

FINAL

**Crook County
Transportation System Plan**

Prepared for
Crook County



Prepared by



**H. Lee & Associates
Central Oregon Land Use Consultants, LLC**

December 2005

CROOK COUNTY
FINAL
TRANSPORTATION SYSTEM PLAN

Prepared for:

Crook County
3000 NE 3rd Street
Prineville, OR 97754

Prepared by:

H. Lee & Associates
Central Oregon Land Use Consultants, LLC
P.O. Box 1849
Vancouver, WA 98668
(360) 567-3002

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SECTION 1.0
INTRODUCTION

Section 1.0 Introduction

The Crook County Transportation System Plan (TSP) addresses the County's anticipated transportation needs through the year 2025. It has been prepared to meet state and federal regulations that require urban areas to conduct long-range planning. Specifically, the TSP was developed in compliance with requirements of the Transportation Equity Act for the 21st Century (TEA-21), Statewide Planning Goal 12, the Transportation Planning Rule (TPR – Oregon Administrative Rule (OAR) Chapter 660, Division 12), and Oregon Highway Plan (1999). The long-range planning is intended to serve as a guide for Crook County in managing their existing transportation facilities and developing future transportation facilities.

1.1. REQUIREMENTS

The TEA-21, Statewide Planning Goal 12, the Transportation Planning Rule, and Oregon Highway Plan (OHP) requirements guiding the development of the Crook County TSP are discussed below.

1.1.1. TEA-21

TEA-21 is federal legislation that was passed in 1998. It specifies requirements for statewide and metropolitan area planning. Although TEA-21 does not specify requirements for areas less than a population of 50,000, it is still relevant to Crook County's TSP planning since it defines how federal aid is dispersed for highway and transit projects. The planning requirements under TEA-21 parallel the requirements under the TPR.

1.1.2. Goal 12

Oregon adopted 19 Statewide Planning Goals in the mid-1970s. These goals were to be implemented in each local jurisdiction's comprehensive plan. Goal 12 of the statewide planning goals related to transportation. The intent of Goal 12 is to "provide and encourage a safe, convenient, and economic transportation system." It provides the following guidelines in creating a transportation element of a local jurisdiction's comprehensive plan:

"A transportation plan shall (1) consider all modes of transportation including mass transit, air, water, pipeline, rail, highway, bicycle and pedestrians; (2) be based upon an inventory of local, regional and state transportation needs; (3) consider the differences in social consequences that would result from utilizing differing combinations of transportation modes; (4) avoid principal reliance upon any one mode of transportation; (5) minimize adverse social, economic and environmental impacts and costs; (6) conserve energy; (7) meet

the needs of the transportation disadvantaged by improving transportation services; (8) facilitate the flow of goods and services so as to strengthen the local and regional economy; and (9) conform to local and regional comprehensive land use plans.”

1.1.3. Transportation Planning Rule (TPR)

The Transportation Planning Rule (TPR) was developed by the Department of Land Conservation and Development (DLCD) and Oregon Department of Transportation (ODOT). It was adopted originally in April 1991 to implement Goal 12 of the Statewide Planning Goals.

The TPR requires that cities, counties, Metropolitan Planning Organizations (MPOs), and state agencies prepare and adopt transportation system plans. A transportation system plan is defined in the TPR as: “a plan for one or more transportation facilities that are planned, developed, operated and maintained in a coordinated manner to supply continuity of movement between modes, and within and between geographic and jurisdictional areas.” The TPR encourages multi-modal transportation systems to reduce the dependence on auto traffic.

The transportation system plan elements produced included the following:

- Street system plan for a network of arterials, collectors, and local streets
- Bicycle and pedestrian plan and integrate with the parks plan/dream trails map
- Public transportation plan
- Air, rail, water, and gas pipeline plan
- Policies and land use regulations for implementing the TSP
- Transportation system and demand management plan
- Transportation financing plan

1.1.4. Oregon Highway Plan (1999)

The 1999 Oregon Highway Plan (OHP) was adopted by the Oregon Transportation Commission on March 18, 1999. It applies the general directives specified in the 1992 Oregon Transportation Plan. The general directives of the 1992 Oregon Transportation Plan called for a transportation system marked by modal balance, efficiency, accessibility, environmental responsibility, connectivity among places, connectivity among modes and carriers, safety, and financial stability. The 1999 OHP applies the 1992 Oregon Transportation Plan general directives by emphasizing on:

- Efficient management of the system to increase safety, preserve the system and extend its capacity;
- Increased partnerships, particularly with regional and local governments;
- Links between land use and transportation;
- Access management;

- Links with other transportation modes; and
- Environmental and scenic resources

There are several policies within the 1999 OHP that local jurisdictions are required to be consistent with in their transportation system plans. Specifically, the OHP states:

“Local and regional jurisdictions must be consistent with Policies 1A, State Highway Classification System; 1B, Land Use and Transportation; 1C, State Highway Freight System; 1D, Scenic Byways; 1F, Highway Mobility Standards; 1G, Major Investments; 2G, Rail and Highway Compatibility; 3A-E, Access Management; 4A, Efficiency of Freight Movement; 4D, Transportation and Demand Management; and the Investment Policy in their local and regional plans when planning for state highway facilities within their jurisdiction.”

1.1.5. Other State Plans

In addition to those specific requirements described above, coordination with other specific state plans is also required. These plans include:

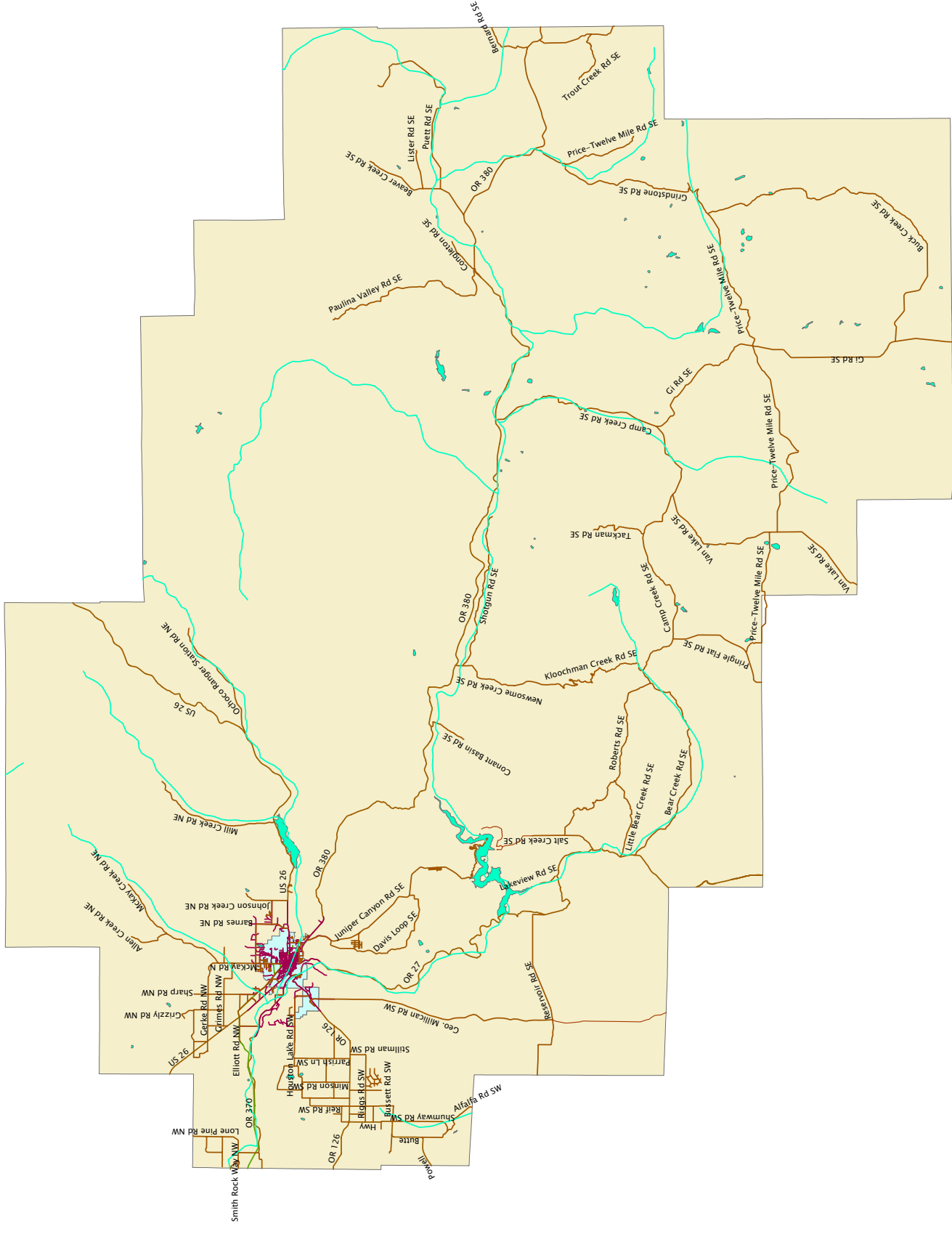
- Oregon Bicycle and Pedestrian Plan, ODOT, June 14, 1995
- Oregon Rail Plan, ODOT, November 8, 2001
- Oregon’s Mobility Needs, Final Report, June 1999
- 1997 Oregon Public Transportation Plan, ODOT
- Freight Moves the Oregon Economy, ODOT, July 1999

1.2. PLANNING AREA

1.2.1. Land Uses

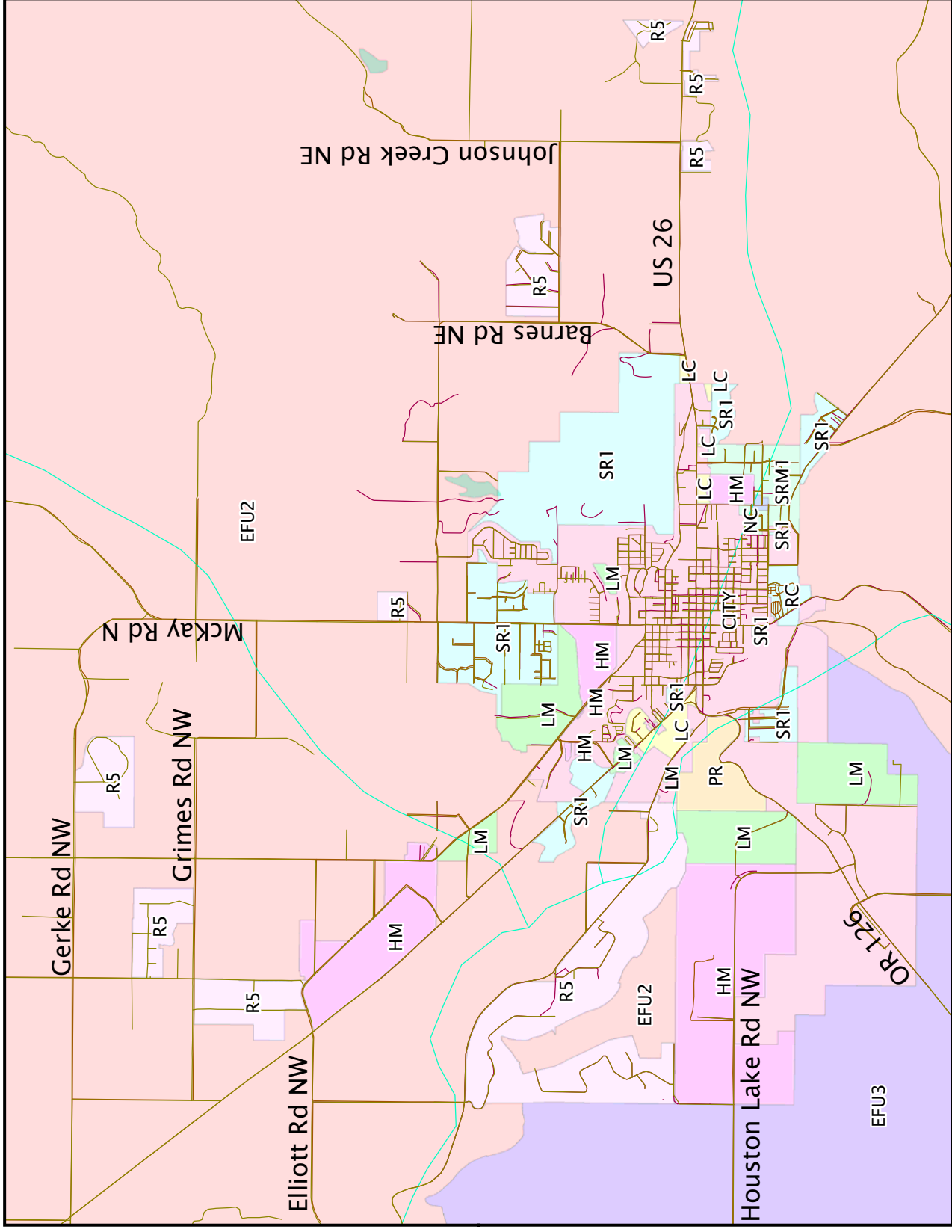
The planning area for the Crook County Transportation System Plan is the unincorporated areas within the county boundaries. Within this area, there is an overlapping planning area between Crook County and the City of Prineville. This overlapping planning area is within the Prineville urban growth boundary and outside the Prineville city limits. The Crook County TSP will address transportation issues within this overlapping planning area. Coordination with the City of Prineville will occur to assure continuity between the county’s and city’s TSP documents.

The Crook County TSP planning area is defined by Figure 1-1. Figure 1-1 also shows the Prineville city limits and urban growth boundary in relation to the boundaries of the unincorporated Crook County area. Figures 1-2a and 1-2b show the Crook County zoning and land use patterns. Figure 1-2a shows the zoning and land use pattern in the urban growth boundary area outside the Prineville city limits. The zoning within this area is known as the county urban-area zoning designations. Figure 1-2b shows the zoning and land use patterns in the remainder of Crook County.



Crook County Transportation System Plan

Figure 1-1
Study Area Map



Zone	Color
CITY	Light Blue
EFU1	Light Green
EFU2	Light Yellow
EFU3	Light Purple
F1	Light Orange
HM	Light Red
LC	Light Cyan
LM	Light Blue
NC	Light Green
PBR20	Light Yellow
PR	Light Orange
R5	Light Purple
RC	Light Blue
RRI	Light Red
RRI-RRS	Light Yellow
RRM5	Light Orange
RSC	Light Blue
SRI	Light Cyan
SRM1	Light Green

Crook County Transportation System Plan

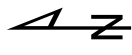
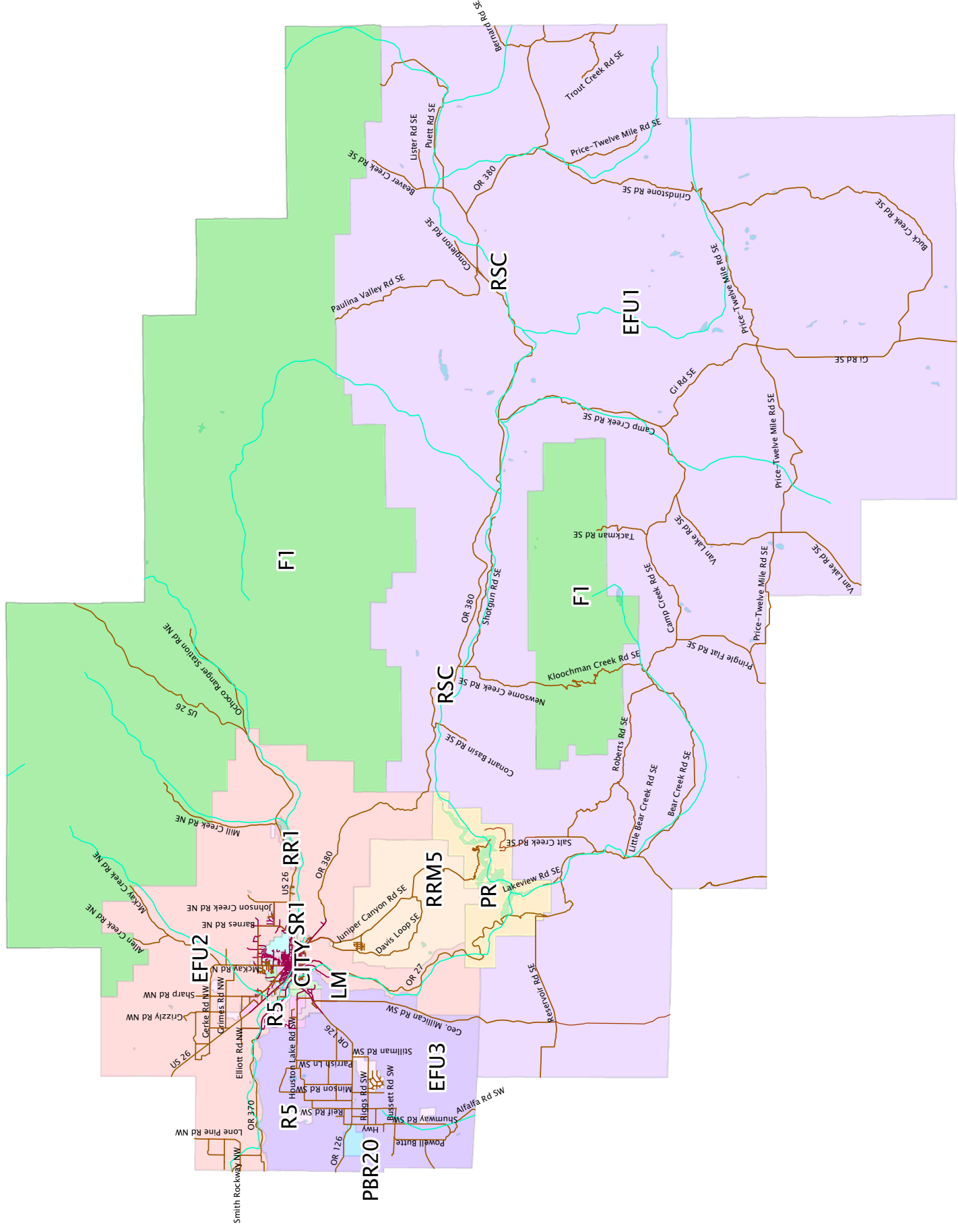


Figure 1-2a
Zoning Map



Crook County Transportation System Plan

Figure 1-2b
Zoning Map

Crook County is comprised of the following types of zoning:

- Exclusive Farm Use-1 - EFU 1
- Exclusive Farm Use-2 - EFU 2
- Exclusive Farm Use-3 - EFU 3
- Forest Zone – F1
- Rural Service Center - RSC
- Park Reserve - P-R
- Recreation Residential Mobile-5 - RR(M)-5
- Recreational Residential-1 – RR1
- Suburban Residential – SR-1
- Suburban Residential Mobile – SR(M)-1
- Limited Commercial – L-C
- Neighborhood Commercial – N-C
- Recreational Commercial – R-C
- Light Industrial – L-M
- Heavy Industrial – H-M
- Rural Industrial – R-M
- Airport Development Zone – ADZ
- Flood Plain Combining – FP
- Rural Residential R-5 Zone – R-5
- Rural Residential R-10 Zone – R-10
- Forest Recreation – FR-10
- Residential Woodlot – RW-10
- Airport Obstruction Zone - AO
- Powell Butte Rural Residential – PBR-20
- Exclusive Farm Use Zone – Juniper Acres – EFU-JA

Of the zoning designations above, the following zoning designations are considered Crook County's urban-area zoning and are contained within the City of Prineville's urban growth boundary:

- Suburban Residential – SR-1
- Suburban Residential Mobile – SR(M)-1
- Limited Commercial – L-C
- Recreational Commercial – R-C
- Light Industrial – L-M
- Heavy Industrial – H-M
- Park Reserve - P-R
- Exclusive Farm Use-2 - EFU 2

Most of the forest land within Crook County is located in the northern area of the county. There is also an area of forest land in the central part of the county. Exclusive farm use (EFU) land is located in the east-central part of the county as well as the west and northwest parts of the county. Rural residential lands in the unincorporated areas of Crook County exist in the Juniper

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Canyon area, Powell Butte area, and surrounding the City of Prineville in all directions. Public lands exist in the Prineville Reservoir area and west central area of Crook County.

1.2.2. Street System

The roadways within the TSP planning area fall under the jurisdiction of the Crook County and the Oregon Department of Transportation (ODOT). State highways traversing through Crook County creates the backbone of Crook County's street system. The following five state highways traverse Crook County:

- Oregon 26 – Madras Prineville Highway Number 360/Ochoco Highway Number 41
- Oregon 370 – Oneil Highway Number 370
- Oregon 126 – Ochoco Highway Number 41
- Oregon 27, Crooked River Highway Number 14
- Oregon 380 – Paulina Highway Number 380

There are is one non-highway principal arterial in Crook County called Lynn Boulevard SE (County Road 110). There are two existing minor arterials called Main Street N (County Road 100) and Powell Butte Highway in unincorporated Crook County.

The major collectors within Crook County include the following roadways:

- Alfalfa Road SW (County Road 105)
- Aviation 365 SW (County Road 115)
- Barnes Butte Road NE (County Road 120)
- Barnes Road NE (County Road 354)
- Bear Creek Road SE (County Road 111)
- Beaver Creek Road SE (County Road 113)
- Bus Evans Lane NW (County Road 348)
- Camp Creek Road SE (County Road 127)
- Carey Foster Road SE (County Road 362)
- Fairgrounds Road SE (County Road 317)
- Geo. Millican Road SW (County Road 305)
- Gerke Road NW (County Road 301) from Milepost 0.00 to Milepost 1.96
- G.I. Road SE (County Road 357)
- Grizzly Road NW (County Road 302)
- Gumpert Road NW (County Road 141)
- Houston Lake Road SW (County Road 103)
- Johnson Creek Road NE (County Road 121)
- Juniper Canyon Road SE (County Road 214)
- Lamonta Road NW (County Road 101)
- Landfill Road SW (County Road 359)
- Lone Pine Road NW (County Road 106)
- McKay Creek Road NE (County Road 116)

- McKay Road NE (County Road 102)
- Melrose Drive SE (County Road 2060)
- Mill Creek Road NE (County Road 122)
- Newsome Creek Road SE (County Road 224)
- Ochoco Ranger Station Road NE (County Road 123)
- Paulina-Suplee Highway SE (County Road 112)
- Puett Road SE (County Road 135)
- Reif Road SW (County Road 349)
- Reservoir Road SE/SW (County Road 332)
- Riggs Road SW (County Road 209)
- Shumway Road SW (County Road 213)
- Smith Rock Way NW (County Road 203)
- Stillman Road SW (County Road 319)
- Tom McCall Road SW (County Road 356)
- Willard Road SW (County Road 351)
- Willowdale Drive SE/NE (County Road 2062)

The minor rural collectors within Crook County include the following roadways:

- Davis Loop SE (County Road 334)
- Elliott Lane NW (County Road 124)
- Elliott Road NW (County Road 124)
- Grindstone Road SE (County Road 333)
- Idleway Street SE (County Road 1051)
- Jasper Knolls Drive SE (County Road 1071)
- Kloochamn Creek Road (County Road 325)
- Lambert Road NW (County Road 232)
- Minson Road SW (County Road 104)
- Orchard Lane NE (County Road 1090)
- Parrish Lane SW (County Road 204)
- Paulina City Road SE (County Road 131)
- Price-Twelve Mile Road SE (County Road 308)
- Pringle Flat Road SE (County Road 216)
- Quail Valley Drive NE (County Road 2012)
- Rawhide Lane NE (County Road 1010)
- Red Cloud Road SW (County Road 2027)
- Rimrock Road SW (County Road 1033)
- Shotgun Road SE (County Road 222)
- Sunset Lane SW (County Road 326)
- Terrace Lane NW (County Road 227)
- Van Lake Road SE (County Road 218)
- Wainright Road NE (County Road 128)
- Weberg Road SE (County Road 318)
- Weigand Road SW (County Road 211)
- West Hills Road NE (County Road 2051)

1.3. PLANNING PROCESS

The transportation system plan (TSP) was developed through a series of technical exercises and input from the public, citizen advisory committee, and technical advisory committee. The key elements of the process to develop the TSP are listed below.

- Define goals and objectives
- Review of existing plans and policies
- Solicit public involvement and input
- Conduct an existing inventory and condition analysis
- Project future traffic volumes
- Define deficiencies and needs
- Develop transportation improvement projects for all modes
- Define transportation facility standards and requirements
- Develop recommended policies and ordinances
- Develop modal plans for each mode of transportation
- Develop a finance plan

1.3.1. Define Transportation Policies and Implementing Strategies

Transportation policies and implementing strategies were developed based on input from Crook County staff and requirements of the TPR. The transportation policies and implementing strategies were used later to guide the development of transportation system plan, to make decisions regarding various transportation improvement projects, developing new standards and requirements, and to provide a direction for making transportation-related decisions for the county.

1.3.2. Review of Existing Plans and Policies

To begin the transportation planning process, all applicable Crook County transportation and land use plans and policies were reviewed. The purpose of this review was to develop an understanding of how Crook County was managing its transportation infrastructure. Also, the plan and policy review also defined where the county is compliant and deficient in meeting the Transportation Planning Rule (TPR) requirements. Where deficiencies exist in meeting the TPR requirements, recommendations will be made that would comply with the TPR requirements.

1.3.3. Solicit Public Involvement and Input

Public involvement regarding transportation issues was solicited in the previous transportation system planning effort. This update of the Crook County Transportation System Plan is primarily a technical update.

1.3.4 Conduct an Existing Inventory and Condition Analysis

The purpose of the existing inventory and conditions analysis was to catalog all the existing transportation facilities and services to determine its operating condition. This information provides the baseline from which the plan can be developed.

1.3.5. Define Deficiencies and Needs

Based on the existing inventory and conditions analysis, a transportation deficiencies list was developed. The inventory and existing conditions analysis forms the technical basis for the deficiencies list.

The future transportation deficiencies were identified from the future traffic projections to the year 2025. The traffic forecast was used to calculate level of service and volume-to -capacity (v/c) ratios. Based on these results, the locations of future traffic deficiencies were identified. The combination of existing and future deficiencies defines the need to develop improvement alternatives.

1.3.6. Develop Transportation Improvements

Based on the deficiencies and needs list, a transportation improvement plan was developed with alternatives. These improvements and alternatives were developed in conjunction with attempting to meet the transportation policies and strategies. Based on an evaluation process, a preferred alternative was selected and individual improvements were prioritized into high, medium, and low priorities.

1.3.7. Define Transportation Facility Standards and Requirements

Transportation facility standards were developed to guide Crook County in managing its roadways as well as a guideline in developing new infrastructure. These standards include access management requirements, road standards for a variety of street classifications, sidewalk width standard, bicycle facility standards, bicycle parking requirements, access-way requirements, internal pedestrian connection requirements, and block and street spacing requirements. The various standards will be documented in the relevant modal plans.

Transportation facilities outside the city limits of Prineville but within the urban growth boundary (UGB) shall be in compliance with urban standards as dictated by the UGB Management Agreement between the City of Prineville and Crook County.

1.3.8. Develop Recommended Policies and Ordinances

The development of the transportation system within Crook County requires that policies in the Comprehensive Plan support its implementation. Also requirements adopted by ordinance(s) are necessary for transportation facilities to develop with new development. This section evaluates the existing policies, standards, and requirements and makes recommendations to enhance policies, standards, and requirements that would support the further development of the transportation system within Crook County.

1.3.9. Develop a Modal Plan for Each Mode of Transportation

Modal plans for each mode of transportation within Crook County were developed. The modal plans were developed from all of the sections described above. The intent of each modal plan was to develop improvement projects that meet the 2025 year need, establish and update standards and requirements complying with the Transportation Planning Rule, and creating and updating comprehensive plan policies that guide the development of the transportation system within Crook County.

1.3.10. Develop a Finance Plan

A finance plan was developed to identify a strategy to fund all of the transportation improvement projects developed. The finance plan starts with existing transportation funding levels. The existing revenues were then compared with the costs of the proposed improvements. Based on a revenue shortfall for funding future projects, a series of funding options was discussed and a strategy proposed.

1.4. OTHER PLANNING CONSIDERATIONS

Environmental conditions have a potentially significant impact to the development of new transportation infrastructure. TPR requirement OAR 660-012-0035 (3) (c) states that “the transportation system shall minimize adverse economic, social, environmental and energy consequences.” In the development of transportation improvements, a cursory look at environmental impacts was conducted from existing sources and known environmental issues by Crook County staff. The goal in the cursory environmental analysis was to minimize environmental impacts by any proposed transportation improvement.

Another consideration in the development of transportation improvement projects was to be consistent and support the transportation policies and implementing strategies to guide the development of the alternative proposals.

SECTION 2.0
TRANSPORTATION GOALS AND POLICIES

Section 2.0 Transportation Goals and Policies

This section establishes broad policy objectives that provide the context to make transportation investment decisions and to develop the existing and future transportation system within the unincorporated areas of Crook County.

2.1. GOAL 1 – MOBILITY

It is the goal of Crook County to provide a multi-modal transportation system that maximizes the mobility of Crook County residents and businesses.

The policies to be used to implement Goal 1 – Mobility are as follows:

- 1.1. Establish a transportation system that can accommodate a wide variety of travel modes and minimizes the reliance on any one single mode of travel.
- 1.2. Properly plan transportation infrastructure to meet the level of service set for each type of facility.
- 1.3. Maintain a level of service standard of LOS D or better for signalized intersections and a level of service of LOS E at unsignalized intersections if the intersection does not meet the most current Manual of Uniform Traffic Control Devices (MUTCD) signal warrants. If the intersection meets signal warrants, then the level of service standard for the unsignalized intersection shall be LOS E. At least two MUTCD signal warrants shall be met prior to consideration of signalization. A traffic study shall be conducted to analyze the potential installation of a signal that includes average daily traffic counts by hour on all intersection approaches, a signal warrant analysis based on the most recent MUTCD, and any other factors identified by a traffic engineer deemed as a factor for signalization such as poor sight distance, vehicle travel speed, and intersection geometric conditions.

For Oregon Department of Transportation (ODOT) facilities, Crook County shall defer to ODOT mobility standards described in the *1999 Oregon Highway Plan*. Section 3, Existing Conditions, describes the relevant ODOT mobility standards within the Crook County planning area.

- 1.4. Develop a local street plan to preserve future rights-of-way for future streets and to maintain adequate local and regional circulation in a manner consistent with Crook County's existing street system.

- 1.5. Require developments to construct their accesses consistent with the local street plan.
- 1.6. Develop an access management policy for the local arterial system and direct commercial development access to local streets wherever possible.
- 1.7. Encourage development to occur near existing community centers where services are presently available to minimize the need for expanding services and to more efficiently utilize existing resources.
- 1.8. Identify local traffic problems and recommend solutions.
- 1.9. Review and revise, if necessary, street cross section standards for local, collector, and arterial streets to enhance safety and mobility.
- 1.10. Develop and adhere to a capital improvement program implementing the improvement recommendations of the TSP as funding is identified.
- 1.11. Future transportation improvements along OR 126 shall occur by a four phase process. These phases are: 1) passing lanes every 3-5 miles; 2) continuous four-lane section; 3) grade separate the higher volume road intersections with interchanges and/or overpasses; 4) full access control with median barriers, frontage roads. Depending on the intersection, some elements of Phase 3 and Phase 4 can be intermixed.

The goal of this four-phase approach is to incrementally improve an existing two-lane rural highway, culminating in a four-lane facility with grade-separated interchanges and frontage roads. The timing of improvements may be tied to volume-capacity (v/c) ratios, levels of service, crash rates per million vehicle miles, reducing types of crashes, or other performance standards.”

- 1.12. Any transporting changes near the Prineville Airport must consider the current Prineville Airport Layout Plan when considering such changes. Crook County does not necessarily support the conclusions of the 1998 City of Prineville Transportation System Plan in regard to their preferred option to improve the airport industrial area access to OR 126. The City of Prineville is in the process of updating their transportation system plan and should closely coordinate the airport industrial area access issues to OR 126 with Crook County since part of the affected facility and traffic is on county roads. The ultimate solution should adequately connect Tom McCall Road and Millican Road together in an efficient manner with one interchange connection to OR 126.
- 1.13. Crook County recognizes that the IGA agreements with ODOT in regard to the Powell Butte jurisdictional transfer and the improvements along OR 126 provide the framework to implement the transportation improvements along those

corridors. Specifically, the IGA addresses the planning and funding of the Powell Butte Highway interchange with OR 126 and the eventual four-lane widening of OR 126 from Redmond to Prineville. In addition, the IGA addresses the process to develop the Tom McCall Road/Millican Road interchange with OR 126.

2.2. GOAL 2 – EFFICIENCY

It is the goal of Crook County to create and maintain a multi-modal transportation system with the greatest efficiency of movement possible for Crook County residents and businesses in terms of travel time, travel distance, and efficient management of the transportation system.

The policies to be used to implement Goal 2– Efficiency are as follows:

- 2.1. Develop Crook County’s transportation system with alternative parallel corridors to reduce reliance on any one corridor and improve local access through a local street plan that preserves future rights-of-way for future streets that develops Crook County’s local street system.
- 2.2. Plan and improve routes to facilitate the movement of goods and services.
- 2.3. Manage Crook County’s resources to improve the transportation system through an up-to-date Capital Improvement Program (CIP) reflecting the transportation needs of the county.

2.3. GOAL 3 – SAFETY

It is the goal of Crook County to maintain and improve transportation system safety.

The policies to be used to implement Goal 3 – Safety are as follows:

- 3.1. Examine the need for speed reduction in specific areas such as adjacent to local schools.
- 3.2. Ensure that the multi-modal transportation system within Crook County is structurally and operationally safe.
- 3.3. Periodically review crash records in an effort to systematically identify and remedy unsafe intersection and roadway locations.
- 3.4. Develop a traffic calming program to implement in areas with vehicle speeding issues.

- 3.5. Ensure adequate access for emergency services vehicles throughout Crook County's transportation system.

2.4. GOAL 4 – EQUITY

It is the goal of Crook County to ensure the cost of transportation infrastructure and services are borne by those who benefit from them.

The policies to be used to implement Goal 4 - Equity are as follows:

- 4.1. System Development Charges (SDCs) shall be considered to be implemented and it should accurately reflect a nexus between the traffic impact of development and the fees assessed to the development.
- 4.2. Crook County shall seek equitable funding mechanisms to maintain transportation infrastructure and services to an acceptable level.
- 4.3. Developments shall be responsible for mitigating their direct traffic impacts. These impacts shall be determined through a traffic study requirement to the developer and/or findings from County staff.
- 4.4. Developments that desire to have "private roads and maintenance" shall still be required to construct the road system in accordance with Crook County road standards established for county and public roads.
- 4.5. Road districts may be created to bring private roads into Crook County's road system as long as those private roads directly connect to a county owned road. Prior to Crook County taking any private road over, the road district must bring the private road up to current Crook County standards. Only after the private road meets the current Crook County road standard will Crook County consider assuming jurisdiction and ownership of the private road. Other factors of Crook County to assume jurisdiction and ownership of a private road is whether the county has adequate available funding to support additional maintained miles within the road budget. The County Court shall make the final decision of accepting a private road into the county's road system.
- 4.6. For private roads not within a road district and directly connecting to a county owned road, Crook County will assist private property owners in creating a local improvement district (LID) to improve the private roadway to current Crook County standards.

2.5. GOAL 5 – ENVIRONMENTAL

It is the goal of Crook County to limit and mitigate adverse environmental impacts associated with traffic and transportation system development.

The policies to be used to implement Goal 5 – Environmental are as follows:

- 5.1. Transportation project related environmental impacts shall be identified at the earliest opportunity to ensure compliance with all federal and state environmental standards.
- 5.2. Transportation project environmental impacts shall be mitigated to state and federal standards as appropriate.

2.6. GOAL 6 – ALTERNATIVE MODES OF TRANSPORTATION

Increase the use of alternative modes of transportation (walking, bicycling, rideshare/carpooling, and transit) through improved access, safety, and service. Increasing the use of alternative transportation modes includes maximizing the level of access to all social, work, and welfare resources for the transportation disadvantaged. Crook County seeks for its transportation disadvantaged citizens the creation of a customer-oriented regionally coordinated public transit system that is efficient, effective, and founded on present and future needs.

The policies to be used to implement Goal 6 – Alternative Modes of Transportation are as follows:

- 6.1. Develop a countywide pedestrian and bicycle plan.
- 6.2. Promote alternative modes and rideshare/carpool programs through community awareness and education.
- 6.3. Coordinate with regional transit service efforts.
- 6.4. Seek Transportation and Growth Management (TGM) and other funding for projects evaluating and improving the environment for alternative modes of transportation.
- 6.5. Seek improvements of mass transit services to Crook County.
- 6.6. Transportation Disadvantaged
 - a. Continue to support programs for the transportation disadvantaged where such programs are needed and are economically feasible.

- b. Increase all citizens' transportation choices.
- c. Identify and retain community identity and autonomy.
- d. Create a customer-oriented focus in the provision of transportation services.
- e. Hold any regional system accountable for levels and quality of service.
- f. Enhance public transportation sustainability.
- g. Promote regional planning of transportation services.
- h. Use innovative technology to maximize efficiency of operation, planning, and administration of public transportation.
- i. Promote both inter-community and intra-community transportation services for the transportation disadvantaged.

2.7. GOAL 7 – MAINTAIN MULTI-JURISDICTION COORDINATION

Maintain coordination between the Crook County, City of Prineville, and the Oregon Department of Transportation (ODOT).

The policies to be used to implement Goal 7 – Maintain Multi-Jurisdictional Coordination are as follows:

- 7.1. Cooperate with ODOT in the implementation of the Statewide Transportation Improvement Program (STIP).
- 7.2. Encourage improvement of state highways.
- 7.3. Work with ODOT and the City of Prineville in establishing cooperative transportation improvement programs and schedules.
- 7.4. Work to establish the right-of-way needed for transportation improvements identified in the TSP.
- 7.5. Take advantage of federal and state highway funding programs.
- 7.6. Crook County shall maintain an urban growth boundary (UGB) management agreement with the City of Prineville. This agreement shall be the basis to manage facilities outside the Prineville city limits but within the UGB as well as to eventually transfer facilities from Crook County to the City of Prineville when annexations occur.

- 7.7. Jurisdictional transfers between Crook County and the Oregon Department of Transportation (ODOT) shall be conducted through a management agreement between the two agencies. The conditions of a jurisdictional transfer of facilities shall be negotiated on a case by case basis.
- 7.8. Crook County shall coordinate with the City of Prineville in the development and update of its transportation system plan (TSP). Crook County shall also coordinate with the City of Prineville in the development of the city's TSP. Consistency between Crook County's and City of Prineville's TSPs shall be sought.
- 7.9. For Oregon Department of Transportation (ODOT) facilities, Crook County shall defer to ODOT access management standards described in Oregon Administrative Rule (OAR) Chapter 734, Division 51, the Oregon Highway Plan, and/or the most recent ODOT adopted access management standards and regulations.
- 7.10. Crook County will coordinate with the Crook County School District when making transportation changes.

2.8. GOAL 8 – ROADWAY FUNCTIONAL CLASSIFICATION

It is the goal of Crook County to properly plan and maintain its transportation system based on a roadway functional classification system. The street and access standards are based on this roadway functional classification system.

The policies to be used to implement Goal 8 – Roadway Functional Classification are as follows:

- 8.1. The transportation system plan (TSP) shall classify roadways throughout Crook County's transportation system. Both an arterial and local street classification shall be identified in the TSP.
- 8.2. The street and access standards shall employ the roadway functional classification system.
- 8.3. The roadway functional classification system represents a continuum in which through traffic increases and access provisions decrease in the higher classification categories. The street and access standards shall reflect this principal.

2.9. GOAL 9 – TRANSPORTATION FINANCING

It is the goal of Crook County to seek adequate financial revenues to fund its Capital Improvement Program and maintenance needs.

The policies to be used to implement Goal 9 – Transportation Financing are as follows:

- 9.1. Crook County shall aggressively seek state and federal funding for relevant transportation projects.
- 9.2. Crook County shall proactively seek new local and regional funding sources for its Capital Improvement Program.

SECTION 3.0
EXISTING CONDITIONS

Section 3.0 Existing Inventory

3.1. INTRODUCTION

This section of the Crook County Transportation System Plan describes existing conditions in unincorporated Crook County related to its transportation system. The section reviews past plans and studies and inventories the existing transportation conditions. This information will be used as a foundation for identifying short-term transportation improvement needs and developing and evaluating longer-term transportation system alternatives.

3.2. STUDY AREA

Crook County is centrally located in Oregon. It is bordered by Wheeler County to the northeast, Jefferson County to the northeast, Deschutes County to the south and west, Grant County to the east, and Harney County to the south and east. The planning area for the Crook County Transportation System Plan is the unincorporated area with Crook County. This area is defined by Figure 3-1. As shown in Figure 3-1, Crook County has only one incorporated city within its boundaries, the City of Prineville. All other areas within Crook County are unincorporated. Rural residential communities exist in the unincorporated area such as Powell Butte, Juniper Canyon, Post, and Paulina.

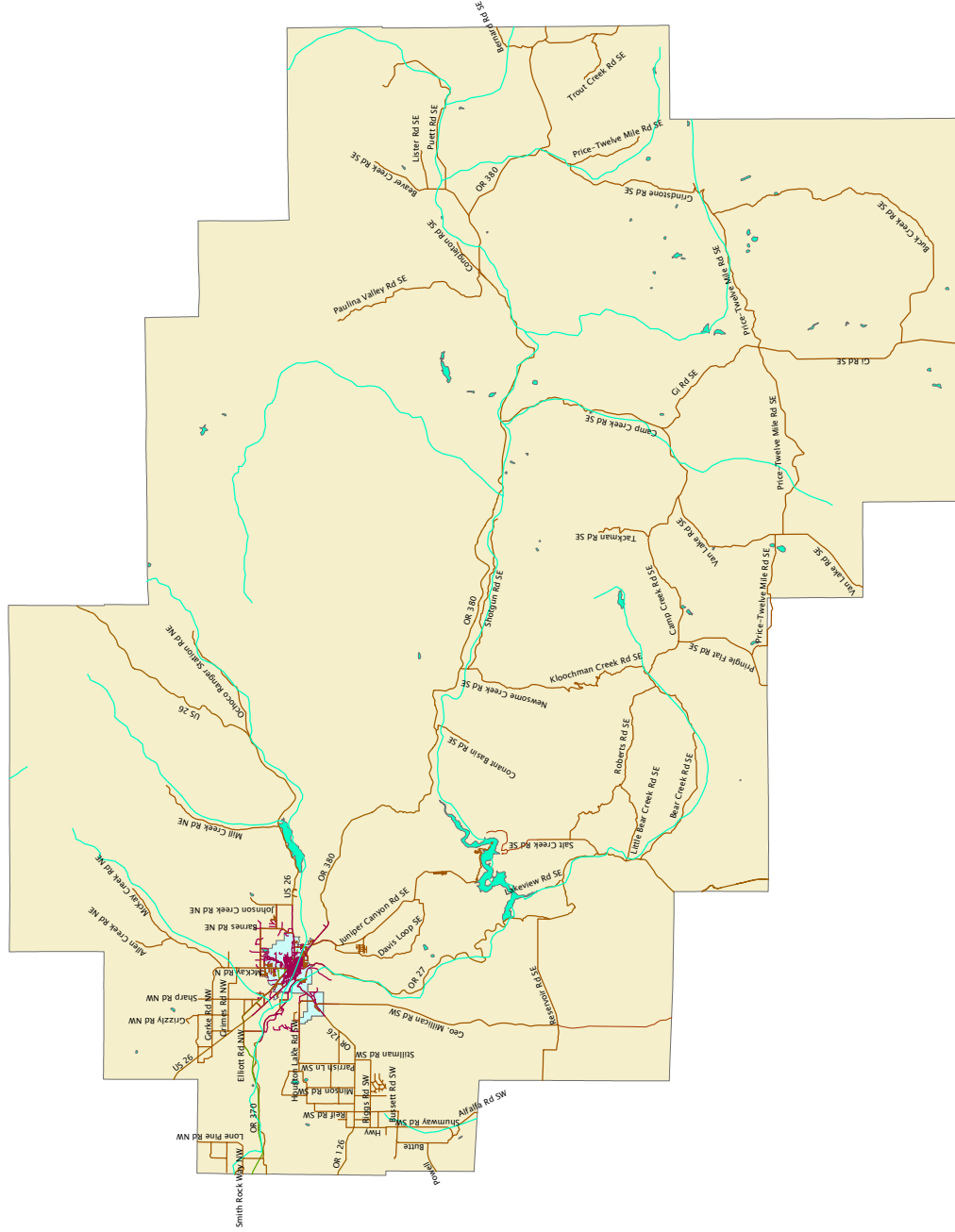
Most commercial, residential, manufacturing, and industrial zones within Crook County are located in the City of Prineville. Smaller areas of rural commercial uses are located in the Powell Butte area which is in the west central area of Crook County. A major rural residential area exists outside of the City of Prineville called Juniper Canyon. It is located directly south of the City of Prineville. Most of the Crook County population is located in the City of Prineville, Powell Butte area, and Juniper Canyon area.

Major physical features of Crook County are the Crooked River, Prineville Reservoir, and Ochoco National Forest.

3.3. ROAD CLASSIFICATION

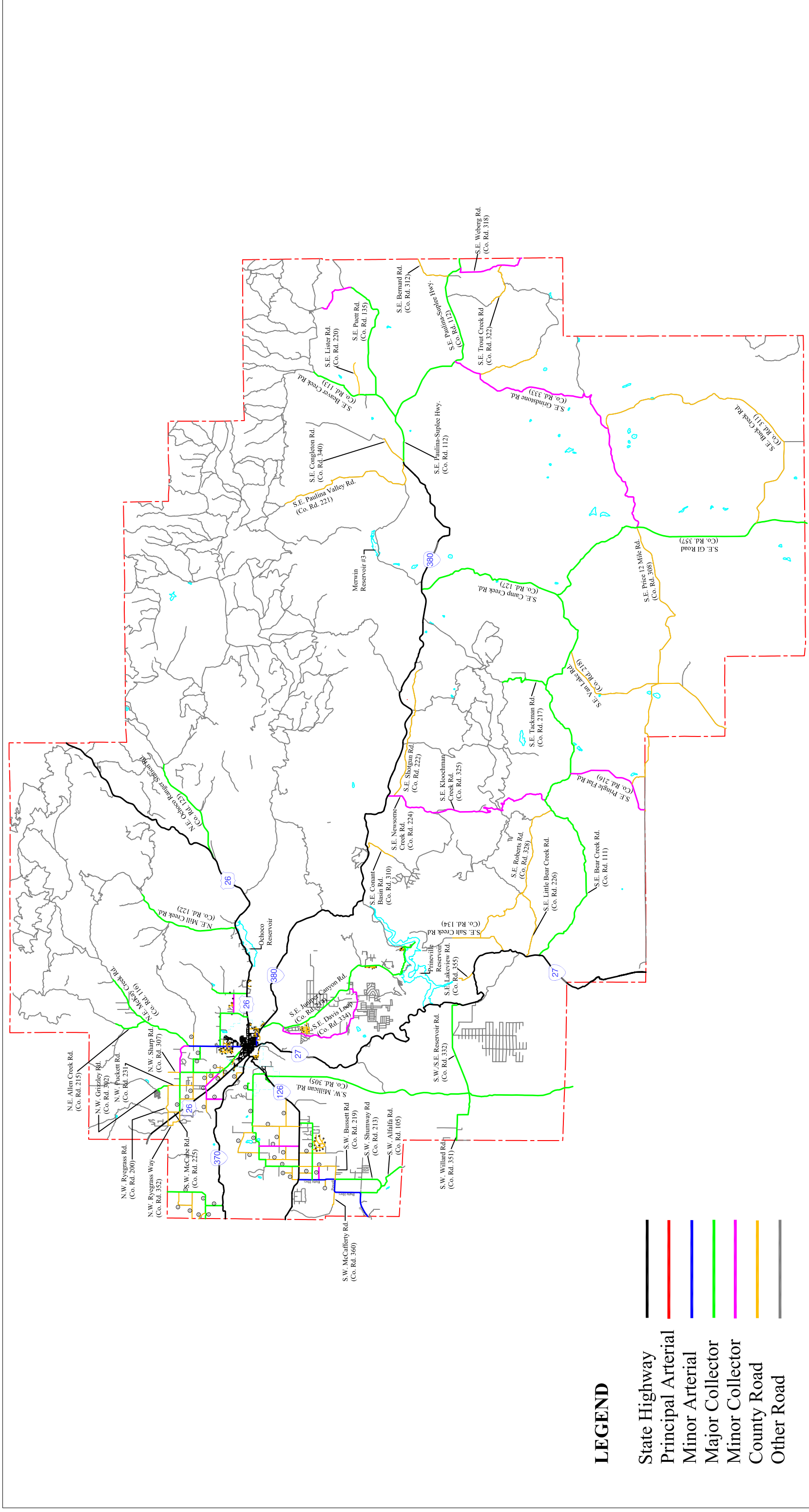
3.3.1 Road Classification System

The roadway functional classifications were obtained from ODOT's Oregon Transportation Map for Crook County. This map is typically coordinated between the State of Oregon and Crook County to coordinate classifications of roadways between jurisdictions. The map was last updated in 2002 and reflects current coordinated roadway classification efforts between ODOT and Crook County. This roadway functional classification is shown in Figures 3-2a, 3-2b, and 3-2c.



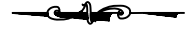
Crook County Transportation System Plan

Figure 3-1
Study Area Map



LEGEND

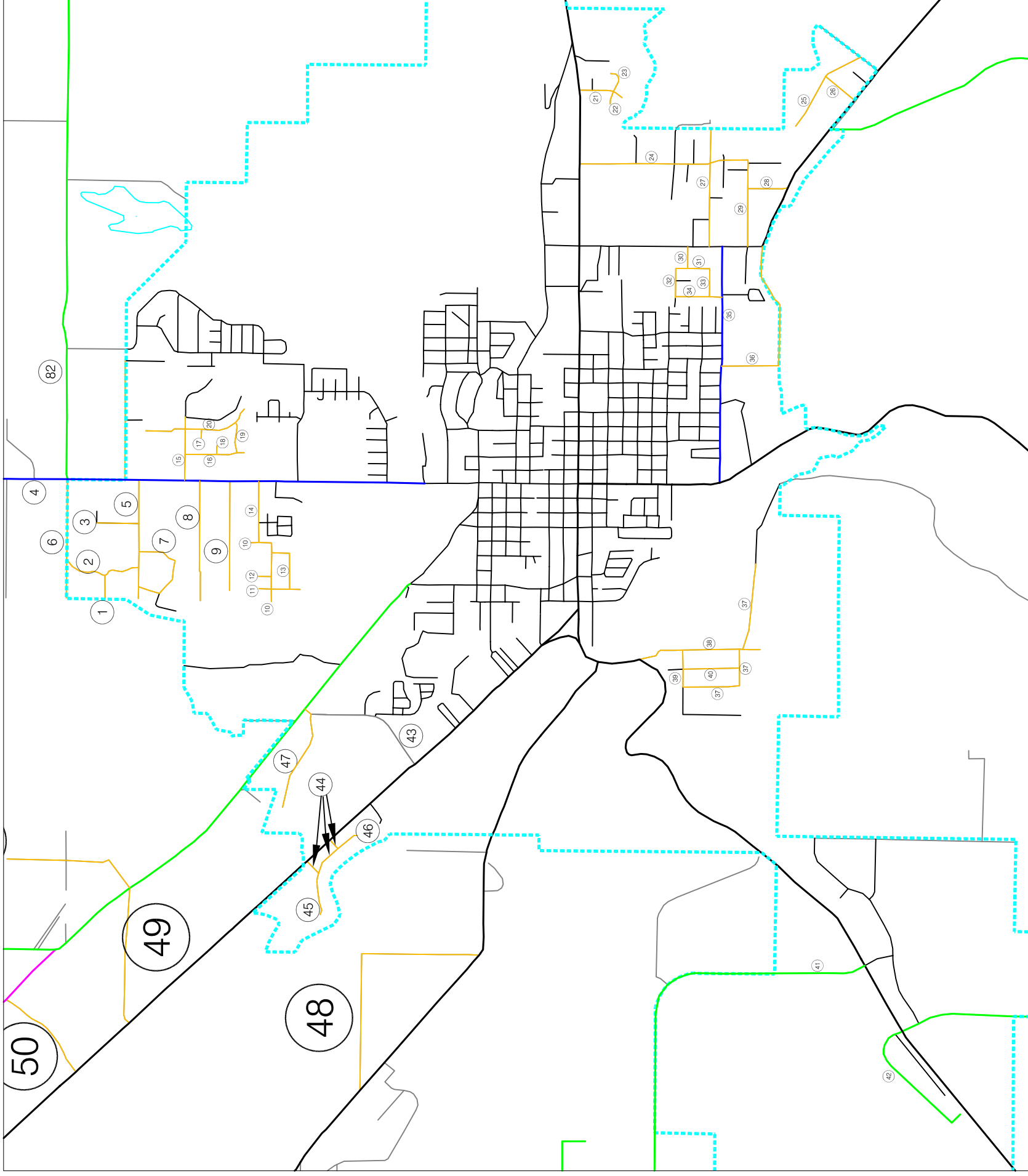
- State Highway
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- County Road
- Other Road



NOT TO SCALE

Crook County Transportation System Plan

Figure 3-2a
Existing Roadway Classification



ROADWAY NAME LEGEND

1. Rollo Lane NW (Co. Rd. 2054)
 2. Rollo Road NW (Co. Rd. 2053)
 3. Knob Hill Way (Co. Rd. 2055)
 4. Main Street N (Co. Rd. 1000)
 5. West Hills Road NW (Co. Rd. 2051)
 6. Peppermint Lane (Co. Rd. 2050)
 7. West Hills Loop (Co. Rd. 2052)
 8. Apollo Road NW (Co. Rd. 336)
 9. McDonald Road NW (Co. Rd. 338)
 10. Harrington Road NW (Co. Rd. 1022)
 11. Hackamore Lane NW (Co. Rd. 1021)
 12. Concho Lane NW (Co. Rd. 1020)
 13. Reata Road NW (Co. Rd. 1023)
 14. Terrace Lane NW (Co. Rd. 227)
 15. Rawhide Lane NE (Co. Rd. 1010)
 16. Buckboard Lane NE (Co. Rd. 1012)
 17. Sorrel Way NE (Co. Rd. 1014)
 18. Bronco Way NE (Co. Rd. 1011)
 19. Latigo Lane NE (Co. Rd. 1013)
 20. Tennessee Lane NE (Co. Rd. 1015)
 21. Williamson Drive NE/SE (Co. Rd. 2042)
 22. Baldwin Court SE (Co. Rd. 2040)
 23. Slayton Court SE (Co. Rd. 2041)
 24. Willowdale Drive SE (Co. Rd. 2062)
 25. Hill Street SE (Co. Rd. 2000)
 26. Hill Road SE (Co. Rd. 2001)
 27. Melrose Drive SE (Co. Rd. 2060)
 28. Stanton Road SE (Co. Rd. 2063)
 29. Lincoln Road SE (Co. Rd. 2061)
 30. Leslie Lane SE (Co. Rd. 1003)
 31. Brewer Lane SE/Palim Lane SE (Co. Rd. 1001)
 32. 5th Street SE (Co. Rd. 1005)
 33. Kramer Lane SE (Co. Rd. 1002)
 34. Baily Road SE (Co. Rd. 1000)
 35. Lynn Boulevard SE (Co. Rd. 110)
 36. Fairgrounds Road SE (Co. Rd. 317)
 37. Crestview Road SW (Co. Rd. 1030)
 38. Rimrock Road SW (Co. Rd. 1033)
 39. Park Drive SW (Co. Rd. 1032)
 40. Cliffside Lane SW (Co. Rd. 1031)
 41. Tom McCall Road SW (Co. Rd. 356)
 42. Airport Road SW (Co. Rd. 115)
 43. Gardner Road NW (Co. Rd. 114)
 44. Riverland Loop NW (Co. Rd. 2030)
 45. Ponderosa Lane NW (Co. Rd. 2031)
 46. Village Court NW (Co. Rd. 2032)
 47. Industrial Park Road NW (Co. Rd. 1060)
 48. Rimrock Acres Loop NW (Co. Rd. 321)
 49. Gumpert Road NW (Co. Rd. 141)
 50. Bus Evans Lane NW (Co. Rd. 348)
 51. Brookfield Lane NW (Co. Rd. 140)
 52. Sunset Lane NW (Co. Rd. 326)
 53. Stahancyk Lane NW (Co. Rd. 347)
 54. Elliott Lane/Road NW (Co. Rd. 124)
 55. Campbell Ranch Road NW (Co. Rd. 303)
 56. Grimes Road NW (Co. Rd. 201)
 57. Woodward Road NW (Co. Rd. 350)
 58. Gerke Road NW (Co. Rd. 301)
 59. Dry Creek Road NE (Co. Rd. 329)
 60. Lone Pine Road NW (Co. Rd. 106)
 61. Lone Pine Lane NW (Co. Rd. 202)
 62. Butler Road NW (Co. Rd. 361)
 63. Lambert Road NW (Co. Rd. 232)
 64. Smith Rock Way NW (Co. Rd. 203)
 65. Landfill Road SW (Co. Rd. 359)
 66. Houston Lake Road SW (Co. Rd. 103)
67. Cornett Loop SW (Co. Rd. 125)
 68. Ref Road SW (Co. Rd. 349)
 69. Brair Lane SW (Co. Rd. 313)
 70. Bozarth Road S/SW (Co. Rd. 208)
 71. Williams Road SW (Co. Rd. 206)
 72. Dixon Road SW (Co. Rd. 207)
 73. Minson Road SW (Co. Rd. 104)
 74. Fleming Road SW (Co. Rd. 205)
 75. Parish Lane SW (Co. Rd. 204)
 76. Wiley Road SW (Co. Rd. 304)
 77. Cronin Road SW (Co. Rd. 345)
 78. Weigand Road SW (Co. Rd. 211)
 79. Kissler Road SW (Co. Rd. 212)
 80. Riggs Road SW (Co. Rd. 209)
 81. Copley Road S (Co. Rd. 210)
 82. Barnes Butte Road NE (Co. Rd. 354)
 83. Quail Valley Lane NE (Co. Rd. 2011)
 84. Quail Valley Drive NE (Co. Rd. 2012)
 85. Lark Lane NE (Co. Rd. 2010)
 86. Wainwright Road NE (Co. Rd. 128)
 87. Johnson Creek Road NE (Co. Rd. 121)
 88. Marmot Lane NE (Co. Rd. 339)
 89. Willow Avenue NE (Co. Rd. 1092)
 90. Orchard Lane NE (Co. Rd. 1090)
 91. River Road (Co. Rd. 1091)
 92. Kylerd Road SE (Co. Rd. 1086)
 93. Canyon Road SE (Co. Rd. 1082)
 94. Mark Road SE (Co. Rd. 1087)
 95. Antler Lane SE (Co. Rd. 1080)
 96. David Way SE (Co. Rd. 1083)
 97. Jerry Drive SE (Co. Rd. 1085)
 98. Bonnie Road SE (Co. Rd. 1081)
 99. Highland Road SE (Co. Rd. 1084)
 100. Mountain Road SE (Co. Rd. 1088)
 101. Idleway Street SE (Co. Rd. 1051)
 102. Loafer Avenue SE (Co. Rd. 1052)
 103. Pleasant View SE (Co. Rd. 1053)
 104. Easy Street SE (Co. Rd. 1050)
 105. Jasper Knolls Drive SE (Co. Rd. 1071)
 106. Sandy Drive SE (Co. Rd. 1073)
 107. Bench Road SE (Co. Rd. 1070)
 108. Ridge Road SE (Co. Rd. 1072)
 109. Yahookin Drive SW (Co. Rd. 2025)
 110. Kootenai Court SW (Co. Rd. 2021)
 111. Wahiakum Street SW (Co. Rd. 2024)
 112. Paute Court SW (Co. Rd. 2028)
 113. Latahomie Street SW (Co. Rd. 2022)
 114. Costanoan Street SW (Co. Rd. 2020)
 115. Pokegama Drive SW (Co. Rd. 2023)
 116. Red Cloud Road SW (Co. Rd. 2027)
 117. Maudu Court SW (Co. Rd. 2029)
 118. Lodi Court SW (Co. Rd. 2026)

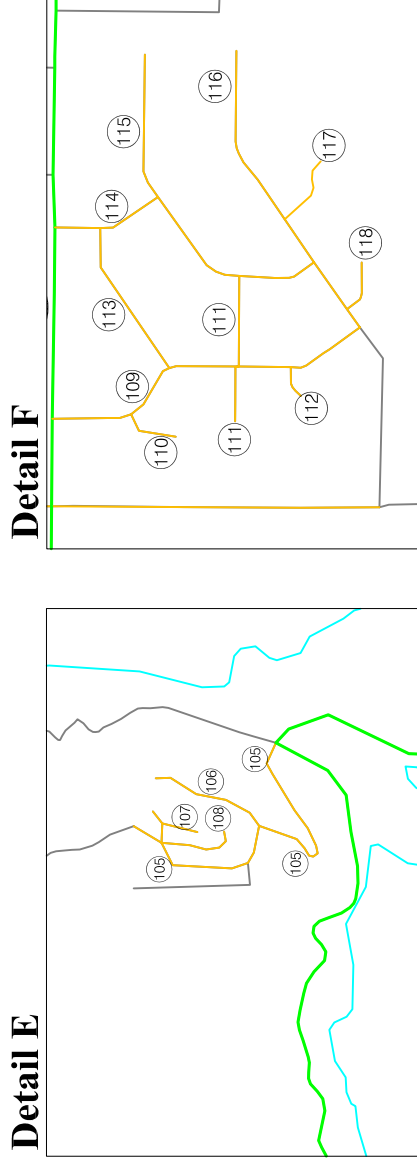
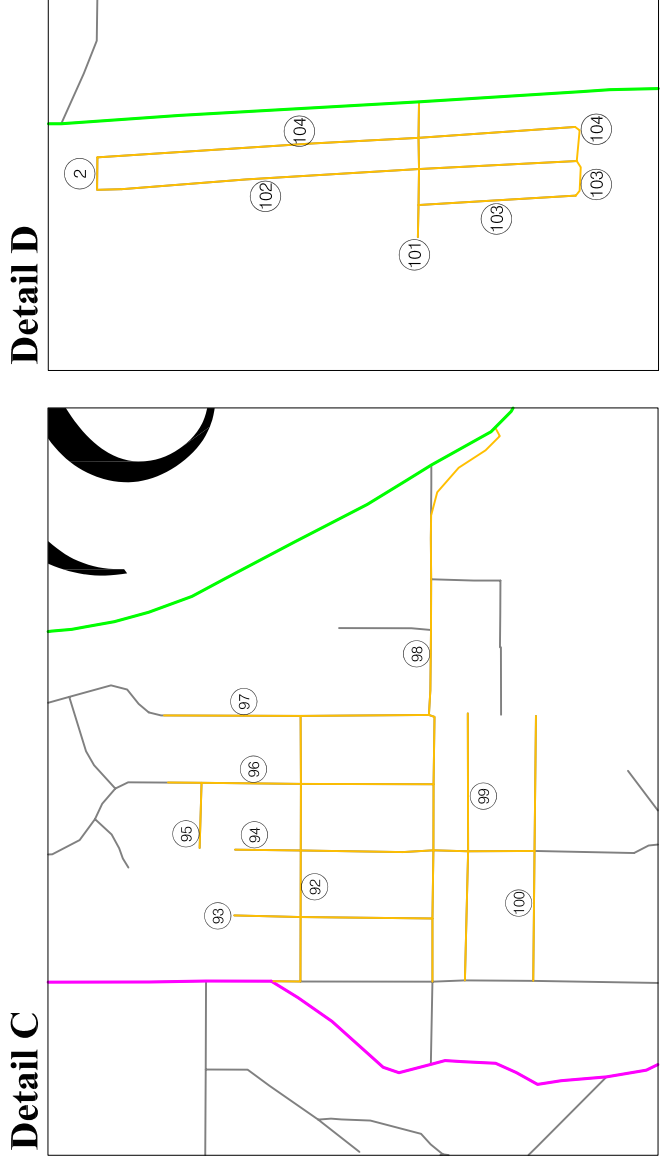
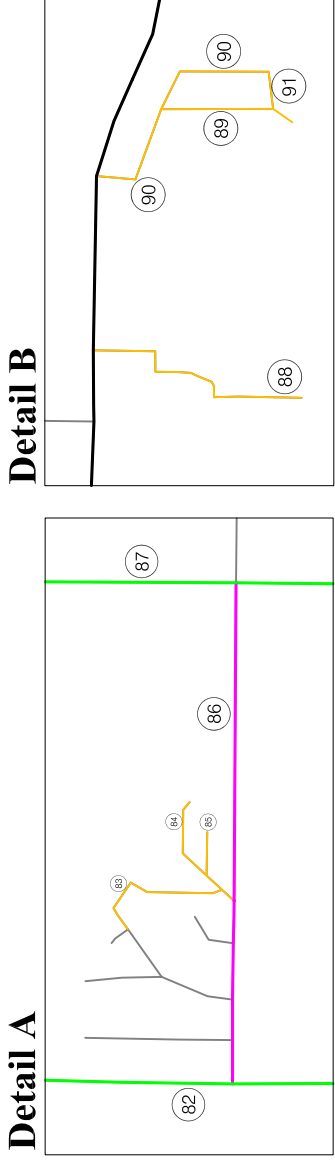
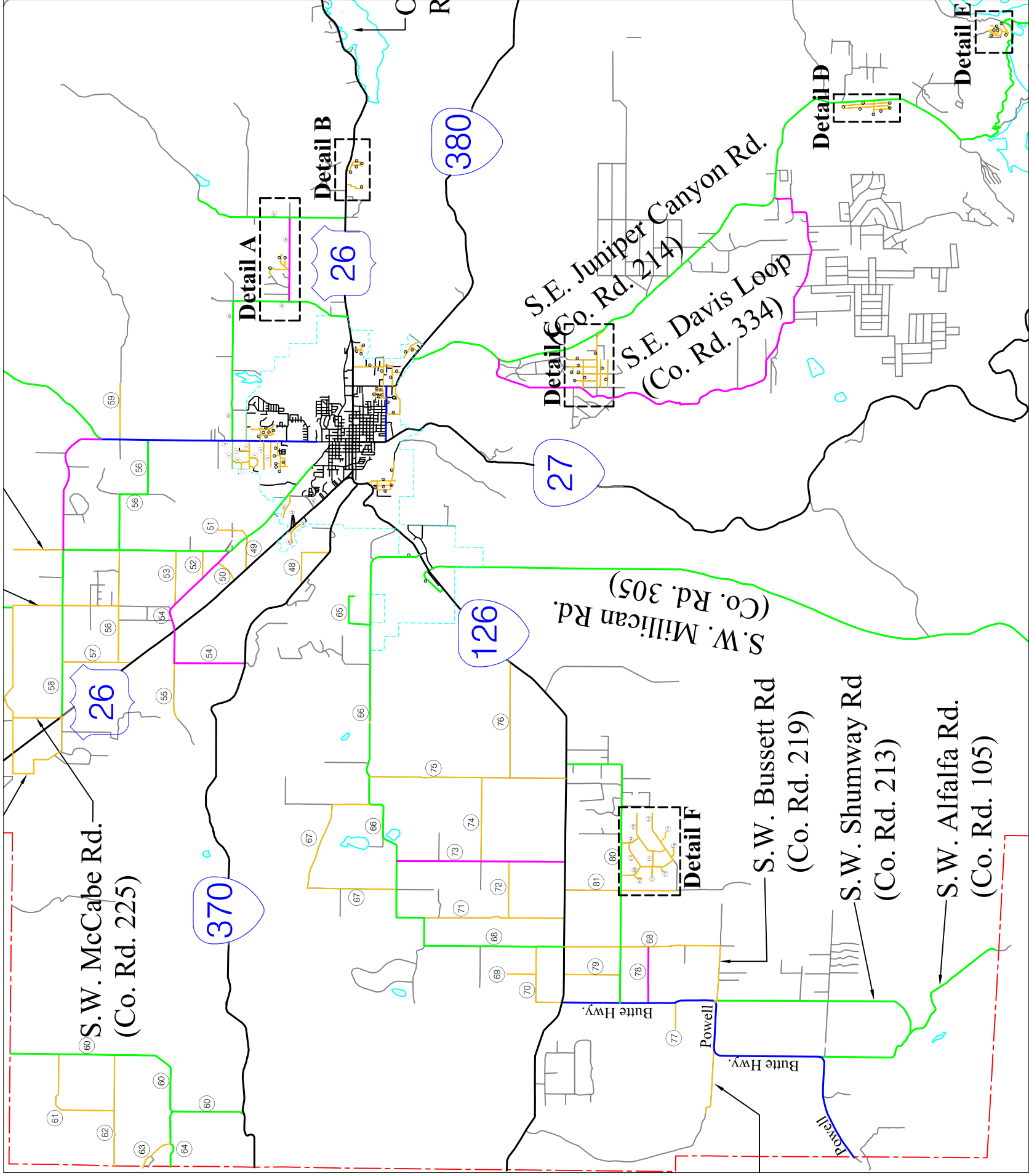


NOT TO SCALE

Crook County Transportation System Plan

- LEGEND**
- State Highway
 - Principal Arterial
 - Minor Arterial
 - Major Collector
 - Minor Collector
 - County Road

Figure 3-2b
Existing Roadway Classification



Crook County Transportation System Plan

- LEGEND**
- State Highway
 - Principal Arterial
 - Minor Arterial
 - Major Collector
 - Minor Collector
 - County Road
 - Other Road
 - Crook County Bridges
 - ODOT Bridges

Figure 3-2c
Existing Roadway Classification

NOT TO SCALE

The roadway functional classification system is made up of the following five classifications:

- principal arterial,
- minor arterial,
- rural major collector,
- rural minor collector, and
- local street.

All of these five roadway functional classifications exist in the Crook County study area.

Typically, a principal/minor arterial is designated as a road which carries the highest volume of traffic within the county. It is primarily intended to provide access across the county rather than provide access to abutting properties. A collector street typically provides access between arterials, to abutting properties, and from neighborhoods onto arterials. A local street is intended to solely serve abutting properties.

3.3.2. State Facilities

State highways traversing through Crook County creates the backbone of Crook County's street system. The following five state highways traverse Crook County:

- US/Oregon 26 – Madras Prineville Highway Number 360/Ochoco Highway Number 41
- Oregon 126 – Ochoco Highway Number 41
- Oregon 370 – Oneil Highway Number 370
- Oregon 27, Crooked River Highway Number 14
- Oregon 380 – Paulina Highway Number 380

The *1999 Oregon Highway Plan*¹ defines a state highway classification system in Policy 1A. The categories of highways defined in Policy 1A are summarized and defined below.

- Interstate Highways (NHS) provide connections to major cities, regions of the state, and other states. A secondary function in urban area is to provide connections for regional trips within the metropolitan area. The Interstate Highways are major freight routes and their objective is to provide mobility. The management objective is to provide for safe and efficient high-speed continuous-flow operation in urban and rural areas.
- Statewide Highways (NHS) typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objectives is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (STAs), local access may also be a priority.

¹ 1999 Oregon Highway Plan, Oregon Department of Transportation, March 1999, pages 37 and 38.
Crook County Transportation System Plan
December 2005

- Regional Highways typically provide connections and links to regional centers, Statewide or Interstate Highways, or economic or activity centers of regional significance. The management objective is to provide safe and efficient, high-speed, continuous-flow operation in rural areas and moderate to high-speed operations in urban and urbanizing areas. A secondary function is to serve land uses in the vicinity of these highways. Inside STAs, local access is also a priority. Inside Urban Business Areas, mobility is balanced with local access.
- District Highways are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements. Inside STAs, local access is a priority. Inside Urban Business Areas, mobility is balanced with local access.
- Local Interest Roads function as local streets or arterials and serve little or no purpose for through traffic mobility. Some are frontage roads; some are not eligible for federal funding. Currently, these roads are District Highways or unclassified and will be identified through a process delineated according to Policy 2C. The management objective is to provide for safe and efficient, low to moderate speed traffic flow and for pedestrian and bicycle movements. Inside STAs, local access is a priority. ODOT will seek opportunities to transfer these roads to local jurisdictions.

US 26 – Madras-Prineville Highway and Ochoco Highway

The Madras-Prineville Highway section of US 26 is classified as a minor arterial and is a regional highway. It provides access between Madras and Prineville as well as destinations further west. US 26 is a two-lane highway with a posted speed limit of 55 mph northwest of Gumpert Road. Southeast of Gumpert Road, the posted speed limit is reduced to 40 mph. There are only limited shoulders along US 26.

The Ochoco Highway section of US 26 is classified as a principal arterial and is statewide highway. It provides access to Central Oregon. The highway is a two-lane facility with a 55 mph posted speed limit and two to four foot shoulders.

Oregon 126 – Ochoco Highway

Oregon 126 is an east-west highway that connects Crook County to Deschutes County and eventually to the Oregon Coast. The highway is classified as a statewide highway and is a principal arterial. The highway is a two-lane facility with a 55 mph speed limit. There are five to six foot shoulders that exist along Oregon 126 in the Crook County section of highway.

Oregon 370 – Oneil Highway

Oneil Highway is classified as a district highway and is a rural major collector. It is two-lane facility with a 55 mph posted speed limit. There are no shoulders along Oneil Highway except for a 2.6 mile section immediately west of Prineville. Oneil Highway provides access between Prineville and US 97 just north of Redmond.

Oneil Highway can serve a significant amount of truck traffic since it is the major access to aggregate sites. Aggregate truck traffic along Oneil Highway varies depending on construction activity in Crook County and other adjacent counties.”

Oregon 27, Crooked River Highway

Oregon 27, Crooked River Highway, is classified as a district highway and is a rural major collector. Oregon 27 provides access south of Prineville and eventually connects to US 20 west of Brothers. The Crooked River Highway is a two-lane facility with a posted speed limit of 55 mph. Shoulder conditions vary from no shoulders to shoulders ranging from one to six feet wide.

Oregon 380 – Paulina Highway

Oregon 380, Paulina Highway, is classified as a district highway and is a rural major collector. It traverses the county in an east-west direction and connects Prineville to Paulina through Combs Flat Junction and Post. Paulina Highway is a two-lane facility with a posted speed limit varying from 45 mph to 55 mph. The shoulder conditions vary from zero to 8 feet wide.

Powell Butte Highway

Powell Butte Highway has recently been transferred to Crook County in a jurisdictional transfer and is no longer an ODOT facility. With this jurisdictional transfer, Powell Butte Highway has been reclassified as a minor arterial. It is a two-lane facility with shoulder conditions varying zero to three feet wide.

3.3.3. Non-Highway Principal and Minor Arterials

There are one non-highway principal arterial in Crook County called Lynn Boulevard SE (County Road 110). There are two non-highway minor arterials in unincorporated Crook County. Main Street N (County Road 100) and Powell Butte Highway are the two non-highway minor arterials in unincorporated Crook County. The roadway characteristics of the non-highway arterials are summarized in Table 3-1.

3.3.3. Major Rural and Minor Rural Non-Highway Collectors

The remainder of Crook County's non-highway arterial system is made up of major rural and minor rural collectors. The rural major collectors within Crook County are listed below:

- Alfalfa Road SW (County Road 105)
- Aviation 365 SW (County Road 115)
- Barnes Butte Road NE (County Road 120)
- Barnes Road NE (County Road 354)
- Bear Creek Road SE (County Road 111)
- Beaver Creek Road SE (County Road 113)
- Bus Evans Lane NW (County Road 348)
- Camp Creek Road SE (County Road 127)
- Carey Foster Road SE (County Road 362)
- Fairgrounds Road SE (County Road 317)
- Geo. Millican Road SW (County Road 305)
- Gerke Road NW (County Road 301) from Milepost 0.00 to Milepost 1.96
- G.I. Road SE (County Road 357)
- Grizzly Road NW (County Road 302)
- Gumpert Road NW (County Road 141)
- Houston Lake Road SW (County Road 103)
- Johnson Creek Road NE (County Road 121)
- Juniper Canyon Road SE (County Road 214)
- Lamonta Road NW (County Road 101)
- Landfill Road SW (County Road 359)
- Lone Pine Road NW (County Road 106)
- McKay Creek Road NE (County Road 116)
- McKay Road NE (County Road 102)
- Melrose Drive SE (County Road 2060)
- Mill Creek Road NE (County Road 122)
- Newsome Creek Road SE (County Road 224)
- Ochoco Ranger Station Road NE (County Road 123)
- Paulina-Suplee Highway SE (County Road 112)
- Puett Road SE (County Road 135)
- Reif Road SW (County Road 349)
- Reservoir Road SE/SW (County Road 332)
- Riggs Road SW (County Road 209)
- Shumway Road SW (County Road 213)
- Smith Rock Way NW (County Road 203)
- Stillman Road SW (County Road 319)
- Tom McCall Road SW (County Road 356)
- Willard Road SW (County Road 351)
- Willowdale Drive SE/NE (County Road 2062)

The roadway characteristics of the non-highway minor arterials are summarized in Table 3-1.

The minor rural collectors within Crook County are listed below:

- Davis Loop SE (County Road 334)
- Elliott Lane NW (County Road 124)
- Elliott Road NW (County Road 124)
- Grindstone Road SE (County Road 333)
- Idleway Street SE (County Road 1051)
- Jasper Knolls Drive SE (County Road 1071)
- Kloochamn Creek Road (County Road 325)
- Lambert Road NW (County Road 232)
- Minson Road SW (County Road 104)
- Orchard Lane NE (County Road 1090)
- Parrish Lane SW (County Road 204)
- Paulina City Road SE (County Road 131)
- Price-Twelve Mile Road SE (County Road 308)
- Pringle Flat Road SE (County Road 216)
- Quail Valley Drive NE (County Road 2012)
- Rawhide Lane NE (County Road 1010)
- Red Cloud Road SW (County Road 2027)
- Rimrock Road SW (County Road 1033)
- Shotgun Road SE (County Road 222)
- Sunset Lane SW (County Road 326)
- Terrace Lane NW (County Road 227)
- Van Lake Road SE (County Road 218)
- Wainright Road NE (County Road 128)
- Weberg Road SE (County Road 318)
- Weigand Road SW (County Road 211)
- West Hills Road NE (County Road 2051)

The roadway characteristics of the non-highway collectors are summarized in Table 3-1. Below is a legend to interpret information in Table 3-1.

- NP – not posted, indicates that no posted speed exists along a roadway section
- BL – bike lane, indicates whether a bike lane exists along a roadway section
- SW – sidewalk, indicates whether a sidewalk exists along a roadway section
- P – poor pavement condition
- F – fair pavement condition
- G- good pavement condition
- F-P – fair to poor pavement condition
- G-F – good to fair pavement condition
- “1” – indicates that the shoulder is marked as a bike lane

Table 3-1. Roadway Inventory

Street	Limits	Posted Speed (mph)	Street Width (feet)	Number of Lanes	Shoulder (Yes/No)	Shoulder Width (feet)	Bike Lane or Sidewalk (BL, SW)	Bike Lane or Sidewalk Width	Pavement Condition
ODOT Highways									
US 26 - Ochoco Hwy	From Barnes Butte Rd to Johnson Creek Rd	NP	22-24	2	Yes	4	-	-	F
	From Johnson Creek Rd to county line (26 mi)	NP	22-24	2	Yes	2-4	-	-	F-P
US 26 - Madras Prineville Hwy	From county line to Gumpert Rd	NP	23-24	2	Yes	0-1	-	-	F-P
	From Gumpert Rd to Riverland Drive	40	23-24	2	Yes	0-1	-	-	F-P
OR 126 - Ochoco Hwy	From Prineville to 0.02 miles	45	42	3	Yes	5-6	-	-	F-P
	From 0.02 miles to begin passing lane	55	42	3	Yes	5-6	-	-	F
	From end passing lane to begin school zone	55	32	2	Yes	5-6	-	-	F
	From begin school zone to end school zone	20	32	2	Yes	5-6	-	-	F
	From end school zone to Powell Butte Hwy	55	32	2	Yes	5-6	-	-	F
	From Powell Butte Hwy to county line	NP	32	2	Yes	5-7	-	-	F-P
OR 370 - O'neil Hwy	For 2.6 miles east of Ochoco Hwy	NP	24	2	Yes	6-7	-	-	F-P
	From 2.6 miles to Lone Pine Rd N	NP	24-26	2	No	-	-	-	P
	Lone Pine Rd N to county line	NP	24-26	2	No	-	-	-	P
OR 27 - Crooked River Hwy	North from Reservoir Rd (21.3 mi)	NP	22	2	No	-	-	-	F-P
	From 21.3 mi to south city limits	45-55	24-27	2	Yes	1-6	-	-	P
OR 380 - Paulina Hwy	From Juniper Canyon Rd to Newsome Cr Rd	45-55	26	2	Yes	0-8	-	-	F
	From Newsome Cr Rd to Camp Cr Rd	NP	31	2	Yes	0-8	-	-	F-P
	Camp Cr Rd to Beaver Creek Rd S	NP	31	2	Yes	0-8	-	-	F-P

Table 3-1. Roadway Inventory Continued

Street	Limits	Posted Speed (mph)	Street Width (feet)	Number of Lanes	Shoulder (Yes/No)	Shoulder Width (feet)	Bike Lane or Sidewalk (BL, SW)	Bike Lane or Sidewalk Width	Pavement Condition
Powell Butte Hwy	From Ochoco Hwy to Alfalfa Rd	NP	22	2	Yes	0-8	-	-	P
	From Shumway Rd to Alfalfa Rd (3.8 mi)	NP	22	2	No	0-8	-	-	F
	From Alfalfa Rd to county line	NP	32	2	Yes	0-8	-	-	P
County Roads									
Alfalfa Rd SW	From Powell Butte Rd to county line (4.0 mi)	NP	23	2	No	-	-	-	F
Allen Cr Rd NE	NE McKay Cr Rd to end of pavement	NP	23	2	Yes	0-8	-	-	G
Barnes Rd N	From Barnes Butte Rd NE to Hwy 26	45	20	2	Yes	1-4	-	-	F
Barnes Butte Rd NE	From McKay to Barnes Rd N	45	20	2	Yes	1-3	-	-	F
Bear Cr Rd S	From OR 27 to Pringle Flat Rd	NP	24	2	No	-	-	-	gravel
Beaver Cr Rd S	From Paulina to USFS boundary	NP	22-25	2	Yes	0-8	-	-	F-G
Camp Cr Rd SE	From OR 380 to 15 miles south	NP	23	2	Yes	4	-	-	F-G
	15 miles south of OR 380 to Pringle Flat Rd	NP	19-25	2	No	-	-	-	gravel
Davis Loop S	For entire length (9.1 mi)	NP	22-24	2	Yes	1-3	-	-	F
Elliott Rd NW	From O'Neil Rd to Hwy 26	NP	19-21	2	No	-	-	-	F-P
	From Hwy 26 to Lamonta Rd	NP	20-24	2	No	-	-	-	F-P
Gerke Rd NW	From Hwy 26 to Lamonta Rd	NP	23	2	No	-	-	-	F
	From Lamonta Rd to McKay Rd NE	NP	20	2	Yes	4-5	BL	-	G
GJ Road SE	From Camp Cr Rd to county line	NP	22-24	2	No	-	-	-	gravel

Table 3-1. Roadway Inventory Continued

Street	Limits	Posted Speed (mph)	Street Width (feet)	Number of Lanes	Shoulder (Yes/No)	Shoulder Width (feet)	Bike Lane or Sidewalk (BL, SW)	Bike Lane or Sidewalk Width	Pavement Condition
Grimes Rd NW	From McKay Rd NE to Lamonta	NP	21-22	2	No	-	-	-	G-F
Houston Lake Rd SW	From Williams Rd S to Munson Rd S	NP	22-24	2	Yes	0-1	-	-	F-P
	From Munson Rd S to Tom McCall Rd SW	NP	20-24	2	Yes	0-2	-	-	F-G
Johnson Creek Rd NE	From Hwy 26 to Wainwright Rd NE	NP	20-21	2	Yes	1-3	-	-	F
	From north from Wainwright for 0.7 miles	NP	20	2	No	-	-	-	F-P
Juniper Canyon Rd SE	From Paulina Hwy to passing lane (4.0 mi)	NP	24	2	Yes	3-5	-	-	F
	Passing lane (4.0 to 4.7 mi)	NP	32	3	Yes	3-4	-	-	F
	From end of passing lane to end of road	NP	24	2	Yes	1-3	-	-	F
Lamonta Rd NW	From Gerke Rd to Garden Ln	55	21-22	2	1	3-5	BL	-	G
	From Garden Ln to Gumpert Rd	35	21-22	2	1	3-5	BL	-	G-F
	From Gumpert Rd to Gardener Rd	35-55	21-22	2	Yes	1-4	-	-	G-F
	From Gardener Rd to Harwood St	40-55	21-22	2	Yes	1-4	-	-	G-F
	From Harwood St to Deer St	35	21-22	2	Yes	1-4	-	-	G-F
	From Deer St to Main St	25	21-22	2	Yes	1-4	-	-	F-P
Lone Pine Rd NW	From O'neil Hwy (Hwy 370) to county line	NP	25	2	Yes	3-6	-	-	F-P
McKay Rd NE	From Peters Rd NE to Gerke Rd	45	32	2	Yes	5-7	BL	5-7	F
McKay Creek Rd NE	From Gerke Rd to Allen Creek Rd NE	NP	20	2	Yes	2-4	-	-	F
	From Allen Creek Rd NE to USFS boundary	NP	20	2	Yes	2-4	-	-	F

Table 3-1. Roadway Inventory Continued

Street	Limits	Posted Speed (mph)	Street Width (feet)	Number of Lanes	Shoulder (Yes/No)	Shoulder Width (feet)	Bike Lane or Sidewalk (BL, SW)	Bike Lane or Sidewalk Width	Pavement Condition
Tom McCall Rd SW	For entire length (0.3 mi)	NP	24	2	Yes	3-4	-	-	G
Wainwright Rd NE		NP	24	2	Yes	4-8	-	-	F
Weberg Rd S	From Suplee Rd to County Line	NP	22	2	Yes	4	-	-	F
Willard Rd SW	From County line to Reservoir Rd SW (1.8 mi)	NP	33	2	Yes	0-5	-	-	F
Williams Rd S	For entire length (0.5 mi)	NP	22-24	2	Yes	0-1	-	-	F

3.4. BRIDGES

The Oregon Department of Transportation maintains an up to date inventory and appraisal of Oregon bridges. Part of this inventory involves the evaluation of three mutually exclusive elements of bridges. One element identifies which bridges are structurally deficient. This is determined based on the condition rating for the deck, superstructure, substructure, or culvert and retaining walls. It may also be based on the appraisal rating of the structural condition or waterway adequacy. Another element identifies which bridges are functionally obsolete. This element is determined based on the appraisal rating for the deck geometry, underclearances, approach roadway alignment, structural condition, or waterway adequacy. The third element summarizes the sufficiency ratings for all bridges. The sufficiency rating is a complex formula which takes into account four separate factors to obtain a numeric value rating the ability of a bridge to service demand. The scale ranges from 0 to 100 with higher ratings indicating optimal conditions and lower ratings indicating insufficiency. Bridges with ratings under 55 may be nearing a structurally deficient condition. In more general terms, a rating under 55 may indicate that significant maintenance is needed or that replacement should be planned. The exception to this are bridges that were built to a much older standard that are in good condition but do not meet today's design standards. These types of bridges can rate fairly low and under 55. The important factor here is that there are no structural integrity issues and loading problems that limit the type of vehicle and weight can cross the structure.

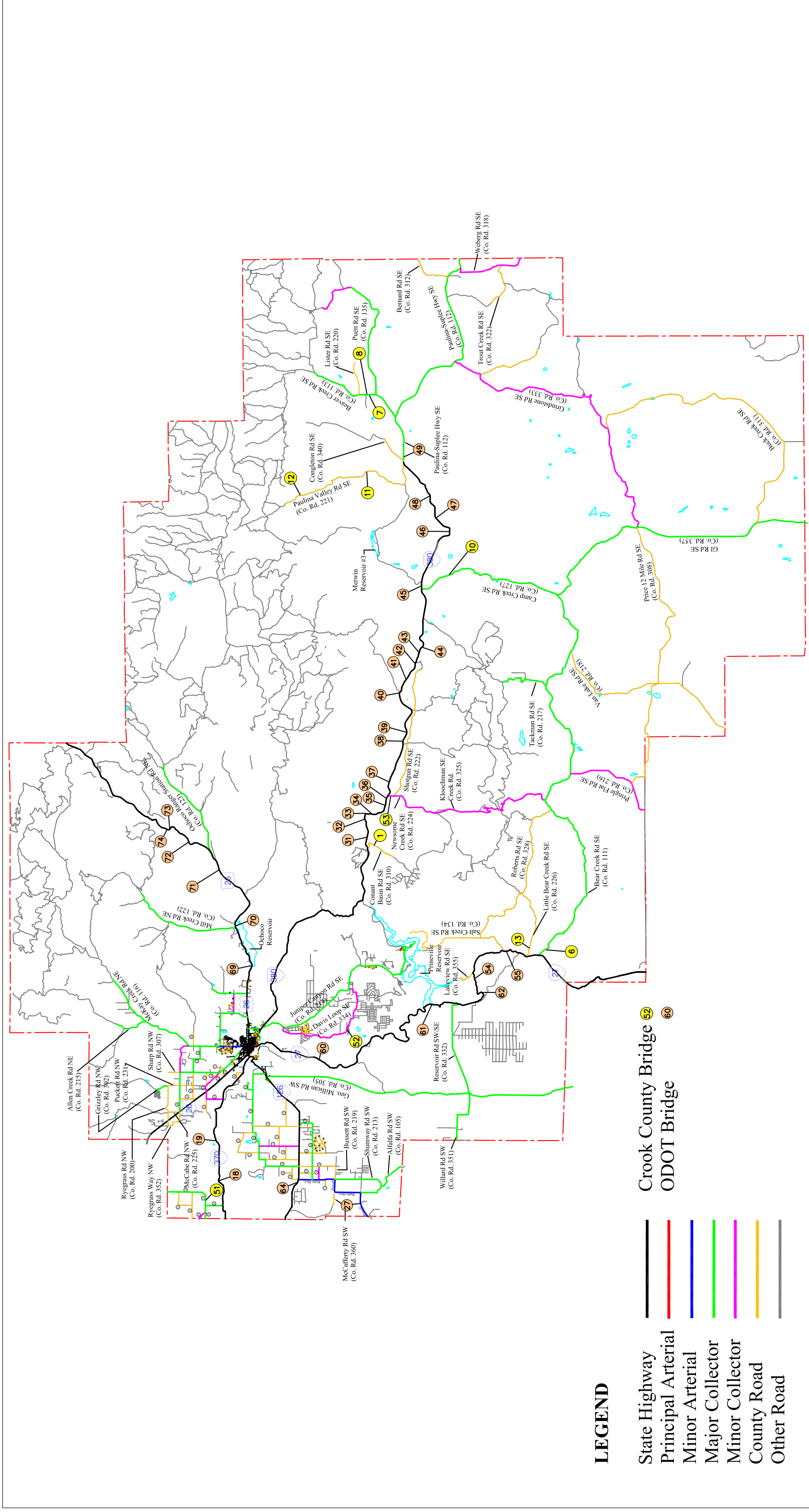
There are 80 bridges within the Crook County planning area that are rated by ODOT. Of these 80 bridges, 24 are maintained by Crook County and the remaining 56 are maintained by ODOT. Five of the ODOT maintained bridges are within the urban growth boundary (UGB) of the City of Prineville. Figures 3-3a, 3-3b, and 3-3c show the locations of the 81 bridges within the Crook County planning area.

Table 3-2 summarizes the inventory of 81 bridges within Crook County that are rated by ODOT, nimbus number, waterway it crosses, maintenance responsibility, and sufficiency rating. As shown in Table 3-2, all of the bridges rated by ODOT had a sufficiency rating greater than 55 except the following three:

- Paulina Valley Road SE bridge over Paulina Creek – Bridge Number 12
- Newsom Road bridge over the Crooked River – Bridge Number 53
- US 26 bridge over the Crooked River – Bridge Number 67

The bridge rating for Bridge Number 12 on Paulina Valley Road SE (County Road 221) over Paulina Creek recently went down from a bridge rating of 56.1 to 40.9 with ODOT's inspection in August 2004. This recent inspection indicates that Bridge Number 12 should be programmed for replacement.

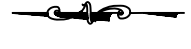
The Newsom Road bridge (Bridge Number 53 in Table 3-2 and Figure 3-3a) has recently failed. Crook County is seeking emergency funding for this bridge replacement. Funding is being secured through OTIA III. Construction to replace the bridge is currently underway.



LEGEND

- State Highway
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- County Road
- Other Road

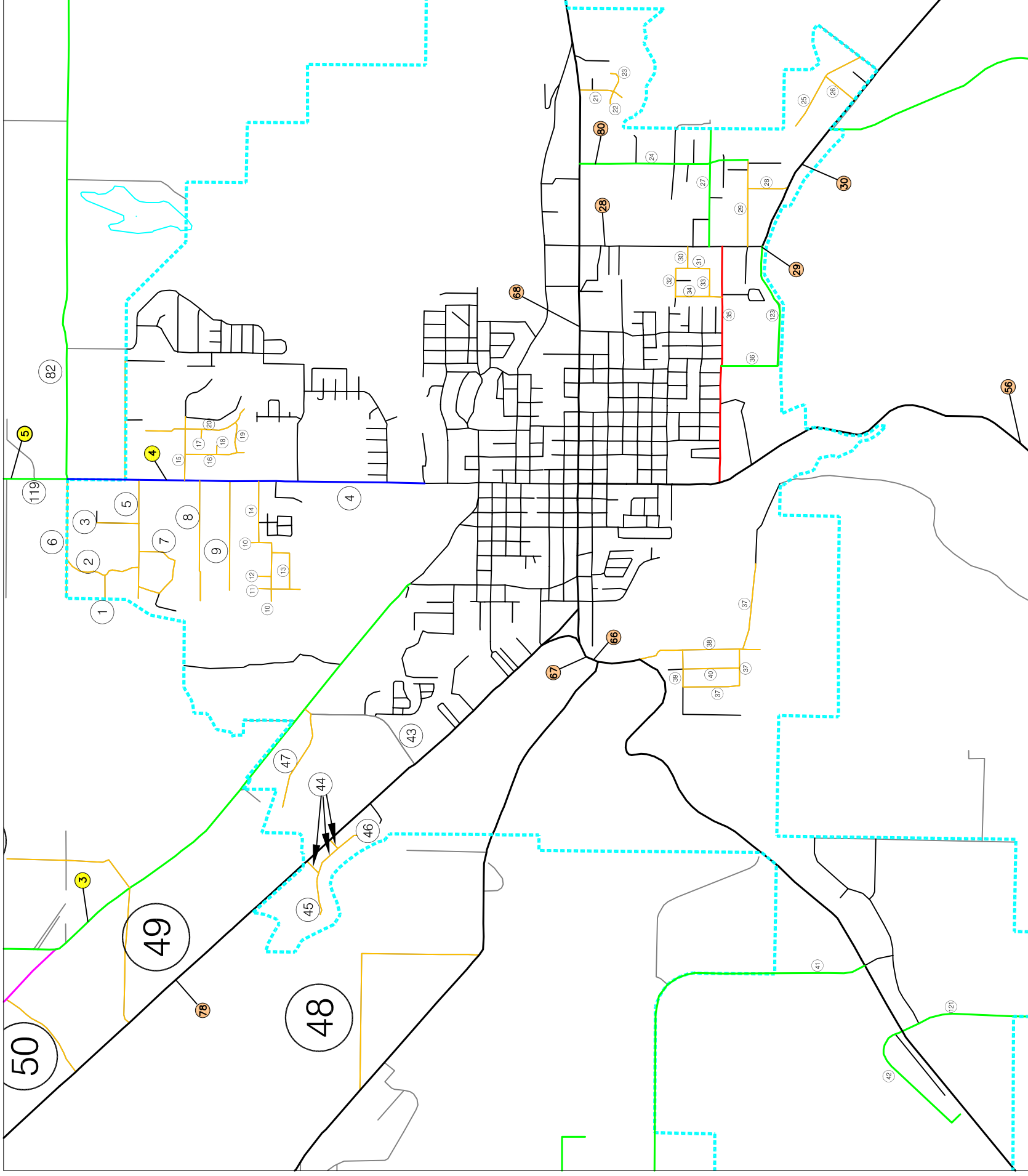
- Crook County Bridge 52
- ODOT Bridge 60



NOT TO SCALE

Crook County Transportation System Plan

Figure 3-3a
Bridge Locations



ROADWAY NAME LEGEND

1. Rollo Lane NW (Co. Rd. 2054)
2. Rollo Road NW (Co. Rd. 2053)
3. Knob Hill Way (Co. Rd. 2055)
4. Main Street N (Co. Rd. 100)
5. West Hills Road NW (Co. Rd. 2051)
6. Peppermint Lane (Co. Rd. 2050)
7. West Hills Loop (Co. Rd. 2052)
8. Apollo Road NW (Co. Rd. 336)
9. McDonald Road NW (Co. Rd. 338)
10. Harrington Road NW (Co. Rd. 1022)
11. Hackamore Lane NW (Co. Rd. 1021)
12. Concho Lane NW (Co. Rd. 1020)
13. Reata Road NW (Co. Rd. 1023)
14. Terrace Lane NW (Co. Rd. 227)
15. Rawhide Lane NE (Co. Rd. 1010)
16. Buckboard Lane NE (Co. Rd. 1012)
17. Sorrel Way NE (Co. Rd. 1014)
18. Bronco Way NE (Co. Rd. 1011)
19. Latigo Lane NE (Co. Rd. 1013)
20. Tennessee Lane NE (Co. Rd. 1015)
21. Williamson Drive NE/SE (Co. Rd. 2042)
22. Baldwin Court SE (Co. Rd. 2040)
23. Slayton Court SE (Co. Rd. 2041)
24. Willowdale Drive SE (Co. Rd. 2062)
25. Hill Street SE (Co. Rd. 2000)
26. Hill Road SE (Co. Rd. 2001)
27. Melrose Drive SE (Co. Rd. 2060)
28. Stanton Road SE (Co. Rd. 2063)
29. Lincoln Road SE (Co. Rd. 2061)
30. Leslie Lane SE (Co. Rd. 1003)
31. Brewer Lane SE/Palim Lane SE (Co. Rd. 1001)
32. 5th Street SE (Co. Rd. 1005)
33. Kramer Lane SE (Co. Rd. 1002)
34. Baily Road SE (Co. Rd. 1000)
35. Lynn Boulevard SE (Co. Rd. 110)
36. Fairgrounds Road SE (Co. Rd. 317)
37. Crestview Road SW (Co. Rd. 1030)
38. Rimrock Road SW (Co. Rd. 1033)
39. Park Drive SW (Co. Rd. 1032)
40. Cliffside Lane SW (Co. Rd. 1031)
41. Tom McCall Road SW (Co. Rd. 356)
42. Aviation 365 SW (Co. Rd. 115)
43. Gardner Road NW (Co. Rd. 114)
44. Riverland Loop NW (Co. Rd. 2030)
45. Ponderosa Lane NW (Co. Rd. 2031)
46. Village Court NW (Co. Rd. 2032)
47. Industrial Park Road NW (Co. Rd. 1060)
48. Rimrock Acres Loop NW (Co. Rd. 321)
49. Gumpert Road NW (Co. Rd. 141)
50. Bus Evans Lane NW (Co. Rd. 348)
51. Brookfield Lane NW (Co. Rd. 140)
52. Sunset Lane NW (Co. Rd. 326)
53. Stahancyk Lane NW (Co. Rd. 347)
54. Elliott Lane/Road NW (Co. Rd. 124)
55. Campbell Ranch Road NW (Co. Rd. 303)
56. Grimes Road NW (Co. Rd. 201)
57. Woodward Road NW (Co. Rd. 350)
58. Gerke Road NW (Co. Rd. 301)
59. Dry Creek Road NE (Co. Rd. 329)
60. Lone Pine Road NW (Co. Rd. 106)
61. Lone Pine Lane NW (Co. Rd. 202)
62. Butler Road NW (Co. Rd. 361)
63. Lambert Road NW (Co. Rd. 232)
64. Smith Rock Way NW (Co. Rd. 203)
65. Landfill Road SW (Co. Rd. 359)
66. Houston Lake Road SW (Co. Rd. 103)

67. Cornett Loop SW (Co. Rd. 125)
68. Ref Road SW (Co. Rd. 349)
69. Brair Lane SW (Co. Rd. 313)
70. Bozarth Road S/SW (Co. Rd. 208)
71. Williams Road SW (Co. Rd. 206)
72. Dixon Road SW (Co. Rd. 207)
73. Minson Road SW (Co. Rd. 104)
74. Fleming Road SW (Co. Rd. 205)
75. Parish Lane SW (Co. Rd. 204)
76. Wiley Road SW (Co. Rd. 304)
77. Cronin Road SW (Co. Rd. 345)
78. Weigand Road SW (Co. Rd. 211)
79. Kissler Road SW (Co. Rd. 212)
80. Riggs Road SW (Co. Rd. 209)
81. Copley Road S (Co. Rd. 210)
82. Barnes Butte Road NE (Co. Rd. 120)
83. Quail Valley Lane NE (Co. Rd. 2011)
84. Quail Valley Drive NE (Co. Rd. 2012)
85. Lark Lane NE (Co. Rd. 2010)
86. Wainwright Road NE (Co. Rd. 128)
87. Johnson Creek Road NE (Co. Rd. 121)
88. Marmot Lane NE (Co. Rd. 339)
89. Willow Avenue NE (Co. Rd. 1092)
90. Orchard Lane NE (Co. Rd. 1090)
91. River Road (Co. Rd. 1091)
92. Kyle Road SE (Co. Rd. 1086)
93. Canyon Road SE (Co. Rd. 1082)
94. Mark Road SE (Co. Rd. 1087)
95. Antler Lane SE (Co. Rd. 1080)
96. David Way SE (Co. Rd. 1083)
97. Jerry Drive SE (Co. Rd. 1085)
98. Bonnie Road SE (Co. Rd. 1081)
99. Highland Road SE (Co. Rd. 1084)
100. Mountain Road SE (Co. Rd. 1088)
101. Idleway Street SE (Co. Rd. 1051)
102. Loafer Avenue SE (Co. Rd. 1052)
103. Pleasant View SE (Co. Rd. 1053)
104. Easy Street SE (Co. Rd. 1050)
105. Jasper Knolls Drive SE (Co. Rd. 1071)
106. Sandy Drive SE (Co. Rd. 1073)
107. Bench Road SE (Co. Rd. 1070)
108. Ridge Road SE (Co. Rd. 1072)
109. Yahookin Drive SW (Co. Rd. 2025)
110. Kootenai Court SW (Co. Rd. 2021)
111. Wahkiakum Street SW (Co. Rd. 2024)
112. Paute Court SW (Co. Rd. 2028)
113. Latahomie Street SW (Co. Rd. 2022)
114. Costanoan Street SW (Co. Rd. 2020)
115. Pokegama Drive SW (Co. Rd. 2023)
116. Red Cloud Road SW (Co. Rd. 2027)
117. Maudu Court SW (Co. Rd. 2029)
118. Lodi Court SW (Co. Rd. 2026)
119. McKay Road N (Co. Rd. 102)
120. Barnes Road NE (Co. Rd. 354)
121. Geo. Millican Rd SW (Co. Rd. 305)
122. Stillman Road SW (Co. Rd. 319)
123. Carey Foster Road SE (Co. Rd. 362)



Crook County Transportation System Plan

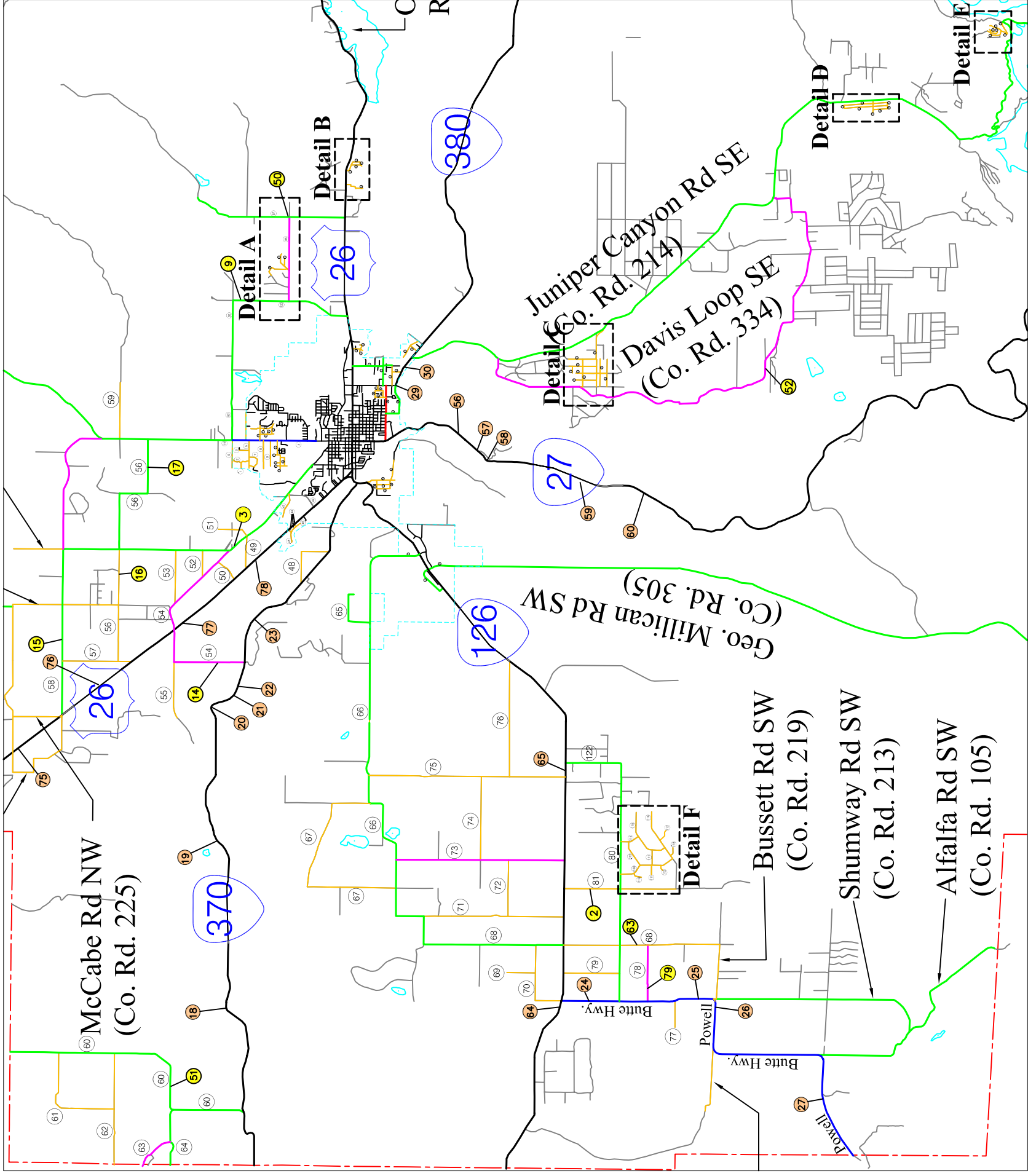
LEGEND

- State Highway
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- County Road

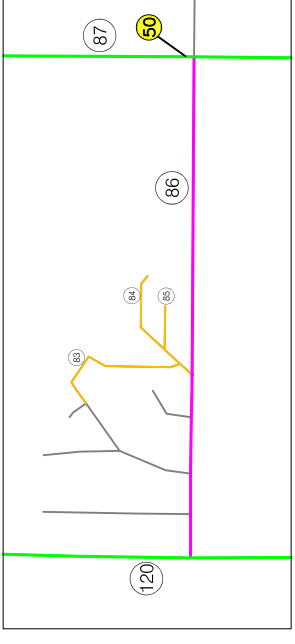
- Crook County Bridges
- ODOT Bridges

- Other Road

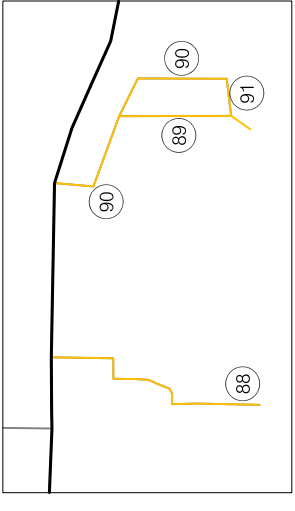
Figure 3-3b
Bridge Locations



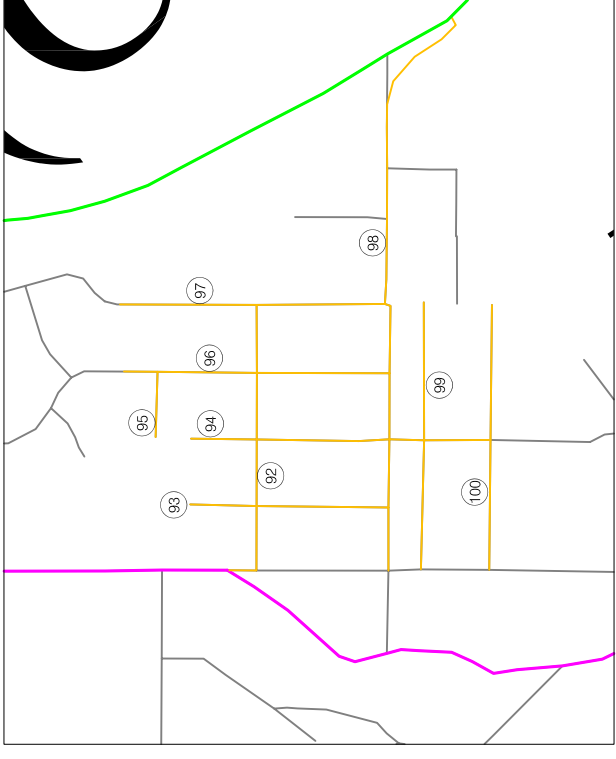
Detail A



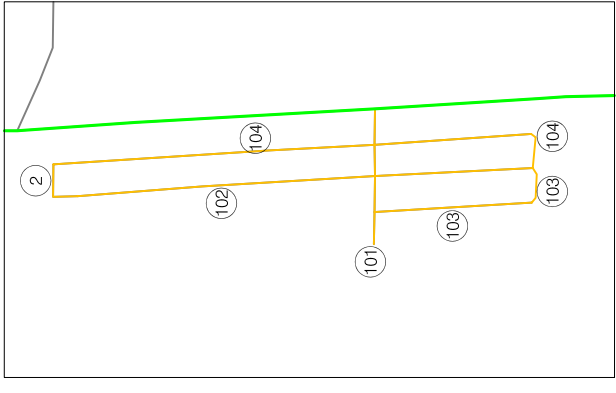
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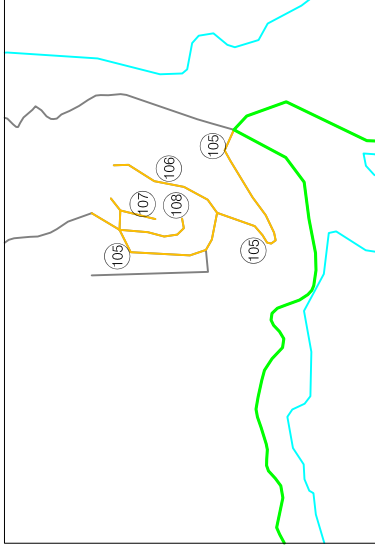
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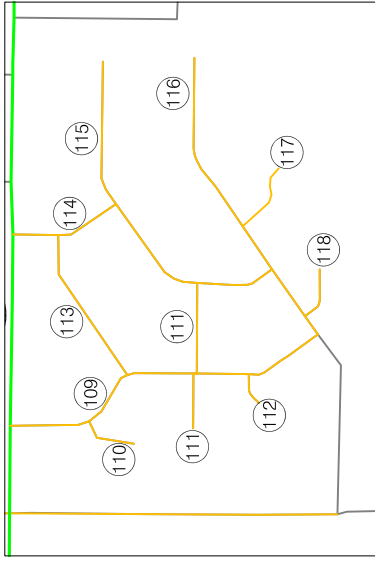
Detail D



Detail E



Detail F



Crook County Transportation System Plan

LEGEND

- State Highway
- Principal Arterial
- Minor Arterial

- Major Collector
- Minor Collector
- County Road

- Other Road
- Crook County Bridges
- ODOT Bridges

Figure 3-3c
Bridge Locations

NOT TO SCALE

Table 3-2. Crook County Bridges

Map No.	Nimbus Number	Street	Waterway/Roadway Crossed	Maintenance Responsibility	ODOT Sufficiency Rating
1	19913	Conant Basin Road (Co. Rd. 310)	Crooked River	Crook County	81.1
2	13C22	Copely Road (Co. Rd. 210)	Irrigation Ditch	Crook County	96.0
3	07C21A	Lamonta Road NW (Co. Rd. 101)	Aqueduct McKay Creek	Crook County	89.7
4	15497A	McKay Road N (Co. Rd. 102)	McKay Creek	Crook County	95.5
5	15459	McKay Road N (Co. Rd. 102)	Allen Creek	Crook County	62.3
6	16775	Bear Creek Road SE (Co. Rd. 111)	Bear Creek	Crook County	89.8
7	16779	Beaver Creek Road SE (Co. Rd. 113)	Beaver Creek	Crook County	91.2
8	16446	Beaver Creek Road SE (Co. Rd. 113)	Beaver Creek Overflow	Crook County	91.2
9	07C22	Barnes Butte Road NE (Co. Rd. 120)	Barnes Butte Canal	Crook County	79.8
10	16741	Camp Creek Road SE (Co. Rd. 127)	Camp Creek	Crook County	97.7
11	13C26A	Paulina Valley Road SE (Co. Rd. 221)	Paulina Creek	Crook County	94.9
12	19083	Paulina Valley Road SE (Co. Rd. 221)	Paulina Creek	Crook County	40.9
13	13C29	Little Bear Creek Road SE (Co. Rd. 226)	Little Bear Creek	Crook County	85.0
14	19026	Elliott Lane NW (Co. Rd. 124)	Crooked River	Crook County	99.9
15	13C31A	Gerke Road NW (Co. Rd. 301)	Irrigation Canal	Crook County	95.9
16	13C20	Grimes Road NW (Co. Rd. 201)	Irrigation Ditch Grimes	Crook County	83.1
17	17033	Grimes Road NW (Co. Rd. 201)	McKay Creek	Crook County	96.9
18	02770	OR 370	N Unit Ochoco Main Canal	ODOT	70.2
19	03279	OR 370	Pilot Butte Wasteway	ODOT	98.7
20	03285	OR 370	Irrigation Ditch	ODOT	94.7
21	03286	OR 370	Irrigation Ditch	ODOT	97.7
22	03288	OR 370	Irrigation Ditch	ODOT	95.7
23	0P120	OR 370	Cattlepass	ODOT	98.7
24	03290	Powell Butte Highway	Irrigation Canal	ODOT	93.1
25	03291	Powell Butte Highway	Powell Butte Canal	ODOT	75.9

Table 3-2. Crook County Bridges Continued

Map No.	Nimbus Number	Street	Waterway/Roadway Crossed	Maintenance Responsibility	ODOT Sufficiency Rating
26	03291	Powell Butte Highway	Powell Butte Canal	ODOT	68.7
27	03293	Powell Butte Highway	Powell Butte Wasteway	ODOT	69.3
28	07282	OR 380	Ochoco Creek	ODOT	61.0
29	18717	OR 380	Flood Control Channel	ODOT	97.3
30	18716	OR 380	Flood Control Channel	ODOT	91.2
31	03303A	OR 380	Wickiup Creek	ODOT	92.1
32	03304	OR 380	Creek	ODOT	92.8
33	03305	OR 380	Horse Heaven Creek	ODOT	91.7
34	03306	OR 380	Cattlepass & Drainage	ODOT	93.1
35	03307	OR 380	Creek	ODOT	92.8
36	03308	OR 380	Creek	ODOT	92.5
37	05292	OR 380	Creek	ODOT	93.5
38	03312	OR 380	Pine Stub Creek	ODOT	93.5
39	0P054	OR 380	Cattlepass & Drainage	ODOT	93.1
40	03315	OR 380	Lost Creek	ODOT	93.5
41	0P055	OR 380	Cattlepass	ODOT	93.5
42	0P056	OR 380	Cattlepass	ODOT	92.8
43	08701	OR 380	N Fork Crooked River	ODOT	68.3
44	08702	OR 380	S Fork Crooked River	ODOT	90.5
45	03323A	OR 380	Camp Creek	ODOT	88.5
46	03324	OR 380	Kelly Creek	ODOT	99.8
47	03325A	OR 380	S Fork Crooked River	ODOT	66.4
48	03326A	OR 380	Beaver Creek	ODOT	87.4
49	08052	OR 380	Beaver Creek	ODOT	56.5
50	13C06A	Johnson Creek Road NE (Co. Rd. 121)	Ochoco Main Canal	Crook County	61.4

Table 3-2. Crook County Bridges Continued

Map No.	Nimbus Number	Street	Waterway/Roadway Crossed	Maintenance Responsibility	ODOT Sufficiency Rating
51	16132A	Lone Pine Road NW (Co. Rd. 106)	Crooked River	Crook County	98.8
52	16752	Davis Loop SE (Co. Rd. 334)	Dry Creek	Crook County	85.6
53	13C28	Newsome Creek Road (Co. Rd. 224)	Crooked River	Crook County	51.9
54	08964	OR 27	Bear Creek	ODOT	74.6
55	00990A	OR 27	Bear Creek	ODOT	80.7
56	13598	OR 27	Irrigation Ditch	ODOT	57.5
57	03257	OR 27	Cattlepass	ODOT	92.0
58	13599	OR 27	Irrigation Ditch	ODOT	83.2
59	13600	OR 27	Irrigation Ditch	ODOT	64.8
60	00537B	OR 27	Dry Creek	ODOT	92.9
61	13597	OR 27	Crooked River	ODOT	83.3
62	0P062	OR 27	Drainage Culvert	ODOT	94.3
63	13C23	Reif Road SW (Co. Rd. 349)	Irrigation Ditch	Crook County	79.9
64	00528	US 26	Dry River Bed	ODOT	90.5
65	02741	US 26	Central Oregon Canal	ODOT	68.6
66	07167	US 26	Irrigation Ditch	ODOT	80.2
67	02761	US 26	Crooked River	ODOT	31.9
68	02201	US 26	Ochoco Creek	ODOT	75.7
69	00781	US 26	Ochoco Irrigation Canal	ODOT	87.8
70	18551	US 26	Mill Creek	ODOT	97.7
71	02553	US 26	Marks Creek	ODOT	68.1
72	07649	US 26	Marks Creek	ODOT	87.8
73	07650A	US 26	Marks Creek	ODOT	93.7
74	07651A	US 26	Marks Creek	ODOT	93.7
75	06956	US 26	Ochoco Irrigation Canal	ODOT	95.0

Table 3-2. Crook County Bridges Continued

Map No.	Nimbus Number	Street	Waterway/Roadway Crossed	Maintenance Responsibility	ODOT Sufficiency Rating
76	0P015	US 26	Lytle Creek	ODOT	95.6
77	02745A	US 26	McKay Creek	ODOT	96.3
78	02746A	US 26	Ochoco Creek	ODOT	96.0
79	13C24	Weigand Road SW (Co. Rd. 211)	Irrigation Ditch Weigand	Crook County	59.1
80	188955	Willowdale Dr SE/NE (Co. Rd. 2062)	Ochoco Creek	Crook County	80.8
81	NA	Riggs Road	Central Oregon Canal	Crook County	NA
82	NA	Riggs Road	Irrigation Ditch	Crook County	NA

Bridge Number 67, which is over the Crooked River along US 26/OR 126, has a sufficiency rating of 31.9. ODOT's 2004-2007 Statewide Transportation Improvement Program (STIP) has programmed this bridge for replacement in 2005.

It should be noted that the Elliot Lane bridge over the Crooked River was replaced in late 2003 and now has a rating of 99.9. Previously, the Elliott Lane bridge had a sufficiency rating of 43.9 before it was replaced.

Bridge Number 7 in Table 3-2 and Figure 3-3 over the Beaver Creek Overflow will be replaced by ODOT in 2005 by a STIP project at Beaver Creek Road Junction with Paulina-Suplee Road.

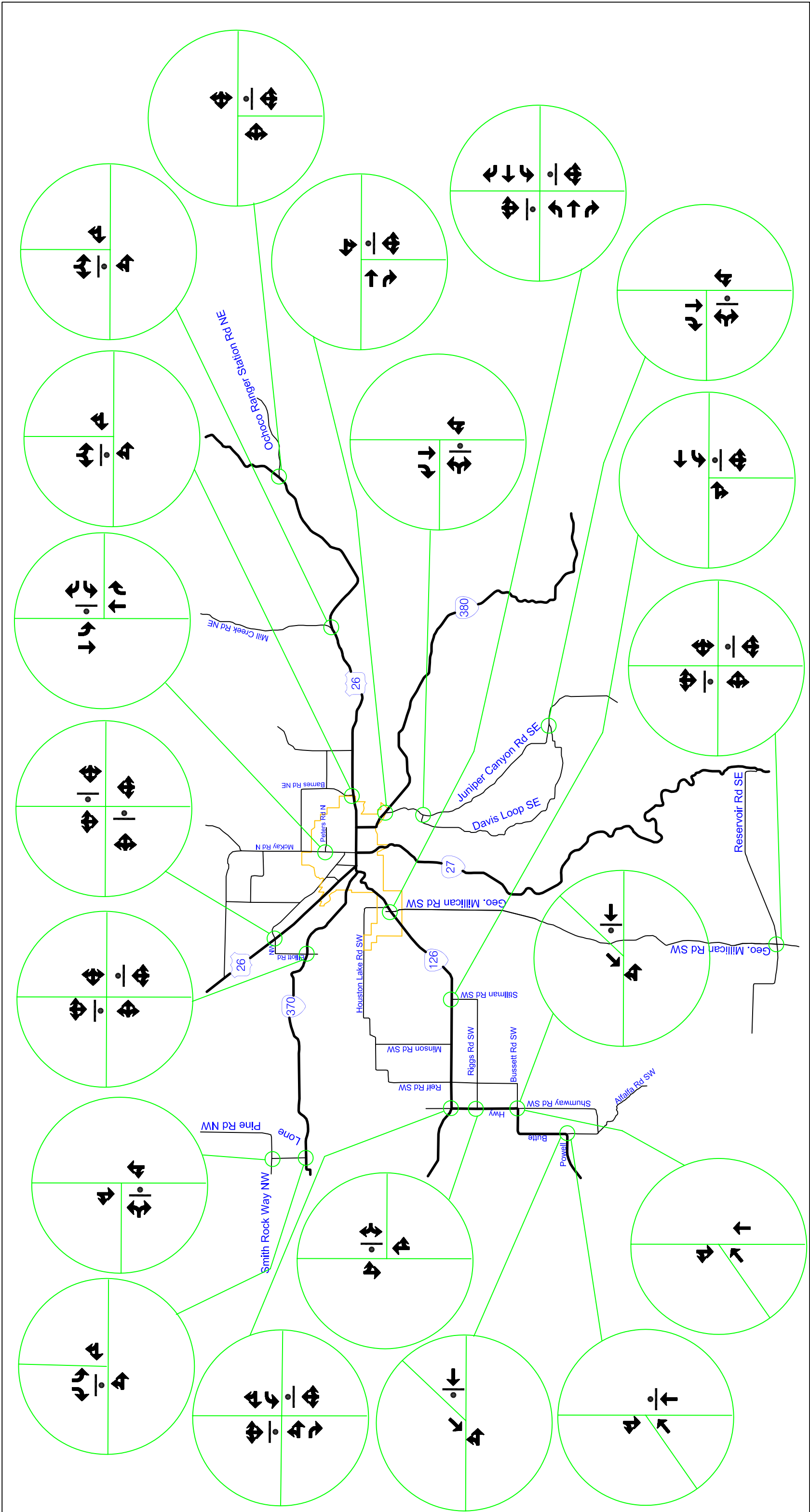
Bridge Number 50 in Table 3-2 and Figure 3-3 on Johnson Creek Road over the Ochoco Main Canal is made of a wood laminate and the county would like to replace it although the sufficiency rating is 61.4.

The bridge located along Weigand Road over the irrigation ditch (Bridge Number 80 in Table 3-2 and Figure 3-3) will be replaced by an OTIA 3 project.

The two bridges along Riggs Road (Bridge #81 and #82) will be replaced with OTIA 3 project in 2005.


3.5. INTERSECTION TRAFFIC CONTROL AND LANE CHANNELIZATION

Figure 3-4 shows the existing intersection traffic control and lane geometry for the major intersections within the study area. All of the study area intersections are stop controlled.



Crook County Transportation System Plan

Figure 3-4
Existing Lane Configuration and Traffic Control




NOT TO SCALE

LEGEND

→ Lane Usage

• Stop Sign



3.6. A.M. AND P.M. PEAK HOUR TRAFFIC VOLUMES

Peak hour turning movement counts at the study area intersections and daily machine counts throughout Crook County were collected by H. Lee & Associates in August 2003. These traffic counts were taken during the peak month of traffic activity in Crook County and represent the 30th highest hour traffic volumes. Figure 3-5 shows the 2003 Existing A.M. and P.M. peak hour traffic volumes at the study area intersections. Figure 3-6 shows the daily traffic volumes along significant county roadways.

3.7. PEDESTRIAN AND BICYCLE FACILITIES

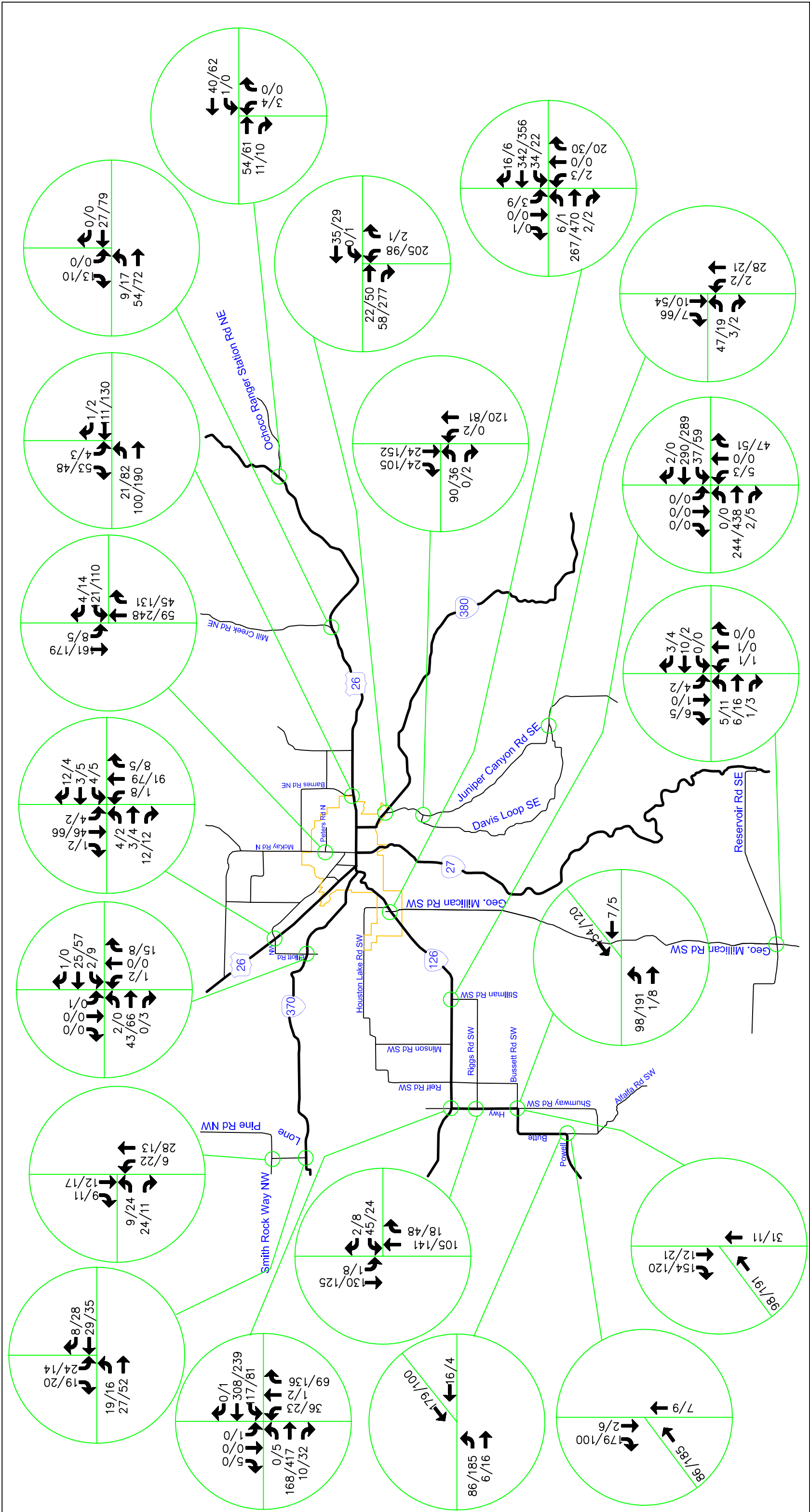
There are limited bicycle facilities in unincorporated Crook County. The following exclusive bicycle lanes exist in Crook County:

- Gerke Road NW from Lamonta Road NW to McKay Road NE – 4 to 5 feet
- McKay Road NE from Gerke Road NW to Barnes Butte Road NE – 5 to 7 feet
- Lamonta Road NW from Gerke Road NW to Gumpert Road NW – 3 to 5 feet

The south end of the Crook County bicycle facilities along McKay Road NE connect into the City of Prineville bicycle facilities along Main Street North. From this connection, bicyclists in Crook County can access all of the City of Prineville bicycle facilities. The City of Prineville has three designated bicycle routes. One existing route runs east-west along US 26 within the urban growth boundary (UGB) while the other runs north-south on Main Street North from Ochoco Creek to the UGB. The third city bike route runs north-south on OR 27 at 3rd Street and connects with the playing fields south of town. Figure 3-7 shows how the county's bicycle facilities connect and relate to the city's bike routes.

In the remainder of unincorporated Crook County, bicyclists must either share the roadway with motorists or can travel along the shoulder if one exists. The road inventory previously shown in Table 3-1 summarizes the shoulder conditions for all arterials, minor arterials, and collectors within the unincorporated county. As can be seen from this table, shoulder conditions vary widely along arterials, minor arterials, and collectors within Crook County.

In most of Crook County, pedestrians must share the road with motorists and use existing shoulders where they are present. Based on the road inventory previously shown in Table 3-1, the presence of shoulders along county roadways are sporadic at best and range widely in width. The present condition of shoulders along county roads does not make for a pedestrian friendly environment. Shoulders are absent on most roads in unincorporated Crook County. At the same time, the pedestrian traffic along county roads is relatively low.



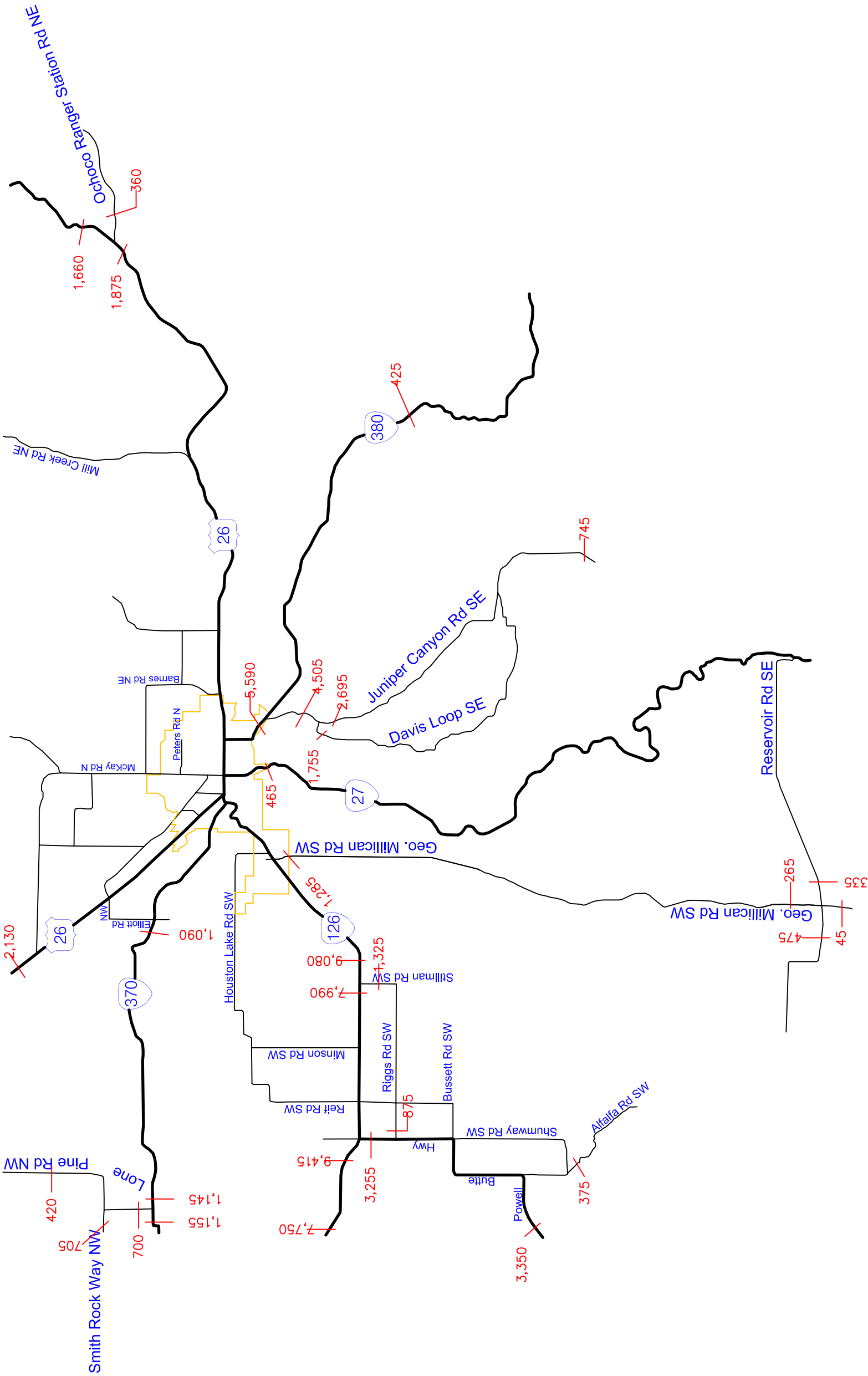
Crook County Transportation System Plan

LEGEND

55/100
AM/PM Peak Hour
Traffic Volume

NOT TO SCALE

Figure 3-5
Existing Weekday A.M. and P.M.
Peak Hour Traffic Volumes



NOT TO SCALE

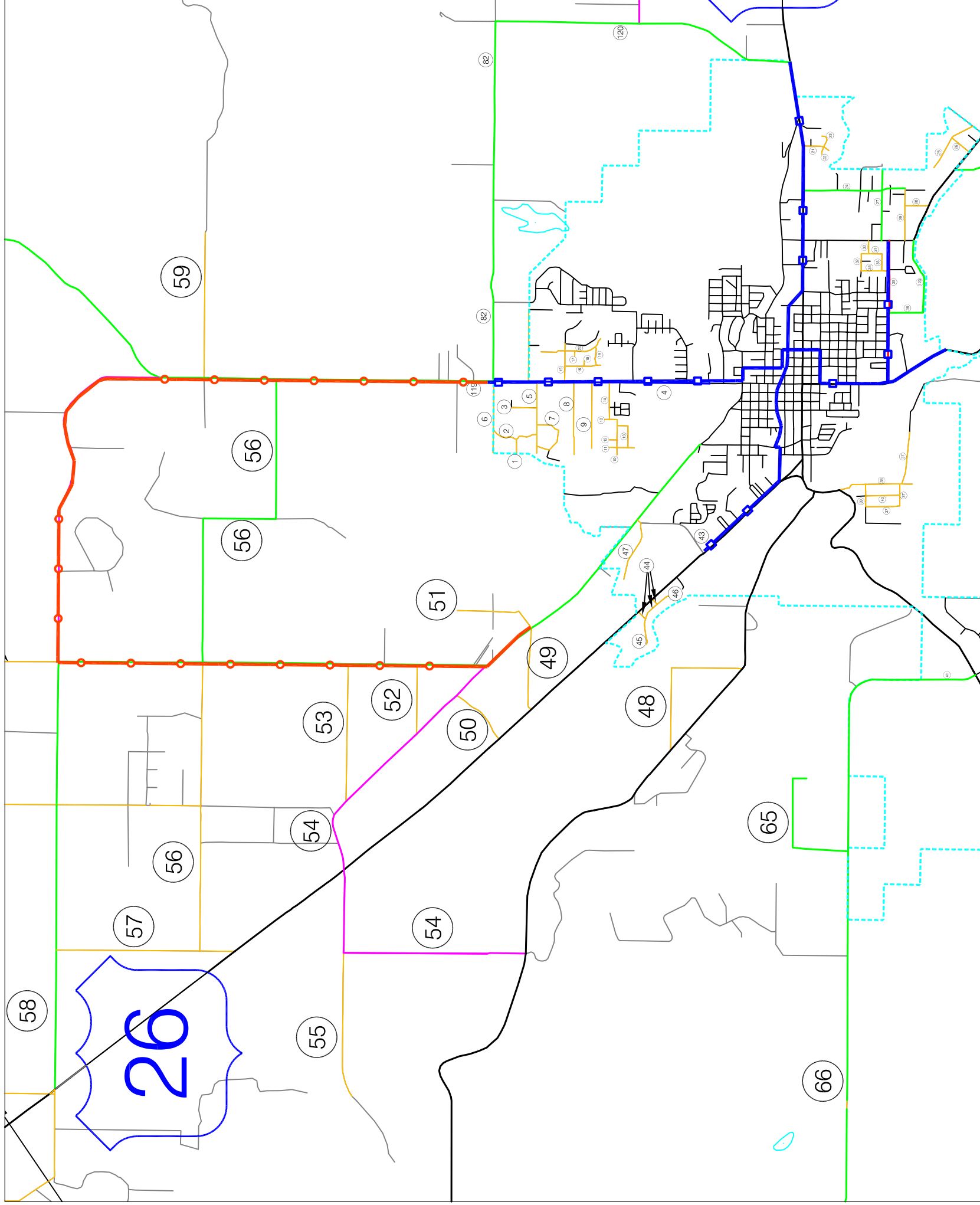
LEGEND

1150

Weekday Daily Traffic Volume

Crook County Transportation System Plan

Figure 3-6
Existing Weekday Daily
Traffic Volumes



ROADWAY NAME LEGEND

1. Rollo Lane NW (Co. Rd. 2054)
2. Rollo Road NW (Co. Rd. 2053)
3. Knob Hill Way (Co. Rd. 2055)
4. Main Street N (Co. Rd. 100)
5. West Hills Road NW (Co. Rd. 2051)
6. Peppermint Lane (Co. Rd. 2050)
7. West Hills Loop (Co. Rd. 2052)
8. Apollo Road NW (Co. Rd. 336)
9. McDonald Road NW (Co. Rd. 338)
10. Martingale Road NW (Co. Rd. 1022)
11. Hackamore Lane NW (Co. Rd. 1021)
12. Concho Lane NW (Co. Rd. 1020)
13. Reata Road NW (Co. Rd. 1023)
14. Terrace Lane NW (Co. Rd. 227)
15. Rawhide Lane NE (Co. Rd. 1010)
16. Buckboard Lane NE (Co. Rd. 1012)
17. Sorrel Way NE (Co. Rd. 1014)
18. Bronco Way NE (Co. Rd. 1011)
19. Lattigo Lane NE (Co. Rd. 1013)
20. Tennessee Lane NE (Co. Rd. 1015)
21. Williamson Drive NE/SE (Co. Rd. 2042)
22. Baldwin Court SE (Co. Rd. 2040)
23. Slayton Court SE (Co. Rd. 2041)
24. Willowdale Drive SE (Co. Rd. 2062)
25. Hill Street SE (Co. Rd. 2000)
26. Hill Road SE (Co. Rd. 2001)
27. Melrose Drive SE (Co. Rd. 2060)
28. Stanton Road SE (Co. Rd. 2063)
29. Lincoln Road SE (Co. Rd. 2061)
30. Leslie Lane SE (Co. Rd. 1003)
31. Brewer Lane SE/Palin Lane SE (Co. Rd. 1001)
32. 5th Street SE (Co. Rd. 1005)
33. Kramer Lane SE (Co. Rd. 1002)
34. Baily Road SE (Co. Rd. 1000)
35. Lynn Boulevard SE (Co. Rd. 110)
36. Fairgrounds Road SE (Co. Rd. 317)
37. Crestview Road SW (Co. Rd. 1030)
38. Kimrock Road SW (Co. Rd. 1033)
39. Park Drive SW (Co. Rd. 1032)
40. Cliffside Lane SW (Co. Rd. 1031)
41. Tom McCall Road SW (Co. Rd. 356)
42. Aviation 365SW (Co. Rd. 115)
43. Gardner Road NW (Co. Rd. 114)
44. Riverland Loop NW (Co. Rd. 2030)
45. Ponderosa Lane NW (Co. Rd. 2031)
46. Village Court NW (Co. Rd. 2032)
47. Industrial Park Road NW (Co. Rd. 1060)
48. Rimrock Acres Loop NW (Co. Rd. 321)
49. Gumpert Road NW (Co. Rd. 141)
50. Bus Evans Lane NW (Co. Rd. 348)
51. Brookfield Lane NW (Co. Rd. 140)
52. Sunset Lane NW (Co. Rd. 326)
53. Stahanyk Lane NW (Co. Rd. 347)
54. Elliott Lane/Road NW (Co. Rd. 124)
55. Campbell Ranch Road NW (Co. Rd. 303)
56. Grimes Road NW (Co. Rd. 201)
57. Woodward Road NW (Co. Rd. 350)
58. Gerke Road NW (Co. Rd. 301)
59. Dry Creek Road NE (Co. Rd. 329)
60. Lone Pine Road NW (Co. Rd. 106)
61. Lone Pine Lane NW (Co. Rd. 202)
62. Butler Road NW (Co. Rd. 361)
63. Lambert Road NW (Co. Rd. 232)
64. Smith Rock Way NW (Co. Rd. 203)
65. Landfill Road SW (Co. Rd. 359)
66. Houston Lake Road SW (Co. Rd. 103)
67. Cornett Loop SW (Co. Rd. 125)
68. Reif Road SW (Co. Rd. 349)
69. Brair Lane SW (Co. Rd. 313)
70. Bozarth Road S/SW (Co. Rd. 208)
71. Williams Road SW (Co. Rd. 206)
72. Dixon Road SW (Co. Rd. 207)
73. Minson Road SW (Co. Rd. 104)
74. Fleming Road SW (Co. Rd. 205)
75. Parish Lane SW (Co. Rd. 204)
76. Wilcy Road SW (Co. Rd. 304)
77. Cronin Road SW (Co. Rd. 345)
78. Weigand Road SW (Co. Rd. 211)
79. Kissler Road SW (Co. Rd. 212)
80. Riggs Road SW (Co. Rd. 209)
81. Copley Road S (Co. Rd. 210)
82. Barnes Butte Road NE (Co. Rd. 120)
83. Quail Valley Lane NE (Co. Rd. 2011)
84. Quail Valley Drive NE (Co. Rd. 2012)
85. Lark Lane NE (Co. Rd. 2010)
86. Wainwright Road NE (Co. Rd. 128)
87. Johnson Creek Road NE (Co. Rd. 121)
88. Marmot Lane NE (Co. Rd. 339)
89. Willow Avenue NE (Co. Rd. 1092)
90. Orchard Lane NE (Co. Rd. 1090)
91. River Road (Co. Rd. 1091)
92. Kyle Road SE (Co. Rd. 1086)
93. Canyon Road SE (Co. Rd. 1082)
94. Mark Road SE (Co. Rd. 1087)
95. Antler Lane SE (Co. Rd. 1080)
96. David Way SE (Co. Rd. 1083)
97. Jerry Drive SE (Co. Rd. 1085)
98. Bonnie Road SE (Co. Rd. 1081)
99. Highland Road SE (Co. Rd. 1084)
100. Mountain Road SE (Co. Rd. 1088)
101. Idleway Street SE (Co. Rd. 1051)
102. Loafer Avenue SE (Co. Rd. 1052)
103. Pleasant View SE (Co. Rd. 1053)
104. Easy Street SE (Co. Rd. 1050)
105. Jasper Knolls Drive SE (Co. Rd. 1071)
106. Sandy Drive SE (Co. Rd. 1073)
107. Bench Road SE (Co. Rd. 1070)
108. Ridge Road SE (Co. Rd. 1072)
109. Yahooskin Drive SW (Co. Rd. 2025)
110. Kootenai Court SW (Co. Rd. 2021)
111. Wahkiakum Street SW (Co. Rd. 2024)
112. Patute Court SW (Co. Rd. 2028)
113. Latahomie Street SW (Co. Rd. 2022)
114. Costanoan Street SW (Co. Rd. 2020)
115. Pokegama Drive SW (Co. Rd. 2023)
116. Red Cloud Road SW (Co. Rd. 2027)
117. Maidu Court SW (Co. Rd. 2029)
118. Lodi Court SW (Co. Rd. 2026)
119. McKay Road N (Co. Rd. 102)
120. Barnes Road NE (Co. Rd. 354)
121. Geo. Millican Road SW (Co. Rd. 305)
122. Stillman Road SW (Co. Rd. 319)
123. Carey Foster Road SE (Co. Rd. 362)

Crook County Transportation System Plan



NOT TO SCALE

LEGEND
 State Highway
 Principal Arterial
 Minor Arterial
 Major Collector
 Minor Collector

County Road
 Other Road
 City Bike Lane
 County Bike Lane

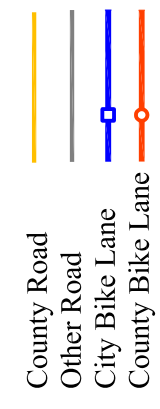


Figure 3-7
 Crook County and City of Prineville
 Bicycle Facilities

3.8. RAIL SERVICE/ROADWAY GRADE CROSSINGS

A short line called the City of Prineville Railway (COPRY) is the only rail service in Crook County. The COPRY was formed in 1918 and is the oldest continuously operated municipal short line in the United States. It is owned and operated by the City of Prineville. The railway is 18.35 miles long and begins in the west-central area of the City of Prineville and extends westward along the north side of Oneil Highway (Oregon 370) into Deschutes County. In Deschutes County, the City of Prineville Railway connects to the Burlington Northern Santa Fe and Union Pacific railroad lines. The City of Prineville Railway provides transport primarily for raw materials, timber, and other products manufactured in Crook County. Figure 3-8 shows existing rail service and at-grade railroad highway crossings in Crook County.

The COPRY is classified as an originating/terminating carrier or line-haul carrier. It operates under “Yard Limit” which limits the operating speed to 20 mph. Under “Yard Limit” the railway is operated from a switch list rather than train orders or block signals and can enter any track any time.

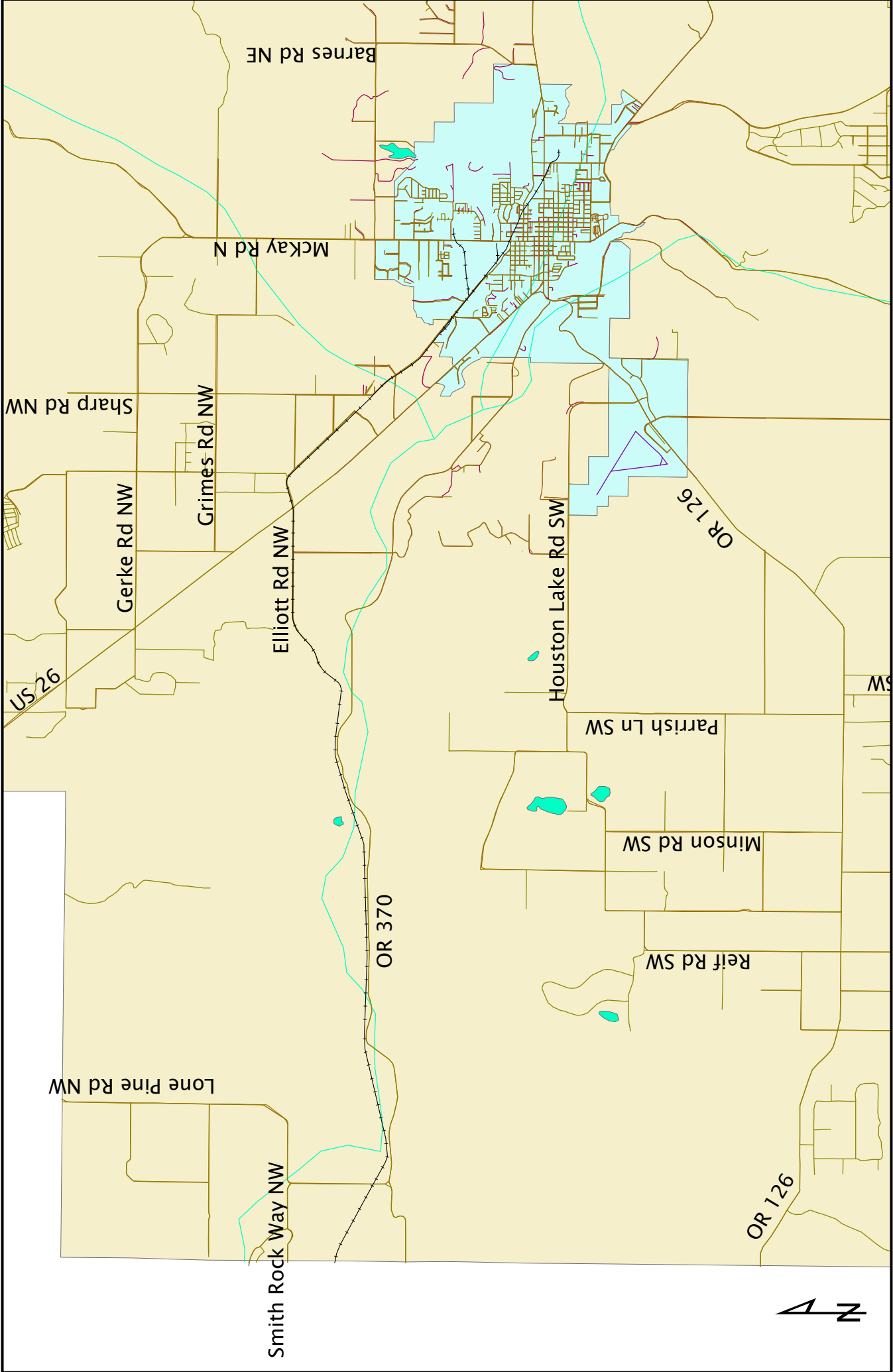
Intermodal truck to rail connections are possible for some sites along the COPRY. Some intermodal facilities still exist from previous uses. No intermodal connections are currently operating. However, the City of Prineville is currently developing a transload and reload facility that will serve the Central Oregon region. One of the goals of the City of Prineville Railway is to provide alternative methods for freight hauling in the Central Oregon region to alleviate congestion on the state highway system. There is over 100 acres of privately owned industrial land that has access to the COPRY.

Within the unincorporated area of Crook County, there are several at-grade rail crossings. These crossings include but are not limited to the following locations:

- Lone Pine Road N just north of OR 370
- Elliott Road N just west of Elliott Lane NW
- Bus Evans Lane NW west of Lamonta Road NW
- Gumpert Road NW west of Lamonta Road NW
- Lamonta Road NW south of Lon Smith Lane.

The City of Prineville Railway provides no commercial passenger rail service. However, the Crooked River Dinner Train, based in Redmond, uses the City of Prineville Railway tracks for various rail tours through the Crooked River Valley. The City of Prineville acquired the Crooked River Dinner Train in January 2005. It is an 1800’s western theme dinner train featuring characters from the wild west.

Crook County residents interested in passenger rail service must travel to Chemult to access the Amtrak passenger rail service.



Crook County Transportation System Plan



Legend

--- railroad tracks

Figure 3-8

Railroad Location

3.9. PUBLIC TRANSPORTATION

Public transportation in Crook County consists of a minibus for local trips, van shuttles for trips to Redmond and Bend, and bus line service for long distance trips. For elderly and disabled residents in Prineville, the Soroptomists Club and the Neat Repeat Store sponsor a minibus service. The service is available in areas within 5 miles of Prineville downtown core. The service operates between 9:00 A.M. and 4:00 P.M. six days a week (Monday through Saturday) and on special occasions. The daily ridership is currently about 65 people. The service was established to provide transport to necessary services such as shopping and doctor visits as well as to the Prineville Senior Center.

The People Mover is a shuttle van operating three times a week (Monday, Wednesday, and Friday) from Prairie City to Redmond and Bend. Service includes scheduled stops in Prineville each day. It connects with the Greyhound in Prineville, Redmond and Bend, and also connects to the airport in Redmond,

Greyhound Bus Lines no longer provides service from the City of Prineville. To access the Greyhound Bus Lines, Crook County residents must travel to Bend. Daily bus service is available from Bend where riders can make connections to and from other cities.

A local cab service called Country Cab is available on-demand in Crook County. This cab will travel as far as Bend or Redmond. However, only local service around the City of Prineville is available during Friday and Saturday nights.

The existing public transportation services meet the basic requirements of the Oregon Transportation Plan. Connections are possible between the services provided, and the service frequency meets the required daily trip to a larger city.

3.10. AIR TRANSPORTATION

Crook County is served by seven airstrips. Below is a list of these airstrips:

- Crook County (Prineville) Airport
- Dry Creek Air Park – private, paved airstrip
- Alfalfa Road/Randy Goering private airstrip
- Post
- G.I. Ranch
- Rager Ranger Station – Forest Service airstrip
- East of Big Summit Prairie

The Crook County (Prineville) Airport, located at the west end of the Prineville urban area, is used by most of the large local businesses, commercial, and heavy industrial firms as well as the U.S. Forest Service. It is a general aviation airport and is included in the National Plan of Integrated Airports (NPIAS). The Crook County (Prineville) Airport has two paved runways. The 10/28

runway is 5000' x 60' and the 15/33 runway is 4000' x 40'. The approach category allows speeds of 91 knots to 121 knots. Planes with a wingspan of less than 49 feet are allowed to use the airport. In 1994, it was estimated that 4,500 operations took place. This was equivalent to approximately four percent of the airport's capacity.

For commercial passenger service, the Redmond Airport is located about 20 miles west of Prineville.

3.11. WATER TRANSPORTATION

There are no significant water borne transportation facilities in Crook County.

3.12. PIPELINE FACILITIES

Crook County has limited natural gas services provided by a Cascade Natural Gas pipeline, which travels along the Ochoco Highway. Service beyond the Prineville urban area is limited.

SECTION 4.0
EXISTING CONDITIONS AND DEFICIENCIES

Section 4.0

Existing Conditions and Deficiencies

4.1. INTRODUCTION

This section of the Crook County Transportation System Plan describes existing transportation conditions and associated deficiencies in the unincorporated areas of Crook County. These conditions and deficiencies will be used as a foundation for identifying short-term transportation improvement needs and developing and evaluating longer-term transportation system alternatives.

4.2. INTERSECTION LEVELS OF SERVICE AND V/C RATIO ANALYSIS

Intersection capacity was measured by the following two methodologies: level of service (LOS) and volume to capacity (v/c) ratio. Level of service to measure the performance at an intersection is the standard practice in the transportation planning and traffic engineering profession. This concept was developed by the Transportation Research Board (TRB). The *2000 Highway Capacity Manual*¹ documents the level of service analysis methodology. The Highway Capacity Manual measures level of service on a scale of LOS A to LOS F. LOS A means that drivers experience no delay or relatively low amounts of delay while traveling through an intersection; while LOS F means that drivers experience a great deal of delay while traveling through an intersection. Typically, most jurisdictions set their level of service standard at LOS D since LOS E denotes that the intersection capacity is being met and LOS F means that conditions beyond the existing intersection capacity are occurring. When LOS F conditions occur, they indicate that it would take motorists multiple signal cycles or a great deal of delay to travel through an intersection. In Section 2, Transportation Goals and Policies, the level of service standard for Crook County has been set at LOS D for signalized intersections and LOS E for unsignalized intersections if the intersection does not meet traffic signal warrants.

The Oregon Department of Transportation bases its traffic operation standards based on volume to capacity (v/c) ratio and not level of service. For ODOT facilities, each type of facility has its own standard. Table 4-1 summarizes the v/c standard by ODOT facility type. The standard documented in Table 4-1 is from the *1999 Oregon Highway Plan*.²

The v/c ratio is a measure of the percentage of used capacity on the roadway. A value of 0.00 indicates no traffic on the roadway, and a value of 1.00 indicates that the entire capacity of the roadway is being utilized. The *1999 Oregon Highway Plan* indicates that for statewide highways on the NHS system such as US 26, the applicable mobility v/c standard is 0.75 in unincorporated communities and 0.70 along rural lands. Regional highways have these same standards.

¹ *2000 Highway Capacity Manual*; Transportation Research Board, National Research Council; Washington, D.C. 2000.

² *1999 Oregon Highway Plan*, Oregon Department of Transportation – Transportation Development Division, Planning Section, March 1999.

Table 4-1
Maximum Volume-to-Capacity Ratios for Peak Hour Operating Conditions Through a
Planning Horizon for State Highway Sections Located Outside the Portland Metropolitan
Area Urban Growth Boundary

Highway	Land Use Type/Speed Limits					
	Inside Urban Growth Boundary				Outside Urban Growth Boundary	
	STAs	MPO	Non-MPO outside of STAs where non-freeway speed limit <45 mph	Non-MPO where non-freeway speed limit >=45 mph	Unincorporated Communities	Rural Lands
Interstate Highways and Statewide (NHS) Expressways	N/A	0.80	0.70	0.70	0.70	0.70
Statewide (NHS) Freight Routes	0.85	0.80	0.75	0.70	0.70	0.70
Statewide (NHS) Non-Freight Routes and Regional or District Expressways	0.90	0.85	0.80	0.75	0.75	0.70
Regional Highways	0.95	0.85	0.80	0.75	0.75	0.70
District/Local Interest Roads	0.95	0.90	0.85	0.80	0.80	0.75

Source: 1999 Oregon Highway Plan (OHP)

Interstates and Expressways shall not be identified as Special Transportation Areas (STAs)

For the purpose of this mobility policy of volume-to-capacity ratio standards, the peak hour shall be the 30th highest annual hour. This approximates weekday peak hour traffic in larger urban areas.

For district highways and local interest roadways, the maximum acceptable v/c ratio is 0.80 for unincorporated communities and 0.75 along rural lands.

For unsignalized intersections, the 1999 OHP sets the following standard:

At unsignalized intersections and road approaches, the volume-to-capacity ratios in Table 4-1 shall not be exceeded for either of the state highway approaches that are not stopped. Approaches at which traffic must stop, or otherwise yield the right-of-way, shall be operated to maintain safe operation of the intersection and all of its approaches and shall not exceed the volume-to-capacity ratios for District/Local Interest Roads standard inside of urban growth boundaries.³

For signalized intersections, the 1999 OHP sets the following standard:

At signalized intersections other than crossroads of freeway ramps, the total volume-to-capacity ratio for the intersection considering all critical movements shall not exceed the

³ 1999 Oregon Highway Plan, Oregon Department of Transportation – Transportation Development Division, Planning Section, March 1999, page 68.

volume-to-capacity ratios in Table 4-1. Where two state highways of different classifications intersect, the lower of the volume-to-capacity ratios in the table shall apply. Where a state highway intersects with a local road or street, the volume to capacity ratio for the state highway shall apply.⁴

There are no signalized intersections within unincorporated Crook County.

The interchange ramp v/c standard within the *1999 OHP* states:

...The primary cause of traffic queuing at freeway off-ramps is inadequate capacity at the intersections of the freeway ramps with the crossroad. These intersections are referred to as ramp terminals. In many instances where ramp terminals connect with another state highway, the volume to capacity standard for the connecting highway will generally be adequate to avoid traffic backups onto the freeway. However, in some instances where the crossroad is another state highway or a local road, the standards will not be sufficient to avoid this problem. Therefore, the maximum volume to capacity ratio for the ramp terminals of interchange ramps shall be the smaller of the values of the volume to capacity ratio for the crossroad, or 0.85.⁵

The 1999 OHP specifies that the v/c ratio mobility standards shall be used for the following:

- Identifying state highway mobility performance expectations for planning and plan implementation.
- Evaluating the impacts on state highways of amendments to transportation plans, acknowledged comprehensive plans and land use regulations pursuant to the Transportation Planning Rule (OAR 660-12-060); and
- Guiding operations decisions such as managing access and traffic control systems to maintain acceptable highway performance.

The level of service and v/c analysis performed for this study for the 30th highest hour A.M. and P.M. weekday peak hours revealed that traffic operations at the major intersections in unincorporated Crook County are all acceptable. Table 4-2 summarizes the level of service at the study area intersections.

⁴ *1999 Oregon Highway Plan*, Oregon Department of Transportation – Transportation Development Division, Planning Section, March 1999, page 68.

⁵ *1999 Oregon Highway Plan*, Oregon Department of Transportation – Transportation Development Division, Planning Section, March 1999, page 68.

Table 4-2. Existing Levels of Service

ODOT Unsignalized Intersection	A.M. Peak Hour			P.M. Peak Hour		
	LOS	Average Delay (sec)	V/C Ratio	LOS	Average Delay (sec)	V/C Ratio
US 26/Barnes Rd N.						
Southbound Approach	A	9.4	0.08	A	9.7	0.09
Eastbound Left	A	7.6	0.02	A	7.7	0.07
US 26/Mill Creek Rd						
Southbound Approach	A	8.6	0.02	A	8.8	0.02
Eastbound Left	A	7.3	0.01	A	7.4	0.01
US 26/ Ochoco Ranger Station Rd						
Northbound Approach	A	9.6	0.01	A	9.4	0.01
Westbound Left	A	7.5	0.00	A	7.4	0.00
OR 126/Powell Butte Highway						
Northbound Approach	C	17.4	0.36	C	16.9	0.37
Southbound Approach	B	12.7	0.02	A	0.0	0.00
Eastbound Left	A	8.0	0.00	A	7.8	0.00
Westbound Left	A	8.1	0.10	A	8.7	0.09
OR 126/Stillman Rd						
Northbound Approach	B	10.9	0.12	B	13.1	0.14
Westbound Left	A	8.0	0.03	A	8.8	0.07
OR 126/Millican Rd SW						
Northbound Approach	B	11.4	0.05	B	14.0	0.10
Southbound Approach	C	18.3	0.03	C	24.7	0.08
Eastbound Left	A	8.2	0.01	A	8.2	0.00
Westbound Left	A	8.1	0.03	A	8.6	0.03
OR 370/Lone Pine Rd						
Southbound Left	A	9.9	0.04	A	9.9	0.03
Southbound Right	A	8.9	0.02	A	8.9	0.03
Eastbound Left	A	7.7	0.02	A	7.4	0.02
OR 370/Elliott Rd NW						
Northbound Approach	A	8.7	0.02	A	8.9	0.01
Southbound Approach	A	0.0	0.00	A	8.6	0.00
Eastbound Left	A	7.3	0.00	A	7.3	0.00
Westbound Left	A	7.4	0.00	A	7.4	0.01

Table 4-2. Existing Levels of Service Continued

ODOT Unsignalized Intersection	A.M. Peak Hour			P.M. Peak Hour		
	LOS	Average Delay (sec)	V/C Ratio	LOS	Average Delay (sec)	V/C Ratio
OR 380/Juniper Canyon Rd						
Northbound Approach	B	10.3	0.26	A	9.5	0.13
Westbound Left	A	7.5	0.00	A	8.0	0.00
Powell Butte Hwy/Riggs Rd						
Southbound Left	A	7.6	0.00	A	7.7	0.01
Westbound Approach	B	10.8	0.09	B	10.5	0.07
Powell Butte Hwy/Shumway Rd/Bussett Rd						
Southbound Left	A	7.6	0.01	A	7.8	0.02
Westbound Left	B	10.9	0.01	B	11.3	0.01
Westbound Right	A	9.2	0.04	A	9.5	0.02
Powell Butte Highway/Alfalfa Rd						
Southbound Left	A	7.5	0.00	A	7.7	0.01
Westbound Left	B	10.8	0.03	B	10.7	0.01
Westbound Right	A	9.0	0.01	A	9.5	0.02
Crook County Unsignalized Intersection						
Juniper Canyon Rd/Davis Loop Rd S. (north end)						
Northbound Left	A	7.3	0.00	A	7.8	0.00
Eastbound Approach	B	10.2	0.14	B	10.4	0.06
Juniper Canyon Rd/Davis Loop Rd S. (south end)						
Northbound Left	A	7.3	0.00	A	7.5	0.00
Eastbound Approach	A	9.0	0.06	A	9.1	0.03
Millican Rd SW/Reservoir Rd SW						
Northbound Approach	A	8.8	0.00	A	9.2	0.00
Southbound Approach	A	9.0	0.01	A	8.5	0.01
Eastbound Left	A	7.4	0.00	A	7.3	0.01
Westbound Left	A	7.4	0.00	A	7.3	0.00

Table 4-2. Existing Levels of Service Continued

Crook County Unsignalized Intersection	A.M. Peak Hour			P.M. Peak Hour		
	LOS	Average Delay (sec)	V/C Ratio	LOS	Average Delay (sec)	V/C Ratio
McKay Rd/Peters Rd						
Southbound Left	A	7.5	0.01	A	8.3	0.01
Westbound Left	B	11.3	0.19	C	15.8	0.33
Westbound Right	A	8.7	0.00	B	10.1	0.03
Smith Rockway/Lone Pine Rd N.						
Northbound Left	A	7.9	0.01	A	7.3	0.02
Eastbound Approach	A	8.8	0.05	A	9.1	0.05

4.3. HIGH CRASH LOCATIONS

Crash data was obtained from the Oregon Department of Transportation for the period between January 1, 2000 and December 31, 2002. The crash data summarized are only reported crashes and there may be other crashes that occurred that was not reported. The data available includes total crashes, crashes by severity (i.e. fatal, injury or property damage only), and crash collision type. The intersection crash data is summarized in Table 4-3 and the mid-block crash data is summarized in Table 4-4. These tables only contain crashes by severity type, crashes per year, and crash rates (crashes per million vehicle miles traveled and crashes per million entering vehicles). Since the crash data is given as an average, the data is shown in fractions of a crash to the nearest hundredth.

To evaluate intersection crashes, two factors were considered. First, an acceptable intersection crash rate standard is typically 1.00 crashes per million entering vehicles. However, the crashes per year should also be considered as secondary criteria for a high crash location in conjunction with this crash rate standard because the crash rate does not always indicate that there is a crash issue. The crash rate can be skewed by low traffic volumes where one crash is weighted highly in the crash rate formula. Therefore, a secondary measure of five crashes per year was also used in evaluating intersection locations for high crashes. The five crashes per year secondary threshold were used because it is the threshold for one of the traffic signal warrants. If an unsignalized intersection has five or more crashes per year, the Manual on Uniform Traffic Control Devices (MUTCD),⁶ allows the intersection for consideration of signalization. Based on the criteria above and shown in Table 4-3, only the Oregon 27/Fairground Access intersection has a crash rate over 1.00 crashes per million entering vehicles. However, this intersection only has 0.33 crashes per year occurring and therefore is not considered a high crash location. It should be noted that no fatalities were reported at any of the intersections involving crashes within the last three years.

⁶ Manual on Uniform Traffic Control Devices (MUTCD), U.S. Department of Transportation, Federal Highway Administration, 2003 Edition, page 4C-8

Table 4-3. Intersection Crash Summary

Intersection	Mile Post	Severity				Average Crashes Per Year	Crashes Per Million
		PDO	Injury	Fatal	Total		Entering Vehicles
Oregon 27/Fairground Access	0.78	1	0	0	1	0.33	1.94
Oregon 126/Bozarth Rd	6.84	1	1	0	2	0.67	0.23
Oregon 126/Stillman Rd	11.10	0	1	0	1	0.33	0.11
Oregon 126/Wiley Rd	13.34	1	1	0	2	0.67	0.23
Oregon 126/Millican Rd	13.52	1	0	0	1	0.33	0.10
US 26/Hickory Farms Rd NE	20.00	1	0	0	1	0.33	0.04
US 26/Gerke Rd NW	19.50	1	1	0	2	0.67	0.08
US 26/Elliott Ln NW	21.97	1	0	0	1	0.33	0.04
Oregon 380/2nd St SE	0.17	1	0	0	1	0.33	0.23
Oregon 380/Lincoln Dr SE	0.70	0	1	0	1	0.33	0.23
Oregon 380/Juniper Canyon Rd	1.35	0	1	0	1	0.33	0.20

The criteria typically used for high mid-block crash locations are the state average. Based on ODOT’s most recent statewide crash report,⁷ the 2002 average statewide crash rate for non-freeway state facilities is 1.49 crashes per million vehicle miles traveled. The 2002 average statewide crash rate for rural non-freeway state facilities is 0.84 crashes per million vehicle miles traveled. Since the mid-block crash rate can be skewed high by a short mid-block section and low traffic volumes, a secondary measure was also used to evaluate for high mid-block crash locations. As with the intersection crash analysis, five crashes per year was used as a secondary threshold. As shown in Table 4-4, six mid-block locations have crash rates greater than the state-wide average for non-freeway state facilities. Another 13 mid-block locations have crash rates greater than the state-wide average for rural non-freeway state facilities. However, all but two of these mid-block locations have fewer than three crashes per year occurring. Therefore, only the two mid-block locations with more than three crashes per year were further analyzed. The locations that were further analyzed were Oregon 370 (Oneil Highway) between Lone Pine Road (milepost 4.99) and Elliott Road (milepost 13.63) and US 26 (Ochoco Highway) from Ochoco Ranger Station Road (milepost 34.82) to Little Hay Creek Road (milepost 45.49).

Oregon 370 (Oneil Highway) between Lone Pine Road (milepost 4.99) and Elliott Road (milepost 13.63) has a crash rate of 1.57 crashes per million vehicle miles traveled. In analyzing the collision type, 12 of the 23 crashes reported were vehicles hitting a fixed object. An additional 7 crashed involved animals. The majority of crashes involved animals or vehicles maneuvering to avoid hitting animals that subsequently hit a fixed object. It does not appear that the majority of the crashes occurring along Oregon 370 between Lone Pine Road and Elliott Road are correctable since the impact of animals crossing the highway is not controllable.

⁷ 2002 State Highway Crash Rate Tables, ODOT, Transportation Development Division, 2003.

Table 4-4. Mid-Block Crash Summary Continued

Road	From		To		Severity				Average Crashes Per Year	Crashes Per Million Miles Traveled
	Street Name	Mile Post	Street Name	Mile Post	PDO	Injury	Fatal	Total		
US 26 - Ochoco Highway	Piscatae Lookout Rd	48.32	Stevenson Mountain Rd	49.41	1	1	0	2	0.67	1.20
	Stevenson Mountain Rd	49.41	County Line	50.03	1	0	0	1	0.33	1.04
US 26 - Madras Prineville Highway	Grizzley Mountain Rd	16.62	McCain Rd N.	17.73	1	0	0	1	0.33	0.45
	Woodward Rd N.	21.08	Elliott Ln NW	21.97	1	0	0	1	0.33	0.51
	Grumpert Rd NW	23.73	Riverland Dr NW	24.87	2	1	0	3	1.00	0.89
	Riverland Dr NW	24.87	McDougal Ct NW	25.10	0	2	0	2	0.67	1.88
Oregon 370 - O'Neil Highway	County Line	3.84	Lone Pine Rd	4.99	0	2	0	2	0.67	0.84
	Lone Pine Rd	4.99	Elliott Rd	13.63	16	7	0	23	7.67	1.57
	Elliott Rd	13.63	Westview Rd	16.72	1	2	0	3	1.00	0.74
Powell Butte Highway	Ochoco Hwy	0.00	Riggs Rd	1.04	1	0	0	1	0.33	0.28
	Weigand Rd	1.54	Cronin Rd	2.04	2	0	0	2	0.67	1.18
	Cronin Rd	2.04	Shumway Rd	2.68	0	2	0	2	0.67	0.93
	Shumway Rd	2.68	McCaffery Rd	3.57	1	1	0	2	0.67	0.67
	Alfalfa Rd	5.52	County Line	7.57	2	0	0	2	0.67	0.30
	Fairgrounds Rd	0.76	Stanton Rd	1.05	0	1	1	2	0.67	1.35
Oregon 380 - Paulina Highway	Bull Blvd	1.66	Burma Rd	12.34	6	1	0	7	2.33	0.54
	Burma Rd	12.34	Crooked River Rd	16.48	1	2	0	3	1.00	1.54
	Crooked River Rd	16.48	Conant Basin Rd S.	20.75	0	1	0	1	0.33	0.54
	Teaters Rd	34.77	Shotgun Rd	37.45	0	1	0	1	0.33	1.47
	Shotgun Rd	37.45	Maury Guard Station Rd	41.10	0	1	0	1	0.33	1.08

US 26 (Ochoco Highway) from Ochoco Ranger Station Road (milepost 34.82) to Little Hay Creek Road (milepost 45.49) has crash rate of 0.91 crashes per million vehicle miles traveled. In analyzing the collision type, 9 of 16 crashes reported were vehicles hitting a fixed object. An additional four crashes involved animals. The majority of crashes involved animals or vehicles maneuvering to avoid hitting animals that subsequently hit a fixed object. It does not appear that the majority of the crashes occurring along US 26 (Ochoco Highway) from Ochoco Ranger Station Road to Little Hay Creek Road are correctable since the impact of animals crossing the highway is not controllable.

During the period between January 1, 2000 and December 31, 2002, a total of seven crash fatalities occurred in Crook County. Four fatalities occurred along Oregon 126, two along US 26, and one along Oregon 380. In evaluating the fatality crashes, there does not appear to be a pattern.

4.4. EXISTING INTERSECTION CAPACITY IMPROVEMENT NEEDS

All of the major study intersections along ODOT highways operate well under the maximum v/c ratio standard. All of the study area intersections along county roadways operate at LOS C or better, well below the LOS E suggested standard in Section 3 for unsignalized intersections.

4.5. SAFETY IMPROVEMENT NEEDS

As previously stated in Section 3, the crash data was obtained from the Oregon Department of Transportation for the period between January 1, 2000 and December 31, 2002. Based on the crash analysis in Section 4.3, there are no high crash locations within the unincorporated Crook County study area that can be mitigated.

4.6. EXISTING STREET REALIGNMENTS

There are three 90 degree turns along the Powell Butte Highway alignment between SW Shumway Road and S. Alfalfa Road that create a potential unexpected driving hazard. Realignment of Powell Butte Highway to minimize and/or eliminate the 90 degree turns should be considered in the development of future improvement projects.

4.7 BRIDGES

Based on Section 3, Existing Conditions, the following bridge deficiencies were identified:

- Paulina Valley Road SE bridge over Paulina Creek – Bridge Number 12
- Newsom Road bridge over the Crooked River – Bridge Number 53
- US 26 bridge over the Crooked River – Bridge Number 67
- County Road 113 bridge over the Beaver Creek Overflow – Bridge Number 7
- Johnson Creek Road bridge over the Ochoco Main Canal – Bridge Number 50
- Weigand Road bridge over the irrigation ditch – Bridge Number 80

4.8. PEDESTRIAN AND BICYCLE FACILITIES

There are very limited pedestrian and bicycle facilities within the unincorporated area of Crook County. In most situations, pedestrian and bicycle facilities are either shared roadway with the motorist or limited shoulders exist.

As previously shown in Table 3-1, shoulders exist sporadically along the state highway system throughout unincorporated Crook County. Widening shoulders along some of the state highways should be considered. For example, along the most significant state highways such as US 26, and OR 126 should be considered for shoulder widening projects to accommodate pedestrians and bicyclists. Another state highway that should be considered for shoulder widening is Powell Butte Highway due to its popularity among recreational bicyclists.

SECTION 5.0
2025 TRAVEL DEMAND FORECAST AND
FUTURE DEFICIENCIES

Section 5.0 2025 Travel Demand Forecast and Future Deficiencies

5.1. TRAVEL DEMAND FORECAST METHODOLOGY

Based on ODOT's 2001 Transportation System Planning Guidelines¹, there are four approved methodologies to forecast future traffic volumes. These methodologies are described below:

- **Level 1 – Trending Forecast**
The trending forecast is based on historical traffic counts in the study area. The methodology requires existing traffic counts as well as 20-year old historical traffic counts to establish a growth rate. This methodology is typically employed in areas where traffic patterns are simple and that have low to moderate growth. It is the simplest methodology used to project future traffic volumes.

- **Level 2 – Cumulative Analysis**
The cumulative analysis uses historical trending information as well as an examination of future development. This analysis requires a good understanding of development trends in the study area. Based on the understanding of future development, each area of projected development is assigned a trip making characteristic and those trips are manually assigned to the street network. The cumulative analysis methodology is typically used small cities where traffic patterns are not complex. This methodology is also best employed where significant shifting of traffic is not expected between alternatives since the difference in how the traffic patterns would change is to be done manually.

- **Level 3 – Transportation Model**
A transportation model is a very sophisticated methodology in forecasting future traffic volumes. It requires a significant amount of traffic and land use data as well as specialized software. Transportation models are typically developed where there is a need to study complex alternatives that can affect traffic patterns significantly. Transportation models are good to compare alternatives to each other since they effectively show the difference in travel behavior between alternatives. This travel demand forecast methodology is beyond the scope of this study process.

- **Level 4 – Regional Transportation Model**
A regional transportation model is developed in a similar manner as the Level 3, Transportation Model except that it involves a larger study area. The study area in a regional model encompasses several urban areas as well as rural areas. It is typically employed at the Metropolitan Planning Organization (MPO) level. This travel demand forecast methodology is beyond the scope of this study process.

¹ 2001 Transportation System Planning Guidelines, Oregon Department of Transportation, Transportation Development Division, May 2001.

5.2. TRAVEL DEMAND FORECAST EMPLOYED FOR CROOK COUNTY STUDY AREA

Several travel demand forecast methodologies were available to project the 2025 traffic volumes for the Crook County Transportation System Plan future year analysis. Of the four methodologies previously discussed, the Level 3 and Level 4 methodologies are well beyond the scope of the transportation system planning process for Crook County. These methodologies involve developing a complex computer model and are typically reserved for areas experiencing urban type of growth. For rural areas such as Crook County, these methodologies are not as appropriate.

The remaining two methodologies to be considered to be employed for the Crook County Transportation System Plan are the Level 1 and Level 2 travel demand forecast methodologies. The Level 2 methodology requires that good information is available regarding existing and future growth patterns. It also is more applicable to apply in areas of higher growth. In areas with sporadic and slow to moderate growth, this methodology tends to create erratic future traffic projections because growth is typically concentrated. To avoid this type of future traffic projection, the Level 1 travel demand forecast methodology was employed. The Level 1 travel demand forecast methodology can be easily employed due to significant historical traffic counts available along the state highways within Crook County.

5.3. DEMOGRAPHIC INFORMATION

5.3.1. Population

Although the Level 1 travel demand forecast methodology does not employ demographic information, it is presented below for reference only.

The population information for Crook County is summarized in Table 5-1. Based on a comparison of 1990 and 2000 population in Crook County, the entire county's population grew by 35.9 percent. This translates to an annual population growth rate of 3.1 percent for both the incorporated and unincorporated areas. The unincorporated areas of the county grew by 35.1 percent from 1990 to 2000. The unincorporated area annual population growth rate from 1990 to 2000 was 3.1 percent. In comparison to the statewide growth between 1990 and 2000, Crook County is growing at a rate well above the statewide average 1.9 percent growth per year for all areas and 0.6 percent growth per year in unincorporated areas. The statewide growth rate can be seen in Table 5-2.

In 2003 the City of Prineville added land to its Urban Growth Boundary (UGB). In the process of justifying the UGB expansion, the City and Crook County showed that the numbers provided by the Office of Economic Analysis in 1997 were very low for both the city and the county. Working with the Department of Land Conservation and Development (DLCD) it was determined that the current 2003 UGB population was 11,600 and the county's population was 21,500. DLCD agreed with the city that the UGB population projection for the year 2023 would

Table 5-1. 1990 and 2000 Population of Crook County

Area	1990 Population	2000 Population	Percent Change Between 1990 and 2000	Annual Growth Rate
Crook County	14,111	19,182	35.9%	3.1%
Prineville	5,355	7,358	37.4%	3.2%
Unincorporated	8,756	11,826	35.1%	3.1%

Source: 1990 and 2000 US Census

Table 5-2. 1990 and 2000 Population of Oregon State

Area	1990 Population	2000 Population	Percent Change Between 1990 and 2000	Annual Growth
Oregon	2,842,321	3,421,399	20.4%	1.9%
Incorporated	1,761,996	2,277,616	29.3%	2.6%
Unincorporated	1,080,325	1,143,783	5.9%	0.6%

Source: 1990 and 2000 US Census

be 21,778, and with the same percentage of UGB to the county, the population for Crook County in 2023 would be 37,138. This information is summarized in Table 5-3. The long term annual compounded growth rate for Crook County is 2.9 percent based on the information gathered from DLCD.

Table 5-3. 2023 Population in Study Area

Area	2000 Population	2023 Population	Percent Change Between 2000 and 2023	Annual Growth Rate
Crook County	19,182	37,138	93.6%	2.9%

Source: Department of Land Conservation and Development

5.3.2. Household

Table 5-4 summarizes the number of households and average household size in Crook County from 1990 to 2000. As shown in Table 5-4, the average household size in Crook County has remained stable between 1990 and 2000 with a slight increase from 2.56 to 2.57. It should be

noted that the household size is based on the population living in households. There is a small amount of the population that are not in household housing and therefore the average household size cannot be directly calculated by dividing the number of households into the population. The annual growth rate of the population and number of households is almost identical at 3.1 and 3.0 percent respectively.

Table 5-4. 1990 and 2000 Number of Households and Household Size

Year	Population	Number of Households	Average Household Size
1990	14,111	5,455	2.56
2000	19,182	7,354	2.57
Percent Change	35.9%	34.8%	0.39%
Annual Growth Rate	3.1%	3.0%	

Source: 1990 and 2000 US Census

5.3.3. Employment

Employment data by employment category was obtained from the 1990 and 2000 US Census. Table 5-5 summarizes this employment data. As shown in Table 5-5, the employment in Crook County has grown at 3.1 percent per year from 1990 to 2000. The annual employment growth rate matches the population growth rate.

Although overall employment grew at an average of 3.1 percent per year, two employment categories declined from 1990 to 2000. The employment categories that declined are manufacturing and wholesale trade. The largest increase in employment category occurred in the construction and service sectors.

The most recent employment projections available are from the Office of Economic Analysis (OEA), State of Oregon. The OEA data is from 1997. Updated employment forecasts are expected sometime this year. Table 5-6 summarizes the OEA employment projections for Crook County.

Based on the OEA employment projections from 2000 to 2025, Crook County is expected to have an annual employment growth of only 1.49 percent. This correlates at almost a similar rate as the population projection growth rate. Based on the OEA employment projections, Crook County is only expected to have modest increases in future employment. The OEA employment projections for 2000 are very low when comparing it to the 2000 US Census data. Consequently, the 2025 employment projections are also very low. These projections are expected to be updated sometime this year to reflect a more realistic trend similar to those shown by the 1990 and 2000 employment numbers.

Table 5-5. 2000 Employment

Employment Category	1990 Employment	2000 Employment	Percent Change Between 1990 and 2000	Annual Growth Rate
Agriculture, forestry, fishing and hunting, and mining	825	834	1.1%	0.11%
Construction	292	675	231.2%	8.7%
Manufacturing	1,876	1,745	-7.0%	-0.7%
Wholesale Trade	230	193	16.1%	-1.5%
Retail Trade	937	1,037	10.7%	1.0%
Transportation and warehousing, and utilities	257	323	25.7%	2.3%
Finance, insurance, real estate, and rental and leasing	200	284	42.0%	3.6%
Services (except public administration)	1,138	2,706	237.8%	9.0%
Public administration	213	293	37.6%	3.2%
Total	5,968	8,090	35.6%	3.1%

Source: 1990 and 2000 US Census

Table 5-6. 2000 to 2020 Employment Forecast – Non-Agricultural Employment

Area	1990 Employment	2000 Employment	2025 Employment	2000 to 2025 Employment Annual Growth Rate
Crook County	5,267	6,834	9,889	1.49%

Source: Office of Economic Analysis, State of Oregon

5.4. 2025 TRAFFIC VOLUME PROJECTIONS

5.4.1. Traffic Volumes

The 2025 traffic volumes were forecasted based on annual historical growth factors along the state highways in Crook County. Table 5-7 summarizes the historical traffic counts and annual growth factors used to forecast the 2025 traffic volumes for the study area intersections. The annual historical growth rates were derived from ODOT daily traffic volumes from 1982 and 2002. The locations of the traffic counts listed in Table 5-7 were taken from locations at or near the study area intersections.

Table 5-7. Annual Historical Growth Rates Along State Highways in Crook County

State Highway	Count Location	Daily Traffic Volume		Compounded Annual Growth Rate
		1982	2002	
US 26	0.01 Mile NW of Gerke Road	940	2,000	3.8%
US 26	0.01 Mile West of OR 380	6,000	10,200	2.7%
US 26	0.01 Mile East of OR 380	4,100	5,500	1.5%
US 26	0.24 Mile West of Barnes Butte Rd	3,200	5,000	2.3%
US 26	0.01 Mile East of Barnes Butte Rd	2,550	3,400	1.4%
US 26	0.01 Mile East of Mill Creek Rd	1,300	1,800	1.6%
US 26	0.01 Mile West of Ochoco Ranger Station Rd	870	1,500	2.8%
US 26	0.01 Mile East of Ochoco Ranger Station Rd	830	1,400	2.6%
OR 27	0.01 Mile North of Swartz Canyon Rd	110	130	0.8%
OR 126	0.01 Mile West of Powell Butte Hwy	2,100	7,200	6.4%
OR 126	0.01 Mile East of Powell Butte Hwy	3,000	8,800	5.5%
OR 126	0.01 Mile East of Minson Rd	2,800	7,700	5.2%
OR 126	0.01 Mile West of Houston Lake Rd	3,050	8,400	5.2%
OR 126	0.01 Mile East of Houston Lake Rd	3,350	9,300	5.2%
OR 370	0.01 Mile East of Lone Pine Rd	440	1,200	5.1%
OR 370	0.01 Mile West of Elliot Rd	480	1,200	4.7%
OR 370	0.01 Mile East of Elliot Rd	470	1,200	4.8%
OR 380	0.01 Mile Northwest of Juniper Canyon Rd	2,100	4,500	3.9%
Powell Butte Hwy	0.30 Mile South of OR 126	1,400	3,100	4.1%
Powell Butte Hwy	0.01 Mile West of Copley Rd	1,250	3,100	4.6%
Powell Butte Hwy	0.01 Mile North of Alfalfa Rd.	1,450	3,000	3.7%

Table 5-8. Annual Growth Factors Applied to Study Area Intersections

Intersection	Approach				Location(s)
	SB	WB	NB	EB	
Smith Rock Rd NW/Lone Pine Rd N.	5.1%	5.1%	5.1%	5.1%	OR 370 – 0.01 Mile East of Lone Pine Rd
OR 126/Powell Butte Hwy SW	4.1%	5.5%	4.1%	6.4%	Powell Butte Hwy – 0.30 Mile South of OR 126 OR 126 – 0.01 Mile West of Powell Butte Hwy OR 126 – 0.01 Mile East of Powell Butte Hwy
Millican Rd SW/Reservoir Rd SW	0.8%	0.8%	0.8%	0.8%	OR 27 – 0.01 Mile North of Swartz Canyon Rd
OR 126/Millican Rd SW	5.2%	5.2%	5.2%	5.2%	OR 126 – 0.01 Mile West of Houston Lake Rd OR 126 – 0.01 Mile East of Houston Lake Rd
Davis Loop SE(South)/Juniper Canyon Rd SE	3.9%	3.9%	3.9%	3.9%	OR 380 – 0.01 Mile Northwest of Juniper Canyon Rd
OR 380/Juniper Canyon Rd SW	3.9%	3.9%	3.9%	3.9%	OR 380 – 0.01 Mile Northwest of Juniper Canyon Rd
Davis Loop SE/Juniper Canyon Rd (North) SE	3.9%	3.9%	3.9%	3.9%	OR 380 – 0.01 Mile Northwest of Juniper Canyon Rd
US 26/Barnes Rd NE	1.9%	1.9%	1.9%	1.9%	US 26 – 0.24 Mile West of Barnes Butte Rd US 26 – 0.01 Mile East of Barnes Butte Rd
OR 370/Elliott Rd NW	4.7%	4.7%	4.7%	4.7%	OR 370 – 0.01 Mile West of Elliott Rd OR 370 – 0.01 Mile East of Elliott Rd
McKay Rd/Peters Rd N.	2.1%	2.1%	2.1%	2.1%	US 26 – 0.01 Mile West of OR 380 US 26 – 0.01 Mile East of OR 380
Powell Butte Hwy SW/Riggs Rd SW	4.1%	4.1%	4.1%	4.1%	Powell Butte Hwy – 0.30 Mile South of OR 126
Powell Butte Hwy SW/Alfalfa Rd SW	3.7%	3.7%	3.7%	3.7%	Powell Butte Hwy – 0.01 Mile North of Alfalfa Rd.
OR 126/Stillman Rd SW	5.2%	5.2%	5.2%	5.2%	OR 126 – 0.01 Mile East of Minson Rd
US 26/Mill Creek Rd	1.6%	1.6%	1.6%	1.6%	US 26 – 0.01 Mile East of Mill Creek Rd
OR 370/Lone Pine Rd N.	5.1%	5.1%	5.1%	5.1%	US 26 – 0.01 Mile East of N Lone Pine Rd
US 26/Ochoco Ranger Station Rd	2.7%	2.7%	2.7%	2.7%	US 26 – 0.01 Mile West of Ochoco Ranger Station Rd US 26 – 0.01 Mile East of Ochoco Ranger Station Rd
Powell Butte Hwy/Shumway/Bussett	4.6%	4.6%	4.6%	4.6%	Powell Butte Hwy – 0.01 Mile West of Copley Rd

Table 5-8 above summarizes the actual annual growth factors applied to each study area intersection. In some cases, multiple traffic counts were used to derive a growth factor. In that case, multiple traffic counts are listed for the particular intersection approach. The average growth between the multiple counts was used to develop the annual historical growth factor.

The 2025 traffic volumes at the study area intersections are shown in Figure 5-1. Both 2025 A.M. and P.M. peak hour traffic volumes are shown in Figure 5-1. Figure 5-2 shows the 2025 projected daily traffic volumes which were also based on the growth factors summarized in Tables 5-7 and 5-8.

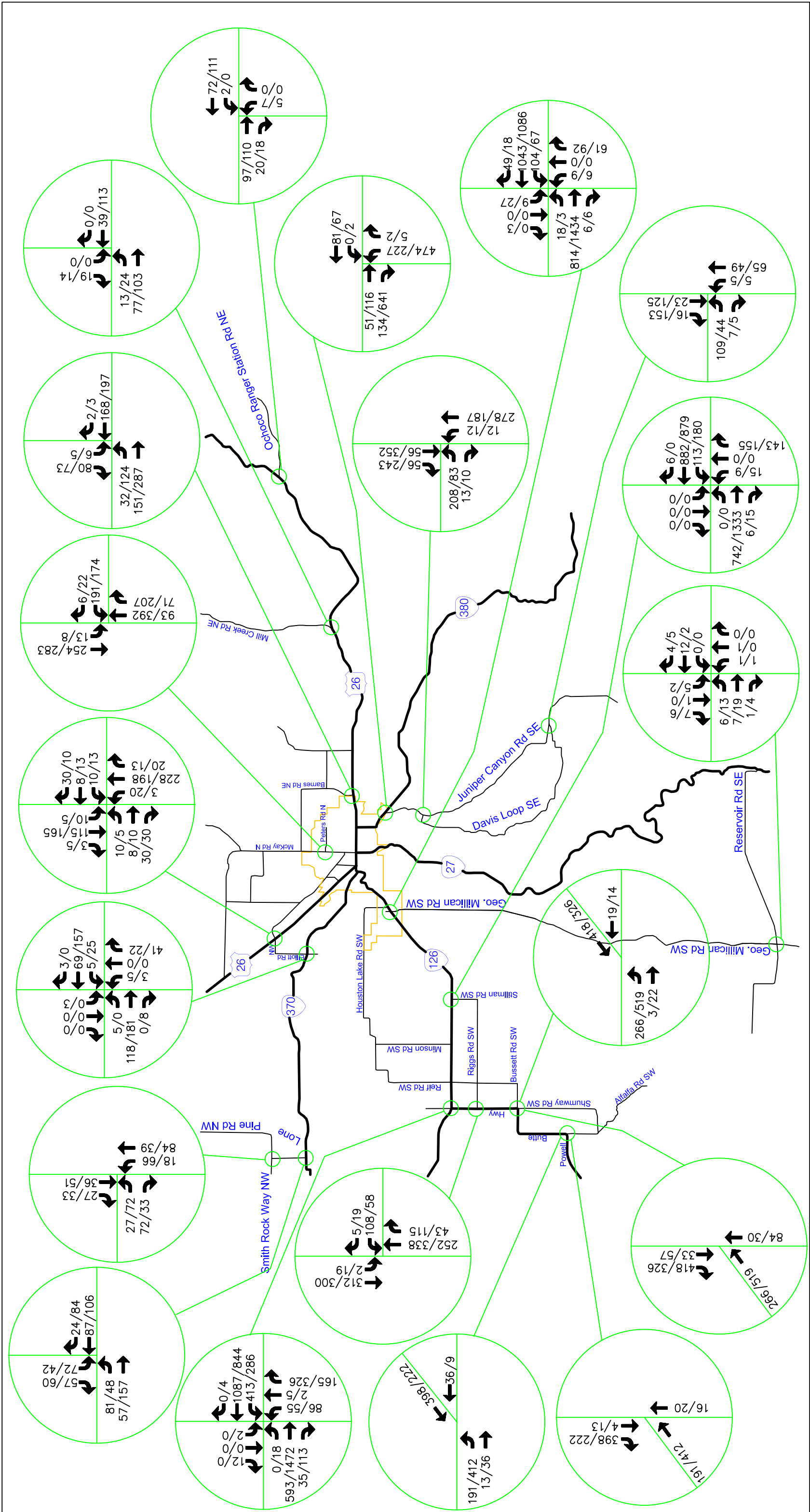
5.4.2. 2025 Level of Service and V/C Ratio Analysis

Based on the 2025 traffic volumes, levels of service and volume-to-capacity (v/c) ratios were calculated for the study area intersections. Both the A.M. and P.M. peak hours were analyzed for the 2025 condition. The levels of service and v/c ratio analyses are summarized in Table 5-9.

Of the 12 ODOT intersections in the study area, the following three are projected to operate beyond the maximum V/C standard for unsignalized intersections:

- OR 126/Powell Butte Highway – In the 2025 A.M. and P.M. peak hours, the northbound and southbound approaches are projected to operate above a v/c ratio of 1.00. The v/c ratio standard is 0.70 on OR 126 and 0.75 on Powell Butte Highway. The poor v/c ratio at the northbound and southbound approaches is primarily due to heavy through movement traffic volumes on OR 126 conflicting with turning movements on the side street approaches. In addition, in the P.M. peak hour, the westbound left turn from OR 126 to Powell Butte Highway is projected to operate at v./c ratio of 0.95.
- OR 126/Stillman Road SW – In the 2025 A.M. and P.M. peak hours, the northbound approach is projected to operate with a v/c ratio of over 1.00. These v/c ratios are well above the maximum v/c standard of 0.80 for the side street, Stillman Road. The poor v/c ratio is primarily due to heavy through movement traffic volumes on OR 126 conflicting with turning movements on the side street approach.
- OR 126/Millican Road SW – In the 2025 A.M. peak hour, the southbound approach is projected to operate with a v/c ratio of over 1.00. In the 2025 P.M. peak hour, the northbound and southbound approaches are projected to operate with a v/c ratio of over 1.00. These v/c ratios are well above the maximum v/c standard of 0.85 for the side street, Millican Road. The poor v/c ratio is primarily due to heavy through movement traffic volumes on OR 126 conflicting with turning movements on the side street approach.

Based on a level of service of LOS E or better for unsignalized intersections, all five of the Crook County intersections are projected to operate within the acceptable level of service standard.

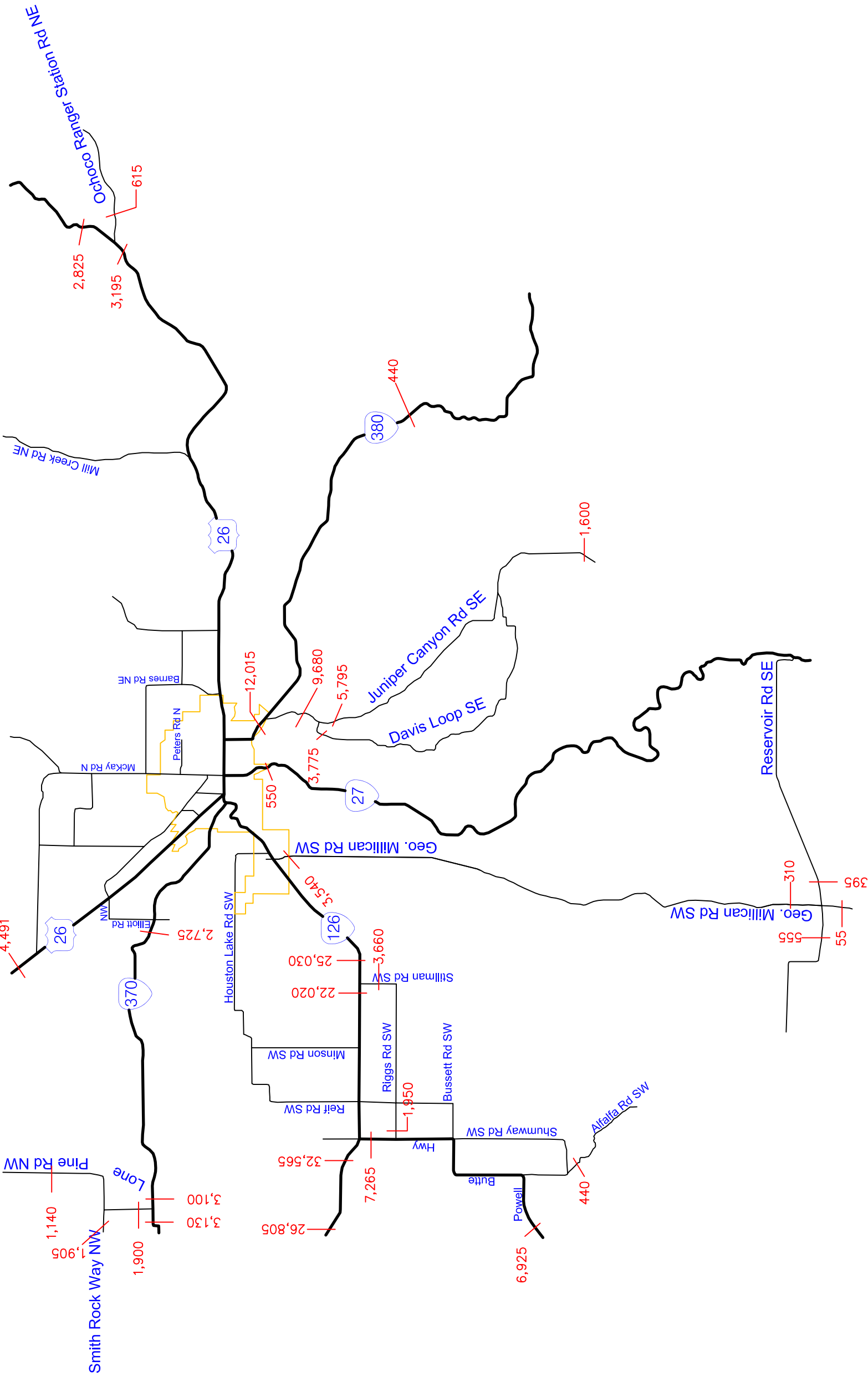


Crook County Transportation System Plan

Figure 5-1
2025 Weekday A.M. and P.M.
Peak Hour Traffic Volumes

LEGEND
55/100
AM/PM Peak Hour
Traffic Volume

NOT TO SCALE



NOT TO SCALE

LEGEND

1150

Weekday Daily Traffic Volume

Crook County Transportation System Plan

Figure 5-2
2025 Weekday Daily
Traffic Volumes

Table 5-9. Year 2025 Levels of Service

ODOT Unsignalized Intersection	A.M. Peak Hour			PM Peak Hour		
	LOS	Average Delay (sec)	V/C Ratio	LOS	Average Delay (sec)	V/C Ratio
US 26/Barnes Rd N.						
Southbound Approach	B	10.2	0.14	B	10.9	0.16
Eastbound Left	A	7.8	0.03	A	8.0	0.11
US 26/Mill Creek Rd						
Southbound Approach	A	8.7	0.03	A	9.1	0.02
Eastbound Left	A	7.4	0.01	A	7.6	0.02
US 26/Ochoco Ranger Station Rd						
Northbound Approach	B	10.4	0.02	B	10.2	0.02
Westbound Left	A	7.6	0.00	A	7.6	0.00
OR 126/Powell Butte Highway						
Northbound Approach	F	>100	>1.00	F	>100	>1.00
Southbound Approach	F	>100	>1.00	F	>100	>1.00
Eastbound Left	B	11.3	0.00	B	10.3	0.03
Westbound Left	C	18.1	0.29	F	71.3	0.95
OR 126/Stillman Rd						
Northbound Approach	F	>100	>1.00	F	>100	>1.00
Westbound Left	B	10.9	0.18	C	23.8	0.52
OR 126/Millican Rd SW						
Northbound Approach	F	>100	0.79	F	>100	>1.00
Southbound Approach	F	>100	>1.00	F	>100	>1.00
Eastbound Left	B	11.9	0.04	B	12.0	0.01
Westbound Left	B	11.6	0.18	C	16.7	0.21
OR 370/Lone Pine Rd						
Southbound Left	B	15.0	0.19	B	14.6	0.14
Southbound Right	A	9.7	0.08	A	10.0	0.10
Eastbound Left	A	8.2	0.10	A	7.9	0.05
OR 370/NW Elliott Rd						
Northbound Approach	A	9.5	0.05	B	10.2	0.02
Southbound Approach	A	0.0	0.00	A	13.0	0.03
Eastbound Left	A	7.5	0.00	A	7.6	0.00
Westbound Left	A	7.7	0.01	A	7.8	0.02

Table 5-9. Year 2025 Levels of Service Continued

ODOT Unsignalized Intersection	A.M. Peak Hour			PM Peak Hour		
	LOS	Average Delay (sec)	V/C Ratio	LOS	Average Delay (sec)	V/C Ratio
OR 380/Juniper Canyon Rd						
Northbound Approach	C	18.7	0.69	C	15.4	0.44
Westbound Left	A	7.8	0.00	A	10.0	0.11
Powell Butte Hwy/Riggs Rd						
Southbound Left	A	8.2	0.00	A	8.5	0.02
Westbound Approach	C	20.2	0.38	C	18.3	0.31
Powell Butte Hwy/Shumway Rd/Bussett Rd						
Southbound Left	A	8.2	0.04	A	9.1	0.08
Westbound Left	C	20.5	0.09	C	24.3	0.08
Westbound Right	A	11.5	0.16	B	12.8	0.07
Powell Butte Highway/Alfalfa Rd						
Southbound Left	A	7.9	0.00	A	8.6	0.02
Westbound Left	C	16.3	0.12	C	15.9	0.04
Westbound Right	A	10.0	0.03	B	11.7	0.05
Crook County Unsignalized Intersection						
Juniper Canyon Rd/Davis Loop Rd (north end) S.						
Northbound Left	A	7.4	0.00	A	7.9	0.01
Eastbound Approach	A	10.0	0.16	B	10.2	0.10
Juniper Canyon Rd/Davis Loop Rd (south end) S.						
Northbound Left	A	7.5	0.00	A	8.7	0.01
Eastbound Approach	C	16.1	0.44	C	15.8	0.22
Millican Rd SW/Reservoir Rd SW						
Northbound Approach	A	8.8	0.00	A	9.3	0.00
Southbound Approach	A	9.0	0.01	A	8.5	0.02
Eastbound Left	A	7.4	0.01	A	7.3	0.01
Westbound Left	A	7.4	0.00	A	7.3	0.00

Table 5-9. Year 2025 Levels of Service Continued

Crook County Unsignalized Intersection	A.M. Peak Hour			PM Peak Hour		
	LOS	Average Delay (sec)	V/C Ratio	LOS	Average Delay (sec)	V/C Ratio
McKay Rd/Peters Rd						
Southbound Left	A	7.7	0.01	A	9.2	0.01
Westbound Left	C	15.3	0.37	E	46.4	0.78
Westbound Right	A	8.9	0.01	B	11.6	0.06
Smith Rockway/Lone Pine Rd N.						
Northbound Left	A	8.0	0.02	A	7.6	0.06
Eastbound Approach	A	9.7	0.17	B	11.2	0.18

5.5. FUTURE INTERSECTION AND ROADWAY CAPACITY DEFICIENCIES

Based on the level of service and v/c ratio analysis, the following three ODOT intersections will need future improvements:

- OR 126/Powell Butte Highway
- OR 126/Stillman Road
- OR 126/Millican Road SW

In addition to the intersection improvements above, based on the 2025 projected daily traffic volumes, it may be necessary to consider additional travel lanes on OR 126.

Future transportation improvements along OR 126 and US 26 shall occur by a four phase process. These phases are: 1) passing lanes every 3-5 miles; 2) continuous four-lane section; 3) grade separate the higher volume road intersections with interchanges and/or overpasses; 4) full access control with median barriers, frontage roads. Depending on the intersection, some elements of Phase 3 and Phase 4 can be intermixed.

The goal of this four-phase approach is to incrementally improve an existing two-lane rural highway, culminating in a four-lane facility with grade-separated interchanges and frontage roads. The timing of improvements may be tied to volume-capacity (v/c) ratios, levels of service, crash rates per million vehicle miles, reducing types of crashes, or other performance standards. It is anticipated that a refinement study will need to be conducted along OR 126 to address the specific timing, phasing, and configuration of the improvements.

5.6. FUTURE ROADWAY CONNECTIVITY AND CIRCULATION

The Juniper Canyon area is one of the fastest growing areas within unincorporated Crook County. The primary factor creating the growth in this area is the popularity of the rural residential area along Juniper Canyon Road and Davis Loop Road S. Previous studies have identified that the Paulina Highway (OR 380)/Juniper Canyon Road intersection will be severely congested in 2015 traffic conditions. It has been previously suggested that another outlet from the Juniper Canyon area be developed to access the Crooked River Highway (OR 27) to alleviate this future congestion.

Salt Creek Road SE provides access to the south side of Prineville Reservoir. With increased development pressure and recreational use, emergency response along Salt Creek Road SE is becoming an issue. Salt Creek Road SE is a 16 foot, unimproved road.

5.7. IDENTIFIED NEEDS FROM 1995 CROOK COUNTY OR 126 STUDY

The following improvement recommendations are summarized from the 1995 Crook County OR 126 Study. Only the recommendations for projects outside of the Prineville urban growth boundary (UGB) are included.

Intersection Improvements: OR 126 through Crook County outside of the Prineville UGB is principally a rural corridor. Side street approaches are typically stop-sign controlled. As traffic volumes increase, the collision potential resulting from vehicles slowing down or stopping to make left or right turns also increases. As a result, several of the major intersections in the corridor will require the addition of turning lanes. Outside of the Prineville UGB, these are the following:

- Powell Butte Highway. In the next year, increasing traffic volumes will warrant the construction of a westbound left turn lane. By the year 2005, a right turn lane for eastbound OR 126 traffic turning onto the Powell Butte Highway should be provided. By 2016, northbound traffic approaching the intersection should be segregated into left and through-right lanes, to allow right-turning vehicles to bypass the left turn queue.
- Stillman Road. At the Stillman Road/OR 126 intersection, left turns comprise about 10% of the westbound traffic. Increasing through and left turn volumes warrant the construction of a westbound left turn lane in the next 5-10 years.

Left Turn Lanes: A review of intersection operations for 2016 indicates that the left turns off OR 126 onto the side streets generally experience low delays. Therefore, the need for left turn lanes at some intersections is driven by safety concerns, not operations. When vehicles are turning left off the highway, they must decelerate and potentially come to a complete stop in order to make their turn. Without a separate left turn lane, they must do this in the highway's

only moving lane which can result in rear end collisions. As previously stated in Section 5.5, it is recognized that OR 126 will go through a four phase process for improvement and will eventually become a four-lane, access controlled facility. While left turn lanes along OR 126 at major intersections may alleviate future congestion and safety problems, it is recognized that these left turn lanes are only a temporary solution and would eventually be eliminated as grade-separated facilities were created as part of the four phase improvement process.

The warrants for determining when a left turn lane is required is based on the number of vehicles turning left, the percent of left-turning vehicles compared to the overall approach volume, and the opposing traffic volume. As the left turn volume increases, the need for a left turn lane becomes more important. This is also true if the overall approach volume increases or the opposing volume increases. A consideration in the left turn warrant process should be the four phase improvement process to eventually build OR 126 into a four-lane, controlled access facility. Consideration for access control, consolidation of accesses onto OR 126, development of frontage roads, and other access management measures should be considered prior to and in conjunction with installing left turn lanes onto OR 126.

5.8. IDENTIFIED NEEDS FROM THE CITY OF PRINEVILLE TRANSPORTATION SYSTEM PLAN

Based on a review of the City of Prineville Transportation System Plan, there is one primary future roadway deficiencies that will affect the Crook County roadway system. The airport industrial area is developing rapidly as an employment center. To continue to adequately serve the transportation needs of the airport industrial area, the OR 126 access will need to be improved.

5.9. FUTURE TRAFFIC IMPACT BY POTENTIAL DESTINATION RESORT AND RESIDENTIAL GROWTH IN CROOK COUNTY

The growth rates used to develop the 2025 traffic volumes in the Crook County Transportation System Plan are very conservative and yield a substantial future increase in traffic. However, there are some large development potentials in Crook County that may further accelerate traffic growth. A proposed destination resort in the Powell Butte area of Crook County has a large potential impact. Also, the Juniper Canyon area is a significant residential area within unincorporated Crook County that has approximately 700 to 800 vacant residential lots and has the potential for thousands of more lots. To assure that the transportation system plan remains a valid planning tool for Crook County, the traffic volumes should be monitored at least every three years in high growth areas such as Powell Butte, Juniper Canyon, OR 126 corridor, and the airport industrial area.

SECTION 6.0
TRANSPORTATION SYSTEM
ALTERNATIVES ANALYSIS

Section 6.0

Transportation System Alternatives Analysis

6.1. ODOT STIP PROJECTS

Oregon's Final 2004-2007 Statewide Transportation Improvement Program (STIP) is the state's transportation preservation and capital improvement program. It covers a four-year period from 2004 to 2007. The STIP includes projects of regional significance and even includes projects in the National Parks, National Forests, and Indian Reservations. Funding sources are from a variety of sources including but not limited to federal, state, and local government transportation funds. It should be noted that the STIP is a project scheduling and funding document. Projects are scheduled and funded based on priorities developed.

The following STIP project types exist:

- Pavement Preservation Program
- Bridge Preservation Program
- Modernization Program
- Safety Program
- Operations Program
- Congestion Mitigation and Air Quality Improvement
- Transportation Enhancement Program
- Public Transportation Programs
- Statewide (Bucketed) Programs including those projects characterized by Special Programs projects

In addition to the project types listed above, STIP projects are also funded by a special program enacted by the 2001, 2002, and 2003 Oregon Transportation Investment Act (OTIA). In 2001 and 2002, the passing of OTIA allowed the Oregon Department of Transportation to sell bonds which brought \$500 million into the State Highway Fund. The following year, 2003, OTIA III was passed by the Oregon State Legislature. OTIA III allowed ODOT to sell bonds to bring an additional \$2.5 billion into the State Highway Fund. The money generated by OTIA has been dedicated to modernization, bridge, and pavement preservation projects.

Based on a review of the 2004-2007 STIP, the following type of STIP projects are currently programmed within unincorporated Crook County:

- Pavement Preservation
- Operations Program
- Bridge Preservation Program
- Jurisdictional Exchange
- Statewide (Bucketed) Programs including those projects characterized by Special Programs projects

6.1.1. Pavement Preservation Projects

The purpose of ODOT's pavement preservation project is to keep highways in the best condition at the lowest lifecycle cost. This purpose focuses on taking preventative measures to add useful life to a road before the pavement reaches poor condition. By implementing a preventative pavement preservation program rather than allowing poor pavement condition before any improvements, 75 to 80 percent savings can be achieved. Two pavement preservation projects are identified in the 2004-2007 STIP. These projects are described below:

- US 26 from Laughlin Road to Marks Creek Pavement Preservation and Rockfall Correction at Elephant Rock – This project involves pavement preservation along US 26 between Milepost 20.58 and 34.00. Also included in this project is rockfall correction at Elephant Rock. The total project cost is \$2,838,000 and is scheduled for construction in 2004.
- Beaver Creek Road Junction with Paulina Suplee Road – Construct improvements along Forest Highway 124 by widening, paving, improving road base, and improving drainage. The project cost is \$4,000,000 and is scheduled for construction in 2005.

6.1.2. Bridge Preservation Projects

Bridge replacement and rehabilitation is a critical component in the STIP to maintain an adequate transportation infrastructure. Although the life expectancy of a bridge is typically between 50 and 80 years, significant changes have occurred that require extensive bridge rehabilitation and/or replacement. These changes include significant increase in traffic volumes, especially truck traffic; heavier truck loads; longer truck loads which affect geometric standards as well as heavier truck weight loads; and higher speeds. All of these changes require upgrades to design standards. Many of the current bridges in operation were not built to current design standards that address the changes to truck freight movement.

A recent report that was made available to the Oregon House Interim Transportation Committee identified the funds needed to address the states bridge replacement and rehabilitation needs. This study identified approximately \$3.1 billion needed to address all of the state's bridge work. In comparison, the 2004-2007 STIP allocates \$342 million for bridges and OTIA III makes available \$1.3 billion. This is still far short of the need.

A bridge replacement and rehabilitation project is developed through the use of the Bridge Management System (BMS) and twelve deficiency parameters. Based on the BMS and deficiency parameters, one bridge project was funded in Crook County by the 2004-2007 STIP. This project is actually within the city limits of the City of Prineville and is described below:

- Crooked River Bridge #02761 (OR 126) – This project involves replacing Crooked River Bridge #02761 along OR 126. The project is scheduled for construction in 2005. The total cost of the project is \$4,985,000.

6.1.3. Special Programs

One Special Programs projects are funded in Crook County in the 2004-2007 STIP. This project is described below:

- Bandit Springs Rest Area – This project involves constructing a walkway and a drinking water system. The project is located along Forest Highway 27 at Milepost 48.83. The total cost of the project is \$100,000. The project is scheduled to begin in 2004.

6.1.4. Operations Program

An operations project improves the efficiency of the transportation system through the replacement of aging operational infrastructure and the deployment of projects and new technology to meet increased system demand. The Oregon Transportation Commission (OTC) has approved approximately \$84 million for the funding of operations projects in the 2004-2007 STIP. The Operations Program includes the following four categories of projects: 1) slides and rockfalls; 2) intelligent transportation systems (ITS); 3) signs, signals, and illumination; and 4) transportation demand management. The following operations project is funded by the 2004-2007 STIP in Crook County:

- US 26/Harwood Street – This project involves the installation of a traffic signal and ADA compliant improvements. The project also involves applying access management in the intersection vicinity. The project is estimated to begin in 2006 and has a total cost of \$298,000. It should be noted that this project is within the city limits of the City of Prineville.

6.1.5. Jurisdictional Exchange

As part of a jurisdictional exchange agreement between ODOT and Crook County, ODOT has partnered with Crook County to build passing lanes along OR 126 from Milepost 4.00 to Milepost 6.00. The construction of this project is expected to begin in 2006. The total project cost is estimated at \$1,950,000.

6.2. CITY OF PRINEVILLE IMPROVEMENTS WITHIN THE URBAN GROWTH BOUNDARY OR IMPACTING CROOK COUNTY TRANSPORTATION SYSTEM

In reviewing the City of Prineville's Transportation System Plan (TSP), there is one roadway improvement project that is in the urban growth boundary and would have an impact to the Crook County roadway system. This improvement is described in the remainder of this section.

Improve OR 126 Access in the Prineville Airport Industrial Area

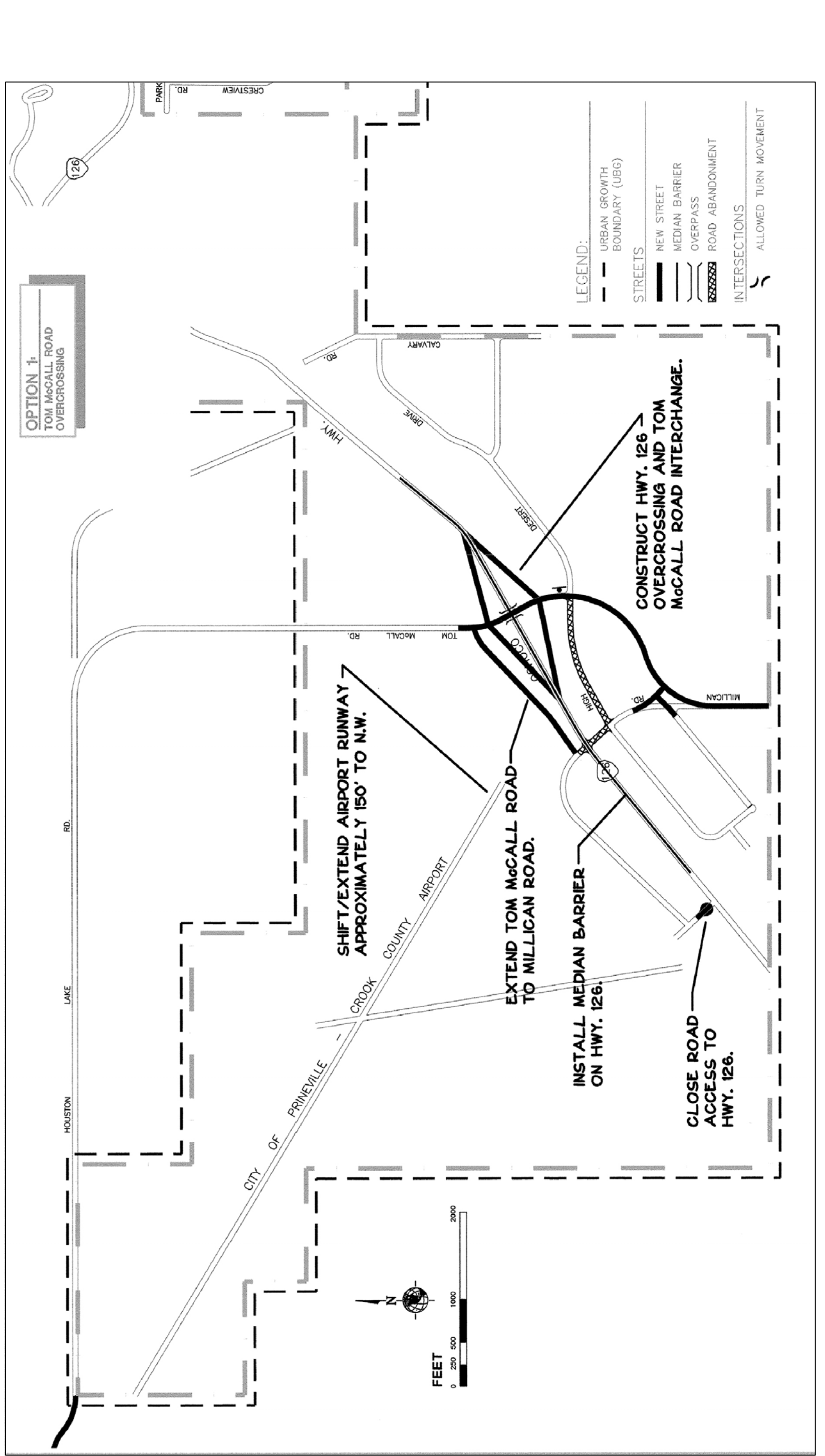
The airport industrial area is developing rapidly as an employment center. To continue to adequately serve the transportation needs of the airport industrial area, OR 126 access will need to be improved. The Prineville TSP has defined the following four options to improve OR 126 access and circulation in the Prineville Airport industrial area:

- Option 1 – Tom McCall Road Overcrossing
- Option 2 – Millican Road Undercrossing
- Option 3 – Tom McCall Road Undercrossing
- Option 4 – Millican/Tom McCall Split-Diamond

The Prineville TSP forecasts that the OR 126/Millican Road and OR 126/Tom McCall Road intersections have traffic volumes high enough in 2025 to warrant traffic signals. Even though these intersections are projected to meet traffic signal warrants by 2025, it is not advisable that these intersections be signalized. The Prineville TSP states:

“However, the installation of new traffic signals, particularly at the edge of Prineville's UGB, will introduce significant delay to state highway traffic; and may even introduce undesirable safety conditions in the area. Any of the interchange options would significantly reduce traffic conflicts by providing improved access management and greater capacity to accommodate the growth instate highway traffic, particularly truck movements through the area. These interchange options are also more consistent with the access management standards outlined in the 1999 Oregon Highway Plan.”

Based on the analysis from the Prineville TSP, Option 1 – Tom McCall Road Overcrossing was found to be the most desirable interchange option that optimized OR 126 operations, provided improved access and safety to the industrial area, and minimized the impact to the airport area operations. Figure 6-1 illustrates the Option 1 improvement. This improvement is estimated to cost approximately \$5.4 million in 2005 dollars.



Crook County Transportation System Plan

Figure 6-1
Conceptual Improvement Option for the
Airport Industrial Area Access to OR 126

NOT TO SCALE

6.3. INTERSECTION IMPROVEMENTS

6.3.1. OR 126 Intersections and Roadway

Based on the 2025 traffic volumes, levels of service, and v/c ratio analyses, the following intersections are projected to operate below an acceptable level of service and/or v/c ratio:

- OR 126/Powell Butte Highway
- OR 126/Millican Road

The intersections above are all candidates for a grade-separated rural interchange. An interchange improvement is proposed to mitigate the intersection problems along OR 126 because it is not safe to install traffic signals at rural intersections. The typical driver expectation is not to expect a traffic signal along a rural highway and an unexpected stop is likely to cause additional crashes.

The City of Prineville TSP has already defined the OR 126/Millican Road interchange concept. However, since this concept does not necessarily address all of Crook County's issues in the vicinity, further work needs to be done to better define a preferred alternative. Since the City of Prineville is in the process of updating their TSP, the city should work with Crook County in defining a preferred alternative that meets the airport's needs as well as the airport industrial area vehicle access needs to OR 126.

Interchange configurations for the OR 126/Powell Butte Highway intersection should be further defined in a refinement study. The cost of construction for rural interchanges is likely in the \$5 to \$10 million range in 2004 dollars. In the IGA agreement between Crook County and ODOT that transferred Powell Butte Highway to Crook County, it is recognized by ODOT that it will secure funding for the OR 126/Powell Butte Highway interchange.

Motorists are using Stillman Road to access Riggs Road as a cut-through route to bypass OR 126. With the new fire station and community hall being developed along Riggs Road, the cut-through situation is not acceptable. To improve this situation, the Crook County Road Department has decided to reinstall all-way stops at the Reif Road/Riggs Road and Copley Road/Riggs Road intersections. In addition, rumble strips will be installed on all intersection approaches as well as advance warning signs. These improvements will be installed as Riggs Road is closed for two bridge replacements for five months in 2005. When Riggs Road opens after the bridge replacements, the all-way stops will be in place.

Figure 5-2 shows the 2025 weekday daily traffic volumes. Along OR 126, the 2025 weekday daily traffic volumes range from 22,020 west of Stillman Road S to 32,565 west of Powell Butte Highway. These projected traffic volumes are well in excess of a two-lane highway capacity. Four to five lanes are necessary along OR 126 to adequately meet the 2025 travel demand. It should be noted that there is an IGA agreement between Crook County and ODOT that recognizes the need to provide four lanes along OR 126.

6.3.2. Juniper Canyon Area Intersections

The July 1997 Crook County Transportation System Plan identified a future 2016 deficiency at the OR 380 (Paulina Highway)/Juniper Canyon Road intersection. The 1997 TSP stated that the intersection was projected to operate at LOS F in the 2016 condition. Based on the updated August 2003 traffic counts and the 2025 traffic projection, these conclusions have changed significantly. Based on the new analysis, the OR 380 (Paulina Highway)/Juniper Canyon intersection is projected to operate at LOS C or better in the 2025 condition. The improved results are from a difference in traffic counts and an updated level of service and v/c ratio calculation methodology. The previous 1997 TSP calculations were based on the *1994 Highway Capacity Manual* while the current analysis was based on the *2000 Highway Capacity Manual*. Based on the updated 2025 level of service analysis, the Juniper Canyon Road/Davis Loop Road S. (north end) and Juniper Canyon Road/Davis Loop Road S. (south end) intersections are projected to operate at acceptable levels of service and v/c ratios. Therefore, no Juniper Canyon Area intersection improvements are being proposed.

6.4. SAFETY IMPROVEMENTS

Based on the crash analysis in Section 4, no high crash locations were identified. However, in analyzing the crash information, many of the accidents were related to hitting wildlife. According to a recent article (November 5, 2003) by the Associated Press, deer-related crashes are the majority of wildlife-related crashes. They are responsible for \$1.1 billion in crashes every year nationwide. An insurance industry study has identified that fencing and reduction in deer herds are the most effective ways to reduce wildlife crashes. Highway reflectors, high-pitched whistles, signs and other methods to prevent collisions show mixed results and are much less effective.

Crook County should consider working with the Oregon Department of Transportation (ODOT) in developing a fencing program and/or other measures along state highway sections where wildlife crashes persist.

6.5. ROADWAY IMPROVEMENTS

From the 1997 Crook County TSP, three roadways projects were identified. These projects included the following:

- Powell Butte Highway - There are two 90 degree turns at Alfalfa Road and Shumway Road. These 90 degree turns are not ideal for motorists to negotiate along a continuous highway with the right-of-way of travel. Realignment should be sought.
- Millican Road from OR 126 to OR 20 – This road has been identified as an alternate truck route to OR 27, the Crooked River Highway. OR 27 is a poor truck route connection from OR 126 to OR 20 with many low speed curves along its alignment.

- Davis Road to OR 27 connection – An additional connection is sought from the rural residential area of Juniper Canyon.

6.5.1. Powell Butte Highway

Powell Butte Highway has two 90 degree curves along its alignment south of OR 126. These 90 degree curves exist at the Alfalfa Road and Shumway Road/Bussett Road. Realignment should be sought to improve these conditions to allow motorists to negotiate through these curves with free flow travel speeds.

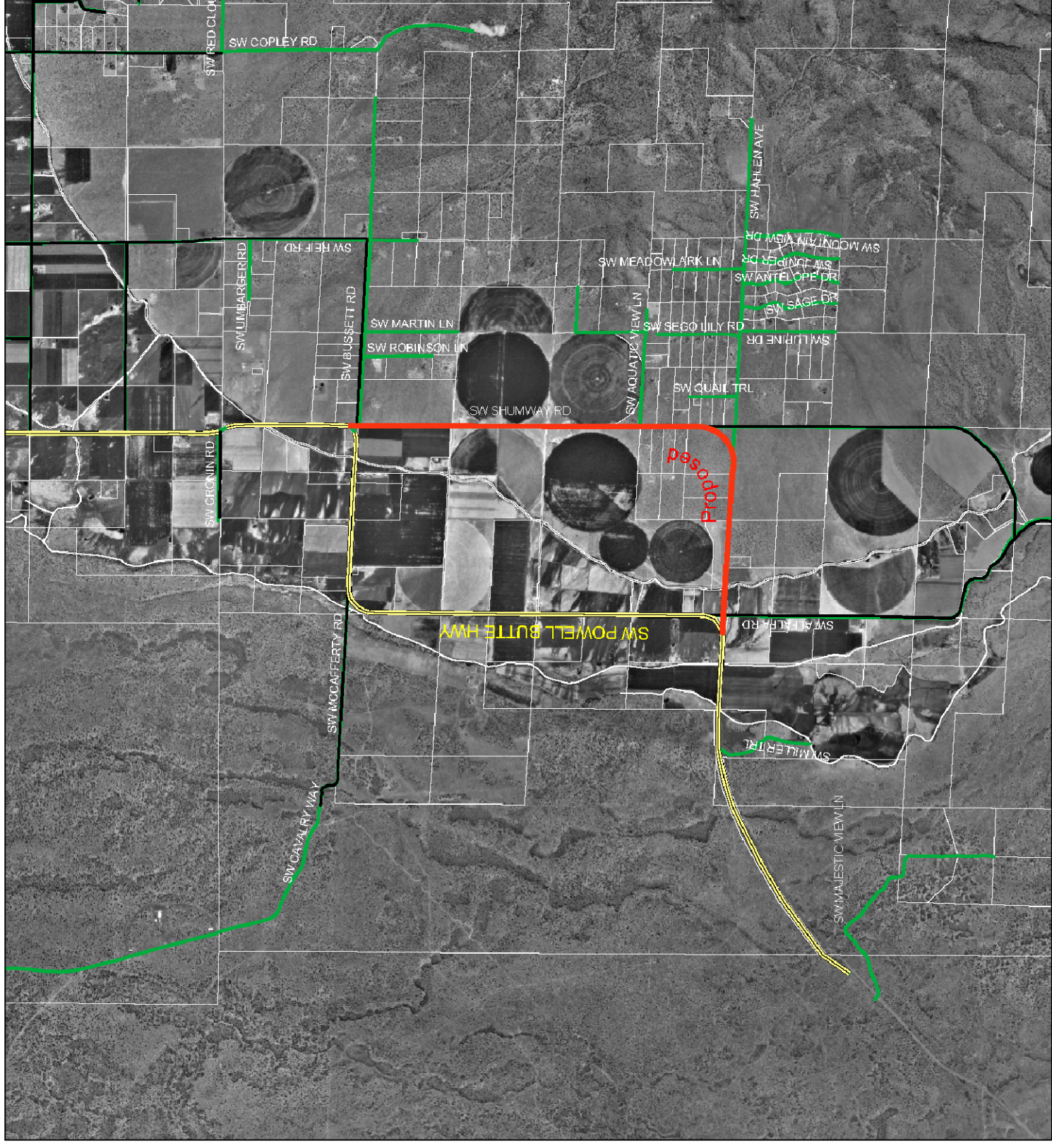
Two improvement alternatives exist. The first alternative involves taking each 90 degree curve and realigning it to accommodate a curve that is rated for a 50 mph travel speed which is the speed limit along Powell Butte Highway. A curve with a 50 mph travel speed and 6 percent rate of superelevation has a minimum centerline radius of 790 feet. This configuration would result in a triangular piece of property with limited use between the old road alignment and the new 50 mph curve. The triangular piece of property that would be created would be approximately seven acres in size. In a worst case scenario, approximately 14 acres of land would need to be purchased to implement this alternative.

A major issue regarding the first alternative is that although the 50 mph curve significantly helps improve travel speeds, two back to back “S” curves are never ideal. Another significant design issue is how the existing intersections at Alfalfa Road and Shumway Road/Bussett Road would be reconfigured. Regardless of the design, it is awkward for two side streets to connect along a curve on the same side of the roadway. Therefore, this alternative was not pursued.

The second alternative involves realigning Powell Butte Highway. This realignment would eliminate the first 90 degree turn at the Shumway Road/Bussett Road intersection by continuing the Powell Butte Highway alignment southward along Shumway Road. A 50 mph curve would turn westward to connect back to the existing Powell Butte Highway alignment at Alfalfa Road. Shumway Road south of this alignment would “T” into the new Powell Butte Highway realignment. The old Powell Butte Highway alignment may remain to provide access to the adjacent parcels of land. The two intersections at Powell Butte Highway/Bussett Road and Powell Butte Highway/Alfalfa Road would become standard four legged intersections at right angles. This alternative is illustrated in Figure 6-2.

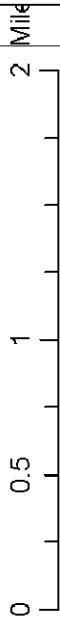
Alternative 2 eliminates the design issues of Alternative 1. It also functions better operational by eliminating the awkward intersections created by Alternative 1. The right-of-way need is also cut in half by eliminating one curve since only approximately eight acres are needed.

Proposed road section Powell Butte Hwy.



Legend

- Proposed Hwy
- Powell Butte Hwy
- County Roads
- Other Roads
- Parcels



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15 August 2003

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Crook County Transportation System Plan

Figure 6-2
 Alternative 2
 Powell Butte Highway Improvements



NOT TO SCALE

6.5.2. Millican Road from OR 126 to OR 20

The Millican Road alternative truck route has recently received county funding. This project provides an alternative truck route from OR 126 to OR 20. The current truck route connecting OR 126 and OR 20 is OR 27, the Crooked River Highway. OR 27's usefulness as a truck route is limited since it is a very windy highway with lower travel speeds. The Millican Road truck route has a relatively straight alignment between OR 126 and OR 20 and would provide trucks a higher speed facility.

The Millican Road truck route project would extend Millican Road from Reservoir Road to OR 20. This section of Millican Road currently exists as an unimproved road and would need to be constructed to ODOT standards for a truck route. The remaining section of Millican Road between Reservoir Road and OR 126 would be improved to ODOT standards for a truck route.

There are only nominal traffic volumes currently on OR 27, the Crooked River Highway. Most of the traffic volumes are associated with recreational use along the Crooked River. These traffic volumes in the 2025 condition are only expected to increase slightly. Therefore, it is not expected that there will be significant shifting of traffic volumes from OR 27 to Millican Road. Most of the shifting will likely be truck traffic which would use Millican Road mostly during off-peak hours. The peak hour traffic volumes at the OR 126/Millican Road intersection should not be significantly impacted by the extension of Millican Road to OR 20.

The truck traffic along Millican Road has increased since the connection between OR 20 and OR 126 was completed in July 2004. This roadway was constructed with a chip seal surface. The increase in truck traffic along Millican Road has deteriorated the chip seal road into a gravel road. County crews are temporarily patching the roadway as needed but this is not an effective long term solution. Another problem with Millican Road is that there are two curves that were constructed with the super elevation in the wrong direction. This has contributed to three trucks rolling over in the vicinity of these curves. Millican Road is in need of an overlay with four inches of HMA to be able to accommodate the truck traffic. Also, the road base needs to be replaced in some locations where the roadway has failed. In addition, the two incorrect super elevations need to be corrected for safety reasons.

6.5.3. Davis Road to OR 27 Connection

Through the TSP process, it was defined that a secondary route from the Juniper Canyon Area was desirable. The only access into the area is from Paulina Highway, OR 380. Since this is the largest rural residential area in Crook County, one access in and out of the area is not prudent. So, a secondary access was sought. This is somewhat problematic because the only other possible access is to connect with OR 27, the Crooked River Highway. The Juniper Canyon area is on a plateau overlooking the Crooked River and the grades to access OR 27 are steep.

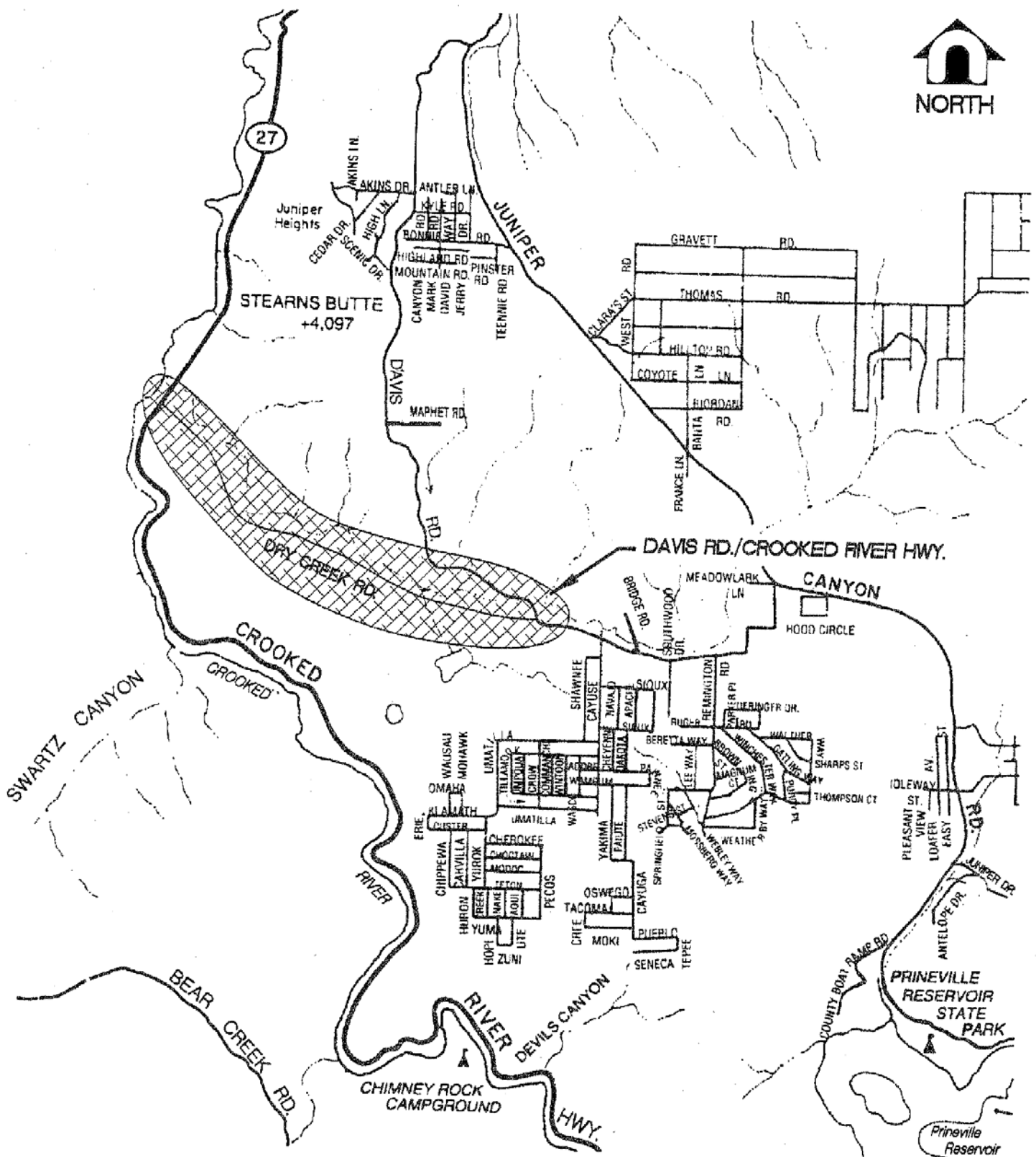
The first alignment is along Dry Creek Road which is a jeep trail through undeveloped country. The alignment is approximately 5.5 miles long and would cross important deer winter range

habitat as identified by the Oregon Department of Fish and Wildlife and Crook County. This alignment would come out by the Federally Designated Scenic River of the Crooked River and within the rimrock protection area of the County's Comprehensive Plan Goal 5 element. Figure 6-3 shows the Dry Creek Road alignment as Alternative 1. It would require land use exceptions to Statewide Planning Goals 5 (Natural Resources) and 2 (Agriculture). Additionally, the road surface would be located on the north slope of the steep canyon which poses additional problems of safety during the cold winter months. Alternative 1 would be very costly to build. This alternative alignment is considered the least desirable of the potential alignments available. Therefore, at this time, this alternative is not being considered.

Alignment Alternative 2 is in the northern proximity of the Juniper Canyon area and takes advantage of less steep terrain. This alignment is less than half the length of the first alternative along the Dry Creek Road jeep trail. Figure 6-4 shows this alignment. As with Alternative 1, this road would be very costly to build. Therefore, this project is included as a potential project, to be considered if the need increases or additional funding becomes available.

A second access out of the Juniper Canyon area is considered a necessity as the development continues. The area has been given high priority as a risk to Wildland Urban interface. Therefore, the area has a high priority in the Community Fire Plan the County is developing.

Future emergency accesses from the upper end of the Juniper Canyon area may need to be explored as development of housing occurs and the increased demand of the recreational activities occurs at Prineville Reservoir. Heaviest usage occurs during the high risk fire danger season. Coordination with BOR and BLM and their RMPs will be required for this action.



Crook County Transportation System Plan



Figure 6-3
Alternative 1
Dry Creek Road to OR 27 Connection



JUNIPER CANYON ACCESS RD



Crook County Transportation System Plan

Figure 6-4
Alternative 2
Davis Road to OR 27 Connection



NOT TO SCALE

6.6. CROOK COUNTY ROAD DEPARTMENT PROJECTS

The Crook County Road Department keeps an administrative list of needed transportation improvement projects. This list is used to seek funding from ODOT and will be part of the Street Modal Plan in Section 7.0. The Road Department's list of needed transportation improvements is summarized in Table 6-1. It should be noted that many of the projects listed in Table 6-1 have already been identified previously in this section. A full list of non-overlapping improvements by jurisdictional responsibility will be provided in Section 7.0.

In addition to the Crook County Road Department Projects, a list of Crook County projects on the CACT Needs list has been provided in Table 6-2. The projects on the COACT needs list are regional in nature and a high priority. It should be noted that many of the projects listed in Table 6-2 have already been identified previously in this section. A full list of non-overlapping improvements by jurisdictional responsibility will be provided in Section 7.0.

In addition to the projects summarized in Tables 6-1 and 6-2, the Crook County Road Department is in the process of developing the following projects:

- Lone Pine Road Widening, Base and Surface Rehabilitation – Lone Pine Road is experiencing structural failure due to commercial truck traffic transporting aggregate to the tri-county area. Lone Pine Road was originally constructed as a low volume rural roadway. Based on surface testing, Lone Pine Road is projected to fail within four years assuming the current level of truck traffic. The solution to solve this problem is to repair the road base before failure, widen the travel lanes to 12 feet in each direction, add two foot paved shoulders, and overlay the roadway with 4 to 6 inches of HMA.
- Lone Pine Road Rail Crossing Improvement – With significant truck traffic in the Lone Pine Road area, the existing rail crossing is in need of improvement and upgrade.

The Crook County Road Department has a list of ITS projects that are planned to be deployed in Crook County. These ITS projects are listed below:

- Millican Road – System – Weight in Motion Scale
- OR 126 Parrish and Minson – System – VMS
- Powell Butte Highway and OR 126 – System – ATR & RWIS & CCTV
- US 26, Ochoco Summit – System – RWIS & CCTV
- Communication Infrastructure Prineville - Redmond

Table 6-1. Crook County Transportation Needs and Maintenance Projects

JURISDICTION	PRIORITY	MODERNIZATION/CAPITAL	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
STATE/COUNTY	HIGH	POWELL BUTTE HWY REALIGNMENT, INTERCHANGE, PAVEMENT PRESERVATION	Establish new route on HWY 317 starting at the current intersection of Alfalfa heading east to Shumway Rd. Install engineered corner to allow through traffic to pass safely. Create T intersections on Shumway heading North and Hahlen Rd heading west. Install a bottomless box culvert for canal crossing on new alignment. Redesign intersection at HWY 126 and Powell Butte to include a left turn lane from HWY 371 and a right turn lane/merge lane with additional ROW.	This will be a temporary fix for this intersection until funding can be secured for an interchange. Replace drainage culverts on the first 2 miles, overlay with a 2" HMA/C. Install left hand turn lanes and right hand turn lanes for consistencies of through traffic flow at the intersections of Riggs, Weigand and Bussett. Vacate old section of HWY 371 and return to the public. This may or may not be maintained by county forces. This will eliminate safety/water/sight distance issues of all three corners, Alfalfa, Shumway, McCaferty.	371	1	7.83	Yes		\$ 2,000,000.00
STATE/COUNTY	MED	MILLICAN and TOM MCCALL ROAD REALIGNMENT, INTERCHANGE	Create one interchange for Tom McCall and Millican to accommodate new freight route. The first section of Millican road will need to be realigned to the east approx. .75 miles. This will eliminate concerns for the interference of an interchange at Millican and Hwy 126.		126	1	2	Yes		\$ 6,000,000.00
COUNTY/STATE	LOW	DAVIS LOOP CUT OFF TO HWY 27	Provide secondary access to Juniper Canyon for Emergency Response	Construct new road approx 5.5 miles	N/A	1	5.5			\$ 5,500,000.00
STATE	HIGH	PASSING LANE and Realignment of corner by West Powell Butte Estates	This is the only straight portion of road that can be used for passing between Redmond and Powell Butte. The entrance of the new West Powell Butte Estates subdivision accesses this portion of road in the middle of the proposed passing area. This has increased the congestion and accidents. The corner leading into this section of road has had several accidents/fatality's as well. Right of Way has been obtained from both Bureau of Land Management and West Powell Butte Estates to allow the necessary safety corrections.	Corner realignment, installation of passing lanes, provide channelization for access to West Powell Butte Estates.	126	4	6	Yes		\$ 1,900,000.00
County	low	Connect Copley to Weigand Rd	Establish an alternate route for residents to get from the Red Cloud Subdivision to Weigand Rd connecting to HWY 371.	This will reduce congestion at the intersections of Hwy 37 and Riggs Rd. This will also reduce response time for emergency response vehicle responding to calls in the Red Cloud Subdivision.	Weigand #211	1.1	2.15	yes	no	\$ 350,000.00
COUNTY	MED	REIF RD WIDENING AND BRIDGE REHAB	REIF RD WILL BECOME THE MAIN ROAD OF ACCESS FOR FUNCTIONS IN THE COMMUNITY OF POWELL BUTTE. The new fire hall has been completed, and the community hall will be completed soon. The Post Office, School and possible groceries/restaurant will be built on the site adjacent to Reif Rd. The current running surface is 20' with 50' of ROW. One bridge will need to be replaced and or modified to handle the width requirements for two vehicles to pass over simultaneously. Utilities need to be relocated back from the edge of right of way for improved site distance and safety.	Increase ROW to 80'. Widen road to 34' running surface which will consist of: 12' travel path, 5' bike path and 4 feet of rock shoulders. Move utilities out side of ROW for improved safety and site issues. Provide channelization at the intersection of Reif and Hwy 126. Widen bridge to a accommodate 12' travel path with bike/ped crossing.	REIF # 349	1	2.5	NO	NO	unknown at this time
County	High	Widen and gravel Salt Creek Road	No access to Blm and BOR lands on Salt Creek Road.	Survey and safety design gravel road as per Crook County Road Department standards 1 mile.	Salt Creek	134	1	Y		\$ 350,000.00
		Carry Foster Rd continuation from the intersecting road of Fairgrounds to Hwy 27.	Alternate route for traffic leaving fairground functions	Connect Carry Foster Rd to Hwy 27	#362			no	no	unknown at this time
JURISDICTION	PRIORITY	OPERATIONS/SAFETY	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
STATE/COUNTY	HIGH	LEFT HAND TURN LANES ON HWY 126/OCHOCO HWY	Installation of Left hand turn lanes are needed from Powell Butte to the East side of Prineville. This has become a major route with increased truck traffic traveling East to West. The speed limit for this section of road is 55 MPH. Therefore, turn lanes for traffic that has stopped to turn is vital for safety.	The following rural roads intersecting to HWY 126 that have reported accidents and are in need of turn lanes for east and west bound traffic include: Barnes Butte Rd., Johnson Creek Rd., Mill Creek Rd., Parrish Lane, Minson Rd., Copley Rd., Reif Rd.and Kissler Rd.	Hwy 126 and Ochoco Hwy Various intersection county roads					\$ 1,600,000.00
County	Med	Widen road to establish shoulders, rehab base damage from Houston Lake, Bring Guard Rail up to current standards, and replace two irrigation canal bridges with 20' wide bottomless culverts.	Houston Lake Rd and Parrish Lane have become the primary routes to the Crook County Landfill. Insufficient road and bridge width are of concern for the safety of the increased truck and auto traffic to this public facility. The waters of Houston Lake have caused sever damage to the base of Houston Lake Rd. resulting in surface failure. Approx 8.18 miles	Replace damaged base, overlay with 4" of HMA/C, correct irrigation canal crossings with arch bottomless culverts	Houston Lake and Parrish Lane # 103 & 204	1	10.27			\$ 2,600,000.00
County	low	Straighten corners on Alfalfa Rd.	The corners for this section of road create safety issues in winter driving conditions.	Realignment of these corners is achievable with little impact to a joining lands.	Alfalfa Rd. #105	1.83	3	Y		\$ 500,000.00
County	High	Road Cam installation on Juniper Canyon.	This area has become the most crucial area for winter maintenance. The ability to view the road conditions from the county web site, will increase response time in addition to the ability to see this area during non working hours.		214	4.46	4.46	y		\$ 40,000.00

Table 6-1. Crook County Transportation Needs and Maintenance Projects Continued

JURISDICTION	PRIORITY	OPERATIONS/SAFETY	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
County	Med	Juniper Canyon Widening	The Juniper Canyon area was designed to be a resort area with seasonal residents. In the recent years this area has become the largest growing residential area for Crook County. With this growth comes additional traffic volumes.	Widen and install left hand turn lanes at intersecting roads on Juniper Canyon.	Juniper Canyon #214	1	15			\$ 6,500,000.00
County	High	Center Line Rumble Strips	On a national basis, rural roads account for approximately 40% of all motor vehicle accidents. Approximately 90% of all fatal crashes in rural areas occur on two lane roads, which typically lack physical measures such as wide medians or barriers to separate opposing traffic flows. As a result, major crash problems on these roads involves vehicles crossing the centerline and either sideswiping or striking opposing vehicles head on.	Centerline rumble strips have reduced injury crashes up to 14%, head on and opposing direction sideswipe crashes have been reduced by 25%. Installation costs are relatively low for the application of center line rumble strips on rural two lane roads. Roads that are listed for center line rumble strips are as follows: Juniper Canyon, Mill Creek, McKay and McKay Creek Rd. Davis Loop, Millican Road.	214, 122, 102,116,334 and 305			approx 58.49 miles total	no	\$300,000.00
County	High	Overlay, correction of supers, install two OHV under crossings.	Current design does not meet ASHTO design requirements for truck traffic. Oil mat surface has failed. OHV's will need under crossing due to change of road status. Rural to Freight Route. Cattle guards need to be removed for safety.	Overlay, repair supers, remove cattle guards, fence ROW, install OHV crossings	305	1	15			\$ 4,400,000.00
County	med	Overlay and widen rural area roads that become the main entrance to 4 major aggregate suppliers	Road Width is insufficient, Sight distance issues, surface failure due to trucking. Intersection no longer meets the traffic volume needs.	Widen road, re design intersections to handle trucking and rural traffic, overlay with a 4" HMAC.	106	1	5.1			\$ 4,500,000.00
County	Low	Widen Reservoir Road with safety design corrections.	Correction of design for sight distance issues and travability. Replace running surface with 4" of HMAC.	Widen to 32' of surface, 4' gravel shoulders, correct corners and hills for safety factors.	332	1	10			\$ 3,000,000.00
JURISDICTION	PRIORITY	BIKE/PED/ENHANCEMENTS	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
County	High	Widen and install Bike path on Riggs Rd.	The first section of Riggs from Stillman to Copley has a completed bike path. Completion of the bike path from Copley Rd to HWY 371 will provide bicyclist an alternate route avoiding congestion at the intersection of HWY 371 and HWY 126. Funding for bridge replacements on the second section of Riggs from Copley to Hwy 371 has been received, with construction to be completed by March of 2005.	This will allow the necessary widening of Riggs from Copley to Hwy 371 for the installation of a bike path. Application of a 2" HMAC will be used for a running surface. Obtain additional ROW and relocate utilities at the intersection of HWY 371 and Riggs. Remove trees for sight distance and safety.	209	1	6.5	y		\$ 2,900,000.00
County	Med	Widen Barnes Butte road with Bike and Ped facilities. A new school will be built on Barnes Butte Road within five years.	Currently Barnes Butte Road is a standard rural road. In order to accommodate the safety requirements of the new school the road must be widened and a bike/ped facilities installed. The Bridge located on Barnes Butte Rd, will also need replacement HBRR funding will be applied for.	Widen bike/ped facilities with channelization to the entrance of the high school	Barnes Butte Rd. #120	1	2.43	n	n	\$ 1,800,000.00
County	High	Create a bike/ped path on Lynn Blvd connecting the bike system on HWY 27 to Combs Flat Rd.	The combination of traffic from the high school and middle school creates a grid lock during school hours. Several accidents have occurred at this crossing not only with vehicles, but children have been ran over. Providing channelization at the entrance of the high school will slow traffic down and allow an uninterrupted flow of school busses and vehicles.	Install bike/ped facilities with channelization to the entrance of the high school	110 Lynn Blvd	0	1			\$ 1,000,000.00
JURISDICTION	PRIORITY	AIRPORT ENHANCEMENT	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
County	Med	Aviation Blvd.	Current road does not provide access to new hanger facilities that house both emergency and personal air craft	Realign road providing access to hangers. Vacate old road for usage by aircraft.		0	1	yes		\$ 1,200,000.00
COUNTY	LOW	MCKAY CREEK PAVING AND SAFETY ENHANCEMENT	Narrow road leading in to the USFS lands. Continuation of the McKay/McKay Creek bike path up to the USFS campgrounds. Narrow road with lack of sufficient ROW creates unsafe driving conditions in the winter. Site issues on corners and drainage problems also exists. We have had several accidents on the section of road.	Widen existing road surface to 14' travel lanes and extend shoulders to 4 feet of gravel. Clear additional ROW and correct drainage problems. Install bike paths for recreationist access to the USFS parks.				No	No	
JURISDICTION	PRIORITY	FEDERAL FOREST HIGHWAY PROJECTS	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
COUNTY	LOW	KLOOTCHMAN WIDEN	Widen Klootchman Saddle Back Gravel road connecting Newsome Creek bridge leading into the usfs and connecting with Bear Creek Rd. Klootchman is impassable in the winter. Newsome Creek Bridge will be replaced this year with a two lane/ped crossing. This will become the only access to this section of the USFS.	Widen and pave existing road to ensure travel during winter months and additional traffic.				No	No	
COUNTY	LOW	MILL CREEK CUT OFF TO MCKAY. PAVE AND DAY PARK DEVELOPMENT	Undeveloped road access connecting Mill Creek and McKay Creek passing through USFS campgrounds. Road maintenance is lacking and at times this road is impassible	Pave and shoulder road providing turn outs for vista and recreation with in the designated park areas.				No	No	
JURISDICTION	PRIORITY	BRIDGES	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
County	High	Owens Road Bridge	Scour, substandard structure	Replace						\$ 400,000.00
County	High	Rawhide Road Bridge	Scour, substandard structure	Replace						\$ 400,000.00
County	Med	Roba Creek Bridge	Scour, substandard structure	Replace				Yes	No	\$ 800,000.00
County	Med	Powell Butte Irrigation Bridges 19' and under	Scour, substandard structure	Replace with bottomless arch culverts	Various			Yes	No	\$ 1,000,000.00
County	Med	Grimes, Puckett flats area Irrigation Bridges 19' and under	Scour, substandard structure	Replace with bottomless arch culverts	Various			Yes	No	\$ 1,000,000.00

Table 6-1. Crook County Transportation Needs and Maintenance Projects Continued

JURISDICTION	PRIORITY	COUNTY MAINTENANCE PLAN	NEED DESCRIPTION	SOLUTION DESCRIPTION	ROUTE	BMP	EMP	PRELIMINARY SCOPE	REFINED SCOPE	ESTIMATED COSTS
COUNTY	ANNUAL	CHIP SEAL APPROX 30 TO 37 MILES A YEAR	TO MAINTAIN CURRENT OIL MAT INFRASTRUCTURE CONDITIONS	SEVEN YEAR ROTATION OR AS NEEDED						\$ 400,000.00
COUNTY	ANNUAL ANNUAL	CRUSH AGGREGATE IN COUNTY PITS BRING ALL GUARD RAIL UP TO CURRENT STANDARDS	TO PROVIDE AGGREGATE TO MAINTAIN COUNTY ROADS GUARD RAIL IS NOT TO CURRENT STANDARDS	ANNUAL ANNUAL UNTIL COMPLETED						\$ 1,000,000.00 \$ 200,000.00
COUNTY	ANNUAL	2" HMAC OVERLAY ON COUNTY ROADS APPROX 2 TO 5 MILES A YEAR	12 YEAR ROTATION OF ROADS THAT HAVE A HMAC SURFACE TO MAINTAIN CURRENT INFRASTRUCTURE PAVEMENT CONDITIONS. A 2" OVERLAY ON HEAVY TRUCK TRAFFIC ROADS MAINTAINED BY COUNTY FORCES	ANNUAL						\$ 400,000.00
COUNTY	ANNUAL ANNUAL	20' AND UNDER BRIDGE STRUCTURES GRAVEL ROAD MAINTENANCE 260 MILES	INSPECTION FOR REPLACEMENT NEEDS OR REPAIRS PULL DITCHES, CROWN ROAD, PLACE 3/4- 0 AND 1/2 - 0, INSTALL DRAINAGE CULVERTS	ANNUAL ANNUAL						\$ 325,000.00 \$ 2,500,000.00
County	High	Intersection Rumble Strips		Grimes/Lamonta - Lamonta/Gerke - Riggs/Reif - Riggs/Copley Install Rumble Strips for Intersections				n		\$50,000.00

January 2005

TABLE 6-2. COACT Needs List - STATE HIGHWAY MODERNIZATION

Name/Landmarks	Milepost	County	Location	Problem	Conceptual Solution	Type	Cost (03 \$)	In TSP?	Status/Comments
US 26 Prineville Truck Route (Unit 2)	111	Crook	Prineville	Traffic Congestion	Continue parallel arterial/ collector, Intersection Improvements	Modernization	Unkown	Yes	City working toward refinement and TSP Update
US 26 @ OR 126 (West Y)	25	Crook	Prineville	Intersection Congestion	Intersection Improvements	Modernization	None	No	ODOT & County discussing alternatives
OR126 @ Powell Butte Hwy	6.84	Crook	Crook County	Construct interchange.		Modernization		Yes	
OR 126 @ Tom McCall / Millican Rd	15	Crook	Prineville	Traffic Congestion & Access Safety	Grade Separated Interchange, Access Mgt	Modernization	\$4,000,000	Yes	

PROGRAMMED FOR CONSTRUCTION

OR 126 W Powell Butte Passing Lanes	120	Crook	Crook Co.	Traffic Safety	Construct New Passing Lanes	Modernization	\$2,000,000	Yes	STIP YR 2004/2005
OR 126 Deschutes County Line - Powell Butte Hwy	5	Crook	Crook County	Traffic Congestion & Safety	Add Passing Lanes (each direction)	Modernization	\$1,750,000	Yes	Under Construction

6.7. OREGON FOREST HIGHWAY IMPROVEMENT PROJECTS

There are two Oregon Forest Highway Improvement projects planned with Crook County. These projects are described below:

6.7.1. Beaver Creek Road (OR PFH 124)

The Beaver Creek Road project, OR PFH 124, is located in the northeast corner of Crook County Oregon, and consists of County Road (CR) 113 and a portion of Forest Road (FR) 58. The project begins at the junction of CR 113 and the Paulina-Suplee Road (County Road 112), and continues to the north through private property for approximately 6.5 miles, where CR 113 becomes FR 58. The project then follows FR 58 for another 1.28 miles to the boundary of the Ochoco National Forest. The entire project route is 7.8 miles in length.

The Beaver Creek Road is showing signs of wear and deterioration in its road base and surface, and is narrow by current design standards. Anecdotal information indicates that the approach curve and cattle guard at MP 3.95 has been the site of several accidents involving injury and property damage. Standard roadside safety features such as guardrails, delineators, and bridge approach railings are lacking throughout the route. The purpose of the proposed Beaver Creek Road improvements is to extend and preserve the service life of the highway by reconstructing the pavement structure and upgrading the roadway template to meet AASHTO Policy on Geometric Design standards including horizontal and vertical alignment, superelevation, roadside drainage, and stopping distance. The proposed road improvements would also enhance driver safety by adding standard safety devices.

The environmental analysis and documentation for this project has been completed (December 22, 2003). The alternative chosen for construction will resurface, restore, and rehabilitate (3R) the Beaver Creek Road from its junction with the Paulina-Suplee Road to the national forest boundary on FR 58. The design speed will be the same as existing for both the CR 113 and FR 58 segments of the route. The roadway will be constructed to a total width of 26 feet, consisting of two 11-foot lanes and 2-foot shoulders. Major project activities will include flattening road fill slopes, fore slopes, and back slopes into and out of roadside ditches, improving road subsurface and cross drainage, correcting roadway superelevation, delineating and paving existing roadside turnouts, and bringing signs, pavement striping, and guardrail up to AASHTO design standards. The existing rails on the Beaver Creek bridges will also be modified to meet current safety standards, curbs will be added to the outside edges of both bridges, and concrete wing-walls will be added to bridge abutments.

The section of CR 113 between MP 4.1 and MP 5.8 will be realigned following AASHTO standards for a design speed of 55 mph. The section of FR 58 between MP 6.7 and 7.3 will be realigned to follow AASHTO standards for a design speed of 45 mph. This will provide a transition area between the 55 mph design speed on most of CR 113, and the 35 mph design speed on most of FR 58. An 11-foot wide transition lane will be added to the north and south legs of the FR 42 intersection to provide a safe changeover between FR 58, which is a two-lane

road, and FR 42, which is a one-lane road. The transition lane will most likely be added to the inside edge on the north leg of the “Y” and to the outside edge of the south leg of the “Y”. The existing cattle guards on the Beaver Creek Road will be removed and open range will be fenced to prevent livestock from entering the roadway. One livestock underpass will be constructed in the vicinity of MP 7.0. The existing loading ramp located at the intersection of FR 58 and FR 42 will be relocated to an area mutually acceptable to the ranch owner and WFLHD. Following completion of the project, the Forest Service will transfer jurisdiction for the Forest Road 58 portion of the route to Crook County.

Current plans are for construction to take place in 2006.

6.7.2. Mill Creek Road (OR PFH 99)

The Mill Creek Road project, OR PFH 99, is located in Crook County, Oregon, on County Road (CR) 122 and Ochoco National Forest Road (FR) 33. The proposed project begins at the end of the pavement on CR 122 (MP 5.44) and extends northeast for 3.2 miles to the forest boundary. From here, CR 122 becomes FR 33, and the project extends another 2.3 miles through the national forest to the junction of FR 33 and FR 3300-300 (Wildcat Campground entrance). The entire project totals approximately 5.5 miles. The Mill Creek Road project route currently has an aggregate surface for its full length. Crook County recently improved the county portion of the route by widening the subgrade and placing some base rock. The current width of the county section varies from approximately 25 feet to approximately 28 feet. The national forest portion of the route is a single-lane road with limited turnouts. The Forest Service section varies in width from 14 feet to 22 feet.

The preliminary proposal is to widen the Forest Service portion of the road to the County standard (similar in width to the existing County portion of the project route). The road width would total 26 feet and have a 22-foot asphalt surface. Culvert placement and size would be evaluated, and new culverts would be added and existing ones resized to meet drainage needs. The Stein Pillar overlook parking lot would also be paved and an informational kiosk added.

This project is in the very early stages of planning and no public involvement or analysis has begun. It is estimated that construction of this project will begin sometime between 2009 and 2012.

6.8. BICYCLE AND PEDESTRIAN IMPROVEMENTS

In rural areas, pedestrians and bicyclists are largely served by road shoulders. Following the recommendations for shoulder additions identified previously and building new roads to meet the new rural road standards in the Street Modal Plan will provide an adequate pedestrian and bicycle system for the rural portions of Crook County. Shoulder addition projects identified through the TSP process are summarized below:

- Barnes Butte Road
- Houston Lake Road
- Juniper Canyon Road to Prineville Reservoir
- McKay Road – Prineville UGB to Gerke Road
- Combs Flat Road (OR 380) – Laughlin Road to Carey Foster Road

These projects were chosen because of their proximity to the City of Prineville urban area and schools, the levels of existing and projected traffic, and their potential use by bicyclists and pedestrians.

Other bicycle and pedestrian improvements that were defined through the TSP process include the following:

- Riggs Road SW – add a bike/pedestrian path along the south side of the roadway
- Millican Road SW – widen shoulder from two feet to four feet and mark as a bike route
- US 26 (Madras Highway) – add shoulders from county line to OR 126
- Lynn Boulevard – add bike lanes and sidewalks from OR 27 to OR 380

6.9. FUTURE PARK & RIDE LOCATIONS

Future park & ride lot locations should be planned to encourage existing and future motorists to car pool. Although the car pool commute rate is only approximately 13% according to Crook County, the number of residents is growing substantially and that growth in residents will increase the number of commuters that will car pool. Possible future park & ride locations are the vicinity of Juniper Canyon Road and Davis Loop SE and near Les Schwab in the vicinity of OR 126 and Millican Road.

SECTION 7.0
TRANSPORTATION MODAL PLANS

Section 7.0 Transportation Modal Plans

7.1. STREET PLAN

7.1.1. Transportation System Plan (TSP) Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (b) A road plan for a system of arterials and collectors and standards for the layout of local streets and other important non-collector street connections. Functional classifications of roads in regional and local TSPs shall be consistent with functional adjacent jurisdictions. The standards for the layout of local streets shall provide for safe and convenient bike and pedestrian circulation necessary to carry out OAR 660-12-045(3)(b). New connections to arterials and state highways shall be consistent with designated access management categories. The intent of this requirement is to provide guidance on the spacing of future extensions and connections along existing and future streets, which are needed to provide reasonably direct routes for bicycle and pedestrian travel. The standards for the layout of local streets shall address:

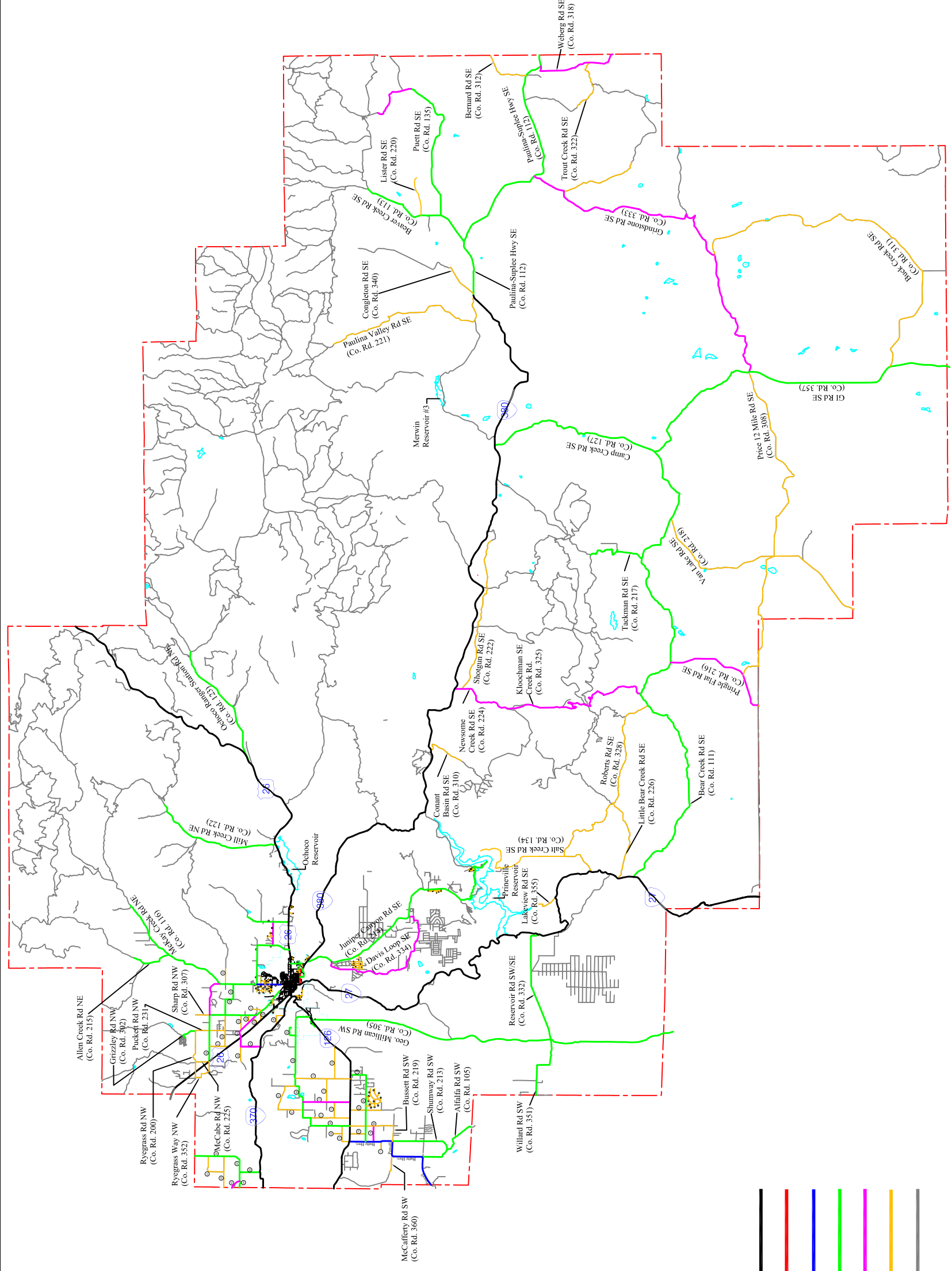
- (A) Extensions of existing streets;
- (B) Connections to existing or planned streets, including arterials and collectors; and
- (C) Connections to neighborhood destinations.

7.1.2. Functional Classification

Crook County roadways are classified by the following classifications:

- principal arterial
- minor arterial
- rural major collector
- rural minor collector
- local street

All of the future roadway network roadway classifications remain the same as the existing roadway classifications defined previously in Section 3 with the following four exceptions: Powell Butte Highway, Main Street, Lynn Boulevard, and Mill Creek Road. Powell Butte Highway is being transferred from ODOT to Crook County. With this jurisdictional transfer, Powell Butte Highway has been reclassified as a minor arterial. Main Street, Lynn Boulevard and Mill Creek Road also have been reclassified as minor arterials. Figures 7-1a, 7-1b, and 7-1c show the new functional classifications for Crook County roadways. It should be noted that the state highway system within Crook County has its own roadway functional classification system and it is defined in Section 3.3.2.



LEGEND

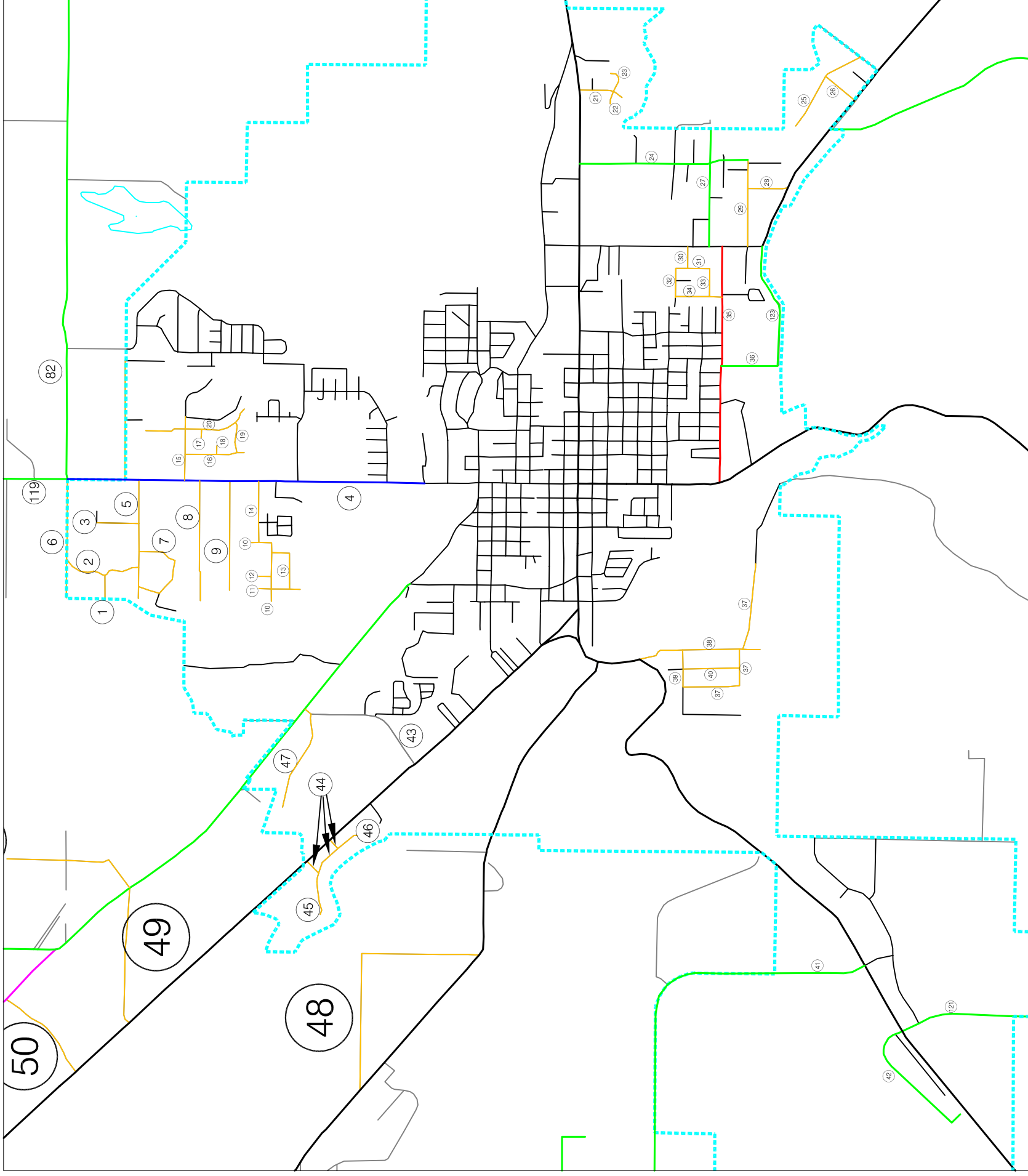
- State Highway
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- County Road
- Other Road



NOT TO SCALE

Crook County Transportation System Plan

Figure 7-1a
Future Roadway Classification



ROADWAY NAME LEGEND

1. Rollo Lane NW (Co. Rd. 2054)
2. Rollo Road NW (Co. Rd. 2053)
3. Knob Hill Way (Co. Rd. 2055)
4. Main Street N (Co. Rd. 100)
5. West Hills Road NW (Co. Rd. 2051)
6. Peppermint Lane (Co. Rd. 2050)
7. West Hills Loop (Co. Rd. 2052)
8. Apollo Road NW (Co. Rd. 336)
9. McDonald Road NW (Co. Rd. 338)
10. Harrington Road NW (Co. Rd. 1022)
11. Hackamore Lane NW (Co. Rd. 1021)
12. Concho Lane NW (Co. Rd. 1020)
13. Reata Road NW (Co. Rd. 1023)
14. Terrace Lane NW (Co. Rd. 227)
15. Rawhide Lane NE (Co. Rd. 1010)
16. Buckboard Lane NE (Co. Rd. 1012)
17. Sorrel Way NE (Co. Rd. 1014)
18. Bronco Way NE (Co. Rd. 1011)
19. Latigo Lane NE (Co. Rd. 1013)
20. Tennessee Lane NE (Co. Rd. 1015)
21. Williamson Drive NE/SE (Co. Rd. 2042)
22. Baldwin Court SE (Co. Rd. 2040)
23. Slayton Court SE (Co. Rd. 2041)
24. Willowdale Drive SE (Co. Rd. 2062)
25. Hill Street SE (Co. Rd. 2000)
26. Hill Road SE (Co. Rd. 2001)
27. Melrose Drive SE (Co. Rd. 2060)
28. Stanton Road SE (Co. Rd. 2063)
29. Lincoln Road SE (Co. Rd. 2061)
30. Leslie Lane SE (Co. Rd. 1003)
31. Brewer Lane SE/Palim Lane SE (Co. Rd. 1001)
32. 5th Street SE (Co. Rd. 1005)
33. Kramer Lane SE (Co. Rd. 1002)
34. Baily Road SE (Co. Rd. 1000)
35. Lynn Boulevard SE (Co. Rd. 110)
36. Fairgrounds Road SE (Co. Rd. 317)
37. Crestview Road SW (Co. Rd. 1030)
38. Rimrock Road SW (Co. Rd. 1033)
39. Park Drive SW (Co. Rd. 1032)
40. Cliffside Lane SW (Co. Rd. 1031)
41. Tom McCall Road SW (Co. Rd. 356)
42. Aviation 365 SW (Co. Rd. 115)
43. Gardner Road NW (Co. Rd. 114)
44. Riverland Loop NW (Co. Rd. 2030)
45. Ponderosa Lane NW (Co. Rd. 2031)
46. Village Court NW (Co. Rd. 2032)
47. Industrial Park Road NW (Co. Rd. 1060)
48. Rimrock Acres Loop NW (Co. Rd. 321)
49. Gumpert Road NW (Co. Rd. 141)
50. Bus Evans Lane NW (Co. Rd. 348)
51. Brookfield Lane NW (Co. Rd. 140)
52. Sunset Lane NW (Co. Rd. 326)
53. Stahancyk Lane NW (Co. Rd. 347)
54. Elliott Lane/Road NW (Co. Rd. 124)
55. Campbell Ranch Road NW (Co. Rd. 303)
56. Grimes Road NW (Co. Rd. 201)
57. Woodward Road NW (Co. Rd. 350)
58. Gerke Road NW (Co. Rd. 301)
59. Dry Creek Road NE (Co. Rd. 329)
60. Lone Pine Road NW (Co. Rd. 106)
61. Lone Pine Lane NW (Co. Rd. 202)
62. Butler Road NW (Co. Rd. 361)
63. Lambert Road NW (Co. Rd. 232)
64. Smith Rock Way NW (Co. Rd. 203)
65. Landfill Road SW (Co. Rd. 359)
66. Houston Lake Road SW (Co. Rd. 103)
67. Cornett Loop SW (Co. Rd. 125)
68. Ref Road SW (Co. Rd. 349)
69. Brair Lane SW (Co. Rd. 313)
70. Bozarth Road S/SW (Co. Rd. 208)
71. Williams Road SW (Co. Rd. 206)
72. Dixon Road SW (Co. Rd. 207)
73. Minson Road SW (Co. Rd. 104)
74. Fleming Road SW (Co. Rd. 205)
75. Parish Lane SW (Co. Rd. 204)
76. Wiley Road SW (Co. Rd. 304)
77. Cronin Road SW (Co. Rd. 345)
78. Weigand Road SW (Co. Rd. 211)
79. Kissler Road SW (Co. Rd. 212)
80. Riggs Road SW (Co. Rd. 209)
81. Copley Road S (Co. Rd. 210)
82. Barnes Butte Road NE (Co. Rd. 120)
83. Quail Valley Lane NE (Co. Rd. 2011)
84. Quail Valley Drive NE (Co. Rd. 2012)
85. Lark Lane NE (Co. Rd. 2010)
86. Wainwright Road NE (Co. Rd. 128)
87. Johnson Creek Road NE (Co. Rd. 121)
88. Marmot Lane NE (Co. Rd. 339)
89. Willow Avenue NE (Co. Rd. 1092)
90. Orchard Lane NE (Co. Rd. 1090)
91. River Road (Co. Rd. 1091)
92. Kyle Road SE (Co. Rd. 1086)
93. Canyon Road SE (Co. Rd. 1082)
94. Mark Road SE (Co. Rd. 1087)
95. Antler Lane SE (Co. Rd. 1080)
96. David Way SE (Co. Rd. 1083)
97. Jerry Drive SE (Co. Rd. 1085)
98. Bonnie Road SE (Co. Rd. 1081)
99. Highland Road SE (Co. Rd. 1084)
100. Mountain Road SE (Co. Rd. 1088)
101. Idleway Street SE (Co. Rd. 1051)
102. Loafer Avenue SE (Co. Rd. 1052)
103. Pleasant View SE (Co. Rd. 1053)
104. Easy Street SE (Co. Rd. 1050)
105. Jasper Knolls Drive SE (Co. Rd. 1071)
106. Sandy Drive SE (Co. Rd. 1073)
107. Bench Road SE (Co. Rd. 1070)
108. Ridge Road SE (Co. Rd. 1072)
109. Yahookin Drive SW (Co. Rd. 2025)
110. Kootenai Court SW (Co. Rd. 2021)
111. Wahiakum Street SW (Co. Rd. 2024)
112. Paute Court SW (Co. Rd. 2028)
113. Latahomie Street SW (Co. Rd. 2022)
114. Costanoan Street SW (Co. Rd. 2020)
115. Pokegama Drive SW (Co. Rd. 2023)
116. Red Cloud Road SW (Co. Rd. 2027)
117. Maudu Court SW (Co. Rd. 2029)
118. Lodi Court SW (Co. Rd. 2026)
119. McKay Road N (Co. Rd. 102)
120. Barnes Road NE (Co. Rd. 354)
121. Geo. Millican Road SW (Co. Rd. 305)
122. Stillman Road SW (Co. Rd. 319)
123. Carey Foster Road SE (Co. Rd. 362)



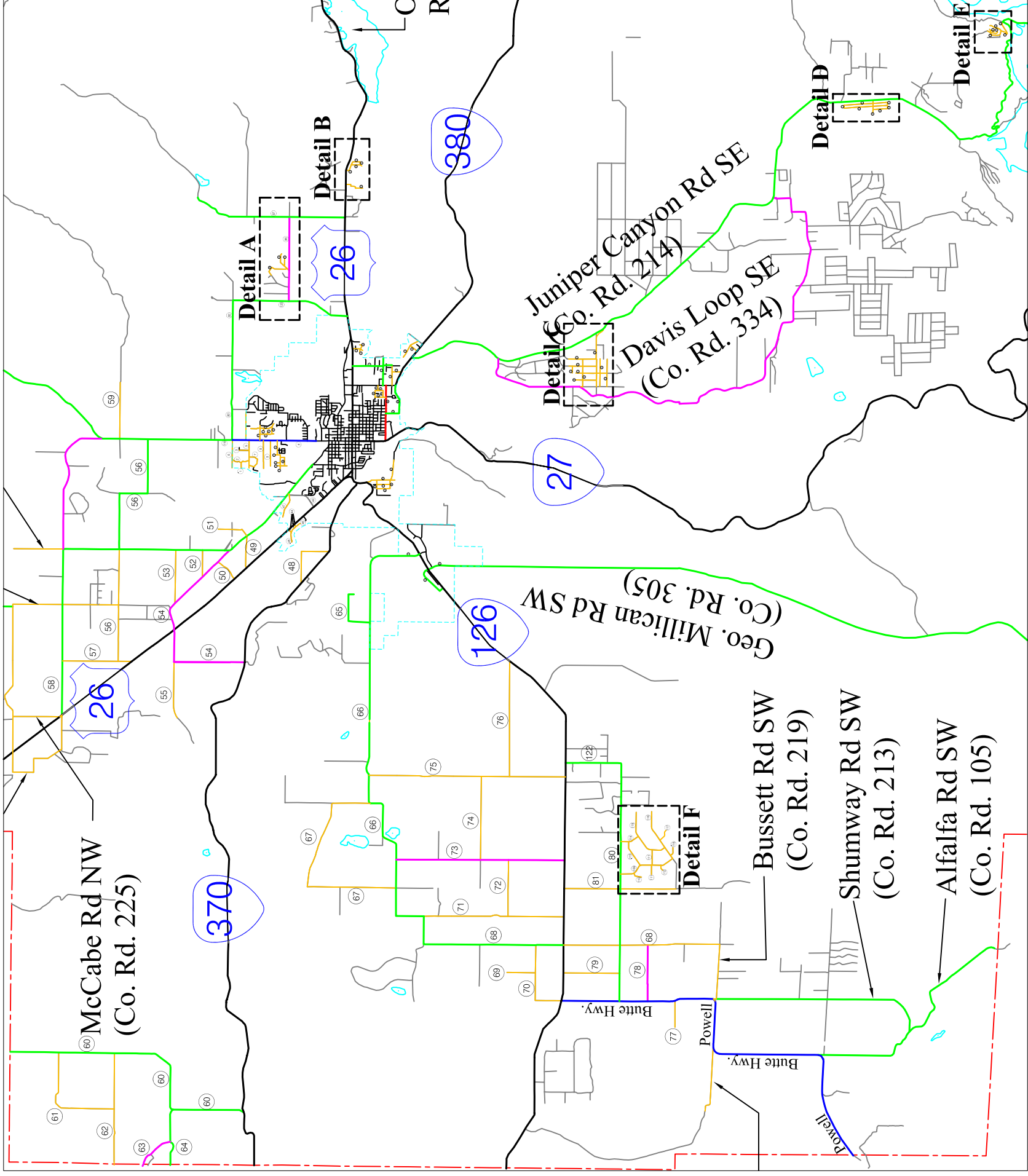
Crook County Transportation System Plan

LEGEND

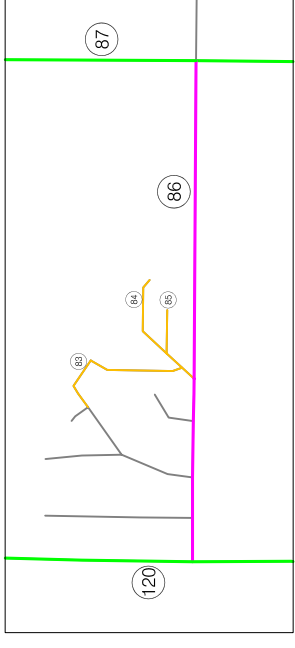
- State Highway
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- County Road
- Other Road

NOT TO SCALE

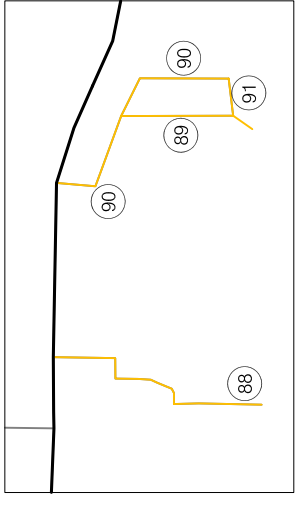
Figure 7-1b
Future Roadway Classification



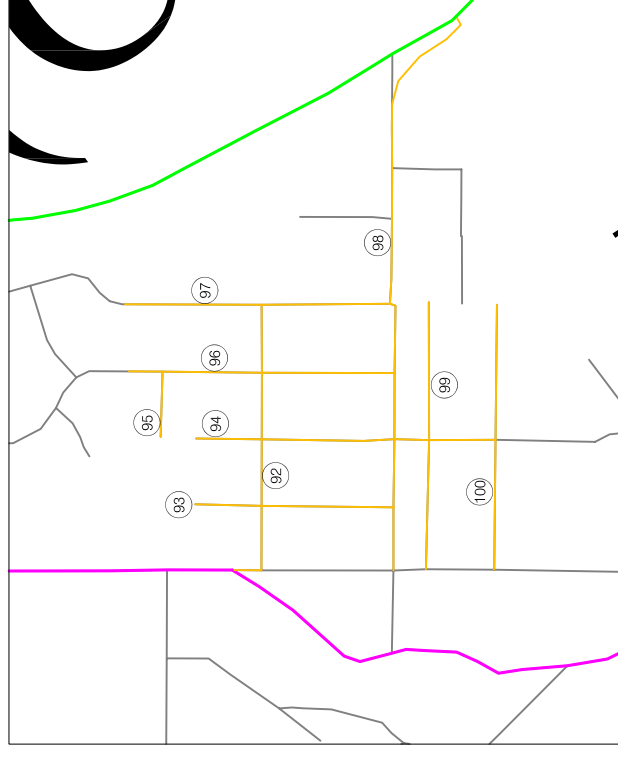
Detail A



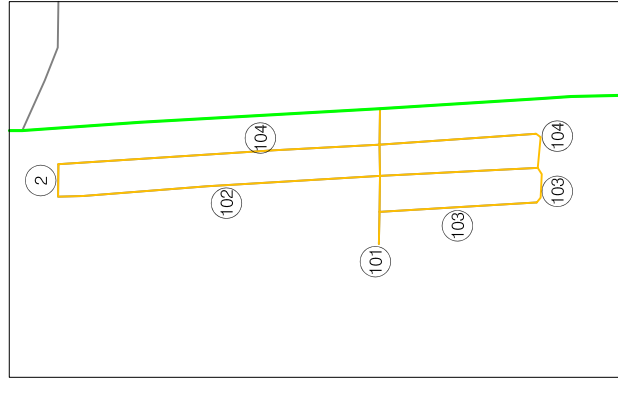
Detail B



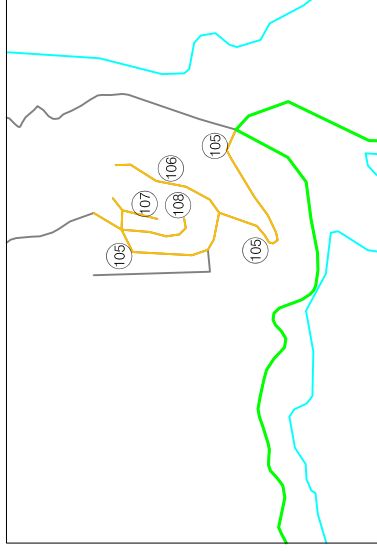
Detail C



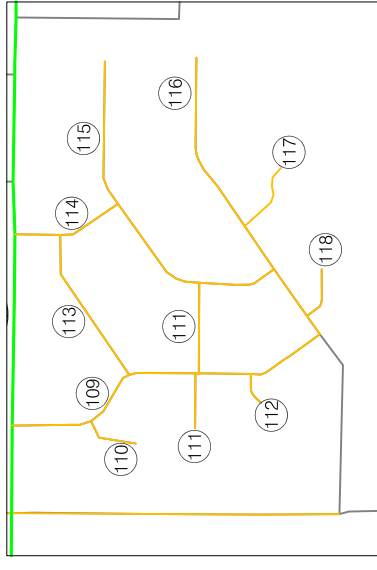
Detail D



Detail E



Detail F



NOT TO SCALE

LEGEND

- State Highway
- Principal Arterial
- Minor Arterial

- Major Collector
- Minor Collector
- County Road

Other Road

Crook County Transportation System Plan

Figure 7-1c
Future Roadway Classification

7.1.3. Street Design Standards

Street classification standards relate the design of a roadway to its function. The function is determined by operational characteristics such as traffic volume, operating speed, safety, and capacity. Street standards are necessary to provide a community with roadways which are relatively safe, aesthetic, and easy to administer when new roadways are planned or constructed. They are based on experience, and policies and publications of the profession.

Table 7-1 summarizes the recommended rural roadway standards by roadway classification. Figure 7-2 shows the typical street cross section by roadway classification.

Table 7-1. Recommended Roadway Standards

Classification	Pavement Width ¹	Paved Shoulder Width	Parking	Right-of-Way
Arterial	36-40'	6-8'	none	80-100'
Major Collector	32-40'	4-8'	off pavement	80'
Minor Collector	30-38'	4-8'	off pavement	80'
Local	24-28'	2-4'	off pavement	60-80'

¹ Includes paved shoulders.

² Major collector = 12 ft travel lanes and wider shoulders

³ Minor collector = 11 ft travel lanes and narrower shoulders

The width of the shoulder for each roadway classification is determined by the anticipated traffic volumes. Table 7-2 shows the recommended shoulder widths on rural roads based on average daily traffic (ADT) and design hour volume (DHV).

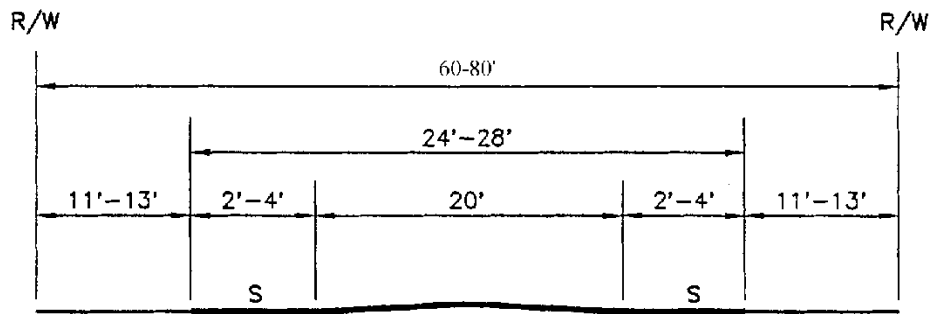
Table 7-2. Recommended Shoulder Widths on Rural Roads

Classification	Shoulder Width				
	ADT ¹ < 400	ADT >400 DHV ² <100	DHV ² 100-200	DHV ² 200-400	DHV ² >400
Arterial	4 feet	6 feet	6 feet	8 feet	8 feet
Collector	2 feet	4 feet	6 feet	8 feet	8 feet
Local	2 feet	2 feet	4 feet	6 feet	8 feet

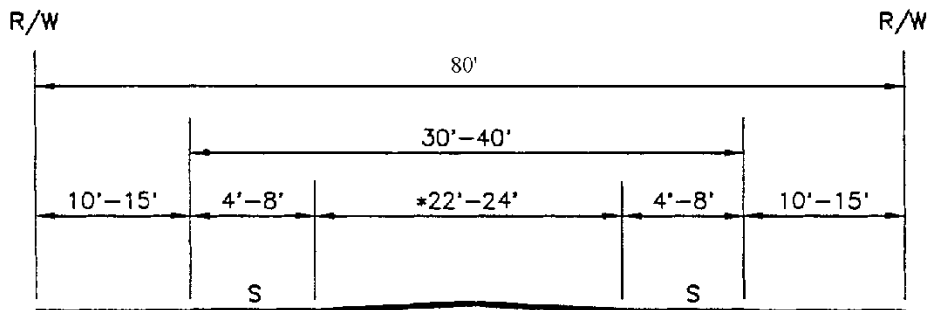
¹ ADT (Average Daily Traffic) – the average number of trips over a 24-hour period.

² DHV (Design Hour Volume) – the expected traffic volume in the peak design hour

A. LOCAL STREET



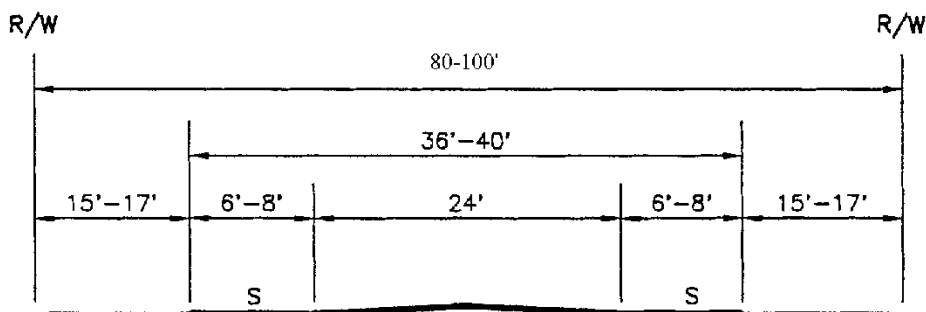
B. COLLECTOR



*Major Collector: 12' Travel Lanes

Minor Collector: 11' Travel Lanes

C. ARTERIAL



LEGEND

R/W = RIGHT-OF-WAY LINE

S = SHOULDER

Crook County Transportation System Plan



Figure 7-2
Typical Roadway Cross Sections

7.1.4 Access Management

Access management is an important tool for maintaining a transportation system. The lack of a prudent access management plan can result in excessive numbers of accesses along arterial streets. Too many access points can diminish the function of an arterial mainly due to delays and safety hazards created by turning movements. Traditionally, the response to this situation is to add lanes to the roadway. The roadway improvements stimulate more business activity and traffic demands. This trend often continues in cyclical fashion and requires significant capital investment. With tightening local, state, and federal funding, there are no longer financial resources to continue this trend. Therefore, the prudent solution is to better manage the roadway through access management to preserve the capacity of the street and balance the need for local access.

The number of access points to a roadway can be restricted and managed by following the techniques described below:

- Restricting spacing between access points (driveways) based on the type of development and speed along the arterial
- Sharing of access points between adjacent properties
- Providing access via the lowest classified street
- Constructing frontage roads to separate local traffic from through traffic
- Providing service drives to prevent spillover of vehicle queues onto the adjoining roadways
- Providing of acceleration, deceleration, left turn lanes, and right turn only lanes
- Installing median barriers to control conflicts associated with left turn movements
- Installing side barriers to the property along the arterial to restrict access width to a minimum

Access management is hierarchical, ranging from complete access control on freeways to increasing use of streets for access purposes, parking and loading at the local and collector level. Table 7-3 describes recommended general access management guidelines by roadway functional classification.

These access management restrictions are generally not intended to eliminate existing intersections or driveways. Rather, they should be applied as new development occurs. Over time, as land is developed and redeveloped, the access to roadways will meet these guidelines. However, where there is a recognized problem, such as unusual number of collisions, these techniques and standards can be applied to retrofit existing roadways.

To summarize, access management strategies consist of managing the number of access points and providing traffic and facility improvements. The solution is a balanced, comprehensive program that provides reasonable access while maintaining the safety and efficiency of traffic movement.

Table 7-3. Access Management Standards for Crook County Facilities

Classification	Minimum Posted Speed	Minimum Spacing Between Driveways/Streets ¹	Minimum Spacing Between Intersections	Adjacent Land Use
Arterial	55 mph	1200 feet	1 mile	Undeveloped or agricultural land between major population centers
Major Collector	35-55 mph	500 feet	½ mile	Undeveloped or agricultural land between and through cities or rural service centers
Minor Collector	25-55 mph	300 feet	¼ mile	Undeveloped or agricultural land between and through cities or rural service centers
Local	25 mph	Access to each lot permitted	150 feet	Residential

¹ Desirable design spacing for new or reconstructed roads. Existing spacing will vary.

As mentioned in Policy 7.9 of Section 2.0 – Transportation Goals and Policies, access management standards along ODOT facilities shall defer to access management standards adopted by the state. These access management standards are contained in OAR Chapter 734, Division 51 and the Oregon Highway Plan.

7.1.5. Local Street Network

The purpose of the Local Street Network Plan is to identify future right-of-way that Crook County will need in order to have and maintain, as much as possible, a balanced street network in accordance with the Oregon Transportation Rule. The plan designates:

- 1) where existing collector/arterials will be extended or new ones will be added;
- 2) where new local access streets and/or pedestrian ways will be located to provide better connection between existing streets (grid infill); and
- 3) where new local access streets will be located to provide adequate connection to significant local destinations for both automobiles and pedestrians.

Locations for the right-of-way and improvements are designated based on review of the existing street grid, existing parcel boundary locations, physical constraints (such as steep slopes and floodways that might preclude economical road construction) and access management guidelines for access onto major arterials.

The following new local streets planned for the future:

- Extension of Crestview Road from its existing terminus to OR 27
- Davis Road to OR 27 connection
- Connect Copley Road to Weigand Road

7.1.6. Street Improvements

The street improvements identified in Section 6 are summarized in Table 7-4.

Table 7-4. Roadway Capital Improvement List and Cost

ODOT STIP Projects	Cost
1. US 26 from Laughlin Road to Marks Creek Pavement Preservation and Rockfall Correction at Elephant Rock	\$2,838,000
2. Beaver Creek Road Junction with Paulina Suplee Road - widening, paving, improving road base, and improving drainage	\$4,000,000
3. Crooked River Bridge #02761 (OR 126 in Prineville)	\$4,985,000
4. Bandit Springs Rest Area – construct a walkway and a drinking water system	\$100,000
5. US 26/Harwood Street intersection improvements (Prineville)	\$298,000
6. OR 126 passing lanes from Milepost 4.00 to 6.00 – jurisdictional exchange	\$1,950,000
City of Prineville Projects	
7. Millican Road Overcrossing and Interchange with OR 126	\$5,400,000
Crook County Projects	
8. Oregon 126/Powell Butte Highway Interchange	\$5,000,000
9. Powell Butte Highway Realignment	\$2,000,000
10. Davis Road to OR 27 Connection	\$3,000,000
11. Connect Copley Road to Weigand Road	\$350,000

**Table 7-4
Roadway Capital Improvement List and Cost Continued**

Crook County Projects	Cost
12. Miscellaneous Turn Lanes along OR 126 at Major Intersections	\$1,600,000
13. Widen Houston Lake Road and Parish Lane	TBD ¹
14. Alfalfa Road – realignment to straighten corners	\$500,000
15. Juniper Canyon Road – road cam	\$40,000
16. Juniper Canyon Widening	TBD ¹
17. Newsom Creek Bridge #13C28	TBD ¹
18. Paulina Valley Road Bridge #19083	TBD ¹
19. Johnson Creek Road Bridge #13C06A	TBD ¹
20. Weigand Road Bridge #13C24 – OTIA 3 Project	TBD ¹
21. OR 126 Widening	TBD ¹
22. Lone Pine Road Widening, Base, and Surface Rehabilitation	TBD ¹
23. Lone Pine Road Rail Crossing Improvement	TBD ¹
Oregon Forest Highway Improvement Projects	
24. Beaver Creek Road (OR PFH 124)	TBD ¹
25. Mill Creek Road (OR PFH 99)	TBD ¹
Crook County ITS Project	
26. Millican Road – Weigh in Motion Scale	TBD ¹
27. OR 126 Parrish and Minson - VMS	TBD ¹
28. Powell Butte Highway and OR 126 – ATR & RWIS & CCTV	TBD ¹
29. US 26, Ochoco Summit – RWIS & CCTV	TBD ¹
30. Communication Infrastructure Prineville - Redmond	TBD ¹

¹TBD – to be determined

7.1.7. Transportation Impact Analysis Requirements

Intent and Purpose

A transportation impact analysis (TIA) provides an objective assessment of the anticipated modal transportation impacts associated with a specific land use action. A TIA is useful for answering important transportation-related questions such as:

- Can the existing transportation system accommodate the proposed development from a capacity and safety standpoint?
- What transportation system improvements are necessary to accommodate the proposed development?
- How will access to the proposed development affect the traffic operations on the existing transportation system?
- What transportation impacts will the proposed development have on the adjacent land uses, including commercial, institutional, and residential uses?
- Will the proposed development meet current standards for roadway design?

Throughout the development of the TIA (and beginning as early as possible), cooperation between Crook County staff, the applicant, and the applicant's traffic engineer is encouraged to provide an efficient and effective process.

Crook County staff may, at its discretion, and depending on the specific situation, require additional study components in a TIA beyond what is outlined in this section or waive requirements deemed inappropriate.

Crook County assumes no liability for any costs or time delays (either direct or consequential) associated with the preparation and review of a transportation impact analysis.

1. When a Transportation Impact Analysis is Required. A TIA shall be required when:
 - a. The development generates 25 or more peak-hour trips or 250 or more daily trips.
 - b. An access spacing exception is required for the site access driveway(s) and the development generates 10 or more peak-hour trips or 100 or more daily trips.
 - c. The development is expected to impact intersections that are currently operating at the upper limits of the acceptable range of level of service during the peak operating hour.
 - d. The development is expected to significantly impact adjacent roadways and intersections that have previously been identified as high crash locations or areas that contain a high concentration of pedestrians or bicyclists such as school zones.
2. When a Transportation Assessment Letter is Required. If a TIA is not required, the applicant's traffic engineer shall submit a transportation assessment letter to Crook

County indicating the proposed land use action is exempt. This letter shall outline the trip-generating characteristics of the proposed land use and verify that the site-access driveways or roadways meet Crook County's sight-distance requirements and roadway design standards.

3. Contents of a Transportation Impact Analysis. As a guide in the preparation of a transportation impact analysis, Crook County recommends the following format be used to document the analysis.
 - a. Table of Contents. Listing of all sections, figures, and tables included in the report.
 - b. Executive Summary. Summary of the findings and recommendations contained within the report.
 - c. Introduction. Proposed land use action, including site location, building square footage, and project scope. Map showing the proposed site, building footprint, access driveways, and parking facilities. Map of the study area, which shows site location and surrounding roadway facilities.
 - d. Existing Conditions. Existing site conditions and adjacent land uses. Roadway characteristics (all transportation facilities and modal opportunities located within the study area, including roadway functional classifications, street cross section descriptions, posted speeds, bicycle and pedestrian facilities, on-street parking, and transit facilities). Existing lane configurations and traffic control devices at the study area intersections. Existing traffic volumes and operational analysis of the study area roadways and intersections. Roadway and intersection crash history analysis.
 - e. Background Conditions (without the proposed land use action). Approved developments and funded transportation improvements in the study area. Traffic growth assumptions. Addition of traffic from other planned developments. Background traffic volumes and operational analysis.
 - f. Full Buildout Traffic Conditions (with the proposed land use action). Description of the proposed development plans. Trip-generation characteristics of the proposed development (including trip reduction documentation). Trip distribution assumptions. Full buildout traffic volumes and intersection operational analysis. Intersection and site-access driveway queuing analysis. Expected safety impacts. Recommended roadway and intersection mitigations (if necessary).
 - g. Site Circulation Review. Evaluate internal site access and circulation. Review pedestrian paths between parking lots and buildings. Ensure adequate throat

depth is available at the driveways and that vehicles entering the site do not block the public facilities. Review truck paths for the design vehicle.

- h. Turn Lane Warrant Evaluation. Evaluate the need to provide turn lanes at the site driveways.
 - i. Conclusions and Recommendations. Bullet summary of key conclusions and recommendations from the transportation impact analysis.
 - j. Appendix. Traffic counts summary sheets, crash analysis summary sheets, and existing/background/full buildout traffic operational analysis worksheets. Other analysis summary sheets such as queuing and signal warrant analyses.
 - k. Figures. The following list of figures should be included in the Transportation Impact Analysis: Site Vicinity Map; Existing Lane Configurations and Traffic Control Devices; Existing Traffic Volumes and Levels of Service (all peak hours evaluated); Future Year Background Traffic Volumes and Levels of Service (all peak hours evaluated); Proposed Site Plan; Future Year Assumed Lane Configurations and Traffic Control Devices; Estimated Trip Distribution Pattern; Site-Generated Traffic Volumes (all peak hours evaluated); Full Buildout Traffic Volumes and Levels of Service (all peak hours evaluated).
 - l. Preparer Qualifications. A professional engineer registered in the State of Oregon shall prepare the Transportation Impact Analyses. In addition, the preparer should have extensive experience in the methods and concepts associated with transportation impact studies.
4. Study Area. The study area shall include, at a minimum, all site-access points and intersections (signalized and unsignalized) adjacent to the proposed site. If the proposed site fronts an arterial or collector street; the study shall include all intersections along the site frontage and within the access spacing distances extending out from the boundary of the site frontage. Beyond the minimum study area, the transportation impact analysis shall evaluate all intersections that receive site-generated trips that comprise at least 10% or more of the total intersection volume. In addition to these requirements, the County Road Master (or his/her designee) shall determine any additional intersections or roadway links that might be adversely affected as a result of the proposed development. The applicant and the County Road Master (or his/her designee) will agree on these intersections prior to the start of the transportation impact analysis.
5. Study Years to be Analyzed in the Transportation Impact Analysis. A level-of-service analysis shall be performed for all study roadways and intersections for the following horizon years:

- a. Existing Year. Evaluate all existing study roadways and intersections under existing conditions.
 - b. Background Year. Evaluate the study roadways and intersections in the year the proposed land use is expected to be fully built out, without traffic from the proposed land use. This analysis should include traffic from all approved developments that impact the study intersections, or planned developments that are expected to be fully built out in the horizon year.
 - c. Full Buildout Year. Evaluate the expected roadway, intersection, and land use conditions resulting from the background growth and the proposed land use action assuming full build-out and occupancy. For phased developments, an analysis shall be performed during each year a phase is expected to be completed.
 - d. Twenty-Year Analysis. For all land use actions requesting a Comprehensive Plan Amendment and/or a Zone Change, a long-term level-of-service analysis shall be performed for all study intersections assuming buildout of the proposed site with and without the comprehensive plan designation and/or zoning designation in place. The analysis should be performed using the future year traffic volumes identified in the Transportation System Plan (TSP). If the applicant's traffic engineer proposes to use different future year traffic volumes, justification for not using the TSP volumes must be provided along with documentation of the forecasting methodology.
6. Study Time Periods to be Analyzed in the Transportation Impact Analysis. Within each horizon year, a level-of-service analysis shall be performed for the time period(s) that experience the highest degree of network travel. These periods typically occur during the mid-week (Tuesday through Thursday) morning (7:00 a.m. to 9:00 a.m.), mid-week evening (4:00 p.m. to 6:00 p.m.), and Saturday afternoon (12:00 p.m. to 3:00 p.m.) periods. The transportation impact analysis should always address the weekday a.m. and p.m. peak hours when the proposed lane use action is expected to generate 25 trips or more during the peak time periods. If the applicant can demonstrate that the peak-hour trip generation of the proposed land use action is negligible during one of the two peak study periods and the peak trip generation of the land use action corresponds to the roadway system peak, then only the worst-case study period need be analyzed.

Depending on the proposed land use action and the expected trip-generating characteristics of that development, consideration of non-peak travel periods may be appropriate. Examples of land uses that have non-typical trip generating characteristics include schools, movie theaters, and churches. The Road Master (or his/her designee) and applicant should discuss the potential for additional study periods prior to the start of the transportation impact analysis

7. Traffic Count Requirements. Once the study periods have been determined, turning movement counts should be collected at all study area intersections to determine the base traffic conditions. These turning movement counts should typically be conducted during

the weekday (Tuesday through Thursday) between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m., depending on the proposed land use. Historical turning movement counts may be used if the data are less than 12 months old, but must be factored to meet the existing traffic conditions.

8. Trip Generation for the Proposed Development. To determine the impacts of a proposed development on the surrounding transportation network, the trip-generating characteristics of that development must be estimated. Trip-generating characteristics should be obtained from one of the following acceptable sources:
 - a. Institute of Transportation Engineers (ITE) *Trip Generation Manual* (latest edition).
 - b. Specific trip generation studies that have been conducted for the particular land use action for the purposes of estimating peak-hour trip-generating characteristics. The Road Master (or his/her designee) should approve the use of these studies prior to their inclusion in the transportation impact analysis.
 - c. In addition to new site-generated trips, several land uses typically generate additional trips that are not added to the adjacent traffic network. These trips include pass-by trips and internal trips and are considered to be separate from the total number of new trips generated by the proposed development. The procedures listed in the most recent version of the *Trip Generation Handbook* (ITE) should be used to account for pass-by and internal trips.
9. Trip Distribution. Estimated site-generated traffic from the proposed development should be distributed and assigned on the existing or proposed arterial/collector street network. Trip distribution methods should be based on a reasonable assumption of local travel patterns and the locations of off-site origin/destination points within the site vicinity. Acceptable trip distribution methods should be based on one of the following procedures:
 - a. An analysis of local traffic patterns and intersection turning movement counts gathered within the previous 12 months.
 - b. A detailed market study specific to the proposed development and surrounding land uses.
10. Intersection Operation Standards. Crook County evaluates intersection operational performance based on levels of service and “volume-to-capacity” (v/c) ratio. When evaluating the volume-to-capacity ratio, the total traffic demand shall be considered.
 - a. Intersection Volume-to-Capacity Analysis. A capacity analysis should be performed at all intersections within the identified study area. The methods identified in the latest edition of the *Highway Capacity Manual*, published by the Transportation Research Board, are to be used for all intersection capacity

calculations. Crook County requires that all intersections within the study area must maintain a v/c ratio of 0.95 or less. It should be noted that the mobility standards in the Oregon Highway Plan apply to Oregon Department of Transportation facilities.

- b. Intersection Levels of Service. Crook County requires all intersections within the study area to maintain an acceptable level of service (LOS) upon full buildout of the proposed land use action. LOS calculations for signalized intersections are based on the average control delay per vehicle, while LOS calculations for unsignalized intersections are based on the average control delay and volume-to-capacity ratio for the worst or critical movement. All LOS calculations should be made using the methods identified in the most recent version of the *Highway Capacity Manual* (or by field studies), published by the Transportation Research Board. The minimum acceptable level of service for signalized intersections is LOS “D”. The minimum acceptable level of service for all-way stop controlled intersections and roundabouts is LOS “D”. The minimum acceptable level of service for unsignalized two-way stop controlled intersections is LOS “E” or LOS “F” with a v/c ratio of 0.95 or less for the critical movement. Any intersections not operating at these standards will be considered to be unacceptable.
11. Review Policy and Procedure. The following criteria should be used in reviewing a transportation impact analysis as part of a subdivision or site plan review.
- a. The road system is designed to meet the projected traffic demand at full build-out.
 - b. Proposed driveways do not adversely affect the functional character of the surrounding roadways.
 - c. Adequate intersection and stopping sight distance is available at all driveways.
 - d. Proposed driveways meet the County’s access spacing standard or sufficient justification is provided to allow a deviation from the spacing standard.
 - e. Opportunities for providing joint or crossover access have been pursued.
 - f. The site does not rely upon the surrounding roadway network for internal circulation.
 - g. The road system provides adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and garbage collection.
 - h. A pedestrian path system is provided that links buildings with parking areas, entrances to the development, open space, recreational facilities, and other community facilities per the Transportation Planning Rule.

12. Conditions of Approval. As part of every land use action, Crook County and ODOT (if access to a state roadway is proposed) will be required to identify conditions of approval needed to meet operations and safety standards and provide the necessary right-of-way and improvements to develop the future planned transportation system. Conditions of Approval that should be evaluated as part of subdivision and site plan reviews include:
 - a. Crossover easement agreements for all adjoining parcels to facilitate future access between parcels.
 - b. Conditional access permits for new developments which have proposed access points that do not meet the designated access spacing policy and/or have the ability to align with opposing access driveways.
 - c. Right-of-way dedications for future planned roadway improvements.
 - d. Half-street improvements along site frontages that do not have full-buildout improvements in place at the time of development.
13. Transportation Impact Analysis Checklist. As part of the transportation impact analysis review process, all transportation impact analyses submitted to Crook County must satisfy the requirements illustrated in the Checklist for Acceptance of Transportation Impact Analyses. A checklist is provided on the next page.

TRANSPORTATION IMPACT ANALYSIS CHECKLIST

Title of Report: _____

Author: _____ Date: _____

Yes No N/A

BACKGROUND INFORMATION

- P. E. Stamp and Signature
- Proper format including Table of Contents, Executive Summary, Conclusions, and Appendices

EXISTING CONDITIONS

- Description of proposed land use action
- Figure - Proposed Site Plan
- Figure - Site Vicinity Map showing the minimum study area boundary
- Description of existing site conditions and adjacent land uses
- Description of existing transportation facilities including roadway, transit, bicycle, and pedestrian facilities
- Figure - Existing Lane Configurations and Traffic Control Devices
- Figure - Existing traffic-volumes measured within previous 12 months
- Existing conditions analysis of the study area intersections
- Roadway and intersection crash history analysis

BACKGROUND CONDITIONS

- Approved planned developments and funded transportation improvements
- Documentation of traffic growth assumptions and added traffic from other planned developments
- Figure – Background traffic volumes at study area intersections
- Background conditions analysis of the study area intersections

FULL BUILDOUT CONDITIONS

- Description of proposed land use action and intended use
- Trip Generation - Based on most recent edition of ITE Trip Generation or approved other rates; include daily, AM, and PM peak hour (other time periods where applicable); provide complete documentation of calculations.
- Trip Distribution - Based on a regional planning model, supplied by staff, or analysis of local traffic patterns based on collected data.
- Figure – Estimated Trip Distribution Pattern (showing assignment onto major arterial/collector system)
- Figure – Site-Generated Traffic Volumes at study area intersections

- Figure – Full Buildout Traffic Volumes at study area intersections
- Full Buildout conditions analysis of the study area intersections
- Identify study area intersection and access driveway deficiencies

WARRANTS/SAFETY ANALYSIS

- Verify compliance to Access Spacing Standard or justify any variance needed
- Address potential safety problems resulting from conflicting turn movements with other driveways and internal traffic circulation
- Determine need for storage lanes, right-turn lanes, and left-turn lanes
- Address availability of adequate sight distance at frontage road access points, for both existing and ultimate road configuration
- Evaluate need for deceleration lanes, and channelization when determined necessary by accepted standards and practices.
- Evaluate whether traffic signals are warranted at study area intersections

IMPROVEMENT RECOMMENDATIONS

- Identify alternate methods of mitigating identified deficiencies
- If a signal is warranted, recommend type of signal control and phasing
- If turn lanes required, recommend amount of storage

OTHER

- Technical Appendix-sufficient material to convey complete understanding to staff of technical adequacy

COMMENTS:

Reviewed by: _____ Date of Review: _____

NOTE: This checklist displays the minimum information required for a Transportation Impact Analysis to be accepted as complete. Acceptance does not certify adequacy and is in no way an approval. Additional information may be required after acceptance of the Transportation Impact Analysis.

7.2. PEDESTRIAN AND BICYCLE SYSTEM PLAN

7.2.1. TPR Requirements

OAR 660-12-020 Elements of Transportation System Plans

- (2) (d) A bicycle and pedestrian plan for a network of bicycle and pedestrian routes throughout the planning area. The network and list of facility improvements shall be consistent with the requirements of ORS 366.514.

OAS 660-12-045 Implementation of the Transportation System Plan

- (6) In developing a bicycle and pedestrian circulation plan as required by 660-12-020(2)(d), local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas. Appropriate improvements should provide for more direct, convenient and safer bicycle or pedestrian travel within and between residential areas and neighborhood activity centers (i.e. schools, shopping, transit stops). Specific measures include, for example, constructing walkways between cul-de-sacs and adjacent roads, providing walkways between buildings, and providing direct access between adjacent uses.

7.2.2. Non-Motorized Improvements

In rural areas, pedestrians and bicyclists are largely served by road shoulders. Following the recommendations for shoulder additions identified previously and building new roads to meet the new rural road standards in the Street Modal Plan will provide an adequate pedestrian and bicycle system for the rural portions of Crook County. Shoulder addition projects identified in Section 6 are summarized below:

- Barnes Butte Road
- Houston Lake Road
- Juniper Canyon Road to Prineville Reservoir
- McKay Road – Prineville UGB to Gerke Road
- Combs Flat Road (OR 380) – Laughlin Road to Carey Foster Road

These projects were chosen because of their proximity to the City of Prineville urban area, the levels of existing and projected traffic, and their potential use by bicyclists and pedestrians.

Shoulder additions should not be considered solely for pedestrian and bicycle access; new roads should be constructed with shoulders because they improve safety by providing emergency refuge and improve the longevity of the roadway by protecting the edges from ravel.

In addition to shoulders, trails and paths are sometimes built to serve a special need, such as access to a school. No such specific projects were identified during the formulation of this TSP.

Other bicycle and pedestrian improvements that were defined through the TSP process include the following:

- Riggs Road SW – add a bike/pedestrian path along the south side of the roadway
- Millican Road SW – widen shoulder from two feet to four feet and mark as a bike route
- US 26 (Madras Highway) – add shoulders from county line to OR 126
- Lynn Boulevard – add bike lanes and sidewalks from OR 27 to OR 380

Table 7-5 summarizes the non-motorized improvement project cost. It should be noted that sidewalk and bicycle lane projects that are part of a street improvement project are not included in Table 7-5. Also, the cost estimates for the non-motorized improvements do not assume that major base work is necessary to implement the improvements. If major base work is necessary, then the cost of the improvements will increase significantly. The cost estimates in Table 7-5 are only planning level cost estimates.

**Table 7-5
Non-Motorized Improvement Cost**

Improvement Description	Cost
1. Barnes Butte Road – add shoulders	\$135,000
2. Houston Road – add shoulders	\$455,000
3. Juniper Canyon Road to Prineville Reservoir – add shoulders	\$440,000
4. McKay Road – Prineville UGB to Gerke Road – add shoulders	\$113,000
5. Combs Flat Road (OR 380) – Laughlin Road to Carey Foster Road	\$94,000
6. Riggs Road SW – add a bike/pedestrian path along the south side of the roadway	\$455,000
7. Millican Road SW – widen shoulder from two feet to four feet and mark as a bike route	TBD ¹
8. US 26 (Madras Highway) – add shoulders from county line to OR 126	TBD ¹
9. Lynn Boulevard – add bike lanes and sidewalks from OR 27 to OR 380	TBD ¹

¹TBD – to be determined

7.3. PUBLIC TRANSPORTATION PLAN

7.3.1. Transportation Planning Rule (TPR) Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (c) A public transportation plan which:

- (A) Describes public transportation services for the transportation disadvantaged and identifies service inadequacies.
- (B) Describes intercity bus and passenger rail service and identifies the location of terminals.
- (C) For areas within an urban growth boundary which have public transit service, identifies existing and planned transit trunk routes, exclusive transit ways, terminals and major transfer stations, major transit stops, and park-and-ride stations. Designation of stop or station locations may allow for minor adjustments in the location of stops to provide for efficient transit or traffic operation or to provide convenient pedestrian access to adjacent or nearby uses.
- (D) For areas within an urban area containing a population of greater than 25,000 persons, not currently served by transit, evaluates the feasibility of developing a public transit system at build out. Where a transit system is determined to be feasible, the plan shall meet the requirements of subsection 2(c)(C) of this section.

7.3.2. Types of Public Transportation and Recommended Services

Public transportation may include the following services and facilities:

- Intra- and inter-city fixed route systems: fixed-route scheduled bus, rail, light rail, and park-and-ride express services.
- Paratransit services which primarily serve the disabled, elderly, or other transportation disadvantaged individuals.
- Rideshare/Transportation Demand Management program: carpool, vanpool, bus pool matching services; preferential parking programs; and reduced parking fees.
- Other: taxi services, privately owned inter-city bus lines or shuttle services.

The best mix of services in any community or planning area will depend on the needs of the service population, spatial distribution of the service population, economic factors, and the existing transportation system and policies.

The Oregon Public Transportation Plan (ODOT, 1997) described a preferred state of public transportation in 2015 to respond to state and federal goals, which established targets for service

types and frequencies relevant to Crook County. The plan identifies minimum levels of public transportation services that provide a range of services intended to keep pace with Oregon's changing and increasing public transportation needs. Minimum level of service recommendations were given by types of services, size of community, and distance from other major intermodal centers (only Portland in Oregon) or urban central cities. Since Crook County is considered a rural area, only the most limited type of public transportation service is recommended.

Public transportation in Crook County consists of a minibus for local trips, van shuttles for trips to Redmond and Bend, and bus line service for long distance trips. The existing public transportation services meet the basic requirements of the Oregon Transportation Plan. Connections are possible between the services provided, and the service frequency meets the required daily trip to a larger city. However, there is reportedly a demand for better local services. The Soroptimists have identified a need for an additional small bus to provide transport services for seniors to events and outings. The rural communities of Powell Butte and Juniper Canyon may be approaching the population members needed to support a Dial-a-Ride service to Prineville.

7.3.3. Transportation Demand Management

Through a method called transportation demand management, or TDM, peak travel demands can be reduced or spread to more efficiently use the transportation system, rather than building new or wider roadways. TDM techniques include car pooling, telecommuting, alternative work schedules, and bicycle and pedestrian facilities. TDM is particularly useful when a specific site is drawing large numbers of commuters that increase peak hour traffic.

In Crook County, the TDM recommendations included in the Prineville Transportation System Plan, which suggest the benefits of staggered work schedules at the Airport and Houston Road Industrial Parks, could have a beneficial effect on the traffic demands generated by the Juniper Canyon and Powell Butte PDIA's. Other TDM measures would not be effective at reducing traffic demands in Crook County, since travel patterns are dispersed and population is low.

No cost has been estimated for Transportation Demand Management. Grants may be available to set up programs; other aspects of encouraging Transportation Demand Management can be encouraged through ordinance and policy.

7.4. AIR, RAIL, WATER AND PIPELINE PLAN

7.4.1. TPR Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (e) An air, rail, water and pipeline transportation plan which identifies where public use airports, mainline and branchline railroads and railroad facilities, port facilities, and major regional pipelines and terminals are located or planned within the planning area. For airports, the planning area shall include all areas within airport imaginary surfaces and other areas covered by state or federal regulations.

7.4.2. Air Service

The Prineville Airport is within the City of Prineville's UGB and will be addressed in that city's transportation system plan.

7.4.3. Rail Service

Rail is not expected to expand as a transportation element in Crook County in the foreseeable future. Timber products are a declining portion of the Crook County economy; however it is expected that the railway will continue to be used to transport raw materials and timber products.

The existing tracks will not support adequate speeds to make passenger rail viable, and there are not current plans to improve them. The Crooked River Dinner Train, based in Redmond, plans to continue to use the tracks for various rail tours through the Crooked River Valley.

7.4.4. Water Transportation Service

There are no water transportation services within the planning area of Crook County.

7.4.5. Pipeline Service

Pipeline service through the Crook County area is expected to remain substantially unchanged for the next 20 years.

SECTION 8.0
FINANCE PLAN

Section 8.0 Finance Plan

8.1. TRANSPORTATION IMPROVEMENT REVENUE NEEDS

As part of the requirement of the Transportation Planning Rule (TPR) for TSPs, a financing plan for the recommended improvements was developed. The cost of transportation projects proposed under this TSP is shown in Table 8-1 for street projects and 8-2 for non-motorized facility improvements.

**Table 8-1
Roadway Capital Improvement List and Cost**

ODOT STIP Projects	Cost
1. US 26 from Laughlin Road to Marks Creek Pavement Preservation and Rockfall Correction at Elephant Rock	\$2,838,000
2. Beaver Creek Road Junction with Paulina Suplee Road - widening, paving, improving road base, and improving drainage	\$4,000,000
3. Crooked River Bridge #02761 (OR 126 in Prineville)	\$4,985,000
4. Bandit Springs Rest Area – construct a walkway and a drinking water system	\$100,000
5. US 26/Harwood Street intersection improvements (Prineville)	\$298,000
6. OR 126 passing lanes from Milepost 4.00 to 6.00 – jurisdictional exchange	\$1,950,000
City of Prineville Projects	
7. Millican Road Overcrossing and Interchange with OR 126	\$5,400,000
Crook County Projects	
8. Oregon 126/Powell Butte Highway Interchange	\$5,000,000
9. Powell Butte Highway Realignment	\$2,000,000
10. Davis Road to OR 27 Connection	\$3,000,000
11. Connect Copley Road to Weigand Road	\$350,000

**Table 8-1
Roadway Capital Improvement List and Cost Continued**

Crook County Projects	Cost
12. Miscellaneous Turn Lanes along OR 126 at Major Intersections	\$1,600,000
13. Widen Houston Lake Road and Parish Lane	TBD ¹
14. Alfalfa Road – realignment to straighten corners	\$500,000
15. Juniper Canyon Road – road cam	\$40,000
16. Juniper Canyon Widening	TBD ¹
17. Newsom Creek Bridge #13C28	TBD ¹
18. Paulina Valley Road Bridge #19083	TBD ¹
19. Johnson Creek Road Bridge #13C06A	TBD ¹
20. Weigand Road Bridge #13C24 – OTIA 3 Project	TBD ¹
21. OR 126 Widening	TBD ¹
22. Lone Pine Road Widening, Base, and Surface Rehabilitation	TBD ¹
23. Lone Pine Road Rail Crossing Improvement	TBD ¹
Oregon Forest Highway Improvement Projects	
24. Beaver Creek Road (OR PFH 124)	TBD ¹
25. Mill Creek Road (OR PFH 99)	TBD ¹
Crook County ITS Project	
26. Millican Road – Weigh in Motion Scale	TBD ¹
27. OR 126 Parrish and Minson - VMS	TBD ¹
28. Powell Butte Highway and OR 126 – ATR & RWIS & CCTV	TBD ¹
29. US 26, Ochoco Summit – RWIS & CCTV	TBD ¹
30. Communication Infrastructure Prineville - Redmond	TBD ¹
Grand Total	\$32,061,000

¹TBD – to be determined

**Table 8-2
Non-Motorized Improvement Cost**

Improvement Description	Cost
1. Barnes Butte Road – add shoulders	\$135,000
2. Houston Road – add shoulders	\$455,000
3. Juniper Canyon Road to Prineville Reservoir – add shoulders	\$440,000
4. McKay Road – Prineville UGB to Gerke Road – add shoulders	\$113,000
5. Combs Flat Road (OR 380) – Laughlin Road to Carey Foster Road	\$94,000
6. Riggs Road SW – add a bike/pedestrian path along the south side of the roadway	\$455,000
7. Millican Road SW – widen shoulder from two feet to four feet and mark as a bike route	TBD ¹
8. US 26 (Madras Highway) – add shoulders from county line to OR 126	TBD ¹
9. Lynn Boulevard – add bike lanes and sidewalks from OR 27 to OR 380	TBD ¹
Grand Total	\$1,692,000

¹TBD – to be determined

As shown in Tables 8-1 and 8-2, the projects proposed in the transportation system plan have a total cost of \$33,753,000. This, however, is the total cost of only 14 of 30 projects listed in Table 8-1 and six of nine projects listed in Table 8-2. It is likely that the total cost of all of the transportation projects listed in Tables 8-1 and 8-2 may be an additional 50 to 75 percent more than what is already identified. Many of the costs of the improvement projects are unknown because of the preliminary nature of the improvement proposal. Refinement work is needed for many of these improvements with costs yet to be determined.

Many of the improvement projects identified are the responsibility of ODOT. The ODOT STIP projects represent approximately 42 percent of the total revenues needed to fund the entire improvement list. It is likely that ODOT will fund Project 8 (OR 126/Powell Butte Highway Interchange), Project 9, (Powell Butte Highway Realignment), and Project 12 (miscellaneous turn lanes along OR 126 at major intersections). Projects 8, 9, and 12 represents approximately 25 percent of the total revenues needed to fund the entire improvement list. Another 16 percent of the total revenues needed are from the City of Prineville project which may also be funded by ODOT. This reduces the dollars needed from Crook County to approximately 17 percent of the total budget which translates to approximately \$5,582,000. If these numbers are adjusted by 50

to 75 percent to account for improvement projects with costs yet to be determined, then the estimated budget needed from Crook County ranges from \$8,373,000 to \$9,768,500.

To fully implement this capital improvement program over a 20-year period, an average of \$1,687,000 would need to be expended each year through the year 2025. This calculation does not include the projects with costs to be determined (TBD).

Of the portion of the improvement projects that Crook County would be fiscally responsible for and where a project cost have been defined, Crook County would have to expend an average of \$279,100 per year through the year 2025. Factoring an adjustment of 50 to 75 percent to account for the improvement projects with costs yet to be determined increases the average cost per year to \$418,650 to \$488,425.

8.2. TRANSPORTATION REVENUE OUTLOOK

The most recent financial information available from Crook County was a local road and street questionnaire for the fiscal year ending June 30, 2000. This survey was conducted by ODOT in association with The League of Oregon Cities and the Association of Oregon Counties. Based on this survey, the 1999-2000 fiscal year budget for the Crook County Road Department was \$3,211,517. This budget was expended as follows:

- Repair and Preservation - \$1,882,034, 59 percent of total budget
- Administration and General Engineering - \$676,912, 21 percent of total budget
- Payments to other Government Agencies - \$364,788, 11 percent of total budget
- Operations and Maintenance - \$284,281, 9 percent of total budget

Almost all of Crook County's road and street budget are allocated to operations, maintenance, repair, and preservation. In the 1999-2000 fiscal year, no monies were expended for modernization or expansion of Crook County's transportation system.

It should be noted that in the 1999-2000 fiscal year, Crook County had a \$18,607,665 surplus in their contingency reserve fund.

8.3. REVENUE SOURCES AND FINANCING OPTIONS

Several possible funding sources exist to implement the recommended transportation improvements. The following pages describe the funding sources that may be available.

LOCAL SOURCES

The following options are available on the local level to raise funds for transportation improvements:

Local Option Gasoline Tax

Revenues raised from a local option gasoline tax could be used by the County to fund recommended transportation improvements. The monies collected from a local gas tax could generate enough monies to at least generate local matching money for grants.

Property Taxes

Local property taxes can be used to fund transportation system improvements. A specific allocation of property taxes to transportation improvements could be identified or set at a fixed and predictable level to provide a longer-term stable and predictable source of revenue. This would be important in implementing larger, longer-term projects with a high capital cost. Voter approval is necessary for the use of property taxes to fund roadway improvements and the uncertainty of this approval affects the attractiveness of this revenue choice. Another major disadvantage of using property taxes to support transportation improvements includes the inequity of this tax when compared with the users of the system (a user tax such as the tax on gasoline is more equitable in that persons who drive and use the street system pay for it rather than persons who own property). Additionally, the use of property taxes to fund transportation improvements would be restricted by the limitations of Measure 5.

Debt Funding

The County could issue municipal bonds to finance improvements. This approach would spread the cost of improvements over the life of the bonds and lower the annual expenses during construction years. If revenue bonds are issued, voter approval might not be necessary, but an identified revenue source (i.e., property taxes) would need to be identified to satisfy the bond underwriter. General obligation bonds would require voter approval. Both bonding approaches would be limited by the restrictions of Measure 5 and the bonding capacity of the local agencies.

System Development Charges

Oregon law enables communities to fund growth-related transportation improvements by imposing system development charges. These charges apply to newly developed property and can be used to recover the costs of past or future roadway improvement projects necessitated by growth. They may not be used to fund transportation improvements to serve existing residents. Therefore, while it is relatively easy to estimate the system development charges which would be needed to build

improvements associated with growth, these charges will not be sufficient to meet all of the infrastructure needs identified in this plan.

System development charges (SDCs) are considered by many to be an equitable method of funding as they provide for many of the improvements needed because of growth in the community. On the other hand, growth in non-local traffic or traffic attributable to existing residents may also fuel the need for improvements which the system development charges are used to fund. Revenue from SDCs is generally not stable or predictable over time as it is received only when development occurs. During times of economic downturn, this revenue source may taper off entirely. This makes it difficult to rely on this source of funds for larger, multi-phased or multi-year projects.

It is required by state law for SDCs to finance those transportation improvements that are tied to local growth needs and, if the anticipated growth does not occur when expected or at all, both the improvement costs and the development charge revenue will not be needed.

Local Improvement Districts

Local improvement districts, known as LIDs, could be formed to finance public transportation improvements. LIDs may be formed by either the County or property owners. Their use and benefit are usually restricted to a specific area. The cost of a project with an LID in place is distributed to each property owner according to the benefit that property receives. With transportation improvements, that benefit may be measured by trips generated by each property. Or, in the example of a sidewalk improvement, the cost could be equitably divided by lineal feet of sidewalk along property frontages. The cost distributed becomes an assessment or lien against the property. It can be paid in cash or through assessment financing.

Contingency Reserve Fund

In the 1999-2000 fiscal year, Crook County had a \$18,607,665 surplus in their contingency reserve fund. Some of the interest, or even some of the principal, could be used to fund transportation modernization and/or expansion projects.

NON-LOCAL FUNDING SOURCES

State Gasoline Tax

Gas tax revenues received from the state are used by all counties and cities to fund road construction and maintenance. The revenue share to cities is divided through an allocation formula related to population. The state gas tax received by Crook County will not sufficiently fund the improvements identified in the TSP and may not even cover maintenance needs.

Grants and Loans

Most grant and loan programs available through the state are related to economic development and not specifically for construction of new streets. Programs such as the Oregon Special Public Works Fund provides grant and load assistance for construction of public infrastructure that support commercial and industrial development that results in permanent job creation or retention. Another grant program is the Immediate Opportunity Fund (IOP). Again, this grant is tied to local and regional economic development efforts.

ODOT FUNDING OPTIONS

The State of Oregon provides funding for all highway-related transportation projects through the Statewide Transportation Improvement Program (STIP) administered by ODOT. The STIP outlines the schedule for ODOT projects throughout the state. Projects within the STIP are identified for a four-year funding cycle. In developing this funding program, ODOT must verify that the identified projects comply with the OHP, ODOT modal plans, corridor plans, local comprehensive plans, and TEA-21 planning requirements. The STIP must fulfill TEA-21 planning requirements. Specific transportation projects are prioritized based on a review of the TEA-21 planning requirements and the different state plans. ODOT consults with local jurisdictions before highway related projects are added to the STIP.

ODOT has the option of making some highway improvements as part of their ongoing maintenance program.

8.4. FUNDING STRATEGIES

The non-Portland metropolitan areas of Oregon have always been very conservative in not assessing system development charges or some type of developer user fee. As Crook County experiences more and more growth from the expansion of the Bend-Redmond area, a great opportunity exists for Crook County to assess similar system development charges to help pay for the need to expand the transportation infrastructure. As the expansion spills into Crook County, more and more developers from the Bend-Redmond will develop in Crook County. When this happens on a frequent basis, it will be more politically feasible for Crook County to apply a comparable system development charge.

Since the shortfall of revenues is only 17 percent of the total revenue needs, this is more than achievable to fund from a system development charge. Crook County should seriously explore implementing an SDC that can account for the estimated local revenue need of \$8,373,000 to \$9,768,500 to fund its 20-year transportation needs list.

Another viable strategy for funding the local portion of the needed monies to fund the 20-year transportation needs list is to use part of the surplus in the contingency reserve fund.