22 interchange to confirm that the SOV rates at the Marion and Center Street bridges are valid for the 99/22 area traffic. Any possible sensitivity analysis will be postponed until the new SOV counts are completed.

REVIEW MODAL INVENTORY DATA

Public Transit
CARTs currently makes 6 trips per day - between the hours of 6 am to 8 PM between Salem & Dallas. The service uses 18-person vans. CARTs staff estimates at about 25 percent occupancy at this time, although on several occasions demand has exceeded 100 percent. In those instances, complimentary dial-a-ride service was provided to those who could not be accommodated on the van. The service priority for the vans is persons with special needs, but commuters are encouraged to use the service as well.

No long-range feasibility studies or trip projections for the service have been developed.

Mid-Valley Rideshare
The Mid-Valley Rideshare program consists of a database of persons interested in carpooling within Salem and outlying communities. The database lists persons described as "active", which includes persons interested in ridesharing and some program participants that may be seeking additional riders and persons listed as "inactive". Based on the program definitions and database management, it is impossible to determine the exact numbers of commuters from Dallas area that use the program or to project future use of the program.

Pedestrian and Bicycle Travel
Bicycle facilities, consisting of either a bike lane or roadway shoulder/bikeway are available in the area between Salem and the project study area. Because the Corridor connects to Highway 18, the Oregon coast is a popular destination for longer distance touring.

Walkways are available throughout the most of the urban arterial sections of Highway 22 in the Salem urban area. In rural areas, such as the project study area, where provision of walkways is not cost-effective, paved shoulders serve as pedestrian walkways.

No counts of pedestrian or bicycle traffic are available.

Conclusion:

- Based on existing data, growth in non-auto travel modes will not significantly affect the magnitude of 2025 traffic projections for the intersection.

REVIEW OF MODIFIED TRAFFIC PROJECTIONS

Linear projections have been developed resulting in a minor change to peak hour projections. Highway 99W signal (v/c .84) and Dallas cutoff (v/c .95) are current problem areas. In 2025, v/c for 99W signal is 1.41 and v/c for the Dallas cutoff is 2.06.

Bob Cortright asked whether peak hour spreading had been considered in the analysis and wanted to ensure that the forecasted level of growth was consistent with the capacity of the Marion and Center street bridges.

John deTar noted that the system is not that constrained and that if spreading were occurring at the bridges the result in the study area would merely be a shifting of the peak hour.

Conclusion:

- Traffic analysis conclusions for the study area need to be consistent with the Bridgehead Engineering Study.

Assignment:

- **MWVCOG needs to document Bridgehead findings and show that peak hour spreading is not applicable in the study area.**

<u>REVIEW APPLIED PROS and CONS for EACH CONCEPT ANALYZED AND PRESENTED</u>
(Operational pros and cons developed by TPAU were passed out at the meeting—this section covers some of the major points raised in those analyses)

<u>Roundabout</u>
Roundabouts are best where a 4-way stop is warranted. Maximum v/c is .80.

Cons:

- Not suited to a high-speed rural location.
- Not suited for Dallas cutoff due to high number of left-turning movements - leads to imbalanced flow.
- Install VMS to advise of speed and upcoming intersection
- Projected v/c ratios for single and dual-lane roundabouts at Highway 22/99 intersection exceed capacity.
- Projected v/c ratio for single lane roundabout at Dallas cutoff exceeds capacity

Conclusion:

- No additional operational feasibility analysis needed for the single lane option. This option and the dual lane option will no longer be considered at 22/99 (although the dual lane will be analyzed at 22/DRH for documentation purposes).

Assignments:
Harlan will develop analysis for dual-lane roundabout option at Dallas cutoff. Harlan & Eric will provide technical memos to MWVCOG.

<u>TSM Concepts</u>
Pros

- Quick, Low-cost treatments with some potential safety benefit.

Cons

- Must be incorporated with some other (costlier) measures to have any significant operational benefit.

Conclusion:

- This option remains acceptable for inclusion as part of phased approach for addressing these issues.

<u>Channelization</u>
Hwy 99W Only
Pros:

- Decreases v/c ratio from 0.84 to 0.81 in year 1999

- Increases safety by providing protective phasing for 99W left-turning traffic flows

Cons:
- Protective left-turn phasing will increase delay and storage distances at the intersection
- All of the cons of the existing intersection

Hwy 22 Only
Pros:
- Adding both westbound dual-left-turn lanes on the eastbound approach along with right-turn lanes on both east and west approaches, decreases the v/c ratio in the year 1999 to 0.84
- Cost effective

Cons:
- Does not provide protective phasing for 99W left-turning traffic flows.
- Westbound dual left-turn lanes on 22 have minimal effect on the v/c ratio at the entire signalized intersection.
- 10-15 year fix at best
- All of the cons of the existing configuration.

Both 99W & Hwy 22
Pros:
- Decreases the v/c ratio to 0.75 in 1999 and 0.97in 2015
- Increases both safety and capacity at the intersection
- Cost effective

Cons:
- The intersection will fail shortly after 2015 (using equal lane utilization for westbound through traffic flows).
- Westbound dual left-turn lanes on 22 have minimal effect on the v/c ratio at the entire signalized intersection
- 10 to 15 year fix best
- All of the cons of the existing configuration.

Conclusions:
- The channelization option for both 99 and 22 remains acceptable for next level of analysis, but will be a mid-term improvement, at best.

Assignments:
Harlan & Eric will analyze options regarding phasing and will perform more detailed operational analysis regarding combined channelization and TSM options. These options will also be analyzed in conjunction with eliminating left turn from Dallas-Rickreall Highway on 22 (see Dallas Cutoff Signalization).

<u>Dallas Cutoff Signalization</u>
The question was raised regarding the queuing problem and impacts to 22/99 intersection if this signal remains unsignalized.

Pros:

- Could potentially keep intersection from failing until 2015, but mobility standard would be exceeded much more quickly.

Cons:
- Signalization may increase queuing and interfere with 22/99 (could be avoided with double left-turn lands from 22 to the DRH.
- Additional signal in this rural location will create “shock-wave” in combination with 22/99 signal, undermining apparent performance.

Conclusions:
- The channelization option for both 99 and 22 remains acceptable for next level of analysis, but will be a mid-term improvement, at best.

Assignments:
Harlan will perform intersection analysis eliminating the northbound to westbound signal left-turn phase (only 15 vehicles during peak hour). Harlan will document for report the impacts to 22/99 intersection if Dallas Cutoff remains unsignalized.

<u>Dallas Cutoff Flyover</u>
Designed as a two-lane bridge to create some excess capacity and to eliminate future need for widening. Lane would be added east of 22/99 intersection in addition to two through lanes.

Pros:
- Can provide acceptable operations
- Is phasable with eventual grade separation alternatives

Cons:
- Potential problems with lane configuration and weave issue.

Conclusions:
- This option remains acceptable for next level of analysis.
- This option will be looked at in combination with 22/99 channelization.

Assignments:
Scott will re-run analysis with several new lane configurations.

<u>At-grade jug-handle</u>
Not yet analyzed with free rights from 22 to 99

Pros:
- Removes left turns from 22 to 99

Cons:
- Lane imbalance
- Left turns require going through the intersection twice. Free right onto 22 and 99 could be a possibility.
- Distance between jug handle and Dallas Cutoff (1,900 feet) requires a spacing exception.
- Mobility standards not met in 2015 or 2025

Conclusions:

- This option remains acceptable for next level of analysis.
- This option will be looked at in combination with Dallas Cutoff variations.

Assignments:
TPAU will analyze operational conditions with free flow right-turn lanes added in the NE and SW corners of the 99/22 interchange.

<u>Grade separated jug-handle</u>
Ramp terminal locations need to be refined.

Pros:

- Eliminates single 22/99 intersection.
- This option works well with significant reserve capacity.
- The cost of structures is not a fatal flaw.

Cons:

- McMinnville to Dallas right-turn traffic would conflict with 22 through traffic, but additional flyover for this traffic may not be worthwhile.
- Some spacing problems with 22/DRH intersection of potential flyover options

Conclusions:

- This option remains acceptable for next level of analysis.

Assignments:
TPAU will analyze operational conditions with free flow right-turn lanes added in the NE and SW corners of the 99/22 interchange.

<u>Grade Separated Interchange Alternatives</u>
Pros:

- Can work be phased-in after development of a Dallas flyover (one variation may be better than another—further assessment needed).
- Will meet mobility standards through forecast period.
- Will eliminate most identified safety concerns

Cons:

- Cost is highest
- Community impacts include possible impacts to crosswalk at Rickreall School due to landing point of overpass.
- More impact on marginal farmland

Conclusion:

- This option remains acceptable for next level of analysis.

Assignments:
Jim will provide more information regarding:

- Cost estimates, including costs of "throwaway" pavement due to realignment and bridge grade and curvature issues;
- The ability to develop in phases;

- Smaller footprint options and ROW Impacts to farmland

NEXT STEPS/CONCLUSIONS

- TAC will continue to review the pros & cons of concepts.
- Roundabout concept is eliminated from further consideration.
- Both jug-handle options remain under consideration pending analysis of right turn alternatives
- TSM/Channelization option remains under consideration.
- Channelization options will be refined through signal phasing.
- Flyover will be considered on its own merits as well as with channelization option.
- Flyover will be considered on its own merits in conjunction with jughandle option, noting concern regarding spacing.
- Grade separation options remain under consideration with further refinement of structure and alignment cost and location issues necessary.

ADDITIONAL ASSIGNMENTS

- ODOT Preliminary Design
  1) Document assessment of existing geometric conditions in a tech memo
  2) Work with TPAU and Region 2 to re-package improvement concepts and develop pro and con assessments for each redeveloped package
  3) Develop graphics, at an appropriate level of detail, to depict improvement concept packages in a form suitable for inclusion in draft and final reports

- ODOT Transportation Planning and Analysis Unit
  1) Work with TPAU and Region 2 to re-package improvement concepts and develop pro and con assessments for each redeveloped package
  2) Analyze performance consequences of right turn options for at-grade jughandles
  3) Analyze affect of routing SB to the DRH moves at 22/99 to Rickreall Road for the grade separation alternatives

- Mid-Willamette Valley COG
  1) Develop meeting minutes
  2) Conduct review of Willamette Valley Strategy and MWACT Strategy
  3) Compile technical memos and reports and begin developing report text
  4) Compile graphics and begin preparation for inclusion in draft and final document

- ODOT Region 2 Traffic

1) Complete analysis of crash data to determine if (and what) correlation between crashes and time of day/day of week exists and, if so what the implications are for potential design options

- ODOT Region 2 Environmentalist

1) Complete collection of requested environmental analyses

- ODOT Region 2 Project Manager

1) Work with PD and TPAU to package improvement concepts and develop pro and con assessments for each package

- All TAC Members

1) Review and comment of TAC minutes and assignments

NEXT MEETING

The agenda for the next meeting is as follows:

TAC #4 –Complete Alternative Screening

- Review Applied Pros and Cons for each Concept Analyzed and Presented
- Dismiss as many Flawed or Ineffective Alternatives as Possible (document reasoning)
- Identify Issues and Stakeholders
- Define and Assign Detailed Evaluation Tasks for Remaining Alternatives

Next meeting is scheduled for August 2, 2000 - 8AM-12PM in Room 209 at ODOT Region 2 HQ at State Street and Airport Road in Salem.

Oregon Department of Transportation

OR Hwy 99/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Conduct Alternative Identification

Region 2 HQ—Room 222
Wednesday, August 2, 2000
8AM - 12PM

TAC MEETING #4 -SUMMARY

ATTENDEES

Jim Buettner—Preliminary Design
Harlan Nale—Transportation Planning and Analysis Unit
Mark Fancey—Mid-Willamette Valley COG
Anthony Boesen—Federal Highway Administration
Dorothy Upton - Transportation Planning and Analysis Unit
Steve Oulman – DLCD
Kan Carter - City of Dallas Public Works
Mel Sutter - City of Dallas Public Works
Erik Havig—Preliminary Design
Dan Fricke—Region 2 Planning
Rich McSwaim—Region 2 Traffic
Jerry Erickson – District 3
Terry Cole—Region 2 Planning/Project Manager

COMPLETE ALTERNATIVE SCREENING

Review Applied Pros and Cons for Each Concept Analyzed and Presented

(Operational pros and cons developed by TPAU were passed out at the meeting—this section covers some of the major points raised in those analyses)

Discard Flawed and Ineffective Alternatives

Concept #1 – Roundabout

Evaluating these intersections with the adopted siting criteria for roundabouts shows that the proposed locations violate several of the recommended characteristics.

- Speed – Posted speed should be 60 km/h (35 mph) or less. These intersections are located in rural high speed environments posted speed of 50 mph with actual 85% speeds closer to 60 mph. Roundabout intersections require every entering vehicle to slow and yield to traffic already within the circulating roadway. In some cases entering vehicles will be required to stop. Either a slow yielding entry or a stopped vehicle produces a large speed differential from the traveling speeds of the highway. The speed differential could range anywhere from

40 mph to 60 mph, which is very significant. Large speed differentials can often lead to high accident locations. This is actually evident at the existing signalized intersection of Hwy. 99 and 99W. This signalized intersection encounters a very high number of rear end crashes most of which can be attributed to the high-speed differential. In addition, drivers in rural environments do not expect to encounter situations that provide high-speed differentials and therefore the crash potential is even higher.

- Trucks – Preliminary Design believes that roundabouts should not be located at intersections that accommodate a large volume of trucks. The Hwy. 22 @ 99W intersection accommodates on average approximately 2000 trucks per day. This is a large volume of truck traffic. Moderate to large trucks have difficulty in maneuvering through a roundabout. Roundabouts are designed to provide low speed movements for passenger type vehicles and even slower movements for truck traffic. This is accomplished by requiring vehicles to accommodate a turning roadway with small radii. Two lane roundabouts require large trucks to utilize both circulating lanes due to the large off tracking. This can create safety as well as operational efficiency problems.

- Number of lanes in roundabout – The interim siting criteria recommends that roundabouts operate as only single lane. This is to reduce the complexity of driving roundabouts. Multi-lane roundabouts offer multiple challenges for drivers. As roundabouts are a relatively new form of intersection control in the USA and particularly in Oregon, drivers need to understand the basic operating principles of single lane roundabouts before they can be expected to use a multi-lane roundabout efficiently and safely. The analysis performed by TPAU shows that both intersections would require multi-lane roundabouts with today's volumes.

In addition, roundabouts at both proposed locations are not consistent with other site characteristics that are recommended by the recently completed ODOT Roundabout research study. These include:

- Equal Traffic Flows – Roundabout intersections operate best where the volume entering the roundabout from each direction are nearly equal. Roundabouts do not operate effectively where one or two entry volumes are significantly higher than the other entries. Additionally, roundabouts are less effective with high left turn volumes. Both the Hwy. 22 @ 99W and Hwy. 22 @ 189 intersections accommodate heavy left turn traffic from westbound to southbound. These left turn demands are forecast to be 880 and 1575 respectively. These are very large volumes and will reduce the effectiveness and safety of a roundabout intersection.

Transportation analysis provided by TPAU showed that each intersection would require two lane roundabouts and that the OHP mobility standards would still be violated at both intersections.

Eric Havig noted that the analytical tools currently available do not allow for analysis of roundabouts in conjunction with other improvements, such as an interchange. He did note that roundabouts would not work well the conjunction with downstream improvements, such as an interchange that would create queuing at the roundabout.

Assignments:
Eric will add qualitative statements to his analysis, including issues such as downstream queuing, that cannot be adequately analyzed given available tools and models.

Conclusion:
The roundabout alternative for either Hwy 22/99 intersection and/or the Hwy 22/Hwy 223 intersection was dismissed by consensus of the TAC.

Concept #2 – Channelization

Note: The pros and cons of adding additional lanes at the Hwy 22/Hwy 99 intersection were discussed at the June 27, 2000 meeting. At that time it was determined that channelization was a viable option, but that additional analysis was needed regarding signalization of the Hwy 223/Hwy 22 intersection.

General Comments Regarding the Installation of Traffic Signals on Hwy 22 at either the Hwy 99 or Hwy 223 Intersection

Pros:
- Provides adequate gaps on Hwy 22 for cross-street traffic flows.
- The Hwy 99/Hwy 22 Hwy 22 already has a traffic signal that can be modified to increase safety.
- A cycle length of 120 seconds can be used to increase the “green-time” for Hwy 22 traffic flows at both Hwy 99 and Hwy 223 intersections.
- Traffic signals are relatively low cost traffic control devices.

Cons:
- Drivers do not expect traffic signals in a rural environment.
- Stopping traffic flows on a high-speed facility (50 – 55 MPH) increases both crash rates and crash severity for vehicles traveling through both of these intersections.
- The westbound left through lane at the Hwy 99/Hwy 22 intersection will contain most of the traffic flow traveling to Dallas.
- The unequal lane utilization resulting from the heavy westbound Dallas left-turn movement will cause the Hwy 99/Hwy 22 intersection to operate at a v/c ratio less than calculated (with equal lane utilization) for all years.
- Traffic signals installed on Hwy 22 actually cuts the capacity of the four-lane facility of Hwy 22 by stopping intersection traffic flows.
- The installation of traffic signals at both Hwy 99/Hwy 22 and Hwy 223/Hwy 22 intersections will cause these traffic signals to operate like two “isolated” traffic signals causing shock waves in traffic flow.

Traffic Signal Proposals for Hwy 99/Hwy 22 Intersection
Existing Intersection Configuration

Pros:
- Operates at v/c = 0.81 in the year 1999 using equal lane distribution.
- All of the pros mentioned in the general comments.

Cons:
- The high accident rate experienced at this intersection will continue into the future.
- All of the cons mentioned in the general comments.

Traffic Signal Proposal for Hwy 223/Hwy 22 Intersection
Existing Lane Configuration (Single Westbound Left-Turn Lane)

Pros:
- The installation of a traffic signal at this location could possibly meet a system warrant, but would likely not meet any other warrants.
- The heavy west to south (Salem to Dallas) traffic movement will be protected.
- All of the pros mentioned in the general comments.

Cons:
- The heavy WB to SB traffic movement would operate in the year 1999 at a v/c = 0.92 without installing a traffic signal at this location.
- The existing unsignalized intersection is not experiencing high crash rates.
- In the year 2025, there will be approximately 15-vehicles/hour turning from the south to the west. This is not enough volume to meet Preliminary ADT Traffic Signal Warrants to install a traffic signal at this location.
- This signalized intersection would operate at a v/c = 0.95 in the year 1999.
- This intersection configuration would operate in the year 1999 at a v/c ratio less than the requirement needed in the 1999 OHP for a Statewide (NHS) Non-Freight Route (v/c = 0.70).
- Both Hwy 223 and Hwy 22 would exceed V/Cs of 1.0 during heavy peak travel periods shortly after the year 1999.
- All of the cons mentioned in the general comments.

Traffic Signal Proposal for Hwy 223/Hwy 22 Intersection
Dual Westbound Left-Turn Lane on East Approach

Pros:
- The heavy WB to SB (Salem to Dallas) traffic movement would be protected.
- The additional westbound left-turn lane would decrease the v/c at this signalized intersection from 0.95 to 0.70 in the year 1999.
- This intersection would operate at a v/c = 0.91 in the year 2015.
- The installation of a traffic signal at this location could possibly meet a system warrant, but would likely not meet any other warrants..
- All of the pros mentioned in the general comments.

Cons:

- In the year 2025, there will be approximately 15-vehicles/hour turning from the south to the west. This is not enough volume to meet Preliminary ADT Traffic Signal Warrants to install a traffic signal at this location.
- This intersection configuration will operate in the year 2015 at a v/c ratio (v/c = 0.91) less than the requirement needed in the 1999 OHP for a Statewide (NHS) Non-Freight Route (v/c = 0.70).
- All of the cons mentioned in the general comments.

Traffic Signal Proposal for Hwy 223/Hwy 22 Intersection
Dual Westbound Left-Turn Lane on East Approach with the Elimination of the NB to WB Turning Movement

Pros:
- The heavy west to south (Salem to Dallas) traffic movement will be protected.
- This increases the operational efficiency of this intersection by eliminating one of the traffic signal phases.
- This intersection will operate at a v/c = 0.98 in the year 2025.
- The installation of a traffic signal at this location could possibly meet a system warrant, but would not likely meet any other warrant.
- All of the pros mentioned in the general comments.

Cons:
- The NB to WB traffic movement is not serviced at this intersection.
- This intersection configuration will operate in the year 2015 at a v/c ratio (v/c = 0.83) less than the requirement needed in the 1999 OHP for a Statewide (NHS) Non-Freight Route (v/c = 0.70).
- All of the cons mentioned in the general comments.

Harlan noted that 120-second cycle was used for modeling at both intersections. He noted that installation of a second signal at the Hwy 22/Hwy 223 intersection would create a “dilemma zone” problem where a driver would barely make the first signal and then attempt to get through the second at high speed. The way to correct this problem would be to phase the signals together, however this reduces efficiency and the associated v/c ratios at each intersection.

Traffic signal estimated costs - $1.5 million for Hwy 22/99 intersection and $1 million for Hwy 22//Hwy 223 intersection.

Eric stated that a system warrant was the only way to justify a signal at Hwy 22/Hwy 223 intersection and that this possibility was remote.

Assignments:

Eric and Harlan will:
- Conduct lane balance progression and incorporate in analysis;
- Discuss possibility of a system warrant with Ed Fisher;
- Look at impacts if “dilemma zone” problem is reduced; and
- Develop preliminary cost estimates.

Conclusion:

Channelization is the lowest cost alternative that can provide some operational/mobility relief, although it is not absolutely certain how much time it will buy until a more costly alternative is needed. It is expected that channelization could buy 12 to 15 years during which operational failure could be avoided, although mobility standards would not be met. It was the consensus of the TAC that the channelization alternative is a viable mid-range/phased solution and should be taken to the next level of analysis.

Concept #3 – Jughandles

At-grade option with jughandles in NW and SE quadrants

Pros:
- Removes left turns from 22 to 99

Cons:
- Jughandle in NW quadrant is too close to Hwy 22/Hwy 223 intersection
- Heavy Salem to Monmouth traffic must go through intersection twice
- Not operable in the long-term – signal fails mobility standard in 2025

At-grade option with jughandles in NE and SW quadrants with free right-turns

Pros:
- Removes left turns from 22 to 99
- Heavy Salem to Monmouth traffic does not have to go through intersection twice

Cons:
- Jughandle in SW quadrant is too close to Hwy 22/Hwy 223 intersection
- Double left-turn lanes required for Salem to Monmouth traffic
- Not operable in the long-term – signal fails mobility standard in 2025

At-grade option with jughandles in NE and SE quadrants – Variation "B"

Pros:
- Removes left turns from 22 to 99
- Better distributes most common movements
- East to north bound and east to south bound traffic don't need to go through a signal
- No signal needed at southern ramp
- Does not have spacing conflict with Hwy 22/Hwy 223 intersection
- Works better than other options for future phasing

Cons:
- Not operable in the long-term – signal fails mobility standard in 2025

Discussion ensued as to whether grade-separated jughandle variations should be dismissed because of spacing difficulties between jughandles in the NW quadrant and the Hwy 22/Hwy 223 intersection. It was agreed that these variations will not be dismissed, but will only be considered as part of a phased system of improvements.

Assignments:
TPAU will:

- Conduct further analysis regarding, lane progression and storage;
- Provide more detail regarding signing and lane balance;
- Speak with experts from other areas regarding signage solutions to eliminate wrong maneuvers
- Develop preliminary cost estimates for potential addition of a structure.

Conclusion:
Variation "B" with jughandles in the NE and SE quadrants seems to be the most viable long-term jughandle solution. Variations with jughandles in the NW and SW quadrants conflict with the Hwy 22/Hwy 223 intersection. Traffic projections for variation "B"" in 2015 still meet mobility standards. Variation "B" is also the most adaptable to an eventual grade-separated structure. In 2025, westbound signalized ramp terminals will still operate better than the mobility standard when grade separated. The variation "B" at-grade jughandle alternative is viable and should taken to the next level of analysis.

Grade-separated jughandle variations will be considered with respect to how well they will work as part of a phased system of improvements (from channelization to full grade separation).

Concept #4 – Flyover at Dallas-Rickreall Highway

The flyover ramp is about 1,000 feet from the Hwy 22/99 intersection. This option works with either at-grade or grade-separated jughandles, however If this option is developed in conjunction with a jughandle variation, jughandle must be in NE quadrant.

Pros:
- Works with jughandle variations (if in NE quadrant)
- Take the high-volume left turn for traffic to Dallas
- Reduces potential for head-on or severe angle crashes
- Operates at acceptable mobility standards well beyond 2025
- Can be part of a phased solution in conjunction other alternatives

Cons:
- If used with jughandle Variation "B" potential lane conflicts exist between traffic bound for Dallas and traffic bound for Corvallis—effective overhead signing would be critical

Assignments:
TPAU will:
- Provide more detail regarding weave considerations for eastbound and westbound traffic
- Develop more detailed cost estimates

Conclusion:
The flyover alternative is a viable modular piece of a phased package of alternatives.

Concept #5 - Interchange

"Jimmy" Interchange Variation

Hwy 99 passes over Hwy 22. Includes a signal for eastbound traffic from coast. Does not accommodate traffic Dallas to McMinnville traffic. Includes two structures with a west to east

flyover at Hwy 22/Hwy 223 intersection. The alignment has been moved north to produce overpass touchdown near Rickreall School.

With the 2-lane flyover at Hwy 22/Hwy 223 intersection, John deTar raised the issue of route continuity. Hwy 22 is a recreational route and coast-bound travelers could wind up in Dallas due to confusion at flyover location

The preliminary cost estimate for this option is $13.7 million (does not include ROW or signal costs). If redesigned so that Hwy 22 passes over Hwy 99, preliminary cost is $14.1 million. This option reduces impacts to Rickreall community.

"Scott" Interchange Variation

Hwy 99 passes over Hwy 22. Does not accommodate traffic Dallas to McMinnville traffic. Includes three structures with two separate flyovers at Hwy 22/223 intersection. The alignment has been moved north to produce overpass touchdown near Rickreall School.

The preliminary cost estimate for this option is $15.5 million (does not include ROW or signal costs).

Comparison of Variations:

- No difference in operations or performance, both perform well in 2025 and beyond
- Both will require a signal in 2025 for south-side ramp terminal at 22/99
- "Scott" variation more conducive to phasing with Hwy 22/223 intersection flyover and with channelization and jughandles—lower cost for phasing
- "Jimmy" variation has more throwaway pavement when phased
- "Jimmy" variation is less costly due to two structures
- ROW impacts are similar, but "Scott" variation needs slightly more for dual flyover at Hwy 22/223 intersection
- If Hwy 22 is constructed over Hwy 99, maintenance may be an issue due to increased structure size

Assignments:

Eric and Jim will document pros and cons of each variation in greater detail, including descriptions of opportunities and constraints regarding construction and phasing and providing more detailed cost estimates.

Conclusion:

Both variations are viable long-term solutions. No significant differences exist regarding cost and costs and operations. The additional cost of moving Hwy 22 over Hwy 99 should be balanced against the impacts to the Rickreall community. Both variations should move forward as viable long-range concepts with the significant differences described for future consideration.

Note: The "deTar" interchange variation (single point diamond at 99/22) was also introduced at the meeting. This configuration would eliminate the southbound point of the interchange. It was determined that pros and cons of this option as well as some operational characteristics are not very well enumerated at this time, although some significant issues exist, including size of structure, operability in a rural area, retaining structures, and interaction with 22/223. Eric and

Harlan will further develop pro and cons, including cost and meet with Terry to determine if this variation should be moved to the next level of analysis. Determination and reasons will be shared at the next TAC.

OUTREACH STRATEGY

Terry Cole asked if the TAC still felt that the outreach strategy consisting of stakeholder interviews with a final work session with the Polk County Board of Commissioners remained valid. The TAC affirmed the outreach strategy.

Issues Identification for Consideration by Stakeholders

- One key message
- Must consider both intersections
- Impact of Hwy 99 southbound lanes to Rickreall
- Future impact on Rickreall Road/Hwy 99 intersection

The issue was raised as to whether the Rickreall Road intersection with Highway 99 should be upgraded to allow it serve as a bypass for certain movements on Highway 22. The group consensus was that the issues would have to be raised and better defined for the outreach process, but that more detail was needed before the TAC could propose adding this to the alternatives and costs associated with this project.

Assignments:

Eric, Jim, and Harlan will provide additional details regarding the Hwy 99/Rickreall Road intersection - including issues, constraints, footprints, and lane demands

ADDITIONAL ASSIGNMENTS

- Mid Willamette Valley COG
  15) Work with ODOT Region 2 Project Manager on presentation materials for outreach to stakeholders.
  16) Work with ODOT Region 2 Project Manager on funding options for improvements within the MWACT context.

- ODOT Region 2 Project Manager

9) Work with MWVCOG on funding options for improvements within the MWACT context.
10) Work with MWVCOG on presentation materials for outreach to stakeholders.
11) With develop draft list of stakeholders for circulation to the TAC.
12) Develop preliminary schedule of stakeholder interviews.

- All TAC Members

6) Review and comment of TAC minutes and assignments

NEXT MEETING

The next meeting will be scheduled for late September at the earliest.

The tentative agenda is as follows:

AGENDA #5 (remembering that we had an agenda 1A and 1B)

- Review Alternatives Evaluation (gain consensus on final draft)
- Identify Considerations for Implementation Phasing and Coordination
- Affirm Issues and Stakeholders
- Define Presentation Materials
- Review Draft Outreach Schedule

Oregon Department of Transportation

Region 2

OR Hwy 99/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Conduct Alternative Identification

Region 2 HQ—Room 209
Friday, October 27, 2000
8AM - 12PM

RICKREALL TAC—AGENDA #5 SUMMARY

ATTENDEES

Jim Buettner—Preliminary Design
Harlan Nale—Transportation Planning and Analysis Unit
Anthony Boesen—Federal Highway Administration
Dorothy Upton - Transportation Planning and Analysis Unit
Bob Cortright – DLCD
Jim Allen – Polk County
Erik Havig—Preliminary Design
Dan Fricke—Region 2 Planning
Rich McSwain—Region 2 Traffic
John deTar—Region 2 Planning Manager
Terry Cole—Region 2 Planning/Project Manager

COMPLETE ALTERNATIVE SCREENING

The meeting began with a review of the results of the more detailed analysis assigned at the last meeting. The TAC then agreed on the content and direction for the first draft of the report with respect to the alternatives analyzed thus far.

Confirmation of Discarded Alternatives

Dismissed Alternative Concept – Roundabout

Based on the additional analysis provided by Erik Havig, the TAC confirmed their recommendation to eliminate the Roundabout option from further consideration.

Dismissed Alternative Concept – Single Point Urban Diamond (SPUD)

Based on the additional analysis provided by Erik Havig, the TAC confirmed their recommendation to eliminate the SPUD option from further consideration.

All other dismissed alternatives are variations on one of the alternative concepts that will be advanced. These dismissed alternatives will be addressed as part of the discussion on the recommended alternative concepts and will be referred to as dismissed alternative variations, as opposed to dismissed alternative concepts.

Confirmation of Recommended Alternative Concepts

Alternative Concept #1 – Safety Measures

- The TAC reaffirmed that recommended step one to deal with the intersection issues will be some combination of "softer" engineering safety measures as previously discussed including, but not limited to, improved fixed signing, signal head design, variable message signing, left turn phasing, offset left-turn refuges to improve sight lines.

Alternative Concept #2 – Channelization/Signalization

- The TAC reaffirmed their recommendation that a full channelization option be forwarded as the appropriate mid-range alternative, with the forecast that it could remain operable until approximately 2012 (+ or -).
- Traffic section sent a memo to Harlan Nale indicating that signalization would not be appropriate or accepted at the Highway 22/223 intersection. The primary reason for concern was the lack of spacing and dilemma zone that would be created for drivers. Based on this memo, only turn lane and minor realignment options will be considered at the Highway 22/223 intersection.
- Lane balance issues were also discussed and it was concluded that, while the V/C would be somewhat reduced by the imbalances, this could be partially offset with proper advance signing and adequate storage for the WB to SB movement from Highway 22 to Highway 99.

Alternative Concept #3 – Jughandles

- Because of weaving problems, the TAC agreed to only recommend the B variation jughandle for further consideration as a medium to long-range alternative.
- While there is some operational value to pursuing the at-grade jughandle variation, it is marginal when compared to the channelization alternative. Consequently, only the grade separated jughandle alternative will be recommended for further consideration—the at-grade will be described and dismissed.
- In the grade separation alternative, Highway 22 would cross over Highway 99 in order to minimize the impacts on the Rickreall community
- In order to minimize impact to sensitive lands, realignment of Highway 22 would only be to the extent needed to stage construction of the new overcrossing.
- Concern was expressed over the operability of the dual left turn needed to serve the left turn movements from 22 WB to 99W SB. Whether or not this movement could be accommodated as a single lane left turn was raised. Long term (20-25 years), the ramps in the NE quadrant of the grade separation would have to be moved to the NW quadrant in order to keep this design operable.

Alternative Concept #4 – Flyover at Dallas-Rickreall Highway

- Based on more extensive analysis of weave, spacing, and phasing issues only one flyover alternative at 223/22 has been determined to be operationally feasible.
- This alternative keeps 22 westbound and 223 at-grade and elevates 22 eastbound over 223. 22 westbound would split on its approach to 223 with two lanes splitting left into Dallas (as 223) and one lane continuing to the coast.
- This alternative can be used with either a grade separated jughandle alternative or a full grade separation at 99W/22.

Alternative Concept #5 – Grade Separated Jughandle with loop ramp in NW Quadrant

- Developing a loop ramp in the NW quadrant of the 22/99W intersection (in the grade separated jughandle alternative) was identified as a viable option for extending the life of the grade separated alternative.
- This addition would also work as the first step to developing a full interchange at 22/99W, if and when a full interchange becomes necessary.
- Concern was raised over the potential intrusion of a 99W SB to 22 WB ramp into farmland and it was agreed that this feature would be designed to stay as close to the existing 22 alignment as possible.

Alternative Concept #6 – Full Interchange

- The two full interchange alternatives developed for previous discussion (the "Jimmy" and "Scott" variations) were discussed. It was agreed that, while each would be documented, a hybrid variation that would incorporate and reuse many of the elements of the grade separation jughandle and flyover alternatives would be recommended for consideration in the long-range period beyond the analysis period.
- As with the grade-separated jughandle, Highway 22 would cross over Highway 99W and realignment of Highway 22 would only be to the extent needed to stage construction of the new overcrossing.
- Aside from illustrating and costing out this potential hybrid alternative, no additional analysis will be conducted as the need for this level of improvement is beyond the 25-year planning horizon and analysis period.

Assignments to Complete 1st Draft Alternative Recommendations

- ❖ PD and TPAU will develop a single lane left turn option for the NE quadrant ramp of the grade separated "B" jughandle alternative and document the operational and design consequences.
- ❖ PD will develop diagrams to illustrate the recommended alternative designs keeping new construction elements as close to the existing Highway 22 alignment as possible.
- ❖ PD will finalize cost estimates for all recommended alternatives
- ❖ PD will document how the recommended alternatives can continue to provide route continuity for Highway 22.
- ❖ PD will develop an alternative comparison matrix so all elements of consideration can be viewed to understand why either concepts or variations have been advance or dismissed.

RICKREALL COMMUNITY ISSUES

Even with the elevation of Highway 22, it is apparent from the analysis to date that the Rickreall community faces significant transportation problems that will need to be addressed as part of this planning process. These problems are due to potential weaving issues from the proposed double left turn from 22 WB to 99W SB and traffic and development issues that will exist whether the 22/99W/223 issues are addressed or not. It was agreed that the scope of this project would be expanded to address the Rickreall community issues.

ASSIGNMENTS TO ASSESS RICKREALL COMMUNITY TRANSPORTATION ISSUES

- PD will gather air photos, ROW maps, and as-built diagrams to develop baseline illustrations of current geometric conditions and constraints.
- Region 2 Traffic Section and PD will develop crash information from the 22/99W intersection to Orr's Corner.
- Region 2 Traffic Section will conduct a speed zone analysis through and south of Rickreall.
- TPAU will assemble or order mainline volume counts south of Rickreall (perhaps as far as Cloud Corner).
- Polk County will provide information about the Rickreall element of the County's periodic review and the Area Advisory Committee process to MWVCOG.
- Mid-Willamette Valley COG will work with Polk County to define future development potential in the Rickreall area and provide that information to TPAU.
- Using the MWVCOG and Polk County data, and historic counts, TPAU will develop forecast traffic numbers for 99W and the Rickreall Road intersection.
- Region 2 Planning will supply an intersection turning movement count for the 99W/Rickreall Road intersection.
- Region 2 Planning will work with District and Region Access Specialists to develop an access profile (permits, approaches, easements, grants, etc.) for all 99W frontage.
- TPAU will analyze existing and future no-build operating conditions.
- Using the operational, geometric, crash, and access data, PD will work with TPAU and Region 2 Planning to develop cross-section and access treatment design alternatives through Rickreall, with emphasis on meeting both pedestrian/school/safety needs and mobility standards.
- TPAU will analyze the existing and future operational conditions of all design alternatives.
- Region 2 Traffic Section and PD will review and comment on the safety issues associated with all design alternatives.
- Region 2 Planning and Traffic will meet with MWVCOG, PD, and TPAU to develop a time frame for completion of new Rickreall task assignments.

OUTREACH

Because of the significant analysis tasks identified for the Rickreall community, the TAC agreed to postpone any outreach efforts until the new analysis tasks reached preliminary completion and a discussion recommendation is produced. MWVCOG will incorporate the Rickreall Area Advisory Committee into the outreach process when it begins.

ADDITIONAL ASSIGNMENTS

- All TAC Members—review and comment on TAC minutes and assignments

NEXT MEETING

The next meeting will be scheduled after the Rickreall task timeline is established. A meeting time will be announced before Thanksgiving.

The tentative agenda is as follows:

AGENDA #6 (remembering that we had an agenda 1A and 1B)

- Review Rickreall community analysis
- Develop revised outreach strategy

Oregon Department of Transportation

Region 2

OR Hwy 99/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Conduct Alternative Identification

Region 2 HQ—Room 116
Wednesday, February 7, 2001
9AM - 12PM

RICKREALL TAC—AGENDA #6 SUMMARY

ATTENDEES

Jim Buettner—Preliminary Design
Harlan Nale—Transportation Planning and Analysis Unit
Anthony Boesen—Federal Highway Administration
Thanh Nguyen - Transportation Planning and Analysis Unit
Bob Cortright – DLCD
Jim Allen – Polk County
Tony Snyder - Polk County
Jerry Erickson - ODOT Maintenance
Kenn Carter - City of Dallas
Mel Sutter - City of Dallas
Mark Fancey - MWVCOG
Erik Havig—Preliminary Design
Dan Fricke—Region 2 Planning
Terry Cole—Region 2 Planning/Project Manager

RICKREALL COMMUNITY ISSUES AND ANALYSIS

At the last TAC meeting on October 27, 2000, it was agreed that the project scope be expanded to address Rickreall community issues. Even with the elevation of Highway 22, it is apparent from the analysis to date that the Rickreall community faces significant transportation problems that will need to be addressed as part of this planning process. These problems are due to potential weaving issues from the proposed double left turn from 22 WB to 99W SB and traffic and development issues that will exist whether the 22/99W/223 issues are addressed or not.

Hwy 99W and Rickreall Road Intersection

Jim Buettner presented maps showing four and 5 lane (with left turn refuges) configurations for Hwy 99W through Rickreall. A four lane section through the community would require the parking for the local feed store be moved to the side or rear of the business.

Forecast traffic volume for Hwy 99W through Rickreall is 24,000 vehicles per day in 2025. Analysis shows that the forecast traffic volume will tax the existing 2-lane section on Hwy 99W as well as the Hwy 99W/Rickreall Road intersection. Given the volume and distribution of traffic

a minimum of four lanes will be needed on Hwy 99W by 2025. The configuration could include four through lanes (2 in either direction) and left-turn refuges at the Hwy 99W/Rickreall Road intersection. The analysis shows that the left-turn refuges are more critical, for safety reasons, than is the second through travel lane. However, single through lanes in either direction fail at 2020 traffic volumes.

A signal at the Hwy 99W/Rickreall Road intersection could introduce some gaps in through traffic to aid pedestrians and local traffic circulation. ODOT Traffic Section does not see signal warrants at this intersection until some option, beyond channelization, is constructed at the Hwy 22/99 intersection. Installing a closed median on Hwy 99W through Rickreall would re-direct some local traffic and hasten the need for a signal.

Several issues were raised:

- The 30 left turn movements from Rickreall Road EB onto Hwy 99W have a V/C greater than 1.0 in 2015 for all proposed configurations. Construction of a flyover at Greenwood Road may alleviate this problem although the result could be just trading traffic volumes.

- Due to conflicts between through traffic and left-turn movements, there was discussion regarding construction of a roundabout for the Hwy 99W/Rickreall Road intersection. No analysis has yet been done for this alternative, however Eric Havig stated that it is doubtful that a roundabout would an efficient solution due to the disproportionate amount of through traffic at this intersection. He noted that a signal would probably be a better solution.

Assignments:

- TPAU will do a preliminary analysis of the roundabout concept for the Hwy 99W/Rickreall Road intersection.

Community Development

Jim Allen confirmed that the County is involved in the periodic review process (unincorporated communities planning) for Rickreall. The process will result in Zoning Ordinance amendments limiting the size of commercial and industrial buildings in the community. Several properties may be rezoned for industrial development, including a property on the east side of Hwy 99W south of the fairgrounds and the former highway ROW property in the eastern portion of the community. Future commercial and industrial development in the community will most likely be limited to these two properties. Some expansion of the fairgrounds may also occur. Lack of a sewer system will limit future growth in the community.

The County recently held a community meeting that was attended by approximately 60 local residents. Participants indicated that they would like speeds reduced on Hwy 99W and would like a divided highway.

Local Circulation

Jim Buettner presented several concepts for additional local access roads in the community. These include north-south streets on either side of Hwy 99W at the eastern and western edges of the community boundary and a split-T concept for Rickreall Road eastbound. In the split-T concept, the existing west leg of the Hwy 99W/ Rickreall Road intersection would be closed with

a cul-de-sac. The west leg connection to Hwy 99W would then be constructed one block north of the existing location.

Under a 4 or 5-lane configuration on Hwy 99W, the split-T concept would require eastbound traffic on Rickreall Road (traveling from Dallas to Derry) to turn right on Hwy 99W, move immediately to the left through lane or left-turn refuge and then make a left turn back onto Rickreall Road. This would add to the projected left-turn/through traffic conflicts on Hwy 99W. For this reason, this concept was dismissed by the TAC.

Sidewalks were not included in the four and 5-lane concepts for Hwy 99W through Rickreall.

If a continuous median is constructed on Hwy 99W, mountable curbs will be needed for the Fire District.

Assignments:

- PD and TPAU will provide information regarding phasing local circulation improvements in conjunction with Hwy 99W/Hwy 22 intersection improvements phasing.
- PD will analyze impacts to property with sidewalks along Hwy 99W.
- PD will look at local circulation and parking lot replacement for local businesses.
- PD will delineate local accesses and develop an access management plan for the area.
- PD will analyze median and pedestrian crossing opportunities.
- MWVCOG will provide parcel maps in digital format to PD.

OUTREACH

At the next meeting, the TAC will discuss the outreach strategy and review the list stakeholders. Because of local access issues, the local fire district may need to be added to the stakeholders list.

ADDITIONAL ASSIGNMENTS

- All TAC Members—review and comment on TAC minutes and assignments

NEXT MEETING

The next meeting is scheduled for March 7, 2001 from 9 am to Noon.

The tentative agenda is as follows:

AGENDA #7 (remembering that we had an agenda 1A and 1B)

- Review Rickreall community analysis
- Develop revised outreach strategy
- Review list of potential stakeholders for outreach

Oregon Department of Transportation

Region 2

OR Hwy 99/22 Rickreall Junction Refinement Plan
Technical Advisory Committee (TAC)
Rickreall Community Analysis

Region 2 HQ—Room 209
Wednesday, March 7, 2001
9AM - 11AM

RICKREALL TAC—AGENDA #7 SUMMARY

ATTENDEES

Jim Buettner—Preliminary Design
Harlan Nale—Transportation Planning and Analysis Unit
Anthony Boesen—Federal Highway Administration
Thanh Nguyen - Transportation Planning and Analysis Unit
Jim Allen – Polk County
Dave Bishop - Region 2
Dan Bish - Traffic Management
Mark Fancey - MWVCOG
Erik Havig—Preliminary Design
Dan Fricke—Region 2 Planning
Terry Cole—Region 2 Planning/Project Manager

RICKREALL COMMUNITY ISSUES AND ANALYSIS

At the TAC meeting on October 27, 2000, it was agreed that the project scope be expanded to address Rickreall community issues. Even with the elevation of Highway 22, it is apparent from the analysis to date that the Rickreall community faces significant transportation problems that will need to be addressed as part of this planning process. These problems are due to potential weaving issues from the proposed double left turn from 22 WB to 99W SB and traffic and development issues that will exist whether the 22/99W/223 issues are addressed or not.

Hwy 99W and Rickreall Road Intersection

Harlan Nale presented analysis of various signalized and unsignalized alternatives for the Hwy 99W/Rickreall Road intersection. These alternatives were analyzed in conjunction with various alternatives for the Hwy 99W/22 intersection as summarized below:

Hwy22/99W No Build Alternative & Unsignalized intersection at 99W/Rickreall Road - Two lanes on Hwy99W

- In 2015, v/c ratio will exceed 1.0 for Rickreall Road EB to 99W NB and SB as well as Rickreall Road WB to 99W SB.
- By 2025, the v/c ratio for all turning movements from Rickreall Road onto 99W will exceed 1.0.

Hwy22/99W - Build Alternative & Unsignalized intersection at 99W/Rickreall Road - Three lanes on Hwy99W

- In 2015, v/c ratio will exceed 1.0 for Rickreall Road EB to 99W NB and Rickreall Road WB to 99W SB. The v/c ratio of .88 for the Rickreall Road WB to 99W SB movement exceeds the OHP standard.
- By 2025, the v/c ratio for all turning movements from Rickreall Road onto 99W will exceed 1.0.

Hwy22/99W - Build Alternative & Unsignalized intersection at 99W/Rickreall Road - Four lanes on Hwy99W

- In 2015, v/c ratio will exceed 1.0 for Rickreall Road EB to 99W SB.
- By 2025, the v/c ratio for all turning movements from Rickreall Road onto 99W will exceed 1.0.

Hwy22/99W - Build Alternative & Unsignalized intersection at 99W/Rickreall Road - Five lanes on Hwy99W

- In 2015, v/c ratio will exceed 1.0 for Rickreall Road EB to 99W SB.
- By 2025, the v/c ratio for all turning movements from Rickreall Road onto 99W will exceed 1.0.

Hwy22/99W - Build Alternative & Signalized intersection at 99W/Rickreall Road - Year 2025

- With three lanes on 99W (no left turn protection), the v/c ratio at the signalized intersection is 1.01 (90 second cycle).
- With four lanes on 99W (no left turn protection), the v/c ratio at the signalized intersection is 0.64 (60 second cycle).
- With five lanes on 99W (no left turn protection), the v/c ratio at the signalized intersection is 0.63 (60 second cycle).

Hwy22/99W - Build Alternative (no interchange) & Split "T" concept (The existing west leg of the Hwy 99W/ Rickreall Road intersection would be closed with a cul-de-sac. The west leg connection to Hwy 99W would then be constructed one block north of the existing location.)

- This alternative requires EB traffic on Rickreall Road (traveling from Dallas to Derry) to turn right on Hwy 99W, move immediately to the left through lane or left-turn refuge and then make a left turn back onto Rickreall Road. This would add to the projected left-turn/through traffic conflicts on Hwy 99W as well as present an unsafe weave situation. For this reason, this concept was dismissed by the TAC.

Hwy22/99W - Build Alternative (no interchange) where Rickreall Road EB left turn is allowed and WB left turn is rerouted through the intersection.

- With four lanes on 99W and two-lane approaches on Rickreall Road, v/c ratio exceeds 1.0 for all EB and WB movements.

- With four lanes on 99W and indirect left turn on Rickreall Road east approach, v/c ratio exceeds 1.0 for EB and WB through movements as well as the rerouted EB to NB left-turn movement.

Hwy22/99 - Build Alternative (no interchange) where Rickreall Road through movements allowed only (EB to SB movement and WB to NB movement rerouted).

- With four lanes on 99W and two-lane approaches on Rickreall Road, v/c ratio exceeds 1.0 for all Rickreall Road movements (including the rerouted movements).
- With four lanes on 99W and one lane approaches on Rickreall Road, v/c ratio exceeds 1.0 for EB and WB through movements.

Based on the analysis, the TAC reached the following conclusions:

- A three or four-lane section for Hwy 99W through Rickreall with channelization and signalization of the 99W/Rickreall Road intersection after 2015 provides reasonable operability.

- The signalization of the 99W/Rickreall Road intersection can be installed in conjunction with either of the two preferred grade-separation alternatives at the 99W/22 intersection. The first being a “B” configuration jughandle and the second being an interchange.

- Insufficient data is available to recommend either a three-lane or four-lane option for Hwy 99W.

<u>Hwy 99W and Rickreall Road Intersection Roundabout Alternatives</u>

Harlan Nale presented analysis of a single lane and two multi-lane roundabout options.

Single-Lane Roundabout

- In 2025, with no interchange at the 99W/22 intersection, the v/c ratio is less than the maximum acceptable OHP standard of 0.80 for all four legs of the roundabout.

- In 2025, with an interchange at the 99W/22 intersection, the v/c ratio is less than the maximum acceptable OHP standard of 0.80 for all the west, south, and east legs of the roundabout. The v/c ratio for the north leg is 0.80.

Multi-Lane Roundabout (2-1-2-1) - Single Lane Approaches from East and West

- In 2025, with no interchange at the 99W/22 intersection, the v/c ratio is less than the maximum acceptable OHP standard of 0.80 for all four legs of the roundabout. Queuing lengths are 80 feet on the north leg and 80 feet on the south leg.

- In 2025, with an interchange at the 99W/22 intersection, the v/c ratio is less than the maximum acceptable OHP standard of 0.80 for all legs of the roundabout. Queuing lengths are 87 feet on the north leg and 83 feet on the south leg.

Multi-Lane Roundabout (2-2-2-2) - Two Lane Approaches on All Directions

- In 2025, with no interchange at the 99W/22 intersection, the v/c ratio is less than the maximum acceptable OHP standard of 0.80 for all four legs of the roundabout. Queuing lengths are 67 feet on the north leg and 65 feet on the south leg.

- In 2025, with an interchange at the 99W/22 intersection, the v/c ratio is less than the maximum acceptable OHP standard of 0.80 for all legs of the roundabout. Queuing lengths are 73 feet on the north leg and 70 feet on the south leg.

For all alternatives:

- The size of the roundabout may have some impacts to property primarily in the SE and NW quadrants of the intersection. Impacts in the NW quadrant may be lessened if the Rickreall Road approach leg is realigned further south.

- Speed differentiation for vehicles entering the roundabout is a concern. In particular, northbound vehicles will need to slow from approximately 45-50 mph to approximately 20 mph when entering the roundabout.

- The unbalanced flows at this intersection present a concern. The through traffic on Hwy 99W may dominate the circulation within the roundabout.

Based on the analysis, the TAC reached the following conclusions:

- A roundabout for the Rickreall Road/99W intersection remains a medium-term alternative for the Rickreall Road/99W intersection. However, concerns exist regarding the unbalanced flows and speed differentiation.

Assignments:

❖ PD will determine the approximate impacts to existing properties for the roundabout alternatives.

<u>Local Access and Community Impacts</u>

Jim Buettner presented information regarding property impacts. Seven-foot driveways in conjunction with a 5-lane section for 99W would leave little room between existing buildings and the sidewalk location. The gas station property would be impacted by the sidewalks. No buildings would be impacted, however.

A median opening would need to be provided at Church Street for use by the Fire District. This could also be used as a pedestrian refuge for school children crossing the highway. A median opening at Pagent Street is another possibility.

Some local re-routing, including the possible vacation of Burch street is possible.

Under the various alternatives for the Rickreall Road/99W intersection, a local access road on the east side of 99W may need to be developed to serve several properties.

A suggestion has been made to consider relocating Rickreall School across the highway. Issues regarding historic property status will need to be researched.

Assignments:

- PD will look at local circulation and parking lot replacement for local businesses.
- PD will delineate local accesses and develop an access management plan for the area.
- PD will analyze median and pedestrian crossing opportunities.
- Terry Cole will discuss possible relocation of the Rickreall School with ODOT historic resources staff.
- PD will prepare diagrams showing local circulation improvements, such as right-turn only driveways.
- PD will prepare an elevation of the cross-section on Hwy 99W adjacent to the Rickreall School to illustrate what controls on approaches may be useful for future design teams.

Outreach Strategy

Jim Allen asked that the TAC representative make a briefing presentation at a community meeting in Rickreall on March 20, 2001. Terry Cole will make the presentation. Without presenting specific alternatives, he will describe the concepts that are under review and let the community know that a draft report will be available by no later than June 1, 2001.

Prior to the meeting, staff will meet with property owners in the area of the northwest quadrant of the Rickreall Road/Hwy 99W intersection.

Assignments:

- MWVCOG will meet with project manager to review list of stakeholders and determine schedule for community outreach.

ADDITIONAL ASSIGNMENTS

- All TAC Members—review and comment on TAC minutes and assignments

NEXT MEETING

The next meeting will be scheduled after the community outreach is conducted, probably the 3rd or 4th week in April.

The tentative agenda is as follows:

AGENDA #8 (remembering that we had an agenda 1A and 1B)

- Review Rickreall community analysis
- Review outreach results
- Review list of potential stakeholders for outreach
- Identify additional items needed for draft report

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

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

- 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

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.

Action 1B.8

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.

Action 1B.9

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

- 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

- 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

■ Scenic Byways

Background

While every state highway has certain scenic attributes (see Policy 5B), the Oregon Transportation Commission has designated 12 Scenic Byways throughout the state on federal, state, and local roads which have exceptional scenic value (see map in printed document). In 1998, the federal government designated two of these routes as All-American Roads, and four as National Scenic Byways. The Oregon Transportation Commission may designate additional state byways. To protect the scenic assets of its Scenic Byways, ODOT will develop guidelines for aesthetic and design elements within the public right-of-way that are appropriate to Scenic Byways. The Scenic Byways Policy recognizes that safety and performance issues may cause the need for physical improvements to Scenic Byways, and seeks to balance these needs with the preservation of scenic values.

Policy 1D: Scenic Byways

It is the policy of the State of Oregon to preserve and enhance designated Scenic Byways, and to consider aesthetic and design elements along with safety and performance considerations on designated Byways.

Action 1D.1

Develop and apply guidelines for appropriate aesthetic and design elements within the public right-of-way on Scenic Byways. The purpose of these guidelines is to preserve and enhance the scenic value while accommodating critical safety and performance needs. The elements should include guidelines for turnouts, overlooks, signage, and visual treatment of the highway infrastructure.

Action 1D.2

With guidelines in place, develop management priorities for Scenic Byways in management plans and corridor plans.

Action 1D.3

Consider impacts to the scenic qualities of Scenic Byways when designing plans and projects.

Action 1D.4

Develop resource management plans and maps that describe ODOT's maintenance actions for roads which are designated Oregon Scenic Byways, including restricted activity zones, property to be used for disposal of slide debris and other material, and unsold state properties to be considered for ODOT retention. Identify scenic resources and existing vista opportunity locations on the maps. Include guidelines for maintenance activities where scenic resources are a factor. Ensure that ODOT highway maintenance activities are compatible with Scenic Byway management plans.

■ Lifeline Routes

Background

Earthquakes, flooding, landslides, wild fires, and other natural and man-made disasters may destroy or block key access routes to emergency facilities and create episodic demand for highway routes into and out of a stricken area. ODOT's investment strategy should recognize the critical role that some highway facilities, particularly bridges, play in emergency response and evacuation. In some cases, the most cost-effective solution to maintaining security in these lifeline routes involves investment in roads or bridges owned by local jurisdictions. To the extent feasible, investments should be made without regard to roadway jurisdiction in order to provide the greatest degree of lifeline security for the available

resources. ODOT will work with local governments to further define and map a network of lifeline routes. The lifeline network will focus on serving those communities which are particularly susceptible to isolation by virtue of their limited highway access.

Policy 1E: Lifeline Routes

It is the policy of the State of Oregon to provide a secure lifeline network of streets, highways, and bridges to facilitate emergency services response and to support rapid economic recovery after a disaster.

Action 1E.1

Define the criteria for lifeline routes to respond to short and long-term needs and, working with local jurisdictions, agencies, and emergency service providers, designate the lifeline network for the State of Oregon.

Action 1E.2

Provide funds or establish state/local partnerships to make improvements to state and local roads and bridges on the lifeline network where supportive of the Lifeline Routes Policy and cost-effective relative to alternative strategies.

Action 1E.3

Consider the presence of designated lifeline routes in system investment and management decisions and in coordination efforts with local land use and transportation planning activities.

Action 1E.4

In planning for lifeline routes, focus on susceptibility of the route and improvements on it (bridges and other structures) to disasters such as earthquakes, landslides, and flooding. In corridor plans and transportation system plans, emphasize improvements and other measures which maintain a highway connection between regions or areas of the state in the event of major disasters. Consider a combination of measures to address identified hazards and elements such as appropriate advance maintenance, structural reinforcement, flood-proofing, emergency response planning, and development of emergency alternative routes.

■ Highway Mobility Standards

Background

Several policies in the Highway Plan establish general mobility objectives and approaches for maintaining mobility.

- Policy 1A (State Highway Classification System) describes in general the functions and objectives for several categories of state highways. Greater mobility is expected on Interstate and Statewide Highways than on Regional and District Highways.
- Policy 1B (Land Use and Transportation) has an objective of coordinating land use and transportation decisions to maintain the mobility of the highway system. The policy identifies several land use types and describes in general the levels of mobility appropriate for each.
- Policy 1C (State Highway Freight System) has an objective of maintaining efficient through movement on major truck freight routes. The policy identifies the highways that are freight routes.
- Policy 1G (Major Improvements) has the purpose of maintaining highway performance and improving highway safety by improving system efficiency and management before adding capacity.

Although each of these policies addresses mobility, none specifically identifies what levels of mobility are acceptable.

The Highway Mobility Standards Policy establishes standards for mobility that are reasonable and consistent with the directions of other Highway Plan policies. This policy carries out the directions of Policies 1A and 1C by establishing higher mobility standards for Interstate Highways, freight routes and other Statewide Highways than for Regional or District Highways. It carries out Policy 1B by establishing lower mobility standards for Special Transportation Areas (STAs) and more highly developed urban areas than in less developed areas and rural areas. The lowest standards for mobility are for Regional and District Highways in STAs where traffic congestion will be allowed to reach levels where peak hour traffic flow is highly unstable and traffic queues will form on a regular basis. The levels of mobility established for Statewide Highways in STAs will avoid high levels of traffic instability (except where accidents or other incidents disrupt traffic). A larger cushion of reserve capacity is established for freight routes than for other Statewide Highways to provide steady flow conditions, although traffic will be slowed in STAs to accommodate pedestrians. (Interstate Highways and Expressways will not be incorporated into an STA.)

The mobility standards are contained in Tables 6 and 7 and in Actions 1F.1 and 1F.5. While state highways are often important routes for pedestrians and bicyclists, Tables 6 and 7 refer only to vehicle mobility.

The policy identifies three uses for the highway mobility standards:

- Planning: identifying state highway mobility performance expectations for planning and plan implementation;

- Review of amendments to comprehensive plans and land use regulations: maintaining consistency between desired highway performance and the type of land use development; and
- Making traffic operations decisions such as managing access and traffic control systems to maintain acceptable highway performance.

The Highway Mobility Standards Policy applies primarily to transportation and land use planning decisions. By defining acceptable levels of highway system mobility, the policy provides direction for identifying highway system deficiencies. The policy does not, however, determine what actions should be taken to address the deficiencies. The highway mobility standards in the policy (volume to capacity ratio or v/c) are neutral regarding whether solutions to mobility deficiencies should be addressed by actions that reduce highway volumes or increase highway capacities. The Major Improvements Policy establishes priorities for actions to address deficiencies.

The Highway Mobility Standards Policy will primarily affect land use decisions through the requirements of the Transportation Planning Rule (TPR). The TPR requires that regional and local transportation system plans be consistent with plans adopted by the Transportation Commission. The TPR also requires that comprehensive plan amendments and zone changes which significantly affect a transportation facility be consistent with the adopted function, capacity and performance measures for the affected facility. The Highway Mobility Standards Policy establishes ODOT's mobility performance measures for state highways.

Policy 1F does not apply to highway design. Separate design standards are contained in ODOT's Highway Design Manual. Mobility performance standards for highway design are generally equal to or higher than the standards contained in this policy to provide an adequate operating life for highway improvements. In some circumstances, highway improvements may be designed to meet the highway mobility standards in this policy where necessary to avoid adverse environmental, land use or other effects.

ODOT's intention is that the highway mobility standards not be exceeded over the course of a reasonable planning horizon. The planning horizon shall be:

- 20 years for the development of state, regional and local transportation plans, including ODOT's corridor plans; and
- The greater of 15 years or the planning horizon of the applicable local and regional transportation system plans for amendments to transportation plans, comprehensive plans or land use regulations.

In the 1991 Highway Plan, levels of service were defined by a letter grade from A-F, with each grade representing a range of volume to capacity ratios. A level of service of A represented virtually free flow traffic with few or no interruptions while level of service F indicated bumper-to-bumper, stop-and-go traffic. However, each letter grade actually represented a range of traffic conditions, which made the policy difficult to implement. This Highway Plan maintains a similar concept for measuring highway performance, but represents levels of service by specific volume to capacity ratios to improve clarity and ease of implementation.

A volume to capacity ratio (v/c) is the peak hour traffic volume (vehicles/hour) on a highway section divided by the maximum volume that the highway section can handle. For example, when v/c equals 0.85, peak hour traffic uses 85 percent of a highway's capacity; 15 percent of the capacity is not used. If the traffic volume entering a highway section exceeds the section's capacity, traffic queues will form and lengthen for as long as there is excessive demand. When v/c is less than but close to 1.0 (e.g., 0.95), traffic flow becomes very unstable. Small disruptions can cause traffic flow to break down and long traffic queues to form. This is a particular concern for freeways because the capacity of a freeway under stop-and-go traffic conditions is lower than the capacity when traffic is flowing smoothly.

The Department and Transportation Commission are concerned that mobility standards may have the unintended effect of discouraging development in downtowns and encouraging development in urban fringe areas. This may occur where highways in downtowns and central business districts are near capacity. Plan amendments to allow more development in such areas are generally discouraged because there is inadequate highway capacity to support more intense use. By contrast, highway facilities in urbanizable areas may have excess capacity which allow land use plan amendments that increase development. The plan attempts to offset this unintended effect by varying the mobility standards by type of area, as shown by Table 6. Furthermore, the policy in Action 1F.3 allows alternate standards to be adopted in metropolitan areas, Special Transportation Areas (STAs) and constrained areas.

Alternate standards for the Portland metropolitan area have been included in the policy (Table 7). These standards have been adopted with an understanding of the unique context and policy choices that have been made by local governments in that area including:

- A legally enforceable regional plan prescribing minimum densities, mixed use development and multi-modal transportation options;
- Primary reliance on high capacity transit to provide additional capacity in the radial freeway corridors serving the central city;
- Implementation of an Advanced Traffic Management System including freeway ramp meters, real time traffic monitoring and incident response to maintain adequate traffic flow; and
- An air quality attainment/maintenance plan that relies heavily on reducing auto trips through land use changes and increases in transit service.

The alternative standards are granted to the Portland metropolitan area with a mutual understanding that reduced mobility standards will result in congestion that will not be reduced by state highway improvements. Alternative standards may also be approved for other metropolitan areas or portions thereof to support integrated land use and transportation plans for promoting compact development.

Although non-metropolitan areas do not face the same magnitude of traffic and land use pressures as do metropolitan areas, they may include Special Transportation Areas or may face environmental or land use constraints that make it infeasible to provide an adequate road network to serve planned development. For example, in a number of coastal cities, highway and other road improvements are severely limited by the presence of unstable terrain and the coast, sensitive wetlands and endangered plants and animals. In these places

it may not be feasible to improve the transportation system to the degree necessary to accommodate the reasonable use of properties in accordance with acknowledged comprehensive plans. In such circumstances, the standards in Table 6 might also preclude comprehensive plan changes that carry out the Land Use and Transportation Policy (1B) such as compact development in a Special Transportation Area. Therefore, the Transportation Commission may adopt alternate standards to accommodate development where practical difficulties make conformance with the highway mobility standards infeasible.

Local governments may adopt higher operating standards if desired, but the standards in Tables 6 and 7 must be used for deficiency analyses of state highways.

The policy also anticipates that there will be instances where the standards are exceeded and the deficiencies are correctable but the necessary transportation improvements are not planned. This may be due to environmental or land use constraints or to a lack of adequate funding. In these circumstances, the Department of Transportation's objective is to improve highway performance as much as possible and to avoid further degradation of performance where improvements are not possible. Action 1F.5 gives examples of actions that may be undertaken to improve performance.

Policy 1F: Highway Mobility Standards

It is the policy of the State of Oregon to use highway mobility standards to maintain acceptable and reliable levels of mobility on the state highway system. These standards shall be used for:

- ***Identifying state highway mobility performance expectations for planning and plan implementation;***
- ***Evaluating the impacts on state highways of amendments to transportation plans, acknowledged comprehensive plans and land use regulations pursuant to the Transportation Planning Rule (OAR 660-12-060); and***
- ***Guiding operations decisions such as managing access and traffic control systems to maintain acceptable highway performance.***

Action 1F.1

Apply the highway mobility standards below and in Table 6 to all state highway sections located outside of the Portland metropolitan area urban growth boundary and the standards below and in Table 7 to all state highway sections located within the Portland metropolitan area urban growth boundary.

- On portions of highways where there are no intersections, the volume to capacity ratios in Tables 6 and 7 shall not be exceeded for either direction of travel on the highway.
- At unsignalized intersections and road approaches, the volume to capacity ratios in Tables 6 and 7 shall not be exceeded for either of the state highway approaches that are not stopped. Approaches at which

traffic must stop, or otherwise yield the right of way, shall be operated to maintain safe operation of the intersection and all of its approaches and shall not exceed the volume to capacity ratios for District/Local Interest Roads in Table 7 within urban growth boundaries or 0.80 outside of urban growth boundaries.

- At signalized intersections other than crossroads of freeway ramps (see below), the total volume to capacity ratio for the intersection considering all critical movements shall not exceed the volume to capacity ratios in Tables 6 and 7. Where two state highways of different classifications intersect, the lower of the volume to capacity ratios in the tables shall apply. Where a state highway intersects with a local road or street, the volume to capacity ratio for the state highway shall apply.

- Although a freeway interchange serves both the freeway and the crossroad to which it connects, it is important that the interchange be managed to maintain safe and efficient operation of the freeway through the interchange area. The main problem to avoid is the formation of traffic queues on freeway off-ramps which back up into the portions of the ramps needed for safe deceleration from freeway speeds. This is a significant traffic safety concern. The primary cause of traffic queuing at freeway off-ramps is inadequate capacity at the intersections of the freeway ramps with the crossroad. These intersections are referred to as ramp terminals. In many instances where ramp terminals connect with another state highway, the volume to capacity standard for the connecting highway will generally be adequate to avoid traffic backups onto the freeway. However, in some instances where the crossroad is another state highway or a local road, the standards will not be sufficient to avoid this problem. Therefore, the maximum volume to capacity ratio for the ramp terminals of interchange ramps shall be the smaller of the values of the volume to capacity ratio for the crossroad, or 0.85.

  At an interchange within a metropolitan area where a majority of the interchange access management area (Policy 3C) of the interchange is developed, the maximum volume to capacity ratio may be increased to as much as 0.90, but no higher than the standard for the crossroad, if:

  1. It can be determined, with a probability equal to or greater than 95 percent, that vehicle queues would not extend into the portion of the ramp needed to accommodate deceleration from freeway speed; and

  2. The interchange access management area is retrofitted to comply, as much as possible, with the standards contained in Policy 3C of this plan.

  For the purposes of this policy, the portion of the freeway ramp needed to accommodate deceleration shall be the distance, along the centerline of the ramp, needed to bring a vehicle to a full stop from the posted freeway speed at a deceleration rate of 6.5 feet/second^2 (two meters/second^2).

- Because the freeway ramps serve as an area where vehicles accelerate or decelerate to or from freeway speeds, the maximum volume to capacity ratio for the interchange ramps exclusive of the crossroad terminals shall be the standard for the freeway with the following exception. For freeway on-ramps where entering traffic is metered to maintain efficient operation of the freeway through the interchange area, the maximum volume to capacity ratio may be higher.
- The Director of the Department of Transportation or his/her delegate shall have the authority to adopt methods for calculating and applying the volume to capacity ratio standards in this policy or any alternative standards adopted pursuant to this policy.

Action 1F.2

Apply the highway mobility standards over a 20-year planning horizon when developing state, regional or local transportation system plans, including ODOT's corridor plans. When evaluating highway mobility for amendments to transportation system plans, acknowledged comprehensive plans and land use regulations, use the planning horizons in adopted local and regional transportation system plans or a planning horizon of 15 years from the proposed date of amendment adoption, whichever is greater. To determine the effect an amendment to a transportation system plan, acknowledged comprehensive plan or land use regulation has on a state facility, the capacity analysis shall include the forecasted growth of traffic on the state highway due to regional and intercity travel and to full development[4] according to the applicable acknowledged comprehensive plan over the planning period.

Action 1F.3

Where it would be infeasible to meet the standards in this policy, consider adopting alternate highway mobility standards for:

- Metropolitan areas or portions[5] thereof to support an integrated land use and transportation plan for promoting compact development, reducing the use of automobiles and increasing the use of other modes of transportation, promoting efficient use of transportation infrastructure, and improving air quality;
- Special Transportation Areas (STAs); and

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[4] Full development, for the purposes of this policy, means the amount of population and employment growth and associated travel anticipated by the community's acknowledged comprehensive plan over the planning period. The Transportation Commission encourages communities to consider and adopt land use plan amendments that would reallocate expected population and employment growth to designated community centers to reduce reliance on state highways.

[5] This policy does not prescribe minimum or maximum sizes for portions of metropolitan areas that would qualify for alternative standards. Nevertheless, the area must be of the size necessary to support compact development, reduce the use of automobiles and increase the use of other modes of transportation, promote efficient use of transportation infrastructure, and improve air quality.

- Areas where severe environmental or land use constraints[6] make infeasible the transportation improvements necessary to accommodate reasonable use of properties in accordance with acknowledged comprehensive plans or to accommodate comprehensive plan changes that carry out the Land Use and Transportation Policy (1B).

The alternative standards shall be clear and objective and shall be related to v/c (e.g., corridor-average v/c, network-average v/c, and the ratio of average daily traffic and hourly capacity (adt/c)). The standards shall be adopted as part of a regional and/or local transportation system plan. The plan shall demonstrate that it would be infeasible to meet the highway mobility standards in this policy. In addition, the plan shall include all feasible actions for:

- Providing a network of local streets, collectors and arterials to relieve traffic demand on state highways and to provide convenient pedestrian and bicycle ways;
- Managing access and traffic operations to minimize traffic accidents, avoid traffic backups on freeway ramps, and make the most efficient use of highway capacity;
- Managing traffic demand, where feasible, to manage peak hour traffic loads on state highways;
- Providing alternative modes of transportation; and
- Managing land use to limit vehicular demand on state highways consistent with the Land Use and Transportation Policy (1B).

The plan shall include a financially feasible implementation program and shall demonstrate strong public and private commitment to carry out the identified improvements and other actions.

In metropolitan areas, the alternate highway mobility standards will become effective only after the standards have been approved by the metropolitan planning organization and adopted by the Transportation Commission.

Outside of metropolitan areas, the alternate highway mobility standards will become effective only after the Transportation Commission has adopted them in a corridor plan or in a portion of a corridor plan.

Action 1F.4

Develop corridor plans for Interstate Highways, other freeways and designated highway freight routes in the Portland metropolitan area that are important for through travel. Develop standards for those routes to provide adequate levels of highway mobility.

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[6] Examples of severe environmental and land use constraints include endangered species, sensitive wetlands, and historic districts.

Action 1F.5

For purposes of preparing planning documents such as corridor plans and transportation system plans, in situations where the volume to capacity ratio for a highway segment is [substandard] above the standards in Table 6 or Table 7, or those otherwise approved by the Commission, and transportation improvements are not planned within the planning horizon to bring performance to standard because of severe environmental, land use or financial constraints, the performance standard for the highway segment shall be to improve performance as much as feasible and to avoid further degradation of performance where no performance improvements are feasible. Examples of actions that might improve performance include the following:

- Reconfigure highway and side-street accesses to minimize traffic conflicts at intersections;
- Limit parking near signalized intersections to increase intersection capacity;
- Coordinate and operate traffic signals to improve traffic progression;
- Relocate driveways and improve local road connections to direct traffic away from overburdened intersections and intersections where side-street capacity is limited in order to optimize traffic progression on the state highway;
- Improve turning-radii at intersections that are heavily used by trucks to avoid lane blockages;
- Install raised medians to reduce traffic conflicts;
- Improve accesses so that traffic can enter or exit the highway with minimal disruptions of flow; and
- Manage land uses to favor types of uses that generate less traffic or traffic peaks which do not coincide with traffic peaks on the highway. This could be done by making appropriate plan amendments or changes to zoning ordinances.

Local governments may also request that the Transportation Commission adopt alternate standards in accordance with Action 1F.3.

Action 1F.6

For purposes of evaluating amendments to transportation system plans, acknowledged comprehensive plans and land use regulations subject to OAR 660-12-060, in situations where the volume to capacity ratio for a highway segment, intersection or interchange is [substandard] above the standards in Table 6 or Table 7, or those otherwise approved by the Commission, and transportation improvements are not planned within the planning horizon to bring performance to standard, the performance standard is to avoid further degradation. If an amendment to a transportation system plan, acknowledged

comprehensive plan or land use regulation increases the volume to capacity ratio further, it will significantly affect the facility.

Table 6: Maximum Volume to Capacity Ratios for Peak Hour Operating Conditions Through a Planning Horizon for State Highway Sections Located Outside the Portland Metropolitan Area Urban Growth Boundary

Highway Category	Land Use Type/Speed Limits					
	Inside Urban Growth Boundary				Outside Urban Growth Boundary	
	STAs	MPO	Non-MPO outside of STAs where non-freeway speed limit <45 mph	Non-MPO where non-freeway speed limit >= 45 mph	Unincorporated Communities	Rural Lands
Interstate Highways and Statewide (NHS) Expressways	N/A	0.80	0.70	0.70	0.70	0.70
Statewide (NHS) Freight Routes	0.85	0.80	0.75	0.70	0.70	0.70
Statewide (NHS) Non-Freight Routes and Regional or District Expressways	0.90	0.85	0.80	0.75	0.75	0.70
Regional Highways	0.95	0.85	0.80	0.75	0.75	0.70
District/Local Interest Roads	0.95	0.90	0.85	0.80	0.80	0.75

Table 6 Notes:

- Interstates and Expressways shall not be identified as Special Transportation Areas (STAs).
- 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.
- For the purposes of Policy 1F and Table 6, the MPO category includes areas within the planning boundaries of the Eugene/Springfield, Medford and Salem/Keizer Metropolitan Planning Organizations, and any other MPO areas that are designated after the adoption of this plan.

Table 7: Maximum Volume to Capacity Ratios for Two Hour Peak Operating Conditions Through a 20-Year Horizon for State Highway Sections within the Portland Metropolitan Area

Highway Category	Land Use Type	
	2040 Concept Area	Non-Concept Area
Interstate Highways and Statewide (NHS) Expressways	0.90	0.90
Statewide (NHS) Freight Routes	0.95	0.90
Statewide (NHS) Non-Freight Routes and Regional or District Expressways	1.0	0.95
Regional Highways	1.0	0.95
District/Local Interest Roads	1.0	0.95

Table 7 Notes:

- The volume to capacity ratios in the table are for the highest two consecutive hours of weekday traffic volumes. This is calculated by dividing the traffic volume for the average weekly two-hour PM peak by twice the hourly capacity.
- 2040 Concept Areas include the Central City, Regional Centers, Town Centers, Station Communities, and Main Streets identified in Metro's adopted Region 2040 Growth Concept.
- Alternate standards may be developed in corridor plans for Interstate Highways, other freeways and NHS freight routes to provide adequate levels of highway mobility for through travel.

■ Major Improvements

Background

Since road construction is very expensive and funding is very limited, it is unlikely that many new highways will be built in the future. Instead, the emphasis will be on maintaining the current system and improving the efficiency of the highways the State already has. The Major Improvements Policy reflects this reality by directing ODOT and local jurisdictions to do everything possible to protect and improve the efficiency of the highway system before adding new highway facilities. This policy carries out the direction of the Oregon Benchmarks. This direction includes improving traffic operations and maintaining the roadway for legal size vehicle travel. These priorities—laid out in Action 1G.1—take precedence over the other actions in this policy.

Policy 1G: Major Improvements

It is the policy of the State of Oregon to maintain highway performance and improve safety by improving system efficiency and management before adding capacity. ODOT will work in partnership with regional and local governments to address highway performance and safety needs.

Action 1G.1

Use the following priorities for developing corridor plans, transportation system plans, the Statewide Transportation Improvement Program, and project plans to respond to highway needs. Implement higher priority measures first unless a lower priority measure is clearly more cost-effective or unless it clearly better supports safety, growth management, or other livability and economic viability considerations. Plans must document the findings which support using lower priority measures before higher priority measures.

1. **Protect the existing system.** The highest priority is to preserve the functionality of the existing highway system by means such as access management, local comprehensive plans, transportation demand management, improved traffic operations, and alternative modes of transportation.
2. **Improve efficiency and capacity of existing highway facilities.** The second priority is to make minor improvements to existing highway facilities such as widening highway shoulders or adding auxiliary lanes, providing better access for alternative modes (e.g., bike lanes, sidewalks, bus shelters), extending or connecting local streets, and making other off-system improvements.
3. **Add capacity to the existing system.** The third priority is to make major roadway improvements to existing highway facilities such as adding general purpose lanes and making alignment corrections to accommodate legal size vehicles.
4. **Add new facilities to the system.** The lowest priority is to add new transportation facilities such as a new highway or bypass.

Action 1G.2

Support any major improvements to state highway facilities in local comprehensive plans and transportation system plans only if the improvements meet all of the following conditions:

- The improvement is needed to satisfy a state transportation objective or objectives;
- The scope of the project is reasonably identified, considering the long-range projection of need;
- The improvement was identified through a planning process that included:
  - Thorough public involvement;
  - Evaluation of reasonable transportation and land use alternatives including measures for managing the existing transportation system and for reducing demands for highway capacity; and
  - Sufficient environmental analysis at the fatal flaw planning level.
- The plan includes measures to manage the transportation system, but these measures will not satisfy identified highway needs during the planning period or there is a need to preserve a future transportation corridor for future needs beyond the planning period;
- The improvement would be a cost-effective means to achieve the objective(s);
- 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;
- Funding for the project can reasonably be expected at the time the project is ready for development and construction;
- The local government schedules funding for local street improvements in its local transportation financing program if these are needed to attain the objectives of the major improvement; and
- The plan includes policies and implementing measures that protect the corridor and its intended function.

ODOT recognizes that transportation system plans may identify needs and regional and local governments may defer decisions regarding function, mode, and general location of a long-range project to a refinement plan as described in the Transportation Planning Rule (OAR 660-12-025). Before ODOT will agree to any improvements on the state highway system, the improvements must conform to the requirements in this Action.

Action 1G.3

Through an intergovernmental agreement, implement a cost-sharing agreement when a project has major benefits to the local system, especially when local sponsors of the

project envision purposes beyond those needed to meet state transportation objectives.

Action 1G.4

Design major improvements for limited access to protect through traffic movements. Develop and implement an access management intergovernmental agreement and require the local jurisdiction to adopt supporting actions in the local comprehensive plan.

Action 1G.5

As part of project development, negotiate an intergovernmental agreement with the local jurisdiction affected by a major improvement such as a bypass and transfer the ownership of the state routes that are bypassed to the local jurisdiction at the completion of the project.

Action 1G.6

Consider purchasing or otherwise protecting right-of-way, consistent with state, regional or local plans, in locations where projects will be necessary in the future.

Goal 2: System Management

To work with local jurisdictions and federal agencies to create an increasingly seamless transportation system with respect to the development, operation, and maintenance of the highway and road system that:

- **Safeguards the state highway system by maintaining functionality and integrity;**
- **Ensures that local mobility and accessibility needs are met; and**
- **Enhances system efficiency and safety.**

Overview

Working towards a seamless highway and road system is a goal based on the need to increase system efficiencies in an environment of limited funding. The term "seamless" implies an integrated system in which a user does not recognize changes in jurisdiction or responsibilities. The state highways and local roads function as a single, integrated system. It is a system where:

- System efficiencies and safety are enhanced through interjurisdictional partnerships;
- Management responsibilities of two or more agencies are consolidated at a single agency to achieve more consistent roadway function and management;
- Duplicative functions such as maintenance responsibilities are eliminated through cooperative agreements between state and local jurisdictions;
- Technologies, such as Intelligent Transportation System technologies, are compatible across jurisdictional boundaries; and
- Federal, state, and local funding sources are flexible for improvements that provide the most benefit, regardless of management responsibilities.

■ Interjurisdictional Relations

Background

The Oregon Transportation Plan acknowledges that the relationships between federal, regional, and local jurisdictions, and ODOT are crucial for the future of the state's highway system. It also recognizes that ODOT has direct relationships with citizens, businesses and affected communities that must be fostered and maintained.

As funding for transportation continues to lag behind the rate of inflation and maintenance needs, the ability to form partnerships and find efficiencies to stretch scarce resources farther will become more important for both economic development and quality of life issues throughout the state.

Three overlapping components would further interjurisdictional relationships:

- Creation of cooperative partnerships;
- Funding of off-system improvements; and
- Interjurisdictional transfer of roads.

Improving the relationship between ODOT and local jurisdictions is a starting point for increasing efficiency and eventually creating a seamless transportation system. An integrated system can reduce the confusion created by overlapping jurisdictions, services, and development requirements. Such a seamless system would share decision-making authority through cooperative arrangements to develop, operate, and maintain the state highway and local road systems. Partnership opportunities between ODOT, local jurisdictions, and federal agencies are necessary to help meet both state and local needs.

ODOT should also consider off-system improvements as a means of enhancing the state/regional transportation system. Off-system improvements may provide a cost-effective alternative to increasing the capacity of the state highway system, while helping to meet both state and local needs. ODOT can accomplish off-system improvements to enhance or preserve the state highway system by funding specific local modernization projects that will provide direct benefits to the state highway system or by involving ODOT staff in planning efforts to identify and address future local land use or transportation activities that will have an impact on the state highway system. This policy does not represent a commitment of funds to specific local projects.

Interjurisdictional road transfers (from ODOT to local jurisdictions, or from local jurisdictions to ODOT) currently occur on an ad hoc basis, with basic issues such as condition at time of transfer, funding for maintenance, and ongoing operational responsibilities negotiated on a case-by-case basis. These transfers should occur on a more systematic basis.

ODOT recognizes that, with limited funding, segments of state highways that do not serve state functions will receive less attention than they deserve. These segments are often urban arterials primarily serving local traffic, frontage roads, farm-to-market roads and other roads that function like city and county streets and roads. ODOT sees its role as serving mainly regional and statewide interests. To appropriately align responsibilities for these state-owned Local Interest Roads, ODOT proposes to develop a process with cities and counties to transfer them to local jurisdictions.

At the same time, there are local roads that are serving primarily through traffic or providing connections between state highways. Local governments and ODOT may be interested in transferring these to state jurisdiction.

The Oregon Transportation Plan stresses the importance of public participation, information, and education in the development and implementation of policies, programs, and projects to achieve the State's transportation goals. In Policy 2D ODOT recognizes that public involvement programs are an important part of building relationships with users and communities to ensure that highway development and maintenance projects meet Oregonians' needs.

Policy 2A: Partnerships

It is the policy of the State of Oregon to establish cooperative partnerships to make more efficient and effective use of limited resources to develop, operate, and maintain the highway and road system. These partnerships are relationships among ODOT and state and federal agencies, regional governments, cities, counties, tribal governments, and the private sector.

Action 2A.1
Support planning and development of highway and local road projects which enhance the seamless qualities of a transportation system which balances state, regional, and local needs.

Action 2A.2
Continue and increase the number of partnerships with federal agencies, tribal governments, and regional and local jurisdictions to share planning, development, operational and maintenance responsibilities, and address aspects of a seamless management system. Seek funding for the partnership process.

Action 2A.3
Investigate the legality of combining federal, state, regional, local and/or private funding to achieve the most effective, efficient expenditure of public money for transportation; encourage flexibility in the application of such funds.

Action 2A.4
Establish partnerships with the private sector where doing so will provide cost efficiencies to the state and advance state goals.

Action 2A.5

With Washington State, support cooperative strategic planning for the bi-state Columbia River bridges and coordinate other transportation projects in corridors approaching the bridges on each side of the river.

Policy 2B: Off-System Improvements

It is the policy of the State of Oregon to provide state 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:

- ***The off-system costs are less than or equal to on-system costs, and/or the benefits to the state system are equal to or greater than those achieved by investing in on-system improvements;***
- ***Local jurisdictions adopt land use, access management and other policies and ordinances to assure the continued benefit of the off-system improvement to the state highway system;***

- ***Local jurisdictions agree to provide advance notice to ODOT of any land use decisions that may impact the off-system improvement in such a way as to adversely impact the state highway system; and***
- ***Local jurisdictions agree to a minimum maintenance level for the off-system improvement that will assure the continued benefit of the off-system improvement to the state highway system.***

Action 2B.1

Establish statewide criteria to identify and prioritize potential off-system improvements.

Action 2B.2

Develop a model intergovernmental agreement that addresses access management and land use restrictions, notification requirements, design standards, and maintenance issues.

Action 2B.3

Continue to participate in local transportation and land use planning to identify and mitigate potential actions that will adversely impact the state highway system or undermine the benefits to the state system of off-system improvements.

Action 2B.4

In preparing corridor plans, transportation system plans and project plans, work with local governments to identify and evaluate off-system improvements that would be cost-effective in improving performance of the state highway.

Policy 2C: Interjurisdictional Transfers

It is the policy of the State of Oregon to consider, in cooperation with local jurisdictions, interjurisdictional transfers that:

- ***Rationalize and simplify the management responsibilities along a particular roadway segment or corridor;***
- ***Reflect the appropriate functional classification of a particular roadway segment or corridor; and/or***
- ***Lead to increased efficiencies in the operation and maintenance of a particular roadway segment or corridor.***

Action 2C.1

Working with local governments, define criteria for identifying state roads and highways that serve primarily local interests and local highways, roads, and streets that serve primarily state interests. The criteria should address land use, trip purposes, highway mobility standards, and access management.

Identify potential roads and highways for interjurisdictional transfer. The state roads and highways to be transferred to local jurisdictions may include:

- Urban arterials serving primarily local travel needs;
- Urban streets that have remained state-owned after a parallel major improvement has been constructed;
- Frontage roads;
- Farm-to-market roads;
- Other roads that function like county roads; and
- Connector roadways between highways. (These facilities do not include continuous highway segments that extend through a local jurisdiction.)

Local roads to be transferred to the state may include:

- Urban arterials that serve mainly through traffic; and
- Rural routes that have a statewide economic importance.

Action 2C.2

Establish criteria to guide decisions to transfer roads, including appropriate compensation, roadway conditions, maintenance agreements, and management and operational standards to maintain the functionality of the facility. Criteria for consideration of transfers should include but are not limited to:

- The importance of the facility to the functionality of the statewide system and the impacts of the transfer on that functionality. Changes in maintenance, highway mobility, or other standards resulting from the transfer should not negatively impact the function of other nearby state facilities;
- The land use vision of the local community;
- The condition or standard of the facility at the time of transfer and its meeting an agreed upon serviceability standard; and
- Appropriate compensation for the exchange that is determined during negotiation through an analysis which equalizes or balances the relative values of each transaction between the State and the local jurisdiction.

Action 2C.3

Develop a decision-making process for interjurisdictional transfers that includes the following:

- The Oregon Transportation Commission finds that the state highway is no longer needed to meet the functional needs of the system, or the local road is needed to meet the functional needs of the state system. The Oregon Transportation Commission solicits comments from the affected jurisdictions and the public;

- The State signs an intergovernmental agreement with the local jurisdiction which addresses compensation, roadway conditions, access management, maintenance, and operational standards;
- The local jurisdiction and ODOT both agree in writing to the transfer; and
- The extent and legal standing of any existing access rights and access management controls is documented and not contested by ODOT or the local jurisdiction.

Policy 2D: Public Involvement

It is the policy of the State of Oregon to ensure that citizens, businesses, regional and local governments, state agencies, and tribal governments have opportunities to have input into decisions regarding proposed policies, plans, programs, and improvement projects that affect the state highway system.

Action 2D.1

Conduct effective public involvement programs that create opportunities for citizens, businesses, regional and local governments, state agencies, and tribal governments to comment on proposed policies, plans, programs, and improvement projects.

Action 2D.2

Increase public information and education about construction, operations, and maintenance activities.

Action 2D.3

Coordinate with local governments and other agencies to ensure that public involvement programs target affected citizens, businesses, neighborhoods, and communities, as well as the general public.

Action 2D.4

Evaluate agency public involvement programs on a regular basis to ensure the programs are effective in involving a broad range of the public in agency planning and decision-making processes.

■ Intelligent Transportation Systems (ITS)

Background

When integrated into the transportation system, a number of information processing, communication, control, and electronic technologies can save lives, save time, and save money. These technologies are known collectively as Intelligent Transportation Systems (ITS). In Oregon, many public and private transportation providers are using these technologies to assist in the day-to-day problems of moving people and goods.

- In the Portland area, closed circuit television and other traffic surveillance devices and methods allow ODOT to rapidly detect and respond to incidents on the urban freeway system. By clearing incidents quickly, traffic flow can return to normal and minimize inconvenience and delay to travelers and freight haulers. They can also detect congestion occurrences and allow traffic managers to use technologies such as ramp metering, variable message signs, internet, kiosks, and other technologies to alert users of potential delays and advise them of alternative routes.
- At the Farewell Bend port of entry near Ontario, in the Operation Greenlight Project, trucks that are equipped with an inexpensive communication device that mounts on the cab windshield can be uniquely identified, weighed, and checked against a computerized database within seconds while the trucks are traveling at highway speed. If a truck is found to be traveling legally, it is given a signal through the communication device and is allowed to proceed down Interstate 84 without stopping at the weigh station.
- Traveler information involving traffic, construction, road conditions, traveler services, and weather can significantly improve travel in both rural and urban areas.
- Public transit applications of ITS, including traveler information and global positioning dispatching systems, have been shown to improve transit performance.
- Incident detection and response along rural highways is a growing concern in Oregon. ITS technologies such as cellular call-in services and mayday systems are in use or the subjects of experiments in the United States at this time.

ITS can effectively provide additional road capacity without increasing the physical size of the facility. Opposition to adding lanes, as well as the cost of building them, makes ITS an attractive alternative. To keep pace with the growth of vehicle miles traveled, the U.S. Department of Transportation predicts that the United States will need to build 34 percent more highway capacity. For 50 cities, the 10-year cost is estimated to be $150 billion. Implementing an ITS solution could cost much less and provide significant portions of the needed capacity.

Sixty percent of the delay on congested freeways can be attributed to incidents. A highway accident increases the risk of an additional accident by a factor of six, according to a study of accident statistics on several California highways and expressways. National studies assessing incident management programs estimates that by reducing the time it takes to detect and respond to freeway accidents from the current national average of 5.2 minutes to 3 minutes, accident fatalities would be expected to decline by 10 percent. Incident response on rural highways can make similar gains.

Policy 2E: Intelligent Transportation Systems

It is the policy of the State of Oregon to consider a broad range of Intelligent Transportation Systems services to improve system efficiency and safety in a cost-effective manner. Deployment of ITS shall reflect the user service priorities established in the Oregon Intelligent Transportation Systems Strategic Plan. Specifically:

- ***Incident Management***
- ***En-route Driver Information***

- ***Traffic Control (Arterials and Freeways)***
- ***Route Guidance***
- ***Commercial Vehicle Electronic Clearance***
- ***Pre-trip Travel Information***
- ***Public Transportation Management***
- ***Emergency Notification and Personal Security***
- ***Emergency Vehicle Management***
- ***Commercial Fleet Management***

Action 2E.1

Establish planning, management, budgeting, and project selection processes within ODOT to encourage timely, cost-effective deployment of ITS applications, including:

- Creating and maintaining an ITS office in the Oregon Department of Transportation to evaluate and implement ITS, implement ITS strategies, provide outreach and coordination among agencies, technology integration, education and program development and assessment, and partnership;
- Encouraging the use of ITS in corridor and transportation system plans and ITS proposals in the Statewide Transportation Improvement Program process; and
- Creating budgets for ITS operational and maintenance requirements within the ODOT Regions.

Action 2E.2

Expand traffic management capabilities in metropolitan areas through the use of ramp meters, variable message signs and closed circuit television to address recurrent congestion and enhance incident management.

Action 2E.3

Expand incident management capabilities in metropolitan areas and along key freight and recreational routes around the state where traffic incidents cause severe non-recurrent congestion.

Action 2E.4

Continue to advance commercial vehicle applications of ITS such as the Greenlight Project.

Action 2E.5

Work with local and regional governments and law enforcement agencies to deploy an effective advanced traffic management system in each metropolitan area.

Action 2E.6

Create a statewide network for real time weather, road condition, traffic, traveler services, and public transportation information.

Action 2E.7

Encourage transit operators and emergency service providers to develop standardized dispatching, vehicle monitoring, and vehicle priority systems.

Action 2E.8

Create a toolbox of standardized ITS applications that can be applied in small cities and rural areas. These products will emphasize enhancements for safety, traveler information, incident response, and congestion relief.

Action 2E.9

Foster public/private partnerships to further ITS development and funding.

Action 2E.10

Develop an advanced high speed telecommunications facility to serve as the communications backbone to statewide ITS deployment in partnership with private communications providers.

Action 2E.11

Develop partnership opportunities with neighboring states for the installation of ITS technologies and for opportunities to share services and information.

Action 2E.12

Support ITS planning, development, and implementation in corridor plans and local transportation system plans.

■ Traffic Safety

Background

In 1996, 316 people died in the 23,053 motor vehicle crashes occurring on Oregon's state highway system. Eighty percent of these fatal crashes occurred on rural highways. Speed contributed to over 17 percent of the fatal crashes, and driving under the influence of intoxicants was a factor in 43 percent of the crashes. About half of the fatal crashes occurred during adverse weather conditions and a third on wet or icy pavement. In the cases where restraint usage was known, 42 percent of those killed were not using a safety belt. Thirteen percent of fatalities on the state highway system were non-motorists (11 percent pedestrians, 2 percent bicyclists).

Fatality and injury statistics show that the majority of all crashes are caused by some error on the driver's part. According to a Michigan study, approximately 80 percent of events causing crashes are due to driver error, 15 percent are due to environmental or roadway conditions, and 5 percent are due to vehicle defects.

ODOT has the responsibility to consider safety in all construction, maintenance, and operating activities on the state highway system. This includes implementation of programs that improve the safety of historically or potentially hazardous sites and routes and programs that address system-wide safety issues. The Oregon Transportation Plan gives safety a high priority in Policy 1G in declaring that "the policy of the State of Oregon is to improve continually the safety of all facets of statewide transportation for system users including operators, passengers, pedestrians, recipients of goods and services, and property owners."

The Oregon Transportation Safety Action Plan further clarifies the 12 actions in the Oregon Transportation Plan. Policy 2F and its actions are based on these adopted policies and priorities.

Three elements are critical to successfully solving any traffic safety issue: engineering, education, and enforcement. Some include another element: emergency medical services. Engineering fixes tend to focus on the driving environment: e.g., improving the road design; improving site distance, illumination, signing and striping; making the shoulder area safer; assessing conditions to establish appropriate speeds; constructing median barriers; and managing access to highways. Solutions to safety problems should also consider the use of non-engineering elements, including coordinating and enhancing state, city, and county law enforcement; involving business, the media, community safety groups, and schools in educational efforts; developing incident management programs; and establishing Corridor Safety Improvement Projects.

Policy 2F: Traffic Safety

It is the policy of the State of Oregon to continually improve safety for all users of the highway system using solutions involving engineering, education, enforcement, and emergency medical services.

Action 2F.1
Establish a process to develop and implement the most cost-effective solutions to high priority safety problems.

Action 2F.2
Whenever safety improvement is the stated objective of the project, include goals and a process to evaluate the outcome and further refine the project selection and solution process.

Action 2F.3
In identifying solutions to traffic safety problems, consider solutions including, but not limited to:

- Increasing traffic enforcement;
- Involving business and community groups and the media in educational efforts;
- Using educational materials and special signing to change driving practices;

- Making engineering improvements such as geometrics, signing, lighting, striping, signals, improving sight distance, and assessing conditions to establish appropriate speed;

- Constructing appropriate bicycle and pedestrian facilities including safe and convenient crossings;

- Managing access to the highway;

- Developing incident response and motorist assistance programs;

- Ensuring the uniformity of traffic control devices; and

- Developing driver information systems.

Action 2F.4
Continue to develop and implement the Safety Management System to target resources to sites and routes with the most significant safety problems. Encourage local governments to adopt a safety management system.

Action 2F.5
Seek additional funding for state and local traffic law enforcement.

Action 2F.6
Work with citizens and local jurisdictions to address safety concerns on the state highway system.

■ Rail and Highway Compatibility

Background

In 1997, there were 148 at-grade highway-railroad public grade crossings on Oregon state highways. Each represents the potential for serious injury or death, even if equipped with gates and lights. Despite Oregon's nationally recognized success in reducing collisions at public grade crossings, the increase in both vehicle and train traffic presents on-going challenges in protecting both the motoring public and train passengers and crews.
Several types of situations can cause conflict between highway and railroad operations at grade crossings:

- Routine maintenance on a roadway, such as an overlay which leaves the track area untouched or a track resurfacing which makes the tracks higher than the adjacent roadway surface.

- Queuing roadway traffic at intersections near rail crossings which results in trapping motorists on the tracks as a train is approaching.

- Roadway design at a rail crossing, including a road expanse wider than two lanes, the angle of intersection of roadway and tracks, the location of the crossing in relation to existing track

devices (switches, multiple tracks, etc.), driveways near the intersection of the track and roadway, and obstructions to motorists' views of approaching trains.

To increase safety and efficiency, ODOT is directed by statute "to achieve uniform and coordinated regulation of railroad-highway crossings and to eliminate crossings at grade wherever possible [and] to control and regulate the construction, alteration, and protection of railroad-highway crossings." (ORS 824.202) The 1995 Legislature transferred this authority from the Oregon Public Utility Commission to ODOT.

Statutory authority means that ODOT has the responsibility of meeting the stated objective of uniformity, construction, alteration, and closure over all public crossings. This includes not only crossings of state highways, but also crossings of county roads and city streets. When a road authority wants to construct or alter a crossing, it must file an application with the ODOT Rail Division. The Rail Division works with all the parties to reach an agreed upon course of action. Determination of whether a new crossing or alteration is justified is made on an individual basis. The process includes consideration of such factors as traffic circulation, pedestrian crossings, economic development, safety, congestion and rail traffic. Both Federal Railroad Administration direction and Oregon statutes call for elimination of grade crossings wherever possible.

Policy 2G: Rail and Highway Compatibility

It is the policy of the State of Oregon to increase safety and transportation efficiency through the reduction and prevention of conflicts between railroad and highway users.

Action 2G.1

Eliminate crossings at grade wherever possible. Give priority to closing those crossings with the greatest potential for train-vehicle conflicts. Where rail grade crossings provide an important route for local pedestrian, bicycle, or vehicle circulation, the needs of these local movements should be considered.

Action 2G.2

Design highway projects to avoid or reduce rail crossings at grade.

Action 2G.3

In cooperation with railroads and local governments, target resources to increase safety through automated devices and enforcement at specific crossings.

Action 2G.4

Coordinate highway design, construction, resurfacing and traffic signals affecting rail crossings with the Oregon Department of Transportation Rail Division and the railroads.

Action 2G.5

Address pedestrian and bicycle access issues and design concerns when designing grade-separated crossings.

Goal 3: Access Management

To employ access management strategies to ensure safe and efficient highways consistent with their determined function, ensure the statewide movement of goods and services, enhance community livability and support planned development patterns, while recognizing the needs of motor vehicles, transit, pedestrians and bicyclists.

Overview

Access management is balancing access to developed land while ensuring movement of traffic in a safe and efficient manner. To achieve effective transportation it is necessary to have a blend and balance of road facilities. Each performs its unique function, since no single class of highway can provide both high levels of movement and high levels of access to property. The spectrum ranges from freeways that provide for ease of movement through higher speeds, higher capacity and freedom from interruption to local residential streets that serve a diverse group of users from pedestrians to garbage collectors and emergency response vehicles by providing ease of access through slow speeds and numerous driveways.

Because expanding population growth and transportation needs are placing increasing demands on the state highway system, there is intense pressure to allow businesses and individuals extensive access to the roadways. Access can be managed a number of different ways, including freeway interchange placement and design, driveway and road spacing and design, traffic signal location, median design and spacing of openings, connectivity and the use of turn lanes. The challenge is to determine how to best apply these access management techniques on Oregon's state highway system to safely protect the highway efficiency and investment, contribute to the health of Oregon's local, regional and statewide economies, and support and maintain livable communities.

Implementation of access management is essential if the safety, efficiency and investment of the existing and planned state highways are to be protected. Roads link together as a chain, and the roadway system is only as effective as its weakest link. The amount of access and how it is allowed to a state highway is a critical factor in determining how long the facility can remain functional, and is the largest contributor to safety. An uncontrolled number of driveways to a highway can cause it to be very unsafe, and some highways will not serve their intended function to carry people, freight, and goods throughout the state. Implementation of access management techniques produces a more constant traffic flow, which helps to reduce congestion, fuel consumption and air pollution.

■ Access Management

Background on Road Approaches (Driveways and Public Road Connections)

In Oregon, prior to 1949, a property owner could build a road approach (driveway or public road connection) to a highway at any location without obtaining permission. The State Legislature realized that highways would not operate safely or efficiently if this practice continued, and in 1949 a statute was passed that required all parties to receive written permission from ODOT or county governments, as appropriate, before constructing an approach road.

Since that time, property owners adjacent to state highways have been required to obtain an approach road permit from ODOT even though they have a "common law" right of access to the state highway. The common law right allows them to access the highway, and the permit process determines how and where the approach road can be safely constructed. While the statue requires that owners be allowed to access their property, it does not ensure that they can have an approach road wherever they desire. For example, ODOT is not obligated to issue an approach road permit when reasonable access is available, such as to a city street or a county road.

ODOT has the authority to purchase the right of access from property owners where appropriate. In some cases, such as along Interstate Highways, ODOT purchases the right of access in its entirety and the property owner no longer has any common law right to access the highway. In this case, a statement in the property owner's chain of title will show that the right of access has been conveyed to ODOT.

In other cases, ODOT purchases access rights just along portions of properties. Gaps, called "reservations of access," may remain along the property's frontage. The reservation of access gives a property owner the common law right of access to the state highway only at specific locations. The property owner must still apply for a road approach permit at these locations.

Having a reservation of access in the deed does not guarantee that ODOT will permit a driveway at that location. For example, in the time since the reservation of access was established, traffic volumes may have increased significantly, travel speeds on the highway may have risen, the highway design may have changed (for example, by adding a passing lane), other approach roads may be too close, or alternate street connections may have been built. Any of these cases could make a new approach road unsafe or otherwise inappropriate.

In these cases, however, ODOT must still ensure that property owners have reasonable access to their property. If there is no reasonable access to the property leaving the property landlocked, ODOT may be required to purchase the property.

Scope of the Policies

The criteria in the Access Management Policies and the standards in Appendix C shall be applied to the development of all ODOT highway construction, reconstruction or modernization projects and approach road permits, as well as all planning processes involving state highways, including corridor plans, refinement plans, state and local transportation system plans and local comprehensive plans.

- All highway plans, including corridor plans and refinement plans, which have not been adopted on or before the effective date of the Access Management Policies, shall be subject to these policies. Local and regional transportation system plans adopted after January 1, 2000 shall be subject to these policies.
- All projects which have not published the draft environmental document at the effective date of the Access Management Policies shall be subject to these policies.
- Projects which have published the draft environmental document prior to the effective date of the Access Management Policies shall be evaluated individually by the Region Manager to determine to what extent these policies should be implemented.

The policy and procedures for Deviations and the standards in Appendix C, and the policy and procedures for Appeals portions of the Access Management Policies apply to local governments, private applicants, and state agencies, including ODOT, where there is a desire to apply standards

and criteria different than those outlined in the Access Management Policies, for the following instances:

- All approach road and private road crossing requests for approaches to state highways.
- New state highway construction projects and new highway plans.
- Any reconstruction or modernization work on state highways.

All proposed traffic control devices on the state highway system must have prior approval of the State Traffic Engineer and may include criteria not set forth in these policies.

Policy 3A: Classification and Spacing Standards

It is the policy of the State of Oregon 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 the highways.

Action 3A.1

Manage access to state highways based on the access management classifications as defined below:

1. Freeways (NHS) – Interstate and Non-Interstate

(Examples: I-5, I-84 (Interstate), and Oregon Route 217, US Route 26 from Interstate 405 west to Oregon Route 6 (Non-Interstate))

- Freeways are multi-lane highways that provide for the most efficient and safe high speed and high volume traffic movement.
- Interstate Freeways are subject to federal interstate standards as established by the Federal Highway Administration.
- Freeways are subject to ODOT's Interchange Policy.
- ODOT owns the access rights and direct access is not allowed. Users may enter or exit the roadway only at interchanges.
  - Preference is given to through traffic.
  - Driveways are not allowed.
- Traffic signals are not allowed.
- Parking is prohibited.
- Opposing travel lanes are separated by a wide median or a physical barrier.
- Grade separated crossings that do not connect to the freeway are encouraged to meet local transportation needs and to enhance bicycle and pedestrian travel.
- The primary function is to provide connections and links to major cities, regions of the state, and other states.

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. Rural Other

- Statewide Rural Highways provide for high speed, continuous flow and through traffic movement.
- Direct access to the abutting property is a minor objective.
- The function of the highway is consistent with purchasing access rights. As the opportunity arises, access rights should be purchased. Preference is to purchase access rights in full.
- The primary function of these highways is to provide connections to larger urban areas, ports and major recreation areas of the state not served by Freeways or Expressways.

c. Urban Expressways (Not inconsistent with, but supplemental to the criteria listed for Statewide Rural Expressways.)

- Traffic signals are discouraged. Where signals are allowed, their impact on through traffic must be minimized by ensuring that efficient progression of traffic is achieved.
- Median treatments are considered in accordance with criteria in Action 3B.3.

d. Urban Other (Not inconsistent with, but supplemental to the criteria listed for Statewide Rural Other.)

- Statewide Urban Highways provide high to moderate speed operations with limited interruptions in traffic flow.

e. Urban Business Areas (UBA) (See Policy 1B.)

- UBAs must be designated in a corridor plan and/or local transportation system plan and agreed upon by ODOT and the local government.
- Direct property access is less limited than on Statewide Urban Highways.
- Purchase of access control may be of lesser importance and access to adjacent land use is a higher priority.
- Redevelopment and in-fill development are encouraged.
- The needs of local auto, pedestrian, bicycle and transit movements to the area are balanced with the through movement of traffic.

f. Special Transportation Areas (STA) (See Policy 1B.)

- STAs must be designated in a corridor plan and/or local transportation system plan and agreed upon in writing by ODOT and the local government.
- STAs apply to a highway segment.
- Direct street connections and shared on-street parking are encouraged.
- Direct property access is limited.
- Purchase of access control may be of lesser importance and access to adjacent land use for all modes is a higher priority.
- Redevelopment and in-fill development are encouraged.
- Local auto, pedestrian, bicycle and transit movements to the area are generally given more importance than the through movement of traffic.

3. Regional Highways

(Examples: Oregon Route 99E, Oregon Route 138, Oregon Route 31, and Oregon Route 207)

a. Rural Expressways (Not inconsistent with, but supplemental to the criteria listed for Statewide Rural Expressways.)

- The primary function of these highways is to provide connections and links to regions within the state, and between small urbanized areas and larger population centers.

b. Rural Other

- Regional Rural Highways provide for efficient and safe medium to high speed and medium to high volume traffic movements.
- These highways serve as routes passing through areas which have moderate dependence on the highway to serve land access.
- The function of the highway supports selected acquisition of access rights. Purchase of access rights should be considered where beneficial such as, but not limited to, ensuring safe and efficient operation between connecting highways in interchange areas, protecting resource lands, preserving highway capacity on land adjacent to an urban growth boundary, or ensuring safety on segments with sharp curves, steep grades or restricted sight distance, or those with a history of accidents.
- The primary function of these highways is to provide connections and links to regions within the state, and between small urbanized areas and larger population centers through connections and links to Freeways, Expressways, or Statewide Highways.

c. Urban Expressways (Not inconsistent with, but supplemental to, the criteria listed for Regional Rural Expressways.)

- Where traffic signals are allowed, their impact on through traffic must be minimized by ensuring that efficient progression of traffic is achieved.
- Median treatments are considered in accordance with criteria in Action 3B.3.

d. Urban Other (Not inconsistent with, but supplemental to, the criteria listed for Regional Rural Other.)

- The function of the highway is consistent with selected acquisition of access rights. Purchase of access rights should be considered where beneficial such as, but not limited to, ensuring safe and efficient operation between connecting highways in interchange areas, protecting resource lands, or ensuring safety on segments with sharp curves, steep grades or restricted sight distance, or those with a history of accidents.

e. Urban Business Areas (UBA) (See Policy 1B. Same criteria as Statewide Urban Business Areas.)

f. Special Transportation Areas) (STA) (Same criteria as Statewide Special Transportation Areas.)

4. District Highways and Local Interest Roads

(Examples: Oregon Route 10, Oregon Route 34, Oregon Route 238, Oregon Route 27 and Oregon Route 86)

a. Rural Expressways (Not inconsistent with, but supplemental to, the criteria listed for Statewide Rural Expressways.)

- The primary function of these highways is to provide connections and links to intercity, inter-community and intracity movements.

b. Rural Other

- These highways provide for safe and efficient medium speed and medium to high volume traffic movements.
- Traffic movement demands and access needs are more evenly balanced, with reasonable access to abutting property.
- The function of the highway supports acquisition of access rights in limited circumstances, recognizing the balanced demands of traffic movement and access needs. Purchase of access rights should be considered where beneficial such as, but not limited to, ensuring safe and efficient operation between connecting highways in interchange areas, protecting resource lands, preserving highway capacity on land adjacent to an urban growth boundary, or ensuring safety on segments with sharp curves, steep grades or restricted sight distance, or those with a history of accidents.
- The primary function of these highways is to provide connections and links to intercity, inter-community and intracity movements.

c. Urban Expressways (Not inconsistent with, but supplemental to, the criteria listed for District Rural Expressways.)

- Where traffic signals are allowed, their impact on through traffic must be minimized by ensuring that efficient progression of traffic is achieved.
- Median treatments are considered in accordance with criteria in Action 3B.3.

d. Urban Other (Not inconsistent with, but supplemental to, the criteria listed for District Rural Other.)

- The function of the highway is consistent with acquisition of access rights in limited circumstances, recognizing the balanced demands of traffic movement and access needs. Purchase of access rights should be considered where beneficial such as, but not limited to, ensuring safe and efficient operation between connecting highways in interchange areas, protecting resource lands, or ensuring safety on segments with sharp curves, steep grades or restricted sight distance, or those with a history of accidents.

e. Urban Business Areas (UBA) (See Policy 1B. Same criteria as Statewide Urban Business Areas.)

f. Special Transportation Areas (STA) (Same criteria as Statewide Special Transportation Areas.)

Action 3A.2

Establish spacing standards on state highways based on highway classification, type of area and speed. Tables 16, 17, 18, and 19 in Appendix C show the access spacing standards for the access management classifications listed in Action 3A.1.

- These standards shall be applied to the development of all ODOT highway construction, reconstruction or modernization projects, approach road and private road crossing permits, as well as all planning processes involving state

highways, including corridor studies, refinement plans, state and local transportation system plans and local comprehensive plans.

- These standards do not retroactively apply to legal approach roads or private road crossings in effect prior to adoption of this Oregon Highway Plan, except or until any redevelopment, change of use, or highway construction, reconstruction or modernization project affecting these legal approach roads or private road crossings occurs. At that time the goal is to meet the appropriate spacing standards, if possible, but at the very least to improve current conditions by moving in the direction of the spacing standards.
- When in-fill development occurs, the goal is to meet the appropriate spacing standards. In some cases this may not be possible, and at the very least the goal is to improve the current conditions by moving in the direction of the spacing standards. Thus, in-fill development should not worsen current approach road spacing. This may involve such options as joint access.
- In some cases access will be allowed to a property at less than the designated spacing standards, but only where a right of access exists, that property does not have reasonable access, and the designated spacing cannot be accomplished. If possible, other options should be considered such as joint access.
- If a property becomes landlocked (no reasonable access exists) because an approach road cannot be safely constructed and operated, and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. (Note: If a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT does not have responsibility for purchasing the property.)

Action 3A.3

Manage the location and spacing of traffic signals on state highways to ensure the safe and efficient movement of people and goods. Safe and efficient traffic signal timing depends on optimal intersection spacing. It is difficult to predetermine where such locations should exist, although half-mile intersection spacing for Statewide and Regional Highways is desirable. The following are critical elements in planning an interconnected traffic signal system:

- Signalized intersection capacity and operation analysis must take into account lane balance of existing and future (20-year projection) traffic volumes.
- The progression bandwidth must equal or exceed that required to accommodate the through volume on the state highway at the most critical intersection during all peak periods. The most critical intersection is defined as the intersection carrying the highest through volume per lane on the state highway. The State Traffic Engineer or designated representative shall approve signal progression parameters and analysis methodology.
- All signals must provide for adequate vehicle storage that does not encroach on the operation of adjacent lanes and signalized intersections.

- The common cycle length for the interconnected traffic signal system must provide for adequate pedestrian crossing times.
- The speed of the progressed traffic band should be no more than five miles per hour below the existing posted speed for both directions of travel during the off-peak periods, nor more than 10 miles per hour below the existing posted speed during peak periods. Approval of the State Traffic Engineer or designated representative is required where speeds deviate more than the above.

Action 3A.4

In general, traffic signals should not be installed on rural high-speed highways because they are inconsistent with the function of these highways to provide for safe and efficient high-speed travel. Although a rural traffic signal may be warranted in a particular instance to control traffic due to existing conditions, ODOT and local governments must avoid creating conditions that would make future traffic signal installations necessary in rural areas. Amendments to local comprehensive plans or land use ordinances that would require a traffic signal on rural highways are inconsistent with the function of the highway.[7]

Action 3A.5

Some private approach roads may have characteristics similar to public road approaches. Such similarities may allow a private approach road to operate as a public road approach. For a private approach road to be considered for a signal, it must have the following attributes:

- High traffic volumes, typically 200 vehicles or more during the peak period;
- Design geometry consistent with that of public road intersections including curbs, appropriate lane widths, pavement markings and vertical alignment; and
- An adequate approach throat length to assure that the movement of entering vehicles is not impeded by on-site queuing.

Signalization of a private approach road shall be dependent upon meeting signal spacing criteria considering the likelihood that nearby locations may be signalized in the future as development occurs in the area. Signal spacing concerns may require that a route be established to a nearby public street that can be signalized at its intersection with the state highway, or a shared private driveway may be required to serve the needs of multiple properties. If a private approach road is considered, it should also be required to connect to the existing or planned local street system and allow use by surrounding properties.

[7] Typically, based on guidance provided in the *Manual on Uniform Traffic Control Devices*, rural traffic signals are not warranted. Rural traffic signals are unexpected by the motorist who is unfamiliar with the location, requiring longer than normal time for drivers to react. Rural highway speeds are typically very high, requiring longer stopping sight distance.

Policy 3B: Medians

It is the policy of the State of Oregon to plan for and manage the placement of medians and the location of median openings on state highways to enhance the efficiency and safety of the highways, and influence and support land use development patterns that are consistent with approved transportation system plans.

Action 3B.1

Plan for a level of median control for the safe and efficient operation of state highways, consistent with the classification of the highway. Corridor plans and transportation system plans shall identify planned median treatments.

Action 3B.2

Design and construct nontraversible medians for:

- All new multi-lane highways constructed on completely new alignment; and
- Modernization of all rural, multi-lane Expressways, including Statewide (NHS), Regional and District.

Action 3B.3

Consider construction of nontraversible medians for:

- Modernization of all urban, multi-lane Statewide (NHS) Highways;
- Modernization of all urban, multi-lane Regional Highways where posted speeds are 45 mph (70 km/h) or greater;
- Multi-lane highways undergoing 3-R or 4-R improvements; and
- Highways not undergoing modernization where a median could improve safety.

In the four instances listed above, consideration shall occur when any of the following criteria are present:

- Forecasted average daily traffic is anticipated to be 28,000 vehicles per day during the 20-year planning period;
- The annual accident rate is greater than the statewide annual average accident rate for similar roadways;
- Pedestrians are unable to safely cross the highway, as demonstrated by an accident rate that is greater than the statewide annual average accident rate for similar roadways; and/or
- Topography and horizontal or vertical roadway alignment result in inadequate left-turn intersection sight distance and it is impractical to relocate or reconstruct the connecting approach road or impractical to reconstruct the highway in order to provide adequate sight distance.

Reasons for not using nontraversible medians when any of these criteria are present must be documented and reviewed and approved by the Region Manager.

Action 3B.4

Full and directional median openings shall be:

- Restricted to locations that conform to ODOT's spacing standards as shown in Appendix C; and
- Designed with a left-turn bay and deceleration lane.

Full median openings will be given preference to a public road connection which is part of a continuous and comprehensive public road network.

Action 3B.5

Continuous two-way left-turn lanes are primarily used on urban highways. On urban Expressways, continuous two-way left-turn lanes are minimal; they will be approved in the future only as part of staged construction of nontraversible medians, and a strategy/plan to replace existing continuous two-way left-turn lanes with nontraversible medians will be developed.

Action 3B.6

Except on freeways, consider using raised median pedestrian refuge islands and mid-block crosswalks in urban areas that are pedestrian and/or transit oriented.

Policy 3C: Interchange Access Management Areas

It is the policy of the State of Oregon to plan for and manage grade-separated interchange areas to ensure safe and efficient operation between connecting roadways.

Action 3C.1

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.

Action 3C.2

To improve an existing interchange or construct a new interchange:

- The interchange access management spacing standards are shown in Tables 16-19 in Appendix C;
- These standards do not retroactively apply to interchanges existing prior to adoption of this Oregon Highway Plan, except or until any redevelopment, change of use, or highway construction, reconstruction or modernization project affecting these existing interchanges occurs. It is the goal at that time to meet the appropriate spacing standards, if possible, but, at the very least, to improve the current conditions by moving in the direction of the spacing standards;

- Necessary supporting improvements, such as road networks, channelization, medians and access control in the interchange management area must be identified in the local comprehensive plan and committed with an identified funding source, or must be in place;
- Access to cross streets shall be consistent with established standards for a distance on either side of the ramp connections so as to reduce conflicts and manage ramp operations. The Interchange Access Management Spacing Standards supersede the Access Management Classification and Spacing Standards (Policy 3A), unless the latter distance standards are greater (see Appendix C);
- Where possible, interchanges on Freeways and Expressways shall connect to state highways, major or minor arterials;
- Interchanges on Statewide, Regional or District Highways may connect to state highways, major or minor arterials, other county or city roads, or private roads, as appropriate;
- The design of urban interchanges must consider the need for transit and park-and-ride facilities, along with the interchange's effect on pedestrian and bicycle traffic; and
- When possible, access control shall be purchased on crossroads for a minimum distance of 1320 feet (400 meters) from a ramp intersection or the end of a free flow ramp terminal merge lane taper.

Action 3C.3

Establish criteria for when deviations to the interchange access management spacing standards may be considered. The kinds of considerations likely to be included are:

- Location of existing parallel roadways (e.g., Highways 99W or 99E which parallel Interstate 5);
- Use of traffic controls;
- Potential queuing, increased delays and safety impacts; and
- Possible use of nontraversible medians for right-in/right-out movements.

Action 3C.4

When new approach roads or intersections are planned or constructed near existing interchanges, property is redeveloped or there is a change of use, wherever possible, the following access spacing and operation standards should be applied within the Interchange Access Management Area (measurements are from ramp intersection or the end of a free flow ramp terminal merge lane taper).

- Approach roads on the crossroads at no closer than 750 feet (230 meters), and between 750 feet (230 meters) and 1320 feet (400 meters), shall be limited to right-in/right-out. This may require construction of a nontraversible median or a median barrier.

- The first full intersection on a crossroad should be no closer than 1320 feet (400 meters).

Action 3C.5

As opportunities arise, rights of access shall be purchased on crossroads around existing interchanges. Whenever possible, this protective buying should be for a distance of 1320 feet (400 meters) on the crossroads.

Action 3C.6

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

Action 3C.7

Use grade-separated crossings without connecting ramps to provide crossing corridors that relieve traffic crossing demands through interchanges.

Policy 3D: Deviations

It is the policy of the State of Oregon to manage requests for deviations from adopted access management standards and policies through an application process to ensure statewide consistency.

Action 3D.1

Implement a procedure by which an applicant may request consideration of a deviation from access management standards and policies. The Access Management Spacing Standard Minor Deviation Limits are shown in Tables 20, 21 and 22 in Appendix C.

Action 3D.2

Establish Region Access Management Engineers to review and act on requests for deviations from access management standards and policies.

Action 3D.3

Establish the use of a technical group to assist the Region Access Management Engineer in an advisory capacity in the review of requests for major deviations from access management standards and policies. Members of the technical group shall have expertise in access management policies, roadway design standards and traffic engineering, and may include technical persons who are not ODOT employees.

Action 3D.4

Establish the criteria which the Region Access Management Engineers shall consider when reviewing requests for deviations from access management standards and policies.

Action 3D.5

Establish criteria for when minor deviations may be allowed. The kinds of considerations likely to be included are:

- Potential queuing, increased delays and safety impacts;
- Pedestrian and bicycle circulation;
- Use of traffic controls;
- Requirements for local road systems;
- Improvement of connectivity to adjacent properties or local road system;
- Plans that address an entire roadway segment (e.g., a transportation system plan);
- Potential need for channelization, such as for turn lanes; and
- Possible use of nontraversible medians for right-in/right-out movements.

Any requests for spacing at less than the minimum deviation limits shall be considered a major deviation from the spacing standards except as stated in Note ① in the notes on Tables 20, 21 and 22 in Appendix C.

Policy 3E: Appeals

It is the policy of the State of Oregon to manage appeals of both denied requests for approach roads and denied requests for deviations from adopted access management standards and policies through an appeals process to ensure statewide consistency.

Action 3E.1

Implement an appeals process by which an applicant may request further consideration of a deviation request denied by a Region Access Management Engineer through ODOT's Administrative Hearings Procedure.

Action 3E.2

Implement an appeals process by which an applicant may request consideration of a denied approach road request (not requiring a deviation).

- Establish Region Review committees to include members with expertise in access management policies, roadway design standards, right-of-way and traffic engineering to make a recommendation to the Region Manager.
- Establish criteria which the Region Review committees shall consider when reviewing denied approach road requests.

- Implement a process where the Region Manager will review and act on the Region Review committee's recommendation.

Action 3E.3

Implement an appeals process by which an applicant may request further consideration of an approach road request denied by the Region Manager through ODOT's Administrative Hearings Procedure.

Goal 4: Travel Alternatives

To optimize the overall efficiency and utility of the state highway system through the use of alternative modes and travel demand management strategies.

Overview

The state highway system serves different modes of transportation, including auto, bus, truck, bicycle, and pedestrian, as well as different travel purposes including freight movement and person trips. Maintaining and improving the performance of the highway system requires that it function as part of a well-coordinated and integrated multimodal system. Intermodal connections for people and goods must be efficient, and appropriate alternative mode choices must be available to allow users to take advantage of the efficiencies inherent in each mode.

Alternative passenger modes, transportation demand management, and other programs can help reduce the single-occupant vehicle demand on the highway system, thus maintaining performance while increasing the person-carrying capacity of the system. Alternative freight modes and related strategies which strive for more efficient commercial vehicle operation will help maintain the overall reliability and performance of the goods movement networks. All of these strategies can contribute to meeting the objectives of Statewide Planning Goal 12, which requires transportation plans to "avoid principal reliance upon any one mode of transportation" and "conserve energy."

■ Freight

Background

An efficient, safe, and environmentally sound system of moving goods through the state is an important economic development goal named in the Oregon Transportation Plan. The Plan also stresses the importance of promoting a balanced freight transportation system that takes advantage of the inherent efficiencies of each mode. For the highway system, this means both improving the efficiency with which motor carriers can operate and promoting alternative (non-highway) modes, where appropriate.

Improving and maintaining the efficiency of highway operations will require balancing the needs of goods movement with the needs of other users of the highway system. For example, some state highways that are important goods movement corridors also serve as communities' main streets.

Improving highway operational efficiency also involves working for more standardization in the areas of commercial vehicle regulations and Intelligent Transportation System technologies. Improving efficiency for goods movement will likely entail public and private investments in infrastructure, especially in an expanding economy. Oregon's Intermodal Management System is a key part of tracking the need for improvements to intermodal connections.

However, public policies or projects often have limited impact on outcomes such as mode split in freight transportation. Freight transportation patterns are a product of industry trends, the

requirements of shippers, the quality, range of services, and rates provided by freight carriers, and other factors outside the public sector realm. The State should not attempt to subsidize one mode over another or otherwise interfere with the market for freight transportation, but should consider making investments in non-highway freight network improvements where doing so will benefit the efficiency of the state highway system.

There are sometimes specific infrastructure problems, bottlenecks, or regulations that pose a barrier to efficiency or exacerbate trends that would be detrimental to the highway system. For example, it is important to maintain a viable deep draft and shallow draft water freight system on the Columbia River to prevent increased congestion on major highway freight routes. Shortages of rail equipment and lack of access to capital may pose a barrier to the increased use of shortline rail for bulk commodity movements. In these cases, public policies and actions should aim to mitigate physical and institutional obstacles and promote safety while avoiding undue meddling in the marketplace. The following policy and actions pertaining to freight transportation and the highway system were developed to be consistent with this philosophy.

Policy 4A: Efficiency of Freight Movement

It is the policy of the State of Oregon to maintain and improve the efficiency of freight movement on the state highway system and access to intermodal connections. The State shall seek to balance the needs of long distance and through freight movements with local transportation needs on highway facilities in both urban areas and rural communities.

Action 4A.1

Identify roadway obstacles and barriers to efficient truck movements on state highways. These include bridges with load limits and geometric constraints that prohibit the travel of legal size vehicles. Set up a process through the Statewide Transportation Improvement Program to systematically improve the highway segments that hinder or prevent freight movements.

Action 4A.2

Encourage uniform commercial vehicle regulations at the regional and national levels where the safety and efficiency of Oregon's transportation system will benefit. These might include regulation regarding vehicle design.

Action 4A.3

Support further development, standardization, and/or compatibility of Intelligent Transportation System Commercial Vehicle Operation technology in the western United States.

Action 4A.4

Maintain and improve roadway facilities serving intermodal freight facilities that are part of Oregon's Intermodal Management System, and support development of new intermodal roadway facilities where they are part of a local or regional transportation system plan.

Action 4A.5

Support the establishment of stable funding or financing sources for transportation systems that will benefit the efficiency of freight movement on the highway system. These transportation systems include non-highway freight modes and intermodal connectors.

Action 4A.6

Work with the private sector (e.g., carriers, shippers), local governments, metropolitan planning organizations, port authorities and others to improve planning coordination between public investments in highways and other investments in the freight movement infrastructure.

Action 4A.7

Support the maintenance and improvement of non-highway infrastructure that provides alternative freight-moving capacity in critical corridors where doing so will maintain or improve the overall performance of the highway system.

■ Alternative Passenger Services

Background

Alternative passenger transportation services can help relieve highway traffic congestion and reduce the rate of vehicle miles of travel per capita. They can also delay, reduce, or eliminate the need for highway capacity expansion. For the purpose of this discussion, alternative passenger transportation includes both publicly and privately operated fixed- and demand-responsive bus services, light rail transit, and intercity bus, rail, and air services. Bicycle, pedestrian, and high-occupancy vehicle services are addressed to a limited extent by these alternative passenger service policies, but are addressed more fully in conjunction with the transportation demand management policies described later in this section.

Two goals within the Oregon Transportation Plan emphasize the role of alternative passenger transportation. Goal 1 seeks provision of a balanced or multimodal transportation system as well as one that is efficient, accessible, and connected to several modes. Goal 2 looks to alternative passenger transportation to help achieve state land use goals and to provide mobility to residents of urban and rural areas through a variety of alternative services, both public and private. The State recognizes that alternative passenger transportation systems that are coordinated with land use actions can have positive benefits for the state highway system.

Three adopted state modal plans emphasize the role of alternative passenger transportation. The Oregon Public Transportation Plan (1997), the Oregon Rail Passenger Policy and Plan (1992), and the Oregon Bicycle and Pedestrian Plan (1995) further advance state policy supporting the use of alternative modes and services to relieve traffic congestion and provide mobility.

The Oregon Highway Plan emphasizes the use of alternative passenger transportation where the volume of traffic and the type of highway use indicates the potential for successful implementation of alternative passenger modes. Alternative mode passenger services can benefit the highway and community through a reduction in vehicle miles traveled, air quality, increased mobility, relief from congestion and/or delay, as well as reduction in the need for highway capacity expansion. The

Highway Plan further encourages the development of alternative passenger transportation services in concert with other elements of the local transportation network, and supports the development of partnerships with the private sector and local agencies to deliver these services where they will be most effective.

Policy 4B: Alternative Passenger Modes

It is the policy of the State of Oregon to advance and support alternative passenger transportation systems where travel demand, land use, and other factors indicate the potential for successful and effective development of alternative passenger modes.

Action 4B.1
Promote alternative passenger transportation services in commute highway corridors to help maintain or meet established performance standards.

Action 4B.2
Promote alternative passenger transportation services located off the highway system that help to preserve the performance and function of the state highway system.

Action 4B.3
Encourage the development of alternative passenger services and systems as part of broader corridor strategies, and coordinate them with necessary supportive local actions. Such actions include developing applicable land use regulations, appropriate types of passenger services, adequate collector-distributor roadway systems, and other local transportation system elements.

Action 4B.4
Encourage the use of alternative passenger modes to reduce local trips on the state highway system where limited highway facilities accommodate large numbers of both intercity and local trips.

Action 4B.5
Support the further development of alternative intercity passenger services in congested transportation corridors through additional peak hour service, use of excess freight rail system capacity, and the provision of support facilities and services which help connect passengers to their destinations (e.g., intercity passenger rail, air, and/or shuttle or charter bus operations coordinated with parking areas).

Action 4B.6
In recreational corridors, promote shuttles and/or charter passenger transportation services, coordinated with off-site parking areas, to lessen congestion during peak periods for travel to significant tourist/visitor destination areas.

■ High-Occupancy Vehicle (HOV) Facilities

Background

High-Occupancy Vehicle (HOV) facilities are one response to increasing traffic congestion, declining mobility levels, air quality and environmental concerns and limited resources. While differing in details of design and operation, HOV facilities are generally restricted to use by buses, vanpools and carpools. HOV facilities are intended to help maximize the person–carrying capacity of a roadway or corridor by providing the high–occupancy vehicles such benefits as shorter travel times and improved travel time reliability. Typically, HOV facilities are most appropriate in large metropolitan planning organization areas and their corresponding fringe areas.

The High-Occupancy/Toll (HOT) lane is a variation of the HOV concept which allows vehicles ineligible by their occupancy number to use the HOV lane with payment of a toll. If limited to commercial vehicles, the practice is known as "commercial vehicle buy-in" and has the potential to offer time savings benefits to the small truck carriers of high-value goods. The HOT approach could achieve capacity improvements, provide additional financing tools, and solve the problem of under-use of HOV lanes. However, large scale implementation of HOT lanes will require a practical method of automatic vehicle occupant counting and a way to tell when the required toll has been paid.

A number of factors will affect whether HOV treatment is an appropriate or effective option for a given roadway or corridor. The first factor is the level of demand for the roadway or corridor. Recent research suggests that HOV facilities are appropriate where delays are major and the HOV vehicle/total vehicle ratio is about 5 to 10 percentage points below the HOV lane/total lane ratio. Outside this range, the facility will either be too crowded to offer real benefit to HOV vehicles or will suffer from "empty lane syndrome," irritating the single occupant vehicle motorists in adjacent congested lanes and resulting in inefficient expenditure of funds.

The extent and completeness of the HOV system will also have an impact on whether any individual HOV facility will function effectively. In addition to the roadway mainline, access ramps, toll plazas, bridges, tunnels and connectors should ultimately be brought into the system to obtain the maximum utility. This system planning approach does not preclude incremental construction of individual HOV facilities, but the individual elements should be part of a well thought-out plan.

Consideration should also be given to the trip ends, or origins and destinations. Park-and-ride facilities on the home end and preferential HOV parking at the work end of a trip complement HOV facilities and increase their effectiveness.

Finally, surrounding land use patterns and transit facilities should also be taken into account. Although HOV and rail in the same corridor are not mutually exclusive, HOV is generally most appropriate in corridors where the existing and planned land uses will not support rail transit. However, HOV may be a suitable forerunner to rail in corridors where long term plans specify a level of development that would support rail.

Policy 4C: High-Occupancy Vehicle (HOV) Facilities

It is the policy of the State of Oregon to utilize HOV facilities to improve the efficiency of the highway system in locations where travel demand, land use, transit, and other factors are

favorable to their effectiveness. A systems planning approach shall be taken in which individual HOV facilities complement one another and the other elements of the multimodal transportation system.

Action 4C.1
Promote the development of HOV facilities in corridors where:

- They are supported in local or regional transportation system plans;
- Current or projected demand will allow for efficient operations; and
- HOV facilities will function as part of the overall transportation system.

Action 4C.2
Support conversion of existing mixed-flow lanes to HOV lanes where the proposed HOV facility would close specific gaps in the HOV network, such as bridges, toll plazas, tunnels, etc., or where increased number of people in vehicles could offset the need for additional highway capacity.

Action 4C.3
Promote the development of support facilities for HOV lanes, such as park-and-ride lots and preferential HOV parking, to provide the complementary elements needed in a comprehensive HOV system.

Action 4C.4
Support the development of High-Occupancy/Toll (HOT) lanes when and where doing so supports the objectives of, and is consistent with, state, local and regional plans.

Action 4C.5
Support light-duty commercial vehicle buy-in to HOV lanes only with the levy of equitable fees or tolls.

■ Transportation Demand Management

Background

Transportation demand management is a broad family of techniques that help extend the use of the highway system by reducing peak period single occupant vehicle traffic, moving traffic demand to time periods other than the peak period or improving the flow of traffic. Transportation demand management includes but is not limited to:

- Rideshare programs and facilities which foster the use of carpools, vanpools, and express bus or light rail services;
- Incentives that encourage the use of transportation alternatives for the daily commute, such as discounted transit passes and employee transportation allowances;

- Market-based mechanisms designed to influence shift of mode or time of travel, such as parking management or pricing strategies to favor high-occupancy vehicles or congestion-based pricing of transportation facilities and services;
- Other demand management techniques intended to "flatten" peak period demand such as truck traffic restrictions, compressed work hours, staggered work hours, and flex-time; and
- Operational techniques designed to improve the flow of vehicular traffic through modifying demand or optimizing available capacity, such as ramp metering, reversible lanes, traffic signal coordination, traveler information systems, one-way streets, high-occupancy vehicle/bus bypass lanes and telecommuting programs.

The Oregon Transportation Plan and the Oregon Public Transportation Plan support the use of demand management programs as a way to effectively manage existing infrastructure and services and to minimize transportation-related energy consumption. ODOT, in cooperation with local agencies and private employers, has created a toolbox of demand management strategies that can be used in corridor and local transportation system planning. This toolbox is described in ODOT's *Transportation System Planning Guidelines*.

Policy 4D focuses on demand management techniques which are appropriate in both rural and urban areas to help decrease congestion, energy consumption and vehicle miles traveled and maintain air quality. These programs are most successful where parking at the destination is costly or where a variety of amenities are available.

Policy 4E highlights one of the most commonly used and cost-effective transportation demand management measures—park-and-ride facilities. Park-and-ride facilities provide a common location for individuals to transfer from a low- to high-occupancy travel mode. Park-and-ride lots may be either exclusive or shared-use facilities. Exclusive lots are planned, designed, constructed and operated to specifically serve as park-and-ride facilities. Shared-use lots serve multiple functions and may be located, for example, at existing shopping centers, schools or churches. In many locations, commuters create informal park-and-ride areas along the side of a road or at an existing parking lot so that they may share rides. Informal and formal park-and-ride facilities exist throughout the state and are common at interchanges along Interstate 5.

The Oregon Constitution strictly limits the use of state highway trust funds to facilities and services that directly benefit the highway system. Therefore, park-and-ride facilities funded through this source must support the motoring public as it travels on the state highway and road system and must be either within the highway right-of-way or adjacent to it. The location of park-and-ride facilities funded from federal and other sources is more flexible.

Policy 4D: Transportation Demand Management

It is the policy of the State of Oregon to support the efficient use of the state transportation system through investment in transportation demand management strategies.

Action 4D.1

Establish and support demand management strategies that reduce peak period single occupant vehicle travel, move traffic demand out of the peak period, and/or improve the flow of traffic on the state highway system.

Action 4D.2
Investigate further the effectiveness, feasibility, and impacts of tolling and congestion-based pricing on congested highway corridors as a means of reducing peak period congestion and delaying or eliminating the need for highway capacity expansion.

Action 4D.3
Support existing transportation demand management/rideshare programs in Portland, Salem, Eugene, Corvallis, Medford, and Bend to reduce peak period congestion. Consider establishing new programs where congestion levels make it appropriate.

Policy 4E: Park-and-Ride Facilities

It is the policy of the State of Oregon to encourage the efficient use of the existing transportation system and to seek cost-effective expansion of the highway system's passenger capacity through development and use of park-and-ride facilities.

Action 4E.1
In coordination with local jurisdictions and based on an analysis of need and potential use, provide park-and-ride facilities at appropriate urban and rural locations adjacent to or within the highway right-of-way.

Action 4E.2
Acquire right-of-way for park-and-ride facilities during construction or expansion projects as appropriate. Consider acquisition and use of adjacent right-of-way for park-and-ride facilities at highway interchanges, consistent with ODOT access management policies and standards.

Action 4E.3
Establish partnerships with other jurisdictions and the private sector to site park-and-ride facilities.

Action 4E.4
Convert informal parking areas within highway rights-of-way to formal park-and-ride facilities where appropriate.

Action 4E.5
Use ODOT surplus property for park-and-ride facilities where appropriate.

Action 4E.6
Provide park-and-ride facilities located in urban areas that are safely accessible by pedestrians, bicyclists and transit users whenever feasible. Include secure bicycle parking in urban park-and-ride designs.

Goal 5: Environmental and Scenic Resources

To protect and enhance the natural and built environment throughout the process of constructing, operating, and maintaining the state highway system.

■ Environmental Resources

Background

Protecting and enhancing the natural and built environments is important to the State of Oregon. It is part of protecting Oregon's livability, preserving its scenic character, and maintaining a healthy environment for plants, wildlife, and people. ODOT constructs, operates, and maintains a state transportation network that traverses a number of habitat types and regional ecosystems. These include the wet forests of the Coastal Range, the mixed forest of the Klamath Mountains Province in southern Oregon, the Willamette Valley grasslands, the temperate and alpine forests of the Western and High Cascades, the High Desert of eastern Oregon, and the Columbia River Gorge. The natural and social diversity of the state contributes to its beauty and resources, but adds complexity to its maintenance.

A variety of federal, state, and local environmental laws and regulations direct ODOT's actions involving the natural and built environment in constructing, operating, and maintaining the highway system. The following are some of the most significant that ODOT must implement:

General Process Regulations

- National Environmental Policy Act 1969 as amended (NEPA)
- FHWA Environmental Impact and Related Procedures, 23 CFR 771
- Section 4(f) of the Department of Transportation Act of 1966
- Occupational Safety and Health Act

Biology, Water Resources, Wetlands

- Federal Endangered Species Act - Oregon Endangered Species Act
- Federal Clean Water Act and the Oregon Water Quality Standards
- Section 404 of the Clean Water Act and Corps Regulations and the Oregon Removal/Fill Law
- Location and Hydraulic Design of Encroachments on Floodplains

- Executive Memorandum on Landscaping Guidelines
- Wild and Scenic Rivers Acts (federal and state)

Cultural, Social, Land Use, Aesthetics

- National Historic Preservation Act of 1966
- Oregon Historic and Scenic Highways Act
- Oregon Land Use Program and Statewide Planning Goals
- Uniform Relocation Assistance and Real Property Acquisition Act
- Civil Rights Act (Title VI)
- Farmland Protection Policy Act
- Executive Order 12898 (Environmental Justice)

Noise, Air Quality, and Hazardous Material

- FHWA Noise Standard
- Federal Clean Air Act Amendments – State and Federal Conformity Rules
- Federal Comprehensive Environmental Response, Compensation and Liability Act
- Resource Conservation and Recovery Act

(Note: More specific information about these laws and regulations is included in Appendix F.)

ODOT makes significant efforts to comply with environmental laws and regulations, but wants to broaden responsibility for the effects of its activities. The Environmental Resources Policy was developed to protect more than that required by law.

Policy 5A: Environmental Resources

It is the policy of the State of Oregon that the design, construction, 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.

Action 5A.1

Implement best management practices to minimize the effects of construction, operations, and maintenance impacts to the human and natural environment.

- Attain and maintain water quality standards through implementation of best management practices, or other actions as needed, to minimize to the maximum extent practicable the effects of construction, operations and maintenance impacts to the human and natural environment.
- Seek and budget money for these purposes as available, especially through federal transportation funding.

Action 5A.2

Attain and maintain air quality standards in highway-related plans, programs, projects and maintenance activities, and ensure that transportation commitments in air quality plans are implemented.

- Consult with federal, state and local government agencies to implement air quality transportation conformity regulations of the Clean Air Act, and take the lead role in regional transportation conformity determinations in rural non-attainment areas.
- Take the lead role in the statewide coordination of the Congestion Mitigation and Air Quality (CMAQ) program.

Action 5A.3

Partner with state and federal agencies, local governments, tribal governments and resource organizations to identify sensitive habitat areas with a high value that are affected by ODOT facilities. Incorporate design features that will avoid or minimize and, when this is not possible, mitigate impacts to sensitive habitats with a high value on all construction and maintenance activities.

Action 5A.4

Design, construct and maintain all stream crossings with anadromous fish in accordance with applicable Oregon Department of Fish and Wildlife standards and criteria for stream-road crossings.

Action 5A.5

Re-vegetate all cleared areas on construction projects, using plants and species based on expected survival, sustainability and compatibility with the surrounding biological and cultural environment. In areas dominated by a native plant environment, give priority to use of native plants along roadsides.

Action 5A.6

Establish a credit/debit banking system for wetland mitigation and wildlife habitat enhancement. Provide advanced mitigation in high-priority areas where construction projects are known to be necessary in the future.

Action 5A.7

Establish an inventory system that identifies natural resources on unsold state lands that may be used for mitigation credit when damage to natural resources is unavoidable.

Action 5A.8

Establish resource management plans and guidelines that describe ODOT's maintenance actions for roads in natural resource areas, and map resource locations.

Action 5A.9

Support and implement integrated pest and vegetation management planning.

Action 5A.10

Identify and implement water- and energy-efficient construction and maintenance practices.

Action 5A.11

Participate in watershed and coordinating councils for planning and on-the-ground actions to enhance fish and wildlife habitat and improve migration.

Action 5A.12

Prevent hazardous substances encountered as a result of construction and maintenance activities from entering the human and natural environment.

Action 5A.13

Design highways with criteria that meet Federal Highway Administration Traffic Noise Standards.

Action 5A.14

Increase ODOT employees' knowledge of the effects of planning, design, development, construction and maintenance activities on environmental and scenic resources and of the legal requirements that govern these resources.

Action 5A.15

Promote and reward the integration of innovative environmental principles in planning, design, development, construction and maintenance activities to encourage ODOT employees to value environmental stewardship.

Action 5A.16

Partner with tribal governments, special districts, local governments, non-profit groups and the private sector to assist in implementing new design standards and environmentally sensitive technologies.

Action 5A.17

Identify environmentally sensitive areas and areas with significant scenic value in corridor plans as appropriate.

■ Scenic Resources

Background

The introduction to the Oregon Historic and Scenic Highway Program developed in 1985 is still true: "Oregonians have long recognized that preservation of the state's historic and scenic resources play a vital role in the enhancement of the state's economic base, and in maintaining its citizens' pride in and respect for its historic and natural resources. Oregon's immense wealth of history and diverse scenery provide unlimited recreation potential for residents and visitors alike . . ." Even early efforts to develop a state transportation system foresaw the importance of preserving the state's scenic and historic values. Construction of the Columbia River Highway in the Columbia Gorge in the 1910s "focused on the need to construct a scenic highway that would complement the beauty of the area."

Since then, a number of state and federal efforts have directed ODOT to preserve or protect historic and scenic features of the state highway system. For example, the 1987 Oregon Legislature declared that it is the state's policy to "preserve and restore the continuity and historic integrity of the remaining segments of the Historic Columbia River Highway." This highway is included in the Columbia River Gorge National Scenic Area, and the Historic Columbia River Highway Master Plan guides its management. Federal, state and local policies and regulations also recognize the need to balance protection of scenic resources with economic development.

The Scenic Resources Policy is intended to guide project planning, development, construction and maintenance for state highways in a consistent manner with regard to scenic resources and aesthetics. This policy applies to all state highways, not only designated Scenic Byways.

Scenic resources, as addressed in this policy, include the combination of structural, historic, cultural, and natural features within highway rights-of-way. Where appropriate, ODOT may coordinate with other agencies and property owners to address scenic resources that lie beyond the rights-of-way. In addition to views from the highway, views of the highway from other areas should be considered, particularly on designated Scenic Byways.

Policy 5B: Scenic Resources

It is the policy of the State of Oregon that scenic resources management is an integral part of the process of creating and maintaining the state highway system. The State of Oregon will use best management practices to protect and enhance scenic resources in all phases of highway project planning, development, construction, and maintenance.

Action 5B.1

Coordinate scenic and cultural resources management with appropriate federal, state and local agencies, tribal governments and special interest groups.

Action 5B.2

Coordinate with federal and state agencies, tribal governments, local governments and property owners to encourage aesthetic considerations outside the state highway rights-of-way, such as land use controls for signs, urban design, rural development, utilities and vegetation.

Action 5B.3

Design transportation facilities that consider visual quality with functional requirements, including safety and other transportation needs.

Action 5B.4

Use best management practices to minimize impacts to scenic resources, and preserve and/or enhance visual quality within the state highway right-of-way when improving and maintaining the state highway system.

Action 5B.5

Identify criteria, and measure and evaluate scenic resources management performance on a regular basis.

Action 5B.6

Develop an inventory system that identifies scenic resources on unsold state lands that may be used for visual mitigation on designated Oregon Scenic Byways and Wild and Scenic Rivers adjacent to state highways.

Action 5B.7

Inventory and map historic resources within the state highway right-of-way including archaeological sites, trails, stone walls, buildings, bridges and other significant antiquities.

Action 5B.8

In project designs, include aesthetic elements that enhance the quality of system improvements. Examples of aesthetic elements include plantings and attractive finishes on poured concrete structures.

SYSTEM ELEMENT

III. System Element

State Highway Needs Analysis

Oregon's ability to implement highway programs in the future is grounded in the current condition of state highways, projected future use of the system and projected transportation revenues. The "Description of the Highway System" section beginning on page 25 discusses future trends. This section summarizes current conditions, the highway needs analysis, and user costs.

Current Infrastructure Condition

ODOT evaluates the condition of the state highway system's pavements on an annual basis using a visual assessment scale ranging from "very poor" to "very good." According to ODOT's 1997 Pavement Condition Report, 77 percent of state highway mileage is in fair or better condition, down 1 percent from 1996.

There are 2,551 bridges on the state highway system, about 38 percent of the bridges in the state. About 95 percent of ODOT bridges are either steel or concrete, and 5 percent are timber. By the year 2000, 76 percent of Oregon's state-owned bridges will be more than 30 years old, and 23 percent will be more than 50 years old.

ODOT's goal is to maintain highway infrastructure in good condition. Not only does this provide the safest, smoothest ride for the public, but it is also the most cost-effective way to do business in the long run. This is because deterioration and repair costs accelerate rapidly over time. On average, for every dollar spent treating pavement in "fair or better" condition, four dollars are required to repair that same pavement once it has reached "poor" condition.

For this reason, ODOT has established a goal of having 90 percent of state highway pavements in "fair or better" condition. If this goal is to be reached by the year 2010, the average amount of paving completed each year will need to be increased from 550 miles (880 kilometers) to approximately 630 miles (1,010 kilometers). However, recent budgets have not even allowed ODOT to maintain pavement conditions.

Over the 20-year planning period of the Highway Plan, the state would need to perform 1,553 major bridge replacement and rehabilitation projects to keep state-owned bridges at current conditions. This includes work to repair seismic and load deficiencies; strengthen bridge footings; repair decks, railings, mechanical and electrical systems; and perform corrosion and painting projects.

As traffic volumes increase because of population increases, state highways reach capacity during all or part of the day, affecting safety, livability and economic activity. Based on projected traffic volumes, ODOT has identified highway segments that need added lanes, new alignments, bypasses and other major improvements. Some of these are needs and projects identified through corridor plans and/or regional and local transportation system plans. Without these projects, traffic speeds and movements, especially in metropolitan areas, will dramatically decrease over the next 20 years.

ODOT's goal is also to make the system efficient and safe. Replacing traffic signs and guardrails, interconnecting traffic signals and using intelligent transportation systems are means for achieving this goal. The needs analysis presents more details on these projects and associated costs.

20-Year Needs Summary

Funding needs for the state highway system reflect infrastructure condition and deterioration, traffic volumes and congestion, safety programs, management, operation and maintenance of the system, and related planning, administrative and support services as well as the policies in this plan.

Since the Highway Plan only addresses ODOT's highway programs, many important ODOT departments and programs are not covered by this needs analysis and revenue projection, including Driver and Motor Vehicle Services, Motor Carrier Transportation, Public Transit, Rail and Aeronautics.

The Highway Plan breaks ODOT's highway responsibility into eleven major programs and categories: modernization, preservation, bridge, maintenance, operations, safety, special programs, construction support, planning, administration and central services.

Policies in this plan may affect the funding needs of these programs. The Land Use/Transportation Policy and Off-System Improvements Policy suggest that funds are needed to assist local governments in making improvements in Special Transportation Areas and on off-system arterials and collectors that benefit movement on the state highway system. Funding for improvements in Special Transportation Areas need to be identified. The costs of off-system improvements should be offset by reductions in the modernization needs. The freight-related policies call for thicker pavements on designated freight routes and improvements to obstacles to freight movements. The needs analysis for preservation includes funding for thicker pavements. The modernization needs analysis includes geometric improvements to rights-of-way that impede truck movements. The Scenic Byways Policy calls for enhancing designated Scenic Byways. The needs analysis includes some funding for improvements, but relies on federal grants for the majority of the funding. No specific funding for Scenic Byways is included in the maintenance program needs. The Major Improvements Policy should reduce modernization needs since the policy requires examination and implementation of less costly alternatives before a major improvement is constructed.

Funding for the Intelligent Transportation System, Traffic Safety, and Rail and Highway Compatibility Policies are included in the needs analysis. Some funding to buy access is included under the safety program, but more is needed to fully implement the access management program. Most of the funding for the Travel Alternatives and Environmental Policies are also included in the analysis although additional funding, largely for maintenance, may be needed to carry out the Scenic Resources Policy. Funding for HOV lanes should come from the modernization and/or operations programs, but needs for HOV lanes have not been identified. The needs created by these policies means that the needs analysis underestimates the total highway needs.

The following list contains a general description of each program or category, some examples of typical projects and costs in that category and a summary of 20-year program needs. More detailed program definitions are presented in Appendix B.

For each highway program, needs estimates are presented for both average yearly and total 20-year investment. The costs were calculated in 1997 dollars. However, the effects of inflation must be considered in order to present a true picture of future buying power. Although inflation is currently quite low—2.3 percent in 1997—the State projects that it will increase gradually over the 20-year

period, reaching 3.9 percent by 2017. The Highway Plan uses the State of Oregon forecast which projects an average annual inflation rate of 3.3 percent for the 20-year period from 1998 to 2017.

Inflation means that buying power decreases over time unless more dollars are spent. For example, an annual inflation of 3.3 percent means that a program that spent $100,000 in 1997 would have to spend $103,300 in 1998 to achieve the same results. Inflation takes on particular importance over the 20-year Highway Plan period: a program that required $100,000 in 1997 would require $190,635 in 2017 with the average 3.3 percent inflation rate used in this plan. That is, if expenditures were not adjusted for inflation, a program would only have 52 percent of its original buying power after 20 years of 3.3 percent inflation.

The annual needs presented are averages. In some cases, programs require higher investments now and lower investments in the future. As discussed above, this is often the most cost-effective way to maintain highway infrastructure: Higher investments in the short term result in savings over the long term.

1. **Modernization.** The primary goal of modernization projects is to add capacity to the highway system in order to facilitate existing traffic and/or accommodate projected traffic growth. Modernization means capacity-adding projects including HOV lanes and off-system improvements. Projects in this category include major widening of lanes or bridges, and the addition of lanes, rest areas or entire facilities.

   The cost of modernization projects can vary greatly because there are several different types of projects in this category. However, recent modernization projects and their costs in 1997 dollars provide some examples:

   - Widening and reconstruction of 3 miles of Highway 62 north of Medford: $8 million.
   - Construction of 4.2 miles of new highway on Route 20 west of Corvallis: $20 million.
   - Construction of the Chenoweth interchange on Interstate 84 at The Dalles: $10 million.
   - Typical left turn lane: $150,000.
   - Typical passing lane (one direction): $650,000.

   Modernization needs were calculated by combining current traffic conditions with projections of future highway demand in a computer model. ODOT staff checked the results of the modeling for feasibility and added projects that had been identified in corridor plans and local transportation system plans. The result is an estimate of feasible needs on the state highway system that would allow the state to meet current design standards and minimum tolerable conditions.

2. **Preservation.** The preservation program includes rehabilitative work on roadways and improvements to rebuild or extend the service life of existing facilities. Preservation projects, such as paving, striping and reconstruction, add useful life to a road without increasing its capacity.

   Paving costs alone for a two-lane roadway are typically from $100,000 to $200,000 per mile. However, preservation costs can vary greatly depending on the type of treatment required, existing traffic flow and patterns, and the cost of other features (such as safety guardrails) that are included in the total project. The average cost of preservation projects in the 1998-2001

Statewide Transportation Improvement Program was $220,000 per mile. Recent preservation projects provide examples of this variation:

- Five miles on the northbound lanes of Interstate 5 near Albany: $388,000 per mile.
- 21 miles on the Ukiah-Hilgard Highway near the Union County line: $55,000 per mile.
- Three miles on the Oregon Coast Highway in Newport: $900,000 per mile.
- 11 miles on Highway 97 beginning at the California border: $159,000 per mile.

Preservation needs were estimated by determining the cost of getting 90 percent of state highway pavement to be in "fair or better" condition by the year 2010 and keeping it at this level until 2017. In 1997, statewide pavement condition was 77 percent fair or better. The Pavement Management System was used to determine the required investment. Current funding levels will lead to a decline in pavement conditions.

3. **Bridge.** Bridge projects include improvements or work needed to rebuild or extend the service life of existing bridge structures. These projects include bridge reconstruction or replacement, painting, seismic retrofitting to mitigate the effects of earthquakes, and overpass screening as well as major work on tunnels and large culverts.

   Bridge projects vary greatly in expense according to the type of work required, the location and the type of bridge being considered. Projects identified in the bridge needs analysis provide examples of costs:

   - Rehabilitation of the Willamette River Bridge on Interstate 205 in West Linn to allow it to perform vital functions after a moderate earthquake: $8 million.
   - Cleaning and repainting of the 3,500-foot long northbound Interstate Bridge over the Columbia River in Portland: $23 million. Costs are high due to the bridge's size and the environmental and lead-abatement requirements of the project.
   - Replacement of the Kahler Creek Bridge on the John Day Highway in Wheeler County: $400,000.
   - Replacement of rails on the Gales Creek Bridge in rural Washington County: $73,000.

   Bridge needs were calculated from existing inventories and inspection databases. Only the most critical third of the identified seismic retrofit needs were included in the needs analysis. At the current level of funding, bridges are declining in condition and value.

4. **Maintenance.** Maintenance covers many areas relating to the appearance and functionality of the highway system, including surface repairs, drainage work, minor structural work, maintenance of signs, signals, lighting, rest areas, and snow and ice removal.

   Maintenance needs were estimated on the basis of current expenditures by assuming that maintenance practices will continue as they are today. Facility conditions under current funding levels are declining. Any additional facilities or infrastructure will require additional funding.

5. **Operations.** Operations investments increase the efficiency of the highway system, leading to safer traffic operations and greater system reliability. Operations programs include interconnected traffic signal systems, new traffic signals, ramp meters, signs, other control

devices, Intelligent Transportation System features, transportation demand management, and rock fall and slide repairs.

Typical costs for the operations program include the following:

- Replacement of a typical traffic signal: $150,000.
- Replacement of an electronic variable message sign: $200,000.
- Replacement or rehabilitation of a typical sign on an Interstate Highway: $5,000.
- Placement of ramp meters: $100,000.

Operations needs were based on staff estimates of individual program costs.

6. **Safety.** The safety program focuses on investments which address priority hazardous highway locations and corridors in order to reduce the number of fatal and serious injury crashes. Projects funded through this program meet strict benefit/cost criteria. Safety projects may include access management features, guardrails, illumination, signing, rumble strips and railroad crossing improvements.

   Safety needs were based on current and projected costs for each activity.

7. **Special programs.** Special programs meet special needs or mandates. Included in this category are the Transportation and Growth Management program, ODOT's share of the Oregon Plan for Salmon and Watersheds, Scenic Byways, the Immediate Opportunity Fund and the Bicycle/Pedestrian Program.

   The salmon recovery program and the Immediate Opportunity Fund make up the bulk of the needs in this category. ODOT will retrofit culverts to improve fish passage as part of the salmon recovery program. While these projects may vary greatly in cost, an average culvert retrofit is expected to cost approximately $150,000.

   Special program needs were calculated from individual program estimates.

8. **Construction support.** This category includes project reconnaissance, staff training and personnel that directly support development of projects. The needs estimate was based on a percentage of construction and preservation related costs.

9. **Planning.** ODOT planning activities include policy development, modal and corridor planning, review of local comprehensive plans and transportation system plans, transportation analysis and accident data. Planning funds are also given to metropolitan planning organizations and local governments to support their planning activities.

   Planning needs were based on current funding and assume a decrease in corridor planning and an increase in state involvement with local plans.

10. **Administration.** Administration involves costs for management related to highway planning, operations, projects, preservation and maintenance.

11. **Central services assessment**. Central services include central administration, communications, finance, human resources/organizational development, information services and business services. The needs estimate was based on an assessment of 6 percent of program costs for these services.

Table 8: Summary of Feasible Needs Analysis

PROGRAM	Average annual investment assuming no inflation (millions)	20-year total investment assuming no inflation (millions)	Average annual investment assuming 3.3% inflation (millions)	20-year total investment assuming 3.3% inflation (millions)
Modernization	$339	$6,785	$471	$9,428
Preservation	$172	$3,436	$239	$4,774
Maintenance	$159	$3,180	$221	$4,419
Bridge	$133	$2,664	$185	$3,702
Safety	$35	$694	$48	$964
Operations	$29	$576	$40	$801
Special Programs	$29	$581	$40	$807
Construction Support	$67	$1,339	$93	$1,861
Planning	$30	$590	$41	$820
Administration	$8	$160	$11	$222
Central Services Assessment	$48	$950	$66	$1,321
TOTAL	$1,048	$20,955	$1,456	$29,119

User Costs

In addition to state costs for modernization, preservation and other highway needs, there are significant costs experienced by every user of the system. For example, roads in poor condition put extra wear and tear on private and commercial vehicles, meaning that the public spends more money on vehicle maintenance and replacement. Travel speed decreases as a result of both poorer roadway conditions and increased congestion. Declining travel speed results in increased costs to private and commercial travelers. As congestion reaches very high levels, or roadway condition deteriorates to very low levels, safety is also adversely affected, and the public bears additional costs in the form of accident-related losses. These kinds of costs are called "user costs," since they are paid "out of pocket" by highway users.

Currently, Oregon highway users incur an estimated $16 billion per year in highway user costs. This is over 30 times as much as the current annual expenditure by ODOT on all highway programs and administration. User costs will go up in the future due to projected increases in vehicle miles of travel and the resulting impact on highway conditions and congestion. ODOT programs can impact only a portion of future user costs. Whatever ODOT can do to minimize future user costs, however, will return dollars into the Oregon economy in the form of reduced user costs which can then be invested elsewhere.

The Oregon Highway Plan evaluates the return on investment or benefit/cost ratio of its programs. Since the State is concerned about all Oregon residents and industries and about Oregon's livability and economy, ODOT's concern is with overall benefits of its investments, not with whether state government captures those benefits. User costs and user benefits are of primary concern in this approach to evaluation of investment in the highway system.

Forecasts of vehicle miles of travel (VMT) indicate that VMT will increase by over 40 percent on the state highway system by 2017. This is consistent with forecasts of VMT growth by Metro for the

Portland region and by ODOT for all highway travel in the state. VMT growth has direct implications for highway mobility and user costs. If nothing is done to improve currently high volume highway segments and VMT grows substantially, highway mobility will decrease, travel times will increase, and user costs will increase for each user as well as for users altogether.

Impact of Various Funding on User Costs

ODOT has estimated the impacts of various scenarios on user costs for selected categories of investments which are highly correlated with user costs. The Oregon Highway Economic Requirements System (OR HERS) was used to make estimates of user cost impacts of alternative levels of funding for modernization and preservation. ODOT has made parallel estimates of the user cost impacts of operations and safety improvements. ODOT estimated bridge investment impacts not as user costs impacts, but rather as a related "value" of bridges in service by year. No formal estimates of user cost impacts were made for maintenance or special categories.

User cost impacts were estimated as accurately as possible for higher and lower investments in each category. The OR HERS model calculated that the user benefits in the 20th year of the Oregon Highway Plan would be $310 million greater each year for an additional $10 million per year invested in preservation, and about $260 million per year greater in the 20th year for an additional $10 million per year spent on modernization. These marginal benefits in comparison to marginal costs are much higher than could be achieved with any other private or public investment of the $10 million per year increment.

Similar returns on investment accrue from safety and operations improvements. Returns over 20 years from safety investments are estimated at over 20 to 1 in terms of ultimate dollars saved due to fewer fatalities and injuries.

These very high returns from added investments in each category provide assurance that added money over and above today's resources can be wisely spent, but provide little guidance about priorities among categories. The priorities among categories have to be set by first taking care of existing system deficiencies and then by investing in successively higher levels where the dollars have good payoff. Continuing to invest in any one category will result in decreasing returns to scale. Therefore, once critical needs are met in a category, additional resources may go to other categories with a larger backlog of needs. This is the basis for the investment scenarios.

Investment Policies and Scenarios

To meet the state highway system needs, ODOT has developed policies and scenarios to use in planning and prioritizing programs at a range of potential funding levels—from no increases in current state fees supporting the highway system, up to a level of funding that can support those highway needs which are feasible to implement.

As funding increases or decreases, various program categories are not increased or decreased proportionately. Difficult choices are necessary under constrained funding. None of the choices yield wholly satisfactory outcomes. However, when the State is not able to fully fund feasible and desirable needs, the goal should be to minimize the short and long term harm to Oregon's economy and livability which will occur when funding levels are inadequate.

At the lowest funding levels, the emphasis is on doing as much as possible to operate the highway system safely and efficiently and to preserve what already is in place, although conditions are likely

to continue to deteriorate under such a strategy. Trying to build a larger system of highways (or of other modes) would be counterproductive under very low funding levels because new or expanded portions of the system would not be sustainable.

With higher than minimum funding, infrastructure conditions can be stabilized or improved, and attention and resources can begin to be devoted to a wider range of goals. All analyses have shown that conditions and system performance improve rapidly as more resources above the current levels are added for any of the program categories. The plan has not examined levels of investment which are so high that conditions and performance could not be improved further in a cost-effective manner.

To operate the highway system as efficiently as possible with limited abilities to expand the infrastructure, the plan's investment policies emphasize capacity-adding programs that are not as costly as traditional modernization projects. These include interconnected traffic signal systems and other operational changes, Intelligent Transportation System technologies, access management, off-system improvements, and High-Occupancy Vehicle lanes.

Safety is an element in all the major programs. For example, new extended freeway ramps in the modernization program can ensure that traffic does not extend from an off-ramp of an interchange onto the freeway. The preservation program overlays rutted pavement that may cause drivers to lose control. The operations program installs traffic signals at dangerous intersections. The maintenance program fills potholes and replaces signs and illumination devices. The safety program addresses problems in priority hazardous locations and corridors; the solutions involve better operations or maintenance or traffic enforcement or other changes.

The Highway Plan recognizes that it is critical to maintain alternate modes in order to limit or reduce demand on the highway system in congested areas. At the lowest funding levels if highway conditions can only be maintained at status quo, it is in the State's interest to maintain at least status quo conditions for alternate modes.

Investment Policy and Priorities

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

ODOT's funding priorities will change according to changes in available revenues. The following scenarios establish funding priorities for highway-related plans and programs at four general funding levels; the first applies at the 1998 funding level. With increases in funding ODOT will progress toward the fourth funding scenario.

1. With funding that does not increase with inflation and subject to statutory requirements and regional equity, address critical safety issues, and manage and preserve existing infrastructure at 77 percent fair or better before adding capacity, as explained below:

- Focus safety expenditures where the greatest number of people are being killed or seriously injured.
- Fund modernization only to meet statutory requirements.

- Preserve pavement conditions at 77 percent fair or better on all roads except for certain Regional and District Highways.
- Do critical bridge rehabilitation and replace bridges only when rehabilitation is not feasible.
- Fund operations to maintain existing facilities and services and extend the capacity of the system.

2. Invest to improve infrastructure conditions and to add new facilities or capacity to address critical safety problems, critical levels of congestion, and/or desirable economic development.

- Address the highest priority modernization projects.
- Move toward pavement conditions of an average 78 percent fair or better on all state highways.
- Maintain the Bridge Value Index (percentage of total replacement value) at 86 percent.

3. When critical infrastructure preservation, safety and congestion needs are met, pursue a balanced program of additional high priority modernization projects and preservation of infrastructure.

- Move toward modernization funding to meet 55 percent of feasible needs.
- Bring pavement conditions up to an average 84 percent fair or better level on all state highways.
- Maintain bridge conditions at 87 percent of total replacement value and address the critical 1/3 of seismic retrofit needs.

4. With significant funding increases, develop feasible modernization projects, address long-term bridge needs and upgrade pavements to a more cost-effective condition.

- Move toward modernization funding to meet 100 percent of feasible needs.
- Bring pavement conditions up to an average 90 percent fair or better level on all state highways.
- Begin to replace 850 aging bridges and increase the Bridge Value Index (percentage of total replacement value) to 91 percent.

Funding for specific programs will follow these priorities:

Modernization

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

Preservation

- Give priority to Interstate pavement condition.
- Maintain Statewide Highways at a higher condition than Regional and District Highways, and invest in thicker pavement on designated freight routes.
- Preserve other highways at lower pavement conditions according to their classification. Preserve District Highways at 60 percent fair or better or higher.
- With no increase in state funding, consider the option of a "maintain only" policy for certain Regional/District Highways.

- With increased funding, increase pavement condition level toward an optimal level.
- With significantly increased funding, maintain pavement conditions at an optimal level of fair or better (90 percent fair or better).

Bridge

- At declining funding due to inflation, do critical bridge rehabilitation and replace critical bridges when rehabilitation is not feasible. Do seismic retrofit projects only to maintain the functionality of major river crossings on Interstate 5 and Interstate 84.
- At increased funding, preserve bridge value at the present state, but ignore most seismic retrofit needs.
- With more funding, maintain the Bridge Value Index (percentage of total replacement value) and address the most critical one-third of the seismic retrofit needs.
- With significant funding increases, address the long-term problems of replacing the 850 bridges built in the 1950s and 1960s.

Safety

- Focus expenditures where the greatest number of people are being killed or seriously injured[8].
- Allow for a reduced number of safety upgrades in preservation projects on highway segments with little or no crash history to increase dollars available for highway preservation.
- Make safety investments based on benefit/cost analysis. The first priority is on preservation projects with a high risk segment. The second priority is stand-alone projects on priority safety segments or spot locations.

Operations

- Maintain the existing facilities and services.
- Increase funding for Intelligent Transportation Systems and other operations to increase safety, increase travel time reliability, and relieve congestion especially in congested metropolitan areas.
- With increased funding, take advantage of technological devices to increase safety, decrease travel time, and relieve congestion throughout the state.

Maintenance

- With existing funding, focus on maintenance of features critical to keeping roads open and safe for travel.
- With increased funding, begin to move toward desired levels of service of features critical to keeping roads open and safe for travel.

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

- With significantly increased funding, invest in high initial cost solutions that improve service to travelers and minimize long-term spending. Examples range from upgrading substandard guardrail to major culvert and ditch upgrades and include improvements such as durable pavement marking.

Special Programs

- **Scenic Byways:** Position the state and local entities to be able to fund national and state Scenic Byway improvements and facilities mainly through federal funding.
- **Salmon Recovery:** Implement the Oregon Plan for Salmon and Watersheds as directed by the Governor's Executive Order. Fund at appropriate levels.
- **Transportation/Growth Management:** Fund transportation plans and projects in local jurisdictions to support livability and economic opportunity.
- **Bicycle/Pedestrian Program:** Focus the program on identifying simple, low-cost projects on urban highways to improve pedestrian and bicyclist access.
- **Immediate Opportunity Fund:** Fund street, road or other transportation-related improvements needed to respond quickly to economic development opportunities.

Planning

- Maintain basic planning program needs, including region and central work on Transportation Planning Rule implementation, periodic reviews, plan amendments, development review, access management, corridor plans and transportation system plan assistance. Adhere to funding priorities when developing corridor plans, facility plans and local transportation system plans.
- Maintain basic ODOT long-range planning to comply with statutory requirements for the Oregon Transportation Plan and related modal plans.
- Continue to assist in funding local transportation system planning.
- If not able to maintain the basic planning program, decrease or eliminate ODOT funding assistance for local planning.

Investment Scenarios

The investment scenarios fit these policies and priorities together. They begin with the continuation of current (1998) funding rates.

Scenario 1: Current Funding Continued

This scenario is based on the assumption that funding rates will not rise; there will be no fuel tax increase or other state source increase.

Total Investment = $515 million/year

New Funding Requirements = $0

If current funding rates were to continue, ODOT would focus investment on preservation and maintenance. Modernization spending would be limited to the state legislative minimum (currently approximately $54 million in accordance with ORS 366.507) including the high priority projects in TEA 21. Only the most critical capacity improvement projects and TEA 21 projects would be completed. The emphasis of the remaining funds would be on preservation and maintenance.

Since this scenario assumes that current funding rates will continue, the absolute dollars of revenue would rise as population rises, but inflation and increased highway system use would mean that ODOT would not be able to maintain current conditions in terms of physical condition or mobility. This investment level would lead to higher long term costs to repair or replace system facilities.

Under this scenario, the physical condition of highway infrastructure would decline and congestion would increase.

Projected Highway System Conditions in 2017:

- *Pavement conditions would decline from 77 percent fair or better, about 2 percent per year.*
- *Bridge Value Index would decline from 87 percent to 82 percent of total replacement value; funding does not keep up with even the most serious deficiencies. ODOT would place restrictions for truck weight on additional bridges.*
- *User costs would increase dramatically by over 50 percent per mile of travel, and speeds would decline by 50 percent compared to current levels.*

Scenario 2: Protecting Current Infrastructure, But No Preservation of Certain Regional and District Roads

This scenario is designed to maintain the current physical condition of the system as well as possible with limited increases in funding.

Investment = $576 million/year (uninflated) beginning in year 2000.

New Funding Requirements: Approximately 3 cents per gallon gas tax increase to take effect in year 2000, plus adjustments for inflation.[*]

ODOT would focus the first additional dollars on protecting the physical condition of the current system by investing more in its maintenance and preservation programs. No additional money would be spent on modernization beyond the level in Scenario 1. Certain Regional and District

[*] Each scenario's description contains a rough estimate of new funding required to match the scenario. These estimates are discussed in more detail on page 134.

roads would receive maintenance treatments, but not preservation treatments. Long-term needs to replace aging bridges and retrofit high-priority bridges to withstand moderate earthquakes would be ignored.

With this level of investment, physical condition of higher volume roads would stabilize at current levels, but overall pavement conditions would decline, bridge conditions would decline, congestion would increase significantly, and mobility would decline.

Projected Highway System Conditions in 2017:

- *77 percent fair or better pavement for roads with higher volumes. Overall condition of the system would decline over the long term.*
- *Bridge conditions would decline slightly, but most critical bridge projects are addressed. There is very little seismic retrofit.*
- *User costs would increase and speeds would decline, but by much less than under current funding.*

Scenario 3: Protecting Current Infrastructure

This scenario is designed to maintain the current physical condition of the system as well as possible with limited increases in funding.

Investment = $599 million/year (uninflated) beginning in year 2000.

New Funding Requirements: Approximately 5 cents per gallon gas tax increase to take effect in year 2000, plus adjustments for inflation.

ODOT would focus additional dollars on protecting the physical condition of the current system by investing more in its maintenance and preservation programs. This scenario is like Scenario 2 in that no additional money would be spent on modernization beyond the level in Scenario 1. Preservation projects would occur on all state highways; safety costs would go up because of the additional preservation projects, but maintenance costs would go down slightly from Scenario 2. Long-term needs to replace aging bridges and retrofit high-priority bridges to withstand moderate earthquakes would be ignored.

With this level of investment, the physical condition of pavement would stabilize at current levels, but congestion would increase and mobility would decline.

Projected Highway System Conditions in 2017:

- *77 percent fair or better pavement condition for roads overall.*
- *All critical bridge projects are addressed, but very little seismic retrofit.*
- *User costs would increase and speeds would decline but by less than under current funding.*

Scenario 4: Protecting the Current Infrastructure with Some Modernization

This scenario focuses investment on preserving and maintaining pavement and bridge conditions as well as possible with limited funding. It would fund about 30 percent of feasible modernization needs.

Investment = $659 million/year (uninflated) beginning in year 2000.

New Funding Requirements: Approximately 10 cents per gallon gas tax increase to take effect in year 2000, plus adjustments for inflation.

Although most of the funding would be directed to preserving pavement conditions, improving bridge conditions, and improving operations, safety and maintenance, funding would support additional modernization projects. Operational and safety increases could help mitigate increased congestion.

Projected Highway System Conditions in 2017:

- *77 percent fair or better pavement condition for roads overall.*
- *Bridges maintained in their current state, but very little seismic retrofit.*
- *User costs would increase and speeds would decline.*

Scenario 5: Protecting the Current Infrastructure with Additional Modernization

Like Scenario 4, this level of investment is designed to marginally improve current pavement, bridge and maintenance conditions. Additionally, this scenario addresses high priority capacity-improvement needs (modernization), thus providing greater management of mobility and congestion than the other scenarios.

Investment = $735 million/year (uninflated) beginning in year 2000.

New Funding Requirements: Approximately 17 cents per gallon gas tax increase to take effect in year 2000, plus adjustments for inflation.

This next level of funding would improve the condition of current infrastructure and allow additional high priority modernization projects. Modernization needs would be funded to about $145 million/year. About 43 percent of the feasible projects identified through the review of current state and local transportation system plans and projected needs would be constructed.

Under this scenario, congestion continues to increase over current levels, but less than in the first four scenarios.

Projected Highway System Conditions in 2017:

- *Pavement conditions would be improved to 80 percent fair or better.*
- *All critical bridge projects would be addressed; seismic retrofit work would be focused on critical routes. Bridges would be maintained at 86 percent of full replacement value.*
- *Speeds would be higher and user costs would be lower than under protecting current infrastructure, but still very unfavorable compared to meeting feasible needs in Scenario 7.*

Scenario 6: Coping with Congestion

This level of investment is designed to further improve current pavement, bridge and maintenance conditions on all roads. Bridge values are maintained at current levels, and the most critical seismic retrofit needs are addressed. Additionally, this scenario addresses about 55 percent of high priority capacity-improvement needs (modernization), thus providing greater management of mobility and congestion than the previous scenarios.

Investment = $823 million/year (uninflated) beginning in year 2000.

New Funding Requirements: Approximately 25 cents per gallon gas tax increase to take effect in year 2000, plus adjustments for inflation.

This next level of funding would improve the condition of current infrastructure and fund 55 percent of feasible modernization projects. The most critical one-third of the seismic retrofitting of bridges would be done.

Under this scenario, congestion continues to increase over current levels, but less than in the previous scenarios.

Projected Highway System Conditions in 2017:

- *Pavement conditions would be improved to 84 percent fair or better overall.*
- *All critical bridge projects and the most critical one-third of the seismic retrofit needs would be addressed. The Bridge Value Index would be maintained at 87 percent of full replacement value.*
- *Speeds would be higher and user costs would be lower than Scenarios 1 through 5, but still very unfavorable compared to meeting Scenario 7 Feasible Needs.*

Scenario 7: Feasible Needs

This scenario is designed to improve pavement conditions to 90 percent fair or better, improve bridge conditions to increase the current value of the system, and complete the list of feasible capacity-enhancing projects that has emerged from the Oregon Highway Plan Needs Analysis. These are projects identified through state and local transportation planning processes and analyses.

Investment = $1,048 million/year (uninflated) beginning in year 2000.

New Funding Requirements = Approximately 46 cents per gallon gas tax increase to take effect in year 2000, plus adjustments for inflation.

This scenario improves the physical condition of highways so that pavements and bridges can be maintained most cost-effectively, operates the system efficiently and completes feasible capacity projects to relieve congestion problems except in places where physical constraints, environmental impacts, high costs and/or political decisions would limit congestion relief. The places with these constraints are mainly in the metropolitan areas. A program to replace the 850 aging bridges built during the 1950s and 1960s would be underway. Seismic retrofitting would be incorporated into the replacement.

Highway physical condition would improve but congestion would increase, although less than above.

Projected Highway System Conditions in 2017:

- *Pavement conditions would be 90 percent fair or better overall.*
- *Bridge value would be increased to 91 percent of full replacement value, and problems with aging of "baby boomer" bridges would begin to be addressed.*
- *Speeds would decline and user costs would increase compared to current levels, but user costs per mile would increase by less than half the increase under current funding.*

These policies, priorities, and scenarios will be the basis for ODOT's Statewide Transportation Improvement Program (STIP), the document that programs and schedules specific construction projects for the next four years. Actual dollar figures will vary between the Highway Plan and the STIP because the Highway Plan figures are 20-year averages and include preliminary engineering,

right-of-way and other costs that the STIP does not. The Highway Plan figures are based on needs, and the STIP project costs have to balance to revenues.

Impacts of Scenarios on User Costs

User costs vary considerably across the scenarios. User costs always decrease much faster than ODOT investment levels increase, for all categories of expenditure and for all investment levels that have been analyzed. In terms of overall benefits that can accrue to Oregon's economy, the highest level of expenditure that was formally evaluated is the most desirable level of expenditure.

None of the alternatives examined, up to and including the alternative with the highest funding level, achieve speeds, user costs and mobility standards as good as current figures.

Table 9 shows the results of using the OR HERS model to estimate the speeds and user costs for the scenarios. The first row of numbers shows initial year conditions. Speeds average around 43 miles per hour for travel on state highways. The average cost per mile, considering ownership and operating costs, safety costs, and travel time costs, is about 82 cents per mile. Total user costs for travel on the state system are estimated at nearly $16 billion per year. Thus, users spend much more on travel costs on the state system than ODOT spends.

Table 9: Implications of Scenarios for Transportation System

Investment Scenario	Average Speed	Total User Costs Per Mile	Total User Costs Per Year
Initial Year[9]	43.1 mph	82.4¢	$15.9 Billion
Protect Current Infrastructure[10]	21.6 mph	132.1¢	$34.4 Billion
Coping with Congestion[11]	22.6 mph	123.6¢	$32.5 Billion
Feasible Needs	29.0 mph	102.3¢	$28.4 Billion
Feasible Needs with Reduced VMT Growth[12]	31.2 mph	96.6¢	$25.7 Billion

The investment scenarios are shown in terms of the conditions in the 20th year (2017). The intermediate scenarios defined for the Highway Plan, Protecting Current Infrastructure and Coping with Congestion, are shown in the second and third rows of the table. These scenarios result in user speeds and costs which are significantly worse than the initial year. These scenarios also show significantly worse performance than the Feasible Needs scenario (row four). In fact, because user costs go up much faster than ODOT budget reductions, all reductions below the Feasible Needs scenario have significant negative impacts which far outweigh the budget savings. For example, by the 20th year, any reduction in expenditure levels below Feasible Needs is costing users 40 times the

[9] All values, other than for the Initial Year, represent conditions at the end of the 20-year planning period.

[10] Approximately 40 percent below feasible needs.

[11] Approximately 27 percent below feasible needs.

[12] The maximum likely level of VMT reduction, relative to 20-year forecast, achieved through aggressive transportation demand management programs primarily at the metropolitan planning organization level.

savings in ODOT highway budget for that year, due to the cumulative negative impact of foregone investments.

For the Feasible Needs scenario with the VMT growth as forecast, speeds will decrease compared to today and user costs will go up, both in total and on a cost per mile basis.

The fifth row shows what speeds and user costs would be by 2017 if Feasible Needs were funded and if the VMT reductions that the metropolitan planning organizations consider to be the maximum feasible were achieved. Speeds increase substantially compared to a higher VMT, and user costs go down. User costs per mile still increase compared to today, but by a lower amount than if Feasible Needs were implemented but VMT was not reduced.

Revenue Projections

It is difficult to accurately predict future revenues since they are dependent on a large number of political and economic variables. The Highway Plan makes general estimates so that investment priorities can be discussed. State highway funding in Oregon comes from both state and federal taxes and fees. Each of these revenue sources is discussed briefly below. This discussion and the numbers cited only cover those revenues that go to the highway programs described above. There are a number of state transportation programs that are not covered by the Highway Plan.

State road user revenues provide approximately 65 percent of state transportation revenues. Oregon's State Highway Fund, which is constitutionally dedicated to highways, derives most of its revenue from three major highway user taxes: vehicle registration fees, motor vehicle fuel taxes and motor carrier fees (the weight-mile tax). These taxes are governed by the concept of cost responsibility–collecting revenues from users based on their fair share of highway costs. Cost responsibility studies are published periodically to ensure that users' shares reflect current conditions. The latest cost responsibility study update was completed in 1995 and assigns 62.3 percent of highway costs to vehicles weighing less than 8,000 pounds and 37.7 percent to heavy vehicles. The 1995 State Legislature reduced heavy vehicle registration fees and weight mile taxes to match this cost responsibility.

In 1998 automobiles paid an annual registration fee of $15 and a state gas tax of 24.6 cents per gallon. Heavy vehicles (those over 8,000 pounds) paid an annual registration fee of between $110 and $415 depending on their weight. In addition, all commercial vehicles with a registered weight of over 26,000 pounds paid a weight-mile tax of between 4.45 cents and 20.4 cents per mile depending on their weight and the number of axles. Vehicles that paid the weight-mile tax did not pay state fuel taxes.

If there are no rate increases, state highway revenues from these sources are expected to average approximately $424 million over the next 20 years, for a total of $8.1 billion. This estimate assumes growth in revenues from additional users of the system, but does not assume any increase in the tax rate. Since motor vehicle taxes in Oregon are fixed amounts (i.e., rather than a percentage of fuel prices), these revenues will not grow with inflation over time.

Oregon also receives highway revenues from the federal government. The federal highway program is financed with proceeds from federal fuel and other transportation-related user taxes and fees. These funds are discretionary and subject to Congressional authorization. The federal Transportation Equity Act for the 21st Century, signed in June 1998, will provide over $246 million annually for Oregon state highways for fiscal years 1998-2003. After this point, it is difficult to accurately forecast revenues. This analysis assumes a gradual rise in federal highway funds which

reflects an upper limit of what may be achievable under fixed tax rates. Using this assumption, federal highway funds for the State of Oregon are estimated at a total of $5.8 billion over the next 20 years.

Thus, Oregon's total highway revenues for the period 1998-2017 are projected to be approximately $13.9 billion (see Table 10) if state funding rates do not change.

Table 10: Projected State and Federal Highway Revenues, 1998-2017

Year	State	Federal	Total
1998	$346,983,057	$184,257,079	$531,240,136
1999	$364,822,730	$211,757,470	$576,580,200
2000	$369,977,182	$217,371,205	$587,348,387
2001	$375,263,272	$222,597,185	$597,860,457
2002	$381,364,362	$227,419,252	$608,783,614
2003	$386,202,160	$229,322,523	$615,524,683
2004	$392,805,296	$279,526,785	$672,332,081
2005	$398,948,938	$279,526,785	$678,475,723
2006	$405,115,216	$279,526,785	$684,642,001
2007	$410,579,143	$279,526,785	$690,105,928
2008	$415,577,315	$279,526,785	$695,104,100
2009	$420,216,752	$279,526,785	$699,743,537
2010	$424,528,797	$334,432,142	$758,960,939
2011	$427,621,303	$334,432,142	$762,053,445
2012	$431,120,636	$334,432,142	$765,552,778
2013	$434,492,387	$334,432,142	$768,924,529
2014	$437,387,939	$334,432,142	$771,820,081
2015	$440,453,086	$334,432,142	$774,885,228
2016	$442,803,615	$400,318,571	$843,122,186
2017	$445,689,041	$400,318,571	$846,007,612
Total	**$8,151,952,226**	**$5,777,115,420**	**$13,929,067,646**

Summary of Needs and Revenues

If revenues remain at current rates, there will be a shortfall of at least $15.2 billion over the 20-year planning period of the 1999 Highway Plan. This means that all state highway needs will not be met unless highway funding rises.

Tax Increases Required to Meet Scenarios

In order to meet the needs of any of the scenarios above current funding, state highway revenues would have to rise. Table 11 lists estimates of the gas and weight-mile tax increases that would be necessary to meet the needs of each scenario. These are general estimates, presented to give a context for long-term state highway needs. The estimates are shown in two ways–a steady increase each year which covers the effects of inflation, and a "one-time" increase with future adjustments tied to inflation.

Table 11: Examples of Tax Increases Needed to Match Projected Revenues with Needs

	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
Steady Increase	**1 cent increase per year (1+1+1…)**	**1.1 cent increase per year (1+1+1…)**	**2 cent increase per year (2+2+2…)**	**3 cent increase per year (3+3+3…)**	**4 cent increase per year (4+4+4…)**	**7 cent increase per year (7+7+7…)**
Total **new** gas tax by 2018 with steady increase	18 cents	18.5 cents	36 cents	54 cents	72 cents	126 cents
"One-time" Increase + Inflation Increase	**3 cents**	**5 cents**	**10 cents**	**17 cents**	**25 cents**	**46 cents**
Total **new** gas tax by 2018 with "one-time" increase	19 cents	22 cents	32 cents	44 cents	58 cents	93 cents

Notes for Table 11:

A. The **steady increase** only meets highway needs (including the effect of inflation) over the full 20-year period. In the next 5-10 years, relatively low levels of new revenues are generated, but this would be compensated for by increased revenues in later years.

B. The "**one-time" increase** would match needs and revenues in the year 2000. After this increase, there would still need to be yearly increases pegged to inflation in order to meet the needs.

C. Revenue produced by each penny assumes:

1. There will be an equivalent increase in the weight-mile tax that will maintain the cost responsibility split at current levels (62.3 percent light vehicles/37.7 percent heavy vehicles).
2. The State will receive 50 percent of any new revenues (the State would receive half of the increase shown in Table 11).
3. There will be growth in the revenue produced by each penny due to increased highway use.
4. Taxes take effect in the year 2000.

D. The numbers assume that federal revenues will increase as shown in Table 10.

E. Needs were calculated assuming an average inflation rate of 3.3 percent for the period 1998-2017. This consists of inflation rates under 3 percent until 2003, and rising to 3.9 percent by 2018.

F. The numbers do not include needs for city- or county-owned roads.

Implementation Strategies

The Highway Plan will be implemented through planning, project selection, design and development, operations and maintenance related to the state highway system. Within one year of the Plan's adoption, ODOT will develop an Action Plan that identifies implementation actions and agency responsibilities. More specifically ODOT will:

1. Identify responsibilities and impacts of the plan related to planning, project selection and development, maintenance and investments.
2. Monitor the implementation of the plan's policies through performance measures.
3. Conduct a process for examining highway classifications, classifying Expressways and designating Special Transportation Areas.
4. Work with local governments to:
    - Develop a process for identifying and transferring Local Interest Roads.
    - Conduct a demonstration project in each ODOT region to apply the Special Transportation Area highway segment designation.
    - Complete corridor plans and transportation system plans to address Highway Plan policies.
    - Achieve consistency between the Highway Plan and local plans and ordinances.
    - Establish criteria and designate lifeline routes.
    - Develop a policy or strategy for interchange management through the Interstate 5 corridor study or other planning efforts.
    - Establish criteria for considering, evaluating, and prioritizing off-system improvements.
5. Develop a funding plan that includes looking at various funding options. These options might include:
    - Increased vehicle fuel taxes
    - Higher vehicle registration fees
    - Increased weight/mile tax compenserate with increased fuel taxes
    - Increased heavy vehicle fees
    - New vehicle sales taxes
    - Fees on vehicle miles traveled
    - Congestion pricing
    - Tolls
    - State systems development charges
    6. Develop an administrative rule for access management procedures.
    7. Work with freight interests to identify concerns about freight movements on state highways.
    8. Develop best management practices to protect environmental and scenic resources.

Performance Measures

The following performance measures have been developed as a means of monitoring the overall implementation of the Highway Plan. ODOT will use these measures to track progress in meeting the goals of the plan. In some cases, current and historical trend data already exist. In others, the current or baseline conditions need to be established. Once the baseline data is in place, future trends will be monitored to evaluate how well the Highway Plan is helping ODOT and its partners meet their stated goals in four policy areas. These measures are intended for overall system-wide use rather than for project-specific application. They are intended to guide the implementation and periodic refinement of programs and strategies rather than be used for budgeting purposes.

Goal 1: System Definition

Policy 1B: Land Use and Transportation

1. Percent of Special Transportation Areas where the highway mobility, as measured by volume-to-capacity ratios (v/c), meets the designated standard.

2. Highway v/c ratio within a Special Transportation Area (for corridor planning applications).

Policy 1C: State Highway Freight System

1. Percent of freight system lane miles that meet highway mobility standards during peak hour or two hour peak period.

2. Number and percent of accidents on the designated state highway freight system involving trucks.

Policy 1D: Scenic Byways

1. Percent of customers reporting favorable perception of Scenic Byway aesthetics, safety and performance.

2. Oregon Scenic Byway Committee rating (every three years) of improvement/degradation overall and for certain routes.

Policy 1E: Lifeline Routes

1. Percent of bridges on lifeline routes with satisfactory seismic rating (potentially bridge health index, sufficiency rating, and/or National Bridge Inventory rating).

2. Number of bridges on lifeline routes brought to satisfactory rating in reporting period.

Additional desirable measures which would be feasible as Geographic Information Systems capabilities are expanded within ODOT include:

3. Percentage of Oregon residents whose lifeline system access has been defined and evaluated.

4. Percentage of Oregon residents whose lifeline system access meets bridge rating standards.

Policy 1F: Highway Mobility Standards

1. Percent of highway lane miles that meet highway mobility standard, by statewide highway classification.

2. Percent of miles on limited-access highways in Oregon urban areas that do not meet highway mobility standard (Oregon Benchmark #70).

Goal 2: System Management

Policy 2A: Partnerships

1. Percent of state expenditures saved through cost-sharing and other partnership arrangements.

Policy 2B: Off-System Improvements

1. Net benefit (savings and/or benefits less costs) of off-system improvements.

Policy 2C: Interjurisdictional Transfers

1. Number of route miles designated by ODOT as having potential for interjurisdictional transfer.

2. Number (and percent of potential total) of route miles transferred.

Policy 2F: Traffic Safety

The Oregon Transportation Commission established safety priorities to carry out the Traffic Safety policy when it approved the *Oregon Transportation Safety Action Plan* (OTSAP). Three of the performance measures included in the OTSAP are directly related to state highway travel:

1. Reduce deaths due to motor vehicle crashes from 1.73 per 100 million vehicle miles traveled (VMT) in 1996 to 1.30 by the year 2010.

2. Increase the percentage of occupants using vehicle safety restraints from 83 percent in 1996 to 90 percent by the year 2010.

3. Reduce the number of deaths due to alcohol and drug-related motor vehicle crashes from 0.72 per 100 million VMT in 1996 to 0.58 per 100 million VMT by the year 2010.

Two additional measures are:

4. Number of accidents with fatalities or serious injury (F/SI) per million vehicle miles traveled.

5. Annual percent reduction in fatal and injury crashes on Category 3, 4, and 5 safety segments, based on 1998 baseline[13].

Policy 2G: Rail and Highway Compatibility

1. Number of newly constructed at-grade crossings on the state system (target is zero).

2. Number of at-grade crossings eliminated or replaced with grade-separated crossings.

3. Number of at-grade crossings improved through installation of new control devices or improved geometric design.

Goal 3: Access Management

There are no performance measures proposed for the Access Management policy.

Goal 4: Travel Alternatives

Policy 4A: Efficiency of Freight Movement

1. Percentage of identified obstacles to freight movement that are eliminated through action of the State, or the State in partnership with others.

2. Percentage (or number) of intermodal connectors improved.

Policy 4B: Alternative Passenger Modes

1. Percent of Oregonians who commute to and from work during peak hours by means other than a single occupancy vehicle (Oregon Benchmark #73).

2. Vehicle miles traveled per capita in metropolitan areas (Oregon Benchmark #74).

Policy 4C: High-Occupancy Vehicle (HOV) Facilities

1. Percent of total person miles of travel that are made in High-Occupancy Vehicle lanes.

2. Percent VMT reduction attributable to High-Occupancy Vehicle lanes.

Policy 4D: Transportation Demand Management

1. Percent of Oregonians who commute to and from work in peak hours in a single- occupancy vehicle.

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[13] The state highway system is divided into five-mile segments, and a tally is made of the number of fatal and serious injury crashes over a three-year period. Category 3, 4, and 5 have had three or more fatal and serious injury crashes during this time period.

Policy 4E: Park-and-Ride Facilities

1. Inventory (number) of park-and-ride spaces within and immediately adjacent to the state highway right-of-way, by corridor.

Goal 5: Environmental and Scenic Resources

Policy 5A: Environmental Resources

1. Number of state highway miles with up-to-date natural resource maps relative to the total number of miles needing mapping.

2. Number of culverts retrofitted for salmon relative to the total number of culverts needing retrofitting.

Policy 5B: Scenic Resources

1. Percent of customers by region reporting "favorable or better" perception of the state highway system for aesthetics, safety and performance.

APPENDIX C

Willamina to Salem Corridor - OR 22 - Interim Corridor Strategy

The Interim Corridor Strategy 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 completed with this Facility Plan.

APPENDIX D

Chemeketa Area Regional Transit System - Central Polk Connector Schedules and Route Map

Two transit routes have been developed that currently serve Polk County. Chemeketa Area Regional Transportation Service (CARTS) provides van service to Dallas, Rickreall, and Salem via ORE 22, ORE 223, 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.

Effective 11/6/00

Central Polk CONNECTOR Route 2

From: Downtown Dallas
To: Downtown Salem thru Independence and Monmouth
Name: Central Polk # 2

Downtown Dallas	Valley Hospital	Campbell Hall at WOU	Monmouth at Market Place	Independence City Hall	Roth's at West Salem	Courthouse Square
6:10	6:18	6:30	6:33	6:41	- -	7:04
10:05	10:11	10:21	10:25	10:32	11:06	11:13
9:50	9:54	10:01	- -	- -	- -	10:28
- -	12:15	12:30	12:34	12:41	1:15	1:22
2:20	2:28	2:40	2:42	2:50	- -	3:13
5:00	5:08	5:20	5:22	5:20	5:56	6:03

From: Downtown Salem
To: Downtown Dallas thru Rickreall
Name: Central Polk # 2

Courthouse Square	Roth's at West Salem	3rd at McNary	Rickreall Park and Ride	WalMart	Oak at Main	Downtown Dallas
7:17	7:24	- -	7:41	7:46	7:53	7:57
11:16	11:22	- -	- -	11:52	12:02	9:37
10:30	10:37	- -	- -	11:10	11:21	- -
1:25	1:32	- -	- -	2:02	2:12	2:17
3:50	3:57	- -	4:26	4:38	4:47	4:56
6:16	6:23	- -	6:52	7:04	7:13	7:21

APPENDIX E

Highways 18 and 22 Safety Report

The Highway 18 and 22 Safety Report was initiated to address the increasing concerns over the safety problems evident on ORE 18 and ORE 22.

The study examined 12 specific locations along ORE 18 and ORE 22 including the ORE 22/ORE 99W intersection (Site 11).

This study is the precursor to the facility plan process described in this report.

Oregon Department of Transportation – Transportation Development Division
Transportation Data Section – Crash Analysis and Reporting Unit
Crash Summaries by Year
Highway 091 MP 57.43 to 57.43 01/01/1995 to 12/31/2000 Both Add and Non-Add mileage

YEAR	COLLISION TYPE	FATAL	NON-FATAL	PROP. DAMAGE ONLY	ACCDNTS TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	OFF-ROAD
1995	REAR-END		1		1		1		1		1		1	
1995	**TOTAL**		**1**		**1**		**1**		**1**		**1**		**1**	
1996	REAR-END			1	1				1			1	1	
1996	TURNING MOVEMENTS			1	1				1			1	1	
1996	**TOTAL**			**2**	**2**				**2**			**2**	**2**	
1997	REAR-END		1	1	2		2		2		2		2	
1997	**TOTAL**		**1**	**1**	**2**		**2**		**2**		**2**		**2**	
FINAL	**TOTAL**		**2**	**3**	**5**		**3**		**5**		**3**	**2**	**5**	

The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate.

Oregon Department of Transportation – Transportation Development Division
Transportation Data Section – Crash Analysis and Reporting Unit

Crash Summaries by Year

Highway 030 MP 16.12 to 16.12 01/01/1995 to 12/31/2000 Both Add and Non-Add mileage

YEAR	COLLISION TYPE	FATAL	NON-FATAL	PROP. DAMAGE ONLY	ACCDNTS TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	OFF-ROAD
1995	REAR-END		2	2	4		4	1	2	2	2	2	4	
1995	TURNING MOVEMENTS		1	3	4		2		2	2	3	1	4	
1995	MISCELLANEOUS			1	1				1			1	1	
1995	**TOTAL**		**3**	**6**	**9**		**6**	**1**	**5**	**4**	**5**	**4**	**9**	
1996	ANGLE		2		2		2	1	2		1	1	2	
1996	REAR-END		4	2	6		12	1	3	3	3	3	6	
1996	SIDESWIPE-OVERTAKING			1	1				1		1		1	
1996	TURNING MOVEMENTS		1	2	3		3		2	1	2	1	3	
1996	**TOTAL**		**7**	**5**	**12**		**17**	**2**	**8**	**4**	**7**	**5**	**12**	
1997	ANGLE		1	2	3		4		2	1	3		3	
1997	REAR-END		3	1	4		3		3	1	3	1	4	
1997	TURNING MOVEMENTS		1		1		3		1		1		1	
1997	NON-COLLISION			1	1			1	1		1		1	
1997	**TOTAL**		**5**	**4**	**9**		**10**	**1**	**7**	**2**	**8**	**1**	**9**	
1998	ANGLE		2	1	3		2		3		3		3	
1998	REAR-END			1	1				1		1		1	
1998	TURNING MOVEMENTS		1	5	6		4	2	6		4	2	6	
1998	MISCELLANEOUS			1	1				1		1		1	
1998	**TOTAL**		**3**	**8**	**11**		**6**	**2**	**11**		**9**	**2**	**11**	
1999	ANGLE		2		2		3			2	1	1	2	
1999	REAR-END		2		2		4		1	1	1	1	2	
1999	**TOTAL**		**4**		**4**		**7**		**1**	**3**	**2**	**2**	**4**	
2000	ANGLE			1	1				1		1		1	
2000	REAR-END		2	2	4		4		4		4		4	
2000	TURNING MOVEMENTS		1	2	3		2	1	3		2	1	3	
2000	**TOTAL**		**3**	**5**	**8**		**6**	**1**	**8**		**7**	**1**	**8**	
FINAL	**TOTAL**		**25**	**28**	**53**		**52**	**7**	**40**	**13**	**38**	**15**	**53**	

The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate.

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Oregon Department of Transportation – Transportation Development Division
Transportation Data Section – Crash Analysis and Reporting Unit
Crash Summaries by Year
Highway 030 MP 15.83 to 15.83 01/01/1995 to 12/31/2000 Both Add and Non-Add mileage

YEAR	COLLISION TYPE	FATAL	NON-FATAL	PROP. DAMAGE ONLY	ACCDNTS TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	OFF-ROAD
1997	TURNING MOVEMENTS		1		1		3		1		1		1	
1997	**TOTAL**		**1**		**1**		**3**		**1**		**1**		**1**	
1998	TURNING MOVEMENTS		1		1		1		1			1	1	
1998	**TOTAL**		**1**		**1**		**1**		**1**			**1**	**1**	
1999	REAR-END		2		2		3			2		2	2	
1999	**TOTAL**		**2**		**2**		**3**			**2**		**2**	**2**	
FINAL	**TOTAL**		**4**		**4**		**7**		**2**	**2**	**1**	**3**	**4**	

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Oregon Department of Transportation – Transportation Development Division
Transportation Data Section – Crash Analysis and Reporting Unit
Crash Summaries by Year
Highway 030 MP 15.87 to 15.87 01/01/1995 to 12/31/2000 Both Add and Non-Add mileage

YEAR	COLLISION TYPE	FATAL	NON-FATAL	PROP. DAMAGE ONLY	ACCDNTS TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	OFF-ROAD
1995	REAR-END		1	1	1					1		1	1	
1995	TURNING MOVEMENTS		1		1		3		1		1		1	
1995	**TOTAL**			**1**	**2**		**3**		**1**	**1**	**1**	**1**	**2**	
1996	ANGLE			1	1				1		1		1	
1996	**TOTAL**			**1**	**1**				**1**		**1**		**1**	
1997	FIXES/OTHER OBJECT			1	1			1	1		1		1	1
1997	**TOTAL**			**1**	**1**			**1**	**1**		**1**		**1**	**1**
1998	REAR-END			1	1				1		1		1	
1998	TURNING MOVEMENTS		1	1	2		2		1	1	1	1	2	
1998	**TOTAL**		**1**	**2**	**3**		**2**		**2**	**1**	**2**	**1**	**3**	
2000	TURNING MOVEMENTS		2		2		8		2		1	1	2	
2000	**TOTAL**		**2**		**2**		**8**		**2**		**1**	**1**	**2**	
FINAL	**TOTAL**		**4**	**5**	**9**		**13**	**1**	**7**	**2**	**6**	**3**	**9**	**1**

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Oregon Department of Transportation – Transportation Development Division
Transportation Data Section – Crash Analysis and Reporting Unit
Crash Summaries by Year
Highway 091 MP 57.42 to 59.00 01/01/1995 to 12/31/2000 Both Add and Non-Add mileage

YEAR	COLLISION TYPE	FATAL	NON-FATAL	PROP. DAMAGE ONLY	ACCDNTS TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	OFF-ROAD
1995	ANGLE			1	1				1		1		1	
1995	REAR-END		2	1	3		2		2	1	3		1	
1995	MISCELLANEOUS			1	1			1	1		1			
1995	**TOTAL**		**2**	**3**	**5**		**2**	**1**	**4**	**1**	**5**		**2**	
1996	ANGLE		1		1		1		1		1		1	
1996	HEAD-ON		1		1		2			1	1			
1996	REAR-END		1	4	5		1	1	3	2	3	2	1	1
1996	TURNING MOVEMENTS		2	1	3		3		3		1	2	3	1
1996	**TOTAL**		**5**	**5**	**10**		**7**	**1**	**7**	**3**	**6**	**4**	**5**	
1997	ANGLE		1		1		1	1	1		1		1	
1997	REAR-END		2	4	6		3		5	1	6		4	
1997	TURNING MOVEMENTS		3	1	4		4		2	2	3	1	2	
1997	MISCELLANEOUS			1	1				1			1		
1997	**TOTAL**		**6**	**6**	**12**		**8**	**1**	**9**	**3**	**10**	**2**	**7**	
1998	ANGLE			2	2				2		2		2	
1998	REAR-END			3	3				2	1	2	1	1	
1998	**TOTAL**			**5**	**5**				**4**	**1**	**4**	**1**	**3**	
1999	ANGLE			1	1					1	1		1	
1999	REAR-END		3	2	5		3		1	4	4	1	1	
1999	TURNING MOVEMENTS		1	2	3		2		2	1	1	2	2	
1999	**TOTAL**		**4**	**5**	**9**		**5**		**3**	**6**	**6**	**3**	**4**	
2000	ANGLE		2	3	5		3		4		4	1	5	
2000	REAR-END		5	1	6		10		6		6			
2000	FIXED/OTHER OBJECT			1	1				1			1		1
2000	**TOTAL**		**7**	**5**	**12**		**13**		**11**		**10**	**2**	**5**	**1**
FINAL	**TOTAL**		**24**	**29**	**53**		**35**	**3**	**38**	**14**	**41**	**12**	**26**	**2**

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Oregon Department of Transportation

Rickreall Junction
Facility Plan
Polk County
Willamina-Salem Highway
OR 22 MP 15.00 to MP 16.50
Revised February 2003

Transportation Planning Analysis Unit
Transportation Development Division, Salem, Oregon

RICKREALL JUNCTION FACILITY PLAN

Oregon Department of Transportation
Transportation Planning Analysis Unit
555 13th Street NE, Suite. 2
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SUMMARY

The Rickreall Junction Facility Plan was originated to address the safety concerns and the congestion at the signalized OR 22/OR 99W and the unsignalized OR 22/Dallas-Rickreall Highway (DRH) intersections. The Refinement Study goal was to develop a long-term solution that meets the mobility and spacing standards required in the 1999 Oregon Highway Plan (OHP).

The Technical Advisory Committee (TAC) considered approximately 20 proposed build alternatives as possible short-term or long-term solutions. Ten of the 20 build alternatives were advanced for further consideration and are explained in detail in the report. The remaining ten build alternatives that were considered, but not advanced, have brief explanations in Appendix A about why the proposed alternative was dropped from further consideration. Solutions ranged from immediate improvements such as striping, signing, visibility enhancements, ITS, etc. to a full interchange that combines the traffic flows on OR 22, OR 99W and DRH. Long-term solutions that could be phased were given special consideration. The traffic development and analysis methodology is furnished in Appendix B. The traffic analysis summarized in this narrative resulted in the following recommendations:

- Alternative 7-A is the best long-term alternative for traffic operation and safety. This is the only alternative evaluated that eliminates the OR 22/OR 99W traffic signal while eliminating the potentially dangerous weave movements.

- Alternative 2-C with improvements such as striping, signing, visibility enhancements, ITS, etc. will improve both safety and traffic flow in the near future.

- Alternative 4-B is the most effective short-term alternative. The eastbound OR 22 fly-over eliminates the need for westbound OR 22 drivers to stop and wait for gaps in opposing traffic flows before turning southwesterly on DRH to travel toward Dallas. However, the length of the eastbound OR 22 queue at the signalized OR 22/OR 99W intersection will increase in future years making it more difficult for drivers coming from the coast to weave into the left-turn refuge to travel northbound on OR 99W toward McMinnville.

The analysis also revealed the likelihood of longer-term operational problems on OR 99W in Rickreall and at the OR 99W/Rickreall Road intersection. Several options for addressing these facilities were analyzed and the analysis results are included in Appendix C. These results should be considered as further work is done to determine how these facilities should be addressed over the 20-year planning horizon.

BACKGROUND INFORMATION

The OR 99W/OR 22 Junction is located on OR 22 approximately seven miles west of Salem (See Figures 1 and 2). Dallas-Rickreall Highway (OR 223 or DRH), Pacific Highway West (OR 99W) and Willamina-Salem Highway No. 30 (OR 22) are the main roadways studied in this refinement plan. OR 22 is both a commuter and tourist route. OR 22 connects the communities of Dallas, Monmouth and Independence to the employment centers of Salem, McMinnville and Portland. As a tourist route, this roadway connects Salem to the coastal communities via Lincoln City.

Presently, the OR 22/OR 99W intersection has a traffic signal and the OR 22/DRH intersection is unsignalized. These intersections are located approximately 400 meters apart. Safety and operational characteristics have been sacrificed at both intersections due to increased traffic flows. Forecasted growth trends indicate traffic flows will continue to increase into the future and cause more concerns.

Improvements to OR 99W in Rickreall and at the OR 99W and Rickreall Road intersection are being considered separately. Forecasted growth trends indicate that within the 15-20 year time frame OR 99W through Rickreall and its intersection with Rickreall Road will not be able to meet OHP mobility standards. Potential OR 99W/Rickreall Road intersection improvements are discussed in a separate technical memorandum (Appendix C).

Figure 1

Figure 2

NO-BUILD ALTERNATIVE

No Build Analysis Summary – Year 1999

The analysis for the no-build alternative was completed using the 30th highest hour traffic volumes for all the roadways located within the study area (Figure 3). Appendix B describes both the current and the future traffic volume development and the analysis methodology used in the development of this narrative.

OR 22 is a Statewide (NHS) Non-Freight Route and OR 99W is a Regional Route. The 1999 Oregon Highway Plan (OHP) requires both of these roadways (in rural lands) to operate at a Volume to Capacity (V/C) ratio equal to or less than 0.70. The maximum allowable V/C ratio for the portion of OR 99W through the unincorporated community of Rickreall is 0.75. The mobility standard for the Dallas-Rickreall Highway (DRH) is less stringent, since DRH is a District Route; therefore, the maximum allowable V/C is 0.80. The Year 1999 No-Build Alternative analysis indicates the following:

- The OR 22/OR 99W and OR 22/DRH intersections do not meet mobility standards in 1999. The existing signalized OR 22/OR 99W intersection operates at a V/C of 0.89. The westbound OR 22 to DRH traffic movement at the existing unsignalized OR22/DRH intersection operates at a V/C of 0.92.
- There is only 400 meters (0.25 miles) on OR 22 between the DRH and OR 99W intersections. The intersections are too close together and, at times, traffic backs up from the westbound OR 22/DRH intersection approximately 75 percent of the way back toward the OR 22/OR 99W intersection creating both speed differential and safety concerns.
- The free flow sections of OR 22, OR 99W and DRH meet mobility standards.
- The OR22/OR 99W and OR 22/DRH intersections are experiencing a high number of crashes typically associated with the combination of traffic signals and high-speed turning movements on rural highways.

Figure 3

No Build Analysis Summary – Year 2025

The future year traffic volumes for this project are for the year 2025, which is approximately 20 years beyond the end of project construction (Figure 4). The future no-build alternative was evaluated using the same street network used in the year 1999 no-build analysis. The traffic volumes for the future no-build alternative were based on historical growth rates of the roadways within the surrounding area. The No-Build Alternative analysis summary for the year 1999 indicates that both the OR 22/OR 99W and the OR 22/DRH intersections do not meet mobility standards required in the 1999 OHP. Figure 4 shows the V/C ratios for the year 2025 No Build Alternative. The year 2025 No-Build Analysis indicates the following:

- The OR 22/OR 99W and OR 22/DRH intersections do not meet mobility standards. The V/C ratio for the signalized OR 22/OR 99W and the unsignalized OR 22/DRH intersections will exceed a V/C ratio of 1.0.
- There is only 400 meters (0.25 miles) on OR 22 between the DRH and OR 99W intersections. The intersections are too close together, by the year 2025 traffic will back up from the westbound OR 22/DRH intersection into the OR 22/OR 99W intersection on a regular basis.
- The free flow section of OR 22 will operate at a V/C of 0.79 in the westbound direction west of OR 22/OR 99W intersection and will not meet mobility standards.
- The free-flow section of OR 99W located between the OR 22/OR 99W intersection and the OR 99W/Rickreal Road intersection will exceed a V/C ratio of 1.0 and will not meet mobility standards.
- The two-lane free-flow section of DRH will exceed a V/C ratio of 1.0 and will not meet mobility standards.
- The free-flow section of OR 99W north of OR 22 will meet mobility standards.

Figure 4

BUILD ALTERNATIVES

The Technical Advisory Committee (TAC) considered approximately 20 proposed build alternatives as possible short-term or long-term solutions. Solutions ranged from immediate improvements such as striping, signing, visibility enhancements, ITS, etc. to a full interchange that combines the traffic flows on OR 22, OR 99W and DRH. Long-term solutions that could be phased were given special consideration. The intention was to identify the potential to phase in incremental improvements over the next 15 years or so that could eventually be used as components of a long-term solution. The goal was to find ways for ODOT to provide acceptable traffic flows within the study area in the short-term if funding could not be found to fully implement the long-term build alternative all at once.

The TAC selected ten of the 22 proposed build alternatives as possible short-term or long-term build alternatives. The longest-term alternative identified (Alternative 7-A) met the following TAC project goals.

- Meet OHP policies (Mobility, Major Investment, Access, Safety, etc.).
- Meet geometric standards as per ODOT Highway Design Manual.
- Minimize impact on the Rickreall community.
- Alternatives that provide the highest overall short- and long-term value per dollar invested.

Alternatives Evaluated

The TAC considered approximately 22 build alternatives. Table 1 shows the No Build Alternative along with 20 of the 22 build alternatives:

Table 1: Alternative Summary Table

Alternative**	Meets Required OHP V/C Ratio (0.70) ?	Meets Required OHP Spacing Standard ?	Promotes Expressway Standards (Eliminates Traffic Signals on OR 22)?	Is Alternative A Viable Short-Term Solution ?	Is Alternative Phaseable?
No Build	No	No	No	N.A.	N.A.
1-A	No	No	No	Yes	Yes
2-A	No	No	No	No	Yes
2-B	No	No	No	No	Yes
2-C	No	No	No	Yes	Yes
2-D	No	No	No	No	Yes
3-A	No	No	No	No	Yes
3-B	No	No	No	No	Yes
3-C	No	No	No	No	Yes
4-A	N.A.	N.A.	No	No	Yes
4-B	No	N.A.	No	Yes	Yes
5-A	No	N.A.	Yes	No	No
5-B	Yes	N.A.	Yes	Yes	Yes
5-C	Yes	N.A.	Yes	Yes	Yes
6-A	No	No	Yes	No	No
6-B	Yes	No	Yes	Yes	Yes
6-C	Yes	No	Yes	Yes	Yes
7-A	Yes	Yes	Yes	Yes	Yes
7-A.1***	No	Yes	Yes	Yes	Yes
7-B	Yes	Yes	Yes	Yes	No
7-C***	No	Yes	Yes	Yes	Yes

* N.A. – Not applicable
** Shaded alternatives were advanced for further, more detailed analysis.
*** These alternatives were added after the initial analysis as lower cost variations of 7-A

The alternative names shown in Table 1 reflect the complexity and timing of proposed alternatives. There are 7 levels of proposed improvements, which are described below:

Level 1 Immediate improvements such as striping, signing, visibility enhancements, ITS, etc.

Level 2	Channelization improvements for existing OR 22/OR 99W intersection and proposed traffic signal for OR 22/Dallas-Rickreall Highway (DRH) intersection.
Level 3	Proposed "at-grade" jug-handle design with ramps in two quadrants at OR 22/OR 99W intersection. A traffic signal is used to regulate OR 22 and OR 99W traffic flows at the OR 22/OR 99W intersection, thereby saving the cost of building a structure over one of these roadways.
Level 4	Construct a fly-over west of the OR 22/OR 99W intersection to eliminate left-turning traffic flows at the OR 22/DRH intersection.
Level 5	Proposed jug-handle style interchange options at OR 22/OR 99W intersection, with OR 22 going over OR 99W.
Level 6	Construct a fly-over west of the OR 22/OR 99W jug-handle interchange proposed in Level 5 Alternatives to improve traffic flows at the OR 22/DRH intersection.
Level 7	Full interchange concepts with freeway style ramps including connections to DRH.

As the level of design alternatives increase so does the cost and impacts of implementing. Although the level 7 alternatives were initially thought to be the most expensive alternatives, the level 6 and 7 alternatives were ultimately estimated to have very similar costs.

The ten alternative concepts shaded in Table 1 underwent more detailed analysis. Discussions about these alternatives included the configuration of the OR 22/OR 99W intersection regarding which road was elevated (OR 22 or OR 99W). The resulting operational characteristics for these scenarios are basically the same. Concerns related to the scenarios involve the grade of the road into town and the spacing on OR 99W between the OR 22 eastbound ramp terminals and the OR 99W/Rickreall Road intersection. The distance between these two roads in both scenarios is greater than the 400 meters (1,320 feet) required by the OHP. However, all other intersections in Rickreall between Rickreall Road and the eastbound ramp terminals are located too close to the ramp terminals to meet OHP intersection spacing standards. Pageant Street will need to be closed at its OR 99W intersection because it will affect the interchange operation. The OR 99W/Church Street intersection is located further away from the interchange than the OR 99W/Pageant Street Intersection (more than 260 meters –850 feet) is and will not adversely impact the operation of the interchange at this time. The future design of OR 99W south of OR 22, including the disposition of the 99W/Church Street intersection will be addressed as part of a future facility planning process that ODOT will begin in FY 2004.

The alternatives not shaded (see Appendix A for list) in Table 1 were dropped from further consideration by the TAC during the initial round of analysis. Figures are

provided in Appendix A showing each alternative along with a short explanation for the reason why each alternative was dropped from further consideration.

The TAC also dropped two additional alternatives not shown in Table 1 after some initial analysis. One alternative considered roundabouts at either or both of the OR 22/OR 99W and OR 22/DRH intersections. The other alternative considered a Single Point Interchange at the OR 22/OR 99W intersection. The TAC dropped both of these alternatives in the early stages of this planning project. The proposed roundabouts will not function at acceptable levels and the Single Point Interchange was costly and was not phaseable. A Technical Memorandum explaining why each alternative was dropped is provided in Appendix A.

Forwarded Alternatives (Ten Alternatives)

The shaded alternatives in Table 1 are the alternatives that both the Transportation Planning Analysis Unit (TPAU) and Preliminary Design Unit forwarded to the TAC for further analysis and consideration. Alternative 7-A is the long-term alternative recommended in this plan. Alternatives 1-A, 2-C, 5-B, and 6-B are short to mid-term build alternatives that will not meet either mobility or spacing standards in the design year (year 2025). These alternatives have limited merit for their ability to improve the safety and the operation of the transportation system in the near future at a lower cost. The more expensive short to mid-term alternatives (Alternatives 4-B, 5-C, and 6-C) have somewhat greater merit based on their ability to better meet mobility and spacing standards and be “phased-in” as components of the best long-term alternative.

After further analysis and consideration, Alternative 7-A.1 was the alternative that was selected to for construction with OTIA funding. This is a “scaled-down” version of Alternative 7-A. There was not enough OTIA funding to fully build Alternative 7-A, therefore, the design was modified to both meet the funding restrictions while still providing the interchange enough lane capacity to meet the 20- to 25-year traffic demand. However, while it will not fail (operationally) during the planning horizon, 7-A.1 will not fully meet OHP mobility standards in the later years of the planning horizon for OR 22 in the vicinity of the interchange without adding an eastbound lane on the bridge structure and an additional turn lane from westbound OR 22 to the DRH.

Alternative 1-A (No Figure):

This alternative is comprised of low cost, easy to implement features meant to improve safety in the area. While no specific features were identified as part of this planning activity, concepts discussed included rumble strips for shoulders and median areas, glare shield on signals to reduce impacts from the sun, ITS reader boards for traffic conditions and accidents, possible signing or striping modifications.

No analysis was performed for this alternative, although, the Project Planning Team acknowledged the potential for immediate safety benefits from this alternative and recommended that Region 2 Traffic and Planning coordinate with District 3 and Traffic Management Section to pursue ideas for implementation.

Alternative 2-C (Figure 5):

This alternative increases the capacity of the existing signalized OR 22/OR 99W intersection. However, there are safety concerns regarding a traffic signal continuing to be located on a high-speed rural transportation facility.

This alternative improves the operation of the existing signalized OR 22/OR 99W intersection by adding left turn refuge lanes on OR 99W and additional lanes on the two approaches of OR 22. This is a relatively low-cost improvement that could increase both safety and capacity of the existing intersection in the short-term.

There is lane imbalance on the westbound approach of this intersection resulting from drivers traveling in the inside lane of the two westbound OR 22 lanes preparing to turn left to travel toward Monmouth or Dallas. If approximately 67 percent of the westbound vehicles were traveling in the inside lane and 33 percent traveling in the outside lane, the proposed intersection will operate at a V/C ratio of 0.84 and 1.14 in the years 1999 and 2015, respectively. Year 2025 has an even higher V/C ratio. This is a good short-term solution; the channelization on OR 99W may improve safety at this intersection. However, the existing safety concerns regarding the traffic signal on a 50 or 55-mile/hour rural facility will continue into the future.

Alternative 4-B (Figure 6):

Alternative 4-B is also an acceptable short-term alternative. Alternative 4-B provides grade separation on eastbound OR 22 for the coast to Salem traffic movement. Eastbound OR 22 vehicles traveling toward Salem will go over the DRH on a fly-over and become an add-lane when connected to OR 22. The eastbound OR 22 fly-over eliminates the stacking on OR 22 for Salem to Dallas traffic flows. However, the safety concern regarding the existing traffic signal located on a high-speed rural transportation facility (at the OR 22/OR 99W intersection) will continue into the future.

At the westbound OR 22/DRH intersection, the three westbound OR 22 lanes will split into two lanes for westbound OR 22 vehicles traveling to the coast and two lanes for DRH vehicles traveling to Dallas. There will be approximately 495 meters of distance between the split and the existing OR 22/OR 99W intersection.

This design is compatible with the longer-term level 6 and 7 alternatives. A “through” lane should be added in both directions on OR 22 east of the OR 99W intersection to carry “through” traffic flows through the signalized OR 22/OR 99W intersection. The third westbound OR 22 through” lane will distribute vehicles traveling from Salem to Dallas into two lanes instead of one lane at the OR 22/OR 99W intersection, thereby, improving the operation of the proposed traffic signal. The OR 22/OR 99W traffic signal will operate at a V/C ratio of 0.60, 0.82 and 1.00 in the years 1999, 2015 and 2025, respectively.

Figure 5

Figure 6

There is a safety concern for fly-over drivers traveling from the coast to McMinnville. These drivers will have to weave across two lanes of traffic and decelerate from 60 miles/hour to 25 miles/hour in a distance of approximately 330 meters. A total minimum distance of 345 meters is required for vehicles making this maneuver to decelerate, weave, and stop. Safe operation requires a desirable distance of 295 meters and a minimal distance of 185 meters for these vehicles to decelerate and weave before reaching the last eastbound "through" vehicles stopped by the proposed traffic signal. In the year 2015, approximately 160 meters will be needed to store the eastbound "through" vehicles stopped at the traffic signal. Using desirable conditions for the deceleration and weave will add another 110 meters to 345 meters for a total of 455 meters. The minimum distance of 345 meters may be used in this case because there is a low volume of approximately 20 eastbound OR 22 vehicles making this weave and there will be good visibility in the year 2015. The eastbound fly-over will elevate vehicles so drivers will start preparing to stop when they see the traffic signal ahead. This alternative is an improvement over the No Build Alternative, but will create safety concerns before the year 2015 if limited condition criteria is used.

The safety concerns regarding the retention of a traffic signal on a 50-55 mile/hour facility may be exacerbated because of the different expectation created with the addition of a free-flow movement at the OR 22/DRH intersection. Drivers traveling from the coast will be free-flow all the way to this intersection. The addition of the fly-over enforces the driver expectancy of the "free-flow condition so a traffic signal may not be expected by first time drivers. That there will be high-speed differentials between vehicles stopped at the traffic signal and traffic coming from the coast compounds these safety concerns. Although the fly-over will elevate OR 22 drivers and enable them to see the traffic signal at the OR 99W intersection, the larger speed differential creates a new safety concern.

Alternative 4-B could be implemented as a short-term improvement. It eliminates the westbound queue for traffic traveling westerly on OR 22 and turning southwest onto DRH to proceed toward Dallas. As the eastbound OR 22 queue at the OR 99W intersection increases, a concern arises from reducing the available weave distance for traffic flows from the coast turning north toward McMinnville. As the small number of vehicles currently making this movement increases, this may become a problem.

This design will not meet ODOT spacing standards due to the short distance between the eastbound OR 22 on-ramp and the existing OR 22/OR 99W intersection. We do not recommend this alternative as a stand-alone mid- or long-term solution since any increase in the coast to McMinnville traffic flows may create an unsafe weave section.

Alternative 5-B (Figure 7)

Alternative 5-B is a jug-handle interchange with jug-handle ramps located in both northeast and southeast quadrants. Alternative 5-B improves the operation of the OR 22/OR 99W intersection, but does nothing to improve the existing unsignalized OR 22/DRH intersection. This alternative is not recommended due to the high number of vehicles (>600 vehicles/hour) that will travel through the dual left-turn lanes at the westbound OR 22 ramp terminals. This is a large volume of traffic flow to travel through dual left-turn lanes at a signalized intersection.

Figure 7

OR 22 is elevated above OR 99W to lessen impacts to the community of Rickreall. Preliminary ADT Traffic Signal Warrants should be met at the westbound ramp terminals in approximately 2010, while the eastbound ramp terminals should be met in the 2015-2020 time frame. However, the signalization at the eastbound ramp terminal would not be approved for the initial construction. Both ramp terminals will meet mobility standards in the design year after signalization.

There will be two eastbound lanes on DRH for vehicles traveling from Dallas to Salem. This will merge with the one eastbound lane of OR 22. Vehicles traveling from the coast to McMinnville will have approximately 500 meters to weave over two lanes into the right travel lane and decelerate to a speed of 25 miles/hour to use the off-ramp. The 1994 AASHTO recommends 100 meters for a vehicle to decelerate from 55 to 25 MPH leaving approximately 400 meters for the weaving maneuver.

A major concern with this alternative is lane distribution for eastbound traffic during the A.M. peak hour in the year 2025. A very high percentage of the vehicles (approximately 1400 per hour) will avoid the trap lane onto the eastbound OR 22 off-ramp by being in the inside lane of the two eastbound DRH travel lanes. If a third travel lane was extended through the eastbound off-ramp rather than terminating as a trap-lane into the off-ramp, there would be better lane distribution.

Another problem is that a driver traveling from OR 99W southbound who is destined for the DRH would enter OR 22 from the westbound on-ramp has approximately 500 meters to:

- accelerate from a speed of 25 to 55 MPH,
- weave into the left lane of the three westbound OR 22 lanes, and then
- decelerate from 55 to 0 MPH to wait in the left turn queue for travel to Dallas.

The 1994 AASHTO recommends a distance of approximately 280 meters for a vehicle to accelerate from 25 to 55 MPH. If the westbound left onto DRH does not have to stop so westbound OR 22 vehicles 220 meters for weaving, the westbound weaving section would operate at an acceptable V/C ratio of 0.65 in the design year. However, under Alternative 5-B the westbound left onto DRH must decelerate to a stop at the end of the queue and wait for a gap. Presently, the vehicles turning left at the OR 22/DRH intersection back up approximately 75 percent of the way to the OR 22/OR 99W intersection. This turning movement will fail around the year 2004 and back through the OR 22/OR 99W intersection. Therefore, this turning movement will block the weave movement causing it to fail.

Traffic Management Section typically will not recommend installing a traffic signal at the westbound OR 22 ramp terminals even though this intersection will meet traffic signal warrants. However, the State Traffic Engineer can approve the traffic signal anyway if Region has recommended it. This is due to the high number (880 vehicles/hour) of left-turning vehicles in the dual left-turn lanes (>600 vehicles/hour).

This alternative will somewhat improve traffic flows on OR 22 by eliminating the traffic signal at the OR 22/OR 99W intersection. However, the weaving problems discussed

above will diminish these gains. Furthermore, westbound OR 22 traffic flows turning southbound to travel toward Dallas will experience unacceptable delays. This alternative will not meet mobility standards.

OHP spacing standards will not be met on OR 22 between the existing OR 22/DRH intersection and this interchange. The long westbound queues will encourage drivers to make unsafe left-turns. The long queue will also spill into the adjacent through lanes causing large speed differentials on OR 22. Because of these problems, the TAC does not recommend any additional consideration of this alternative.

Alternative 5-C (Figure 8)

Alternative 5-C improves the operation of the OR 22/OR 99W intersection, but does not improve the existing unsignalized OR 22/DRH intersection. The westbound OR 22 vehicles turning left at the OR 22/DRH intersection will continue to experience long delays. As the eastbound traffic volumes increase, the left turn queues will get longer and adversely impact the eastbound OR 22 through movements.

Alternative 5-C is a jug-handle interchange with ramps located in the northwest and southeast quadrants. OR 22 is elevated over OR 99W to lessen impacts to the community of Rickreall. The heavy Salem/Rickreall and Rickreall/Salem traffic movements can be accommodated without installing a traffic signal at the westbound ramp terminal for approximately 20-25 years. The eastbound ramp terminal would need a traffic signal in the 2015-2020 time frame. Signalization at either ramp terminal will not be approved for the initial construction.

There will be two eastbound lanes from the DRH onto OR 22 for vehicles traveling from Dallas to Salem. Vehicles traveling from the coast to McMinnville will have approximately 500 meters to weave over two lanes into the right travel lane and decelerate to a speed of 25 miles/hour to use the eastbound off-ramp. The 1994 AASHTO recommends 100 meters for a vehicle to decelerate from 55 to 25 MPH leaving approximately 400 meters for the weaving maneuver.

This alternative's major concern is the A.M. peak hour lane distribution in the year 2025. Approximately 1400 vehicles/hour traveling from Dallas to Salem will be in the inside of the two DRH travel lanes to avoid having to weave left one lane on OR 22 to avoid the eastbound trap lane to OR 99W. To achieve better lane distribution, the third eastbound OR 22 travel lane should be extended through the eastbound off-ramp rather than having a lane drop at the off-ramp. There should then be an acceleration lane for Rickreall to Salem traffic flows.

A design was considered that brought eastbound DRH into OR 22 with one lane and built a right turn deceleration lane to remove off-ramp traffic flows from OR 22 "through" traffic flows. The design kept the eastbound DRH traffic flows in the right most of the two lanes and avoided the one lane weave to the left before the off-ramp lane drop. However, this solution is not viable long-term since a single northeasterly lane on DRH will be operating at capacity with approximately 1445 vehicles/hour in it.

Figure 8

Westbound OR 22 vehicles turning left at the DRH intersection back up about 75 percent of the way to the OR 22/OR 99W intersection which is east of the proposed westbound on-ramp, preventing McMinnville to Dallas travelers from entering the westbound OR 22 left-turn refuge. To make this alternative safe and work with the existing OR 22/DRH intersection, the westbound on-ramp traffic flows should be prevented from turning left at the OR 22/DRH intersection. A raised barrier is one technique that could be used to prevent this left turn movement and reroute the traffic flows to the OR 99W/Rickeall Road intersection. However, it is recommended that the short westbound on-ramp be disconnected and replaced with a longer one that connects the westbound ramp terminals to OR 22 west of the DRH intersection. This modification will reroute drivers traveling from McMinnville to Dallas from the DRH to the Kings Valley Highway via its intersection further west on OR 22. This traffic could also proceed southerly on OR 99W past the interchange to the OR 22/Rickreall Road intersection and west on Rickreall Road to reach the DRH and continue towards Dallas.

The west to south traffic movement at the unsignalized OR 22/DRH intersection will operate at a V/C of 0.92 and 1.38 in the years 1999 and 2015, respectively. This turning movement will fail around the year 2004. Once the V/C ratio reaches approximately 1.0, westbound OR 22 vehicles turning south toward Dallas will stack eastward past the OR 22/OR 99W interchange. The west to south traffic movement at the existing unsignalized OR 22/DRH intersection ultimately needs to be eliminated.

This alternative can be phased in as part of a complete solution without a major loss of investment. However, it will not meet mobility standards due to the stacking of the heavy westbound to southbound turning movement at the OR 22/DRH intersection. OHP spacing standards will not be met on OR 22 between the existing OR 22/DRH intersection and this interchange.

Alternative 6-B (Figure 9)

Alternative 6-B improves the operation of the existing OR 22/DRH intersection by eliminating the stacking of westbound OR 22 vehicles turning southwest at the DRH intersection. However, this alternative is not recommended due to the high number of vehicles that will travel through the dual left-turn lanes at the westbound OR 22 ramp terminals.

Alternative 6-B combines Alternative 4-B with the jug-handle interchange shown in Alternative 5-B. Eastbound OR 22 vehicles traveling will be routed on the south side of OR 22 onto the fly-over pass over the DRH. It then becomes an add-lane when connected to OR 22 with approximately 300 meters between the fly-over entrance to OR 22 and the southeast jug-handle ramp exit. With two northeasterly traffic lanes on DRH for the heavy Dallas to Salem A.M. peak hour the lane distribution for eastbound flows will be good because the DHR flows will be in both the left and the middle travel lanes of the three eastbound OR 22 lanes.

Figure 9

There will be three westbound lanes on OR 22 between the northeast jug-handle ramp entrance and the DRH. At the westbound OR 22/DRH intersection, the three lanes will split into two lanes for westbound OR 22 travel to the coast and two lanes for DRH vehicles traveling to Dallas. Two lanes will be needed on DRH for vehicles traveling from Dallas to Salem. There will be approximately 600 meters of distance between the split and the northeast jug-handle ramp entrance. This option eliminates the westbound queuing concern of Alternates 5-B and 5-C.

There are only 300 meters available on OR 22 for vehicles traveling from Dallas to McMinnville to weave into the right lane of the three eastbound OR 22 lanes and decelerate from a speed of 55 to 25 MPH to use the eastbound off-ramp. Elongating the eastbound ramp could increase this distance, but the shorter distance would not likely cause significant problems because of the low demand for this movement. The 1994 AASHTO recommends 100 meters to decelerate from 55 to 25 MPH leaving 200 meters for eastbound vehicles to weave. Using the latest HCS software, the eastbound weaving section will operate at a V/C ratio of 0.57 during the A.M. peak hour in the year 2025.

Drivers entering OR 22 from the westbound OR 22 on-ramp will have approximately 600 meters to accelerate from 25 MPH to 50 MPH and weave into the middle of the three westbound OR 22 lanes to travel to Dallas. The 1994 AASHTO recommends approximately 280 meters of distance for a vehicle to accelerate from 25 to 55 MPH and 320 meters for weaving. This is not a desirable situation as the speed differential is acceptable at about 9 MPH. The westbound weaving section will operate at a V/C ratio of 0.64 in the design year.

Preliminary ADT Traffic Signal Warrants should be met at the eastbound ramp terminals in the 2015-2020 time frame. The westbound ramp terminals will meet warrants about year 2010. Traffic Management Section typically will not recommend installing a traffic signal at the westbound OR 22 ramp terminals even though the intersection will meet traffic signal warrants. However, the State Traffic Engineer can approve the traffic signal anyway if Region has recommended it. This is due to the high number (880 vehicles/hour) of left-turning vehicles in the dual left-turn lanes (>600 vehicles/hour).

This design is compatible with one short-term (Alternative 4-B) and one long-term alternative (Alternative 7-A). Although this alternative will meet mobility standards it will not meet OHP spacing standards due to the short distance between the eastbound and westbound OR 22/DRH on- and off-ramps and merge/diverge points.

Alternative 6-C (Figure 10)

Alternative 6-C, combines Alternatives 4-B and 5-C into one alternative. It is the best of the mid-term alternatives. However, this alternative will not meet interchange spacing standards, but will operate acceptably until the design year.

Figure 10

The OR 22/OR 99W intersection will have jug-handle ramps in both northwest and southeast quadrants. The heavy traffic flows between Salem and Rickreall are accommodated without installing a traffic signal at either ramp terminal for approximately 20-25 years. OR 22 is elevated above OR 99W, while the westbound OR 22 on-ramp will be extended past the westbound OR 22/DRH intersection. This eliminates the unsafe weaving maneuvers from OR 22 on DRH toward Dallas. Drivers traveling from McMinnville to Dallas will be rerouted from the DRH to the Kings Valley Highway via its intersection further west on OR 22. This traffic could also proceed southerly on OR 99W past the interchange to the OR 22/Rickreall Road intersection and west on Rickreall Road to reach the DRH and continue towards Dallas.

At the OR 22/DRH intersection, there will be a one-lane fly-over on OR 22 for drivers traveling eastbound between the coast and Salem. This lane will become an add-lane joining OR 22, forming the three eastbound OR 22 lanes between the OR 22/DRH intersection and the eastbound OR 22 off-ramp to OR 99W. With two northeasterly traffic lanes on DRH for the heavy Dallas to Salem A.M. peak hour the lane distribution for eastbound OR 22 traffic flows will be good since the heavy flow will be in the left and middle travel lanes when it becomes the three eastbound OR 22 lanes. However, there is only 300 meters (990 feet) available on OR 22 for vehicles traveling from Dallas to McMinnville to weave into the right most lane and decelerate from a speed of 55 to 25 MPH to use the eastbound off-ramp. This design will not meet OHP spacing distance between the eastbound OR 22 on-ramp and the lane drop at the southeast jug-handle off-ramp. The OHP requires a standard spacing of 1.6 kilometers (5,280 feet) between interchange ramps. However, the volume of vehicles making this weaving maneuver is small (less than 10 percent of the typical peak hour eastbound vehicles in 2025 even if all vehicles making this move came from DRH and none came from OR 22). The 1994 AASHTO recommends 100 meters to decelerate from 55 to 25 MPH leaving 200 meters for eastbound vehicles to weave. Using the latest HCS software, the eastbound weaving section will operate at a V/C ratio of 0.57 during the A.M. peak hour in the year 2025. Preliminary Design Unit does not consider it a fatal flaw.

The three westbound OR 22 lanes split into two lanes for westbound (coast) OR 22 vehicles and two lanes for southwesterly DRH vehicles traveling to Dallas. Locating the westbound OR 22 on-ramp west of the westbound OR 22/DRH intersection eliminates the weave on OR 22 between the westbound OR 22 on-ramp and the DRH intersection. This eliminates the weave and speed differential concerns on OR 22 between OR 99W and DRH.

Alternative 7-A (Figure 11)

This is the best long-term alternative since it meets both interchange spacing and mobility standards.

Alternatives 7-A combines the two OR 22/OR 99W and OR 22/DRH intersections into a single interchange complex with freeway style ramps. This alternative includes a structure on OR 22 over OR 99W and a loop ramp in the northwest quadrant. OR 22 is

Figure 11

elevated over OR 99W to lessen the impact to the community of Rickreall. Alternative 7-A has a one-lane structure over DRH for eastbound OR 22 vehicles traveling from the coast to Salem. Traffic signals are not needed at either eastbound or westbound ramp terminals if an "add-lane" is constructed on OR 99W southbound to move the traffic coming from the westbound ramp terminals (the Salem to OR 99W southbound vehicles).

Route continuity is preserved on OR 22 by having three westbound OR 22 lanes and then splitting these three lanes into two toward the coast and two toward Dallas. This will also better fulfill driver's expectations since OR 22 will have two lanes going to the coast instead of only one lane.

This interchange configuration will not provide a direct route for McMinnville/Dallas or Dallas/McMinnville traffic flows. These drivers will have to reroute to the Kings Valley Highway or one of the roads from Dallas that intersect with OR 99W to reach their destinations (Rickreall Road, Clow Corner Road, etc.). This rerouting of traffic flows will likely cause the OR 99W/Rickreal Road intersection to meet Preliminary ADT Traffic Signal warrants by about 2020. A technical memorandum explaining more detail about potential OR 99W/Rickreall Road intersection improvements is provided in Appendix C.

The interchange portion of this alternative will meet both mobility standards and spacing standards. The OR 99W/Rickreall Road unsignalized intersection will meet spacing standards, however, it will not meet mobility standards for the minor approaches until OR 99W is widened to five-lanes and the intersection is signalized or unless a way is found to reduce demand along OR 99W in Rickreall.

Introduction of Two New Alternative Proposals During the Later Stages of this Refinement Study (Alternatives 7-A.1 and 7-C)

When discussion of this project began during the OTIA project selection process, Alternative 6-C was thought to be the most cost-effective solution for the 20-year planning horizon. However, there was concern about eastbound traffic flows traveling from the coast on OR 22 weaving across two lanes of traffic to exit at the eastbound OR 22 interchange off-ramp. In order to address this concern, Alternative 7-A.1 was proposed, which would design the eastbound OR 22 ramp terminals as a half-diamond interchange and eliminate the weave.

Alternative 7-C, which has a standard diamond interchange design in the northeast quadrant, was proposed as a way to potentially address concerns that removing the signal at OR 22 and OR 99W would eliminate gaps in the traffic flow in Rickreall. This alternative was the only alternative that would warrant a traffic signal on OR 99W at the end of construction that ODOT Traffic Management Section would support. This signal would be located at the westbound OR 22 off-ramp intersection with OR 99W. This alternative was analyzed to determine if the signal would improve gap opportunities in Rickreall and, as a result, improve pedestrian safety and local accessibility to OR 99W.

Both of these alternatives are discussed in more detail below:

Alternative 7-A.1 (Figure 12)

Alternative 7-A.1 is a "scaled-down" version of Alternative 7-A. Alternative 7-A.1 has one less lane on OR 22 in both eastbound and westbound directions and DRH remains a two-lane roadway in lieu of the four-lane roadway proposed in Alternative 7-A. Like Alternative 7-A, Alternative 7-A.1 has a loop ramp in the northwest quadrant which is an "add-lane" onto OR 99W that enables off-ramp drivers to "free-flow" onto southbound OR 99W with minimal interference from other southbound OR 99W vehicles. As with all of the alternatives, a new local (county) road north from Rickreall Road along the eastern portion of Rickreall will provide access to the elementary school, Grange and Mason Lodge and enable implementation of the access plan for the interchange.

There are approximately 490 meters (1,600 feet) between the eastbound OR 99W ramp terminals and Rickreall Road. This meets the OHP ramp-to-local street spacing of 400 meters (1,320 feet). However, there are two streets between Rickreall Road and the ramp terminals. Pageant Street, located approximately 140 meters (500 feet) south of the ramp terminals, will need to be closed because direct access from the street onto OR 99W will affect interchange operations. Church Street is located approximately 270 meters (890 feet) south of the eastbound OR 22 ramp terminals. Region has indicated that the OR 99W/Church Street intersection will remain a full movement access at this time. When additional turn lanes or travel lanes are needed on OR 99W to handle traffic flows, it is possible that the Church Street access will be limited to right in/out movements through the use of a median. Any median in this vicinity would need to be "mountable" (i.e., designed to allow Fire and Emergency vehicles to cross over). These issues will be studied in a future refinement plan that will deal with capacity, safety and access issues while trying to maintain a "livable community".

It is anticipated that the need to add lanes to and implement more stringent access management on OR 99W will occur within an approximately 15-20-year horizon. It is also anticipated that traffic signal warrants at Rickreall Road will also be met in this same period. When signalized, Rickreall Road will be better able to handle additional traffic diverted from residences and businesses whose access may be affected by installation of a median.

There was concern within the community that there would not be sufficient gaps within future OR 99W traffic flows for pedestrian to safely cross OR 99W and particularly for children to walk to and from school. Concern about access to homes and businesses were also raised. A simulation using SYNCHRO software has indicated there will be adequate gaps within future OR 99W traffic flows for pedestrians and local access. As with all other interchange alternatives, this alternative provides an improved school crossing with a center-median pedestrian refuge area enabling pedestrians to cross OR 99W in two stages (crossing just one lane of traffic at a time).

After further analysis and consideration, Alternative 7-A.1 was the alternative that was selcected to build. There was not enough funding to build Alternative 7-A, therefore, the design was modified to both meet the funding restrictions while still providing the

Figure 12

interchange enough lane capacity to meet the 20- to 25-year traffic demand.

This alternative was considered with OR 22 both over OR 99W and OR 22 under OR 99W. Based on input from area residents and the Polk County Commission, the TAC recommended that OR 22 should go over OR 99W. It was felt that this approach would have fewer impacts to the community of Rickreall. Region 2 Management approved and advanced this alternative for construction using OTIA funding.

Alternative 7-C (Figure 13)

Alternative 7-C is similar to Alternative 7-A.1 except there is no loop ramp in the northwest quadrant. Instead, the proposed interchange will have a standard diamond interchange ramp in the northeast quadrant. The westbound OR 22 ramp terminals will be signalized. On the westbound approach, there will be dual left-turn lanes and a single right-turn lane. Like Alternative 7-A.1, there will be four lanes on OR 99W under the OR 22 structure. The lane configurations on OR 99W throughout the community of Rickreall are the same as those shown in Alternative 7-A.1.

As discussed in the Alternative 7.A.1 section, there was concern within the community that there would not be sufficient gaps within future OR 99W traffic flows for pedestrian to safely cross OR 99W and particularly for children to walk to and from school. It was felt that a traffic signal at the westbound ramp terminals would maintain the gaps in OR 99W traffic flows that are provided by the existing traffic signal. Traffic signals do platoon vehicles and do create gaps in traffic flows when the traffic signal is located fairly close a crosswalk. The SYNCHRO simulation mentioned earlier demonstrated that because of the random arrival of vehicles turning into Rickreall from eastbound OR 22, installing a signal would not significantly increase gaps in the traffic flow within Rickreall.

Additionally, by the time vehicles travel from the westbound ramp into Rickreall, the vehicles that were stopped by the signal have become so dispersed that the gaps created by the traffic signal are minimal within Rickreall. Also, note that a traffic signal at the westbound off-ramp has no effect on northbound OR 99W traffic flows.

In the year 2025, there will be approximately 880 vehicles per hour using the dual left-turn lanes at the westbound OR 22 ramp terminals. Therefore, this alternative is not recommended beyond 2025 due to the high number of vehicles (>600 vehicles/hour) that will travel through the ramp terminal intersection. If it were chosen, this alternative should leave enough room in the NW quadrant to construct the free flow loop for WB to SB movements in the future.

This alternative was also considered with OR 22 both over and under OR 99W and with OR 22. Based on input from area residents and the Polk County Commission, the TAC recommended that OR 22 should go over OR 99W. It was felt that this approach would have fewer impacts to the community of Rickreall.

Figure 13

Recommendation

Alternative 7-A is the best long-term alternative for traffic. However, due to funding limitations, Alternative 7-A.1 is the selected alternative. It provides the interchange with enough lane capacity to meet the 20- to 25-year traffic demand and can be expanded into the full Alternative 7-A configuration at a later date. Alternatives 7-A and 7-A.1 are the only alternatives evaluated that eliminates the OR 22/OR 99W traffic signal while eliminating the potential dangerous weave movements on OR 22 between OR 99W and the Dallas Rickreall Highway (OR 223).

APPENDIX A

ALTERNATIVES CONSIDERED, BUT NOT ADVANCED

1. Appendix A summarizes the alternatives that were considered, but not advanced for this project. More information about the alternatives may be found in the “Build Alternatives” Section, and Table 1 in the main body of this report.
2. Geometric Design and Operational Analysis for Roundabout Intersection Alternatives.
3. Geometric Design and Operational Analysis for Single Point Interchange Alternative.

Figure 14

Figure 15

Figure 16

Figure 17

Figure 18

Figure 19

Figure 20

Figure 21

OR 99W/22 Rickreall Junction Refinement Plan
Geometric Design and Operational Analysis
Technical Memorandum #1
Roundabout Intersection Alternatives

Roundabout intersection control was evaluated for both the intersections of Hwy. 22 @ 99W and Hwy. 22 and Hwy. 189 (Dallas – Rickreall Hwy.). Transportation analysis provided by ODOT's Transportation Planning and Analysis Unit showed that each intersection would require two lane roundabouts and that the OHP mobility standards would still be violated at both intersections. In addition to the traffic analysis there are several safety and geometric concerns that would suggest roundabout intersection control is not appropriate at either of the two proposed locations.

Geometric Design and Safety Issues:

The Preliminary Design Unit, lead a recent research project evaluating the effectiveness of roundabouts and developed siting criteria to help aide in locating these types of intersection control in the areas that best suit their operating characteristics. Evaluating these intersections with the adopted siting criteria (attached) shows that the proposed locations violate several of the recommended characteristics.

- Speed – Posted speed should be 60 km/h (35 mph) or less. These intersections are located in rural high speed environments posted speed of 50 mph with actual 85% speeds closer to 60 mph. Roundabout intersections require every entering vehicle to slow and yield to traffic already within the circulatory roadway. In some cases entering vehicles will be required to stop. Either a slow yielding entry or a stopped vehicle produces a large speed differential from the traveling speeds of the highway. The speed differential could range anywhere from 40 mph to 60 mph, which is very significant. Large speed differentials can often lead to high accident locations. This is evident at the existing signalized intersection of Hwy. 99 and 99W. This signalized intersection encounters a very high number of rear end crashes most of which can be attributed to the high-speed differential. In addition, drivers in rural environments do not expect to encounter situations that provide high-speed differentials and therefore the crash potential is even higher.

  Any roundabout design at these locations would need to provide mitigation measures to reduce the speed differential. This means physical adjustments to all highway segments approaching the roundabout to transition traffic speeds from high speed to low speed. However, these types of physical

modifications can also lead to an increase in some accidents particularly rear end crashes. Therefore, the actual crash experience will extend beyond the limits of the roundabout and include the highway speed transition segments.

- Trucks – Roundabouts should not be located at intersections that accommodate a large volume of trucks. The Hwy. 22 @ 99W intersection accommodates on average approximately 2000 trucks per day. This is a large volume of truck traffic. Moderate to large trucks have difficulty in maneuvering through a roundabout. Roundabouts are designed to provide low speed movements for passenger type vehicles and even slower movements for truck traffic. This is accomplished by requiring vehicles to accommodate a turning roadway with small radii. Two lane roundabouts require large trucks to utilize both circulatory lanes due to the trailer off tracking. This can create safety as well as operational efficiency problems.

- Number of lanes in roundabout – The interim siting criteria recommends that roundabouts operate as only single lane. This is to reduce the complexity of driving roundabouts. Multi-lane roundabouts offer multiple challenges for drivers. As roundabouts are a relatively new form of intersection control in the USA and particularly in Oregon, drivers need to understand the basic operating principles of single lane roundabouts before they can be expected to use a multi-lane roundabout efficiently and safely. The complexity of multi-lane roundabouts increases with the number of entering legs. The analysis performed by TPAU shows that both intersections would require multi-lane roundabouts with today's volumes.

  Multi-lane roundabouts create several internal conflicts. Truck traffic will use most, if not all of the circulatory roadway. Vehicles on the inside circulatory lane may be sideswiped by the trailer off-tracking. Drivers are used to having their own lane without worrying about infringement from other vehicles. This may cause some problems. Additionally, there are high volumes of left turning traffic at these intersections. Proper use of the roundabout requires left turning traffic to use the inside portion of the roundabout and leave from the inside as well. This will be difficult for many drivers to comprehend and some will make a left turn from the outside lane, which may create safety problems as well as operational efficiency issues.

In addition, roundabouts at both proposed locations are not consistent with other site characteristics that are recommended by the recently completed ODOT Roundabout research study. These include:

- Equal Traffic Flows – Roundabout intersections operate best where the volume entering the roundabout from each direction are nearly equal. Roundabouts do not operate effectively where one or two entry volumes are significantly higher than the other entries. Additionally, roundabouts are less effective with high left turn volumes. Both the Hwy. 22 @ 99W and Hwy. 22 @ 189 intersections accommodate heavy left turn traffic from westbound to

southbound. These left turn demands are forecast to be 880 and 1575 respectively. These are very large volumes and will reduce the effectiveness and safety of a roundabout intersection.

- Roundabout interaction with other traffic control devices – Roundabout intersection control was discussed in conjunction with one of the intersections being signalized. Additionally, a roundabout was proposed at Dallas – Rickreall Highway with an interchange at the Hwy. 22 @ 99W intersection. Both of these proposals create significant operational issues. First of all queuing, or storage problems at either the roundabout or signalized intersection could affect the operations at one or both intersections. Additionally, there will be operational problems for westbound traffic from an interchange at Hwy. 22 @ 99W to a roundabout intersection at the Dallas – Rickreall Highway. Traffic will be accelerating to highway speeds and merging, drivers will not expect an intersection control closely spaced that requires them to slow to 20 mph or even stop. Therefore roundabout intersection control at both intersections would be necessary to ensure proper vehicle interaction between the two intersections.

Traffic Analysis Results:

The following tables show the traffic analysis results for roundabout intersection control at both Hwy. 22/99W and Hwy. 22/DRH. As the analysis shows, the existing traffic demand at the Hwy. 22/99W intersection requires a double lane roundabout with 1999 volumes. The Hwy. 22/DRH intersection does operate at acceptable levels as a single lane roundabout with two by-pass lanes (DRH to Salem and WB traffic on Hwy. 22) under 1999 traffic conditions. However, by the time any improvement would be constructed, the single lane roundabout V/C ratio will most likely be over the OHP mobility standards for this highway and therefore require construction of a double lane roundabout immediately.

Table 1 shows the results for the Hwy. 22/99W intersection:

Table 1: Analysis Results for Hwy. 22/99W Intersection

Type of Roundabout	Year	Approach Volume to Capacity (V/C) Ratio			
		South	West	North	East
Single	1999	1.03	0.82	1.40	1.39
Double	1999	0.37	0.45	0.38	0.70
Double	2015	0.75	0.77	2.42	1.15
Double	2025	1.18	0.96	1.71	1.53

As can be seen in Table 1, a double lane roundabout barely meets the OHP mobility standards for 1999 traffic volumes. By the time construction would be completed (at least 2005, the mobility standards will not be met at this

intersection. Additionally, the roundabout would be over capacity before 2015. Extrapolating the above data shows that the roundabout will be at capacity for the east approach around 2010. This means that a double lane roundabout constructed in 2005 would at most only last 5 years before reaching capacity.

Table 2 shows the results for the Hwy. 22/DRH intersection:

Table 2: Analysis Results for Hwy. 22/DRH Intersection

Type of Roundabout	Year	Approach Volume to Capacity (V/C) Ratio		
		South	West	East
Single (No Bypass Lanes)	1999	0.46	0.60	0.81
Single (With Two Bypass Lanes)	1999	0.01	0.65	0.54
Single (With Two Bypass Lanes)	2025	0.01	6.80	0.87
Double	1999	0.39	0.27	0.50
Double	2015	0.62	0.61	0.68
Double	2025	0.67	1.42	0.81

Table 1 shows that a double lane roundabout at the Hwy. 22/DRH intersection would function within the OHP mobility standards through 2015. However, the OHP standards would be violated the next year. In addition, extrapolating the data for the west approach shows that the roundabout would reach capacity around 2020.

The computer program SIDRA was used to do the analysis. This program may be a little optimistic when it comes to computing roundabout operation within the United States. The analysis model was developed in Australia where roundabouts have been used extensively for over 50 years. The model assumes that drivers actually drive multi-lane roundabouts in an aggressive and optimistic manner. Drivers in the United States will probably drive roundabouts much more conservatively than in areas where they have been used for a long time. The research work actually confirmed that US drivers do not drive multi-lane roundabouts properly therefore reducing the efficiency of the intersection. This means that the actual operations of the double lane roundabouts will most likely be worse than the model is predicting.

Summary:

Roundabout intersection control is not recommended at either intersection due to the numerous safety and operational aspects of this type of intersection control at these locations. These problems include large speed differentials, truck volume, truck – vehicular conflicts, unequal traffic volumes, complexity of multi-lane operation, lack of compatibility with other design options, and highway mobility standards cannot be met in the design year.

OR 99W/22 Rickreall Junction Refinement Plan
Geometric Design and Operational Analysis
Technical Memorandum #2
Single Point Interchange Alternative

A Single Point Interchange alternative was evaluated for the intersection of Hwy. 22 @ 99W. This alternative was discussed as a design technique that could reduce the impacts of an interchange to the Rickreall community. This alternative was not advanced due to higher overall construction costs, right of way impacts, lack of compatibility of phasing, and the alternative did not offer any real advantages over other long term design alternatives. No transportation analysis was performed for this alternative.

Alternative Description:

This alternative consists of building a single point diamond interchange at the Hwy. 22 @ 99W intersection as well as grade separating the Hwy. 22 @ 189 intersection. The single point diamond design is a tight or compressed design where the ramps are closely spaced to the highway and curve inward towards each other to form one singe intersection underneath the overcrossing structure. However, due to the close proximity of the Hwy. 22 @ 189 intersection, the ramps to the Dallas – Rickreall Highway (189) need to be separated from the Hwy. 22 @ 99W ramps. This requires exiting westbound traffic bound for Hwy. 189 prior to the exit to Highway 99W. The ramp roadway then crosses over Hwy. 99W, then curves over Hwy. 22 to connect with the existing Hwy. 189. For eastbound traffic there are two options. The first option is to realign the eastbound portion of Hwy. 189 to run parallel to and south of Hwy. 22. Hwy. 189 eastbound would then cross over Hwy. 99W and then merge with Hwy. 22 just prior to the railroad structure. The second option is to braid the eastbound portion of Hwy. 189 with the eastbound exit ramp to Hwy. 99W. This option may reduce the overall footprint over the first option.

Alternative Evaluation:

This alternative was not advanced for the following reasons:

- Cost – The estimated construction cost for this alternative is approximately $17.5 million. This is $1.5 - $3 million more than the other two full build interchange alternatives. This alternative requires 4 structures, 1 – 2 more than the other alternatives. Additionally, this design requires substantial retaining walls along the Hwy. 99W ramps. Finally, this alternative may require additional right of way than the other alternatives that would increase the costs further.

- Right of Way Impacts – This alternative would likely require more right of way than the other full build alternatives. This would require taking more farmland. It is a statewide planning and project goal to minimize or avoid taking farmland whenever possible.

- Ability to Phase the Project – This alternative can not be phased with any of the short to mid-range solutions being considered. All short and mid-range solutions would end up being throw away if this alternative is selected as the full long term solution. The ability to phase improvements was an important element in selection of preferred alternatives. This alternative fails this goal.

- No Distinctive Advantages – The single point interchange option did not offer any significant or unique benefits as far as operational performance, right of way impacts, community impacts, cost, or phasing. Overall, this alternative performed at a level equal to or less than the other grade-separated alternatives in all of the evaluation categories.

On the basis of the reasons above, the single point interchange alternative was not advanced and is not recommended for further consideration.

APPENDIX B

TRAFFIC DEVELOPMENT & ANALYSIS METHODOLOGY

TRAFFIC DEVELOPMENT

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

- Manual Counts at key locations
- ODOT's Permanent Recorder Stations
- ODOT's Traffic Volume Tables
- Maps depicting land use and development potential in the study area.
- Anticipated major traffic generators within the region
- Proposed expansion of major traffic generators within the region
- Polk County Fairgrounds Traffic Information
- Alternative Mode Projections
- Bridgehead Engineering Study
- Population Projections

Manual Counts at Key Locations

Manual turn movement counts including truck classification breakdowns were taken at the following locations shown in Table 2:

Table 2: Manual Count Locations

Location	Date	Duration (hours)
Or 22/Greenwood Road	August 17/19, 1997	14
OR 22/Or 99W	November 17/18, 1997	14
OR 22/Or 99W	October 28/29, 1999	16
OR 22/Or 99W	May 17, 2000	2
OR 22/Dallas-Rickreall Highway (DRH)	December 17/20, 1999	16
OR 22/Dallas-Rickreall Highway (DRH)	May 17, 2000	2
OR 22/Kings Valley Highway	July 31 & Aug. 1, 1996	14
OR 99W/Rickreall Road	April 20/22, 1999	14
OR 99W/Rickreall Road	December 21/22, 1999	16
OR 99W/Rickreall Road	November 29, 2000	14
OR 99W/0.02 miles north of Portland & Western Railroad Crossing	March 5,6,10 & 11, 1997	24
OR 99W/0.02 miles north of Portland & Western Railroad Crossing	March 31/April 19/May 2, 2000	24
OR 99W/0.02 miles north of Portland & Western Railroad Crossing	March 5,6,10 & 11, 1997	24

ODOT's Permanent Recorder Stations

ODOT maintains 120 permanent automatic Traffic recorder (ATR) stations throughout the state highway system that record information about highway use throughout the year. The data gathered from these recorders include Average Daily Traffic (ADT), Maximum Day, Maximum Hour, 10th, 20th, 30th Highest Hours shown as a percentage of ADT, truck classification breakdowns, Historical Annual Average Daily Traffic (AADT) by Year, directional traffic splits, and seasonal variations in traffic. The general seasonal adjustments were derived from an average of ATR's that have operational characteristics similar to OR 22.

ODOT's Traffic Volume Tables

ODOT's transportation Volume Tables contain the tabulation listing of ADT values for state highways. Information from these tables provides a basis for the current ADT values and historical growth trends.

Future year traffic projections are typically performed through the use of cumulative analysis, historic growth trends or transportation models. Historic growth trends were determined to be the most accurate method to use for this project. Future growth trends were analyzed at 11 locations and the results are shown in the Table 3:

Table 3: Year 1999 – 2025 Growth Rates for Specific Roadway Sections

Road-Way	Location	Traffic Volume Tables ADT (vehicles/day)			Predicted ADT (vehicles/ day)	Linear Annual Growth Rate	'99-25' Linear Growth Increase
		1995	1996	1997	2017	(%)	(%)
OR 22	0.02 m. east of Perry-dale Rd. (Dolph Cor.)		7,100		9,400	1.5426	40.11
OR 22	0.21 m. west of Dallas-Rickreall Hwy.		7,200		10,700	2.3148	60.19
OR 22	0.01 m. west of OR 99W		17,100		25,200	2.2556	58.65
OR 22	0.01 M. east of OR 99W		19,300		30,600	2.7881	72.49
OR 22	0.01 m. east of Greenwood Rd.		23,300		35,500	2.4934	64.83*
OR 99W	0.01 m. north of OR 22	4,400			7,300	2.9959	77.89
OR 99W	0.01 m. south of OR 22	8,900			16,100	3.6772	95.61
OR 99W	At Rickreall Bridge	10,500			17,800	3.1602	82.16
OR 99W	0.01 m. north of Orrs Corner Rd.	10,100			16,200	2.7453	71.38
DRH **	0.02 m. west of OR 22			10,800	15,700	2.2685	58.98
DRH **	0.01 m. west of connection to OR 99W			12,500	17,400	1.9600	50.96

* Growth rate is consistent with Salem Model.
** DRH – Dallas-Rickreall Highway

Maps Depicting Land Use and Development Potential in the Study Area

Mid-Willamette Valley Council of Governments (MWVCOG) developed generalized land use and location maps. Vacant lands within the study area and Rickreall community were zoned either Exclusive Farm Use (EFU) or Light Industrial (IL). There were approximately 6.57acres of vacant industrial land. The land use plan for the community of Rickreall may change. The Polk County Planning Department is eliciting proposals from anyone in Rickreall that would like to have their property rezoned.

Presently, there is not any large land use rezoning proposals within the project area that would have a significant effect on the projected traffic volumes for this project.

Anticipated Major Generators within the Region

MWVCOG provided the following list of anticipated traffic generators within the region. Here is the list:

City of Dallas

- A second major grocery store within the next five years.
- More commercial growth is expected along Ellendale Road and Kings Valley Highway.
- City hopes to have wastewater treatment facility expansion completed by August 2003.
- City still receives an increased amount of sewer connections.

City of Monmouth

- Development of a nine-acre commercial development along the Monmouth-Independence Highway (at the S-curve) is expected within the next several years.
- City has annexed approximately 80 acres of residential property that could add approximately 800 residential units.

The additional traffic flow generated from the anticipated major generators that are located within the region will increase traffic volumes significantly within the study area.

Proposed Expansion of Major Traffic Generators within the Region

Dalton Rock - Dallas

- Quarry operations could increase
- It is estimated that 10 percent of the firm's trucks (about 10 trucks) use the OR 22/OR 99W intersection today and could increase about 50 percent in future years.

Hampton Lumber – Willamina

- Ed Immel of ODOT's Rail Division assured the Hampton rail line will continue to operate into the future. Hampton has invested in new railcars.

Willamette Industries – Dallas

- The sawmill facility will be retooled and truck traffic will increase from 30 to 60 percent.
- Presently, approximately 80 trucks/day of the 130 trucks/day travel through the OR 22/OR99W intersection.
- There is a potential for expansion.

Spirit Mountain – Grand Ronde

- Approximately 100 rooms may be added to the existing 100-room overnight facility.
- There are physical constraints at the site that limits growth.

Valley Concrete – Independence

- Approximately five trucks/day use the OR 22/OR 99W intersection.
- The company does not expect this number to increase.

Chinook Winds Casino

- The casino did not respond to MWVCOG.

The additional traffic flows generated from the proposed expansion of major traffic generators within the region will increase traffic volumes within the study area.

Polk County Fairgrounds Information

- The fairground has had a dramatic increase in use during the past two years.
- Moving the Polk County museum to the fairgrounds will increase the visitation at the fairgrounds from 72,000 visitors/year to 76,000 visitors/year.
- It is booked on weekends and does not have much going on during the week.

The use of the Polk County Fairgrounds will continue to increase into the future and will not have a significant impact on the traffic flows within the study area. It is economically infeasible to design the project to adequately handle the traffic flow generated while the Polk County Fair is going on.

Alternative Mode Projections

Hampton Lumber – Willamina

- More lumber will travel by train from Willamina, since Hampton is expected to add new railcars to the rail line.

Public Transit

- CART's makes six trips per day between Salem and Dallas.
- No long-range feasibility studies or trip projections have been made.

Mid-Valley Rideshare

- This program consists of a database of persons interested in carpooling within Salem and outlying communities.
- It is impossible to determine the exact number of commuters from the Dallas area that use the program or to project future use of the program.

Pedestrian and Bicycle Travel

- The study area provides either a bike lane or a shoulder/bikeway and connects to the coast, which makes this roadway a popular bikeway for long-distance touring.
- Paved shoulders serve as pedestrian walkways.

The alternative mode projections have a negligible effect on traffic flows through the study area.

Bridgehead Engineering Study

The Bridgehead Engineering Study concerns future improvements at the bridgeheads at both the Marion Street and the Center Street Bridges in Salem. Region reported at the Technical Advisory Committee (TAC) meeting on June 27, 2000 that future improvement will add enough capacity so that future OR 22 traffic flows will not be restricted on OR 22 between Salem and the study area. If there is spreading at the bridges, the result at the study area would be merely a shifting of the peak hour.

If the transportation system is restricted at the bridgeheads, the design on this project could be reduced in magnitude because fewer vehicles will be able to reach the study area at one time.

Population Projections

Projections were obtained for Polk County and the communities of Dallas, Monmouth and Independence. Both past population values and projections were furnished by the MDWVCOG. Population projections for the years 2020 to 2025 were extrapolated from the Polk County Transportation Systems Plan. These values are shown in Table 4:

Table 4
Projected Population Growth
Polk County and Selected Cities
2000-2025

	1980	2000	Percent Increase 1980-2000 (20 years)	2020	2025*	Percent Increase 2000-2025 (25 years)
Polk Co.	45,203	63,268	40.0%	101,588	114,950	81.7%
Dallas	8,530	12,278	43.9%	18,009	19,823	61.5%
Monmouth	5,594	8,322	48.8%	15,117	17,550	110.9%
Independence	4,024	6,204	54.2%	9,559	10,650	71.7%

Source: Polk county Transportation Plan, 1997
* Extrapolated from 2020 projections in the Polk County Transportation System Plan

The range of growth in the past 20 years for the communities of Dallas, Monmouth and Independence range from 44 to 54 percent. The forecasted growth in the next 25 years for the same communities ranges from 62 to 111 percent. The population is forecasted to grow at a higher rate in the future than in the past.

The traffic flows on the highways are expected to increase between 60 and 91 percent between the years 1999 and 2025. Traffic flow projections do not necessary coincides with population projections, but both indicators do show there will be rapid growth rates in both population and traffic flows in future years.

Traffic Development Summary

The existing traffic volumes for this study were projected into the future using linear growth rates shown in Table 1. The traffic volumes on OR 22 (within the study area) will increase between 60 and 72 percent between the years 1999 and 2025. OR 99W is expected to grow between 71 and 96 percent and DRH between 51 and 59 percent during the same time period.

The projected traffic volumes should incorporate the following items adequately:

- The 6.57 acres of vacant industrial land available within Rickreall.
- The second major grocery store proposed in Dallas within the next five years.
- The potential development in Dallas allowed once the wastewater treatment facility is completed.
- The addition of approximately 800 residential units in Monmouth.

- The major generators within the region will add some traffic flows, but not that much.
- The Polk County Fairgrounds will continue to expand, however, the additional traffic flows generated from this facility will be small.
- Alternative modes will have a negligible effect on the transportation system.
- The Bridgehead Engineering Study indicates there will be enough capacity at both the Marion Street and Center Street Bridgeheads so vehicles will be able to travel on OR 22 between Salem and the study area without being restricted.
- The increase of population within the communities of Dallas, Monmouth and Independence.

Analysis Methodology

The Volume to Capacity (V/C) ratios signalized intersections for were analyzed using ODOT's computer program SIGCAP2. The V/C ratios for both the unsignalized intersections and multilane highways were analyzed using McTrans HCS Version 3.2 software. The V/C ratios for the rural two-lane highways calculated using HCS Release 1.5. These V/C ratios are compared with the V/C mobility standards listed in the 1999 Oregon Highway Plan (OHP) based on highway classification and surrounding land use.

Both Synchro and SimTraffic were used to analyze the "at-grade" jug-handle intersection alternatives for this project. Synchro is a software package for intersection capacity analysis; modeling actuated traffic signals and optimizing traffic signal timings, which implements the methods of the 1994 Highway Capacity Manual, Chapter 9. SimTraffic is traffic simulation and animation software. SimTraffic includes the vehicle and driver performance characteristics developed by the Federal Highway Administration for use in traffic modeling.

An Australian computer program, aaSIDRA (Signalised & unsignalised Intersection Design and Research Aid) Version 1.0 by Akcelik and Associates was used to analyze roundabouts at both the OR 22/OR 99W and OR 22/Dallas-Rickreall Highway (DRH) intersections.

The Transportation Planning Analysis Unit (TPAU) uses Traffic Signal Warrant 1 (Minimum Vehicular Volume) and Warrant 2 (Interruption of Continuous Traffic) from the Manual on Uniform Traffic Control Devices (MUTCD) for a preliminary traffic signal warrant analysis. These warrants deal primarily with high volumes on the intersecting minor street, and high volumes on the major street. Meeting preliminary traffic signal warrants does not guarantee that a traffic signal will be conducted by Region. If traffic signal warrants are met, the ODOT Traffic Management Section will make the final decision on the installation of a traffic signal on the State Highway System.

APPENDIX C

OR 99W/RICKREALL ROAD INTERSECTION TECHNICAL MEMORANDUM BUILD ALTERNATIVES

OR 99W/Rickreall Road Intersection Traffic Analysis Technical Memorandum

Intersection Build Alternatives (April 9, 2001)

The OR 99W/Rickreall Road intersection is located within the community of Rickreall, approximately 600 meters (0.38 miles) south of the OR 22/OR 99W intersection. The Rickreall Junction Facility Plan is considering future build alternatives for both the OR 22/OR 99W and the OR 22/Dallas-Rickreall Highway (DRH) intersections. The purpose of this memorandum is to address the future operation of the OR 99W/Rickreall Road intersection, keeping in mind that the build alternatives for the OR 22/OR 99W and the OR 99W/Rickreall Road intersections must operate together as a single transportation system.

The analysis indicates that, unless some as yet unforeseen regional alternative reduces traffic demand on this segment of OR 99W, it will need four through lanes at Rickreall Road in approximately 15 to 20 years. The form of intersection control used at the OR 99W/Rickreall Road intersection has a direct bearing on the left-turn lane needs on OR 99W. The following build alternatives were analyzed for this intersection:

- Unsignalized intersection - Existing two-lane, and build alternatives with three, four and five-lane sections on OR 99W (Figures 1-5).
- Signalized intersection – Build alternatives with three, four and five-lane sections on OR 99W (Figure 6).
- Converting existing “4-way” intersection into two “T” intersections.(Figure 7)
- Widening OR 99W to four lanes and eliminating left turns from either one or both of the Rickreall Road Approaches (Figures 8-9).
- Two-lane section on OR 99W with single lane roundabout (Figure 10).
- Four-lane section on OR 99W with double lane roundabout (Figure 11).

Tables 1 and 2 show the effects that different forms of intersection control combined with multiple lanes on OR 99W have on traffic flows on OR 99W and Rickreall Road, respectively. The V/C ratios shown in the tables are for the year 2025 and do not assume OR 22/OR 99W Alternative 7-A.1 improvements. The 1999 Oregon Highway Plan (OHP) indicates the maximum acceptable V/C ratio for the OR 99W/Rickreall Road intersection is 0.80. Construction of Alternative 7-A.1 will likely send slightly more traffic onto OR 99W through Rickreall. In the worst case this shift in volume would amount to approximately 100 peak hour vehicles or 3.7% or the total traffic volume. This increase will make all of these results slightly worse.

Table 1: Year 2025 Volume to Capacity (V/C) Ratios for OR 99W

OR 99/Rickreall Road Intersection Control	Number of Lanes on OR 99W			
	Two	Three	Four	Five
Unsignalized	1.08	0.98	0.50	0.40
Signal	*N.A.	1.01	0.82	0.61
Two "T" Intersections	* N.A.	0.98	0.50	0.40
No WB Left-Turn	1.08	0.98	0.50	0.40
No WB or EB Left-Turns	1.08	0.98	0.50	0.40
Single Lane Roundabout	**0.75/1.11	*N.A.	*N.A.	*N.A.
Double Lane Roundabout	*N.A.	*N.A.	0.41***	*N.A.

* N.A. Not Available
** Highest Approach V/C Ratio: Using AASIDRA Methodology/German Methodology
*** Highest Approach V/C Ratio (Using AASIDRA Methodology)

Based on current traffic volume growth trends, Table 1 indicates that OR 99W will need to have four through lanes in 2025 to meet the OHP mobility standard regardless of the intersection control used at the Rickreall Road intersection. At first glance, it appears that the single lane roundabout may allow OR 99W to remain a two-lane facility. Using the AASIDRA Method, a single lane roundabout will meet mobility standards in 2025. Using the German Methodology, the single lane roundabout will fail before the year 2025. The actual operation of the single lane roundabout will likely be approximately the average of the two methodologies giving a V/C of 0.93, which does not meet the OHP standard.

If a signal is installed at the OR 99W/Rickreall Road intersection, four through lanes and a channelized left-turn lane will be needed to meet the mobility standard. OR 99W meets the ODOT left-turn lane criteria in the year 1999 at the Rickreall Road intersection. A left-turn lane should be installed on OR 99W at this location as soon as funding is available (adding a turn lane to Rickreall Road on OR 99W will require replacement of the OR 99W bridge over Rickreall Creek, in either the two or four lane cross-section).

Converting the existing OR 99W/Rickreall Road intersection from a single "four-way" intersection into two "T" intersections will meet mobility standards on OR 99W when there is either a four or five-lane free-flow section on OR 99W.

Eliminating the westbound left-turn or both the westbound and the eastbound left-turn movements at the unsignalized OR 99W/Rickreall Road intersection will meet mobility standards on OR 99W when there is either a four or five-lane free-flow section on OR 99W.

As discussed above, a single lane roundabout will not meet mobility standards. The AASIDRA Methodology shows that a double lane roundabout meets mobility standards with a four-lane cross section on OR 99W. Note that ODOT does not use the German Methodology to calculate a V/C ratio for a double lane roundabout.

Roundabouts operate most effectively and safely where there are balanced traffic flows on all four legs of an intersection. Vehicles exiting a roundabout leave gaps in the circulating roadway for vehicles entering the roundabout from other legs. The traffic

flows on the legs of this intersection are very unbalanced. There will be a tendency for "through" OR 99W traffic flows to dominate the circulatory lane or lanes of the roundabout and possibly not yield to the traffic already on the circulatory roadway or allow the traffic on Rickreall Road to enter the roundabout. This would further diminish the apparent V/C ratios shown in Table 1.

Additionally, Table 1 shows that any traffic control change that requires OR 99W traffic flows to slow down or stop will have an adverse impact on the operation of OR 99W "through" traffic flows.

Table 2: Year 2025 Volume to Capacity (V/C) Ratios for Rickreall Road

OR 99/Rickreall Road Intersection Control	Number of Lanes on OR 99W			
	Two	Three	Four	Five
Unsignalized	>> 1.0	>> 1.0	>> 1.0	>>1.0
Signal	*N.A.	1.01	0.82	0.61
Two "T" Intersections	*N.A.	2.28	*N.A.	*N.A.
No WB Left-Turn	*N.A.	*N.A.	>> 1.0	*N.A.
No WB or EB Left-Turns	*N.A.	*N.A.	3.80	*N.A.
Single Lane Roundabout	**0.75/1.11	*N.A.	*N.A.	*N.A.
Double Lane Roundabout	*N.A.	*N.A.	0.41***	*N.A.

* N.A. Not Available
** Highest Approach V/C Ratio: Using AASIDRA Methodology/German Methodology
*** Highest Approach V/C Ratio (Using AASIDRA Methodology)

Table 2 shows that the V/C ratio for Rickreall Road at OR 99W will exceed 1.0 in the year 2025 with every intersection control type except a signal or a double lane roundabout. As mentioned earlier, the single lane V/C will be approximately 0.93 which does not meet mobility standards.

A traffic signal will operate acceptably at the OR 99W/Rickreall Road intersection when there are four through lanes and a left-turn refuge on OR 99W

The analysis shows that Rickreall Road drivers (who comprise approximately 8 percent of the intersection traffic flows) will experience unacceptable delays unless there is intersection control at OR 99W/Rickreall Road that creates gaps in the heavy OR 99W traffic flows. Improving the operation for the 8 percent of the drivers approaching the OR 99W/Rickreall Road intersection from Rickreall Road will have a negative impact on the 92 percent of the drivers on OR 99W.

Unsignalized Intersection

The effects of widening OR 99W at this unsignalized intersection from the existing two-lanes to three, four and five lane-sections have been analyzed using the unsignalized intersection portion of the 1997 Highway Capacity Software. OR 99W at Rickreall Road meets the ODOT left-turn lane criteria. The analysis shows that adding left-turn lanes to OR 99W will improve safety and operation of OR 99W. In general, adding capacity to

OR 99W improves the function of the roadway, but does not address the long delays that the Rickreall Road drivers will experience.

Existing Two-Lane Section

The existing OR 99W/Rickreall Road intersection has two lanes on OR 99W (one lane on OR 99W in both northbound and southbound directions) and a left-turn lane and a "through-right" lane on both westbound and eastbound approaches of Rickreall Road (Figure 1). The present unsignalized intersection operates acceptably in the year 1999. OR 99W will meet ODOT left-turn lane criteria in1999.

In the year 2015, the V/C ratios for both of the traffic movements on the west approach and the single left-turn lane on the on the east approach exceed the OHP mobility standards. As expected, the V/C ratios for the design year (year 2025) are higher than the results for the year 2015.

In the year 2025, the free-flow traffic movement of OR 99W will operate at a V/C ratio of 1.08. This does not meet mobility standards.

Build Three-Lane Section

Figure 2 shows the results when a left-turn refuge is added in both northbound and southbound directions on OR 99W at the existing intersection. The left-turn refuges improve the safety and operation of the intersection, but does not improve the intersection enough to meet OHP mobility standards in the year 2015. In the year 2025, the "through" traffic movements on OR 99W will operate at a V/C ratio of 0.98. This does not meet mobility standards.

The eastbound Rickreall Road to northbound OR 99W traffic movement and the westbound Rickreall Road to southbound OR 99W traffic movement will operate at V/C ratios of 1.00 and 3.10 in the year 2015, respectively. The 3.10 V/C ratio involves approximately 30 vehicles/hour. Drivers of these vehicles will experience unacceptable delays and may use unsafe gaps on OR 99W to turn southbound on OR 99W. Drivers that have experienced this delay during peak traffic flow periods will tend to use another roadway to reach destinations located south of this intersection. If these Rickreall Road drivers do not reroute, continuous traffic flows will have to be interrupted on OR 99W to let a few Rickreall Road drivers turn onto OR 99W.

Build Four-Lane Section

Figure 3 includes a four-lane section on OR 99W at Rickreall Road. There are two lanes in both northbound and southbound directions on OR 99W and no left-turn refuges on OR 99W at this intersection. Both northbound and southbound OR 99W vehicles will block the inside travel lane while waiting for acceptable gaps in opposing traffic flows to turn left on Rickreall Road. Vehicles continuing through on OR 99W will either wait behind the turning vehicle or turn into the right travel lane to pass. Drivers familiar with the intersection will tend to use the outside travel lane to avoid getting stopped behind

vehicles that are waiting to turn left. This will create a lane imbalance and inefficient operation of the intersection.

ODOT left-turn lane criteria are met on OR 99W at Rickreall Road. Left-turn refuges are needed OR 99W in both northbound and southbound directions at this intersection to reduce delay and improve safety. This indicates that a five-lane section should be built instead of a four-lane facility.

The additional lane on OR 99W improves the operation of this intersection over a three-lane section, but not enough to fully meet mobility standards in the year 2015. The westbound Rickreall Road to southbound OR 99W traffic movement will operate at a V/C ratio of 1.41 in the year 2015. Like, the three-lane section, drivers will experience unacceptable delays and may use unsafe gaps on OR 99W to turn southbound on OR 99W.

The V/C ratio for the OR 99W "through" lanes on OR 99W is an acceptable V/C ratio of 0.50. This was calculated using Chapter 21 of the Highway Capacity Manual (2000) and making adjustments for the drivers stopped in the left through lane waiting for gaps in opposing traffic flows to turn left onto Rickreall Road at the OR 99W/Rickreall Road intersection.

Build Five-Lane Section

Figure 4 shows a five-lane section on OR 99W at this intersection. There are left-turn refuges on OR 99W on both northbound and southbound approaches. The V/C ratios for the five-lane section are similar to the V/C ratios for the four-lane section. However, the left-turn refuges improve safety on OR 99W. Like the four-lane section, mobility standards are not met for the Rickreall Road approaches.

The "through" lanes on OR 99W will operate at an acceptable V/C ratio of 0.40.

OR 99W and Rickreall Road Signalized Intersection

The OR 99W/Rickreall Road intersection does not meet Preliminary ADT Traffic Signal Warrants in the year 2025 using the forecasted traffic volumes. However, the on-going Rickreall Facility Plan is advancing a long-term alternative (Alternative 7-A) that adds traffic to the Or 99W/Rickreall Road intersection. The intersection meets the two-lane minor approach portion of the Preliminary ADT Traffic Signal Warrant 2 before the design year with the additional traffic. Additional traffic flows at this intersection resulting from future access management practices being incorporated on OR 99W throughout the community of Rickreall may warrant a traffic signal earlier. Meeting traffic signal warrants is not a guarantee that a traffic signal will be installed at this location. The State Traffic Engineer will make the final decision on whether or not to install the traffic signal.

The long-term OR 22/OR 99W alternative does not allow the Dallas to McMinnville and McMinnville to Dallas traffic movements now using OR 99W and the DRH at the proposed OR 22 and OR 99W interchange. Many of the peak-hour estimated 50

vehicles/hour traveling from Dallas to McMinnville and the 85 vehicles/hour traveling from McMinnville to Dallas will reroute to the OR 99W/Rickreall Road intersection to reach their destinations. Others will reroute to the Kings Valley Highway further west on OR 22.

Figure 6 shows the signalized intersection analysis results for the OR 99W/Rickreall Road intersection when OR 99W are three, four and five-lane sections.

Build Three-Lane Section

In the year 2025, the OR 99W/Rickreall Road intersection will operate at a V/C ratio of 1.01. The addition of a left-turn lane will improve safety at this location. This option does not meet the mobility standards.

Build Four-Lane Section

This intersection will operate at a V/C ratio of 0.82 in the year 2025. This alternative does not include any left-turn protection on OR 99W for drivers turning left to travel on Rickreall Road. Left-turning drivers will block the inside travel lane waiting for acceptable gaps in opposing traffic flows. Drivers traveling "through" in the inside travel lane will either wait behind the turning vehicle or turn into the right travel lane to pass. This intersection will meet guidelines for left-turn protection on OR 99W before the year 2025. In order to ensure safe operation of this intersection, left-turn lanes should be installed.

This alternative meets mobility standards; however, there are safety concerns caused by not having the left-turn lanes on OR 99W. OR 99W meets left-turn lane guidelines and they should be included to ensure safe and efficient operation.

Build Five-Lane Section

This intersection will operate at a V/C ratio of 0.61 and 0.65 without and with left-turn protection on OR 99W, respectively. This intersection is borderline in meeting the guideline for left-turn protection on OR 99W. If the left-turning vehicles on OR 99W are not protected, drivers turning left onto Rickreall Road will have a left-turn refuge to wait in until there are adequate gaps on OR 99W to turn left safely. If the left-turning turning movement is protected on OR 99W, drivers will have a "green-arrow" that will create gaps for these drivers to safely turn onto Rickreall Road.

Assuming no reduction in demand on OR 99W, five lanes will be needed on OR 99W in 2025 and the OR 99W/Rickreall Road intersection will need to be signalized in order to meet OHP mobility standards.

Existing "Four-Way" Intersection Converted to Two "T" Intersections

This alternative converts the existing OR 99W/Rickreall Road unsignalized intersection into two "T" unsignalized intersections (See Figure 7). The northern "T" intersection is formed by realigning Rickreall Road so that Rickreall Road will follow the alignment of

Burch Street to intersect OR 99W at the existing OR 99W/Burch Street intersection approximately 140 meters north of the existing intersection. Disconnecting the western leg of Rickreall Road from the existing "4-way" intersection at OR 99W will form the second "T" intersection located to the south.

The "T" intersections will not meet mobility standards in the design year. The eastbound Rickreall Road vehicles turning northbound onto OR 99W at the northern "T" intersection will operate at a V/C ratio of 0.83 in the design year. If the long-term OR 22/OR 99W build alternative (Alternative 7-A) is constructed and another 50 vehicles/hour is added to this left-turn movement, the V/C ratio will increase past 1.0 and these drivers will have difficulty turning left. The westbound to southbound traffic movement at the southern "T" intersection will operate at a V/C ratio of 2.28.

If an additional lane is added in both northbound and southbound directions on OR 99W, west/east and east/west Rickreall Road drivers will have to weave left one lane before reaching the left-turn refuge for Rickreall Road. For this reason, building the "T" intersections and widening OR 99W to a five-lane section is not recommended.

The northern "T" intersection will be located approximately 350 meters south of the eastbound ramp terminals for the long-term OR 22/OR 99W alternative. This will not meet the OHP spacing standards of 400 meters.

A typical "four-way" intersection has 32 conflict points while a typical "T" intersection has nine conflict points. In some cases, eliminating conflict points by converting a "four-way" to two "T" intersections can increase safety and operation of a transportation system. However, this proposed conversion is not a recommended treatment for this particular intersection because it does not meet either the OHP mobility standards or the ODOT spacing standards.

OR 99W widened to Four Lanes and the Westbound Rickreall Road Left-Turning Movements is Prohibited and Rerouted Straight Through the OR 99W/Rickreall Road Intersection.

This alternative (Figure 8) is an attempt to avoid the need for left-turn refuges on OR 99W at the OR 99W/Rickreall Road intersection, thereby, reducing possible impacts to homes and businesses on OR 99W. The westbound Rickreall Road left-turn movement will be prohibited and rerouted straight through the intersection to enter a jug-handle type intersection to travel southbound on OR 99W. This rerouting of traffic flows does improve the V/C ratios for the Rickreall Road traffic movements when compared to the V/C ratios shown in Figure 3 for the same year (year 2025) where this traffic movement is allowed. However, the improvement in the V/C ratios is not enough to meet OHP mobility standards.

OR 99W Widened to Four Lanes and both Eastbound and Westbound Rickreall Road Left-Turning Movements are Prohibited and Rerouted Straight Through the OR 99W/Rickreall Road Intersection.

This alternative (Figure 9) is a second attempt to avoid the need for left-turn refuges on OR 99W at the OR 99W/Rickreall Road intersection, thereby, limiting impacts to homes and businesses on OR 99W. The eastbound and westbound Rickreall Road left-turn movements will be prohibited and rerouted straight through the intersection to enter jug-handle type intersections to travel either northbound or southbound on OR 99W, respectively. This rerouting of traffic flows does improve the V/C ratios for the Rickreall Road traffic movements when compared to the V/C ratios shown in Figure 8, but not enough to meet mobility standards. The V/C ratios for the eastbound and the westbound Rickreall Road "through" traffic movements are 2.93 and 3.80, respectively.

Proposed Installation of a Roundabout at the OR 99W/Rickreall Road Intersection

Both a single lane and a double lane roundabout were analyzed for this intersection. The single lane roundabout was analyzed using both the Australian program (AASIDRA 1.0) and the German Methodology. The double lane roundabout was analyzed using AASIDRA 1.0. The analysis for each of the two types of roundabouts is dependent upon the alternative that is selected at the OR 22/OR 99W intersection. The rerouting of the Dallas/McMinnville and McMinnville/Dallas traffic flows shown in Alternative 7-A will likely add enough traffic to the roundabout to cause to operate slightly less efficiently. For this reason, each roundabout was analyzed both without and with the proposed interchange at the OR 22/OR 99W intersection.

Single Lane Roundabout (Figure 10)

The following dimensions were used to analyze the single lane roundabout:

- Inscribed Diameter 190 feet
- Circulatory Roadway 21 feet
- Truck apron 10 feet
- Entry lane Width 16 feet

The single lane roundabout will be 190 feet wide curb-to-curb and will have a single 21-foot wide circulatory lane. There will be a ten-foot wide truck apron constructed adjacent to the inside edge of the circulatory roadway to provide the extra width required for trucks traveling through the roundabout. Each of the four approaches to the roundabout will have single 16-foot entry lanes.

Table 3 shows the results for the single lane roundabout using AASIDRA and the German Methodology. Table 4 shows the results using the German Methodology.

Table 3 - Year 2025 Single Lane Roundabout V/C Ratios (AASIDRA)

	Volume to Capacity (V/C) Ratio				Queue (feet)			
Approach	West	South	East	North	West	South	East	North
No OR 22/OR 99W Interchange	0.38	0.75	0.24	0.75	67	223	41	223
With OR 22/OR 99W Interchange	0.52	0.78	0.28	0.80	121	246	43	271

Table 4 -Year 2025 Single Lane Roundabout V/C Ratios (German Methodology)

	Volume to Capacity (V/C) Ratio				Queue (feet)			
Approach	West	South	East	North	West	South	East	North
No OR 22/OR 99W Interchange	0.47	1.11	0.32	1.11	N.A.	N.A.	N.A.	N.A.
With OR 22/OR 99W Interchange	0.65	1.15	0.37	1.19	N.A.	N.A.	N.A.	N.A.

* N.A. – Not Available

The single lane roundabout will apply to alternatives that have single lane approaches. The OHP indicates that the maximum acceptable V/C ratio for the OR 99W/Rickreall Road intersection is 0.80. The results for the Australian program, AASIDRA, shows that a single lane roundabout will meet mobility standards in the design year, even with the additional traffic flows resulting from constructing the long-term alternative at the OR 22/OR 99W intersection. However, the German methodology indicates that a single lane roundabout will not meet mobility standards even without the influence of the interchange. The actual operation of the roundabout will probably be somewhere between the AASIDRA and German methodology results and will likely exceed the OHP mobility standard.

Vehicles entering the roundabout must slow down to approximately 20 MPH. This will stack vehicles approximately ten vehicles or 250 feet in both southbound and northbound directions on OR 99W.

Double Lane Roundabout (Figure 11)

The following dimensions were used to analyze both multi-lane roundabouts:

- Inscribed Diameter 200 feet
- Circulatory Roadway 28 feet
- Truck apron 10 feet
- Entry lane Width 28 feet

The double lane roundabout will be 200 feet wide curb-to-curb and will have two 14-foot circulatory lanes. Like the single lane roundabout, there will be a ten-foot wide truck apron. There will be two lanes on OR 99W, so there will be two 14-foot entry lanes for both northbound and southbound traffic flows entering the roundabout. There will be a single 16-foot entry lane for Rickreall Road vehicles entering the roundabout in both eastbound and westbound directions.

Table 5 shows the results for the double lane roundabout:

Table 5 - Year 2025 Double Lane Roundabout V/C Ratios (AASIDRA)

	Volume to Capacity (V/C) Ratio				Queue (feet)			
Approach	West	South	East	North	West	South	East	North
No OR 22/OR 99W Interchange	0.22	0.41	0.14	0.41	26	65	17	67
With OR 22/OR 99W Interchange	0.28	0.43	0.15	0.44	33	70	17	73

The double lane roundabout can be used when there are two lanes in both northbound and southbound directions on OR 99W. The additional lane for "through" OR 99W traffic flows drops both the V/C ratios and the queue lengths when compared to the single-lane roundabout. This roundabout will operate within OHP mobility standards.

Additional Comments Regarding Installing Roundabout at OR 99W/Rickreall Road Intersection

The highest approach V/C ratio for a single lane roundabout without the influence of an interchange at the OR 22/OR 99W intersection ranges between 0.75 and 1.11 depending upon the analysis methodology used to determine the operational characteristics.

Roundabouts operate most effectively and safely where there are balanced traffic flows on all four legs of an intersection. Vehicles exiting a roundabout leave gaps in the circulating roadway for vehicles entering the roundabout from other legs. The traffic flows on the legs of this intersection are very unbalanced. There will be a tendency for "through" OR 99W traffic flows to dominate the circulatory lane or lanes of the roundabout and possibly not yield to the traffic already on the circulatory roadway or allow the traffic on Rickreall Road to enter the roundabout. Each vehicle entering the roundabout will be delayed an average of 10 to 12 seconds.

The speed differentiation between vehicles traveling on OR 99W and the vehicles traveling within the roundabout may create safety problems. Northbound OR 99W vehicles traveling between 45 and 50 MPH (posted 40 MPH) will have to slow down to approximately 20 MPH to travel through the roundabout. There will be a safety concern if these vehicles do not recognize the hazard and slow down before entering the roundabout.

Recommendations

The existing OR 99W/Rickreall Road intersection and the portion of OR 99W located within the community of Rickreall currently operate within OHP mobility standards. As traffic flows grow, improvements should promote safety and efficient traffic flow through Rickreall.

Long-term Recommendations

Unless traffic demand for OR 99W between Monmouth and OR 22 is somehow reduced in the meantime, by the year 2025, OR 99W should have four lanes with channelized left turn lanes and the OR 99W/Rickreall Road Intersection should be signalized to ensure safe and efficient operation. The section of OR 99W located between OR 22 and Rickreall Road will have a higher capacity if the OR 99W/Rickreall Road Intersection is signalized.

OR 99W would not have as much capacity if a roundabout was installed at the OR 99W/Rickreall Road Intersection due to OR 99W traffic flows being delayed and to the absence of a progressed system.

Short-term Recommendations

OR 99W currently meets ODOT left-turn lane criteria. In the short-term adding a left-turn lane to OR 99W at Rickreall Road will enhance safety. However, adding this lane will necessitate widening the Rickreall Creek bridge structure. Because of this additional cost, it may be best to defer adding the turn lane until the long-term improvements along this segment of OR 99W are implemented.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

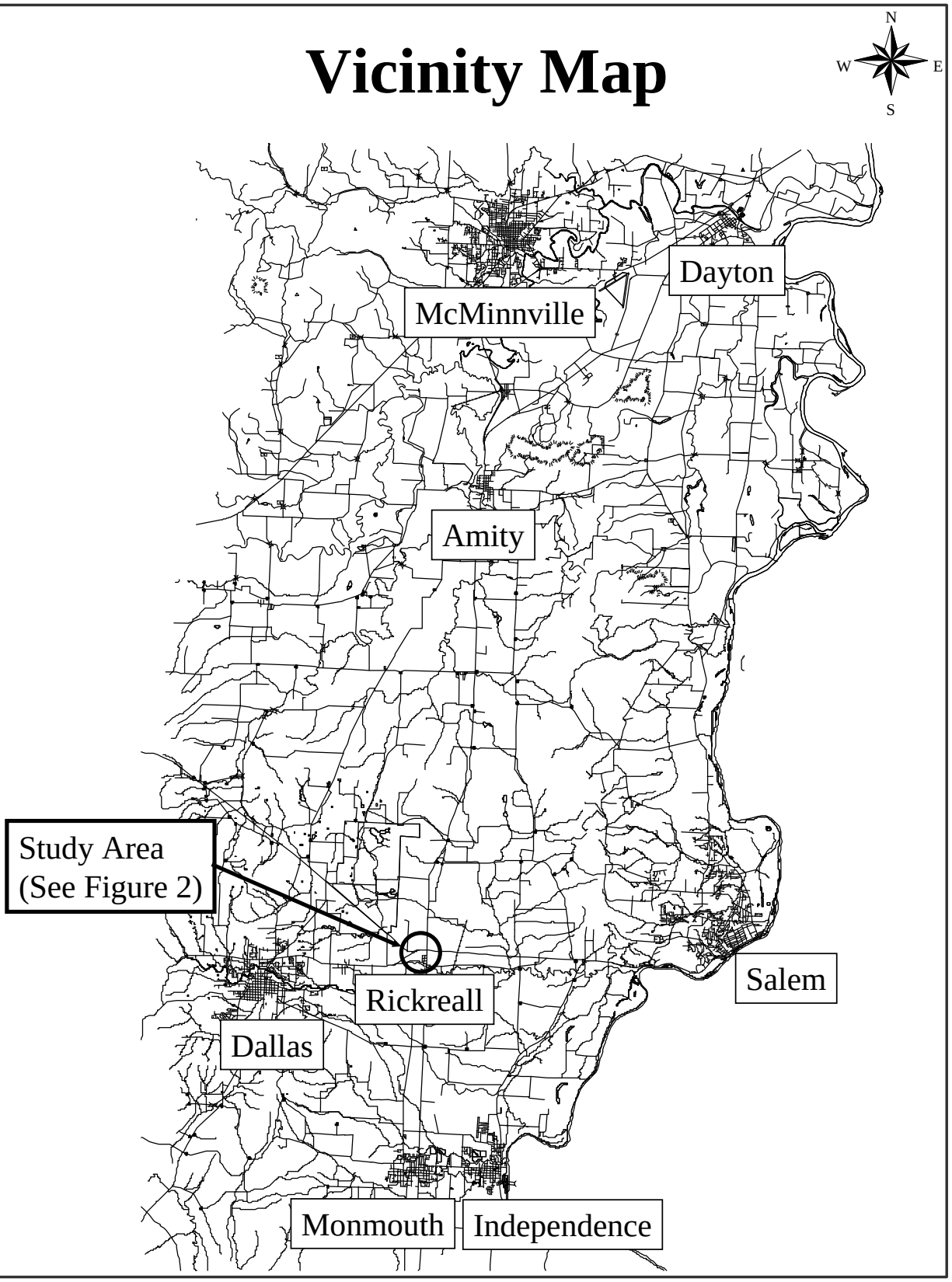
Figure 7

Figure 8

Figure 9

Figure 10

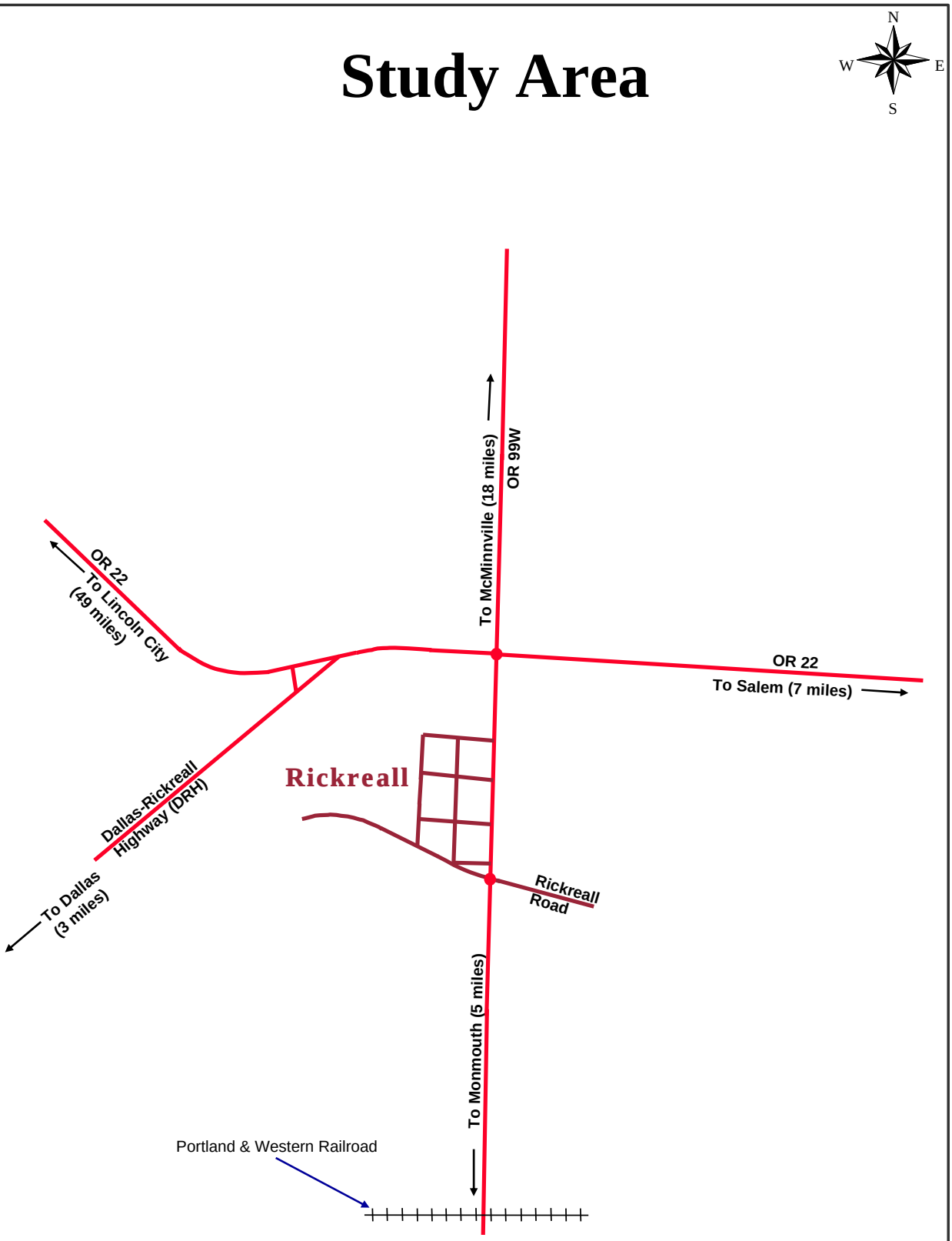
Vicinity Map



OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan **Polk County**	**FILE : RStudyArea.ppt**	**Prepared By: HLN**	FIGURE 1
	DATE :01/19/2001	**Reviewed By: BGD**	

Study Area



OREGON DEPARTMENT OF TRANSPORTATION

TPAU

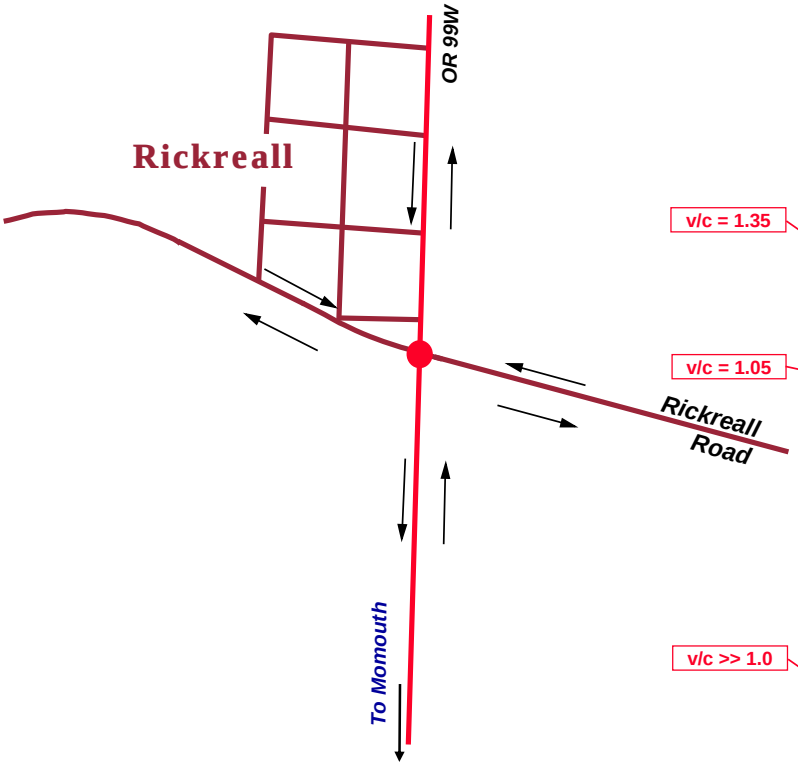
TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan **Polk County**	**FILE : RStudyArea.ppt**	**Prepared By: HLN**	FIGURE 2
	DATE :01/19/2001	**Reviewed By: BGD**	

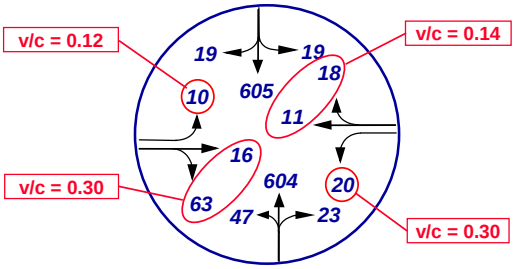
No Build Alternative - Years 1999, 2015 and 2025

Existing OR 99W/Rickreall Road Unsignalized Intersection

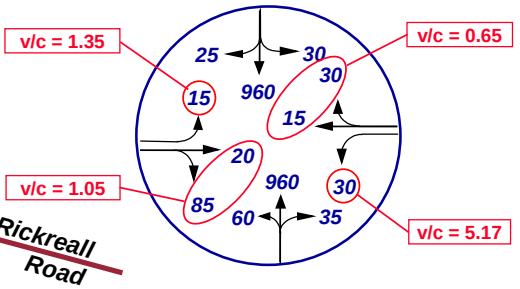
Two Lanes on OR 99W



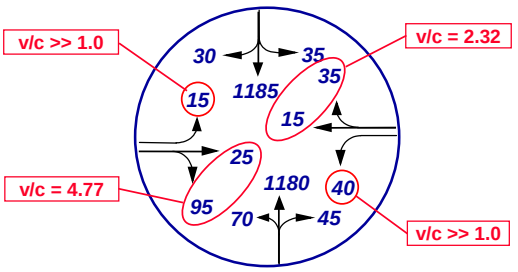
Year 1999



Year 2015



Year 2025



Note:
Traffic volumes do not reflect any additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

Legend
xxx 30th Highest Hour

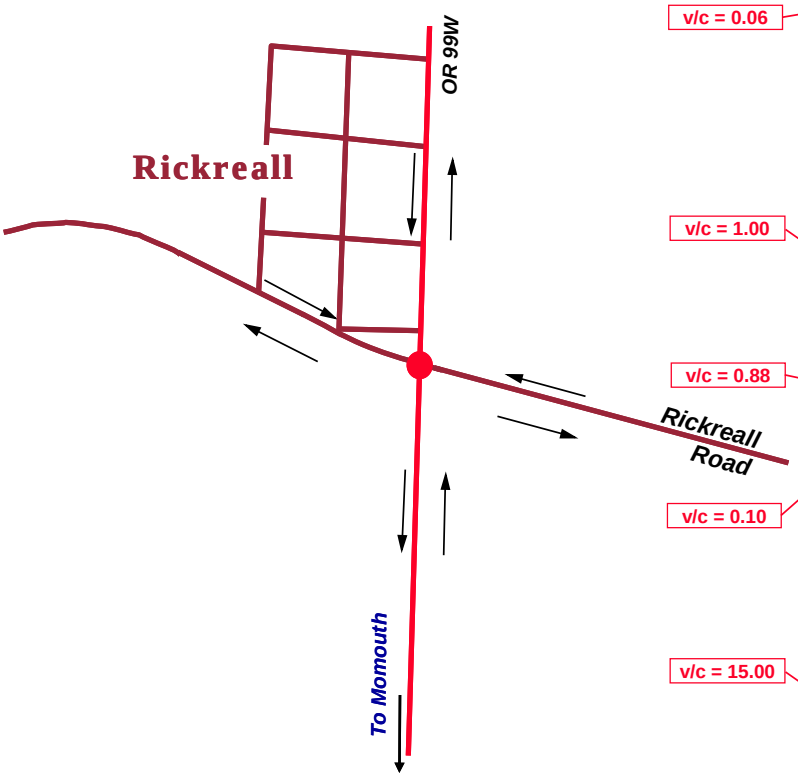
OREGON DEPARTMENT OF TRANSPORTATION — TPAU — TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 1
	DATE :02/28/2001	Reviewed By: BGD	

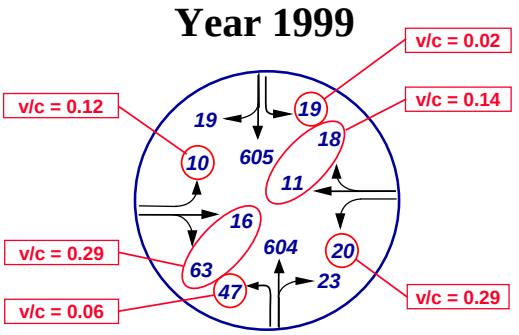
Build Alternative - Years 1999, 2015 and 2025

OR 99W/Rickreall Road Unsignalized Intersection

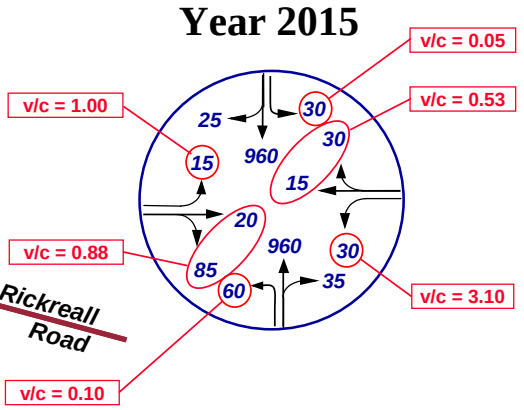
Three Lanes on OR 99W



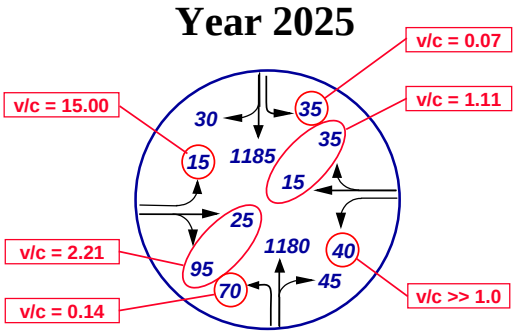
Year 1999



Year 2015



Year 2025



Note:
Traffic volumes do not reflect any additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

Legend
xxx 30th Highest Hour

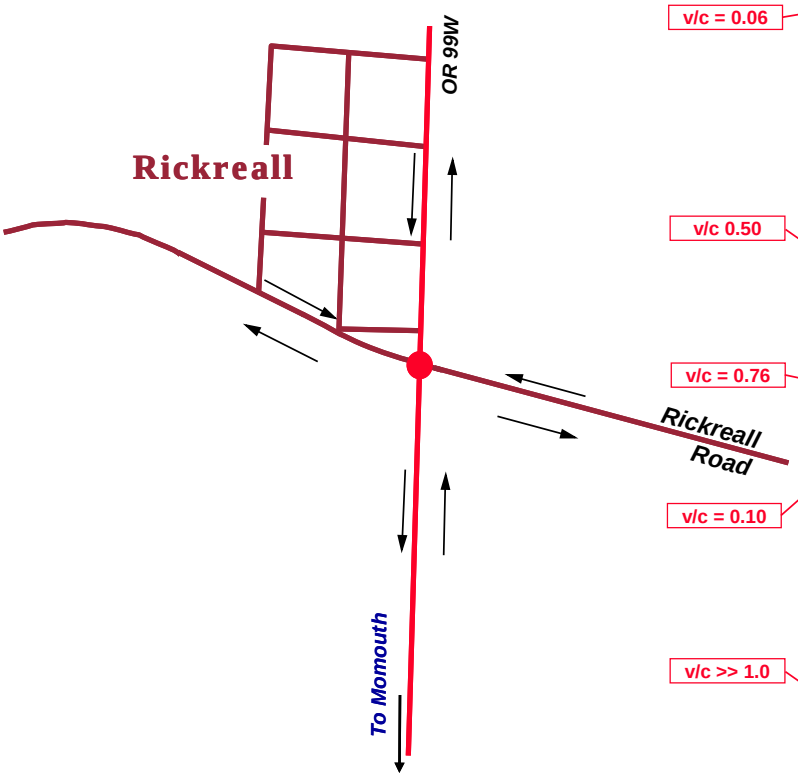
OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 2
	DATE :02/28/2001	Reviewed By: BGD	

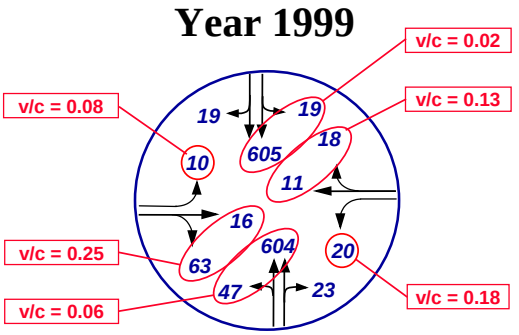
Build Alternative - Years 1999, 2015 and 2025

OR 99W/Rickreall Road Unsignalized Intersection

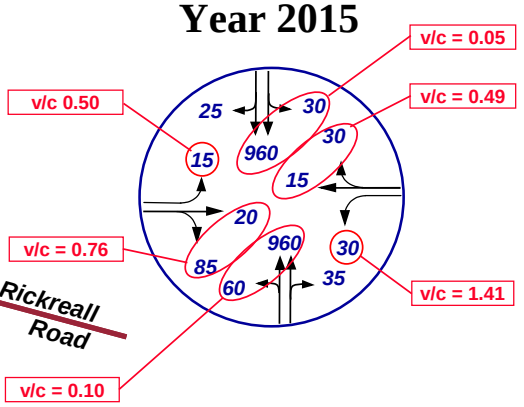
Four Lanes on OR 99W



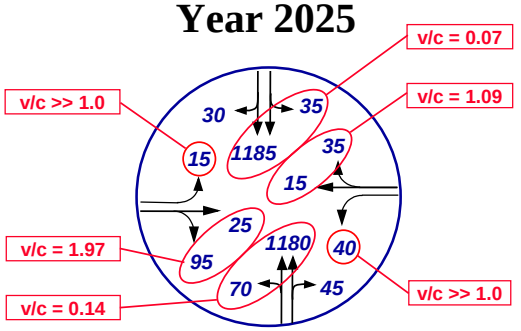
Year 1999



Year 2015



Year 2025



Note:
Traffic volumes do not reflect any additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

Legend
xxx 30th Highest Hour

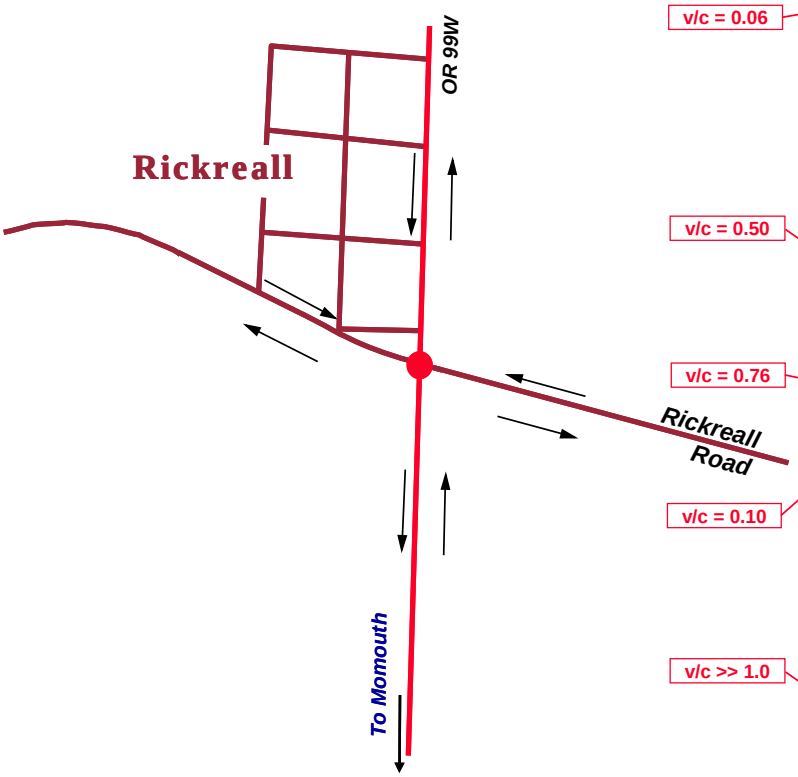
OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 3
	DATE :02/28/2001	Reviewed By: BGD	

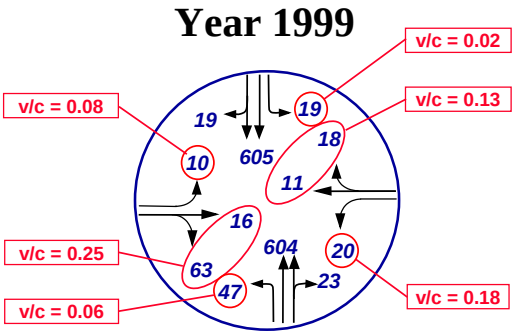
Build Alternative - Years 1999, 2015 and 2025

OR 99W/Rickreall Road Unsignalized Intersection

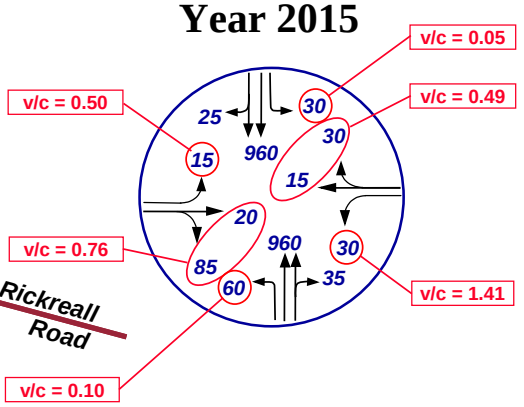
Five Lanes on OR 99W



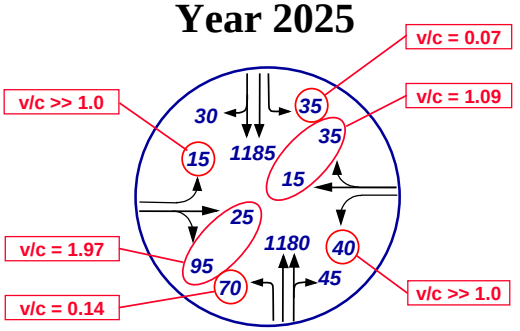
Year 1999



Year 2015



Year 2025



Note:
Traffic volumes do not reflect any additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

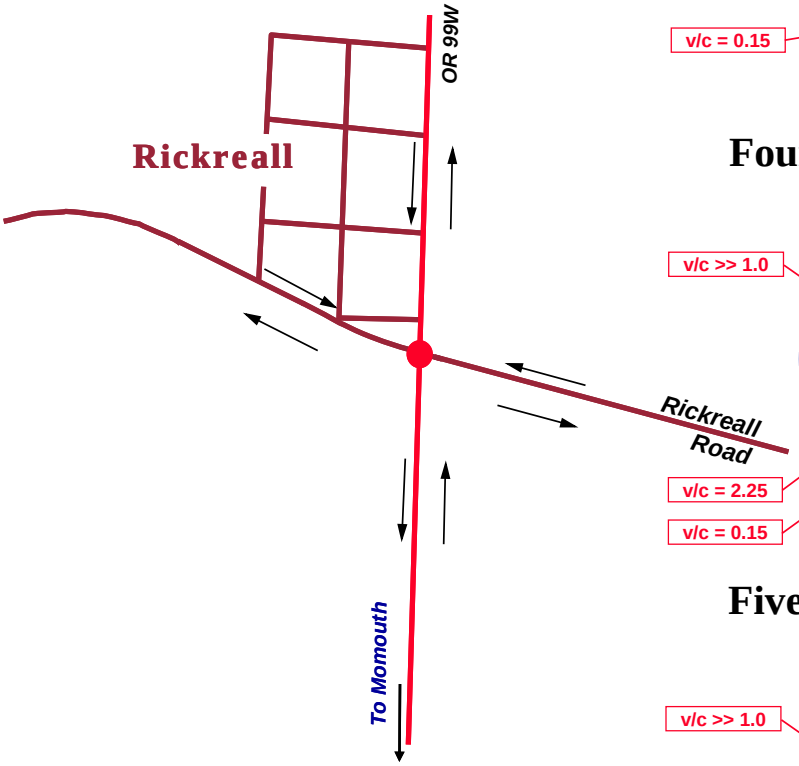
Legend
xxx 30th Highest Hour

OREGON DEPARTMENT OF TRANSPORTATION — TPAU — TRANSPORTATION PLANNING ANALYSIS UNIT

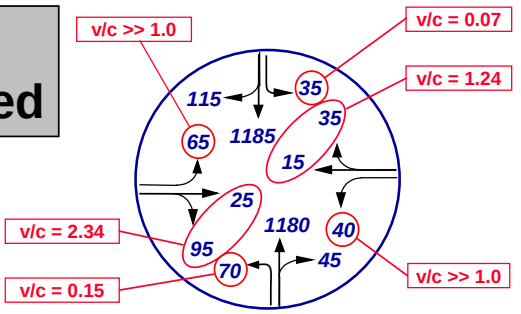
OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 4
	DATE :02/28/2001	Reviewed By: BGD	

Build Alternative - Year 2025 (Includes Proposed OR 22/OR 99W Interchange)

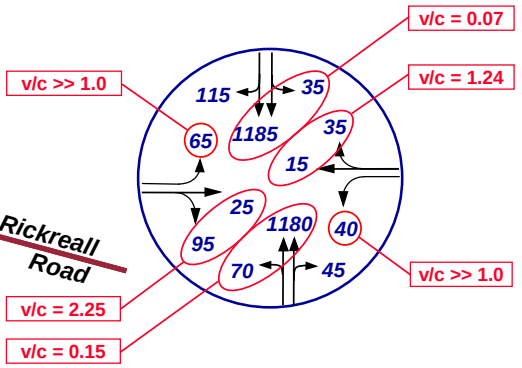
OR 99W/Rickreall Road Intersection is Unsignalized



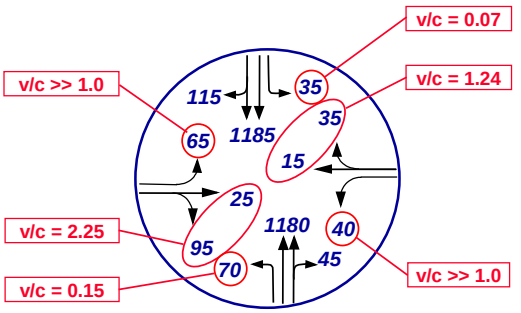
Three Lanes on OR 99W



Four Lanes on OR 99W



Five Lanes on OR 99W



Legend
xxx 30th Highest Hour

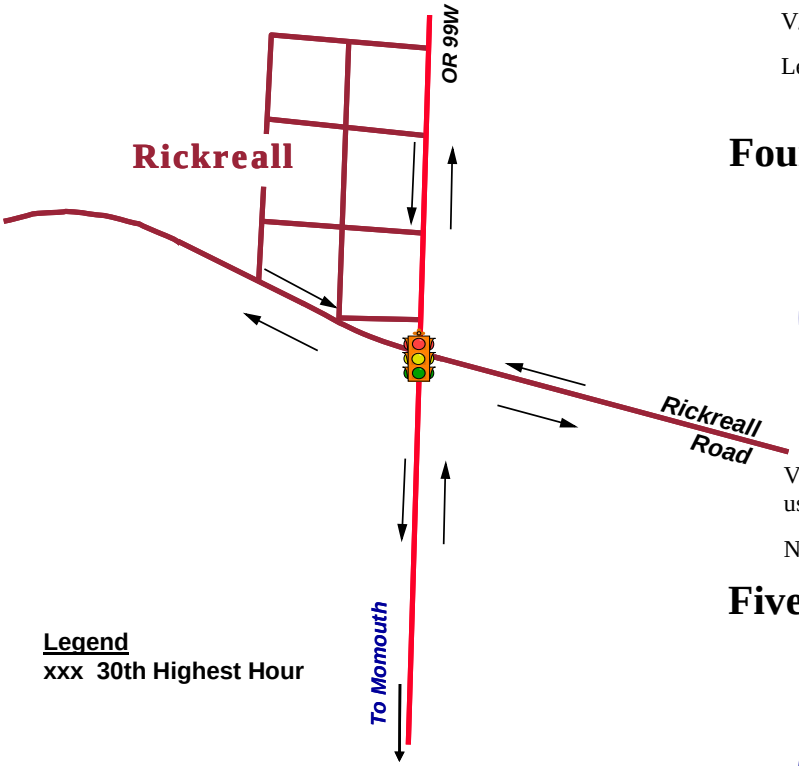
Note:
Traffic volumes do reflect additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 5
	DATE :02/28/2001	Reviewed By: BGD	

Build Alternative - Year 2025 (Includes Proposed OR 22/OR 99W Interchange)

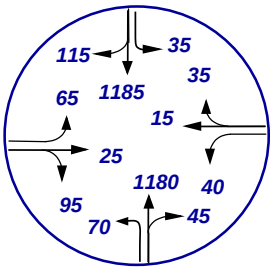
OR 99W/Rickreall Road Intersection is Signalized



Legend
xxx 30th Highest Hour

Note:
Traffic volumes do reflect additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

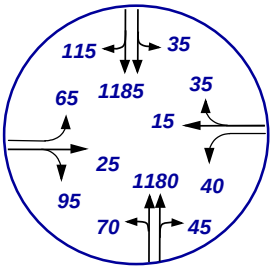
Three Lanes on OR 99W



V/C ratio = 1.01 (90 second cycle)

Left turns protected on OR 99W

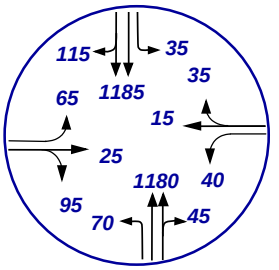
Four Lanes on OR 99W



V/C ratio = 0.82 (60 second cycle) using SYNCHRO (60/40 split)

No left turn protection

Five Lanes on OR 99W



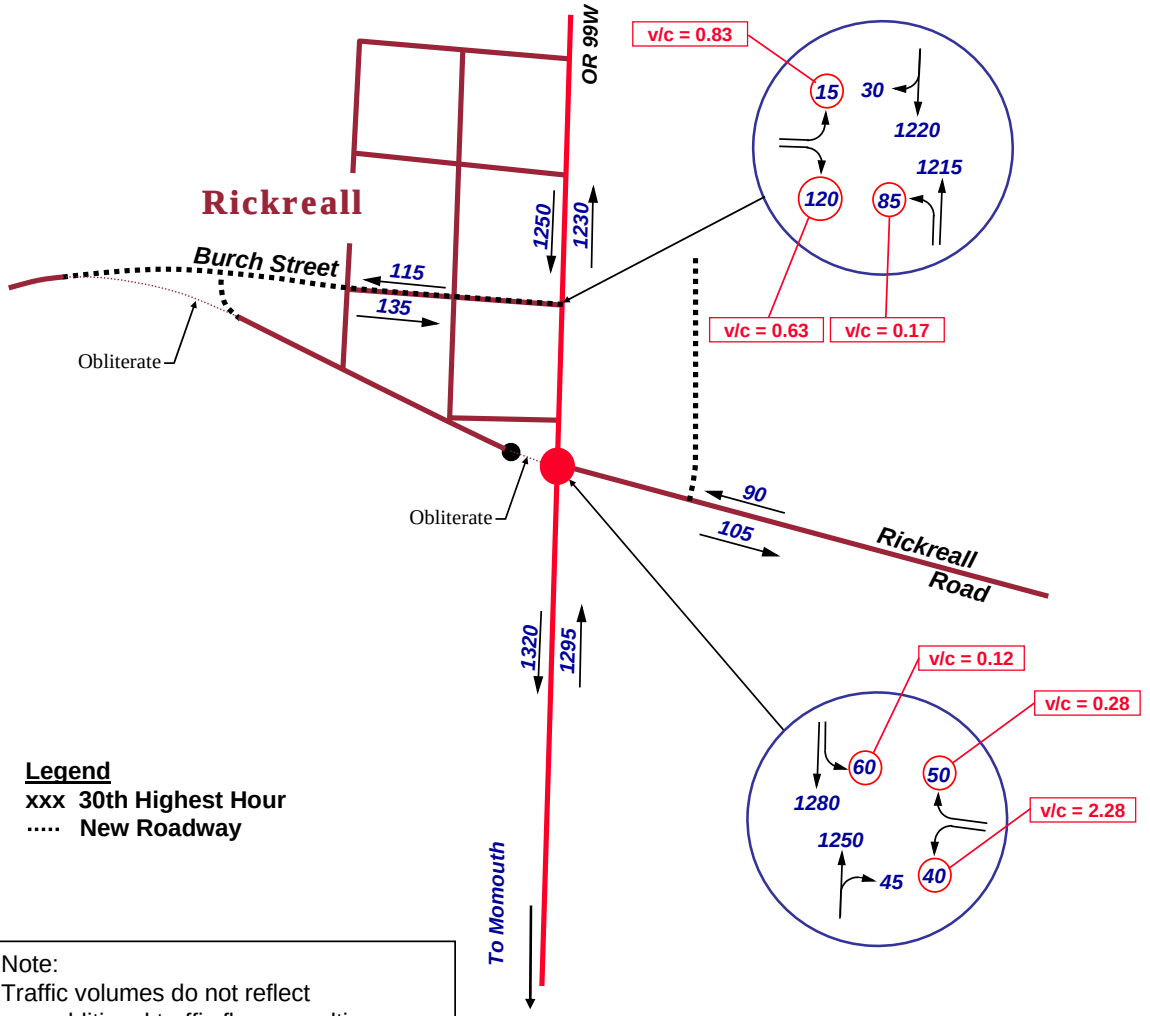
V/C ratio = 0.63 (60 second cycle)

No left turn protection

OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 6
	DATE :02/28/2001	Reviewed By: BGD	

Two "T" Intersection Build Alternative - Year 2025 - (No Proposed OR 22/OR 99W Interchange)



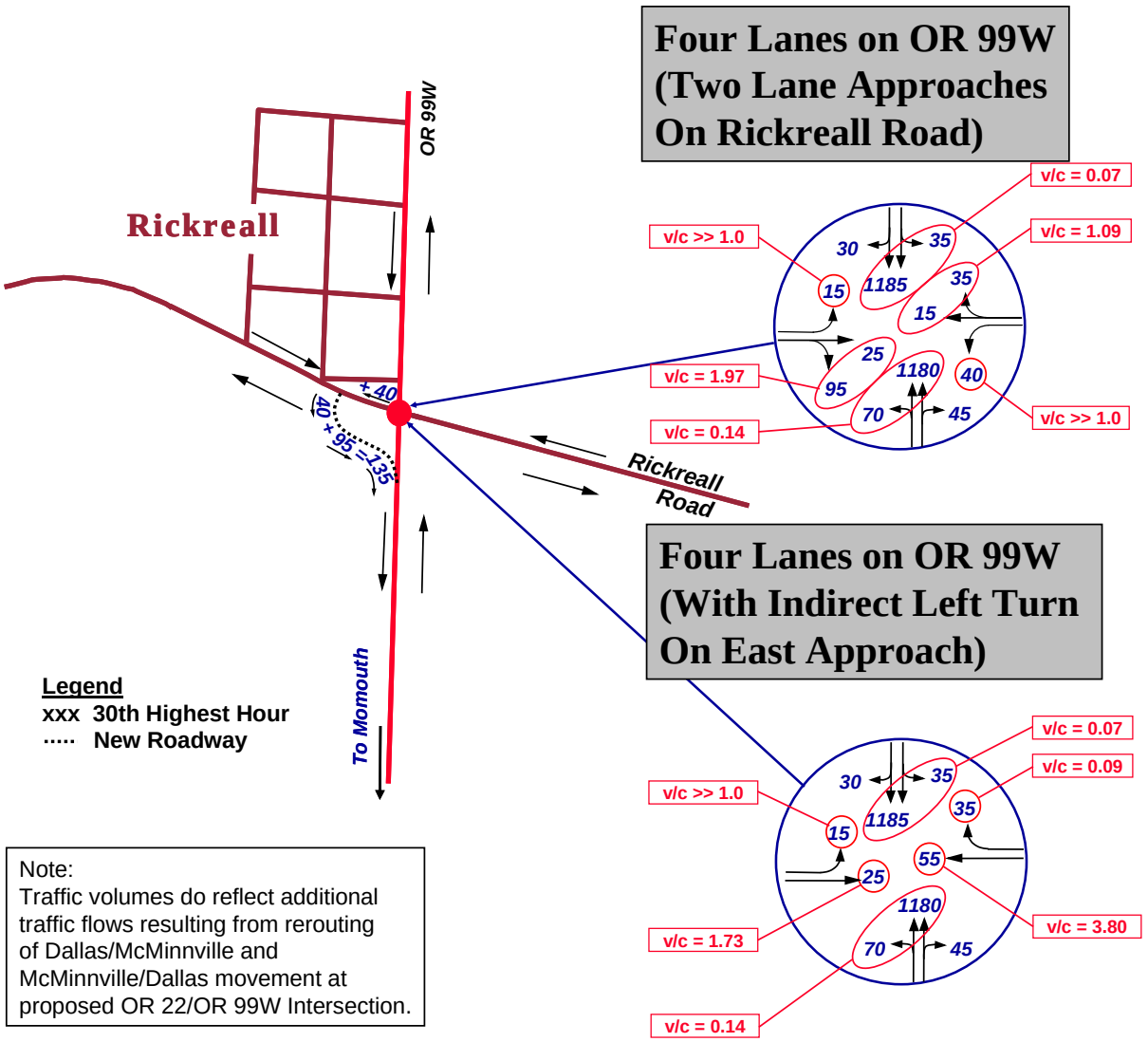
Legend
xxx 30th Highest Hour
····· New Roadway

Note:
Traffic volumes do not reflect any additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 7
	DATE :02/28/2001	Reviewed By: BGD	

Year 2025 Build Alternatives Comparing OR 99W/Rickreall Road Intersection When The Eastbound Left Turn From Rickreall Road Is Allowed And The Westbound Left Turn Is Rerouted Directly Through The Intersection. (No Proposed OR 22/OR 99W Interchange)

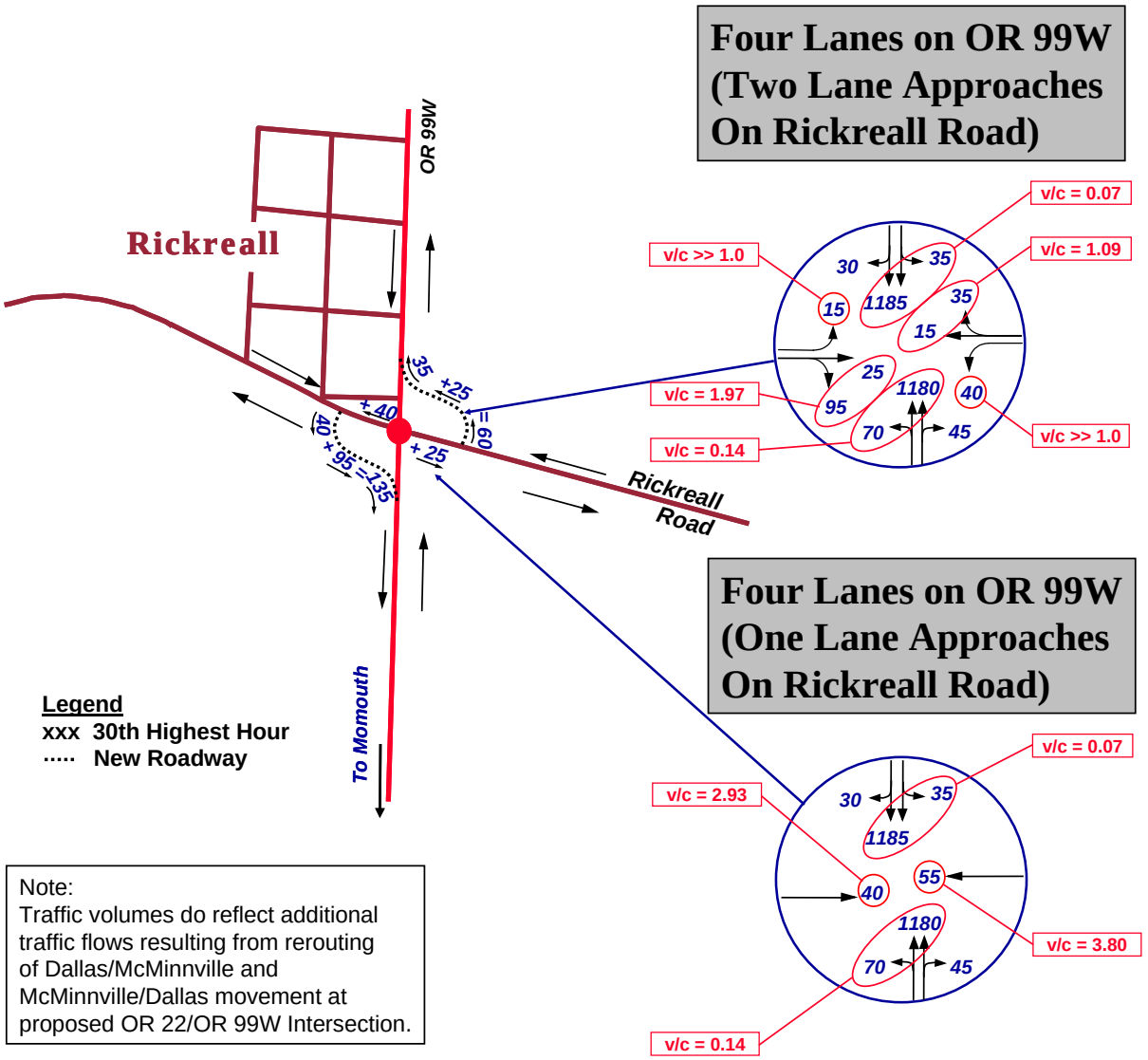


Note:
Traffic volumes do reflect additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 8
	DATE :02/28/2001	Reviewed By: BGD	

Year 2025 Build Alternatives - Comparing OR 99W/Rickreall Road Intersection To "Through" Traffic Movements Being The Only Traffic Movements Allowed On Rickreall Road (No Proposed OR 22/OR 99W Interchange).



Note:
Traffic volumes do reflect additional traffic flows resulting from rerouting of Dallas/McMinnville and McMinnville/Dallas movement at proposed OR 22/OR 99W Intersection.

OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	FILE : RIntersection.ppt	Prepared By: HLN	FIGURE 9
	DATE :02/28/2001	Reviewed By: BGD	

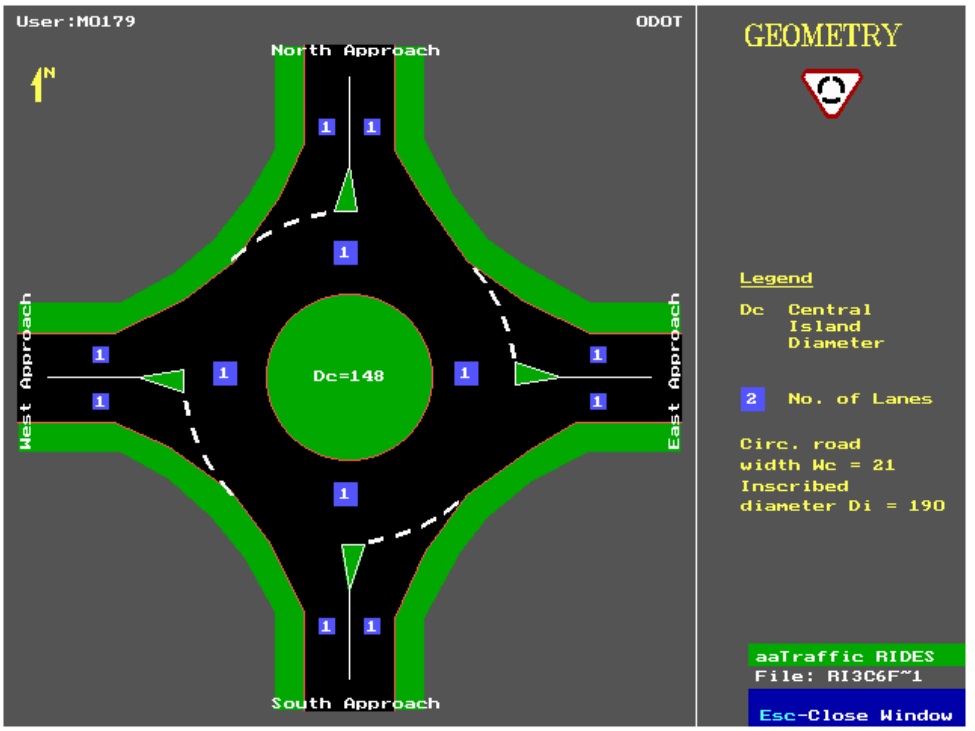


Figure 10 – Single Lane Roundabout

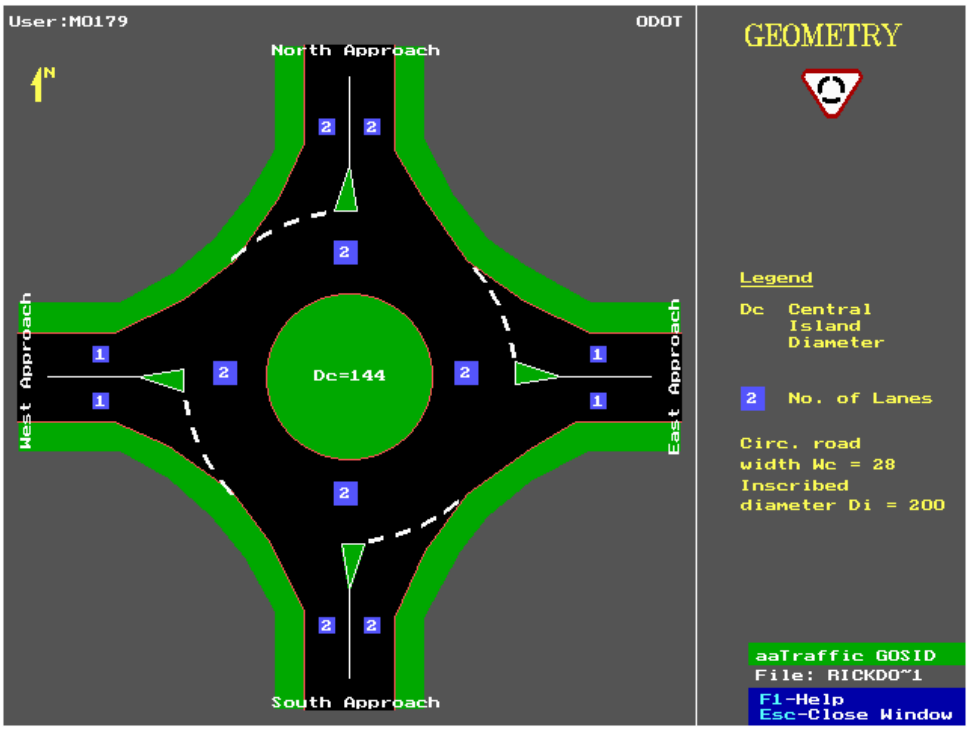
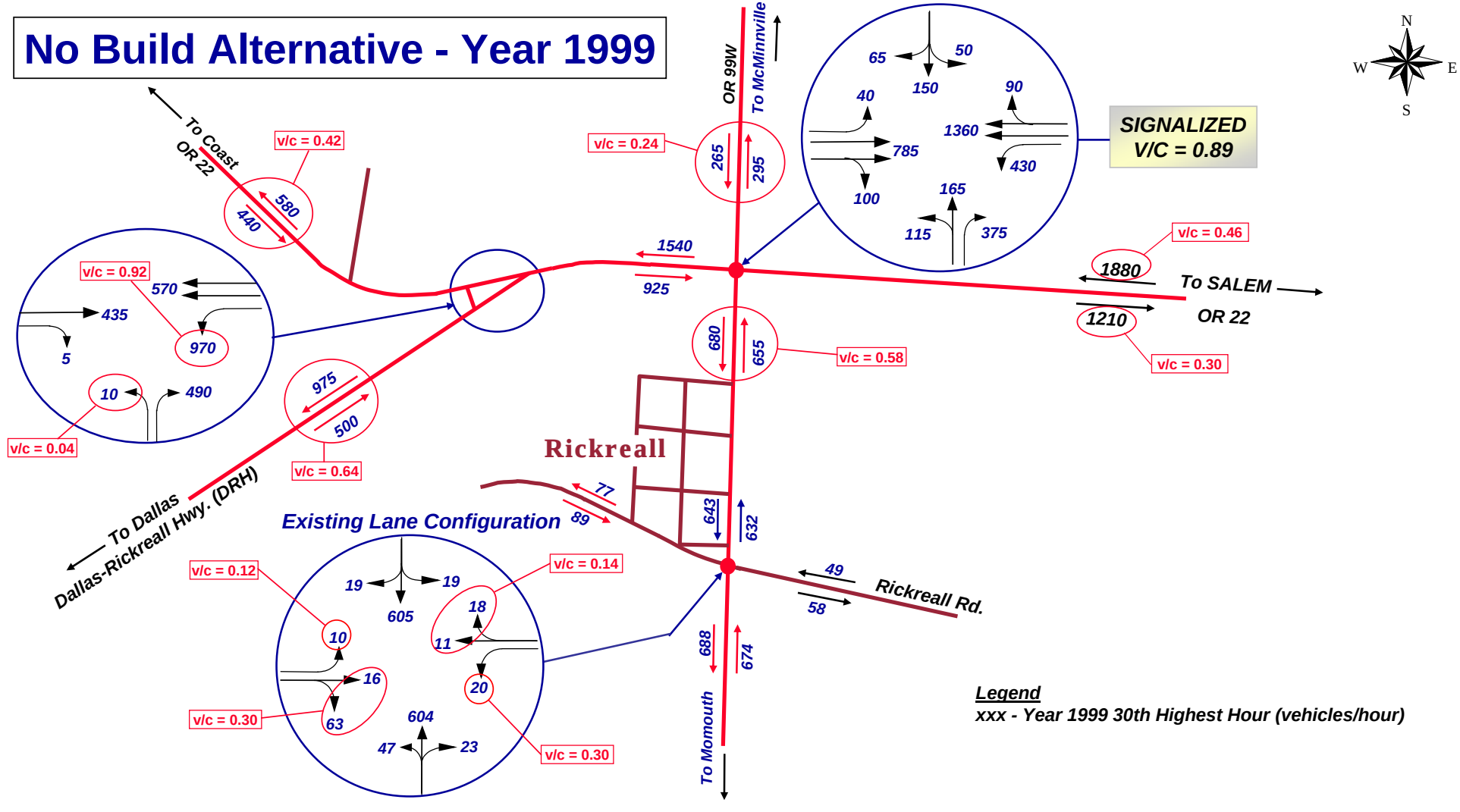


Figure 11 – Double Lane Roundabout

No Build Alternative - Year 1999

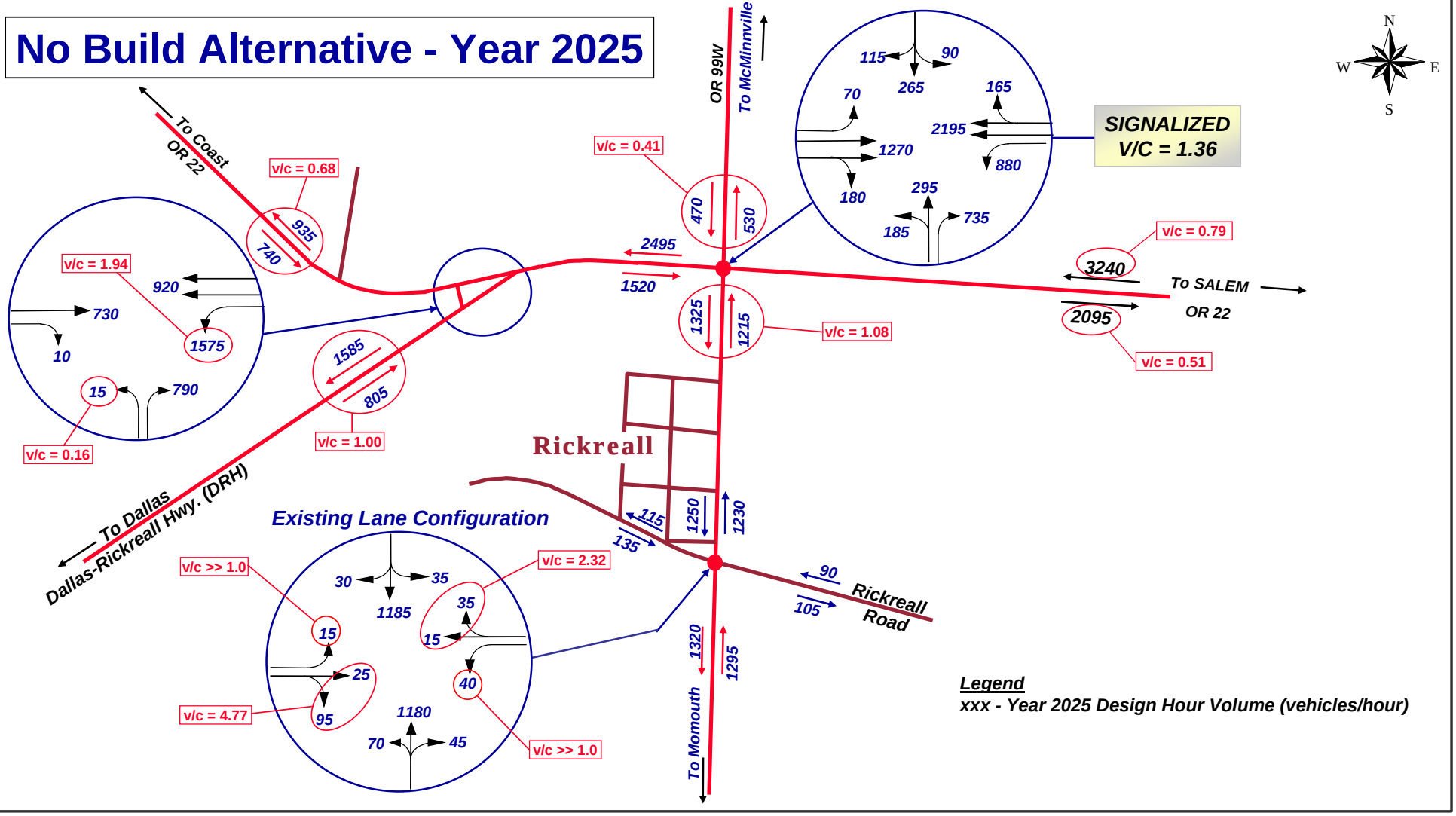


OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan No Build Alternative - Year 1999	File : RickDraft.ppt Date : 01/29/01	Prepared By: Harlan Nale, P.E. Reviewed By: Brian Dunn, P.E.	FIGURE 3

No Build Alternative - Year 2025

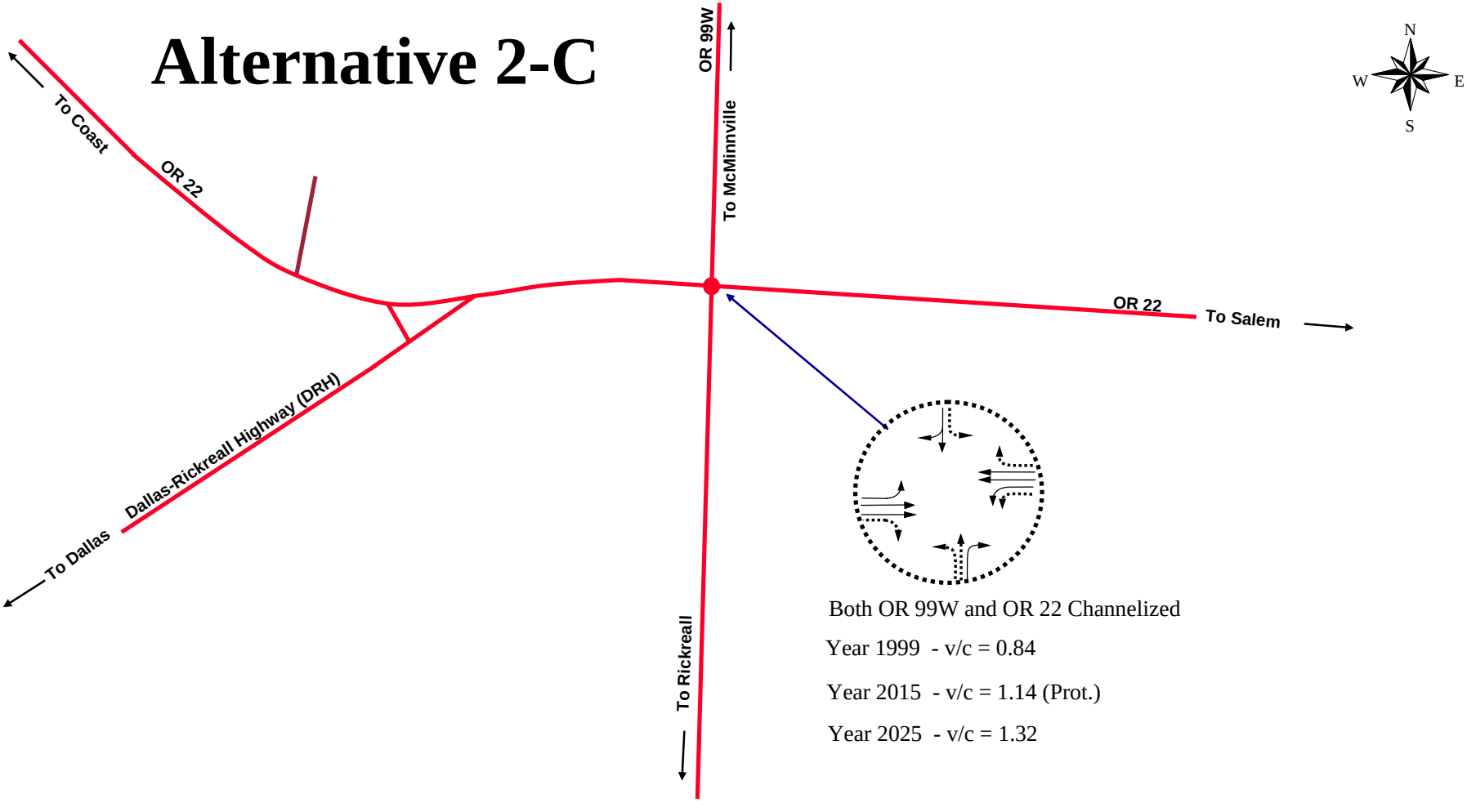


8

OREGON DEPARTMENT OF TRANSPORTATION TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan No Build Alternative - Year 2025	File : RickTown.ppt Date : 01/29/01	Prepared By: Harlan Nale, P.E. Reviewed By: Brian Dunn, P.E.	FIGURE 4

Alternative 2-C



Both OR 99W and OR 22 Channelized

Year 1999 - v/c = 0.84

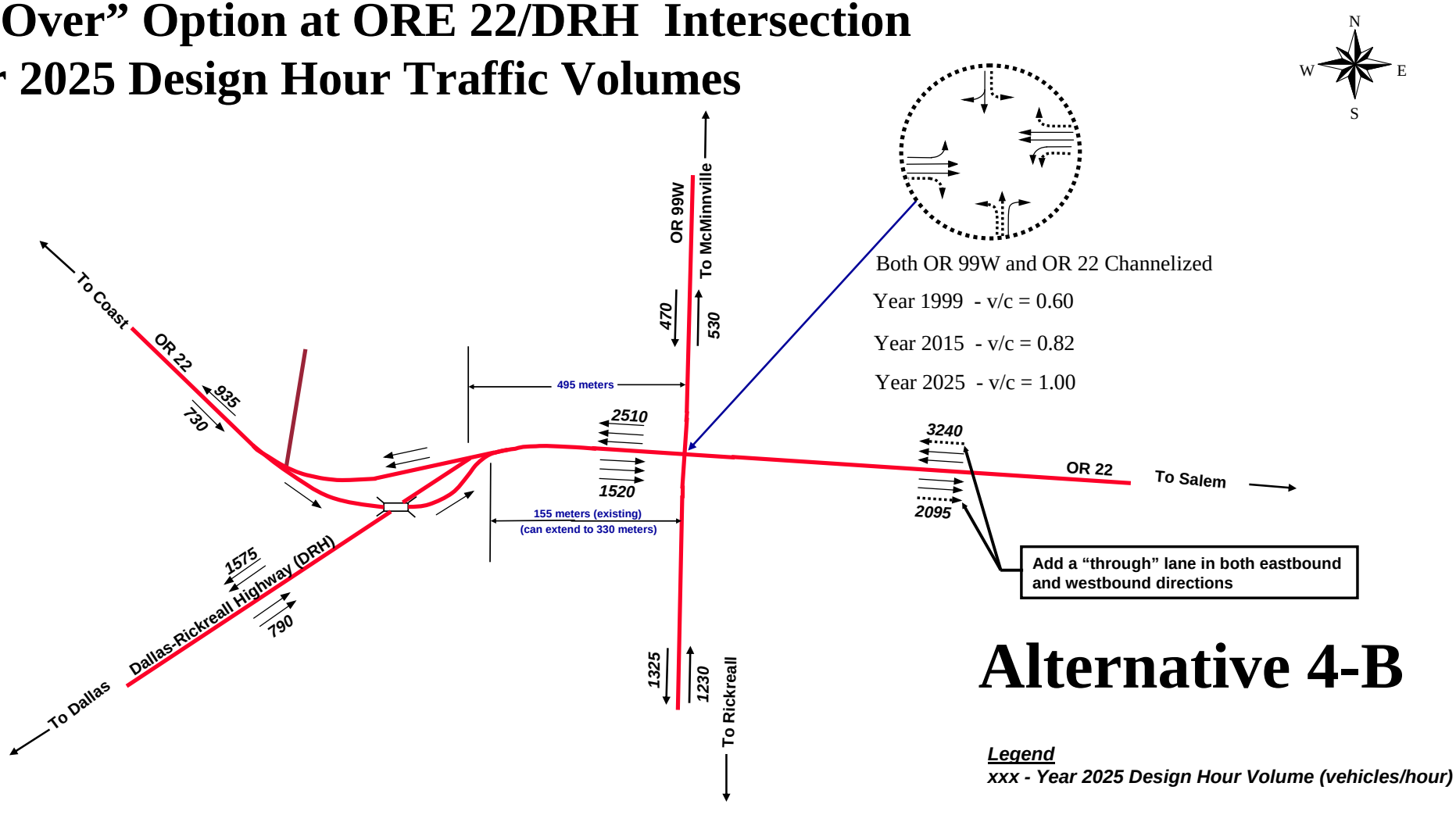
Year 2015 - v/c = 1.14 (Prot.)

Year 2025 - v/c = 1.32

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	**File : RAdvanced.ppt**	**Prepared By: Harlan Nale, P.E.**	FIGURE 5
	Date : 1/30/2001	**Reviewed By: Brian Dunn, P.E.**	

"Fly-Over" Option at ORE 22/DRH Intersection
Year 2025 Design Hour Traffic Volumes



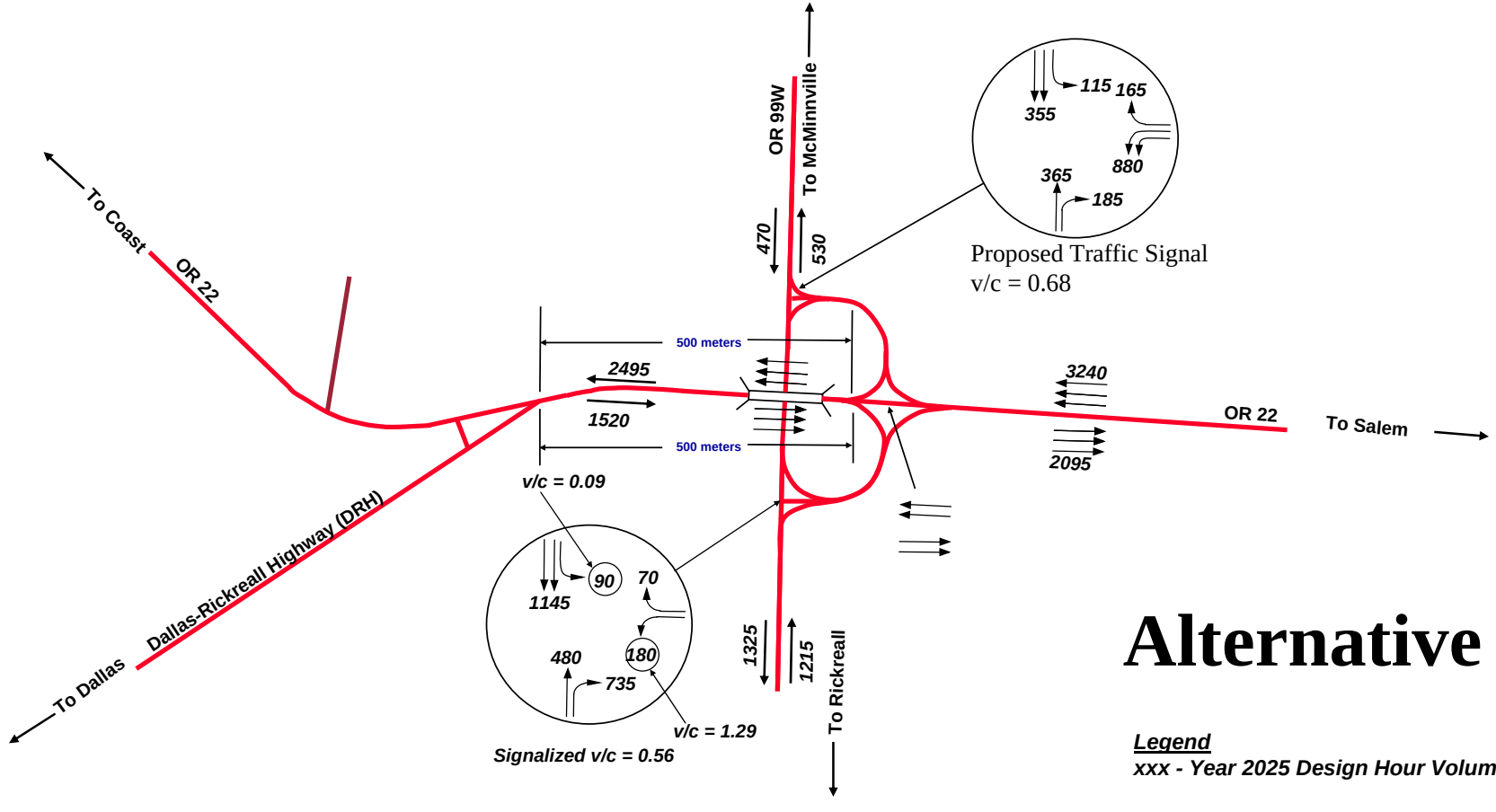
Alternative 4-B

Legend
xxx - Year 2025 Design Hour Volume (vehicles/hour)

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RAdvanced.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 6
	Date : 1/30/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection
"Structure" Option - Year 2025 Design Hour Traffic Volumes



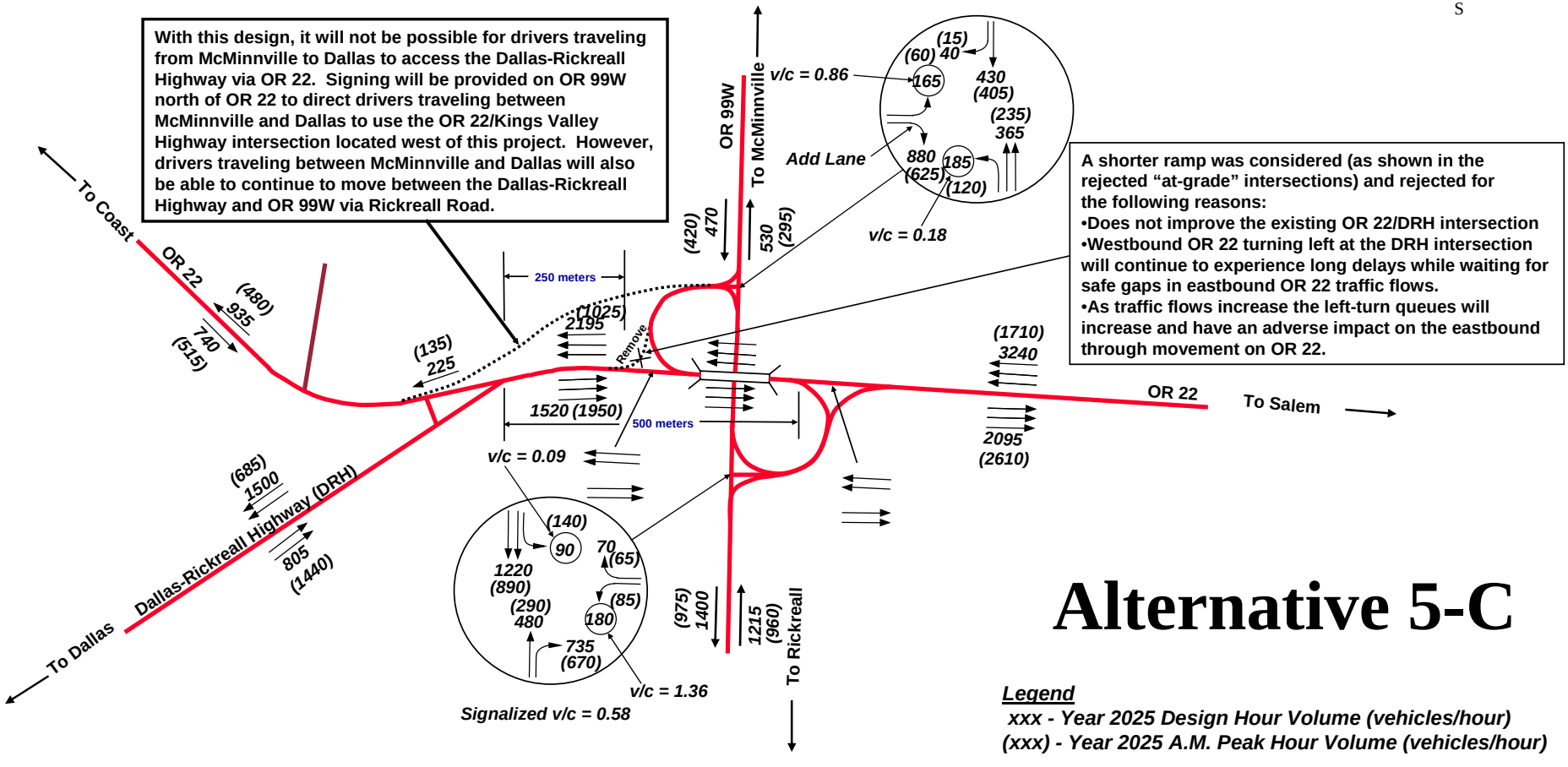
Alternative 5-B

Legend
xxx - Year 2025 Design Hour Volume (vehicles/hour)

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RAdvanced.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 7
	Date : 1/30/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection
"Structure" Option - Year 2025 Design Hour Traffic Volumes



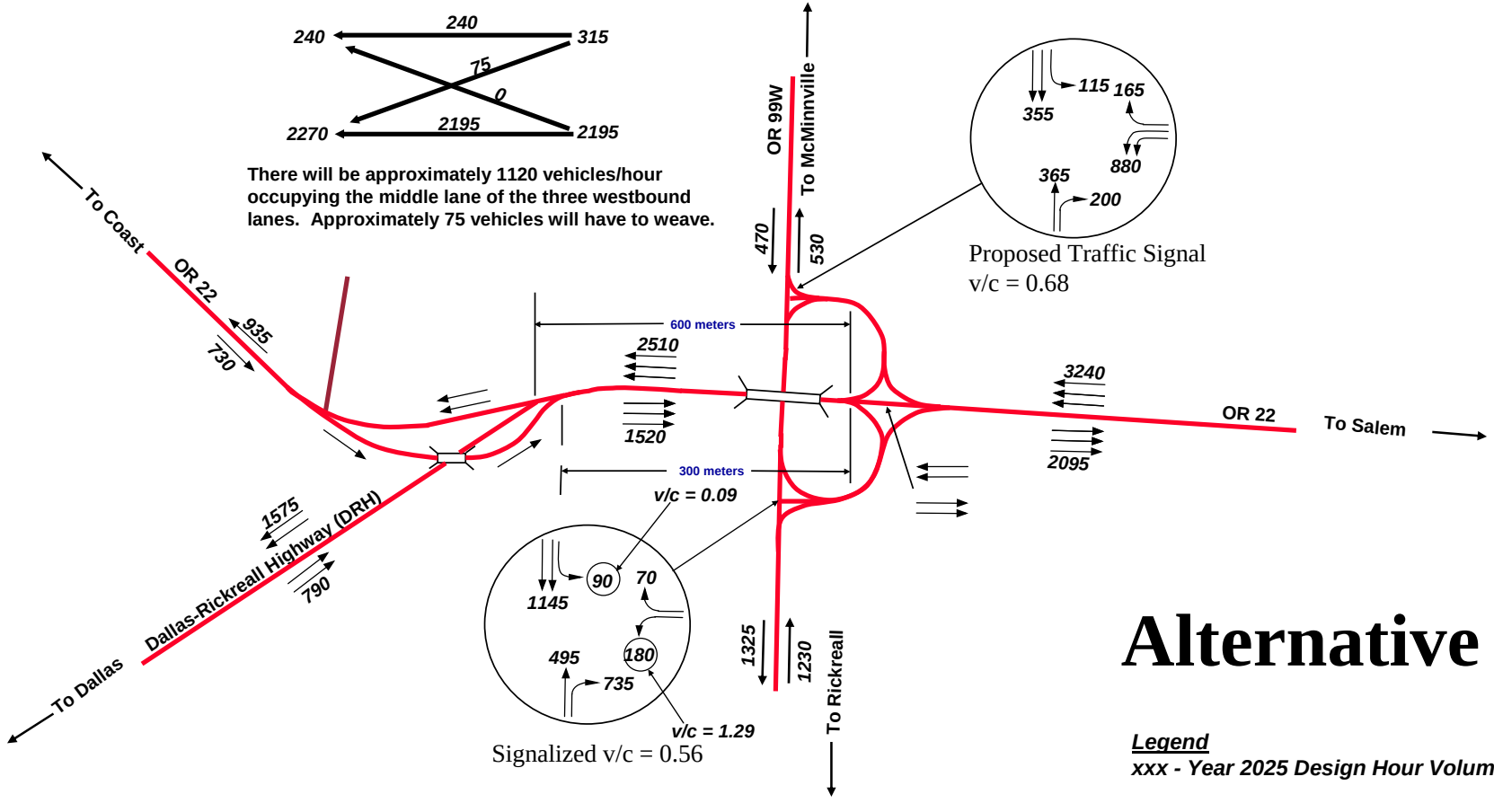
20

OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RAdvanced.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 8
	Date : 1/30/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection with "Fly-Over" Option - Year 2025 Design Hour Traffic Volumes



Alternative 6-B

Legend

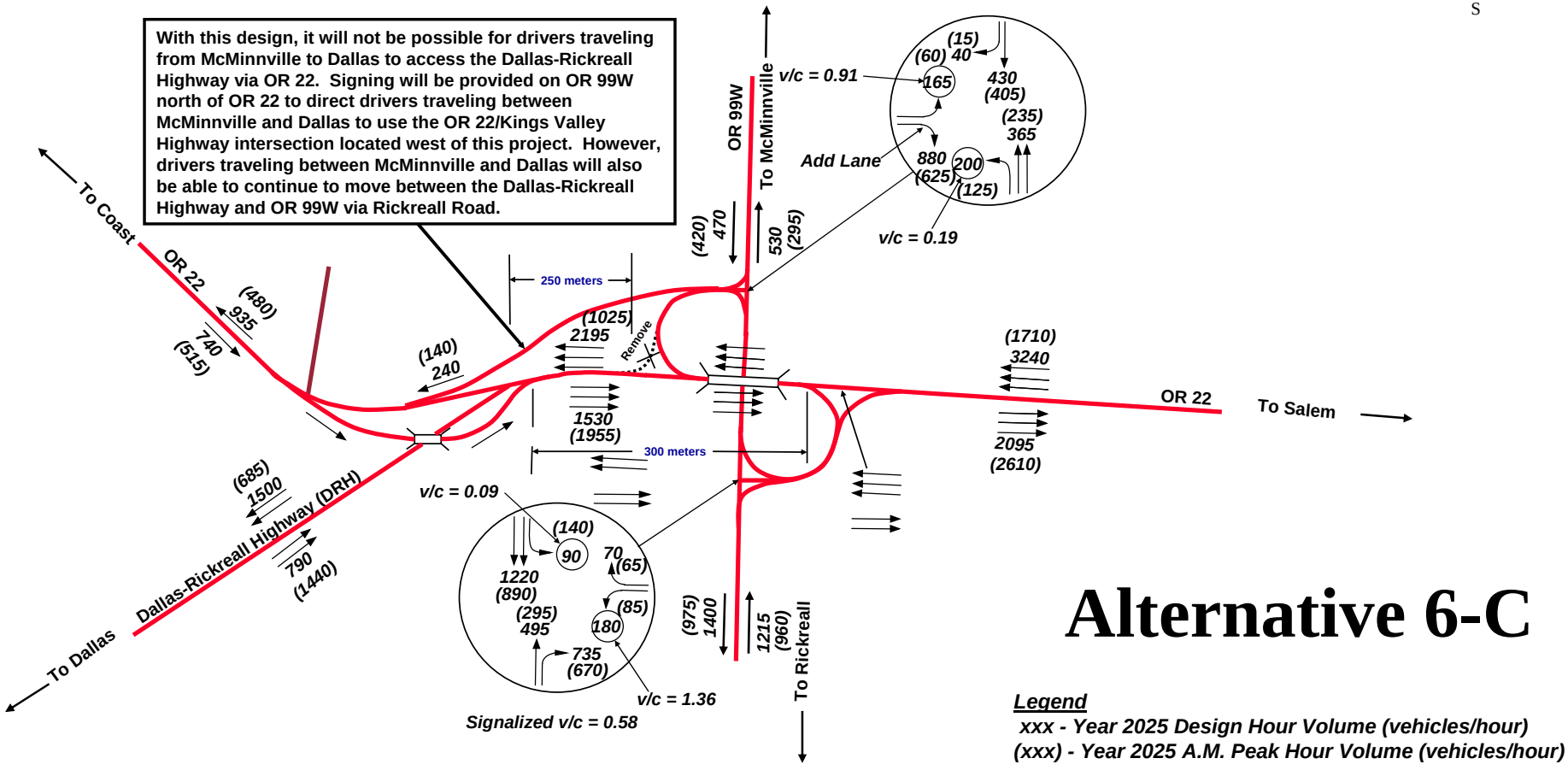
xxx - Year 2025 Design Hour Volume (vehicles/hour)

22

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RAdvanced.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 9
	Date : 1/30/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection
"Structure" Option - Year 2025 Design Hour Traffic Volumes



OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RAdvanced.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 10
	Date : 3/20/2001	Reviewed By: Brian Dunn, P.E.	

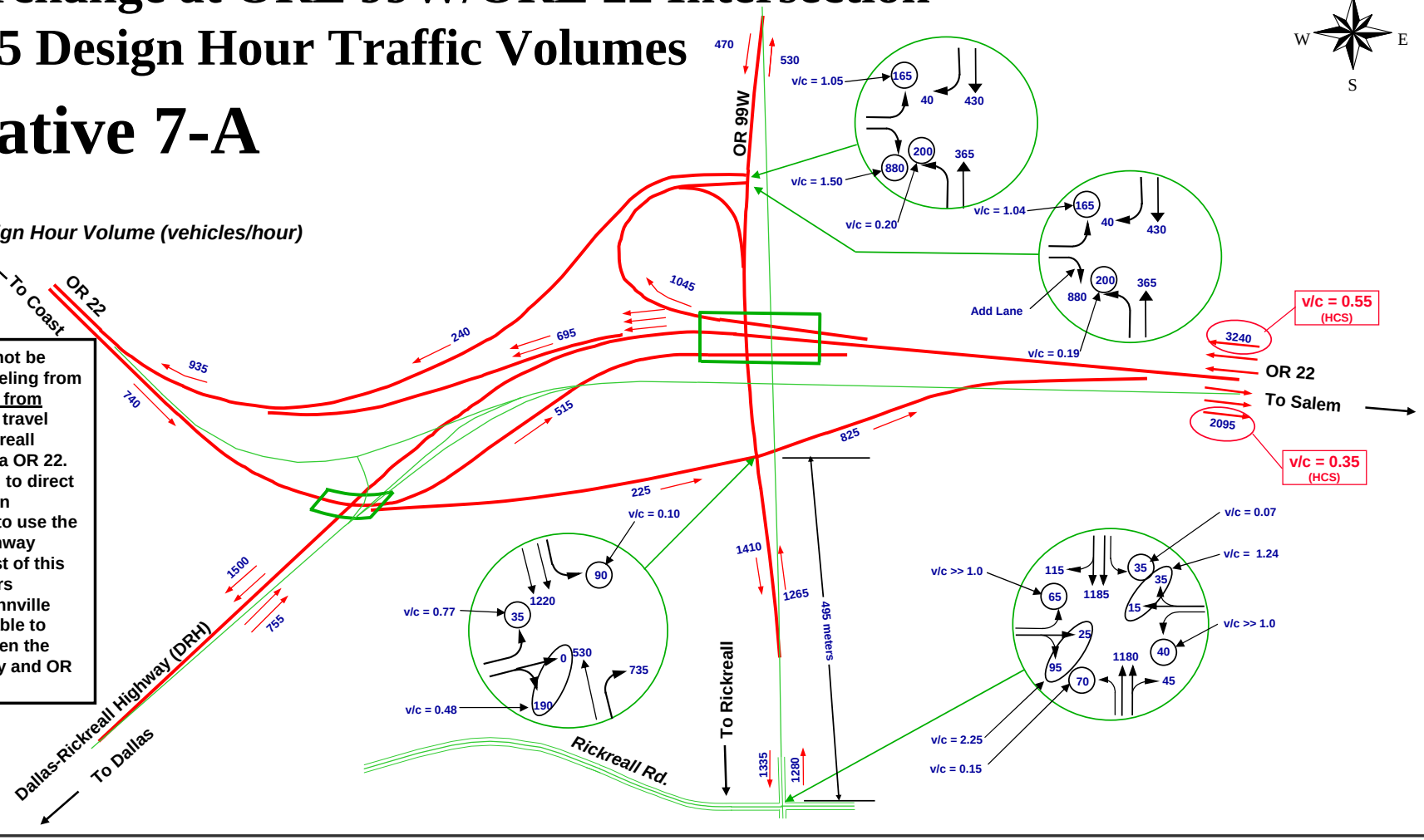
Full Interchange at ORE 99W/ORE 22 Intersection
Year 2025 Design Hour Traffic Volumes

Alternative 7-A

Legend
xxx - Year 2025 Design Hour Volume (vehicles/hour)

26

With this design, it will not be possible for drivers traveling from McMinnville to Dallas <u>or from</u> Dallas to McMinnville to travel between the Dallas-Rickreall Highway and OR 99W via OR 22. Signing will be provided to direct drivers traveling between McMinnville and Dallas to use the OR 22/Kings Valley Highway intersection located west of this project. However, drivers traveling between McMinnville and Dallas will also be able to continue to move between the Dallas-Rickreall Highway and OR 99W via Rickreall Road.

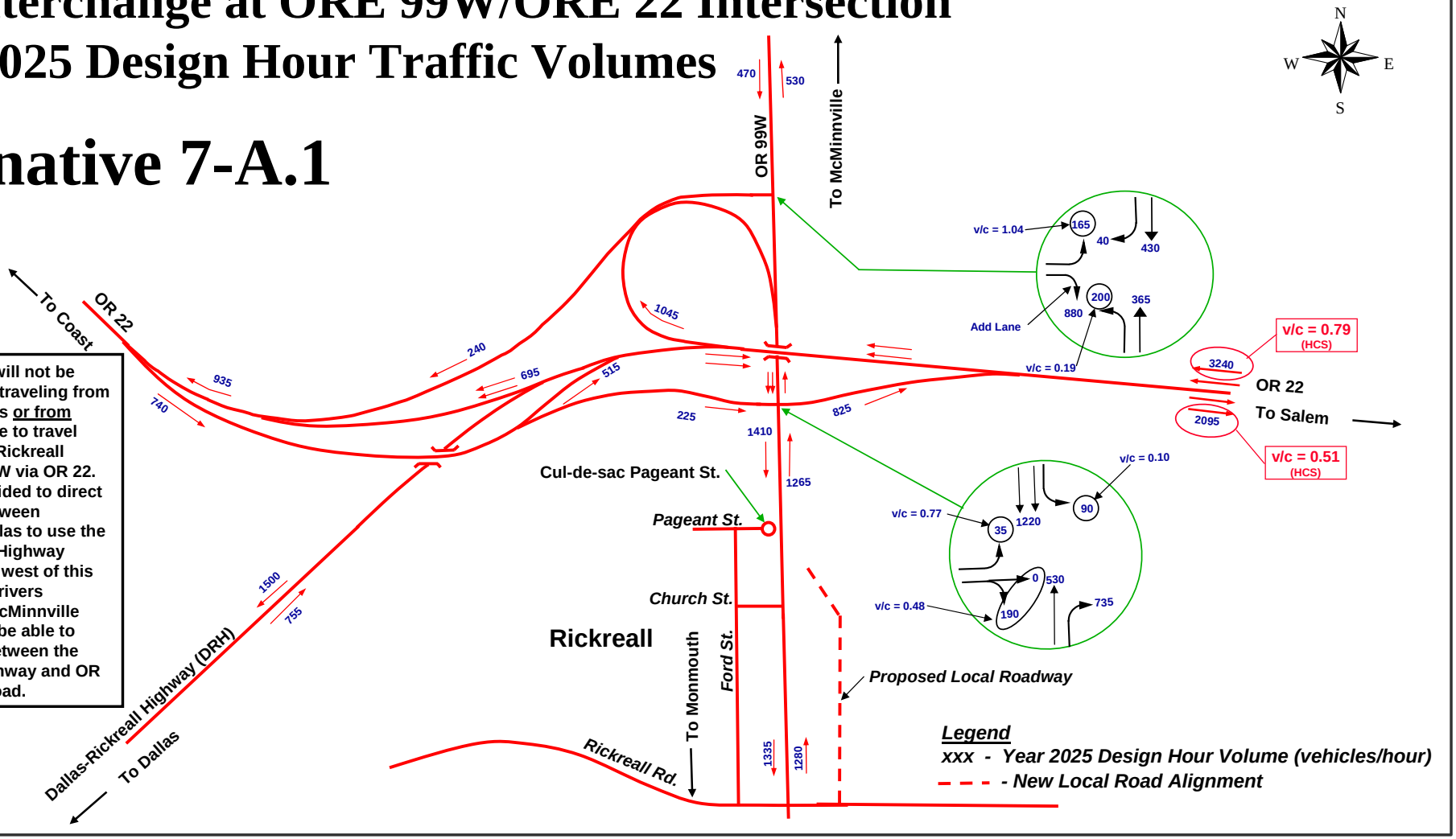


OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RAdvanced.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 11
	Date : 1/30/2001	Reviewed By: Brian Dunn, P.E.	

Full Interchange at ORE 99W/ORE 22 Intersection
Year 2025 Design Hour Traffic Volumes

Alternative 7-A.1



29

With this design, it will not be possible for drivers traveling from McMinnville to Dallas or from Dallas to McMinnville to travel between the Dallas-Rickreall Highway and OR 99W via OR 22. Signing will be provided to direct drivers traveling between McMinnville and Dallas to use the OR 22/Kings Valley Highway intersection located west of this project. However, drivers traveling between McMinnville and Dallas will also be able to continue to move between the Dallas-Rickreall Highway and OR 99W via Rickreall Road.

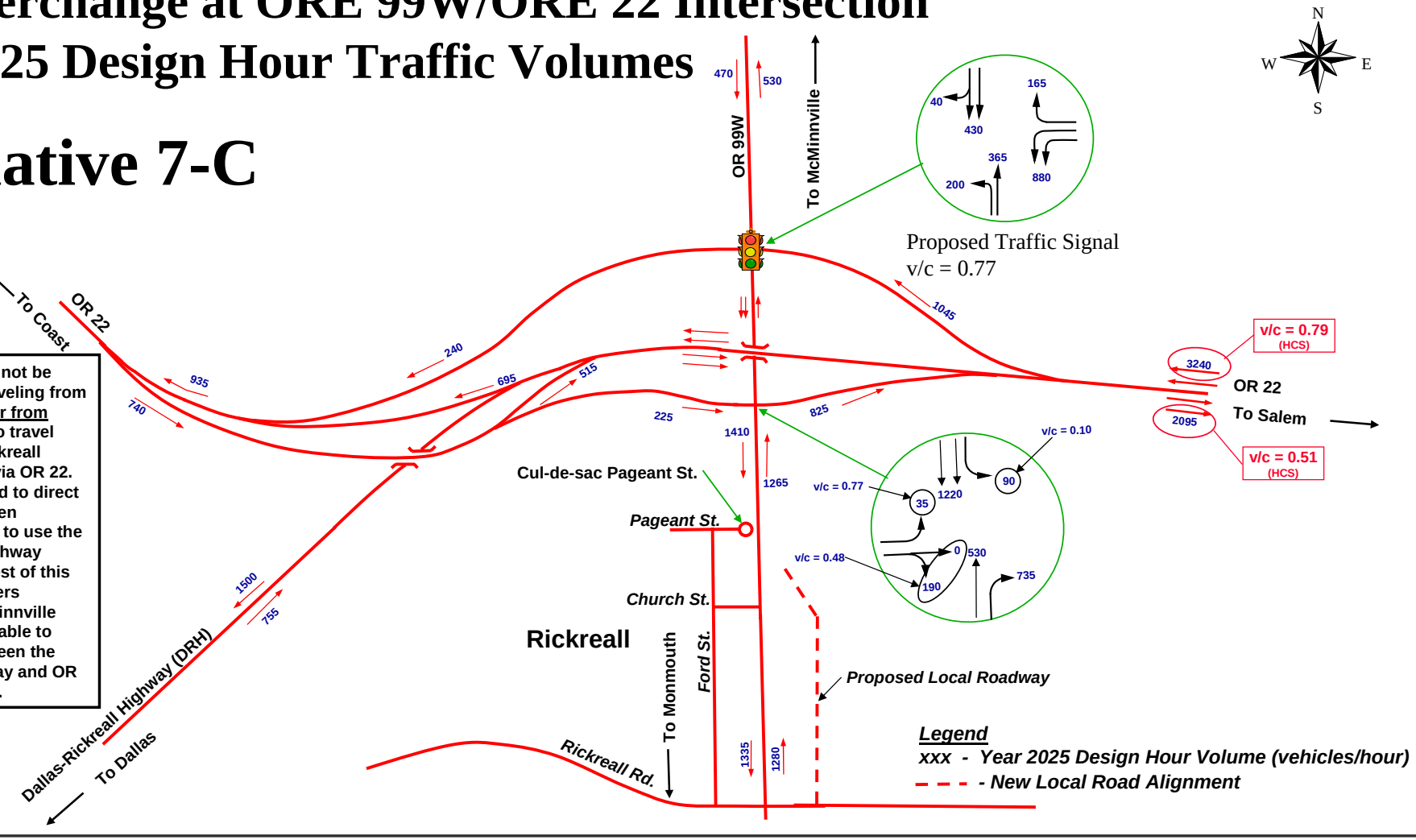
OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	File : Rick7-A.1.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 12
	Date : 10/15/2002	Rev. By: Dorothy Upton, P.E.	

Full Interchange at ORE 99W/ORE 22 Intersection
Year 2025 Design Hour Traffic Volumes

Alternative 7-C



31

With this design, it will not be possible for drivers traveling from McMinnville to Dallas <u>or from</u> Dallas to McMinnville to travel between the Dallas-Rickreall Highway and OR 99W via OR 22. Signing will be provided to direct drivers traveling between McMinnville and Dallas to use the OR 22/Kings Valley Highway intersection located west of this project. However, drivers traveling between McMinnville and Dallas will also be able to continue to move between the Dallas-Rickreall Highway and OR 99W via Rickreall Road.

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : Rick7-A.1.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 13
	Date : 10/15/2002	Rev. By: Dorothy Upton, P.E.	

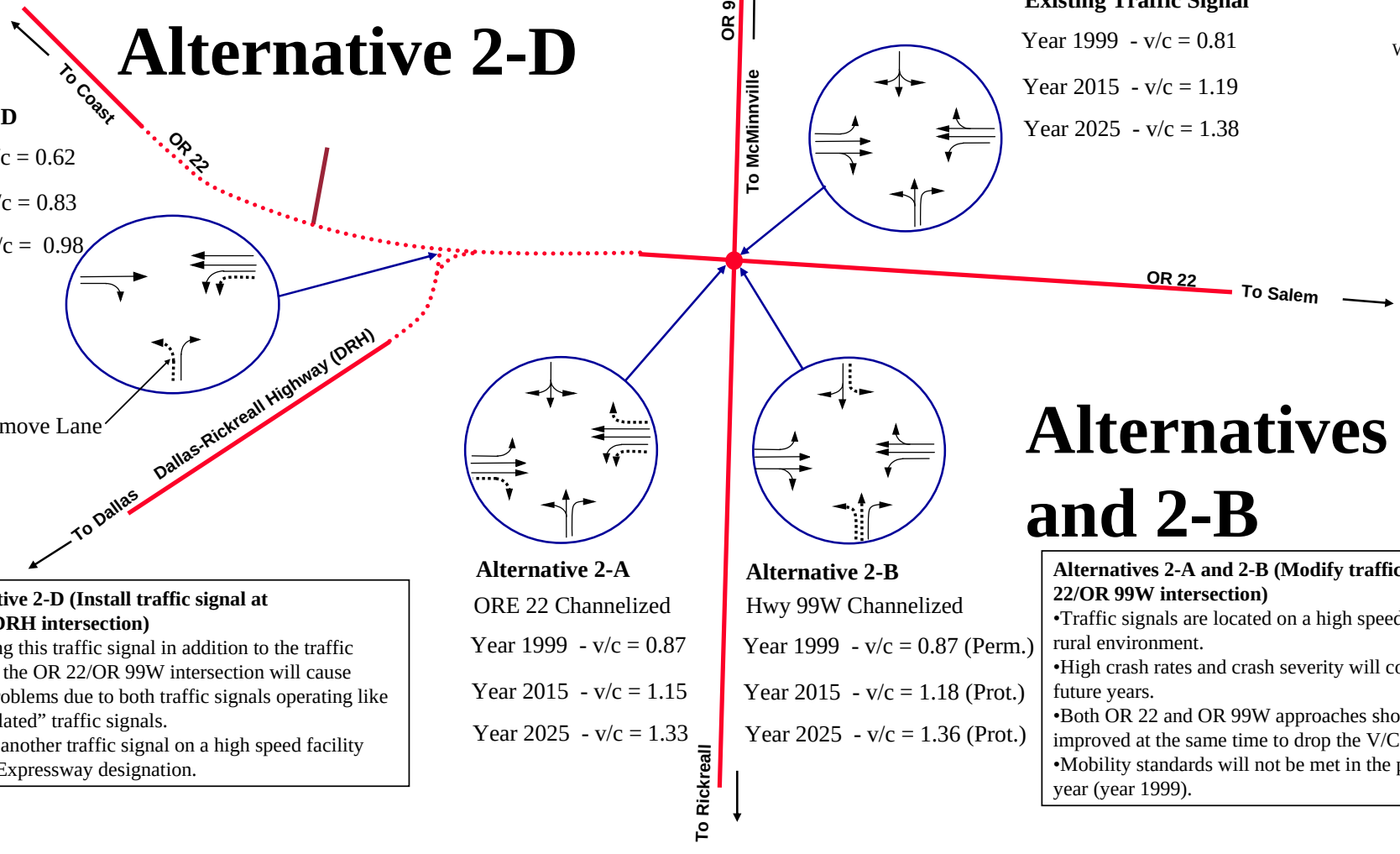
Alternative 2-D

Alternative 2-D

Year 1999 - v/c = 0.62

Year 2015 - v/c = 0.83

Year 2025 - v/c = 0.98



Existing Traffic Signal

Year 1999 - v/c = 0.81

Year 2015 - v/c = 1.19

Year 2025 - v/c = 1.38

Alternatives 2-A and 2-B

Alternative 2-A

ORE 22 Channelized

Year 1999 - v/c = 0.87

Year 2015 - v/c = 1.15

Year 2025 - v/c = 1.33

Alternative 2-B

Hwy 99W Channelized

Year 1999 - v/c = 0.87 (Perm.)

Year 2015 - v/c = 1.18 (Prot.)

Year 2025 - v/c = 1.36 (Prot.)

Alternative 2-D (Install traffic signal at OR 22/DRH intersection)

•Installing this traffic signal in addition to the traffic signal at the OR 22/OR 99W intersection will cause safety problems due to both traffic signals operating like two "isolated" traffic signals.

•Installs another traffic signal on a high speed facility with an Expressway designation.

Alternatives 2-A and 2-B (Modify traffic signal at OR 22/OR 99W intersection)

•Traffic signals are located on a high speed facility in a rural environment.

•High crash rates and crash severity will continue into future years.

•Both OR 22 and OR 99W approaches should be improved at the same time to drop the V/C ratios.

•Mobility standards will not be met in the present year (year 1999).

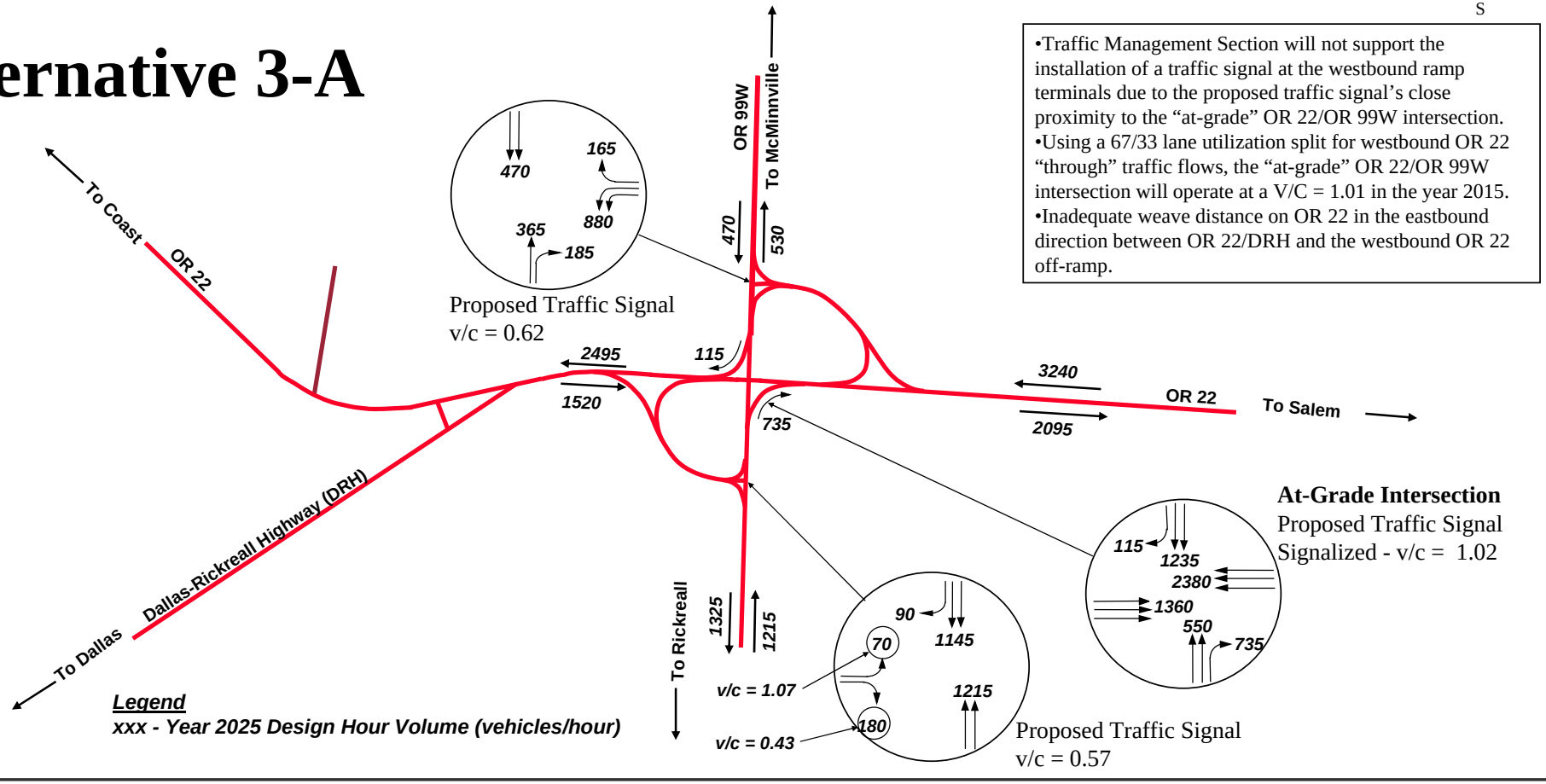
A-2

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RLosers.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 14
	Date : 2/02/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection
"At-Grade" Option - Year 2025 Design Hour Traffic Volumes

Alternative 3-A



- Traffic Management Section will not support the installation of a traffic signal at the westbound ramp terminals due to the proposed traffic signal's close proximity to the "at-grade" OR 22/OR 99W intersection.
- Using a 67/33 lane utilization split for westbound OR 22 "through" traffic flows, the "at-grade" OR 22/OR 99W intersection will operate at a V/C = 1.01 in the year 2015.
- Inadequate weave distance on OR 22 in the eastbound direction between OR 22/DRH and the westbound OR 22 off-ramp.

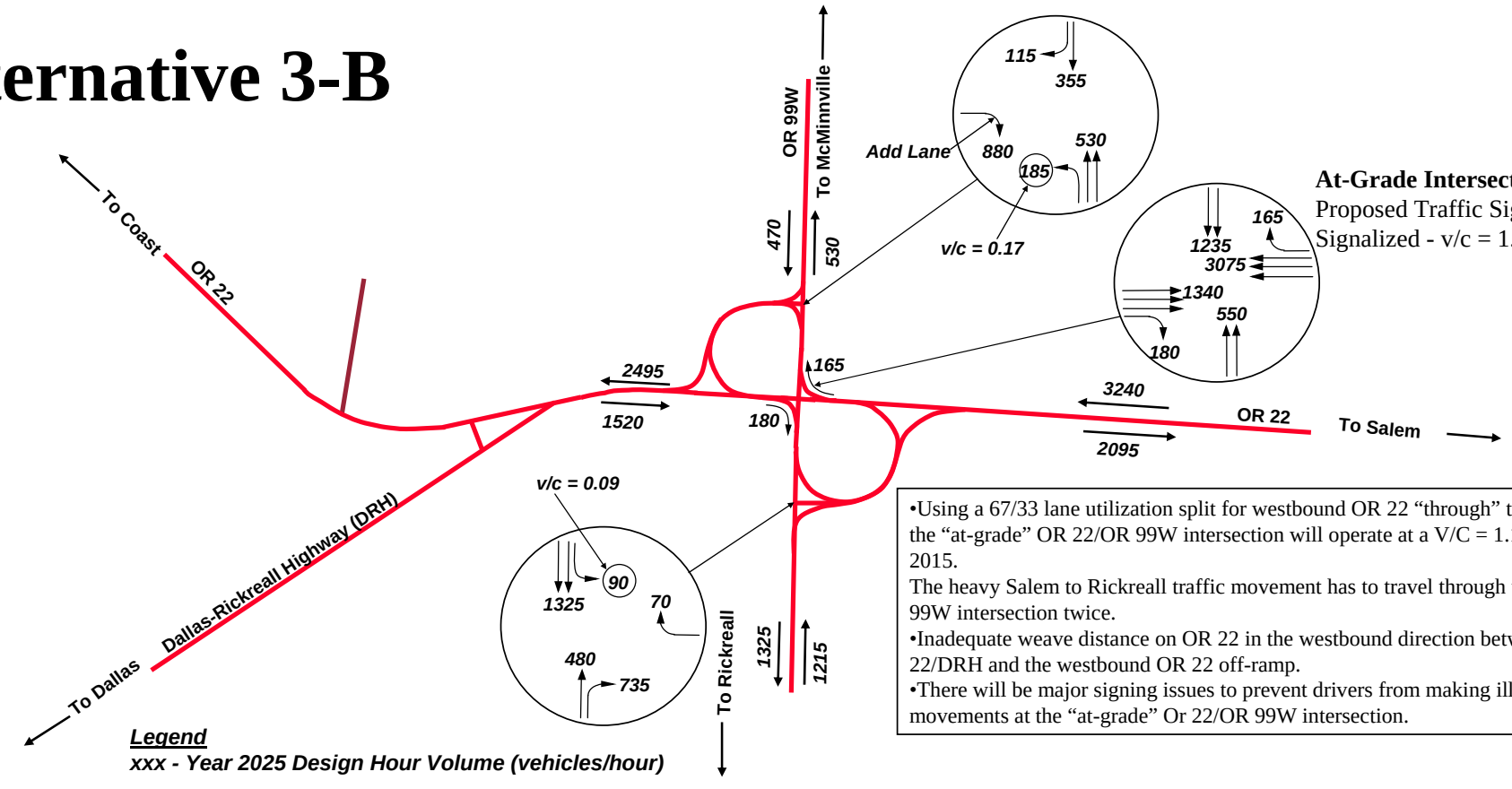
A-3

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RLosers.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 15
	Date : 2/02/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection
"At-Grade" Option - Year 2025 Design Hour Traffic Volumes

Alternative 3-B



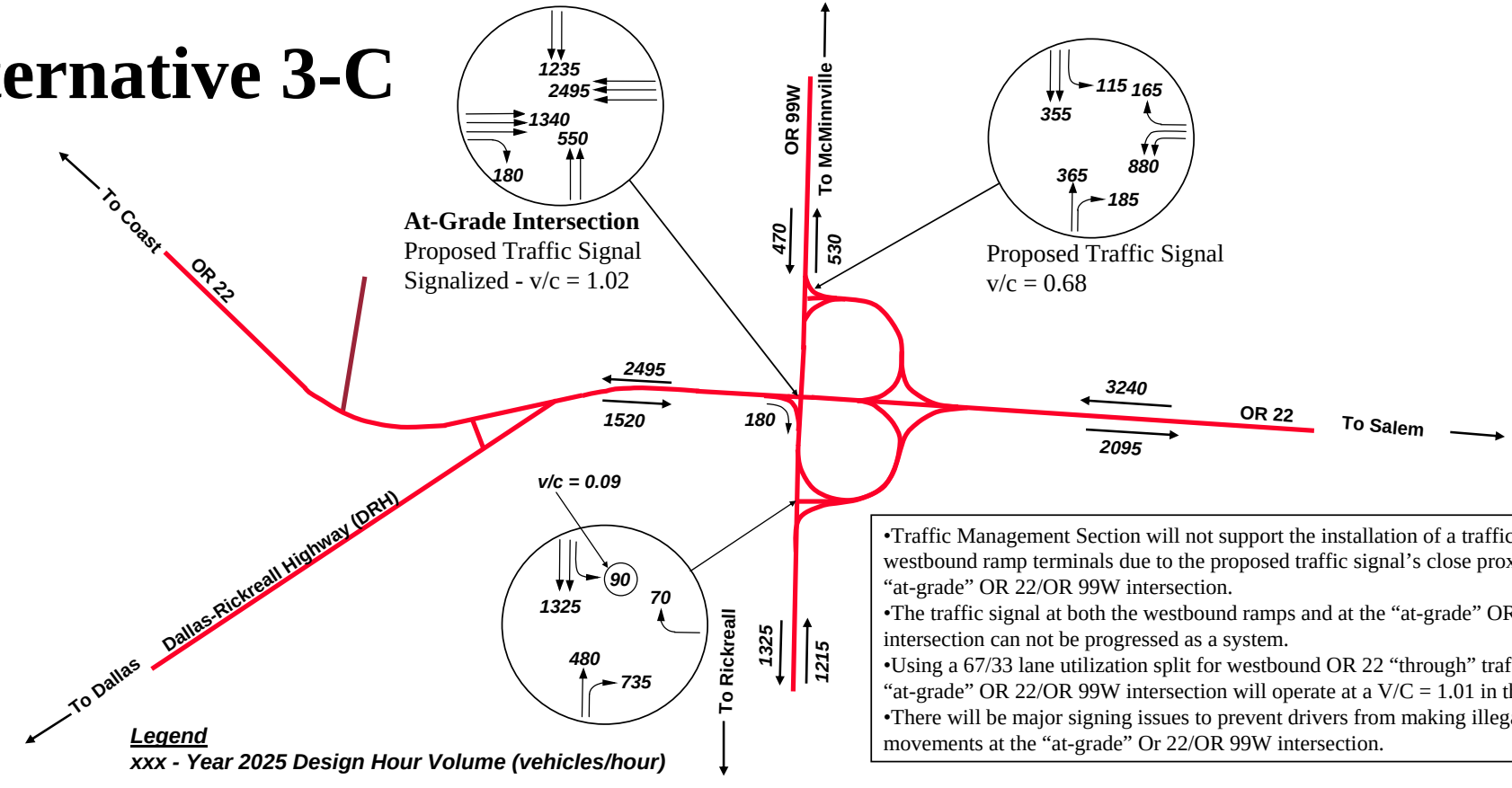
At-Grade Intersection
Proposed Traffic Signal
Signalized - v/c = 1.16

- Using a 67/33 lane utilization split for westbound OR 22 "through" traffic flows, the "at-grade" OR 22/OR 99W intersection will operate at a V/C = 1.11 in the year 2015.
- The heavy Salem to Rickreall traffic movement has to travel through the OR 22/OR 99W intersection twice.
- Inadequate weave distance on OR 22 in the westbound direction between OR 22/DRH and the westbound OR 22 off-ramp.
- There will be major signing issues to prevent drivers from making illegal turning movements at the "at-grade" Or 22/OR 99W intersection.

A-4

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection
"At-Grade" Option - Year 2025 Design Hour Traffic Volumes

Alternative 3-C



- Traffic Management Section will not support the installation of a traffic signal at the westbound ramp terminals due to the proposed traffic signal's close proximity to the "at-grade" OR 22/OR 99W intersection.
- The traffic signal at both the westbound ramps and at the "at-grade" OR 22/OR 99W intersection can not be progressed as a system.
- Using a 67/33 lane utilization split for westbound OR 22 "through" traffic flows, the "at-grade" OR 22/OR 99W intersection will operate at a V/C = 1.01 in the year 2015.
- There will be major signing issues to prevent drivers from making illegal turning movements at the "at-grade" Or 22/OR 99W intersection.

A-5

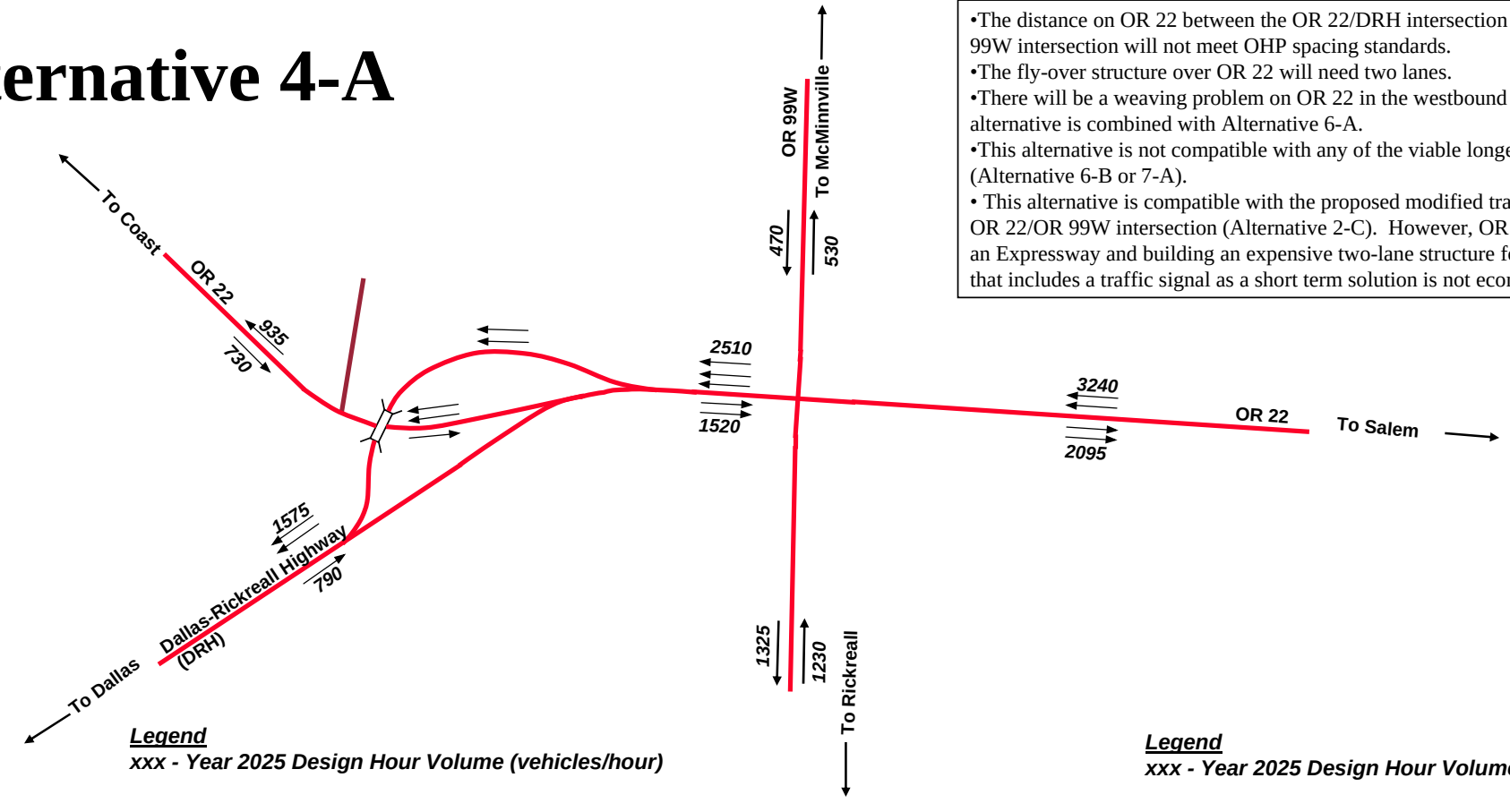
OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RLosers.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 17
	Date : 2/02/2001	Reviewed By: Brian Dunn, P.E.	

"Fly-Over" Option at ORE 22/DRH Intersection
Year 2025 Design Hour Traffic Volumes

Alternative 4-A

- The distance on OR 22 between the OR 22/DRH intersection and the OR 22/OR 99W intersection will not meet OHP spacing standards.
- The fly-over structure over OR 22 will need two lanes.
- There will be a weaving problem on OR 22 in the westbound direction if this alternative is combined with Alternative 6-A.
- This alternative is not compatible with any of the viable longer term Alternatives (Alternative 6-B or 7-A).
- This alternative is compatible with the proposed modified traffic signal at the OR 22/OR 99W intersection (Alternative 2-C). However, OR 22 is designated as an Expressway and building an expensive two-lane structure for an alternative that includes a traffic signal as a short term solution is not economically feasible.



Legend
xxx - Year 2025 Design Hour Volume (vehicles/hour)

Legend
xxx - Year 2025 Design Hour Volume (vehicles/hour)

A-6

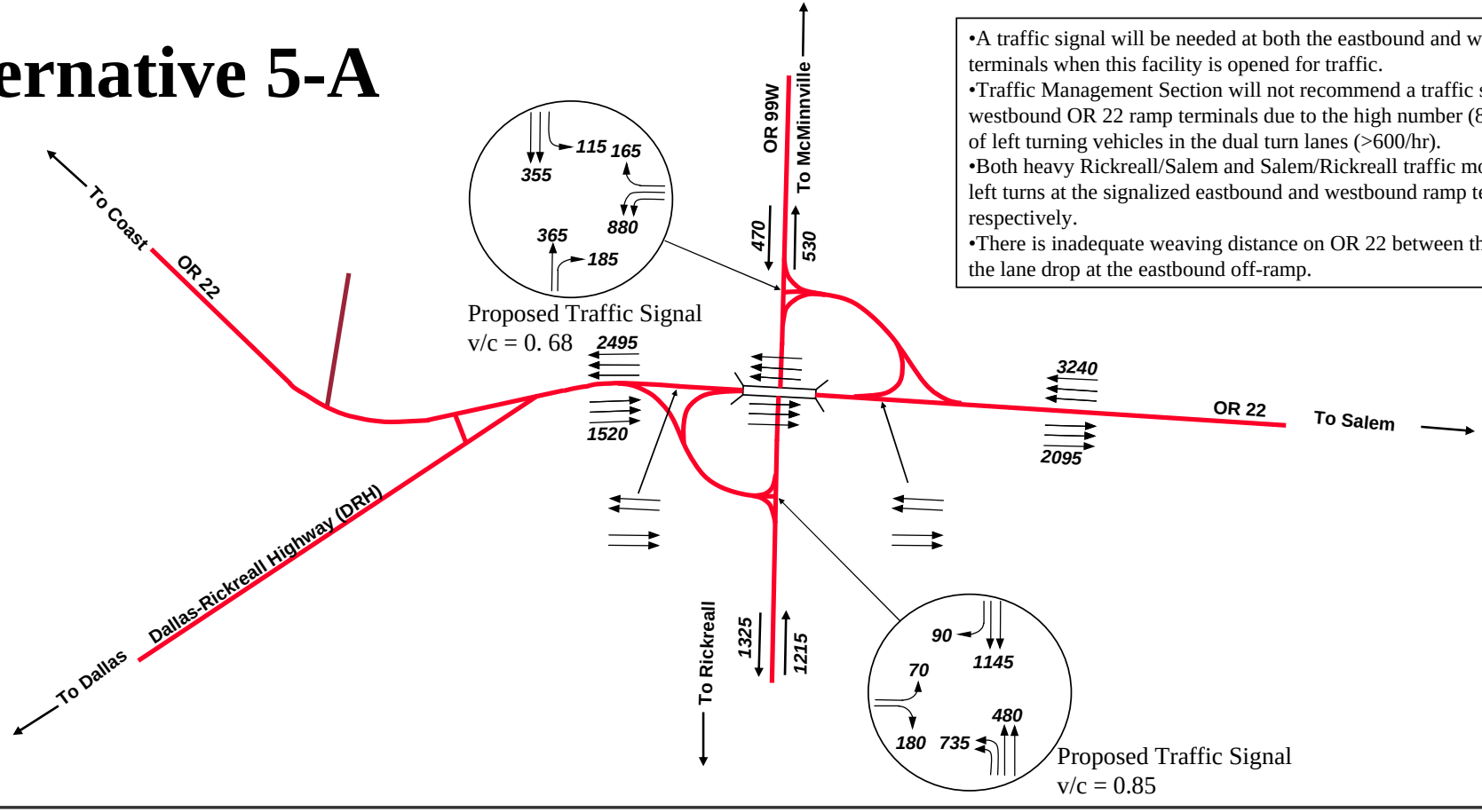
OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RLosers.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 18
	Date : 2/02/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection
"Structure" Option - Year 2025 Design Hour Traffic Volumes

Alternative 5-A

- A traffic signal will be needed at both the eastbound and westbound ramp terminals when this facility is opened for traffic.
- Traffic Management Section will not recommend a traffic signal at the westbound OR 22 ramp terminals due to the high number (880 vehicles/hour) of left turning vehicles in the dual turn lanes (>600/hr).
- Both heavy Rickreall/Salem and Salem/Rickreall traffic movements are dual left turns at the signalized eastbound and westbound ramp terminals, respectively.
- There is inadequate weaving distance on OR 22 between the OR 22/DRH and the lane drop at the eastbound off-ramp.



A-7

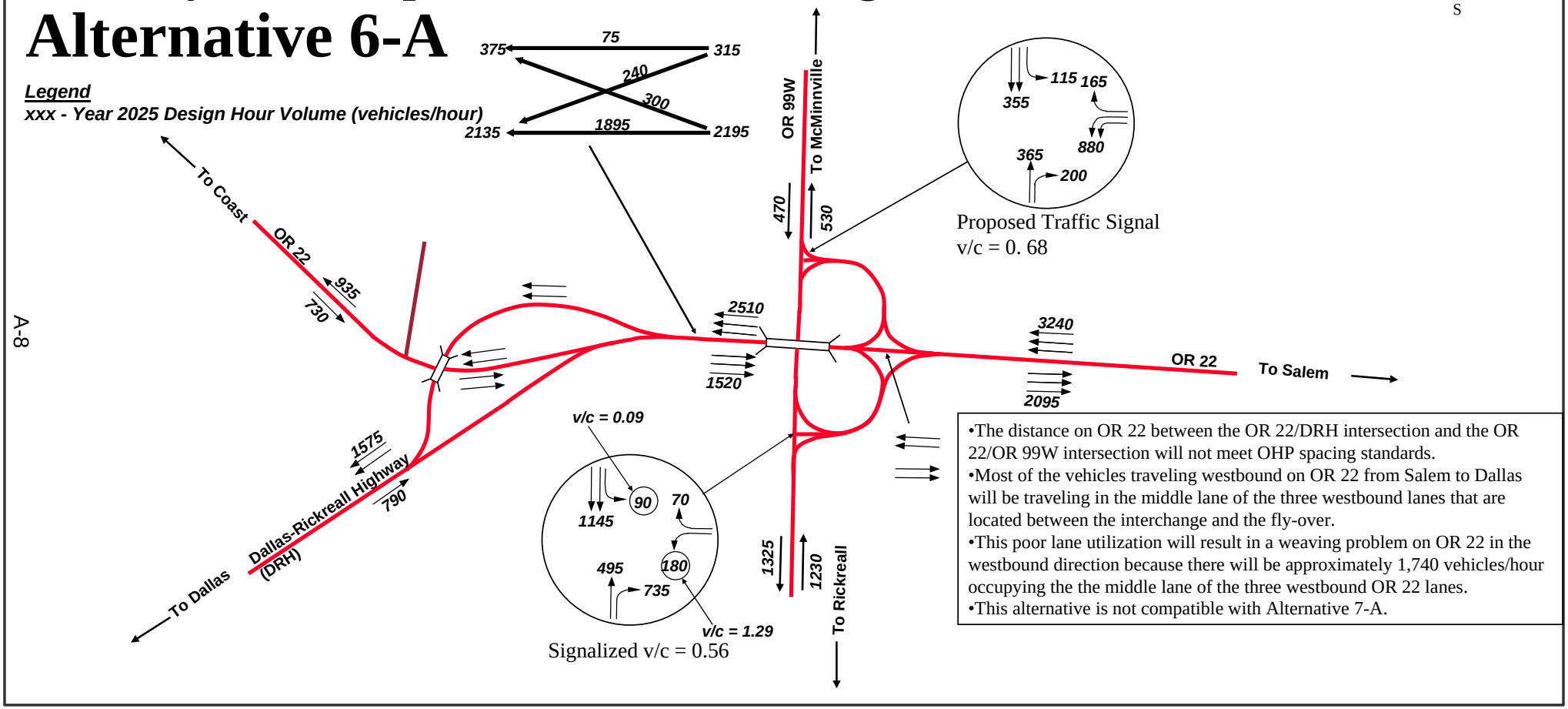
OREGON DEPARTMENT OF TRANSPORTATION

TPAU TRANSPORTATION PLANNING ANALYSIS UNIT

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RLosers.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 19
	Date : 2/02/2001	Reviewed By: Brian Dunn, P.E.	

Jug-Handle Interchange at ORE 99W/ORE 22 Intersection with "Fly-Over" Option - Year 2025 Design Hour Traffic Volumes

Alternative 6-A



- The distance on OR 22 between the OR 22/DRH intersection and the OR 22/OR 99W intersection will not meet OHP spacing standards.
- Most of the vehicles traveling westbound on OR 22 from Salem to Dallas will be traveling in the middle lane of the three westbound lanes that are located between the interchange and the fly-over.
- This poor lane utilization will result in a weaving problem on OR 22 in the westbound direction because there will be approximately 1,740 vehicles/hour occupying the the middle lane of the three westbound OR 22 lanes.
- This alternative is not compatible with Alternative 7-A.

A-8

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RLosers.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 20
	Date : 2/02/2001	Reviewed By: Brian Dunn, P.E.	

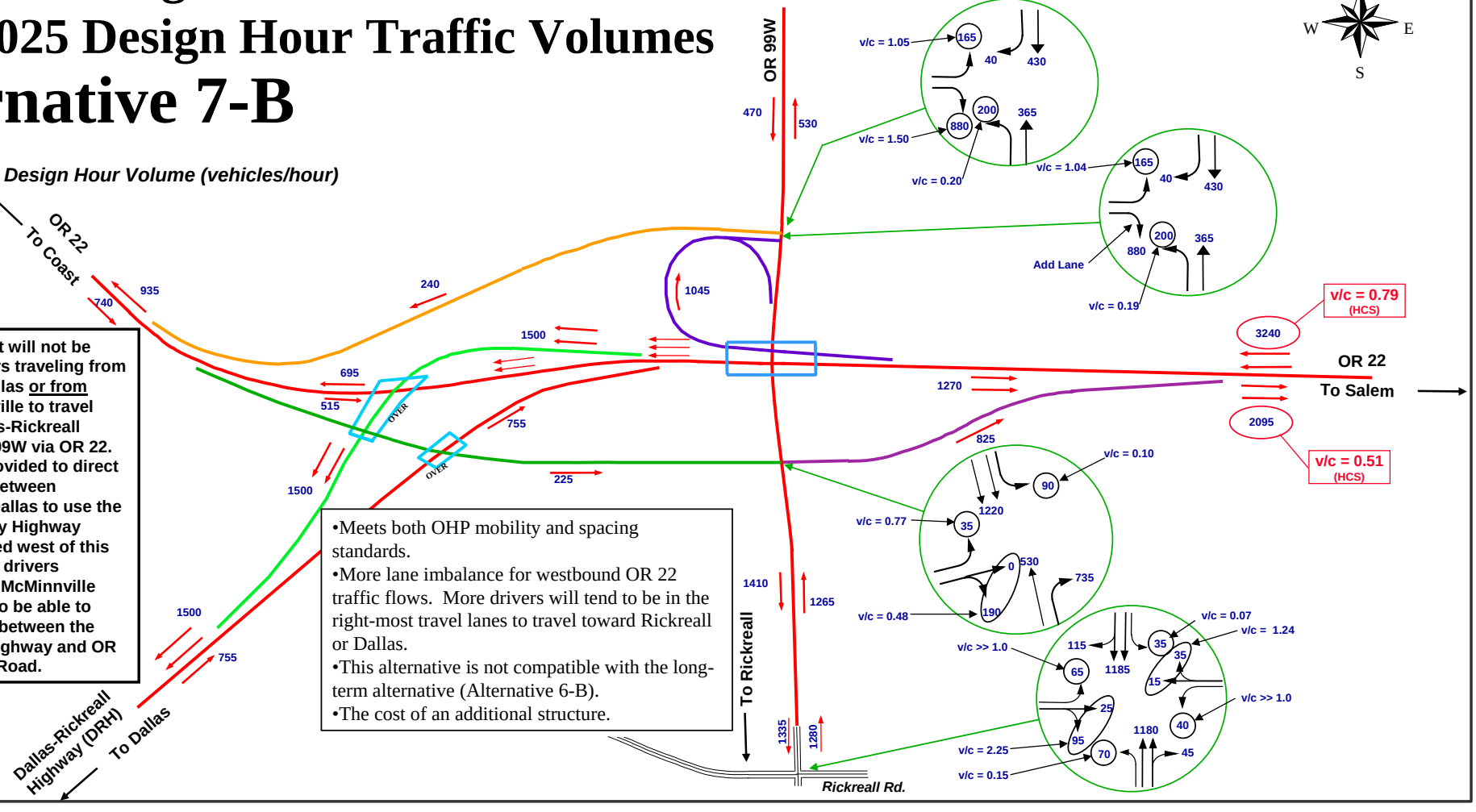
Full Interchange at ORE 99W/ORE 22 Intersection

Year 2025 Design Hour Traffic Volumes

Alternative 7-B

Legend

xxx - Year 2025 Design Hour Volume (vehicles/hour)



A-9

With this design, it will not be possible for drivers traveling from McMinnville to Dallas <u>or from</u> Dallas to McMinnville to travel between the Dallas-Rickreall Highway and OR 99W via OR 22. Signing will be provided to direct drivers traveling between McMinnville and Dallas to use the OR 22/Kings Valley Highway intersection located west of this project. However, drivers traveling between McMinnville and Dallas will also be able to continue to move between the Dallas-Rickreall Highway and OR 99W via Rickreall Road.

- Meets both OHP mobility and spacing standards.
- More lane imbalance for westbound OR 22 traffic flows. More drivers will tend to be in the right-most travel lanes to travel toward Rickreall or Dallas.
- This alternative is not compatible with the long-term alternative (Alternative 6-B).
- The cost of an additional structure.

OREGON DEPARTMENT OF TRANSPORTATION TPAU **TRANSPORTATION PLANNING ANALYSIS UNIT**

OR 99W/OR 22 Junction Refinement Plan Polk County	File : RLosers.ppt	Prepared By: Harlan Nale, P.E.	FIGURE 21
	Date : 2/02/2001	Reviewed By: Brian Dunn, P.E.	

Modal Considerations

Mid-Willamette Valley Council of Governments (MWVCOG) staff provided the following information to the Technical Advisory Committee at the May 24, 2000 and June 27, 2000 TAC meetings (see Appendix A).

Major traffic generators in the region

- In Dallas, an increase in commercial growth in the next five (5) years including the addition of a second major grocery store in town. More commercial development is expected along Ellendale Road and Kings Valley Highway. The City hopes to have wastewater treatment facility expansion complete by August 2003 and is not under any type of moratorium.

- In Monmouth, several new developments could potentially impact the intersection. Development of a 9-acre commercial area along Monmouth-Independence Highway (at the S-curve) is expected within the next several years. In addition, development of a recently annexed residential property (approximately 80 acres) would add some 800 new residential units.

- Spirit Mountain Development Casino is in the process of studying the feasibility of adding an additional 100 rooms to the existing 100-room overnight facility. No expansion of the Casino is planned or anticipated through the planning period due to two reasons: (1) physical constraints at the site limit growth and (2) the Tribe is required, by law, to conduct gaming on no more than five (5) acres.

- The potential exists for Willamette Industries (Dallas) truck traffic to increase anywhere from 30 to 60 percent in the next few years as the sawmill facility is retooled.

- Willamina (Hampton) Lumber trucks travel from Willamina to Portland via Salem on Highway 22, rather than use Highway 18. A steady increase in truck traffic from the Willamina plant will occur. At present, 15-18 rail cars per day leave the Willamina plant and that the company has no intention of curtailing future rail use. To that end, the company has made a significant investment in approximately 900 rail cars.

- Use of the Polk County Fairgrounds has increased dramatically the past two years. Construction of the Polk County Museum at the fairgrounds will increase the visitation at the fairgrounds from 72,000 visitors/year to 76,000 visitors/year. Fairgrounds use is expected to increase into the future, however with most of the use occurring on weekends, increased usage will not have a significant impact on the traffic flows within the area

Public Transit

In November 1998, the Chemeketa Area Regional Transportation Service (CARTS) began providing van service to Dallas, Monmouth, Independence, Rickreall and Salem. Central Route #1 serves Dallas, Rickreall, and Salem via Highway 22, Dallas-Rickreall Road, and Ellendale Road.

Central Route #2 serves Independence, Monmouth, Dallas, and Salem via Highway 51 and Clow Corner Road.

These are flexible routes that will deviate up to 0.75 mile from the primary route to accommodate senior citizens and disabled clients from developmentally disabled provider group homes. Both routes operate five days per week between the hours of 6:00 a.m. and 8:00 p.m.

CARTs currently makes 6 trips per day - between the hours of 6 am to 8 PM between Salem & Dallas. The service uses 18-person vans. Traveling from Salem, the vans turn left onto Highway 99W and eventually stop at the Rickreall Park & Ride, before continuing on to Dallas. Traveling from Dallas, the vans again stop at the Park & Ride, and approach the intersection heading north on Hwy 99W, before turning right to head to Salem.

CARTS also supplies 1,700 hours of dial-a-ride service to address capacity constraints, provide mobility to outlying communities and ensure the service is compliant with the Americans With Disabilities Act.

CARTs staff estimates at about 25 percent occupancy at this time, although on several occasions demand has exceeded 100 percent. In those instances, complimentary dial-a-ride service was provided to those who could not be accommodated on the van. The service priority for the vans is persons with special needs, but commuters are encouraged to use the service as well.

CARTS has held public workshops in Monmouth, Independence, & Dallas and based on those meeting, staff members feel that there is some latent demand for commuter service. Staff is optimistic that within the next several years 3-4 express vans would run from Dallas to Salem in the morning and from Salem to Dallas in the afternoon.

No long-range feasibility studies or trip projections for the service have been developed.

Mid-Valley Rideshare

The Mid-Valley Rideshare program consists of a database of persons interested in carpooling within Salem and outlying communities. The database lists persons described as "active", which includes persons interested in ridesharing and some program participants that may be seeking additional riders and persons listed as "inactive". This designation includes people who have expressed interest in the program, but are no longer interested or people who are actively ridesharing and are no longer looking for riders/drivers. Each month, files from that same month, in the previous year, are purged. Based on the format of the database and the purging of files, it is impossible to determine the exact numbers of commuters from Dallas area that use the program. It is also not possible to project future use of the program.

At present, the database lists 32 persons from Dallas. Of these 8 are listed as active participants and 24 are listed as inactive.

Steady growth in the program has occurred over time, but as the Rideshare staff notes, until congestion and travel times increase, resistance to carpooling will remain strong.

Pedestrian and Bicycle Travel

The Oregon Bicycle and Pedestrian Plan notes 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.

Bicycle facilities, consisting of either a bike lane or roadway shoulder/bikeway are available in the area between Salem and the project study area. Because the Corridor connects to Highway 18, the Oregon coast is a popular destination for longer distance touring.

Walkways are available throughout the most of the urban arterial sections of Highway 22 in the Salem urban area. In rural areas, such as the project study area, where provision of walkways is not cost-effective, paved shoulders serve as pedestrian walkways.

No counts of pedestrian or bicycle traffic are available.

Conclusions:

- Growth from major generators within the region will add additional traffic, but will not significantly affect the magnitude of 2025 traffic projections for the OR 22/OR 99W intersection.

- Based on existing data, growth in non-auto travel modes will not significantly affect the magnitude of 2025 traffic projections for the intersection.

Conditions Study For:

Willamina-Salem Highway, Highway No. 30 (OR 22)

OR 22/OR 99W Intersection
M.P. 15.50 to 16.30

Geometry

Configuration

Rickreall Intersection is signalized and located approx. 7 miles West of Salem. OR 22 is a flat, high-speed four-lane expressway, that begins prior to the Dallas–Rickreall Highway (DRH) connection. The 1999 OHP classifies Willamina-Salem Highway No. 30 as a highway of statewide importance. The Highway Design Manual has the Willamina-Salem Highway classified as Rural Principal Arterial.

Geometric Deficiencies

OR 22: Paved shoulder width (extg. 1.8m) std. 2.4, less than desirable

Vertical Alignment, over the RR structure. (extg. 463m) std. 790m, stopping sight distance. No reported accidents, but this could be a problem in the future.

Spiral length (extg. 91.44m) std. 150m, less than desirable.

Turning radius do not accommodate trucks well

Left turn pocket to DRH is to close to the signalized intersection and has marginal storage.

Operations

Section written by TPAU, includes

OR22 v/c ratio of 0.89, 1999; future 2025(no build) v/c ratio of 1.36

Safety

The 5 year crash record (1996 – 2000) for the intersection listed:

OR 22 @ OR 99W, 14 rear-ends, vehicles stopped at the signal.

4 turning 9 T-bones & 1 sideswipe, high speed or speed differential.

OR 22 @ OR 223 (DRH), see report for this section.

There are several factors associated with this intersection that might contribute to a crash. 1. OR 22 @ OR 99W is an isolated signal in a rural setting on a high-speed facility (expressway) and where diver would not expect to see a signal. 2. OR 22 runs East/West and early morning and late afternoon sun could interfere with viewing of the signal. 3. This is a high commuter route.

Conditions Study For:

Pacific Highway West, Highway No. 92 (OR 99W)

OR 99W @ Rickreall
M.P. 57.30 to 58.00

Geometry

Configuration
Rickreall Intersection is signalized and located approx. 7 miles West of Salem and Rickreall Road intersection is in Rickreall, or another three tenths of a mile farther south of OR 22/OR 99W intersection on OR 99W. Rickreall is an unincorporated community that is split by OR 99W. There are several businesses and a grade school along it. The posted speed is 45mph. The 1999 OHP classifies Pacific Highway West No. 92 as a regional level of importance. The Highway Design Manual lists Pacific Highway West as a Rural Minor Arterial.

Geometric Deficiencies

Addition lane: A left turn refuge is needed because of all the access points to 99W, and high speed.
Left turn pocket to Rickreall Road is adequate, but will need to be lengthen for future (2015) storage.

Operations

Section written by TPAU, includes
OR99W v/c ratio of 0.58, 1999; future (no build, yr. 2025) v/c ratio of 1.08

Safety

OR 99W @ Rickreall Rd, 1 rear-end, stopped to make a turn into one of the many local accesses. 6 turning, with most trying to get on to 99W. 6 T-bones, high speed, and lack of gaps for turning movements.
There are several factors that can be associated with this section. OR 99W divides Rickreall community, where there are many access turning points to distract drivers. The volume of traffic through Rickreall on 99W doesn't lend it self to many gaps in the traffic. The speed through the community is probably higher than the posted speed. A speed study would need to be performed to determine if vehicle speeds are excessive.

Conditions Study For:

Dallas-Rickreall Highway, Highway No. 189 (OR 223 or DRH)

OR 223/OR 22 Intersection
M.P. 3.97 to 4.10

Geometry

Configuration

The Dallas-Rickreall Highway Y intersection is another one tenth of a mile farther west on OR 22. This Highway ends at OR 22 and is classified as Rural Minor Arterial.

Geometric Deficiencies

Left turn pocket to DRH is to close to the signalized intersection and has marginal storage.

Operations

Section written by TPAU, includes

OR223 v/c ratio of 0.64, 1999: future 2025(no build) v/c ratio of 1.00

Safety

The 5 year crash record (1996 – 2000) for the intersection listed are:
9 rear-ends, Storage length too short and high speed combination.
7 turning, vehicles miss judging the high speed and lack of adequate gaps for turning.
2 T-bones, & 3 sideswipes, high volumes, the proximity to intersection and merging/lane changing.
There are several factors associated with this intersection that might be deemed as contributors to any one crash. The OR 22 @ OR 99W is an isolated signal in a rural setting on a high-speed facility (expressway) and where diver would not expect to see a signal. High volume of commuter traffic. The lack of adequate gaps for lane changes. Storage length and the distance between the intersections are inadequate. The driver must pay specific attention to this intersection to avoid an accident

Pacific Hwy West (99W)
Willamina - Salem Hwy (OR22)
Dallas-Rickreall Hwy (OR223)
Polk County
Geometric Deficiencies

	ORE 99W NB approach	ORE 99W SB approach	ORE 22 WB approach	ORE 22 EB approach	ORE 223 EB approach
Cross Section (lanes & shoulders)	**A**	**A**	**A**	**A**	**A**
Number of approach lanes	**A**	**A**	**5**	**A**	**A**
Horizontal Alignment	90 degree	90 degree	90 degree	90 degree	110 degree
Vertical Alignment	**flat**	**flat**	**2**	**2**	**flat**
LT turn storage length	**A**	**A**	**5**	**A**	**A**
Existing Signal	**A**	**A**	**A**	**A**	**NA**
Right Turn Lane	**5**	**NA**	**NA**	**NA**	**NA**
Horizontal/Vertical Clearance					
Intersection Spacing	**A**	**A**	**A**	**A**	**6**
Intchg. Spacing					
Intersection Sight Distance	**A**	**A**	**2**	**A**	**A**
Access Mgmt.	**A**	**A**	**A**	**A**	**A**
Turning Radius	**4**	**A**	**4**	**A**	**A**

A : Acceptable

: Not Applicable

: Geometric Deficiency

.

RICKREALL Willamina-Salem Highway (ORE-22) M.P. 15.50 to 16.30 **Region 2** **Polk County** 09/26/01 Prepared by: BTS

Pacific Hwy West (ORE-99W) Intersection M.P. 57.30 to 58.00 *Accident History Data 1995 to 2000

Dallas-Rickreall Hwy #189 (DRH) M.P. 3.97 to 4.10

Geometric Deficiencies (ORE-22)

Note	Deficiency	Standard
1	Shoulder Width 1.8m ORE- 22	ODOT - 2.4m
2	Vertical Alignment 463m crest ORE-22 @ RR structure	ODOT - 600m for algebraic difference
3	Spiral Length 91.4m ORE-22 @ Dallas-Rickreall Hwy	ODOT - 150m
4	Turning Radius @ 16m ORE-22 SW & SE corners	ODOT - 20m
5	45m, Current left turn storage is marginal ORE-22 WB, Storage length should be longer or double left.	300m, By Analysis.
6	ORE-22 @ DRH left turn storage is too close to signal	ODOT - 800m

Existing Safety/Operational Deficiencies

SPIS Top 10% Sites		Computed Accident Rate
ORE-22	77.82	ORE-22

28 people injuries in a five year period.*

ORE-22 @ 99W, 14 rear-ends,14 Turning, 9 T-bone & 1 side-swipes
ORE-22 @ DRH, 9 rear-ends, 3 side-swipes, 2 T-bone, & 7 turning
ORE-99W @ Rickreall Rd 1 rear-ends, 6 turning & 6 T-bone

Fatalities		SIP Accident Category	
ORE-22	0	ORE-22	4
ORE 99W	0	ORE 99W	2
ORE 99W	NA	ORE 99W	

DRH, 21 accidents in a 5 year period*
ORE 99W, 38 accidents in a 5 year period*

High number of crashes typically associated with the combination of traffic signal and high speed.
Rickreall community is subject to congestion by having many access points to the highway.
ORE-22 Volume Capacity (v/c) Ratio std. is 0.70. The mobility standard for the year 2025 will be 1.36.
99W/Rickreall v/c ratio is 0.75 for an unincorporated community and will be 1.08 in the year 2025.
DRH, Existing 0.92 v/c ratio, The mobility standard should be 0.80.
Additional lanes will be needed to meet mobility standards.

Future Traffic and Development

Significant Geometric Deficiencies with Safety/Operational Issues

Note	Deficiency
5	Current traffic volume indicates a need for a double left.
6	Westbound ORE-22 traffic backs up in the left turn pocket of ORE-22 @ DRH, approx. 75% of the distance to 99W.

Geometric Deficiencies Expected to Become Significant with Growth in Traffic

Note	Deficiency
5	WB ORE-22, storage length will need to be a double left turn.
6	The current distance of 400m on ORE-22 between DRH & ORE-99w will only increase the accident potential.

Evaluation Criteria Summary

Category	Performance Measure*	Description
Transportation Operations		
Mobility - Traffic flow at signalized intersections or for critical movements	Volume to Capacity (v/c) Ratio	Quantitative comparison for 2025
Operations – applied design standards	Safety, Consistency with Standards, Pedestrian, Bicycle, Transit, Freight Movement	Qualitative with supporting facts (e.g. ORE 22 overpass less desirable than ORE 99W overpass due to downward off-ramp grade from ORE 22)
Impacts – Environmental, Economic, and Land Use		
Environment	Air, water, and energy	Mostly qualitative with supporting facts (based on ODOT staff comments and literature search)
Environment	Resource lands, biology, wetlands, and Hazardous Materials	Qualitative with supporting facts (based on ODOT staff comments and literature search)
Environment	Noise, visual, and social impacts	Qualitative with supporting facts (based on ODOT staff comments and literature search)
Land Use	Right-of-way (no. of affected parcels)	Quantitative comparison
Economic	Relocations (No. of relocations)	Quantitative comparison
Implementation		
Plan consistency	Federal, State, and Polk County	Statement of consistency or note of inconsistent elements
Phasing flexibility	Separable components	Qualitative comparison focused on feasibility to separate construction of components
Total Costs	Construction and ROW Costs	Quantitative comparison

Evaluation Criteria	Recommended Alternatives					
	1A	**2C**	**4B**	**5C**	**6C**	**7A**
Mobility - V/C ratio for signalized intersections or critical movements	• NA	• 2015 - 1.11 • 2025 - 1.32	• 2015 - 0.82 • 2025 - 1.00	• 2015 - 0.76 • 2025 - 0.86	• 2015 - NA • 2025 - 0.56	• 2015 - NA • 2025 - 0.77
Operations - Safety and consistency with geometric design standards	• Potential for immediate safety benefits • OR 22/99W intersection and OR/22 Dallas-Rickreall Highway intersections are too closely spaced	• Eliminates turning conflicts • Lane imbalance on westbound approach • Reduces the length of storage for left-turning traffic and reduces speed differential conflicts on OR 22 • Provides an area for eastbound to southbound traffic on OR 22 to decelerate out of the through traffic stream • OR 22/99W intersection and OR/22 Dallas-Rickreall Highway intersections are too closely spaced	• Eliminates turning conflicts • Separates Dallas-bound traffic from OR 22 • Reduces spacing conflicts for OR22/99W intersection and OR22/Dallas-Rickreall Highway intersection	• At-grade intersection eliminated • Deceleration and acceleration lanes improve safety and traffic flow • Westbound weave for Dallas-bound traffic is eliminated • OR 22/99W intersection and OR/22 Dallas-Rickreall Highway intersections are too closely spaced	• Heavy westbound to southbound and northbound to eastbound movements can be accommodated without a traffic signal for approximately 20 years • Westbound weave for Dallas-bound traffic is eliminated • Does not meet interchange spacing standards	• Full grade-separation • Westbound weave for Dallas-bound traffic is eliminated • May eliminate gaps in traffic through Rickreall • Meets interchange spacing standards
Impacts	• None	• None	• Possible archeological resources • Possible presence of Kincaid's lupine and Meadow sidalcea	• Possible archeological resources • Possible presence of Kincaid's lupine and Meadow sidalcea	• Possible archeological resources • Possible presence of Kincaid's lupine and Meadow sidalcea	• Possible archeological resources • Possible presence of Kincaid's lupine and Meadow sidalcea

			• Minor impacts to agricultural land	• Moderate impacts to agricultural land	• Moderate impacts to agricultural land	• Most significant impacts to agricultural land
Implementation - Plan consistency	• Consistent with OHP Major Improvement Policy • Consistent with local plans • Consistent with TPR	• Consistent with OHP Access Management and Major Improvement Policies • Consistent with local plans • Consistent with TPR	• Consistent with OHP Access Management and Major Improvement Policies • Consistent with OHP "expressway" designation • Consistent with local plans • Consistent with TPR	• Consistent with OHP Access Management and Major Improvement Policies • Consistent with OHP "expressway" designation • Consistent with local plans • Consistent with TPR	• Consistent with OHP Access Management and Major Improvement Policies • Consistent with OHP "expressway" designation • Consistent with local plans • Consistent with TPR	• Consistent with OHP Access Management and Major Improvement Policies • Consistent with OHP "expressway" designation • Consistent with OHP interchange spacing standard • Consistent with local plans • Consistent with TPR
Implementation - Maintenance and operations						
Implementation - Costs	• Environmental & Preliminary Engineering - • Engineering & Construction - • Right-of-way - $0 • Total -	• Environmental & Preliminary Engineering - $200,000 • Engineering & Construction - $2,900,000 • Right-of-way - $0 • Total - $3,100,000	• Environmental & Preliminary Engineering - $600,000 • Engineering & Construction - $7,500,000 • Right-of-way - $240,000 • Total - $8,340,000	• Environmental & Preliminary Engineering - $1,200,000 • Engineering & Construction - $15,000,000 • Right-of-way - $240,000 • Total - $16,440,000	• Environmental & Preliminary Engineering - $1,560,000 • Engineering & Construction - $19,500,000 • Right-of-way - $600,000 • Total - $21,660,000	• Environmental & Preliminary Engineering - $1,728,000 • Engineering & Construction - $21,600,000 • Right-of-way - $600,000 • Total -$23,928,000

APPENDIX K

Resource and Land Use Maps

The following maps show various physical features within the study area, such as 100-year floodplains, wetlands, and soils, that must be further evaluated, considered and, if necessary, mitigated when developing the environmental documentation needed to authorize construction.

Also included is the zoning map for the study area.

August 17, 2009

Steven Corey, Chair
Oregon Transportation Commission
355 Capitol Street NE Room 101
Salem, OR 97301-3450

RE: Polk County Highway 99W / Highway 22 Interchange Funding

Dear Mr. Corey:

Polk County is encouraged at the consideration for funding of the Highway 99W and Highway 22 interchange in Polk County. We share an interest in retaining the functioning characteristics of the proposed interchange. There are currently several elements in place that address this issue.

Polk County completed planning for the community of Rickreall, which begins approximately 450 feet south of the existing intersection. The planning, zoning, and community boundary is consistent with Oregon Administrative Rule (OAR) Chapter 660, Division 22 for unincorporated communities. It was determined that the current zoning provided for the projected needs of the community. Therefore, it is not anticipated that additional lands would be needed for industrial, residential, or commercial uses in the near future.

The land between the unincorporated community of Rickreall and the proposed interchange is designated as Agriculture in the Polk County Comprehensive Plan. The zoning on this property is Exclusive Farm Use. The property north of the proposed interchange is also designated Agriculture and zoned Exclusive Farm Use (EFU). The purpose of this Comprehensive Plan designation and zoning district is to conserve agricultural lands consistent with OAR Chapter 660, Division 33, and Oregon Revised Statutes Chapter 215. The properties south of Highway 22 in the EFU zone also contain predominantly high-value farm soils, further limiting nonfarm uses.

Polk County currently has adopted Comprehensive Plan Policies and Transportation Systems Plan (TSP) Policies that address concerns related to potential impacts to the proposed interchange capacity, expansion of unincorporated communities, and the preservation and use of Agricultural lands (Attachment A). We believe these policies and the implementing Zoning Ordinance provisions provide a strong framework for retaining agricultural lands in farm use.

It is Polk County's intention that the intervening lands zoned Exclusive Farm Use between the community of Rickreall and the interchange and the properties directly north of the interchange are maintained as a buffer or separator for the interchange facility. It is the policy of the Polk County Board of Commissioners that these properties are to be retained in the EFU zone. The Polk County Board of Commissioners adopted a resolution memorializing this policy.

In addition to the land use planning policies that are in place in Polk County, the Board of Commissioners will direct Polk County staff to work with the Oregon Department of Transportation and local property owners in the development of an interchange management plan. The interchange management plan would include issues such as access control and trip generation limits that protect the function of the Highways. Polk County would adopt the coordinated plan based on input from affected agencies and property owners.

As a reminder, Polk County has adopted revisions to the Polk County Zoning Ordinance consistent with the Oregon Transportation Planning Rule. These changes provide for the replacement of an intersection with an interchange as a conditional use. There is no requirement for an exception to the Statewide Planning Goals for this project.

Polk County would like to acknowledge the ODOT staff for the time spent and efforts that have been made to make this project become a reality. Please find an air photograph, zoning map, soils map, floodplain map, and vicinity map enclosed for your reference. These documents help provide a visual of the project area.

If you have any further questions regarding this project, please contact Jim Allen, Planning Director, at 503-623-9237, or Commissioner Mike Propes at 503-623-8173.

Sincerely,

POLK COUNTY BOARD OF COMMISSIONERS

Ron Dodge, Chair

Attachments: Polk County Comprehensive Plan and TSP Policies (Attachment A)
Polk County Resolution No. 01-31
Air photo, zoning map, soil map, floodplain map

c Bruce Warner, Director, ODOT
Ed Gallagher, Community Solutions Team, Executive Office Building at 155 Cottage Street, NE, Salem, OR 97301-4047
Terry Cole, ODOT
Mark Radabaugh, Community Solutions Team

Selected Polk County Comprehensive Plan Policies

Agricultural Lands Element:

1.1 Polk County will endeavor to conserve for agriculture those areas which exhibit a predominance of agricultural soils, and an absence of nonfarm use interference and conflicts.

1.2 Polk County will place lands designated as agriculture on the Comprehensive Plan Map consistent with Oregon Revised Statutes Chapter 215 and Oregon Administrative Rules Chapter 660, Division 33 in an exclusive farm use zoning district.

1.3 Polk County will apply standards to high-value farmland areas consistent with Oregon Revised Statutes Chapter 215 and Oregon Administrative Rules Chapter 660, Division 33.

1.4 Polk County will permit those farm and nonfarm uses in agricultural areas authorized by Oregon Revised Statutes Chapter 215 and Oregon Administrative Rules Chapter 660, Division 33.

1.5 Polk County will discourage the development of nonfarm uses in agricultural areas.

Unincorporated Communities Element:

1.3 Polk County will only permit those uses in unincorporated communities for which it can be clearly demonstrated that such uses:

a. Contribute to the well-being of the community;

b. Do not seriously interfere with surrounding or adjacent activities;

c. Are consistent with the identified function, capacity and level of service of facilities.

1.5 Polk County shall adopt individual plan and zone designations reflecting the projected use (e.g. residential, commercial, industrial, and public) for each property for all land in each community.

1.6 Polk County shall ensure that new uses authorized within unincorporated communities do not adversely affect agricultural or forestry uses.

1.7 Polk County shall ensure that the cumulative development within unincorporated communities will not:

a. Result in public health hazards or adverse environmental impacts that violate state or federal water quality regulations; and,

b. Exceed the carrying capacity of the soil or of existing water supply resources and sewer services.

Transportation Element:

2.2 Polk County will discourage direct access from adjacent properties onto those highways designated as arteries whenever alternative access can be made available.

Polk County Transportation Systems Plan Policies

1-3 Polk County will discourage direct access from adjacent properties onto those highways designated as arterials whenever alternative access can be made available.

1-7 *Polk County will strive to maintain a Level of Service (LOS) A on all county arterials and collectors, and will initiate corrective action to prevent degradation below LOS C. LOS C is a range of stable flow, but with delays at signalized or stop sign controlled intersections. It is the beginning of the range of flow in which the operation of individual users become significantly affected by the presence of others. The general level of comfort and*

2-4 Polk County recognizes the function of Highway 18 and 22 as being critically important to a wide range of statewide, regional, and local users, and that these highways serve as the primary route linking the mid-Willamette Valley to the Oregon Coast, with links to Lincoln City and Tillamook.

2-5 Polk County recognizes the benefit of Highway 99W as a critically important north-south route linking areas within the mid-Willamette Valley. Highway 99W also serves as an emergency alternative to and reliever for Interstate 5. The county supports a continuing effort to enhance and maintain the capability of Highway 99W.

4-3 To prevent exceeding planned capacity of the transportation system, Polk County will consider road function, classification, and capacity as criteria for comprehensive plan map and zoning amendments/changes.

BEFORE THE BOARD OF COMMISSIONERS
FOR THE COUNTY OF POLK, STATE OF OREGON

In the Matter of Establishing Policy)
Regarding a Buffer Area for)
Retaining the Functioning Capabilities)
Of the Highway 99 / Highway 22)
Interchange North of Rickreall)

RESOLUTION 01-31

WHEREAS, the Polk County Board of Commissioners identified the need to preserve the functioning capabilities of the interchange at Highway 99W and Highway 22; and

WHEREAS, the properties north and south of the unincorporated community of Rickreall are zoned Exclusive Farm Use and designated Agriculture in the Comprehensive Plan, and

WHEREAS, the properties identified below constitute the properties that are contiguous to the Highway 99W / Highway 22 interchange, located in the Exclusive Farm Use Zone, and are specifically identified as a "separator" or "buffer" between the highway interchange and the community of Rickreall:

Tax Map ID	Owner	Address	Uses	Size
7-4-30-200	Ragsdale, Elbert et al Tr.	Vacant	Farm use	22.32
7-4-30-201	Ragsdale, Elbert et al Tr.	350 N Pacific Highway	Dwelling, farm use	58.56
7-4-30-400	Ragsdale, Elbert et al Tr.	Vacant	Farm use	16.61
7-4-30-500	Ragsdale, Elbert et al Tr.	Vacant	Farm use	26.64
7-4-30-507	Ragsdale, Elbert et al Tr.	Vacant	Farm use	28.72
7-4-30-900	Rickreall Properties, LLC	9525 Rickreall Road	Dwelling, farm use	75.24
7-4-30-1100	State Highway Comm.	Vacant	Farm use	0.34
7-4-30-1200	State of Oregon	Vacant	Farm use	0.33
7-4-30-1300	State Highway Comm.	Vacant	Farm use	0.32

IT IS HEREBY RESOLVED THAT the Polk County Board of Commissioners recognizes the above properties as a separator for the Highway 99W / Highway 22 interchange that will remain in an Exclusive Farm Use Zone. Polk County will initiate text amendment proceedings to recognize the above properties in conjunction with the coordinated Oregon Department of Transportation interchange management plan.

Dated: November 28, 2001 at Dallas, Oregon.

POLK COUNTY BOARD OF COMMISSIONERS

_____
Ron Dodge, Chairman

_____
Mike Propes, Commissioner

Approved as to form:

_____
Dave Doyle, County Counsel

_____
Tom Ritchey, Commissioner

CHAPTER 127

SUBURBAN RESIDENTIAL (SR) ZONING DISTRICT

127.010. Purpose
127.020. Use
127.030. Transitional Use
127.035. Uses Permitted Subject to Review and Approval
127.040. Conditional Uses

127.010. PURPOSE. The purpose and intent of the Suburban Residential Zone is to provide a transition between urban and rural living within an officially designated sewered area, or an area which may be served with sewers during the next 10 years, or within an unincorporated community where water is available and methods for sewage disposal are available. **[Amended by Ordinance #00-03, dated May 5, 2000]**

127.020. USE. Within any SR, Suburban Residential Zone, no building, structure or premises shall be used, arranged or designed to be used, erected, structurally altered or enlarged, except for one or more of the following uses:

(A) Single-family dwelling;

(B) Manufactured home if located outside of an adopted urban growth boundary of a city;

(C) Public and semi-public uses, buildings and structures;

(1) playgrounds, parks;

(2) hospitals, providing a 50-foot building setback is maintained from abutting, privately owned property;

(3) public buildings and structures such as libraries, fire stations.

(D) Other main uses:

(1) Gardens, orchards, and crop cultivation, which include the processing and sale of produce that is raised only on the premises;

(2) Raising of livestock is permitted with a minimum of one (1) acre for the first animal unit, or fraction thereof, and one-half (1/2) acre for each animal unit thereafter. Cattle, horses, burros, donkeys, and other animals of comparable size each constitutes one (1) animal unit. Five (5) animals the size of sheep or goats constitute one (1) animal unit. All animals and fowl shall not be allowed to run at large off the property of the owner. Swine shall not be allowed on tracts of less than ten (10) acres. All animal unit ratios shall not apply on tracts of 20 acres or more. The keeping of livestock, fowl and fur-bearing animals and animal waste therefrom shall be done in such a reasonable manner as not to constitute a nuisance, especially by reason of odor, water pollution, or the attraction of rodents or flies and other insects.

(3) Temporary use of manufactured home during construction (see Limited Uses, Section 125.010).

(4) Temporary use of a pre-cutting and assembly facility within a new subdivision or planned development (see Limited Uses, Section 125.020).

(5) Subdivision or planned development sales office or development office (see Limited Uses, Section 125.030).

(E) Right-of-way for public utilities for convenience and necessity.

(F) Public utilities, structures directly related to the operation of (D) above, not to include storage, maintenance or related activities, when they comply with all yard and setback requirements.

(G) Accessory uses and structures:

(1) Customary residential accessory buildings for private use, such as pergola, greenhouse, hot house, hobby shop or hobby house, summer house, patios - enclosed or covered patios, woodshed, quarters for domestic animals maintained as pets;

(2) Fallout shelter;

(3) Fences;

(4) Garages and parking areas for the storage and protection of the automobiles of the residents of the dwelling, including a private garage for not more than three (3) motor vehicles for each single-family dwelling on the same lot with or within the dwelling to which it is accessory and in which no garage, business or industry is conducted;

(5) Storage for a commercial vehicle, maximum of one (1) per dwelling;

(6) Sleeping quarters and guest quarters not in the main building are permitted if such quarters are, and remain dependent upon the main building for either or both kitchen and bathroom facilities and the guest facilities are not used for residential purposes;

(7) Swimming pools for private use (requires a building permit);

(8) Private stables and barns;

(H) Home occupations, as defined in Section 116.020.

(I) The taking of boarders or leasing of rooms by a resident family, providing the total number of boarders and roomers does not exceed two (2) in a single-family dwelling, nor more than four (4) in any legally established two-family dwelling.

(J) Residential homes, as defined in Section 110.477. **[Amended by Ordinance #89-17, dated December 6, 1989.] [Amended by Ordinance #00-03m, dared May 5, 2000]**

(K) Transportation Improvements **[Amended by Ordinance #01-01, dated November 14, 2001.]**

127.030. TRANSITIONAL USES. Transitional uses shall be permitted in an SR Zone where the side of a lot abuts upon any commercial (C) Zone or Industrial (I) Zone, provided that such transitional use does not extend across a street or alley and in no case more than 165 feet from the boundary of the less restricted zone which it adjoins, as follows:

(A) Dwellings:

(1) Two-family dwellings (duplexes) if located within an urban growth boundary or within an unincorporated community;

(B) Public and semi-public uses, buildings, and structures;

(1) Churches, if set back from all side and rear property lines at least 20 feet;

(2) Community or neighborhood club buildings, including swimming pools and other allied facilities, when erected by a non-profit community club for the improvement of the zone or social recreation of the members;

(C) Other main uses:

(1) Public automobile parking area when located and developed as prescribed in Chapter 112;

(2) Outdoor plant nursery with no retail sales;

(3) Privately operated kindergartens or day nurseries, provided the residential character of the building is unchanged. **[Amended by Ordinance 00-12]**

127.035. USES PERMITTED SUBJECT TO REVIEW AND APPROVAL.

(A) A manufactured dwelling unit within an adopted urban growth boundary subject to the following conditions:

(1) A manufactured dwelling placement permit shall be obtained from the Polk County Community Development prior to the moving in and locating of a manufactured dwelling on any lot. Building permits are required for any on-site construction.

(2) The manufactured dwelling and accessory structures shall comply with the development standards of this zoning district.

(3) The accessory structures attached to the manufactured dwelling shall be considered as a portion of the manufactured dwelling and shall observe the same yard requirements as a manufactured dwelling.

(4) The manufactured dwelling shall be situated upon a foundation system having an approved manufactured dwelling placement permit. Continuous skirting shall be applied around the base of the unit to completely screen with a sight-obscuring material all of the underside of the unit.

(5) The manufactured dwelling shall comply with the applicable manufactured dwelling placement requirements of that city based upon adopted intergovernmental agreements.

(B) Hardship Temporary Manufactured Dwelling.

One manufactured dwelling unit in conjunction with an existing dwelling as a temporary use for the term of the hardship suffered by the existing resident or a relative of the resident, provided that:

(1) The medical hardship is certified by a licensed physician;

(2) The manufactured home is connected to the existing sewage disposal system; except when the County Sanitarian finds the existing system to be inadequate and that it cannot be repaired or is not physically available; If the manufactured home will use a public sanitary system, such condition will not be required.

(3) The applicant agrees to renew the permit every two years and will remove the manufactured home when the hardship condition ceases.

(4) Notice of Determination. Upon issuance of a temporary hardship determination by the Planning Director, determinations shall be mailed to the applicant and to interested parties based upon the provisions of Section 111.270 of the Polk County Zoning Ordinance. An appeal of the Planning Director's decision shall be processed pursuant to Section 111.280 of the Polk County Zoning Ordinance. **[Subsection 127.035 added by Ord. 95-12.] [Amended by Ordinance #00-03, dated May 5, 2000]**

127.040. CONDITIONAL USES. When authorized under the procedure provided for conditional uses in this ordinance, the following uses will be permitted in an SR Zone:

(A) Public and semi-public uses, buildings and structures;

(1) Churches, if set back from all side and rear property lines at least 20';

(2) Community or neighborhood club buildings, including swimming pools and other allied facilities, when erected by a non-profit community club for the improvement of the zone or social recreation of the members;

(3) Radio and TV transmitters and antennas as provided in Section 112.135; **[Amended by Ordinance 01-3]**

(4) Riding clubs and stables, rodeo grounds and similar uses;

(5) Schools (elementary, junior high, and high school);

(B) Miscellaneous uses;

(1) Privately operated kindergartens or day nurseries provided the residential character of the building is unchanged;

(2) Beauty shops, where no assistants are employed;

(3) Use of an accessory building for conducting a home occupation;

(C) Dwellings;

(1) Two-family dwelling (duplexes) on a corner lot (See Specific Conditional Uses Section 119.150 (B)) if located within an urban growth boundary or within an unincorporated community.

(2) [Subsection (C) (2) deleted by Ord. 95-12, Sec. 5]

(D) Boat, camper and trailer storage area or lot (see Specific Conditional Uses, Section 119.150 (C)).

(E) [Subsection (E) deleted by Ord. 95-12, Sec. 5]

(F) Planned Development;

(G) Solid Waste Disposal Site (see Section 120.310 to 120.380);

(H) Sand and Gravel Resource Site (see Section 120.410 to 120.460);

(I) Conditional Home-Occupation (see Section 116.030).

(J) [Subsection (J) repealed by Ord. 89-17, Sec. 23] **[Amended by Ordinance 00-12]**

CHAPTER 128.500

ACREAGE RESIDENTIAL-FIVE ACRE (AR-5) ZONING DISTRICT

128.510. Purpose
128.520. Use
128.525. Uses Permitted Subject to Review and Approval
128.530. Conditional Uses

128.510. PURPOSE. It is the purpose and function of the Acreage Residential - 5 acre (AR-5) zone to:

(A) Provide for the best use of the land based on the location, inherent limitations and ability to serve the functional needs of the area.

(B) Provide larger acreage homesites which will be a buffer area between farm zones and higher density urban and urbanizing areas, thus reducing the conflicts between residential use and usual and normal farming practices.

(C) Provide for the orderly growth of the urban areas so that as urbanization occurs, the supporting community will be able to afford the increased capital investments required for services to and within the new urban area and the costs of maintenance of utility facilities, rebuilding of arterial streets, protective services and desired social services.

(D) To provide for the efficient, redivision of acreage subdivisions which may occur in the area.

(E) To promote the pre-planning of future important streets in the area.

(F) To meet the needs of a segment of the population for non-urban, non-farm acreage homesites.

(G) To provide for the above, yet not adversely affect fish and wildlife resources and habitat areas, natural areas, and scenic areas. **[Amended by ordinance #256, dated September 19, 1979.]**

128.520. USE. Within any AR-5, Acreage Residential 5-acre zone, no building, structure or premises shall be used or arranged, designed, erected, or maintained to be used except for the following purposes:

(A) Single-family dwelling including single-family mobile home;

(B) Farm Use (as defined in Section 110.223);

(C) Public parks, playgrounds;

(D) Public buildings such as libraries and fire stations;

(E) Churches;

(F) Accessory uses and structures:

(1) Customary residential accessory building for private use, such as pergola, greenhouse, hothouse, hobby house, summer house, patios, enclosed or covered patios, woodshed, quarters for domestic animals maintained as pets;

(2) Fallout shelters;

(3) Fences;

(4) Garages and parking areas for the storage and protection of the automobiles of the residents of the dwelling, including a private garage for not more than three motor vehicles for each single-family dwelling on the same lot with or within the dwelling to which it is an accessory and in which no business or industry is conducted;

(5) Storage for a commercial vehicle, maximum of one per dwelling;

(6) Sleeping quarters in a garage for domestic employees of the main building to which the garage is attached;

(7) Guest houses and guest quarters not in the main building are permitted if such quarters are, and remain, dependent upon the main building for either or both kitchen and bathroom facilities and the guest facilities are not used for residential purposes;

(8) Swimming pools for private use (requires building permit);

(G) Home occupation as defined in Section 116.020;

(H) The taking of boarders or leasing of rooms by a resident family providing the total number of boarders and roomers does not exceed two in a single-family dwelling nor more than four (4) in any legally established two-family dwelling.

(I) The use of a manufactured home during construction (see Limited Uses, Section 125.010).

(J) Schools (elementary, junior high and high);

(K) Privately operated kindergartens or day nurseries, providing the residential character of the building is maintained.

(L) Residential homes, as defined in Section 110.477. **[Subsection (L) added by Ordinance # 89-17, dated December 6, 1989.]**

(M) Transportation Improvements **[Amended by Ordinance #01-01, dated November 14, 2001.]**

128.525. USES PERMITTED SUBJECT TO REVIEW AND APPROVAL.

(A) HARDSHIP TEMPORARY MANUFACTURED DWELLING. One manufactured dwelling unit in conjunction with an existing dwelling as a temporary use for the term of the hardship suffered by the existing resident or a relative of the resident, provided that:

(1) The medical hardship is certified by a licensed physician;

(2) The manufactured home is connected to the existing sewage disposal system; except when the County Sanitarian finds the existing system to be inadequate and that it cannot be repaired or is not physically available; If the manufactured home will use a public sanitary system, such condition will not be required.

(3) The applicant agrees to renew the permit every two years and will remove the manufactured home when the hardship condition ceases.

(4) Notice of Determination. Upon issuance of a temporary hardship determination by the Planning Director, determinations shall be mailed to the applicant and to interested parties based upon the provisions of Section 111.270 of the Polk County Zoning Ordinance. An appeal of the Planning Director's decision shall be processed pursuant to Section 111.280 of the Polk County Zoning Ordinance. **[Subsection 128.525 added by Ordinance. 95-12 SEC. 6]**

128.530. CONDITIONAL USE.

(A) The following allied farm commercial processing and similar activities may be permitted as a separate business or enterprise, not operated in conjunction with a farm.

(1) hop, nut and fruit driers;

(2) feed mixing and storage facilities;

(3) hullers;

(4) rendering plants;

(5) mint distilleries;

(6) seed processing, packing, shipping and storage facilities;

(7) slaughter houses;

(8) agricultural produce storage, i.e., onion warehouses, grain elevators and similar facilities;

(9) feed lots;

(10) vegetable oil processing and refining;

(11) any other similar processing and allied farm commercial activities (includes farm equipment repair shop).

(B) Planned recreational developments.

(C) Sand and gravel excavation and processing facilities as provided for by Chapter 120.400;

(D) Solid waste disposal sites as provided for in Chapter 120.300;

(E) Kennels;

(F) Community or neighborhood club buildings, including swimming pools, and other allied facilities, when erected by a non-profit community club for the improvements of the community or social recreation of the members;

(G) Private airfield;

(H) Motor race track;

(I) A two (2) family dwelling (duplex) on a corner lot (see Specific Conditional Uses, Section 119.150 (B));

(J) Boat, camper and trailer storage area or lot (see Specific Conditional Uses, Section 119.150 (C));

(K) [Subsection (K) deleted by Ord. 95-12.]

(L) Church conference and campground (see Specific Conditional Uses, Section 119.150 (F));

(M) Planned development;

(N) Radio and TV transmitters and antennas as provided in Section 112.135; **[Amended by Ordinance 01-3]**

(O) Riding clubs and stables, rodeo grounds and similar uses;

(P) Beauty shops, where no assistants are employed;

(Q) Use of an accessory building for conducting a home occupation;

(R) Conditional home-occupation (see Section 116.030.

(S) Utility facilities necessary for public service, except commercial facilities for the purpose of generating power for public use by sale, as provided in Section 112.135. **[Amended by Ordinance 91-15, dated July 24, 1991.]**

(T) Cottage Industry Home Occupations (see Section 116.040).

CHAPTER 153.500

RICKREALL UNINCORPORATED COMMUNITY COMMERCIAL (RICKREALL UC-C) ZONING DISTRICT

153.510. Purpose and Intent
153.520. Small-Scale, Low Impact Uses
153.530. Standard Industrial Classifications
153.540. Permitted Uses
153.550. Conditional Uses

153.510. PURPOSE AND INTENT. The purpose of the Rickreall Unincorporated Community Commercial (UC-C) Zoning District is to implement the Comprehensive Plan policies related to commercial development by providing for a range of service and product-oriented commercial activities. This zone is applied to commercial lands within the unincorporated community of Rickreall.

The intent of the RICKREALL UC-C Zoning District is to provide for commercial development in the unincorporated community of Rickreall. Commercial activities in this zone generally consist of uses which complement agricultural and forest activities in the surrounding area, uses which serve the needs of the surrounding community or the needs of the traveling public, or other uses which are small-scale and low impact.

153.520. SMALL-SCALE, LOW-IMPACT USES. Uses listed under Section 153.540(C) or Section 153.550(C) shall be established in a building or buildings not to exceed 4,000 square feet of floor space. The floor area calculation does not include outdoor storage areas.

Establishment of a new use or expansion of a use listed under Section 153.540(C) or Section 153.550(C) which would exceed the 4,000 square foot standard shall require a Comprehensive Plan Amendment as specified in Chapter 115 of the Zoning Ordinance.

153.530. STANDARD INDUSTRIAL CLASSIFICATIONS. Standard Industrial Classification (SIC) code numbers for most of the uses in this zone are shown in parentheses after the listed use. The SIC codes are a coding system used by the federal government to identify specific industries. Two-digit codes are used most often in the Zoning Ordinance to describe general categories of uses. In some instances, more specific three and four-digit codes are used. A copy of the SIC Manual is available for use at the Community Development Department and provides a more detailed description of the uses described in each general category.

153.540. PERMITTED USES. The following uses and their accessory buildings and uses are permitted. All uses under this Section are subject to the applicable standards as set forth in Chapter 112 (Development Standards) and other general provisions and exceptions set forth by this ordinance. No building, structure, or premises shall be used except for one or more of the following uses:

(A) Uses which serve the needs of the community and surrounding rural area or the traveling public:

(1) Unlimited number of dwelling units including:

(a) Dormitories;

(b) Sorority and fraternity houses;

(c) Student homes;

(d) Boarding houses (also see accessory uses);

(e) Rooming houses;

(f) Churches;

(g) Community or neighborhood clubs;

(h) Child day care services, including pre-schools, nurseries and kindergartens (835);

(i) Apartment houses;

(j) Court apartments;

(2) Single-family residences;

(3) Eating and drinking places (58);

(4) Playgrounds, parks;

(5) Public buildings and structures, such as libraries, fire stations;

(B) Uses which complement natural resource industries:

(1) Laboratory-seed and soil testing, research facilities (8734);

(2) Fruit store and vegetable market (54);

(3) Greenhouse (18);

(4) Farm product warehousing and storage (4221);

(5) Farm or forest products stand, designed and used for the sale of farm crops, special forest products and livestock grown on farms in the local agricultural area, including the retail sale of incidental items accounting for no more than 25 percent of the total sales of the farm or forest stand. Farm or forest products stands do not include structures designed for residential occupancy or to accommodate activities other than the sale of farm crops, special forest products and livestock, such as structures for banquets, public gatherings or entertainment;

(6) Farm or forest implement and equipment sales; and

(7) Farm or forest related equipment, machinery or truck repair, including associated service parts facilities;

(8) Farm and forest supply.

(C) Uses which are small-scale, low-impact:

(1) Grocery stores (54);

(2) News dealers, newsstands (5994);

(3) Auditorium;

(4) Billiard parlor;

(5) Pony riding ring (no stable);

(6) Printing, publishing and allied industries (27);

(7) Miscellaneous Retail (59);

(8) General merchandise stores (53);

(9) Community Services Schools (barber, beauty, commercial, dancing, driving, music, trade);

(10) Boat repair and haul-out facilities;

(11) Building materials, hardware, and garden supply (52);

(12) Equipment rental and leasing (735);

(13) Educational services, including vocation schools (82);

(14) Repair services (76);

(15) Gasoline service stations (554);

(16) Personal services (72);

(17) Business services (73);

(18) Residential homes, as defined in Section 110.477;

(19) Amusement game center;

(20) Financial, insurance and real estate offices (60, 61, 62, 63, 64, 65,67);

(21) Offices for membership organizations (86);

(22) Professional offices for engineering, accounting, research, management, and public relations, and legal services (81, 87);

(23) Medical, dental, and other allied professional offices, laboratories and clinics(801, 802, 803, 804, 805, 807, 809);

(24) Apparel and accessory stores (56);

(25) Veterinary clinics (074);

(26) Home furniture, furnishing, and equipment stores (57);

(27) Automotive repair, services, and parking (75);

(28) Automotive dealers (551);

(29) Towing service;

(30) Unlimited number of dwelling units including:

(a) Homes for the aged;

(b) Retirement homes;

(c) Rest homes;

(d) Nursing homes;

(e) Sanitariums;

(f) Group Care Home.

(D) Transportation Improvements **[Amended by Ordinance #01-01, dated November 14, 2001.]**

153.550. CONDITIONAL USES. When authorized under the procedure provided for conditional uses in this ordinance, the following uses will be permitted in any UC-C Zone:

(A) Uses which serve the needs of the community and surrounding rural area or the traveling public:

(1) Community center;

(2) Residential homes, as defined in Section 110.477;

(3) Private ambulance service (8099);

(4) Recreational vehicle park as defined in Section 110.466 (703);

(5) Boat, camper and trailer storage areas or lots (see Specific Conditional Uses, Section 120.030);

(6) Manufactured home parks (when developed pursuant to provisions of PCZO Section 119.150 (A);

(7) Public Utilities (49) (exempted from these regulations are: underground pipes and conduits and above ground electric transmission distribution, communication signal lines on signal lines on a single pole system);

(B) Uses which complement natural resource industries:

(1) Processing facilities for farm or forest products (20, 24);

(2) Commercial activities in conjunction with farm or forest use including activities related to the processing, distribution, and retail marketing of farm or forest products a portion of which is grown on-site; and

(C) Uses which are small-scale, low-impact:

(1) General warehousing and storage (4225);

(2) Motor freight terminal offices (421);

(3) Funeral service and crematories (726);

(4) Billboards;

(5) Radio and TV transmitter stations and towers (483);

(6) Telephone and telegraph communication facilities (482);

(7) Performance theater (783);

(8) Kennels (boarding and raising animals);

(9) Miniature golf course;

(10) Athletic club, club house (7991)(7997);

(11) Dance hall, ballroom (791);

(12) Summer recreational camp;

(13) Swimming Pools;

(14) Boat sales and service;

(15) Utilities, secondary truck parking and material storage yard;

(16) Auto racing track;

(17) U-Haul concrete mix store (5032);

(18) Cabinet shop and sales firm (see Specific Conditional Uses, Section 119.150(E));

(19) Cottage Industry Home Occupations (see Section 116.040); and

(20) Any other commercial use, where the buildings do not exceed 4,000 square feet of floor space provided that the use will not exceed the capacity of water and sewer service available to the site on December 5, 1994, or if such services are not available to the site, the capacity of the site itself to provide adequate water and absorb waste water.

Appendix 1

Rickreall Unincorporated Community Commercial Properties Inventory

Building Size Inventory

January 2001

#	Tax Lot	Map#	Acres		Zone	Owner	Use	Building Size sq. ft.	Buildable
1	200	7.4.30C	0.84	1	CG	HANSON B M	1920 dwelling (Historic)		
2	300	7.4.30C	0.22		CG	CONRAD IRENE VERA, DECLARATION	Vacant		
3	400	7.4.30C	0.12		CG	CONRAD IRENE VERA, DECLARATION	Vacant		
4	500	7.4.30C	0.19		CG	CONRAD IRENE VERA, DECLARATION	Vacant		
5	600	7.4.30C	0.4	1	CG	CONRAD IRENE VERA, DECLARATION	1930 dwelling		
6	700	7.4.30C	1.42	1	CG	CONRAD IRENE VERA, DECLARATION	1925 dwelling (Historic)		
7	5803	7.4.30C	1	1	CG	ROCHA DANNY L & DORIS M	1925 dwelling		
8	400	7.4.30CA	0.92	1	CG	BRIEDWELL JAMES & T CHRISTINE	1916 dwelling (Historic)		
9	500	7.4.30CA	3.3		CG	RICKREALL FARM SUPPLY, INC	Farm Supply/Gas Station-Garage	6,000 /3,584 - 20,232	
10	600	7.4.30CA	0.36	1	CG	RICKREALL FARM SUPPLY, INC	1926 dwelling (Historic)		
11	700	7.4.30CA	0.3		CG	MEIER PLUMBING, INC	Retail store	2,132	
12	800	7.4.30CA	0.32		CG	HEDGES FRANK J & MARILYN A	Rickreall Mini market	3,960	
13	900	7.4.30CA	1.28	1	CG	RICKREALL FARM SUPPLY, INC	1930 dwelling (Historic)		
14	2700	7.4.30CA	0.11	1	CG	POTTER ROGER S	1945 dwelling		
15	2800	7.4.30CA	0.2	1	CG	BELL KATHERINE A & POTTER ROGE	1952 dwelling		
16	2900	7.4.30CA	0.4	1	CG	SEIPP MARTHA K & KENNETH LYNN	1920 dwelling		
17	3000	7.4.30CA	0.69		CG	KINGERY DOUGLAS F	Automotive Repair	3,456	
18	200	7.4.31	3.85	2	CR	CAUDILLO MANUEL SR	1940 & 1935 dwellings		
19	202	7.4.31	1.54	1	CR	FALK PAPROCKI JOINT TRUST	Farrol's restaurant / 8 Unit Offices	5,111 / 2,982	
20	500	7.4.31	1.9	2	CG	TABER A LLOYD & PATRICIA ANN	1900 dwelling, mnf. Home		
21	1600	7.4.31	0.12		CR	STATE OF OREGON, DEPARTMENT OF	Highway		
22	1200	7.5.25D	1.01		CG	JACOB DAVID E	RV retail sales Inds. / Storage	4,800 / 12,000	

This table was created using Polk County Tax Assessors Tax Maps. Each tax lot should not be inferred to be a separate lawfully

created lot or parcel. The deed to the subject property describes, in the legal description, how many lots or parcels comprise the subject property. The legal status of the lots or parcels described in a deed can be determined by evaluating the land-use applications made through the Polk County Planning Division and the deed history of the subject property.

CHAPTER 154.500

RICKREALL UNINCORPORATED COMMUNITY INDUSTRIAL COMMERCIAL (UC-IC) ZONING DISTRICT

154.510. Purpose and Intent
154.520. Small-Scale, Low Impact Uses
154.530. Standard Industrial Classifications
154.540. Permitted Uses
154.550. Conditional Uses

154.510. PURPOSE AND INTENT. The purpose of the Rickreall Unincorporated Community Industrial Commercial (Rickreall UC-IC) Zoning District is to implement the Comprehensive Plan policies related to both industrial and commercial development by providing for a mixture of commercial and manufacturing activities. This zone is applied to designated lands within the unincorporated community of Rickreall.

Commercial activities in this zone generally consist of uses which complement agricultural and forest activities in the surrounding area, uses which serve the needs of the surrounding community or the needs of the traveling public, or other uses which are small-scale and low impact. Industrial activities in this zone generally consist of uses which complement agricultural and forest activities in the surrounding area, uses that require proximity to rural resources, or other uses which are small-scale and low impact.

154.520. SMALL-SCALE, LOW-IMPACT USES. Commercial uses allowed in the RICKREALL UC-IC Zone which are listed under Section Rickreall 154.540(C) or Section 154.550(C) shall be established in a building or buildings not to exceed 4,000 square feet of floor space. The floor area calculation does not include outdoor storage areas.

Industrial uses allowed in the RICKREALL UC-IC Zone which are listed under Section 154.540(C) or Section 154.550(C) shall be established in a building or buildings not to exceed 10,000 square feet of floor space. The floor area calculation does not include outdoor storage areas.

Establishment of a new commercial use or expansion of a commercial use listed under Section 154.540(C) or Section 154.550(C) which would exceed the 4,000 square foot standard shall require a Comprehensive Plan Amendment as specified in Chapter 115 of the Zoning Ordinance.

Establishment of a new industrial use listed under Sections RICKREALL 154.540(C), and 154.550(C) or expansion of an industrial use other than those listed under Section Rickreall 154.540(B) which would exceed the 10,000 square foot standard shall require a Comprehensive Plan Amendment as specified in Chapter 115 of the Zoning Ordinance.

154.530. STANDARD INDUSTRIAL CLASSIFICATIONS. Standard Industrial Classification (SIC) code numbers for most of the uses in this zone are shown in parentheses after the listed use. The SIC codes are a coding system used by the federal government to identify specific industries. Two-digit codes are used most often in the Zoning Ordinance to describe general categories of uses. In some instances, more specific three and four-digit codes are used. A copy of the SIC Manual is available for use at the Community Development Department and provides a more detailed description of the uses described in each general category.

154.540. PERMITTED USES. The following uses and their accessory buildings and uses are permitted. All uses under this Section are subject to the applicable standards as set forth in Chapter 112 (Development Standards) and other general provisions and exceptions set forth by this ordinance. No building, structure, or premises shall be used except for one or more of the following uses:

(A) Commercial uses:

(1) Any use permitted under Rickreall UC-C, Section 153.540, when established using the guidelines of the Section 153.540 subsection the use is listed under.

(B) Expansion of an existing industrial use which existed on December 5, 1994.

(C) Industrial uses which are small-scale, low-impact:

(1) Electronic and other electrical equipment and components manufacturing (36);

(2) Metal fabricated products manufacturing (34); except metal stampings, and screw machine products;

(3) Measuring, analyzing, and controlling instruments manufacturing (38);

(4) Manufacturing of rubber products and miscellaneous plastics products (30);

(5) Textile products manufacture, including apparel (22, 23);

(6) Tobacco processing (21);

(7) Transportation equipment manufacture (371)(372)(373)(375)(379);

(8) Metal working equipment and machinery manufacturing wholly within a building (354) except machine shops;

(9) Public warehousing and storage (422);

(10) Wholesale trade, non-durable goods (51);

(11) Utilities - primary equipment and storage yard;

(12) Well drilling pump repair facilities;

(13) Pharmaceuticals (283);

(14) Furniture and fixtures manufacturing (25);

(15) Paperboard containers and boxes assembly (265); and

(16) Sign construction and painting shop, contained wholly within a building.

154.550. CONDITIONAL USES. When authorized under the procedure provided for conditional uses in this ordinance, the following uses will be permitted in any UC-IC Zone:

(A) Commercial uses:

(1) Any use permitted under Rickreall UC-C, Section 153.550, when established using the guidelines of the Section 153.550 subsection the use is listed under.

(B) Industrial uses which require proximity to rural resources:

(1) Food and derivative products processing, including grain elevators, storage (20), and;

(2) Millwork, veneer, and wooden container manufacturing (243, 244).

(C) Industrial uses which are small-scale, low-impact:

(1) Leather and leather products manufacture (31);

(2) Special industry machinery manufacturing, such as sawmill equipment (355);

(3) Refrigeration and service industry machinery manufacturing (358);

(4) Metal stampings (346);

(5) Screw machine products, and bolts, nuts, screws, rivets and washers (345);

(6) Machine shop;

(7) Bulk fuel storage, provided all storage is underground.

Appendix 1
Rickreall Unincorporated Community Industrial Commercial Properties
Building Size Inventory
January 2001

#	Tax Lot	Map#	Acres	Dwelling	Zone	Owner	Use	Building Size sq. ft.
1	5800	7.4.30C	2.15		IC	EOLA HILLS WINE CELLARS, INC	Industrial	9,000
2	5804	7.4.30C	2		IC	EOLA HILLS WINE CELLARS, INC	Warehouses / Storage	22,350 / 2,400

This table was created using Polk County Tax Assessors Tax Maps. Each tax lot should not be inferred to be a separate lawfully created lot or parcel. The deed to the subject property describes, in the legal description, how many lots or parcels comprise the subject property. The legal status of the lots or parcels described in a deed can be determined by evaluating the land-use applications made through the Polk County Planning Division and the deed history of the subject property.

CHAPTER 155.500

RICKREALL UNINCORPORATED COMMUNITY INDUSTRIAL (RICKREALL UC-I) ZONING DISTRICT

155.510. Purpose and Intent
155.520. Small-Scale, Low-Impact Uses
155.530. Standard Industrial Classifications
155.540. Permitted Uses
155.550. Conditional Uses

155.510. PURPOSE AND INTENT. The purpose of the Rickreall Unincorporated Community Industrial (RICKREALL UC-I) Zoning District is to implement the Comprehensive Plan policies related to industrial development by providing for industrial uses with limited off-site impacts such as noise, dust, or odor. This zone is applied to designated industrial lands within the unincorporated community of Rickreall.

Industrial activities in this zone generally consist of uses which complement agricultural and forest activities in the surrounding area, uses that require proximity to rural resources, or other uses which are small-scale and low impact.

155.520. SMALL-SCALE, LOW-IMPACT USES. Small-scale, low impact uses listed under Section 155.540(E) or Section 155.550(B) shall be established in a building or buildings not to exceed 10,000 square feet of floor space. The floor area calculation does not include outdoor storage areas.

Establishment of a new industrial use listed under Section 155.540(F), Section 155.550(B), or Section 155.550(C) or expansion of an industrial use other than those listed under Section 155.540(A) which would exceed the 10,000 square foot standard shall require a Comprehensive Plan Amendment as specified in Chapter 115 of the Zoning Ordinance.

155.530. STANDARD INDUSTRIAL CLASSIFICATIONS. Standard Industrial Classification (SIC) code numbers for most of the uses in this zone are shown in parentheses after the listed use. The SIC codes are a coding system used by the federal government to identify specific industries. Two-digit codes are used most often in the Zoning Ordinance to describe general categories of uses. In some instances, more specific three and four-digit codes are used. A copy of the SIC Manual is available for use at the Community Development Department and provides a more detailed description of the uses described in each general category.

155.540. PERMITTED USES. Within the RICKREALL UC-I Zone, no building, structure, or premises shall be used, enlarged, or designed to be used, erected, structurally altered, or enlarged except for one or more the following uses:

(A) Expansion of an existing industrial use which existed on December 5, 1994.

(B) Dwelling for a caretaker or watchman for the premises only (88).

(C) Ambulance service (8099).

(D) Fire stations.

(E) Industrial uses which require proximity to rural resources:

(1) Gardens, orchards, crop cultivation and timber raising and tree farm (01, 02);

(2) Greenhouses and outdoor plant nurseries (018, 526);

(3) Lumber and wood products processing, manufacturing and storage facilities (24);

(4) Food and kindred products manufacturing (20); and

(5) Millwork, veneer, and wooden container manufacturing (243, 244).

(6) Farm product warehousing and storage (4221);

(7) Farm or forest products stand, designed and used for the sale of farm crops, special forest products and livestock grown on farms in the local agricultural area, including the retail sale of incidental items accounting for no more than 25 percent of the total sales of the farm or forest stand. Farm or forest products stands do not include structures designed for residential occupancy or to accommodate activities other than the sale of farm crops, special forest products and livestock, such as structures for banquets, public gatherings or entertainment;

(8) Farm or forest implement and equipment sales;

(9) Farm or forest related equipment, machinery or truck repair, including associated service parts facilities;

(10) Farm and forest supply.

(F) Industrial uses which are small-scale, low-impact:

(1) Any use permitted under 154.540(C);

(2) Communication and Broadcast Towers subject to PCZO 112.135;

(3) Business offices of the firm or operations;

(4) Restaurants (buildings not to exceed 4,000 square feet) (58);

(5) Public utilities (49);

(6) Parking lot, garage (commercial) when developed as prescribed in Chapter 112 (7521);

(7) Tractor and heavy equipment sales and service (352);

(8) Motor vehicle body & painting facility (371);

(9) Truck stop facility (423);

(10) Wholesale trade (50);

(11) Appliance, office and electrical product equipment manufacturing (39);

(12) Professional, scientific and controlling equipment manufacturing (873);

(13) Rubber and allied products manufacturing (30);

(14) Food, grain, feed and derivative products processing facility;

(15) Meat processing and manufacturing facilities (021);

(16) Manufacturing of fabricated metal products (34);

(17) Building contractors (general, highway and street contractors, heavy construction contractors) (15, 16);

(18) Special trade construction contractors (17);

(19) Auction house or market;

(20) Motor freight depot (421);

(21) Industrial and commercial machinery and computer manufacturing facilities (355);

(22) Blacksmith;

(23) Welding, welding shop; and

(24) Machine shop.

155.550. CONDITIONAL USES. When authorized under the procedure provided for conditional uses in this ordinance, the following uses will be permitted in the RICKREALL UC-I Zone:

(A) Industrial uses which require proximity to rural resources:

(1) Any use permitted under 154.550(B);

(2) Mining and quarrying of nonmetallic minerals, except fuels (14);

(3) Sand and gravel resource processing sites, excluding quarries (see Sections 120.410 to 120.460) (144);

(4) Cement, clay, glass and stone products manufacturing facilities (32); and

(5) Livestock auctions and sales, including feed lots (0211).

(B) Industrial uses which are small-scale, low-impact:

(1) Any use permitted under 154.550(C);

(2) Kennels (boarding and raising of animals);

(3) Cottage Industry Home Occupations;

(4) Metals, primary, manufacturing facilities (33);

(5) Manufacturing of fabricated metal products (34);

(6) Machinery facilities;

(7) Railroad equipment manufacture and repair (374);

(8) Auto wrecking yard, perimeter fenced and landscaped;

(9) Paper and allied products manufacturing facilities (265)(267);

(10) Bulk fuel storage;

(11) Petroleum, petroleum products, and storage facilities (29);

(C) Any other industrial use, where the buildings do not exceed 10,000 square feet of floor space provided that:

(1) The use is small in size and low impact; or

(2) The use is significantly dependent upon a specific resource located on agricultural or forest land; and

(3) The use will not have adverse impacts on surrounding farm and forest activities; and

(4) The new use will not exceed the capacity of water and sewer service available to the site on December 5, 1994, or if such services are not available to the site, the capacity of the site itself to provide adequate water and absorb waste water.

Appendix 1
Rickreall – Derry Unincorporated Community Industrial Properties
Building Size Inventory
January 2001

#		Map#	Acres	Dwelling	Zone	Owner	Use	Building Size sq. ft.	Buildable
1	1000	7.4.30	1.44		IL	WEST HILLS MFG.	Vacant		X
5	802	7.4.31	9.91		IL	DEMBOWSKI AL	Dallas Coop Grain Storage Silos	432,000 Bushel Cap	
6	801	7.4.31	4		IL	SIEBER RAYMOND A	Dallas Equipment Repair	7,624	
7	1001	7.4.31	1		IL	WESTERN FARM SERVICES, INC	Seed Warehouse & Office	3,456 2,318	
8	1600	7.5.25	1.6		IL	BLESSING TONI JO	Vacant		X
9	1000	7.5.25D	0.82	1	IL	HINCHCLIFF CHARLES E & NORA E	1930 dwelling		
10	1100	7.5.25D	0.71		IL	HINCHCLIFF CHARLES E & NORA E	Red Mule Store	2,400	
11	300	7.5.25D	1	1	IL	PENNA EDWARD & REBECCA	1881 dwelling (Historic Registry)		
12	500	7.5.25D	1	1	IL	GOINS MARSHALL & MADISON D	1917 dwelling		
13	700	7.5.25D	0.87		IL	COUEY JOE E & LETA J	Vacant		X
14	800	7.5.25D	0.56	1	IL	COUEY LETA J	1945 dwelling		
15	900	7.5.25D	0.56	1	IL	COUEY LETA J	1920 dwelling		
16	100	7.5.25D	7.2		IL	HOFF GWENDOLYN CLAIRE ET AL	Burelbach Inds./Warehs./Manf./Shop	21,040 / 12,700 / 1,200	
17	200	7.5.25D	1		IL	POOLE JONATHAN W & MICHELLE	Industrial	1,728	
18	201	7.5.25D	3.01		IL	PEGG WYATT	Vacant		X
19	400	7.5.25D	2		IL	PEGG WYATT	Western Interlock	~9,000?	
20	600	7.5.25D	5.49		IL	IOTT KEN & JUDY ET AL	Rickreall Mini Storage	40,248	
21	100	7.4.29C	0.82		IH	WILLAMETTE GRASS SEED, LLC	Warehouses	9,408 / 5,040	X
22	101	7.4.31	1.36		IH	MARX RONALD L ET AL	Seed cleaning operation	Part of building 9,505	X
23	200	7.4.29C	1.52		IH	AG WEST SUPPLY	Farm equipment parking		X
24	300	7.4.29C	1.56		IH	WILLAMETTE GRASS SEED, LLC	Machine shop / warehouses / office/ utility building	14,640 / 17,252 / 1,896	
25	500	7.4.29C	9.56		IH	POLK COUNTY FARMS CO-OP	Showroom / Warehouse / Machine shop / tanks/ office / storage	6,710 / 11,675 / 6,912 / 1,540 / 1,240 / 14,010	
26	600	7.4.29C	1.72		IH	MARX RONALD L ET AL	Seed Warehouses (4)	39,908	
27	400	7.4.29C	2.67		IH	S. PACIFIC / BURLINGHAM	Grain warehouse	5,520	

This table was created using Polk County Tax Assessors Tax Maps. Each tax lot should not be inferred to be a separate lawfully created lot or parcel. The deed to the subject property describes, in the legal description, how many lots or parcels comprise the subject property. The legal status of the lots or parcels described in a deed can be determined by evaluating the land-use applications made through the Polk County Planning Division and the deed history of the subject property.

CHAPTER 170
PUBLIC ZONES

170.005. Transportation Improvements
170.010. PA, Public Amusement and Recreation Zone, Use
170.020. PC, Public and Private Cemeteries Zone, Use
170.030. PE, Public and Private Educational Facilities Zone, Use
170.040. PH, Public and Private Hospitals, Use
170.050. PP, Public Park Zone, Use
170.060. PS, Public Service Zone, Use
170.065. Conditional Uses
170.070. Abandoning Use: Transfer of Ownership
170.080. Changing Use

170.005. TRANSPORTATION IMPROVEMENTS. Transportation Improvements are permitted within any Public Zone **[Amended by Ordinance #01-01, dated November 14, 2001.]**

170.010. PA, PUBLIC AMUSEMENT AND RECREATION ZONE. USE. Within any PA, Public Amusement and Recreation Zone, no building, structure, or premises shall be used, arranged, or designed to be used, erected, structurally altered, or enlarged except for one or more of the following uses:

(A) Airport

(B) Amusement park

(C) Armory

(D) Auditorium

(E) Ball park

(F) Dwelling for the caretaker or watchman; or mobile home

(G) Exposition

(H) Fairground

(I) Golf course

(J) Military training facilities

(K) Race tracks

(L) Stadium

(M) Stock show

(N) Zoo

(O) When authorized under the procedure provided for conditional uses, a recreational vehicle park may be allowed, if the location is (1) within an urban growth boundary, or (2) within a rural community center.

(P) Marina or boat club. **[Amended by Ordinance 91-15, dated July 24, 1991.] [Amended by Ordinance 96-3, dated June 5, 1996. (P)]**

170.020. PC, PUBLIC AND PRIVATE CEMETERIES ZONE. USE. Within any PC, Public and Private Cemeteries Zone, no building, structure, or premises shall be used, arranged or designed to be used, erected, structurally altered, or enlarged except for one or more following uses:

(A) Cemetery

(B) Dwelling for the caretaker or watchman

When authorized under the procedure provided for conditional uses crematoriums and mausoleums shall be permitted in a PC, Public and Private Cemeteries, Zone.

170.030. PE, PUBLIC AND PRIVATE EDUCATIONAL FACILITIES ZONE. USE. Within any PE, Public and Private Educational Facilities Zone, no building, structure, or

premises shall be used, arranged, or designed to be used, erected, structurally altered or enlarged except for one or more of the following uses:

(A) School

(B) Educational institution

(C) School or institution for the handicapped, provided it is non-residential

(D) Dwelling for the caretaker or watchman or housing for staff

(E) Dwelling, mobile home, or dormitory for students and/or faculty **[Subsection (E) adopted by Ordinance #219, dated September 22, 1978.]**

170.040. PH, PUBLIC AND PRIVATE HOSPITALS. USE. Within any PH, Public and Private Hospitals Zone, no building, structure, or premises shall be used, arranged, or designed to be used, erected, structurally altered, or enlarged except for one or more of the following uses:

(A) Penal institution

(B) Reformatory

(C) Detention and correctional home, institution or school

(D) Hospital and institution for the mentally retarded

(E) Hospital

(F) Medical and dental clinic

(G) Dwelling for the caretaker or watchman or housing for staff

(H) Residential school for the handicapped

170.050. PP, PUBLIC PARK ZONE. USE. Within any PP, Public Park Zone, no building, structure, or premises shall be used arranged, or designed to be used, erected, structurally altered, or enlarged except for one or more of the following uses:

(A) Public park (non-commercial)

(B) Public playground (non-commercial)

(C) Parkway

(D) Municipal Golf Course

(E) Dwelling for the caretaker or watchman

170.060. PS, PUBLIC SERVICE ZONE. USE. Within any PS, Public Service Zone, no building, structure, or premises shall be used, arranged, or designed to be used, erected, structurally altered or enlarged except for one or more of the following uses:

(A) Municipal or government service building, structure and use, i.e., reservoir, water tower, pump station, sewage treatment plant, land fill operation, bus equipment, parking, servicing or repairing

(B) Dwelling for the caretaker or watchman **[Amended by Ordinance #113, dated January 22, 1974.]**

170.065. CONDITIONAL USES.

(A) Commercial utilities for the purpose of generating power for public use by sale, including but not limited to turbine, thermonuclear, geothermal, hydro-electric installations and transformer stations, electric transmission lines and substations owned by the utility.

(B) Public or private solid waste disposal site, solid waste transfer facility, sanitary land fill (see Chapter 120.300).

(C) Television, microwave, radio, and communication towers and facilities, as provided in Section 112.135. **[Amended by Ordinance 01-3]**

170.070. ABANDONING USE: TRANSFER OF OWNERSHIP. Whenever the existing use of any Public Zone, or a part of any such zone, is abandoned or the property transferred to private ownership for different use, the Planning Commission shall recommend to the Board of Commissioners appropriate rezoning for any such area. **[Amended by Ordinance #96-3, dated June 5, 1996.]**

170.080. CHANGING USE. Any area shown on the official zoning map as a park, playground, cemetery, ball park, fairgrounds, airport, school or other public or semi-public area, shall not be used for any other purpose than that for which such area is used at the effective date of the Polk County Zoning Ordinance, and whenever the use of such an area is discontinued or proposed to be changed, the Planning Commission shall recommend to the Board of Commissioners appropriate rezoning for any such area. **[Amended by Ordinance #89-17, dated December 6, 1989.]**

Rickreall Land Use Changes
Potential Impacts to Traffic Generation

The following table illustrates PM peak hour trip generation potential for all parcels in the Rickreall area in the vicinity of the Ore. 22 and Ore. 99W Interchange. This trip generation potential is based on rates derived from the Institute of Transportation Engineer's (ITE) Trip Generation Manual. For the purpose of this analysis, the rates applied were purposely high. The number of current PM peak hour trips estimated by this methodology is more than double the number of PM peak hour trips actually observed coming from or destined for this area through recent traffic counts. These trips can be compared to the approximately 3800 PM peak hour trips currently using the state transportation system in this area and the approximately 6500 PM peak hour trips foecast to be using the state transportation system in this are in 2025. This same rates are applied to assumptions about undeveloped or redevelopable properties in order to produce a forecast of the trips that could be produced under existing zoning.

As part of the measures that Polk County will take to ensure the long-term viability of the state highway improvements being made in this area as a result of the Oregon Transportation Investment Act funding, a provision for special notification will be included in the Polk County development code. Under this provision, Polk County will provide special notification to ODOT if any development proposal with a trip generation potential that exceeds the estimates in this table is made in the Rickreall area. With this notification, Polk County and ODOT will determine whether the potential impact threatens the operation of the state transportation facilities and, if so, if and how it can be mitigated.

Acres	Situs Address	Dwellings	Description	Action	Acres Changed	ID	New Descriptor	Affected Acres	Existing Acres	Exist. PM Peak Trips		Potential PM PeakTrips		ADDED	
										In	Out	In	Out	IN	OUT
1	9750 BURCH GROVE LN	1	Dwelling - By Winery	No Change					1	1	1	1	1	0	0
0.84	9635 RICKREALL RD	1	Dwelling - Historic	No Change					0.84	1	1	1	1	0	0
1.42	120 MAIN ST	1	Dwelling - Historic	No Change	0.72				0.72	1	1	1	1	0	0
			New		0.7	B1				1	1	1	1	0	0
0.4	100 MAIN ST	1	Dwelling		0.4	B1				1	1	1	1	0	0

0.22			Vacant		0.22	B1	**Mini-Mart w/ Gas (4 Fuel Positions) (75% Diverted)**	**1.63**		1	1	10	10	9	9
0.12			Vacant		0.12	B1				1	1	1	1	0	0
0.19			Vacant		0.19	B1				1	1	1	1	0	0
3.3	130 MAIN ST		Farm Supply/Gas Station	No Change					3.3	8	8	8	8	0	0
0.92	260 MAIN ST	1	Dwelling				**Daycare (8,000 sf) (50% Diverted)**	**0.92**		1	1	25	28	24	27
0.69	9855 RICKREALL RD		Automotive Repair		0.69	B2				7	7	7	7	0	0
0.32	115 MAIN ST		Rickreall Mini-Mart	No Change					0.32	10	10	10	10	0	0
1.28	130 MAIN ST	1	Dwelling - Historic	No Change					1.28	1	1	1	1	0	0
0.36	200 MAIN ST	1	Dwelling -Historic	No Change					0.36	1	1	1	1	0	0
0.4	141 FORD ST	1	Dwelling		0.4	B2	**Auto Parts (4,000 sf)**	**1.4**		1	1	12	12	11	11
0.11	9805 RICKREALL RD	1	Dwelling		0.11	B2				1	1	1	1	0	0
0.3	9750 RICKREALL RD		Plumbing,office,espresso	No Change					0.3	10	10	10	10	0	0
0.2	9825 RICKREALL RD	1	Dwelling		0.2	B2				1	1	1	1	0	0
3.85	750 S PACIFIC HWY W	2	2 Dwellings				**Small Strip Mall (2ksf Video Rental;10ksf Speciality Retail) (75% Diverted)**	**3.85**		2	2	9	12	7	10
1.54	670 S PACIFIC HWY W	1	Restaurant/Office	No Change					1.54						
1.9	665 S PACIFIC HWY W	3	Manuf.Home Sale				**Car Sales (4,000 sf)**	**1.9**		2	4	4	7	2	3
1.01	10445 RICKREALL RD		RV Sale/Industr	No Change					1.01	2	2	2	2	0	0
	New trips for R-UC-U									**55**	**57**	**105**	**114**	**50**	**57**
9.56	9055 RICKREALL RD			Out of Area					9.56						
1.56	8875 RICKREALL RD			Out of Area					1.56						
1.72	8880 RICKREALL RD			Out of Area					1.72						
0.82				Out of Area					0.82						
1.52				Out of Area					1.52						
2.75	8875 RICKREALL RD			Out of Area					2.75						
9.91			Dallas Co-Op Silos	No Change	4.91				4.91	2	2				
			New		5		**New-Light Industrial**	**5**							

4	905 S PACIFIC HWY W		Dallas Equipment Repair	No Change	2				2	2	2				
			New		2		**New-Light Industrial**	**2**							
1	1095 S PACIFIC HWY W			Out of Area					1						
1.36				Out of Area					1.36						
1.6			Vacant	No Change	0.8				0.8						
			New		0.8	B3	**New-Light Industrial**	**3.05**							
1.25			Vacant			B3									
2	10095 RICKREALL RD		Western Interlock	No Change					2	3	3				
5.49	10255 RICKREALL RD		Mini Storage	No Change					5.49	4	4				
1	10045 RICKREALL RD	1	Historic	No Change					1	1	1				
1	10215 RICKREALL RD	1	Dwelling	No Change					1	1	1				
0.56	10355 RICKREALL RD	1	Dwelling			B4				1	1				
0.82	10385 RICKREALL RD	1	Dwelling			B4	**New-Light Industrial**	**2.7**		1	1				
0.46	10325 RICKREALL RD	1	Dwelling			B4				1	1				
0.71	10395 RICKREALL RD		Red Mule Store	No Change					0.71	3	3				
0.86			Vacant			B4									
1	10085 RICKREALL RD		Industrial			B3									
7.2	10135 RICKREALL RD		Burelback Industries	No Change					7.2	2	2				
3.01			Paver Manufacture	No Change					3.01	3	3				
2	505 S PACIFIC HWY W		Winery	No Change					2	3	3				
2.15	501 S PACIFIC HWY W		Winery	No Change					2.15	1	1				
	New trips for R-UC-I & R-UC-IC									**81**	**287**	**91**	**322**		
				New Light Industrial (22/78 split)=>12.75 acres (5.75 acres already included) so 7 un/redeveloped acres =										**10**	**35**
2.35	8870 RICKREALL RD			No Change											
0.95	8860 RICKREALL RD	1		No Change						1	1	1	1	0	0
4.45	10000 RICKREALL RD	1		No Change						1	1	1	1	0	0
1.08	9810 RICKREALL RD	1		No Change						1	1	1	1	0	0
2.54	10025 RICKREALL RD	1		No Change						1	1	1	1	0	0
1.37	9760 RICKREALL RD	1		No Change						1	1	1	1	0	0
2.44		1		No Change						1	1	1	1	0	0
1.44				New						0	0	1	1	1	1
3.4	9745 BURCH GROVE LN	1		No Change						1	1	1	1	0	0
0.99	9490 RICKREALL RD	1		No Change						1	1	1	1	0	0
2	525 S PACIFIC HWY W	1		No Change						1	1	1	1	0	0
3.04	9830 BURCH GROVE LN	1		No Change						1	1	1	1	0	0
0.1	9680 RICKREALL RD	1		No Change						1	1	1	1	0	0
1.5	9630 RICKREALL RD	1		No Change						1	1	1	1	0	0

2.46				New						0	0	1	1	1	1
0.42	9815 BURCH GROVE LN	1		No Change						1	1	1	1	0	0
0.63				New						0	0	1	1	1	1
2.16				New						0	0	1	1	1	1
5.04	10250 RICKREALL RD	1		No Change						1	1	1	1	0	0
1.35	10060 RICKREALL RD	1		No Change						1	1	1	1	0	0
0.81	10130 RICKREALL RD	1		No Change						1	1	1	1	0	0
0.11				New						0	0	1	1	1	1
	New trips for AR5		**Residential- 8.5 trips per day - 2 trips per PM Peak =**							**16**	**16**	**21**	**21**	**5**	**5**
21.23	650 S PACIFIC HWY W	1	Fairgrounds												
3.37	300 MAIN ST		School												
18.65			Park												
0.09			Cemetery												
3.78	520 S PACIFIC HWY W		Park												
	New trips for Public Parcels (PA,PE,PP)						**No Change**							**0**	**0**
0.62	9585 RICKREALL RD	1		No Change						1	1	1	1		
1	9725 PAGEANT ST	2		No Change						2	2	2	2		
0.6	9755 CHURCH ST	1		No Change						1	1	1	1		
0.93	9895 BECK ST	1		No Change						1	1	1	1		
0.44	275 FORD ST	1		No Change						1	1	1	1		
0.26	270 MAIN ST			No Change						0	0	0	0		
0.64	280 MAIN ST			No Change						0	0	0	0		
0.57	205 MAIN ST	1		No Change						1	1	1	1		
0.33	255 MAIN ST	1		No Change						1	1	1	1		
0.34	9750 PAGEANT ST	1		No Change						1	1	1	1		
0.72	9850 PAGEANT ST	2		No Change						2	2	2	2		
0.3	9851 BECK ST	1		No Change						1	1	1	1		
1.14	305 FORD ST	1		No Change						1	1	1	1		
0.37	9740 CHURCH ST	1		No Change						1	1	1	1		
0.57	9745 BECK ST	1		No Change						1	1	1	1		
0.47	9801 PAGEANT ST	1		No Change						1	1	1	1		
0.23	275 MAIN ST			No Change						0	0	0	0		
2.25	9815 PAGEANT ST	1		New 1						1	1	2	2		
0.54	301 MAIN ST	1		No Change						1	1	1	1		
0.62	345 FORD ST	1		No Change						1	1	1	1		
0.34	310 FORD ST			No Change						0	0	0	0		
0.36	221 FORD ST	1		No Change						1	1	1	1		

0.15				No Change						0	0	0	0		
0.23				No Change						0	0	0	0		
0.46				New 1						0	0	1	1		
0.43				No Change						0	0	0	0		
0.2				No Change						0	0	0	0		
0.36				No Change						0	0	0	0		
0.2	9750 CHURCH ST			No Change						0	0	0	0		
New trips for SR			**Residential- 8.5 trips per day - 2 trips per PM Peak =**							**20**	**20**	**22**	**22**	**2**	**2**
			TOTAL NEW TRIPS											***67***	***99***
			TOTAL RICKREALL TRIPS							***172***	***380***	***239***	***479***		

EVALUATION CRITERIA Performance Measure	RECOMMENDED ALTERNATIVES					
YEAR 2025 MOBILITY						
Volume to Capacity Ratio	**1A**	**2C**	**4B**	**5C**	**6C**	**7A**
ORE 22/99W Intersection	NA	1.32	1.0	NA	NA	NA
ORE 22/DRH WB Left	NA	1.94	NA (now free flow)	1.94	NA (now free flow)	NA (now free flow)
ORE 22/99W Interchange southern ramp (Signal)	NA	NA	NA	0.58	0.58	NA
ORE 22/99W Interchange northern ramp minor WB to NB left turn (Unsig)	NA	NA	NA	0.86	0.91	0.91
ORE 22/99W Interchange southern ramp minor EB to NB left turn (Unsig)	NA	NA	NA	NA	NA	0.77
OPERATIONS	**1A**	**2C**	**4B**	**5C**	**6C**	**7A**
Safety	• Potential for immediate safety benefits	• Lane imbalance exacerbated on westbound approach to ORE 22/ORE 99W intersection • Reduces the length of storage (but increases storage capacity) for left-turning traffic thereby reducing speed differential conflicts on OR 22 • Turning movement conflicts remain at all intersections	• Eliminates turning conflicts at OR 22 & Dallas/Rickreall Hwy. intersection	• Eliminates turning conflicts at ORE 22 and ORE 99W intersection • Would eliminate gaps in traffic through Rickreall without signals at Rickreall Road or ramp terminals • Would reduce EB gaps on ORE 22 at Greenwood Road • OR 22/99W and OR/22 Dallas-Rickreall Hwy. intersections remain too closely spaced	• Eliminates all major turning conflicts • Would eliminate gaps in traffic through Rickreall without signals at Rickreall Road or ramp terminals • Would reduce EB gaps on ORE 22 at Greenwood Road	• Eliminates all major turning conflicts • Would eliminate gaps in traffic through Rickreall without signals at Rickreall Road or ramp terminals • Would reduce EB gaps on ORE 22 at Greenwood Road

OPERATIONS	1A	2C	4B	5C	6C	7A
Consistency with Geometric Design Standards	• OR 22/99W and OR/22 Dallas-Rickreall Highway intersections are too closely spaced	• OR 22/99W and OR/22 Dallas-Rickreall Highway intersections are too closely spaced	• Reduces (but does not eliminate) spacing conflicts for OR22/99W intersection and OR22/Dallas-Rickreall Highway intersection	• OR 22/99W and OR/22 Dallas-Rickreall Hwy. intersections too closely spaced • ORE 22 overpass less desirable than ORE 99W overpass due to downward off-ramp grade from ORE 22 • Minor spacing deviations from southern ramp terminal needed for accesses on ORE 99W between Church Street and Rickreall Road	• Does not fully meet interchange spacing standards • ORE 22 overpass less desirable than ORE 99W overpass due to downward off-ramp grade from ORE 22 • Minor spacing deviations from southern ramp terminal needed for ORE 99W accesses between Church Street and Rickreall Rd	• Meets interchange spacing standards • ORE 22 overpass less desirable than ORE 99W overpass due to downward off-ramp grade from ORE 22 • Minor spacing deviations from southern ramp terminal needed for accesses on ORE 99W between Church Street and Rickreall Road
Bicycle	• No changes	• WB lefts on ORE 22 must cross two lanes at ORE 99W	• WB lefts on ORE 22 must cross two lanes at ORE 99W • Bike shoulders built on new construction	• Bike shoulders built on new construction	• Bike shoulders built on new construction	• Bike shoulders built on new construction
Pedestrians	• Might include some pedestrian crossing improvements at Rickreall Elementary (specifics not determined)	• Pedestrian crossing distance increased at ORE 22/ORE 99W intersection	• Pedestrian crossing distance increased at ORE 22/ORE 99W intersection	• Sidewalks for pedestrians provided on ORE 99W between Church Street and the northern ramp terminal • School ped. crossing created between the southern ramp terminal and Church Street	• Sidewalks for pedestrians provided on ORE 99W between Church Street and the northern ramp terminal • School ped. crossing created between the southern ramp terminal and Church Street	• Sidewalks for pedestrians provided on ORE 99W between Church Street and the northern ramp terminal • School ped. crossing created between the southern ramp terminal and Church Street

OPERATIONS	1A	2C	4B	5C	6C	7A
Transit	• No benefit	• Minor capacity increases will facilitate all vehicular movement	• Minor capacity increases will facilitate all vehicular movement	• Capacity increases will facilitate all vehicular movement • School bus access improved with construction of new access road from Rickreall Road	• Capacity increases will facilitate all vehicular movement • School bus access improved with construction of new access road from Rickreall Road	• Capacity increases will facilitate all vehicular movement • School bus access improved with construction of new access road from Rickreall Road
Freight movement	• No benefit	• Minor capacity increases will facilitate all vehicular movement	• Minor capacity increases will facilitate all vehicular movement	• Capacity increases will facilitate all vehicular movement	• Capacity increases will facilitate all vehicular movement	• Capacity increases will facilitate all vehicular movement
IMPACTS	**1A**	**2C**	**4B**	**5C**	**6C**	**7A**
Environmental (air, water, and energy)	• Worst air quality impact due to no capacity improvements • Worst energy impact due to no capacity improvements	• Likely to have least air quality improvement of any build alternative due to greater congestion and stop and go conditions • Likely to have least energy benefits of any build alternative due to greater congestion and stop and go conditions	• Minor air quality improvement over no build and 2C due to congestion reduction resulting from grade separation at Dallas/Rickreall Hwy. • Likely to have minor energy benefits over 2C due to congestion reduction resulting from grade separation at Dallas/Rickreall Hwy.	• Minor air quality improvement over no build and 2C due to congestion reduction resulting from grade separation at ORE 22 and ORE 99W • Likely to have minor energy benefits over 2C due to congestion reduction resulting from grade separation at ORE 22 and ORE 99W	• Moderate air quality improvement over no build and 2C due to congestion reductions resulting from both grade separations • Likely to have moderate energy benefits over 2C due to congestion reduction resulting from both grade separations	• Most significant air quality improvement over no build and 2C due to congestion reductions resulting from both grade separations and elimination of all heavy left turn volumes • Most significant energy benefits over 2C due to congestion reductions resulting from both grade separations and elimination of all heavy left turn volumes

IMPACTS	1A	2C	4B	5C	6C	7A
Environmental (resource lands, biology, wetlands, and haz-mat)	• No notable impacts	• Very minor encroachment on agricultural land (within existing ROW) around the ORE 22/ORE 99W intersection associated with addition of turning lanes	• Minor encroachment on agricultural land • Possible presence of Kincaid's lupine and Meadow sidalcea	• Moderate encroachment on agricultural land • Possible presence of Kincaid's lupine and Meadow sidalcea • Minor impact on margin of 100-year floodplain	• Moderate encroachment on agricultural land • Possible presence of Kincaid's lupine and Meadow sidalcea • Minor impact on margin of 100-year floodplain	• Most significant encroachment on agricultural land • Possible presence of Kincaid's lupine and Meadow sidalcea • Minor impact on margin of 100-year floodplain
Environmental (noise, visual, and social)	• No Environmental Justice or Title 6 issues noted	• No Environmental Justice or Title 6 issues noted	• No Environmental Justice or Title 6 issues noted • Possible archeological resources in area that could be affected based on known historical and pre-historical settlement patterns	• No Environmental Justice or Title 6 issues noted • Possible archeological resources in area that could be affected based on known historical and pre-historical settlement patterns • ORE 22 over ORE 99W design favored to reduce noise and visual intrusion into the community	• No Environmental Justice or Title 6 issues noted • Possible archeological resources in area that could be affected based on known historical and pre-historical settlement patterns • ORE 22 over ORE 99W design favored to reduce noise and visual intrusion into the community	• No Environmental Justice or Title 6 issues noted • Possible archeological resources in area that could be affected based on known historical and pre-historical settlement patterns • ORE 22 over ORE 99W design favored to reduce noise and visual intrusion into the community
Land Use and Economic	• No properties affected • No relocations	• 3-4 properties affected • No relocations	• 2-3 properties affected • No relocations	• 9-10 properties affected • No relocations	• 10-12 properties affected • No relocations	• 10-12 properties affected • No relocations

IMPLEMENTATION	1A	2C	4B	5C	6C	7A
Plan Consistency	• Does not meet OHP Mobility Standards (ORE 22/ORE 99W and ORE 22/Dallas Rickreall Highway intersections) • Consistent with local plans • Consistent with TPR	• Does not meet OHP Mobility Standards (ORE 22/ORE 99W and ORE 22/Dallas Rickreall Highway intersections) • Consistent with local plans • Consistent with TPR	• Consistent with OHP Major Improvement Policy (at ORE 22/ Dallas Rickreall Highway intersection) • Does not meet OHP Mobility Standards (ORE 22/ORE 99W intersection) • Consistent with local plans • Consistent with TPR	• Consistent with OHP Major Improvement Policy • Critical movements meet or exceed OHP Mobility Standards (minor WB to NB left turn at northern ramp terminal exceeds mobility standard, but is operable in 2025 time frame) • Requires minor spacing deviations on ORE 99W between ORE 22 and Rickreall Road • Consistent with OHP expressway designation • Consistent with local plans • Consistent with TPR	• Consistent with OHP Major Improvement Policy • Critical movements meet or exceed OHP Mobility Standards (minor WB to NB left turn at northern ramp terminal exceeds mobility standard, but is operable in 2025 time frame) • Requires minor spacing deviations on ORE 99W between ORE 22 and Rickreall Road • Consistent with OHP expressway designation • Consistent with local plans • Consistent with TPR	• Consistent with OHP Major Improvement Policy • Critical movements meet or exceed OHP Mobility Standards (minor WB to NB left turn at northern ramp terminal and EB to NB left turn at southern ramp terminal exceed mobility standard, but are operable in 2025 time frame) • Requires minor spacing deviations on ORE 99W between ORE 22 and Rickreall Road • Consistent with OHP expressway designation • Consistent with OHP interchange spacing standard • Consistent with local plans • Consistent with TPR
Phasing Flexibility	Compatible with subsequent phases	Not compatible with subsequent phases	Compatible with subsequent phases	Compatible with subsequent phases	Compatible with subsequent phases	NA
Implementation - Costs	<$500,000	$2.5-3.5 Million	$6-8 Million	$10-15 Million	$15-20 Million	$22-27 Million

This map is illustrative and is only to be used for planning purposes.

Alternative 2-C : Add Turn Lanes to Existing Intersection

Figure 1

This map is illustrative and is only to be used for planning purposes.

Alternative 4B: Grade Separation at Ore 22/Dallas-Rickreall Highway Intersection

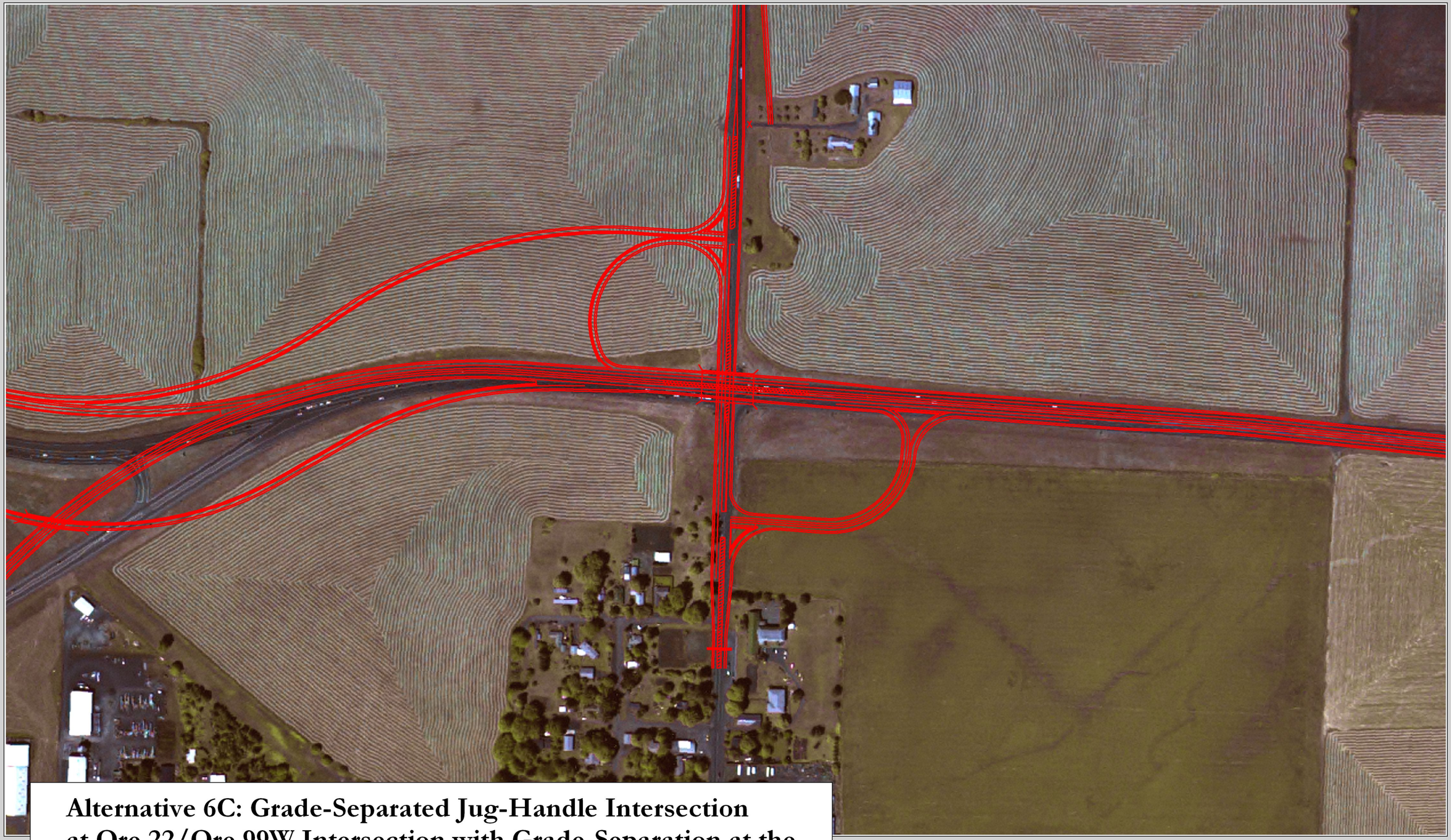
Figure 2

This map is illustrative and is only to be used for planning purposes.

Alternative 5C: Grade-Separated Jug-Handle Intersection at Ore 22/Ore 99W Intersection

Figure 3

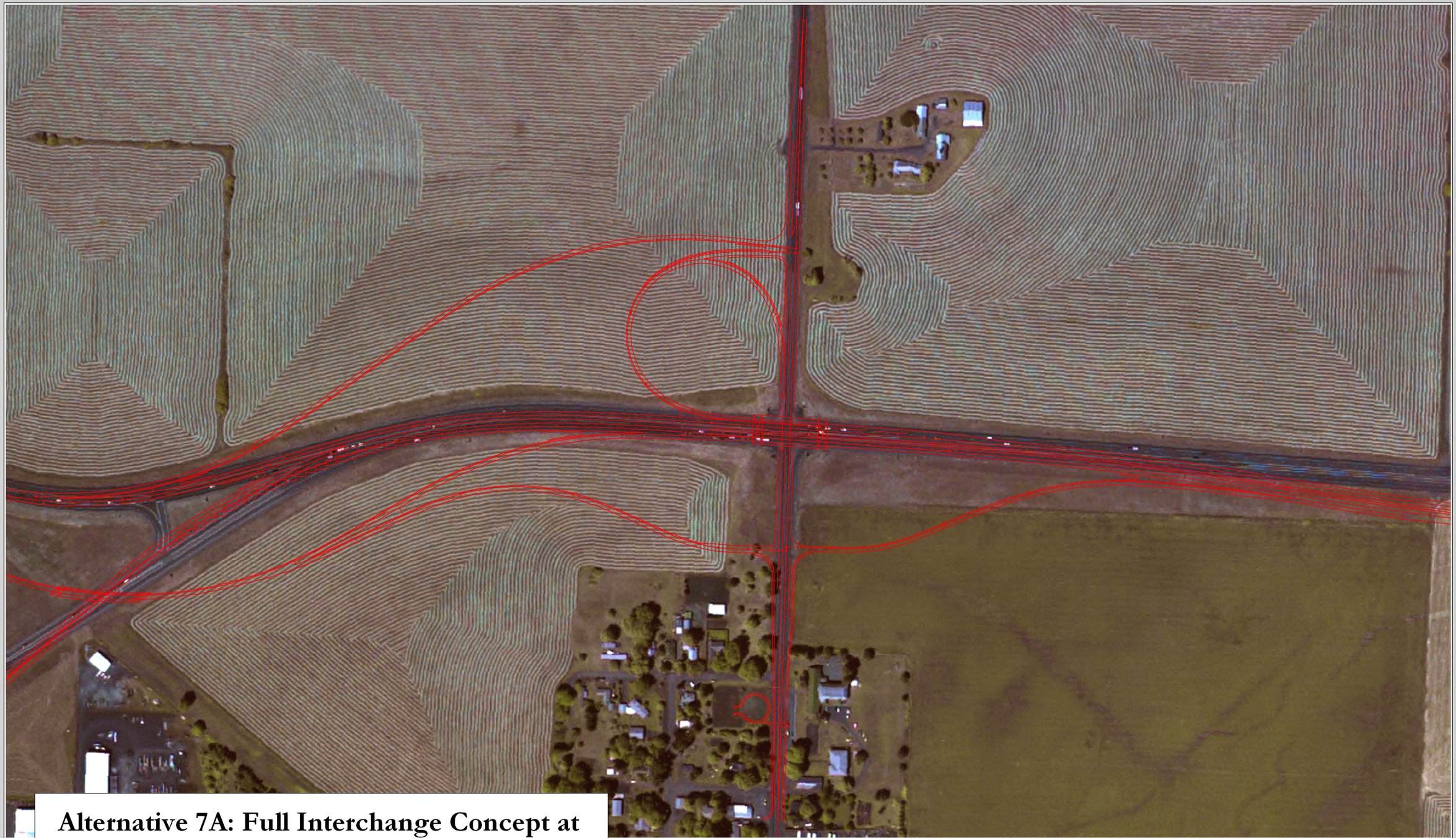
This map is illustrative and is only to be used for planning purposes.



Alternative 6C: Grade-Separated Jug-Handle Intersection at Ore 22/Ore 99W Intersection with Grade-Separation at the Ore 22/Dallas-Rickreall Highway Intersection

Figure 4

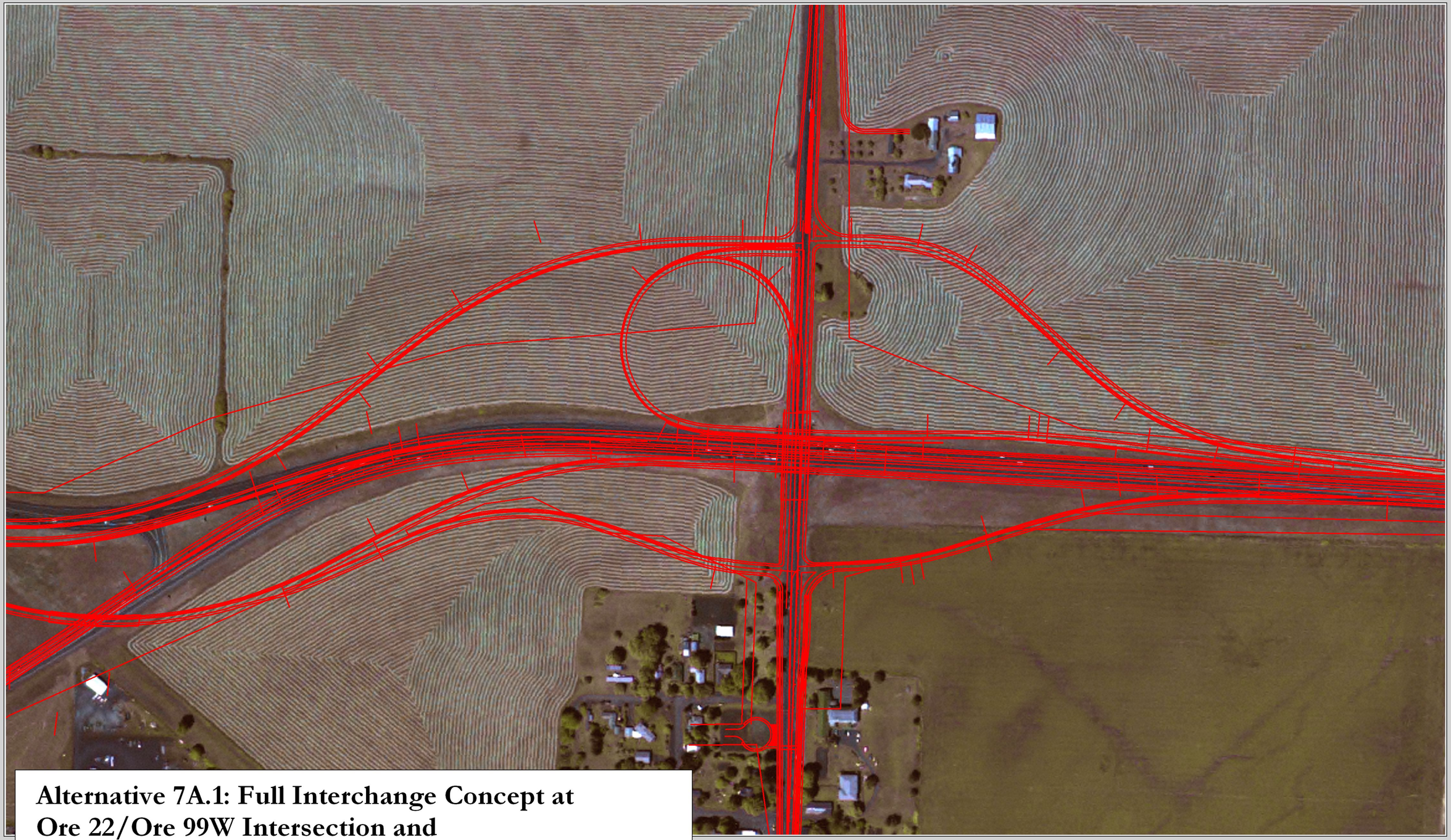
This map is illustrative and is only to be used for planning purposes.



Alternative 7A: Full Interchange Concept at Ore 22/Ore 99W Intersection and Ore22/Dallas-Rickreall Highway Intersection

Figure 5

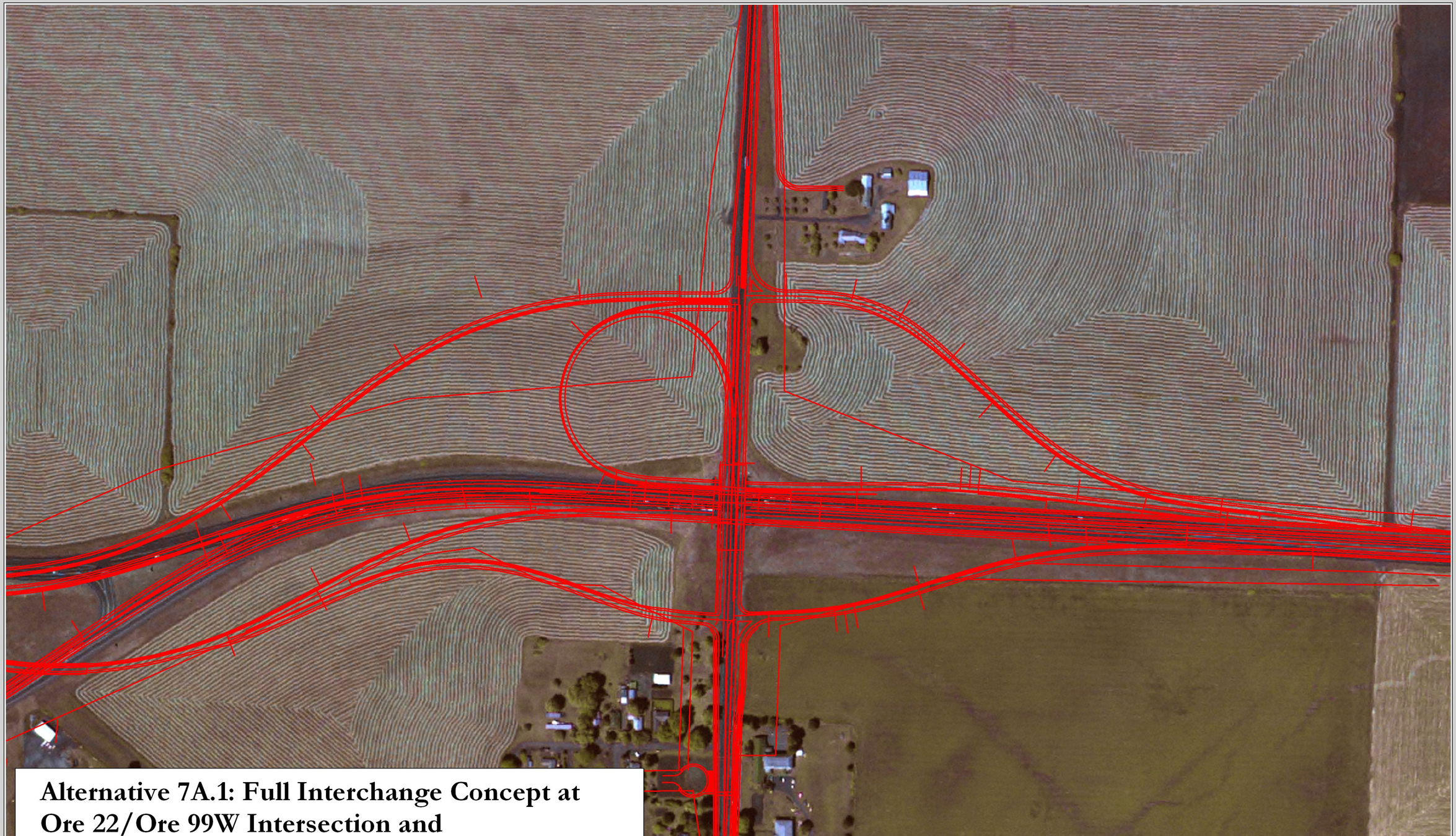
This map is illustrative and is only to be used for planning purposes.



Alternative 7A.1: Full Interchange Concept at Ore 22/Ore 99W Intersection and Ore 22/Dallas-Rickreall Highway Intersection with Ore 22 elevated over Ore 99W

Figure 6

This map is illustrative and is only to be used for planning purposes.



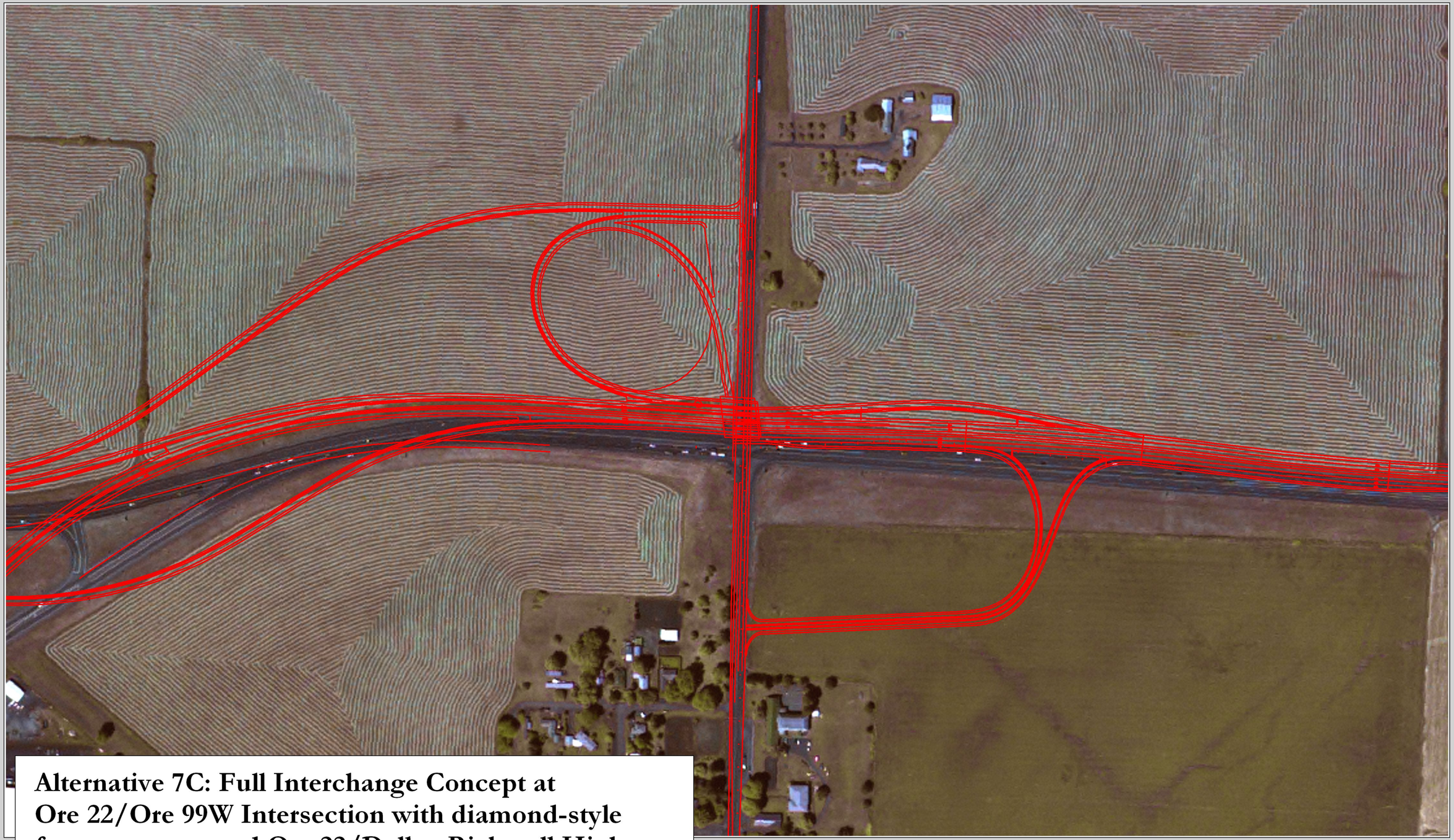
Alternative 7A.1: Full Interchange Concept at Ore 22/Ore 99W Intersection and Ore22/Dallas-Rickreall Highway Intersection with Ore 99W elevated over Ore 22

Figure 7

This map is illustrative and is only to be used for planning purposes.

Alternative 7A: Full Interchange Concept at Ore 22/Ore 99W Intersection and Ore22/Dallas-Rickreall Highway Intersection

This map is illustrative and is only to be used for planning purposes.



Alternative 7C: Full Interchange Concept at Ore 22/Ore 99W Intersection with diamond-style freeway ramps and Ore 22/Dallas-Rickreall Highway Intersection with Ore 22 elevated over Ore 99W

Figure 8

This map is illustrative and is only to be used for planning purposes.

Alternative 7C: Full Interchange Concept at Ore 22/Ore 99W Intersection with diamond-style freeway ramps and Ore 22/Dallas-Rickreall Highway Intersection with Ore 99W elevated over Ore 22

Figure 9

This map is illustrative and is only to be used for planning purposes.

Alternative B: 3-Lane Section Ore 99W in Rickreall

This map is illustrative and is only to be used for planning purposes.

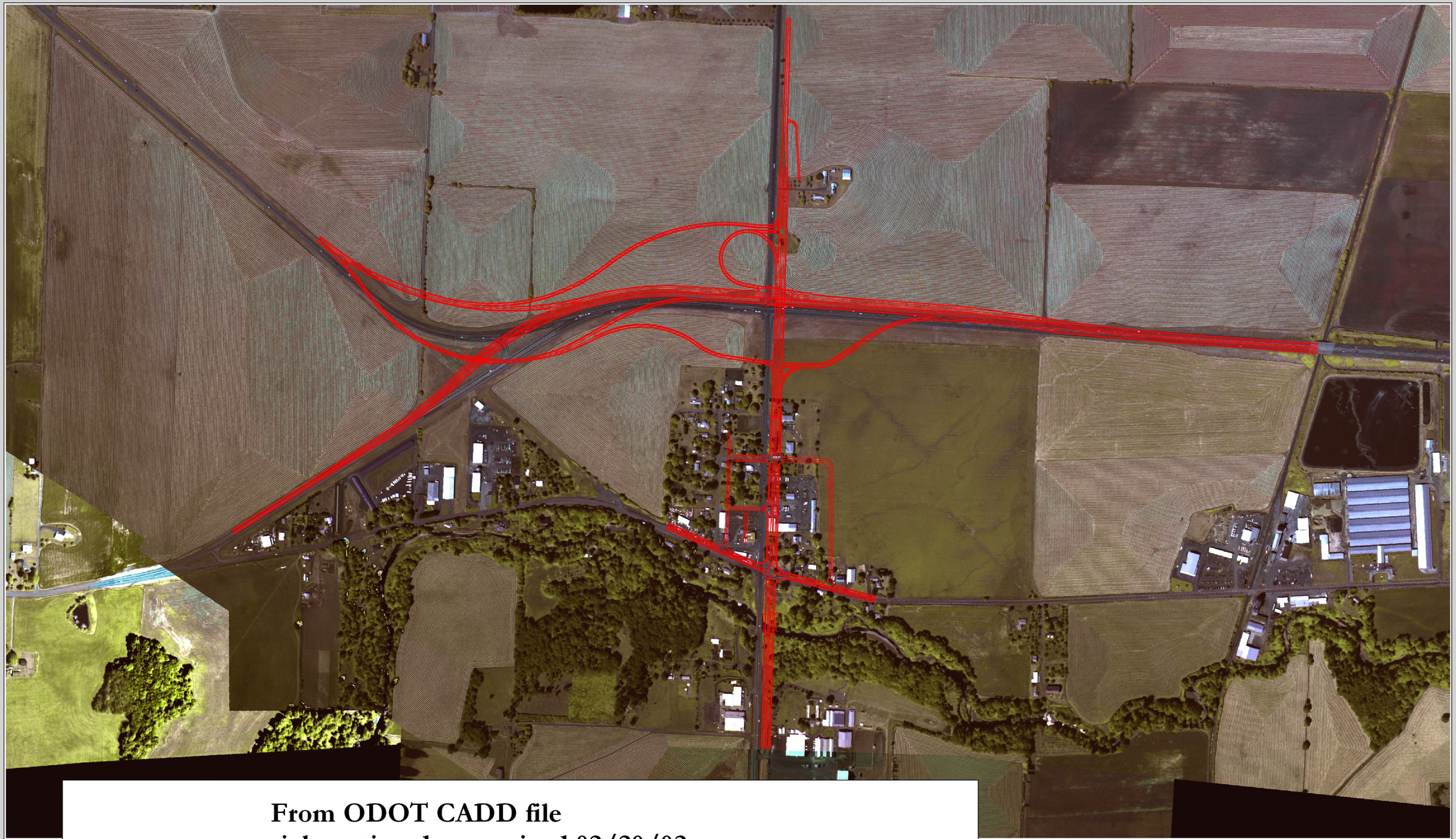
Alternative C: 4-Lane Section Ore 99W in Rickreall

This map is illustrative and is only to be used for planning purposes.

Alternative D: 4-Lane Section Plus Median Ore 99W in Rickreall

Rickreall

This map is illustrative and is only to be used for planning purposes.



From ODOT CADD file rick_option.dgn received 02/20/02.

02/21/02

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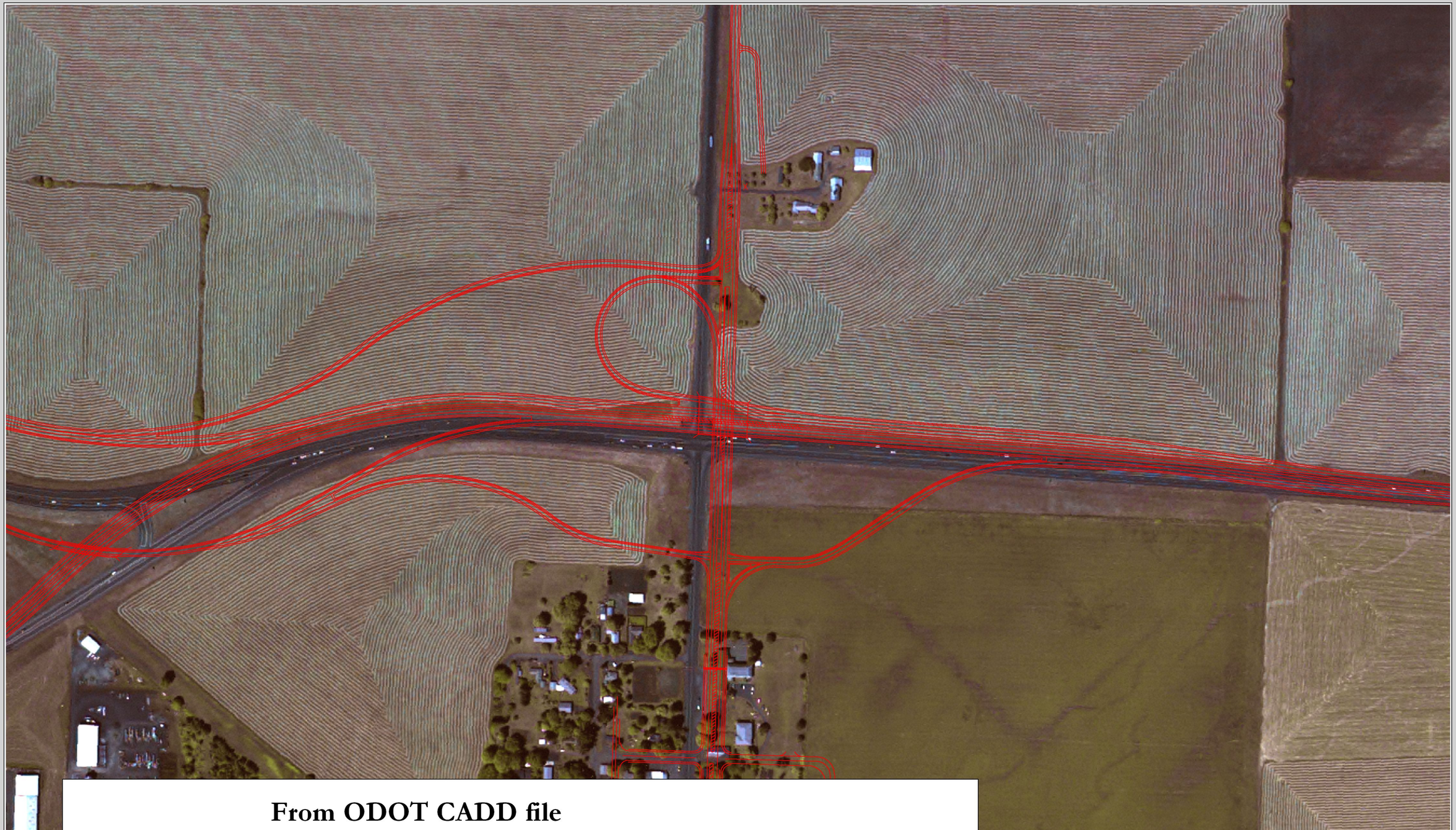
Level 7 Hwy 22 Struct.
NW Loop, w/4 lanes on 99w

Rickreall

This map is illustrative and is only to be used for planning purposes.



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02/21/02

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Level 7 Hwy 22 Struct.
NW Loop, w/4 lanes on 99w