Corridor Refinement Plan for the I-84 Frontage Road

(Old US Highway 30)

Rufus, Oregon

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Prepared for:
Oregon Transportation and Growth Management Program

Prepared by:
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The contents of this document do not necessarily reflect the views or policies of the State of Oregon.
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EXECUTIVE SUMMARY

The purpose of the Rufus Corridor Refinement Plan is to identify and recommend mitigation treatments to ensure safe and efficient traffic operations in the near- and long-term time periods. A major element of this plan is to develop a downtown streetscape concept that improves the aesthetics within the right-of-way, while balancing the transportation needs of the adjacent property owners, transportation users, the local transportation system, and the state highway system.

The Plan was developed through a series of technical analyses combined with input and review by the Project Advisory Committee (PAC), the Rufus City Council, the Oregon Department of Transportation (ODOT), the Oregon Downtown Development Association (ODDA), and the public. The PAC consisted of staff, elected and appointed officials, residents, and business people from the city. Key elements of the process included:

- Involving the City of Rufus community;
- Defining goals and objectives;
- Reviewing existing plans and transportation conditions;
- Developing travel forecasts; and
- Developing and evaluating potential transportation system improvements.

One objective of the Plan is to identify opportunities and constraints for transportation, economic, and aesthetic improvements to the I-84 Frontage Road through Rufus and develop two alternative access management/design plans for the corridor that will:

- Identify enhancements to the I-84 Frontage Road in keeping with its function as “Main Street” for Rufus;
- Accommodate convenient pedestrian and bicycle circulation;
- Establish standards for accessways that are consistent with the operational needs of the facility and adjacent land uses;
- Provide for more efficient use of urban land; and
- Discourage inappropriate traffic speeds.

The preferred streetscape alternative consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. Sidewalks will be separated from the roadway by a raised 1-foot wide curb. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks, which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will also include curb bulbs at intersections, which will extend 4 feet into the roadway on both sides of the road. The curb bulbs will help calm traffic by shortening the pedestrian crossing distance by a total of 8 feet and by visually reducing the width of the roadway, which has a tendency to slow traffic. The raised curbs in this alternative will be very effective at controlling access to the I-84 Frontage Road.
INTRODUCTION

PROJECT DESCRIPTION

The purpose of the Rufus Corridor Refinement Plan is to identify and recommend mitigation treatments to ensure safe and efficient traffic operations in the near- and long-term time periods. A major element of this plan is to develop a downtown streetscape concept that improves the aesthetics within the right-of-way, while balancing the transportation needs of the adjacent property owners, transportation users, the local transportation system, and the state highway system.

BACKGROUND

The City of Rufus is located in northern Sherman County, adjacent to the Columbia River and I-84. It is twenty miles north of Moro, the county seat, twenty-five miles east of The Dalles, and two miles downstream from the John Day Dam. At an elevation of 200 feet, Rufus sits in the Columbia Basin at the base of what becomes a high plateau. A vicinity map identifying the urban growth boundary, city limits, and zoning districts is shown in Figure 1.

Rufus is a low-density tourist and agricultural service center on the perimeter of an area of expansive wheat farms. It is positioned between two rivers classified under Oregon’s Scenic Rivers System, the Deschutes and the John Day. Because of the natural setting of the city and proximity to fine trout fishing was well as the rural atmosphere, people from more urban areas are now attracted to the city for retirement and recreational homesites. Its location on a well-traveled highway connecting with the Sam Hill Bridge gives Rufus potential as a residential location for workers in Klickitat County in Washington.

Because of recent development in Biggs Junction, approximately 6 miles to the west, there has been an increase in traffic on Old US 30 through Rufus. Biggs Junction is a major transportation hub for the region, in particular the movement of freight by truck. The I-84 interchange at Rufus is a convenient “back door” for trucks entering and leaving truck service facilities at Biggs Junction. As a result of this situation, the Lower John Day Community Solution Team, in partnership with local elected officials, identified the need to prepare a corridor refinement plan for Old US 30 through Rufus.

PROBLEM STATEMENT

The City of Rufus has seen a steady increase in the volume of traffic on Old US Highway 30. An increasing proportion of that traffic has been large trucks hauling intra- and interstate cargo. The 1999 Oregon Highway Plan designated I-84 and US Highway 97 (located 5 miles to the west) as Statewide Freight Routes. Coupled with recent developments at Biggs Junction and associated congestion at the US 97/I-84 Interchange, more and more truck traffic has been using the Rufus Interchange and Old US 30 to access Biggs Junction and US 97. This situation has precipitated conflicts between traffic on US Highway 30 and adjacent land uses. With increased traffic volumes and speeds, the following have become major concerns of the community:

- Speed of traffic on Old US 30;
- Conflicts between local business access and traffic on the highway;
- Existing design of the highway facility;
- Pedestrian and bicycle circulation within and across the corridor; and
- Protection of the unique character of the City.
GENERAL DESCRIPTION OF THE STUDY AREA

The study area consists of a 1000-foot corridor, 100 feet wide on both sides of the right-of-way, along the I-84 Frontage Road (Old US Highway 30), from Wallace Street to Murray Street. The study area, including the tax assessor’s parcels, existing land uses, and existing accesses is shown in Figure 2 and in Table A-1 in Appendix A.

GOALS AND OBJECTIVES

Overall Goal:

The overall goal of the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) is to identify and recommend mitigation treatments to ensure safe and efficient traffic operations on the I-84 Frontage Road (Old US Highway 30) in the near- and long-term time periods.

Objectives:

- Conduct a public involvement program to develop a list of goals and objectives for the project.
- Evaluate existing and future conditions on the I-84 Frontage Road (Old US Highway 30) through Rufus by examining existing street and lot configurations, existing permitted accesses, and applying the mobility standards and access management standards in the adopted 1999 Oregon Highway Plan.
- Complete an opportunities and constraints analysis that includes two alternative plans for access management, roadway cross sections, and local circulation, specifically to address any deficiencies identified in the evaluation existing and future conditions.
- Develop a downtown streetscape concept that improves the aesthetics within the right-of-way, while balancing the transportation needs of the adjacent property owners, transportation users, the local transportation system and the state highway system.
- Prepare a draft and final Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) that includes a detailed list of needed improvements to arterials, collectors, and local streets that will identify improvements that support local land uses, reduce conflicts between local and through traffic, and improve conditions for pedestrians and bicycles.
- Adopt a detailed list of transportation improvements needed to support planned land uses.
- Develop an access management plan for the I-84 Frontage Road (Old US Highway 30).
- Prepare and adopt amendments to the final draft of the Sherman County Transportation System Plan, local Comprehensive Plan, and Zoning and Subdivision Ordinances that implement the recommendations of this project.

PUBLIC INVOLVEMENT

Public involvement is an integral component in the development of any planning document. There were two levels at which the public was able to participate in this plan’s development. The first was through appointment of a Project Advisory Committee. The second level at which the public participated was during an open house before the City Council.
A Project Advisory Committee (PAC) provided guidance on technical issues to the consultant. Staff members from the local jurisdiction and ODOT served on this committee. The PAC consisted of 20 members of the community and represented a wide variety of interests. This group met four times during the course of the project.

Another part of the public involvement effort consisted of a public open house before the City Council. The public open house was conducted on May 7, 2003. The general public was invited to learn about the planning process and provide input on transportation issues and concerns. The public was notified of the meeting through press releases in the local newspapers and on the local radio stations. 

**Appendix B** contains the meeting summaries from the four PAC meetings and the public open house.
EXISTING CONDITIONS AND TRAFFIC ANALYSIS

INTRODUCTION

This chapter constitutes the summary of existing conditions and transportation system inventory for the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30/First Street) in Rufus, Oregon. The inventory covered the street system, as well as the pedestrian and bicycle system, and adjacent land uses as they apply to this study. As part of the planning process, the current and future operating conditions for the transportation system were evaluated.

REVIEW OF EXISTING PLANS, POLICIES, AND ORDINANCES

To begin the planning process, the applicable transportation and land use plans, policies, and ordinances were reviewed as they relate to transportation facilities within the project area. Those included: the Rufus Comprehensive Land Use Plan, the Rufus Zoning Ordinance, the Rufus Subdivision Ordinance, the Sherman County Transportation System Plan, and the Oregon Highway Plan. The purpose of this effort was to understand the history of transportation planning in Rufus, including the street system improvements planned and implemented in the past, and how the city is currently managing its ongoing development. Existing plans and policies are described in Appendix C.

STREET INVENTORY

David Evans and Associates, Inc. (DEA) conducted an inventory of the existing transportation facilities in Rufus. The inventory (see Table A-2 in Appendix A) covered the street system as well as the pedestrian and bicycle systems. The following information was collected during the inventory conducted in March 2003:

- street jurisdiction and classification
- right-of-way and street width
- number of travel lanes
- surface type and pavement conditions
- speed limits
- number of permitted and actual accesses
- on-street and off-street parking
- bridges
- bikeways and sidewalks
- curb and gutter

General pavement conditions were evaluated based on field observations using a 1994 report provided by the ODOT Pavements Unit titled, Pavement Rating Workshop, Non-National Highway System. This report defines the characteristics that pavements must display to be categorized as Very Good, Good, Fair, Poor, and Very Poor. The report also provides color photographs of roadways that display these characteristics, which aids in field investigation and rating of pavement condition. Most roads within the UGB are paved and appear to be in Fair to Good condition. A complete listing of local street pavement conditions is provided in Table A-2 as well as shown on Figure 3. Schematic drawings of the intersection geometries along the I-84 Frontage Road are shown in Figure 4.
FIGURE 4
INTERSECTION GEOMETRY ALONG I-84 FRONTAGE ROAD (OLD US HIGHWAY 30)
Rufus’s roadway system has developed around the I-84 Frontage Road with most roads either feeding or traveling parallel to it. This road is clearly the spine of the roadway system in Rufus, serving as the main street in the city. The road is paved and is in fair condition. The road is 24 feet wide and has no bike lanes, shoulders, or sidewalks. Bicyclists and pedestrians must share the travel lanes with motor vehicles. There is no on-street parking on this road; however, nearly every lot abutting the road has some off-street parking. The posted speed on this road is 35 mph.

The widths of the local streets in the study area range from 24 to 66 feet with most streets measuring 36 feet. Pavement conditions are generally good. None of the local streets in the study area have bike lanes, shoulders, or sidewalks. There is no on-street parking on these roads, with the exception of Fowler Street between First and Second Streets, which has parallel parking on the east side. There are no posted speeds on these roads; however, typical speeds are 25 mph.

**Roadway Classification**

The [1999 Oregon Highway Plan](#) (OHP) classifies the state highway system into five categories based on function: interstate, statewide, regional, district, and local interest roads. The OHP classifies Old US Highway 30 (First Street) as a local interest road. According to the OHP, Local Interest Roads function as local streets or arterials and serve little or no purpose for through traffic mobility. Some are frontage roads; some are not eligible for federal funding. Currently, these roads are District Highways or unclassified. The management objective is to provide for safe and efficient, low to moderate speed traffic flow and for pedestrians and bicycle movements. Inside Special Transportation Areas (STAs), local access is a priority. ODOT will seek opportunities to transfer these roads to local jurisdictions.

In Rufus, the I-84 Frontage Road acts as an arterial street and serves a combination of statewide, regional, and local traffic demands. Arterial streets form the primary roadway network within and through a region. They provide a continuous road system that distributes traffic between cities. Generally, arterial streets are high capacity roadways that carry high traffic volumes. The highway is a two-lane roadway with 0- to 4-foot gravel shoulders along both sides of the highway.

Collector roadways connect residential neighborhoods with the arterial system. Property access is generally a higher priority for the collector roads than arterials, and through traffic is served as a lower priority. Collector roadways are intended to carry local traffic, including limited through traffic. The only collector in the study area is Main Street (Scott Canyon Road).

Local roads have property access as their main priority and through traffic movement is not encouraged. The design of the local roads affects their operation, as well as the safety and livability of the area that the road serves. Local roads are designed to carry small volumes of traffic at relatively slow speeds. All roads not classified as arterials or collectors are classified as local roads. The local roads in the study area are Second Street, Wallace Street, Fowler Street, and Murray Street.

**PEDESTRIAN SYSTEM**

The most basic transportation option is walking. Walking is one of, if not the most popular forms of exercise in the United States and can be performed by people of all ages and all income levels. However, it is not often considered a means of travel. This is mainly because pedestrian facilities such as sidewalks, multi-use paths, and adequate roadway shoulders are generally an afterthought and not planned as an essential component of the transportation system. In times of limited funding, pedestrian improvement projects are often the first to be cut from capital improvement programs at all levels. The relatively small scale of the City of Rufus is conducive to pedestrian travel. Although the city scale supports walking, pedestrian facilities are generally lacking. None of the streets in the study area have sidewalks or any other type of separated pedestrian facilities.
**BICYCLE SYSTEM**

Like pedestrians, bicyclists are often overlooked when considering transportation facilities. Bicycles take up little space on the road or parked, do not contribute to air or noise pollution, and offer relatively higher speeds than walking. In a typical city, a short trip that would be taken by bicycle is around two miles. Judging from the size of Rufus, many bicycle trip lengths would be much shorter. None of the streets in the study area have bike lanes, paved shoulders, or any other type of separated bicycle facilities.

The **1995 Oregon Bicycle and Pedestrian Plan** recommends shoulder bikeways along arterials (state highways) be paved to a minimum width of four feet. Four- to eight-foot shoulders typically allow bicyclists to ride far enough from the edge of pavement to avoid debris and avoid conflict with passing vehicles. However, the Plan goes on to say that shoulder design practices outlined in the ODOT **Highway Design Manual** specifying shoulder widths as narrow as 2 feet along low volume rural collector and local roadways are adequate to serve bicyclists. Roads that do not meet the standards outlined in the 1995 Oregon Bicycle and Pedestrian Plan do not serve as shoulder bikeways; rather they serve as shared roadway facilities with bicyclists and motor vehicles expected to safely share the roadway.

Based on the relatively low traffic volumes and speeds in Rufus, it is reasonable to expect bicyclists and motor vehicles to safely share the roadway. It is unlikely that lack of bike lanes reduces bicycle use in Rufus. However, bicycle amenities such as bike parking and storage facilities may have some impact.

**TRAFFIC VOLUMES AND CAPACITY ANALYSIS**

**Existing Traffic Volumes**

ODOT conducted 24-hour traffic counts for this study in December 2002 at the following three locations on the I-84 Frontage Road:

- West City Limits of Rufus
- Intersection of First Street and Main Street
- Intersection of First Street and I-84 Ramps

The December traffic counts had to be seasonally adjusted to arrive at an Average Daily Traffic (ADT) estimate for the year. ADT volumes represent the typical average volume of traffic in all lanes passing a given roadway location in both directions over a 24-hour period, and are measured in vehicles per day (vpd). The only locations along the state highways in Oregon where seasonal data is collected are at ODOT’s Automatic Traffic Recorders (ATRs). The nearest ATR stations to the City of Rufus are on I-84 one mile west of OR Highway 74 (ATR Station 11-008) and on I-84 6.3 miles west of The Dalles (ATR Station 33-001). Data in ODOT’s 2001 Transportation Volume Tables for the two ATR stations closest to Rufus indicate that December traffic volumes represent approximately 84 percent of ADT volumes; therefore, the December 2002 traffic counts were divided by 0.84 to seasonally adjust them to ADT volumes. The year 2002 ADT volumes in the study area are shown below:

- West City Limits of Rufus – 380 vpd
- West of Main Street – 740 vpd
- Between Main Street and the I-84 Ramps – 970 vpd

Evaluation of a roadway’s capacity and level of service is usually based on an analysis of peak hour volumes. The Design Hour Volume (DHV) is the peak hour volume that is used for design, and is measured in vehicles per hour (vph). For any roadway, it represents the 30th highest hourly traffic volume.
recorded along the roadway segment throughout the year. For example, if the total number of vehicles in both directions at a specific roadway location was counted for every hour throughout the year, and then the hourly volumes were ranked from highest to lowest, the 30th highest hourly volume of the year would represent the DHV. Past examples have shown that the 30th highest hourly volume as a percentage of the Average Daily Traffic (ADT) fluctuates minimally each year, even in cases of significant ADT variations. Typical values for the 30th highest hourly volumes range from approximately 10 to 20 percent of the ADT. Data in ODOT’s 2001 Transportation Volume Tables for the two ATR stations closest to Rufus indicate that the DHV represents approximately 13.6 percent of ADT volumes; therefore, the year 2002 ADT volumes were multiplied by 0.136 to adjust them to DHVs. The year 2002 DHVs in the study area are shown below:

- West City Limits of Rufus – 50 vph
- West of Main Street – 100 vph
- Between Main Street and the I-84 Ramps – 130 vph

**Future Traffic Volumes**

The traffic volume forecasts for the I-84 Frontage Road are based on historic growth on the state highway system. The forecasts are based on a Level I –Trending Forecast analysis methodology based on available existing and historic traffic data. This methodology assumes that traffic demand on the state highways will grow over the 20-year planning period according to the 20-year historic traffic growth rate. According to the Sherman County Transportation System Plan, the historic growth rate on I-84 in Sherman County has ranged between 2.8 and 3.1 percent per year. For this study, an average annual growth rate of 3.0 percent per year was used to forecast traffic volumes for the year 2023 planning horizon. The year 2023 ADT volumes in the study area are shown below:

- West City Limits of Rufus – 710 vpd
- West of Main Street – 1,380 vpd
- Between Main Street and the I-84 Ramps – 1,810 vpd

The year 2023 DHVs in the study area are shown below:

- West City Limits of Rufus – 100 vph
- West of Main Street – 190 vph
- Between Main Street and the I-84 Ramps – 250 vph

**ODOT Highway Mobility Standards**

ODOT has established several policies in the 1999 Oregon Highway Plan (OHP) that enforce general objectives and approaches for maintaining highway mobility. Of these policies, the Highway Mobility Standards (Policy 1F) establish maximum volume-to-capacity (V/C) ratio standards for peak hour operating conditions for all highways in Oregon. The V/C ratio represents the ratio of measured traffic demand (volume) on a highway section divided by the maximum volume that the highway section can process under prevailing roadway and traffic conditions (capacity).

The V/C standards apply to the state highway in Rufus and the OHP policy specifies that the V/C standards be maintained for ODOT facilities through a 20-year horizon. The OHP Highway Mobility Standards that apply to the I-84 Frontage Road in Rufus are as follows:

- Where the posted speed is greater than or equal to 45 mph, the V/C ratio shall not exceed 0.80.

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1 ODOT Transportation System Planning Guidelines, May 2001, p. 29.
Capacity and Level-of-Service Criteria

Although the OHP Highway Mobility Standards are the overriding operations standard for Oregon highways, Level-of-Service (LOS) is a widely recognized and accepted measure and descriptor of traffic operations and is, therefore, also presented. Transportation engineers have established various standards for measuring traffic operations of roadways and intersections. Each standard is associated with a particular LOS and/or the V/C ratio. Both the LOS and V/C ratio concepts require consideration of factors that include traffic demand, capacity of the intersection or roadway, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort, convenience, and operating cost.

Six standards have been established to define LOS. They range from LOS “A” where traffic flow is relatively free flowing to LOS “F” where the highway or intersection is totally saturated with traffic and movement is very difficult. V/C ratios range from 0.0 to greater than 1.0. When the V/C ratio is near 0.0, traffic conditions are generally good with free flow travel conditions present on the roadway segments. As the V/C ratio approaches 1.0, traffic becomes more congested along roadways and “platoons” of traffic are formed, while at intersections traffic conditions become more unstable with longer delays. LOS may be applied to individual turning movements at an intersection as well as to the intersection as a whole.

Capacities along the I-84 Frontage Road in Rufus were evaluated in two different ways: two-lane highway operations and unsignalized intersection operations.

Two-lane Highway Operations

The operation of mainstream traffic along a two-lane highway is a function of the volume, type, speed, and directional distribution of traffic, as well as roadway features such as the percentage of no-passing zones, general terrain, and lane and shoulder widths. On two-lane rural highways with level terrain, sufficient passing zones, wide lanes and shoulders and speeds of 55 mph, the theoretical capacity of the road is 1,800 vehicles per hour per lane (vphpl). The theoretical capacity drops off quickly with the introduction of no-passing zones or on rolling or mountainous terrain. Inside the city limits of Rufus, the I-84 Frontage Road has a posted speed of 35 mph, which further reduces its capacity. The estimated two-way capacity of the I-84 Frontage Road through Rufus is 2,000 vph.

Using the estimated capacity of 2,000 vph, the volume-to-capacity (V/C) ratios for the I-84 Frontage Road in the year 2002 are shown below:

- West City Limits of Rufus – V/C = 0.03
- West of Main Street – V/C = 0.05
- Between Main Street and the I-84 Ramps – V/C = 0.07

Therefore, the I-84 Frontage Road in Rufus operates well within ODOT’s mobility standards outlined in the OHP.

The V/C ratios for the I-84 Frontage Road in the year 2023 are shown below:

- West City Limits of Rufus – V/C = 0.05
- West of Main Street – V/C = 0.10
- Between Main Street and the I-84 Ramps – V/C = 0.13

Again, the I-84 Frontage Road in Rufus is expected to operate well within ODOT’s mobility standards in the 20-year planning horizon.
Intersection Operations

The analysis of the operational characteristics such as V/C, LOS, and delay was determined at the intersections in the study area in accordance with the procedures in the 2000 Highway Capacity Manual, Transportation Research Board Special Report 209, 2000. The Highway Capacity Software (HCS) was used for calculating V/C, LOS, and delay. In HCS, LOS for unsignalized intersections is defined by the amount of delay, measured in seconds. A quantitative definition of LOS for unsignalized intersections is presented in Table 1. Level of Service D is generally considered to represent the minimum acceptable design standard.

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Delay Range (seconds/vehicle)</th>
<th>Expected Delay to Minor Street Traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&lt;= 10</td>
<td>Little or no delay</td>
</tr>
<tr>
<td>B</td>
<td>&gt; 10 &lt;= 15</td>
<td>Short traffic delays</td>
</tr>
<tr>
<td>C</td>
<td>&gt; 15 &lt;= 25</td>
<td>Average traffic delays</td>
</tr>
<tr>
<td>D</td>
<td>&gt; 25 &lt;= 35</td>
<td>Long traffic delays</td>
</tr>
<tr>
<td>E</td>
<td>&gt; 35 &lt;= 50</td>
<td>Very long traffic delays</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 50</td>
<td>Extreme traffic delays</td>
</tr>
</tbody>
</table>

Traffic operations at select intersections within Rufus were evaluated using procedures outlined in the 2000 Highway Capacity Manual for unsignalized intersections. The highest volume intersection locations in the city were selected to provide a worst case analysis. The two highest volume intersections in the city (and the intersections for which traffic counts were conducted) are:

- First Street (I-84 Frontage Road) and Main Street
- First Street (I-84 Frontage Road) and I-84 Ramps

At both of these intersections, minor street approaches to First Street are controlled by STOP signs. Traffic on First Street does not stop at these intersections, except for left-turning vehicles, which must yield to oncoming traffic. The critical approach at the intersection of Main Street is the northbound approach and the critical approach at the intersection of the I-84 ramps is the southbound approach. The results of the unsignalized intersection analysis are shown in Table 2. The intersection of First Street and Main Street will operate at a V/C ratio of 0.04 in the year 2003 and at a V/C ratio of 0.08 in the year 2023, and will meet ODOT’s mobility standard of a V/C ratio of 0.85 or less. The intersection of First Street and the I-84 ramps will operate at a V/C ratio of 0.11 in the year 2003 and at a V/C ratio of 0.21 in the year 2023, and will meet ODOT’s mobility standard of a V/C ratio of 0.85 or less. Detailed operations analysis worksheets are located in Appendix D.
Access Management

Access management along a roadway corridor incorporates planning, design, and implementation of land use and transportation policies and strategies that control the flow of traffic between the roadway and the surrounding land. Access management policies and strategies apply to driveways and other roadways and are designed to achieve a balance between the need to provide safe and efficient travel with the ability to access individual destinations. Implementation of appropriate roadway access management measures can provide substantial benefits to a community, including:

- Protecting the functional operation of a roadway, thus delaying or preventing costly roadway improvements;
- Improving safety conditions along roadways for all users, including pedestrians and bicyclists;
- Facilitating a more constant traffic flow, thus reducing congestion, delays, overall vehicle miles of travel (VMT), fuel consumption and air pollution; and
- Promoting more desirable compact land development patterns.

Access management is an important tool for promoting safe and efficient travel for both local and long distance users along a roadway. Research has clearly shown a direct correlation between the number of access points and collision rates. Typically, as the number of access points increases, so do collision rates. Experience throughout the United States has also shown that a well-managed access plan for a street system can minimize local cost for transportation improvements needed to provide additional capacity and/or access improvements along unmanaged roadways. Therefore, it is essential that all levels of government maintain the efficiency of existing roadways through better access management. One objective of this study is to develop an access management plan that maintains and enhances the integrity (safety and capacity) of the I-84 Frontage Road in Rufus.

Access Management Techniques

Access management can be accomplished through a number of strategies and specific techniques that differ in large urban areas versus rural areas. Based on existing and forecast levels of traffic and development in Rufus, the most suitable access management strategy would appear to be management of the number of access points and their spacing. The following techniques describe how the number of access points to a road can be restricted or reduced.

- Restrictions on spacing between access points (driveways) and public/private roads based on the type of development and the speed along the road;
- Sharing of access points between adjacent properties;
- Providing driveway access via collector or local roadways where possible;
- Constructing frontage roads to separate local traffic from through-traffic;
Offsetting driveways at proper distances to produce T-intersections that minimize the number of conflict points between traffic using the driveways and through traffic; Installing median barriers to control conflicts associated with left-turn movements (in or out of driveway or roadway); and Installing barriers to the property along the arterial to restrict access width to a minimum.

**Access Management Requirements for State Highways**

Statewide Planning Goal 12 serves as the State’s general transportation policy and the Transportation Planning Rule (TPR) guides state, regional and local implementation of Goal 12. The TPR requires ODOT and local governments to prepare Transportation System Plans (TSPs) that identify facility and service improvements adequate to meet identified needs over a 20-year planning period. All local TSPs must be consistent with the state TSP and associated modal and facility plans.

The Oregon Transportation Plan (OTP) is the State’s TSP and the 1999 Oregon Highway Plan (OHP) is the highway-specific modal element of the OTP. The OHP describes goals, policies, and strategies designed to meet the transportation goals outlined in the state’s TSP. The TPR also requires that local TSPs consider new connections to arterials and state highways that are consistent with designated access management categories (OAR 660-12-020(2)(b)). The current OHP, adopted by the Oregon Transportation Commission (OTC) in July 1999, contains an access management goal (Goal 3) and several policies that provide guidance for access management along various types of state highway segments.

**Access Management Standards for State Highways**

Access management along all state highways in Oregon is regulated by an administrative rule (OAR 734-051) specifically drafted to implement the access management policies adopted in the OHP. The OHP specifies an access management classification system for state facilities and establishes standards and guidelines to be applied when making access management assignments for highways based upon their classification.

The OHP maintains access management standards that vary for Interstate, Statewide, Regional, and District level highways. The standards vary further based on a number of other criteria including:

- Posted highway speed;
- Highway location in rural or urban areas;
- Whether adjacent accesses are streets only with no driveways between or where driveway-to-driveway or driveway-to-street accesses are being considered; and
- Urban areas where the highway passes through a designated Urban Business Area (UBA) or Special Transportation Area (STA).

As noted earlier, the I-84 Frontage Road in Rufus is classified as a District level highway. **Table 3** summarizes the ODOT access spacing standards for District level highways. The table clearly indicates that spacing increases as the posted speed increases. Spacing also increases within rural areas where the need for access generally decreases and where the public expects to encounter fewer accesses. These standards apply to both streets and driveway approaches and are measured from the center of one access to the center of the next access on the same side of the road.
Table 3
Access Management Spacing Standards for District Highways

<table>
<thead>
<tr>
<th>Posted Speed (mph)</th>
<th>Rural Spacing Standard (feet)</th>
<th>Urban Spacing Standard (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;55</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>50</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td>40 &amp; 45</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>30 &amp; 35</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>&lt;25</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>

Source: 1999 Oregon Highway Plan, Table 15.

Notes:

1. Where a right of access exists, access will be allowed to a property at less than the designated spacing standard only if that property does not have reasonable access and the designated spacing cannot be accomplished. If possible, other options would be considered such as joint access.

   Where the right of access exists, the number of approach roads (driveways) to a single property shall be limited to one, even when the property frontage exceeds the spacing standards. More than one approach road may be considered if, in the judgement of the Region Access Management Engineer, additional approach roads are necessary to accommodate and service the traffic to a property, and additional approach roads will not interfere with driver expectancy and the safety of the through traffic on the highway.

   Approach roads shall be located where they do not create undue interference or hazard to the free movement of normal highway or pedestrian traffic. Locations on sharp curves, steep grades, areas of restricted sight distance or at points which interfere with the placement and proper functioning of traffic control signs, signals, lighting or other devices that affect traffic operation will not be permitted.

   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.)

2. These standards are for unsignalized access points only. Signal spacing standards supersede spacing standards for approaches.

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

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

Existing Accesses

The section of the I-84 Frontage Road through Rufus where the posted speed is 35 mph requires minimum access spacing of 400 feet between two adjacent streets with no driveways in between. For the most part, the downtown core area of Rufus along the I-84 Frontage Road does not meet this access spacing standard. Not only does the street grid not meet this standard, but most of the lots abutting the highway have full width driveway cuts, which do not meet current standards. In addition, a search of ODOT approach road permit records indicated that none of the existing accesses on the highway in Rufus are permitted.
ENVIRONMENTAL CONSTRAINTS

The only environmental constraints in the study area are two creeks that require bridges on the I-84 Frontage Road. Bridge Number 01833 crosses Gerking Canyon Creek between Fowler Street and Murray Street. This bridge has a sufficiency rating of 67, which means the bridge is not structurally deficient; however, the narrow travel lane width (24 feet curb-to-curb) and narrow sidewalks (3 ½ feet) make this bridge functionally obsolete.

Bridge Number 01839 crosses Scott Canyon Creek between Murray Street and the I-84 ramps. This bridge has a sufficiency rating of 50, which means the bridge is structurally deficient. This bridge also has narrow travel lanes and narrow sidewalks; however, the span is too short (18 feet) to be considered functionally obsolete.
ALTERNATIVE ACCESS MANAGEMENT PLANS

INTRODUCTION

One objective of the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) is to identify opportunities and constraints for transportation, economic, and aesthetic improvements to the I-84 Frontage Road through Rufus and develop two alternative access management/design plans for the corridor that will:

- Identify enhancements to the I-84 Frontage Road in keeping with its function as “Main Street” for Rufus;
- Accommodate convenient pedestrian and bicycle circulation;
- Establish standards for accessways that are consistent with the operational needs of the facility and adjacent land uses;
- Provide for more efficient use of urban land; and
- Discourage inappropriate traffic speeds.

Roadway standards relate the cross sectional design of a roadway to its function. The function is determined by operational characteristics such as adjacent land use, traffic volume, operating speed, safety, and capacity. Roadway standards are necessary to provide a community with roadways that are relatively safe, aesthetic, and easy to administer when new roadways are planned or constructed.

Rufus’s roadway system has developed around the I-84 Frontage Road with most roads either feeding or traveling parallel to it. This road is clearly the spine of the roadway system in Rufus, serving as the main street in the city. The road is paved and is in fair condition. The road is 24 feet wide and has no bikelanes, shoulders, or sidewalks. Bicyclists and pedestrians must share the travel lanes with motor vehicles. There is no on-street parking on this road; however, nearly every lot abutting the road has some off-street parking. The posted speed on this road is 35 mph. A roadway cross section for the existing roadway is shown in Figure 5.

The I-84 Frontage Road functions as an arterial in the City of Rufus. Arterials connect cities and other major traffic generators. They serve both through traffic and trips of moderate length, and access is usually controlled. Arterials are high-volume roadways due to the combination of local and through traffic. Depending on adjacent land uses, speeds range between 25 and 55 mph.

As part of this project, two streetscape alternatives will be developed. These alternatives will be based on David Evans and Associates’ (DEA’s) experience developing street standards for local jurisdictions in Central and Eastern Oregon, state and local policies, traffic conditions, and the needs and desires of the Rufus community. Three very preliminary street cross section alternatives were presented at Project Advisory Committee (PAC) Meeting #2 on April 23, 2003. The first alternative included 6-foot bike lanes in addition to the 12-foot travel lanes and 5-foot sidewalks separated from the roadway by 7-foot landscape strips. The second option also included 6-foot bike lanes in addition to the 12-foot travel lanes and 12-foot sidewalks adjacent to the roadway. The third option included 6-foot bike lanes in addition to the 12-foot travel lanes and 7-foot parallel parking strips and 5-foot sidewalks adjacent to the roadway. The three options were discussed and the PAC recommended refining these options to include two options that include on-street parking and sidewalks, but no bike lanes (bike lanes would be provided on Second Street instead). These two options are described in more detail in the following sections.
FIGURE 5
EXISTING ROADWAY CROSS SECTION
ALTERNATIVE 1

The cross section standard for Alternative 1 is shown in Figure 6. The cross section standard in Alternative 1 consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks separated from the roadway by a recessed 1-foot wide curb. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks (minimum recommended width for downtowns), which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will also include curb bulbs at intersections, which will extend 4 feet into the roadway on both sides of the road. The curb bulbs will help calm traffic by shortening the pedestrian crossing distance by a total of 8 feet and by visually reducing the width of the roadway, which has a tendency to slow traffic. The curb bulbs, which are not shown in the roadway cross section in Figure 6, are shown in the roadway plan view in Figure 8 and the roadway illustrative view in Figure 10. Due to the lack of raised curbs, Alternative 1 will not be as effective as Alternative 2 at controlling access.

Drainage will be handled by the recessed curbs that will convey storm water along the pavement edge to the curb bulbs. At the bulbs, the storm water will discharge from the recessed curbs into shallow retention areas adjacent to the sidewalks where it will percolate into the soil. The retention areas can be covered with drain rock or other landscaping material as long as it does not interfere with percolation. Street longitudinal grades will need to provide smooth flow along the recessed curbs to ensure that the storm water is conveyed to the bulbs, i.e. there can be no intermediate low points.

ALTERNATIVE 2

The cross section standard for Alternative 2 is shown in Figure 7. Similar to Alternative 1, the cross section standard in Alternative 2 consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. The only difference from Alternative 1 is that the sidewalks will be separated from the roadway by a raised 1-foot wide curb. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks (minimum recommended width for downtown), which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will also include curb bulbs at intersections, which will extend 4 feet into the roadway on both sides of the road. The curb bulbs will help calm traffic by shortening the pedestrian crossing distance by a total of 8 feet and by visually reducing the width of the roadway, which has a tendency to slow traffic. The curb bulbs, which are not shown in the roadway cross section in Figure 7, are shown in the roadway plan view in Figure 9 and the roadway illustrative view in Figure 11.
FIGURE 6
ROADWAY CROSS SECTION
ALTERNATIVE I
FIGURE 7
ROADWAY CROSS SECTION
ALTERNATIVE 2
The raised curbs in Alternative 2 will be very effective at controlling access to the I-84 Frontage Road. In Alternative 2, each property that abuts the I-84 Frontage Road will be allowed one 30-foot wide driveway apron (or curb cut) on the I-84 Frontage Road, unless that property also abuts a city street. In that case, the property will be required to take access off of the “lower order” street (e.g., a local or collector street as opposed to an arterial) and direct access to the I-84 Frontage Road will not be provided. The purpose of this access restriction is to bring the I-84 Frontage Road into closer compliance with the Access Management Spacing Standards for District Highways, as defined in the 1999 Adopted Oregon Highway Plan. The access management spacing standard for District Highways with posted speeds of 35 mph is 400 feet. In Rufus, even the existing street grid, with block lengths of approximately 325 feet, does not meet the spacing standard. In this case, the minimum access spacing standard should be the existing city block spacing and mid-block driveways should be limited to properties that can not take access off of an adjacent city street.

The exceptions to this standard will be Bob’s Texas T-Bone and Frosty’s Lounge and the Baunach properties north of the I-84 Frontage Road, which will be allowed two accesses on the I-84 Frontage Road to allow adequate on-site circulation, and Rufus General Store and Hi Way Market and Deli, which will be allowed one access each on the I-84 Frontage Road, even though those properties can take access off of an adjacent lower order street.

Drainage will be handled by the curbs directing storm water along the toe of the curbs to catch basins that are connected to dry-wells. Typically catch basins are located in low points along each curb line, on opposite sides of the street and connected with a buried cross pipe. The cross pipe is then extended behind the curb (or to a nearby location) and connected to a dry-well. Each dry-well is a perforated manhole structure that allows storm water to percolate into the ground. To comply with current Oregon Department of Environmental Quality (DEQ) standards, the catch basins must be filtered to prevent contamination of groundwater. Catch basin filters typically consist of filter cloth and absorbent materials to capture pollutants such as silt, trash, grease, and oils. The filters must be replaced periodically (approximately once per year in dry climates). Each catch basin and drywell must also be registered with the DEQ.

PREFERRED ALTERNATIVE

At PAC Meeting #3 on May 7, 2003, it was decided that Alternative 2 (with the raised curbs) is the preferred alternative.

The driveway locations shown in Figures 8 and 9 are for illustrative purposes only, and generally indicate whether a parcel will have one, two, or no accesses on the I-84 Frontage Road. Exact driveway locations will be determined when the area is surveyed and construction drawings are prepared, assuming that this plan is implemented.

The software program AutoTURN was used to determine whether the proposed 30-foot wide driveway aprons are wide enough for the vehicles that will be using them. AutoTURN is a CAD-based program that simulates low speed turning maneuvers for highway vehicles. AutoTURN is used to determine vehicle tire tracking and swept paths. Sample program results have been verified against, and show good comparison with field measurements, turning templates and other methods of analysis. For this exercise, the chosen design vehicle was the WB-67 Interstate Semi-trailer. Design vehicles are selected motor vehicles with the weight, dimensions, and operating characteristics used to establish highway design controls for accommodating those vehicles. As shown in Figure 12, the proposed 30-foot wide driveway aprons are wide enough for an Interstate Semi-trailer to make a right turn in and right turn out of a parcel adjacent to the I-84 Frontage Road. As shown in Figure 13, the proposed 30-foot wide driveway aprons are not wide enough for an Interstate Semi-trailer to make a left turn in and left turn out of a parcel.
adjacent to the I-84 Frontage Road. Where these turns are expected, driveways will have to be wider (approximately 45 feet).
CONSTRUCTION STANDARDS

Unlike the roadway design standards presented in Figures 6 and 7, which illustrate the cross-section design of future improvements to the I-84 Frontage Road, construction standards address the material type and depth of the various roadway layers (e.g., pavement surface, base rock, etc.). Construction standards are sensitive to key design parameters such as heavy truck volumes, environmental conditions, and soil conditions. Construction standards may differ based on many variables including the types of materials used, the design truck volumes to be served, and the desired pavement design life. Because of greater traffic volumes, and specifically truck volumes, state highways (i.e., arterials) would be expected to have a thicker section than collectors, local streets, or alleys. Experience in other rural eastern Oregon communities indicates that past pavement performance has been well served by designing asphalt pavements with a minimum of 8 inches of base rock and 3 inches of asphalt concrete on state highways.

These minimum guidelines should be followed in future asphalt pavement designs unless the results of a pavement design warrant changes. Detailed pavement designs may follow procedures outlined in the 1993 AASHTO Guide for Design of Pavement Structures published by the American Association of State Highway Transportation Officials or the 1998 Asphalt Paving Design Guide published by the Asphalt Pavement Association of Oregon.

The construction details for Alternatives 1 and 2 are shown in Figures 14 and 15. Those section details were used to develop the cost estimates described in the following section and shown in Table 4.
FIGURE 14
SECTION DETAIL
ALTERNATIVE 1
FIGURE 15
SECTION DETAIL
ALTERNATIVE 2
COST ESTIMATES

Cost estimates were prepared for the roadway design and construction standards described in the preceding sections. These cost estimates are based on standard unit costs for similar projects conducted elsewhere. As shown in Table 4, the unit cost of construction for either Alternative 1 or 2 is $112.22 per linear foot.

Table 4
Unit Costs for Street Construction

<table>
<thead>
<tr>
<th>Description of Item</th>
<th>Unit Cost</th>
<th>Cost per Linear Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1 and/or 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt (3 inches of Class C) 38 ft. wide</td>
<td>$6/SY</td>
<td>$25.33</td>
</tr>
<tr>
<td>Leveling rock (2 inches of ¾” minus) 38 ft. wide</td>
<td>$18/CY</td>
<td>$4.22</td>
</tr>
<tr>
<td>Base rock (6 inches of 1½” minus) 38 ft. wide</td>
<td>$18/CY</td>
<td>$12.67</td>
</tr>
<tr>
<td>Concrete curb, 16 inch, ODOT Type C</td>
<td>$14/LF</td>
<td>$14.00</td>
</tr>
<tr>
<td>Concrete sidewalk (4 inches conc. over ¾” minus)</td>
<td>$56/LF</td>
<td>$56.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$112.22</strong></td>
<td><strong>$112.22</strong></td>
</tr>
</tbody>
</table>

Notes:
1. These estimates do not include any earthwork or grading of subgrade.
2. These estimates do not include mobilization, cleanup, or temporary control of traffic.
3. These estimates do not include any storm drain improvements.
4. These estimates do not include any adjustment to existing utilities.
5. Curb and sidewalk estimates include both sides of the street.
6. Sidewalks are 4 inches of concrete over 2 inches of base rock and are 10 feet wide.
7. These estimates are based on prevailing wages and similar sized projects in the recent past. No warranty is made as to their accuracy.

The precision of a cost estimate is a function of the detail to which alternatives are developed and the techniques used in preparing the estimate. The American Association of Cost Engineers divides estimates into three basic categories:

1. Order of Magnitude Estimate – An approximate estimate made without detailed development of the alternative and without engineering data. Techniques such as cost-capacity curves, scale-up or scale-down factors, and ratios are used in preparing order of magnitude costs. It is expected that an order of magnitude cost estimate is accurate to +50 and –30 percent.
2. Budget Estimate – Refers to the owner’s budgeting requirements and is not the budget as a project control document. This estimate is prepared using process flow sheets, layouts, and equipment details. An estimate of this kind is typically accurate to within +30 to –15 percent.
3. Definitive Estimate – This type of estimate is prepared from engineering data such as plans and specifications. As a minimum, the available information must include: comprehensive plans and elevation, piping and instrument diagrams, one-line electrical diagrams, equipment manufacturer quotes, structural diagrams, soil data and complete specifications. It is expected that a definitive cost estimate would be accurate within +15 percent or –5 percent.

Estimates prepared in this study are Order of Magnitude Estimates.
Appendix A

Land Use and Street System Inventory
Table A-1
Tax Assessor’s Parcels and Existing Land Use
Corridor Refinement Plan for I-84 Frontage Road

<table>
<thead>
<tr>
<th>Unique Identifier</th>
<th>Tax Lot Number</th>
<th>Existing Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3N 17 31DC 4200</td>
<td>Undeveloped (gravel)</td>
</tr>
<tr>
<td>2</td>
<td>3N 17 31DC 1000</td>
<td>Single Family Dwelling Unit</td>
</tr>
<tr>
<td>3</td>
<td>3N 17 31DC 1200</td>
<td>Rufus General Store</td>
</tr>
<tr>
<td>4</td>
<td>3N 17 31DC 1100</td>
<td>Single Family Dwelling Unit</td>
</tr>
<tr>
<td>5</td>
<td>3N 17 31DC 1300</td>
<td>Single Family Dwelling Unit</td>
</tr>
<tr>
<td>6</td>
<td>3N 17 31DC 1301</td>
<td>Hi Way Market and Deli</td>
</tr>
<tr>
<td>7</td>
<td>3N 17 31DC 1400</td>
<td>Undeveloped (gravel)</td>
</tr>
<tr>
<td>8</td>
<td>3N 17 31DC 1500</td>
<td>Undeveloped (gravel)</td>
</tr>
<tr>
<td>9</td>
<td>3N 17 31DD 1400</td>
<td>Undeveloped</td>
</tr>
<tr>
<td>10</td>
<td>3N 17 31DD 1300</td>
<td>Tyee Motel</td>
</tr>
<tr>
<td>11</td>
<td>3N 17 31DD 1000</td>
<td>Single Family Dwelling Unit</td>
</tr>
<tr>
<td>12</td>
<td>3N 17 31DD 1103</td>
<td>Single Family Dwelling Unit</td>
</tr>
<tr>
<td>13</td>
<td>3N 17 31DD 0900</td>
<td>Undeveloped</td>
</tr>
<tr>
<td>14</td>
<td>3N 17 31DD 0800</td>
<td>Pacific Pride Gas Station</td>
</tr>
<tr>
<td>15</td>
<td>3N 17 31DC 0901</td>
<td>Parking (asphalt)</td>
</tr>
<tr>
<td>16</td>
<td>3N 17 31DC 0900</td>
<td>Parking (asphalt)</td>
</tr>
<tr>
<td>17</td>
<td>3N 17 31DC 0700</td>
<td>Bob's Texas T-Bone</td>
</tr>
<tr>
<td>18</td>
<td>3N 17 31DC 0600</td>
<td>and</td>
</tr>
<tr>
<td>19</td>
<td>3N 17 31DC 0500</td>
<td>Frosty's Lounge</td>
</tr>
<tr>
<td>20</td>
<td>3N 17 31DC 0200</td>
<td>Single Family Dwelling Unit</td>
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<tr>
<td>21</td>
<td>3N 17 31DC 0100</td>
<td>Parking (asphalt)</td>
</tr>
<tr>
<td>22</td>
<td>3N 17 31DD 0100</td>
<td>Undeveloped</td>
</tr>
</tbody>
</table>
### TABLE A-2

2003 Street Inventory
Corridor Refinement Plan for I-84 Frontage Road

<table>
<thead>
<tr>
<th>Street Name</th>
<th>Jurisdiction</th>
<th>Classification</th>
<th>ROW Width (feet)</th>
<th>Street Width (feet)</th>
<th>No. of Travel Lanes</th>
<th>Surface</th>
<th>2001 Pavement Conditions</th>
<th>Speed Limit (mph)</th>
<th>Permitted Accesses</th>
<th>Actual Accesses</th>
<th>On-Street Parking</th>
<th>Off-Street Parking</th>
<th>Bridge</th>
<th>Bikeways</th>
<th>Sidewalks</th>
<th>Curb/Gutter</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Highway 30 (I-84 Frontage Road / 1st Street)</td>
<td>State</td>
<td>Arterial</td>
<td>80</td>
<td>24</td>
<td>2</td>
<td>Paved</td>
<td>Fair</td>
<td>35</td>
<td>None</td>
<td>Unlimited</td>
<td>None</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West of Wallace Street</td>
<td>State</td>
<td>Arterial</td>
<td>80</td>
<td>24</td>
<td>2</td>
<td>Paved</td>
<td>Fair</td>
<td>35</td>
<td>None</td>
<td>Unlimited</td>
<td>None</td>
<td>None</td>
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<td></td>
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<tr>
<td>Wallace Street to Main Street</td>
<td>State</td>
<td>Arterial</td>
<td>80</td>
<td>24</td>
<td>2</td>
<td>Paved</td>
<td>Fair</td>
<td>35</td>
<td>None</td>
<td>Unlimited</td>
<td>None</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Street to Fowler Street</td>
<td>State</td>
<td>Arterial</td>
<td>80</td>
<td>24</td>
<td>2</td>
<td>Paved</td>
<td>Fair</td>
<td>35</td>
<td>None</td>
<td>Unlimited</td>
<td>None</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fowler Street to Murray Street</td>
<td>State</td>
<td>Arterial</td>
<td>80</td>
<td>24</td>
<td>2</td>
<td>Paved</td>
<td>Fair</td>
<td>35</td>
<td>None</td>
<td>Unlimited</td>
<td>None</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murray Street to I-84</td>
<td>State</td>
<td>Arterial</td>
<td>80</td>
<td>24</td>
<td>2</td>
<td>Paved</td>
<td>Fair</td>
<td>35</td>
<td>None</td>
<td>Unlimited</td>
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**Legend/Notes**
The three types of bicycle facilities on roadways as outlined in the 1995 Oregon Bicycle and Pedestrian Plan are: (1) shared roadway, (2) shoulder bikeway, and (3) bike lanes.

Pavement condition information is based on field survey conducted by ODOT in March 2003.
Appendix B

Summary of Public Involvement
MEETING SUMMARY

Project Advisory Committee (PAC) Meeting #1

March 26, 2003

PAC Meeting #1 for the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) was held on March 26, 2003 at Rufus City Hall. In attendance were:

Clifford Jett
Bart Baunach
Ed Arthur
Ron Jensen
Linda Beers
Bill Beers
Ed Moore, Oregon Department of Transportation
Brad DeHart, Oregon Department of Transportation
David Knitowski, David Evans and Associates, Inc.

The meeting agenda covered five items: 1) Introductions; 2) Project Description and Deliverables; 3) Role of the Project Advisory Committee; 4) Project Schedule; and 5) Public Involvement.

1) Introductions

The meeting opened with PAC members introducing themselves. David Knitowski of David Evans and Associates, Inc. is the consultant who was hired to prepare the plan. Ed Moore of the Oregon Department of Transportation is the grant manager for the state. Sabrina Absolon is the lead city contact for the project.

2) Project Description and Deliverables

The project is a corridor refinement plan for the I-84 frontage road (Old US Highway 30) in Rufus. The study will focus on the area between Wallace and Murray Streets. The consultant’s deliverables include a set of project area maps identifying existing physical conditions in the study area, a technical memorandum describing the features mapped and traffic operations, two streetscape/access management alternatives shown in plan, elevation, and perspective view, and a corridor refinement plan that includes a list of improvements needed. A draft of the project goals and objectives was distributed.

3) Role of the Project Advisory Committee

The role of the PAC is to attend and participate in meetings, define goals for the project, identify problems, develop solutions, and review draft deliverables prepared by the consultant. General guidelines for participation were presented.

4) Project Schedule

The project is scheduled to be completed by June 30, 2003. The PAC will meet four times between March and June. A tentative schedule for the meetings is as follows:
Meeting #1 – Wednesday, March 26th, 6:00 to 8:00 PM at City Hall
Meeting #2 – Wednesday, April 23rd, 6:00 to 8:00 PM at City Hall
Meeting #3 – Wednesday, May 7th, 6:00 to 8:00 PM at City Hall
Meeting #4 – Wednesday, May 28th, 6:00 to 8:00 PM at City Hall

Meeting #1 was a project kick-off meeting, in which the project goals and objectives were reviewed. Meeting #2 will be to review the existing conditions maps and technical memorandum prepared by the consultant. Meeting #3 will be to review the two streetscape/access management alternatives prepared by the consultant. Meeting #3 will be followed by an open house for the general public. Meeting #4 will be to review the draft corridor refinement plan prepared by the consultant.

5) Public Involvement

There are two ways in which the public will be involved in the project: through the four PAC meetings and the open house.

Other Discussion

Other questions, responses, and comments made during the meeting are as follows:

Comment: Brad DeHart of ODOT will provide a consistent name that ODOT uses for the frontage road and the mileposts.
Question: Who maintains the I-84 frontage road and who owns the right-of-way?
Response: ODOT maintains the I-84 frontage road and owns the right-of-way.
Comment: If curbs and gutters are proposed, a stormwater drainage system will be needed.
Comment: The streetscape plan should include streetlights.
Comment: The edge of the road can be defined with curbs and/or landscaping.
Question: After the plan is adopted, how will it be implemented?
Response: The project will be placed on ODOT’s Needs List, where it will compete for funding with other projects before being placed on ODOT’s Statewide Transportation Improvement Program (ODOT’s near-term funded Capital Improvement Program).
Question: Will the project develop road standards?
Response: Roadway design standards were developed as part of the Sherman County Transportation System Plan.
Question: Can the streetscape plan include painted crosswalks?
Response: Painted crosswalks on the state highway system need to be approved by the State Traffic Engineer.
Comment: Currently, traffic can turn right off of the Interstate without stopping. Traffic should be required to stop.
Question: Are either of the bridges on the I-84 frontage road on ODOT’s Statewide Transportation Improvement Program (STIP)?
Response: Brad DeHart of ODOT will check.
Comment: Brad DeHart of ODOT will provide sample drawings or photos of other streetscape projects ODOT has constructed.
Comment: Ed Moore of ODOT will provide the City of Rufus with a copy of the Sherman County Transportation System Plan.

Comment: The plan should look at realigning any intersections that are not 90-degrees.
Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30)

MEETING SUMMARY

Project Advisory Committee (PAC) Meeting #2

April 23, 2003

PAC Meeting #2 for the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) was held on April 23, 2003 at Rufus City Hall. In attendance were:

Larry Cone
Clifford Jett
Pat Beers
Ron Jensen
Ben Smith
Ed Moore, Oregon Department of Transportation
Brad DeHart, Oregon Department of Transportation
David Knitowski, David Evans and Associates, Inc.

The meeting agenda covered three items: 1) Presentation of Task 3 Deliverable – Existing Conditions Memo; 2) Project Advisory Committee Comments on Task 3 Deliverable; and 3) Next Steps.

1. Presentation of Task 3 Deliverable – Existing Conditions Memo

David Knitowski of David Evans and Associates, Inc. made a brief presentation of the Existing Conditions Memo. The presentation included a summary of the following items:

• Existing Plans, Policies, and Ordinances
• Street System Inventory
• Pedestrian System Inventory
• Bicycle System Inventory
• Traffic Volumes and Capacity Analysis
• Access Management, and
• Environmental Constraints

2. Project Advisory Committee Comments on Task 3 Deliverable

There was one comment from the PAC on the material that was presented:

Comment: Map 3 shows three unused rights-of-way. Those rights-of-way have been vacated.

Other questions, responses, and comments made during the meeting are included at the end of this meeting summary.

3. Next Steps

The next consultant deliverable (Task 4 Deliverable) is two streetscape alternatives (shown in plan, elevation, and perspective views) and a technical memorandum describing them. These will be presented and discussed at the next PAC meeting, which is scheduled for May 7, 2003 at 5:30 PM. PAC Meeting #3 will be followed by an open house for the general public at 7:30 PM.

David Knitowski presented three very preliminary street cross section options that will be refined for the next PAC meeting. The first option included 6-foot bike lanes in addition to the 12-foot travel lanes and 5-foot sidewalks separated from the roadway by 7-foot landscape strips. The second option also included 6-foot bike lanes in addition to the 12-foot travel lanes and 12-foot sidewalks adjacent to the roadway.
The third option included 6-foot bike lanes in addition to the 12-foot travel lanes and 7-foot parallel parking strips and 5-foot sidewalks adjacent to the roadway. The three options were discussed and the PAC recommended refining these options to include two options that include on-street parking and sidewalks, but no bike lanes (bike lanes would be provided on Second Street instead). Two options will be presented at the next meeting that include on-street parking and sidewalks, but no bike lanes. The difference between the two options will be that one will include curb bulbs at intersections and one will not.

Other Discussion

Other questions, responses, and comments made during the meeting are as follows:

Question: Is the plan to take away accesses on the highway?
Response: The plan is not to take away accesses, but to eliminate unlimited access and define accesses with curbs and/or landscaping and to try to meet ODOT’s access spacing standards.

Question: When will the Scott Canyon Creek bridge be repaired or replaced?
Response: The bridge is scheduled to be replaced in the year 2006.

Question: Has an economic impact study been done to determine the impact to businesses?
Response: No.

Question: Is the I-84 Frontage Road eligible for federal funding?
Response: No.

Question: Are there separate funds for bicycle and pedestrian improvements?
Response: There are “off-system” funds for those types of projects; however, they must be shown in a plan.

Question: Is a left turn lane in to the proposed industrial area warranted?
Response: This will be addressed in the Sherman County Transportation System Plan.

Question: Can the City have two accesses in to the proposed industrial area?
Response: Yes, if the 400-foot spacing standard can be met.

Question: Is there a weight restriction on the Scott Canyon Creek bridge?
Response: Not at this time. The bridge can handle loads up to 105,000 lbs.

Comment: Speeding is not a problem on the frontage road.

Question: Is the City planning a sewer system?
Response: Not for storm water drainage, only for sewage treatment.

Question: Is West Nile Virus an issue with standing water on or near the roadways?
Response: ODOT is looking into this issue.

Question: Are there buildings built in the highway right-of-way?
Response: Not likely.

Comment: Any street cross section alternative requiring storm drainage would be unacceptable because it would create point-source (vs. non-point-source) water pollution.

Comment: Reducing the travel lane widths from 12 to 11 feet is okay.
**Comment:** Six-foot sidewalks with tree wells are okay, provided they allow three feet of clearance to meet ADA requirements.

**Comment:** Bike lanes should be on Second Street, and not First Street.

**Comment:** Street cross section options should include on-street parking (high priority).

**Comment:** Only show street cross section options with curbs if they won’t require a storm drainage system.

**Comment:** Landscaping in the curb bulb-outs can be “grasscrete” or permeable pavers.

**Comment:** Street cross sections should show streetlights. It may be necessary to create a lighting district where property owners pay the electric bill.

**Comment:** 24-foot driveway widths are too narrow. Consultant should check truck turning templates at proposed driveway locations.

**Comment:** Streetscape options need to accommodate delivery trucks.
Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30)

MEETING SUMMARY

Project Advisory Committee (PAC) Meeting #3

May 7, 2003

PAC Meeting #3 for the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) was held on May 7, 2003 at Rufus City Hall. In attendance were:

Larry Cone
Chet Diestler
Ron Jensen
Bart Baunach
Clifford Jett
Kay Jett
Ed Moore, Oregon Department of Transportation
Brad DeHart, Oregon Department of Transportation
David Knitowski, David Evans and Associates, Inc.

The meeting agenda covered three items: 1) Presentation of Task 4 Deliverable – Streetscape Alternatives; 2) Project Advisory Committee Comments on Task 4 Deliverable; and 3) Next Steps.

1. Presentation of Task 4 Deliverable – Streetscape Alternatives

David Knitowski of David Evans and Associates, Inc. made a brief presentation of the Streetscape Alternatives. The two streetscape alternatives presented are described below:

ALTERNATIVE 1

The cross section standard in Alternative 1 consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks separated from the roadway by a recessed 1-foot wide curb. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks (minimum recommended width for downtown), which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will also include curb bulbs, which will extend 4 feet into the roadway on both sides of the road. The curb bulbs will help calm traffic by shortening the pedestrian crossing distance by a total of 8 feet and by visually reducing the width of the roadway, which has a tendency to slow traffic. Due to the lack of raised curbs, Alternative 1 will not be as effective as Alternative 2 at controlling access.

ALTERNATIVE 2

Similar to Alternative 1, the cross section standard in Alternative 2 consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. One difference from Alternative 1 is that the sidewalks will be separated from the roadway by a raised 1-foot wide curb. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks (minimum recommended width for downtown), which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will not include curb bulbs, as in Alternative 1.
The raised curbs in Alternative 2 will be very effective at controlling access to the I-84 Frontage Road. In Alternative 2, each property that abuts the I-84 Frontage Road will be allowed one 24-foot wide driveway apron (or curb cut) on the I-84 Frontage Road, unless that property also abuts a city street. In that case, the property will be required to take access off of the “lower order” street (e.g., a local or collector street as opposed to an arterial) and direct access to the I-84 Frontage Road will not be provided. The purpose of this access restriction is to bring the I-84 Frontage Road into closer compliance with the Access Management Spacing Standards for District Highways, as defined in the 1999 Adopted Oregon Highway Plan. The access management spacing standard for District Highways with posted speeds of 35 mph is 400 feet. In Rufus, even the existing street grid, with block lengths of approximately 325 feet, does not meet the spacing standard. In this case, the minimum access spacing standard should be the existing city block spacing and mid-block driveways should be limited to properties that can not take access off of an adjacent city street.

2. Project Advisory Committee Comments on Task 4 Deliverable

There were six comments from the PAC on the material that was presented:

Comment: 24-foot driveway widths are too narrow. Driveway widths should be 30 feet instead.

Comment: The consultant should check truck turning templates for interstate trucks at proposed driveway locations.

Comment: Maybe driveways should be constructed with curb returns instead of curb aprons.

Comment: Show curb bulbs/curb extensions on the streetscape alternative with raised curbs (Alternative 2).

Comment: The preferred alternative is Alternative 2 with raised curbs and curb bulbs.

Comment: The consultant should provide more description of the filter needed in the proposed dry-wells.

Other comments made during the meeting are included at the end of this meeting summary.

3. Next Steps

PAC Meeting #3 will be followed by an open house for the general public at 7:30 PM. David Knitowski will present all of the material prepared to date at this meeting.

The next consultant deliverable is refined streetscape alternatives based on the comments received at this meeting. These will be mailed to the PAC by June 4, 2003 and will be discussed at the next PAC meeting, which is scheduled for June 11, 2003 at 6:00 PM. Note that this is a different date than was scheduled in March for PAC Meeting #4. The consultant will also prepare the Task 5 Deliverable – a Draft Corridor Refinement Plan by June 4, 2003. The Final Corridor Refinement Plan will be prepared by June 30, 2003.

Other Discussion

Other comments made during the meeting are as follows:

Comment: Last month’s meeting minutes need to be corrected regarding the statement that a lighting district may need to be created where property owners pay the electric bills for street lights. The City of Rufus or ODOT should pay the electric bills for streetlights.

Comment: The Corridor Refinement Plan should be implemented when the bridges on the I-84 Frontage Road are replaced.

Comment: Scott Creek Bridge may not be replaced in the year 2006.
Comment: Show possible intersection improvements at the intersection of Murray Street and First/Second Street as an option for further study.

Comment: Show possible intersection improvements at the intersection of Wallace Street and First/Second Street as an option for further study.
Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30)

MEETING SUMMARY

Public Meeting

May 7, 2003

The Public Meeting for the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) was held on May 7, 2003 at Rufus City Hall at a regularly-scheduled City Council Meeting. In attendance were:

Karen Wentz
Sabrina Absolon
Richard Misener
Lynn Komar
Clifford Jett
Kay Jett
Ed Moore, Oregon Department of Transportation
David Knitowski, David Evans and Associates, Inc.

The meeting agenda covered four items: 1) Project Description; 2) Review of Existing Conditions Memo; 3) Review of Alternative Access Management Plan Memo; and 4) Next Steps.

1. Project Description

The project is a corridor refinement plan for the I-84 frontage road (Old US Highway 30) in Rufus. The study will focus on the area between Wallace and Murray Streets. The overall goal of the corridor refinement plan is to identify and recommend mitigation treatments to ensure safe and efficient traffic operations on the I-84 Frontage Road (Old US Highway 30) in the near- and long-term time periods and to improve aesthetics. The consultant’s deliverables include a set of project area maps identifying existing physical conditions in the study area, a technical memorandum describing the features mapped and traffic operations, two streetscape/access management alternatives shown in plan, elevation, and perspective view, and a corridor refinement plan that includes a list of improvements needed. There are two ways in which the public will be involved in the project: through the four Project Advisory Committee (PAC) meetings and the public meeting tonight.

2. Review of Existing Conditions Memo

David Knitowski of David Evans and Associates, Inc. made a brief presentation of the Existing Conditions Memo. The presentation included a summary of the following items:

- Existing Plans, Policies, and Ordinances
- Street System Inventory
- Pedestrian System Inventory
- Bicycle System Inventory
- Traffic Volumes and Capacity Analysis
- Access Management, and
- Environmental Constraints


David Knitowski made a brief presentation of the Streetscape Alternatives. The two streetscape alternatives presented are described below:
ALTERNATIVE 1

The cross section standard in Alternative 1 consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks separated from the roadway by a recessed 1-foot wide curb. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks (minimum recommended width for downtown), which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will also include curb bulbs, which will extend 4 feet into the roadway on both sides of the road. The curb bulbs will help calm traffic by shortening the pedestrian crossing distance by a total of 8 feet and by visually reducing the width of the roadway, which has a tendency to slow traffic. Due to the lack of raised curbs, Alternative 1 will not be as effective as Alternative 2 at controlling access.

ALTERNATIVE 2

Similar to Alternative 1, the cross section standard in Alternative 2 consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. One difference from Alternative 1 is that the sidewalks will be separated from the roadway by a raised 1-foot wide curb. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks (minimum recommended width for downtown), which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will not include curb bulbs, as in Alternative 1.

The raised curbs in Alternative 2 will be very effective at controlling access to the I-84 Frontage Road. In Alternative 2, each property that abuts the I-84 Frontage Road will be allowed one 24-foot wide driveway apron (or curb cut) on the I-84 Frontage Road, unless that property also abuts a city street. In that case, the property will be required to take access off of the “lower order” street (e.g., a local or collector street as opposed to an arterial) and direct access to the I-84 Frontage Road will not be provided. The purpose of this access restriction is to bring the I-84 Frontage Road into closer compliance with the Access Management Spacing Standards for District Highways, as defined in the 1999 Adopted Oregon Highway Plan. In Rufus, even the existing street grid, with block lengths of approximately 325 feet, does not meet the spacing standard. In this case, the minimum access spacing standard should be the existing city block spacing and mid-block driveways should be limited to properties that can not take access off of an adjacent city street.

4. Next Steps

The next consultant deliverable is refined streetscape alternatives based on the comments received at this meeting. These will be mailed to the PAC by June 4, 2003 and will be discussed at the next PAC meeting, which is scheduled for June 11, 2003 at 6:00 PM. Note that this is a different date than was scheduled in March for PAC Meeting #4. The consultant will also prepare the Task 5 Deliverable – a Draft Corridor Refinement Plan by June 4, 2003. The Final Corridor Refinement Plan will be prepared by June 30, 2003.

Other Discussion

The City Council asked the consultant to present this material to Bill and Linda Beers, owners of the Hi Way Market and Deli, because they were unable to attend the meeting and their parking lot could possibly be impacted by the project. The consultant met with the Beers after the public meeting.
Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30)

MEETING SUMMARY

Project Advisory Committee (PAC) Meeting #4

June 11, 2003

PAC Meeting #4 for the Corridor Refinement Plan for the I-84 Frontage Road (Old US Highway 30) was held on June 11, 2003 at Rufus City Hall. In attendance were:

Clifford Jett
Ed Arthur
Bart Baunach
Larry Cone
Richard Misener
David Knitowski, David Evans and Associates, Inc.

The meeting agenda covered three items: 1) Presentation of Task 5 Deliverable – Draft Corridor Refinement Plan; 2) Project Advisory Committee Comments on Task 5 Deliverable; and 3) Next Steps.

1. Presentation of Task 5 Deliverable – Draft Corridor Refinement Plan

David Knitowski of David Evans and Associates, Inc. made a brief presentation of the Draft Corridor Refinement Plan. There is very little new material in the draft plan; most of the material has been presented in prior meetings. The preferred streetscape alternative was reviewed and is described below:

At PAC Meeting #3 on May 7, 2003, it was decided that Alternative 2 (with the raised curbs) is the preferred alternative. The cross section standard in the preferred alternative consists of a 38-foot pavement width (two 11-foot wide travel lanes and two 8-foot wide parallel parking strips) with 10-foot wide concrete sidewalks. The total improvement width will be 60 feet, which will fit within the existing 80-foot wide right-of-way. The sidewalks will be separated from the roadway by a raised 1-foot wide curb. Bicycles will share the roadway with motor vehicles. Pedestrians will be accommodated on 10-foot wide sidewalks (minimum recommended width for downtown), which will be wide enough to accommodate “street furniture” such as benches, wastebaskets, trees (in tree wells), and period lampposts. This alternative will also include curb bulbs, which will extend 4 feet into the roadway on both sides of the road. The curb bulbs will help calm traffic by shortening the pedestrian crossing distance by a total of 8 feet and by visually reducing the width of the roadway, which has a tendency to slow traffic. The driveway locations shown in Figures 8 and 9 of the draft plan are for illustrative purposes only, and generally indicate whether a parcel will have one, two, or no accesses on the I-84 Frontage Road. Exact driveway locations will be determined when the area is surveyed and construction drawings are prepared, assuming that this plan is implemented.

2. Project Advisory Committee Comments on Task 5 Deliverable

There were four comments from the PAC on the material that was presented:

Comment: Bart Baunach asked that he get two driveway curb cuts in front of Bob’s Texas T-Bone and Frosty’s Lounge and two driveway curb cuts on each of the two parcels that he owns north of the I-84 Frontage Road, roughly across from Wallace Street.

Comment: Bart Baunach also commented that he is going to ask the city to vacate the right-of-way for the section of Main Street north of the I-84 Frontage Road.

Comment: Clifford Jett asked to see a cost comparison between brick pavers and concrete sidewalk.
Comment: There was a general comment to make some of the graphics in the report darker and/or larger to make them more legible.

3. Next Steps

The next consultant deliverable is the Final Corridor Refinement Plan, which will be prepared by June 30, 2003.
Appendix C

Review of Existing Plans, Policies, and Ordinances
APPENDIX C
REVIEW OF EXISTING PLANS, POLICIES, AND ORDINANCES

To begin the planning process, the applicable transportation and land use plans, policies, and ordinances were reviewed as they relate to transportation facilities within the project area. Those included: the Rufus Comprehensive Land Use Plan, the Rufus Zoning Ordinance, the Rufus Subdivision Ordinance, the Sherman County Transportation System Plan, and the Oregon Highway Plan. The purpose of this effort was to understand the history of transportation planning in Rufus, including the street system improvements planned and implemented in the past, and how the city is currently managing its ongoing development. Existing plans and policies are summarized in the following sections.

RUFUS COMPREHENSIVE LAND USE PLAN

The only transportation-related policy in the Rufus Comprehensive Land Use Plan is the following:

- The city will coordinate with ODOT in implementing its improvement program.

RUFUS ZONING ORDINANCE

The Rufus Zoning Ordinance has the following transportation-related provisions:

- Every lot shall abut a street, other than an alley, for at least 25 feet.
- In permitting a new conditional use or the alteration of an existing conditional use, the City Council may impose conditions that it finds necessary to avoid a detrimental impact and to otherwise protect the best interests of the surrounding area or the community as a whole. These conditions may include the following:
  - Controlling the location and number of vehicle access points.
  - Increasing the street width.

RUFUS SUBDIVISION ORDINANCE

The Rufus Subdivision Ordinance has the following transportation-related provisions:

- Streets and highways (shall) conform with plans and standards.
- Unless otherwise indicated on any master plan, or by proceedings initiated by the City Council, or approved by the City Council upon initiation by other legally constituted governmental bodies, widths shall conform with city standards except where it can be shown by the subdivider, to the satisfaction of the City Council, that the topography or the small number of lots served and the probable future traffic development are such as to unquestionably justify a narrower width. Increased widths may be required where streets are to serve commercial property, or where probable traffic conditions warrant.
- When any lot fronts on a major street, the City Council may require the subdivider to dedicate a service road at the front of the lot.
- No reserved strips controlling the access to public ways will be approved unless the strips are necessary for the protection of the public welfare, and in these cases they may be required.
- When any lots are proposed for commercial or industrial usage, alleys at least 20 feet in width may be required at the rear thereof with adequate ingress and egress for truck traffic, unless alternative commitments for off-street service truck facilities without alleys are approved. Intersecting alleys shall not be permitted.
• Lots without frontage on a street will not be permitted.
• Blocks shall not exceed 1,320 feet in length, except blocks adjacent to major streets.
• All streets shall be improved to city standards.
• Sidewalks shall be installed along both sides of each street and in pedestrian ways.

SHERMAN COUNTY TRANSPORTATION SYSTEM PLAN

The Sherman County Transportation System Plan has the following transportation-related policies that apply to the City of Rufus:

• Maintain and upgrade the overall transportation system within the county and cities to meet present and future needs.
• Cooperate with ODOT in the implementation of the STIP.
• Take advantage of federal and state highway funding programs.
• Increase the use of alternative modes of transportation (walking, bicycling, rideshare/carpooling, and dial-a-ride transit) through improved access, safety, and service within urban areas and rural service centers within the county.
• Ensure planning coordination between the local jurisdictions, the county and the state.
• Seek Transportation and Growth Management (TGM) and other funding for projects evaluating and improving the environment for alternative modes of transportation.
• Develop and upgrade transportation facilities in such a manner consistent with the adopted Oregon Transportation Plan (OTP), The Oregon Highway Plan (OHP), and the Transportation Planning Rule (TPR), and insure that valuable soil, water, scenic, historic, or cultural resources are not damaged or impaired.
• Encourage citizen involvement in identifying and solving local problem spots.
• Work with the local jurisdictions in establishing cooperative road improvement programs, funding alternatives, and schedules.
• Comply with all applicable state and federal noise, air, water, and land quality regulations.
• Promote alternative modes and rideshare/carpool programs through community awareness and education.
• The general policy of the Planning Commission will be to not create any traffic hazard in the granting of variances, conditional uses permits, and zone amendments.
• Encourage active pedestrian and bicycle use within urban areas and along state highways.
• Preserve the function, capacity, level of service, and safety of the state highways and local roads in a manner consistent with the adopted OTP, OHP, TPR, draft US Highway 97 Corridor Plan, and the February 2001 Biggs Junction Refinement Plan.
• Adopt access management standards that will meet the requirements of the TPR, the OHP, US Highway 97 Corridor Plan, Biggs Junction Refinement Plan, and Oregon Administrative Rule (OAR) 734-051, and also consider the needs of the affected communities.
• Provide for safe and efficient high-speed continuous flow operation in rural areas (a V/C of 0.70 or less) and moderate-speed operations of flow in the urban areas of Rufus, Wasco, Moro and Grass Valley and the rural development centers of Biggs Junction and Kent (a V/C ratio of 0.75) and 0.85 within an STA.
• Improve and maintain all existing public roadways to: 1) achieve a pavement condition of 70% in fair or better condition, 2) provide bike lanes on all arterials within urban areas, 3) provide shoulder widths adequate to accommodate bicycles on rural arterial and major collectors, and 4) provide crosswalks when warranted.
• Improve the access on to and off of arterial roadways to accommodate projected growth in a manner consistent with adopted comprehensive plans and implementing regulations.
- Provide adequate signage along major and minor county roads for the purpose of easy identification.
- Adopt policies and standards that address street connectivity, spacing, and access management.
- Work with the local jurisdictions in establishing the right-of-way needed for new roads identified in the TSP.
- Ensure that roads created in land division and development be designed to tie into existing and anticipated road circulation patterns.
- Direct commercial development and use access onto major arterials by means of improved county roads.
- Continue to develop and maintain the road system as the principal mode of transportation both for access to the county and within the county.
- Review and revise, if necessary, street cross section standards for local, collector, and arterial streets to enhance safety and mobility.
- Analyze the safety of traveling speeds and consider modifying posted speeds as necessary.
- Design all transportation improvements to preserve and enhance natural and scenic resources, i.e., new roads should not be constructed in areas identified as sensitive wildlife areas.
- Incorporate balanced opportunities for bicyclists in new or reconstructed transportation facilities.
- Identify needs for bike lanes in urban areas and develop programs to fulfill needs.
- Support maintenance of State highways as bicycle routes, with use of local parallel routes as alternative routes where feasible.
- Undertake bicycle facility improvements, such as establishing bike lanes and paths, where appropriate, within the cities of Rufus, Wasco, Moro, and Grass Valley that will balance the need for safe and convenient bicycle travel within the communities against the need to preserve through movement of traffic on the roadway.
- Support widening shoulders as for bicycle travel as part of roadway preservation and improvement projects or as separate projects. Where feasible, provide standard continuous five-foot (4-foot at a minimum) shoulders on all State highways.
- Emphasize shoulder maintenance (surfacing, cleaning, vegetation removal), particularly in the peak summer cycling months.
- Provide pedestrian facilities, such as establishing sidewalks and paths, where appropriate, within the cities of Rufus, Wasco, Moro, and Grass Valley that connect residential areas with important destinations such as parks, schools, commercial areas and community buildings.
- Identify needs for sidewalks in urban areas and develop programs to fulfill needs.
- Encourage development of connective sidewalk systems in commercial areas, and along arterials, and major and minor collectors within urban areas.
- All pedestrian facilities and crossings should be accessible to people with disabilities to meet the standards of the Americans with Disabilities Act.
- Examine the need for specific pedestrian crossing locations in urban areas.
- Sidewalks should be buffered from the Highway with adequate landscaping, shoulders, and/or parking in areas with design speeds of 45 mph or above.
- Within commercial areas, provide, at a minimum, six-foot sidewalks to increase mobility and safety of pedestrian activities.
- Where feasible, provide separation between pedestrians and autos through access management and landscaping, or street design guidelines within urban areas.
- Provide adequate shoulders on rural collector and arterial roads to support biking and walking.
- Incorporate traffic calming measures (curb extensions, raised medians, landscape treatments) within designated Special Transportation Areas as part of new highway projects or major reconstruction. Retrofit projects should be programmed based on need.
- Provide adequate pedestrian warning signs in rural service centers.
- Provide for safe and efficient high-speed continuous flow operation in rural areas and moderate-speed operations of flow in urban and urbanizing areas and rural development centers for truck freight.
• Identify truck routes to focus truck traffic to a limited number of roads in urban areas.
• Support truck access to industrial sites, including turn and acceleration/deceleration lanes where appropriate.

The Sherman County Transportation System Plan includes the following three street system improvements in the City of Rufus:

• **Improve I-84 Frontage Road** – Residents have identified the need for improved speed zone signs because traffic (especially trucks) is speeding through town and the braking create excessive noise. The recommended improvement consists of signage located further from the towns warning of conflicts due to crossing traffic, pedestrian use of the road and reduced speeds.

• **Widen Scott Canyon Road** – There is concern that large long-haul truck traffic is routinely using Scott Canyon Road to bypass the Biggs Junction area. The road does not have the ability to accommodate large long-haul truck traffic, the base is inadequate and the curves are too sharp for large trucks to maneuver safely. The County Road Department proposes to rebuild the road in its five to ten year plan. These improvements should include widening and some minor straightening but do not include rebuilding the base of the road.

• **Replace the Bridges on the Biggs-Rufus Highway (I-84 Frontage Road) at Gerking Creek and Scott Canyon Creek** – The bridges on the Biggs-Rufus Highway (I-84 Frontage Road) were built in the 1930s and are functionally obsolete. Both bridges are narrow and have sufficient room for only two travel lanes. An adequate shoulder for emergency parking and use by cyclists is lacking. In addition, there are no pedestrian accommodations on the bridges. Both Scott Canyon and Gerking Creeks are subject to flash flooding and significant storm water runoff during the winter months. Both bridges experience a regular build-up of debris under and around the structures that pose a significant threat. Replacement of the two bridges would bring them up to current standards to accommodate all users, autos, bikes and pedestrians. The bridges could also be designed to accommodate historic storm water runoff and runoff from major storm events so that the existing threat to the bridges could be eliminated. The replacement of the two bridges would reduce the need for ODOT maintenance crews from having to remove debris from the creek channels on an annual basis, would protect the existing road bed, and prevent storm water runoff from leaving the creek channels and flooding adjacent developed properties.

### 1999 Oregon Highway Plan

The 1999 Oregon Highway Plan has the following transportation-related policies:

• 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.
• 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
• 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.
• To optimize the overall efficiency and utility of the state highway system through the use of alternative modes and travel demand management strategies.
To protect and enhance the natural and built environment throughout the process of constructing, operating, and maintaining the state highway system.

In addition to those policies, the 1999 Oregon Highway Plan sets Mobility Standards and Access Management Standards for the state highway system.
Appendix D

Unsignalized Intersection Capacity Analysis
## TWO-WAY STOP CONTROL SUMMARY

### General Information
- **Analyst**: DAK
- **Agency/Co.**: DEA
- **Date Performed**: 3/28/2003
- **Analysis Time Period**: DHV

### Site Information
- **Intersection**: Main St. and First St.
- **Jurisdiction**: Rufus, OR
- **Analysis Year**: 2003

### Project Description
- **Corridor Refinement Plan for I-84 Frontage Road - Rufus**
- **East/West Street**: First Street
- **North/South Street**: Main Street
- **Intersection Orientation**: East-West
- **Study Period (hrs)**: 0.25

### Vehicle Volumes and Adjustments

| Major Street | Eastbound | Westbound |
|--------------|-----------|
| Movement     | L | T | R | L | T | R |
| Volume       | 2 | 41 | 7 | 25 | 46 | 1 |
| Peak-Hour Factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly Flow Rate, HFR | 2 | 45 | 7 | 27 | 51 | 1 |
| Percent Heavy Vehicles | 10 | - | - | 10 | - | - |
| Median Type  | Undivided |
| RT Channelized | 0 | 0 |
| Lanes        | 0 | 1 | 0 | 0 | 1 | 0 |
| Configuration | LTR | LTR |
| Upstream Signal | 0 | 0 |

| Minor Street | Northbound | Southbound |
|--------------|------------|
| Movement     | L | T | R | L | T | R |
| Volume       | 7 | 2 | 26 | 0 | 1 | 1 |
| Peak-Hour Factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly Flow Rate, HFR | 7 | 2 | 26 | 0 | 1 | 1 |
| Percent Heavy Vehicles | 10 | 10 | 10 | 10 | 10 | 10 |
| Percent Grade (%) | 0 | 0 |
| Flared Approach | N | N |
| Storage       | 0 | 0 |
| RT Channelized | 0 | 0 |
| Lanes        | 0 | 1 | 0 | 0 | 1 | 0 |
| Configuration | LTR | LTR |

### Delay, Queue Length, and Level of Service

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**HCS2090TM**

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Version 4.1b
### TWO-WAY STOP CONTROL SUMMARY

#### General Information
- **Analyst**: DAK
- **Agency/Co.**: DEA
- **Date Performed**: 3/28/2003
- **Analysis Time Period**: DHV

#### Site Information
- **Intersection**: Main St. and First St.
- **Jurisdiction**: Rufus, OR
- **Analysis Year**: 2023

#### Project Description
- **Corridor Refinement Plan for I-84 Frontage Road - Rufus**

#### East/West Street: First Street
- **North/South Street**: Main Street
- **Intersection Orientation**: East-West
- **Study Period (hrs)**: 0.25

#### Vehicle Volumes and Adjustments

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## TWO-WAY STOP CONTROL SUMMARY

### General Information
- **Analyst**: DAK
- **Agency/Co.**: DEA
- **Date Performed**: 3/28/2003
- **Analysis Time Period**: DHV
- **Project Description**: Corridor Refinement Plan for I-84 Frontage Road - Rufus
- **East/West Street**: First Street
- **Intersection Orientation**: East-West
- **Site Information**: I-84 Ramps and First St.
- **Jurisdiction**: Rufus, OR
- **Analysis Year**: 2003
- **Study Period (hrs)**: 0.25

### Vehicle Volumes and Adjustments

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### TWO-WAY STOP CONTROL SUMMARY

#### General Information
- **Analyst**: DAK
- **Agency/Co.**: DEA
- **Date Performed**: 3/28/2003
- **Analysis Time Period**: DHV

#### Site Information
- **Intersection**: I-84 Ramps and First St.
- **Jurisdiction**: Rufus, OR
- **Analysis Year**: 2023
- **Study Period (hrs)**: 0.25

#### Project Description
- Corridor Refinement Plan for I-84 Frontage Road - Rufus

#### East/West Street
- **First Street**

#### North/South Street
- **I-84 Ramps**

#### Vehicle Volumes and Adjustments

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#### Delay, Queue Length, and Level of Service

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