January 2012

OR HIGHWAY 126 CORRIDOR FACILITY PLAN

CROOK COUNTY, OREGON

OR Highway 126 Corridor Facility Plan

Crook County, Oregon

Prepared for:
City of Prineville
Crook County
Oregon Department of Transportation

Prepared by:
Kittelson & Associates, Inc.

In association with:
WHPacific, Inc.
Angelo Planning Group

Project No. 11168

January 2012

TABLE OF CONTENTS

Preface vii

Volume I, Appendix vi

Volume II, Technical Appendix (under separate cover) vi

PPMT Members vii

PAC Members viii

Consultant Team viii

Section 1 Introduction 1-0

Project Background 1-1

Project Purpose Statement 1-2

Project Need Statement 1-2

Project Goals and Objectives 1-2

Evaluation Criteria 1-5

Section 2 Interagency and Public Involvement Program 1-0

Planning Project Management Team 2-1

Project Advisory Committee 2-3

Public Involvement 2-3

Section 3 Plan and Policy Review 2-0

State of Oregon/ODOT Plans and Policies 3-1

Local Plans and Ordinances Reviewed 3-1

Highway Classification and Management Objectives 3-2

Recent Policy Changes Influencing the Corridor Facility Plan 3-3

Section 4 Inventory of Existing Transportation/ Land Use Conditions 3-0

Surrounding Land Use 4-1

Roadway Classification 4-2

Alignment and Cross-Section 4-5

Highway Access 4-8

Traffic Safety 4-8

Existing Traffic Operations 4-10

Section 5 Future Conditions 4-0

Traffic Volume Growth 5-1

Traffic Operations 5-5
Future Highway Safety 5-8
Section 6 Concept Development and Analysis 5-0
Initial Concept Development 6-1
Initial Qualitative Concept Screening 6-3
Design Considerations 6-7
Refined Concept Development 6-10
Land Use Strategies in Concept Development 6-16
Section 7 Economic, Social, Environmental and Energy Analysis 6-0
ESEE Intent 7-1
Economic Impacts 7-1
Social Impacts 7-3
Environmental Impacts 7-3
Energy Impacts 7-5
Section 8 Facility Plan 7-0
Background 8-1
Policy Framework 8-2
Transportation Improvement Plan Overview 8-4
Highway Segment Cross-Section Improvements 8-12
Access Management Considerations 8-13
Right-of-Way (ROW) Dedication Needs 8-15
Phasing Plan 8-15
Project Descriptions 8-20
Section 9 Implementation Plan 8-0
Implementation Overview 9-1
Adoption Elements 9-2
Implementation Plan Framework 9-3
Implementation of Plan Elements through Private Development Actions 9-3
Other Recommended Actions and Considerations 9-4
Monitoring Process 9-5
Section 10 References 9-0

LIST OF FIGURES

Figure 1-1 Study Area Map 1-3
Figure 4-1 Existing Zoning 4-3
Figure 4-2 Roadway Classification 4-4
Figure 4-3 Roadway Cross-Section (Section A) 4-6
Figure 4-3 Roadway Cross-Section (Section B) 4-7
Figure 4-4 Existing Access 4-9
Figure 4-5 Existing Traffic Conditions 4-12
Figure 5-1 Sub-Area Analysis Zones 5-3
Figure 5-2 Sub-Area "G" Analysis Zone 5-4
Figure 5-3 Year 2030 No-Build Traffic Conditions, Weekday PM Peak Hour 5-7
Figure 6-1 Typical Cross-Section Options 6-4
Figure 8-1 Facility Plan 8-5
Figure 8-2 Long-Term OR Highway 126 Corridor Facility Plan – Segment 1 8-6
Figure 8-3 Long-Term OR Highway 126 Corridor Facility Plan – Segment 2 8-7
Figure 8-4 Long-Term OR Highway 126 Corridor Facility Plan – Segment 3 8-8
Figure 8-5 Long-Term OR Highway 126 Corridor Facility Plan – Segment 4 8-9
Figure 8-6 Long-Term OR Highway 126 Corridor Facility Plan – Segment 5 8-10
Figure 8-7 Long-Term OR Highway 126 Corridor Facility Plan – Segment 6 8-11
Figure 8-8 Short-Term Improvement Projects 8-16
Figure 8-9 Medium-Term Improvement Projects 8-17
Figure 8-10 Long-Term Improvement Projects 8-18

LIST OF TABLES

Table 5-1 Summary of Roadway and Intersection Needs 5-6

Table 6-1 Initial Intersection Concepts Dismissed 6-6

Table 6-2 Initial Corridor Segment Concepts Dismissed 6-7

Table 6-3 Preferred Intersection Concepts 6-15

Table 6-4 Initial Preferred Segment Concepts 6-16

Table 7-1 Expected ESEE Impacts of OR Highway 126 Corridor Facility Plan Projects 7-2

Table 8-1 OR Highway 126 Facility Long-Term Transportation Improvements 8-4

Table 8-2 Minimum Right-of-Way Needs by Segment 8-15

Table 8-3 Implementation Projects 8-19

LIST OF EXHIBITS

Exhibit 1-1 OR Highway 126 west of O'Neil Highway. 1-1

Exhibit 2-1 August 23rd, 2011 Public Meeting at the Powell Butte Community Center. 2-1

Exhibit 2-2 Project Process Flowchart 2-2

Exhibit 2-3 Project Website Hosted by ODOT 2-4

Exhibit 3-1 US 26/OR Highway 126 Junction (Prineville "Y"). 3-2

Exhibit 3-2 Central Oregon Highways Subject to Reduction of Capacity Review 3-3

Exhibit 4-1 The Country Store located directly across the highway from the school within the Powell Butte Rural Service Center 4-1

Exhibit 4-2 Farming Equipment on the Highway at Williams Road 4-2

Exhibit 4-3 Existing shoulder along OR Highway 126 with rock outcroppings, utility poles, and guardrail within the clear zone. 4-5

Exhibit 4-4 Year 2005 through 2009 crash severity throughout the corridor. 4-8

Exhibit 4-5 Midweek volume profile of OR Highway 126 east of the Powell Butte Highway. 4-10

Exhibit 4-6 Illustration of the average monthly volume patterns based on data from the Automatic Traffic Recorder located west of the Crook County line. 4-11

Exhibit 6-1 Concept development and analysis process. 6-2

Exhibit 6-2 Concept development process. 6-3

Exhibit 6-3 Illustration of PPMT and PAC Initial Screening Concept Workbooks 6-5

Exhibit 6-4 OR Highway 126 highway users. 6-7

Exhibit 6-5 US 50/US 77 Roundabout in Florence, Kansas 6-8

Exhibit 6-6 Example of a gated cut-through for heavy vehicles at a roundabout 6-9

Exhibit 6-7 Typical rural roundabout approach treatments illustrating a gradually increasing degree of curvature to safely reduce approach speeds to traverse the roundabout. 6-10

Exhibit 6-8 Offset "T" Intersection Concept at Williams Road. 6-12

Exhibit 8-1 OR Highway 126 facing west from Millican Rd. 8-1

Exhibit 8-2 Crook County line to Millican Road basic roadway cross-section. 8-12

Exhibit 8-3 Millican Road to downtown Prineville basic roadway cross-section. 8-13

Exhibit 9-1 Lone Pine Roadway Paving in Crook County. 9-1

Exhibit 9-2 OR Highway 126 Corridor Facility Plan Adoption Process. 9-3

APPENDICES

Volume I, Appendix

Appendix A Interagency and Public Involvement Schedules

Appendix B Preferred Intersection Concepts

Appendix C Cost Estimates

Volume II, Technical Appendix (under separate cover)

Technical Appendix A Project Purpose and Need Statement

Technical Appendix B Technical Memorandum #1: Plan and Policy Review

Technical Appendix C Technical Memorandum #2: Existing Conditions Analysis

Technical Appendix D Technical Memorandum #3: Future Year 2030 No-Build Traffic Conditions

Technical Appendix E Technical Memorandum #4A: Circulation and Access Opportunities and Constraints

Technical Appendix F Technical Memorandum #4B: Alternative Land Use Strategies White Paper

Technical Appendix G Technical Memorandum #5A: OR 126 Corridor Refined Concept Screening

Technical Appendix H Technical Memorandum #5B: Alternative Land Use Strategies

Technical Appendix I Technical Memorandum #6A: OR 126 Corridor Implementation Plan Evaluation

Technical Appendix J Technical Memorandum #6B: OR 126 Corridor Supplemental Concept Screening

Technical Appendix K Technical Memorandum #7: Draft Code Amendments

Preface

The development of OR Highway 126 Corridor Facility Plan was guided by the Planning Project Management Team (PPMT) and the Project Advisory Committee (PAC). The PPMT and PAC members are identified below, along with members of the consultant team. The PPMT primarily provided input and review of technical documents, and coordinated between meetings on project management tasks related to project schedule and meeting logistics. In addition, the PPMT made final plan recommendations to the Prineville City Council and Crook County Court based on input from the public and the PAC. Several of the PPMT members also participated in the PAC meetings. The PAC members were responsible for reviewing all work products and guiding the planning work through participation in project meetings. They devoted a substantial amount of time and effort to the development of the OR Highway 126 Corridor Facility Plan, and their participation was instrumental in the development of the recommendations that are presented in this report.

PPMT Members

- Scott Edelman, City of Prineville
- Eric Klann, City of Prineville
- Scott Smith, City of Prineville
- Bill Zelenka, Crook County
- Penny Keller, Crook County
- Devin Hearing, Oregon Department of Transportation
- James Savage, Crook County Sheriff's Office
- Casey Kump, Crook County Fire & Rescue

PAC Members

- Marty Bailey, City of Prineville Planning Commission
- Bill Gowen, Crook County Planning Commission
- Don Wood, City of Prineville Planning Commission
- Jason Carr, Economic Development of Central Oregon
- Dale Keller, City of Prineville Railroad
- James Lewis, (formerly of) Central Oregon Intergovernmental Council
- Mike Ervin, Les Schwab
- Jennifer Lester, Tom McCall Business Representative
- Kevin Spencer, Tom McCall Business Representative
- Lynn Lundquist, Powell Butte Rural Service Center
- Ron and Mindy Sloper, Powell Butte Rural Service Center
- Maureen Crawford, Crook County Parks and Recreation District
- Mike McCabe, County Court
- Rick Williams, Central Oregon Trucking

Consultant Team

- Marc Butorac, Kittelson & Associates, Inc.
- Julia Kuhn, Kittelson & Associates, Inc.
- Casey Bergh, Kittelson & Associates, Inc.
- Joe Bessman, Kittelson & Associates, Inc.
- Barry Johnson, WHPacific, Inc.
- Justin Mason, WHPacific, Inc.
- Ron Hand, WHPacific, Inc.
- Cathy Corliss, Angelo Planning Group
- Darci Rudzinski, Angelo Planning Group

Section 1 Introduction

1. INTRODUCTION

Project Background

The OR Highway 126 Corridor Facility Plan assesses the highway segment between the western Crook County boundary and the Prineville "Y" junction with US 26. The study corridor is illustrated in Figure 1-1. Throughout this segment, OR Highway 126 is classified as a statewide highway and an *Expressway* within the Oregon Highway Plan (OHP, Reference 1). As specified in the OHP, expressways are intended to provide "safe and efficient high-speed and high-volume traffic movements." However, within the study segment of the corridor there are two school crossings, an industrial park, irrigated agricultural lands, and a rural commercial center. Agricultural lands within the Powell Butte community are actively utilized, and there is a need to travel on, and cross the highway with farming equipment.

Exhibit 1-1 OR Highway 126 west of O'Neil Highway.

In addition to the current land use issues, projections for the corridor indicate a high rate of future growth from regional trips between Redmond and Prineville, recreational trips, and trips to approved destination resorts. There are industrial and employment centers in western Prineville that also provide growth potential. Some of this development has already begun to occur, as evidenced by the recent development of the Facebook facility.

Currently OR Highway 126 lacks the capacity to serve future traffic demand created by anticipated growth. Further, there are current operational and safety concerns that need to be addressed through interim and partial solutions. Short, medium, and long-term plans are needed for OR Highway 126 to ensure that the highway will be able to continue to safely and efficiently serve local, regional and statewide mobility needs. In addition, due to environmental, topographic, and funding constraints, facility management strategies that can extend the viability of the corridor and improve safety prior to long-term grade separation are imperative.

Project Purpose Statement

This project establishes a long-term vision for OR Highway 126 and provides a series of strategies aimed at addressing corridor congestion, improving safety, supporting economic development and expected population growth in Crook County and Prineville, and serving statewide mobility needs.

Project Need Statement

The project purpose is demonstrated with the following Statement of Need:

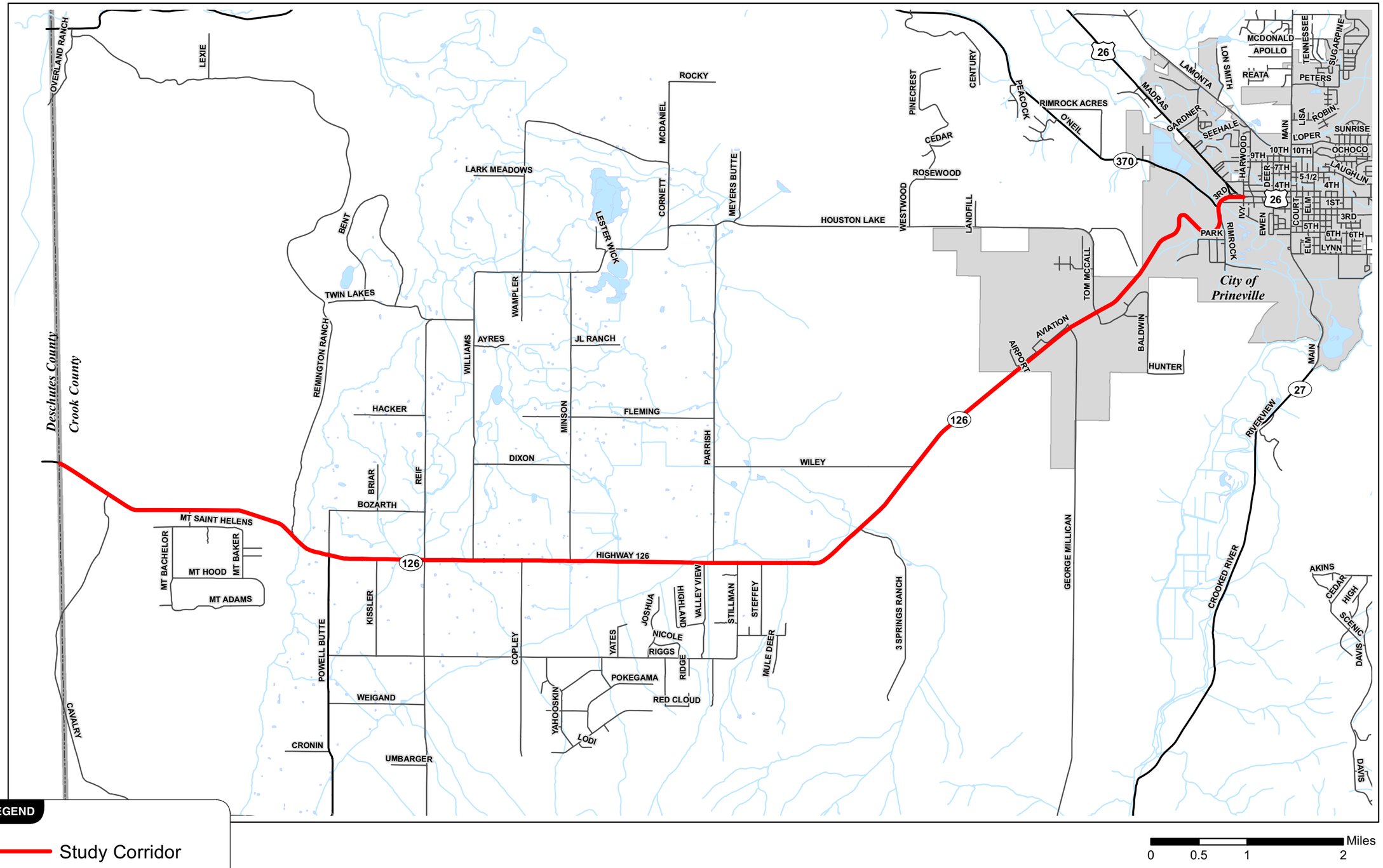
- Limited alternative routes and modes of travel to Prineville result in reliance on OR Highway 126 for local and regional trip-making.
- The operations of the unsignalized intersections along the corridor do not meet State mobility standards. Due to topographic, environmental and fiscal constraints, these intersections cannot be grade-separated in the foreseeable future, which results in increased congestion and potential for reduced roadway safety.
- Conflicting use of the facility by farming equipment and high-speed trucks decreases mobility for through traffic and increases potential for crashes.
- Inconsistency between the OHP's *Expressway* designation for the corridor and posted speed limits, cross-section, access, and roadside character.

Project Goals and Objectives

Project goals, objectives, and evaluation criteria used to identify, evaluate, and select the ultimate corridor plan were organized around the key plan elements presented below.

CORRIDOR ALIGNMENT/JUNCTIONS

1. Improve mobility by accommodating through traffic and freight movement.
    a. Protect the function and operation of the corridor as a transportation facility of statewide significance.
    b. Provide for freight mobility between Redmond, Bend, and Prineville.
    c. Protect the function and operation of the existing local street network within the study area and maintain or improve local circulation.
    d. Connect recreational opportunities.



STUDY AREA
CROOK COUNTY, OREGON

FIGURE 1-1

H:\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\gis\Fig1-1_Study Area.mxd

Kittelson & Associates, Inc. Transportation Engineering / Planning
WHPacific
Angelo planning group

2. Improve traffic safety for all users.
   a. Provide appropriate access for emergency vehicles.
   b. Provide appropriate speed management and driver warning measures.
   c. Identify short-, medium-, and long-term improvements to enhance safety along segments and at intersections.
   d. Provide a short-, medium-, and long-term access management plan that minimizes the number and frequency of driveways while maintaining access to adjacent properties.
   e. Provide safe circulation for users of the Powell Butte Rural Service Center (RSC).
3. Ensure that the planning and design of transportation system improvements minimizes environmental, cultural and social impacts to the greatest extent possible.
   a. Avoid geographic constraints and sensitive environmental resources, especially rimrock, wetlands, and farmland, to the greatest extent possible.
   b. Minimize impacts to community facilities and institutions and minimize property takings and displacement of existing businesses and residences.
4. Provide flexibility to respond to changing socio-economic conditions, concurrency of development and the opportunities and constraints represented by the various plans of the jurisdictions within and adjacent to the corridor.
   a. Coordinate with future land use and transportation plans for the area.
   b. Consider phased development as well as projected ultimate build-out.

HIGHWAY CROSS-SECTIONAL FEATURES

5. Identify a roadway cross section that meets highway management goals.
   a. Promote compatible land uses along the corridor.
   b. Manage access along the corridor.
   c. Balance streetscape features with maintenance considerations.

PLAN IMPLEMENTATION

6. Ensure effective plan implementation over time.
   a. Employ “least cost planning” and “range forecasting” techniques to help evaluate costs and benefits and to ensure that proposed improvements are correctly sized to maximize benefits.

b. Develop federal, state, regional and local partnerships to fund and implement the OR Highway 126 Corridor Facility Plan and to make the project eligible for federal funding.

c. Identify phased potential funding options.

d. Consider staged and/or development-related construction if full funding is not available.

e. Develop an ongoing monitoring program to assess Plan implementation and to identify needed adjustments.

Evaluation Criteria

Evaluation criteria were used to identify which design concepts achieve the project purpose and goals. These criteria also reflect practical considerations such as cost and constructability. Because the solution concepts may consider different combinations of alignments and streetscape options, the evaluation criteria have been separated into two categories:

- Corridor Alignment/Junction Criteria, and
- Highway Cross-Sectional Feature Criteria.

The following identifies the evaluation criteria.

CORRIDOR ALIGNMENT/JUNCTION EVALUATION CRITERIA

Mobility - This criterion assesses the quality of flow for traffic along the OR Highway 126 corridor as a comparison to ODOT standards.

Local Access - This criterion evaluates whether the concept maintains and/or enhances vehicular access to the neighborhoods, businesses, and public facilities along the corridor.

Safety - This criterion considers the degree to which the concept reduces the potential for crashes within the study area involving vehicles, farm equipment, and freight, and related to access.

Impacts to Natural Environment - This criterion addresses the environmental impacts of the concept, including the impact to streams, wetlands, riparian areas, wildlife habitats, cultural, historical, or scenic resources, open spaces, and other natural resources.

Impacts to the Built Environment - This criterion considers the impact of the concept on existing and future development in the study area, including property acquisition requirements, socio-economic impacts, noise/air impacts, cultural resources, and hazardous waste sites.

Land Use Compatibility - This criterion assesses the concept's consistency with the plans and standards of Crook County and the City of Prineville. It also considers how the concept supports or impacts future economic development opportunities.

Flexibility of Implementation - This criterion considers the feasibility of constructing the concept in phases in order to preserve the function of the existing infrastructure and optimize capital improvement budgets. It also considers the feasibility of expanding the corridor concept to accommodate changes in future development and traffic patterns.

Cost Effectiveness - This criterion qualitatively evaluates the relative overall magnitude of design and construction costs, including roadway construction, structures, right-of-way, environmental mitigations, and maintenance of traffic. It also qualitatively assesses the economic benefits to gauge the overall relative value of the concept.

HIGHWAY CROSS-SECTIONAL EVALUATION CRITERIA

Aesthetic Enhancement - This criterion assesses the highway cross sectional feature concept's enhancement potential to the visual character of the corridor, including elements such as landscaping and preservation of the rural character.

Environmental Features - This criterion considers the environmental impact of the concept's footprint as well as the degree to which the concept provides green street features.

Maintenance - This criterion considers the issues and requirements related to ongoing maintenance and upkeep, including drainage system maintenance, pavement maintenance, and landscape maintenance.

Functionality - This criterion considers the effectiveness and efficiency for the facility to serve as an expressway and to serve all users (including low-income and minority populations) and all travel modes (including passenger cars, trucks, emergency vehicles, and farm equipment).

Section 2 Interagency and Public Involvement Program

2. INTERAGENCY AND PUBLIC INVOLVEMENT PROGRAM

Exhibit 2-1 August 23rd, 2011 Public Meeting at the Powell Butte Community Center.

As part of the OR Highway 126 Corridor Facility Plan, interagency coordination and public involvement occurred through: regular meetings of the Planning Project Management Team (PPMT) and the Project Advisory Committee (PAC), two public workshops, one public meeting (see Exhibit 2-1), three joint work sessions of the City of Prineville Planning Commission, Crook County Planning Commission, City of Prineville City Council, and Crook County Court; and, public adoption hearings by the City of Prineville's Planning Commission and City Council and Crook County's Planning Commission and Court. A summary of the interagency and public involvement activities is provided below. Exhibit 2-2 illustrates the overall process followed. More detailed information regarding these activities is available in Appendix A.

Planning Project Management Team

The Planning Project Management Team (PPMT) primarily provided input and review of technical documents, and coordinated between meetings on project management tasks related to project schedule and meeting logistics. The PPMT was ultimately responsible for the overall project direction and the plan recommendations sent forward to the City and County decision making bodies for review and adoption. A schedule and summary of the PPMT meetings is provided in Table A-1 in Appendix A.

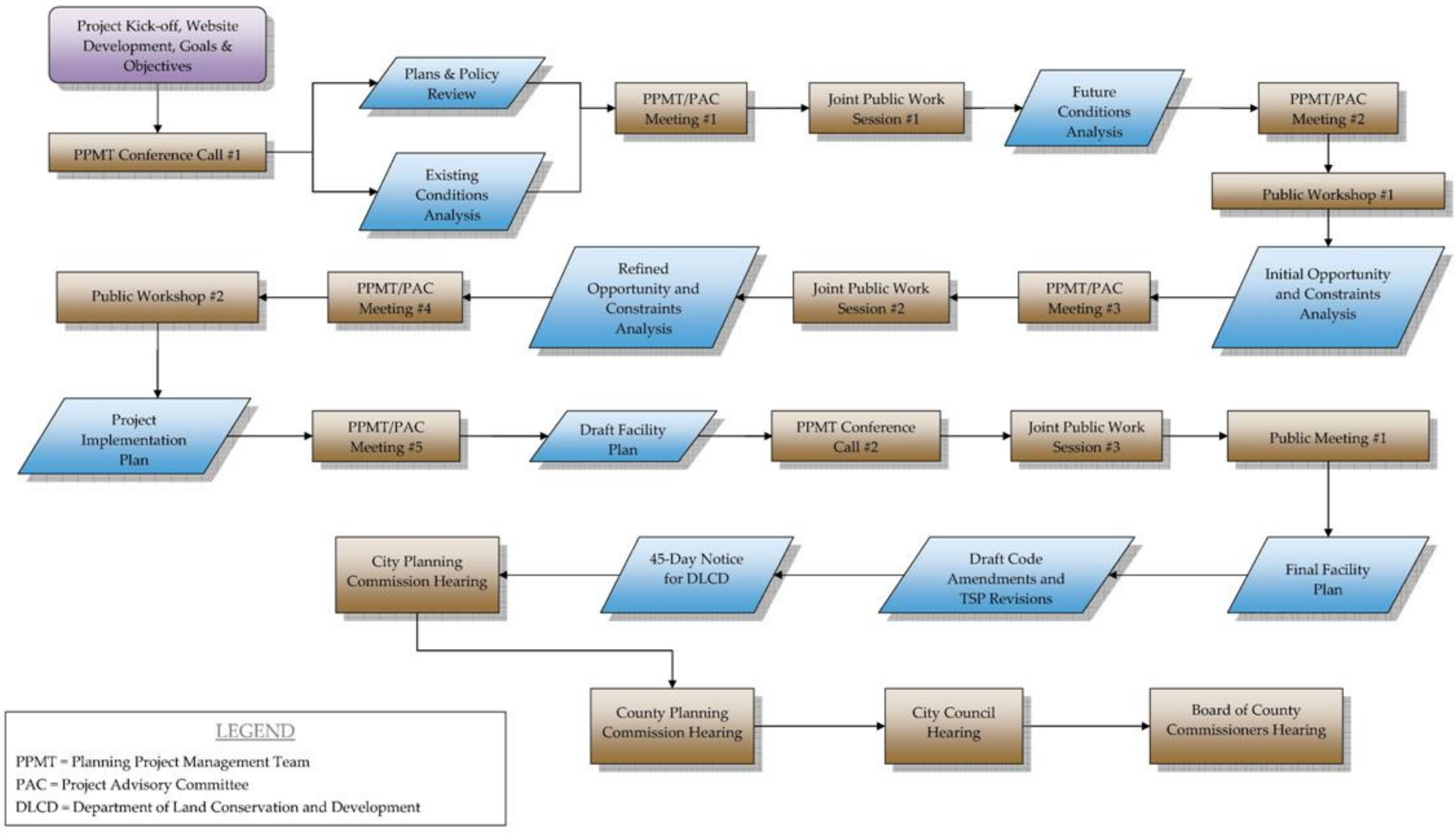


Exhibit 2-2 Project Process Flowchart

Project Advisory Committee

The PAC guided the planning work and was responsible for reviewing all work products, providing input on all planning recommendations such as the project goals and objectives, concept development, concept screening, and concept implementation plan development. Ultimately, the PAC recommended the preferred intersection and segment concepts, access management plan, and implementation plan elements of the Facility Plan to the PPMT. A summary of the PAC meetings is provided Table A-2 in Appendix A.

Public Involvement

To ensure that adequate project coordination and public participation occurred throughout the development of the Corridor Facility Plan, the following public forums were held: two public workshops, a public meeting, three joint work sessions of the City of Prineville Planning Commission, Crook County Planning Commission, City of Prineville City Council, and Crook County Court, and, public adoption hearings by the City of Prineville's Planning Commission and City Council and Crook County's Planning Commission and Court. The purpose of each of these public forums is described below and is followed by an outline of the dates of each meeting.

PUBLIC WORKSHOPS AND PUBLIC MEETING

The two public workshops and one public meeting were held over the duration of the project. The workshops gave the public an opportunity to provide input on the development and screening of intersection and corridor segment concepts. The public meeting summarized the project findings and recommendations. A summary of the public workshops and public meeting is provided in Table A-3 in Appendix A.

JOINT WORK SESSIONS

Three joint work sessions were held through the course of the project to inform the County and City Planning Commissioners, County Court, and City Councilors of the process and progress being made throughout the duration of the project. The work sessions provided an opportunity for each of these bodies to ask questions and gain an understanding prior to completion of the draft plan. Each joint work session was conducted in the City of Prineville Council Chambers and members of the general public were allowed to listen in on the discussions. A summary of the joint work sessions are provided in Table A-4 in Appendix A.

PROJECT WEBSITE

A public website, shown in Exhibit 2-3, was developed and maintained by ODOT to provide ongoing updates to the general public throughout the duration of the project. All technical memorandums were made available on the site as they were completed and public meeting announcements were posted prior to each public workshop or meeting. Interested parties could also request more information through this website.

Exhibit 2-3 Project Website Hosted by ODOT

HEARINGS

The City of Prineville City Council and the Crook County Court held public hearings on November 15, 2011, and December 14, 2011. The hearings included joint discussion of the project while allowing a separate decision of whether to adopt, adopt with amendments, or not adopt the Facility Plan. The City and County adopted ordinances separately in January 2012. A summary of the joint work sessions are provided in Table A-5 in Appendix A.

Section 3 Plan and Policy Review

3. PLAN AND POLICY REVIEW

The Plan and Policy Review was conducted for the OR Highway 126 Corridor Facility Plan to review applicable State and local documents that provide the policy and regulatory framework for transportation planning within the study area. *Technical Memorandum #1 in the Technical Appendix* includes details on the individual plans and policies and their relevance to the corridor study, with particular attention paid to access management and highway design (including cross-section design and roadside character). The following plans and policies were deemed applicable to the development and ultimate adoption of the corridor facility plan.

State of Oregon/ODOT Plans and Policies

- Oregon Transportation Plan (2006)
- Oregon Highway Plan (1999, last amended 2006)
- Oregon Bicycle and Pedestrian Plan (1995)
- Access Management Rule (OAR 734-051)
- Freight Moves the Oregon Economy (1999)
- Oregon Aviation Plan (2007)
- ODOT Highway Design Manual (2003, last revised 2008)
- State Transportation Improvement Program (2000-present)

Local Plans and Ordinances Reviewed

- Crook County Comprehensive Plan (Last Amended 2002)
- Crook County Transportation System Plan (2005)
- Crook County Coordinated Transportation Plan (2007)
- Crook County Development Code
- City of Prineville Urban Area Comprehensive Plan (2007)
- City of Prineville Transportation System Plan (2005)
- City of Prineville Land Use Code
- Airport Layout Plan Report (2003)

Highway Classification and Management Objectives

Per the Oregon Highway Plan (OHP), OR Highway 126 is classified as a *Statewide Highway*, a *Freight Route*, a *Truck Route*, and is considered a part of the National Highway System (NHS) throughout the study area (Reference 1). According to these designations, ODOT must ensure that OR Highway 126 adequately serves inter-regional travel as part of the interconnected system of principal arterial routes that makes up the NHS system in Oregon. OR Highway 126 is also classified as an *Expressway* from the Crook County boundary east to the O'Neil Highway (OR 370, milepost 17.92). Expressways are intended to carry a high volume of traffic, at high speeds, safely and efficiently. Given its *Freight Route* designation, recommended future improvements to OR Highway 126 should improve the efficiency of operations to facilitate the movement of goods, while at the same time be balanced against the needs of other users of the highway.

OR Highway 126 is part of the arterial roadway system that provides a vital route between Prineville and the Redmond/Bend area and access to the rural residential areas in the western part of the County. While the City has established economic development goals to provide employment within the City for residents, many will continue to find employment in Bend or Redmond and will rely on OR Highway 126.

The US 26/OR Highway 126 junction (Prineville "Y"), the western "gateway" to Prineville shown in Exhibit 3-1, is also very important for the City of Prineville. This junction is the eastern end of the study area where the role of the corridor transitions from a priority for high speed throughput to increased need to serve businesses and provide safe traffic movements along Third Street, a primary commercial corridor and designated Special Transportation Area (STA)[1] through Prineville.

Exhibit 3-1 US 26/OR Highway 126 Junction (Prineville "Y").

[1] Third Street from Locust Street to Knowledge Street is a designated STA.

Recent Policy Changes Influencing the Corridor Facility Plan

ORS 366.215 – NO REDUCTION OF VEHICLE-CARRYING CAPACITY

ORS 366.215 is legislation that applies to freight routes defined in the Oregon Highway Plan (OHP), the National Network, and seven additional routes defined in the legislation. Any proposed project on any of these routes is subject to review by freight stakeholders to determine if a reduction in vehicle-carrying capacity (defined as a reduction in the "hole-in-the-air" currently available to vehicles) would result. If a reduction in vehicle-carrying capacity is determined to result from the project, the project becomes subject to additional reviews with the possibility of being appealed to the Oregon Transportation Commission (OTC) for final consideration.

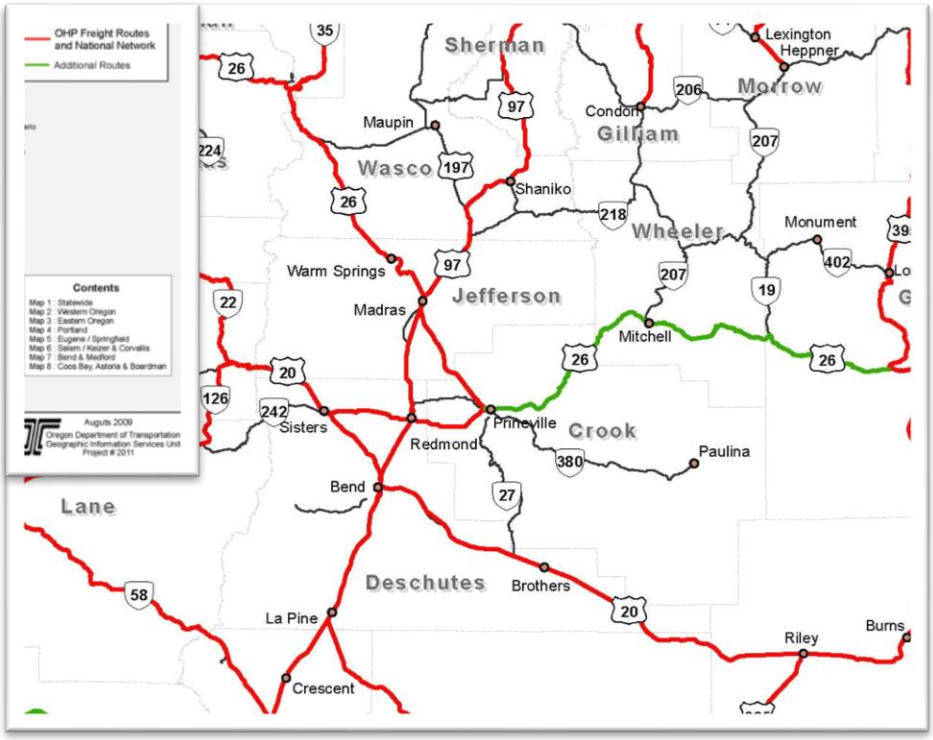


Exhibit 3-2 Central Oregon Highways Subject to Reduction of Capacity Review

As shown in Exhibit 3-2, OR Highway 126 is designated as a freight route by the OHP. Therefore, a proposed improvement along the corridor must be presented to the freight stakeholders for review and be subject to the process outlined in ORS 366.215.

SENATE BILL 264

Senate Bill 264 was passed during the 2011 legislative session and most of the provisions of the bill that affect the ODOT's access permit policies go into effect on January 1, 2012. This bill affects how access management along state highways is managed. Specifically, the following results from the passage of the bill:

- The legislature controls highway access permitting governance rather than ODOT;
- ODOT can no longer deny an application for highway access because of the presence of non-highway access that is available to a site;
- For most types of applications ODOT now has the burden to prove that a proposed driveway will be unsafe or will interfere with highway operations; and,
- Medians will not be installed on highways unless ODOT can prove that no other effective mitigation measure is available.

ODOT ROUNDABOUT POLICY

In November 2008, the State Traffic Engineer issued a directive to ODOT staff to consider a roundabout as an alternative whenever a traffic signal was be considered on the state highway system. However, in March 2011, ODOT issued updated guidance to staff that no roundabouts should be approved or designed by staff on the state highway system due to concerns raised by the trucking industry. Subsequently, the requirement previously issued to evaluate roundabouts as an alternative to traffic signals was temporarily lifted.

Currently, ODOT is awaiting the results of a study being led by the Kansas Department of Transportation evaluating the effects of roundabouts on oversized loads. Upon completion of that study, the agency has indicated that the current prohibition of roundabouts on the state system will be reconsidered.

Section 4 Inventory of Existing Transportation/ Land Use Conditions

4. Inventory of Existing Transportation and Land Use Conditions

This section provides a summary of the condition of the OR Highway 126 facility as observed in fall 2010 and documents the surrounding land use characteristics, roadway classification, alignment and cross-section, highway access, traffic safety, and traffic operations of the corridor. *Technical Memorandum #2 in the Technical Appendix* provides context on the purpose of this segment of the OR Highway 126 corridor, identifies the range and acuity of existing system needs, and was used to prioritize future highway and non-highway improvements within the facility plan.

Surrounding Land Use

The OR Highway 126 Corridor Facility Plan assesses a segment of OR Highway 126 between the western Crook County boundary and the Prineville "Y" junction with US 26. The highway serves as a major east-west connection between larger cities to the west on US 97 (Redmond/Bend) and Prineville to the east. Land adjacent to the study segment is zoned for agricultural uses, but there are several sections that serve non-agricultural uses. Inside the Powell Butte Rural Service Center (RSC), the highway provides access to a school, convenience store/service station (see Exhibit 4-1), a church, and other uses. The highway is the main transportation route that enables residents of the Powell Butte RSC and other rural residential areas south of the highway to reach goods, services, and employment in Prineville and the Bend/Redmond areas. Near Tom McCall Road, the highway serves the land around the Prineville Airport, which is one of the region's major industrial employment areas.

Exhibit 4-1 The Country Store located directly across the highway from the school within the Powell Butte Rural Service Center

Development around the airport is a top local priority for infrastructure planning and economic expansion incentives. As such, the Tom McCall Industrial Park has been certified by the State of Oregon as a Shovel-Ready site. The City's economic analysis concludes that there is a need for additional

industrial lands that are situated near the airport, which in turn will require that adequate public facilities be planned, funded, and installed to serve employment areas.[2]

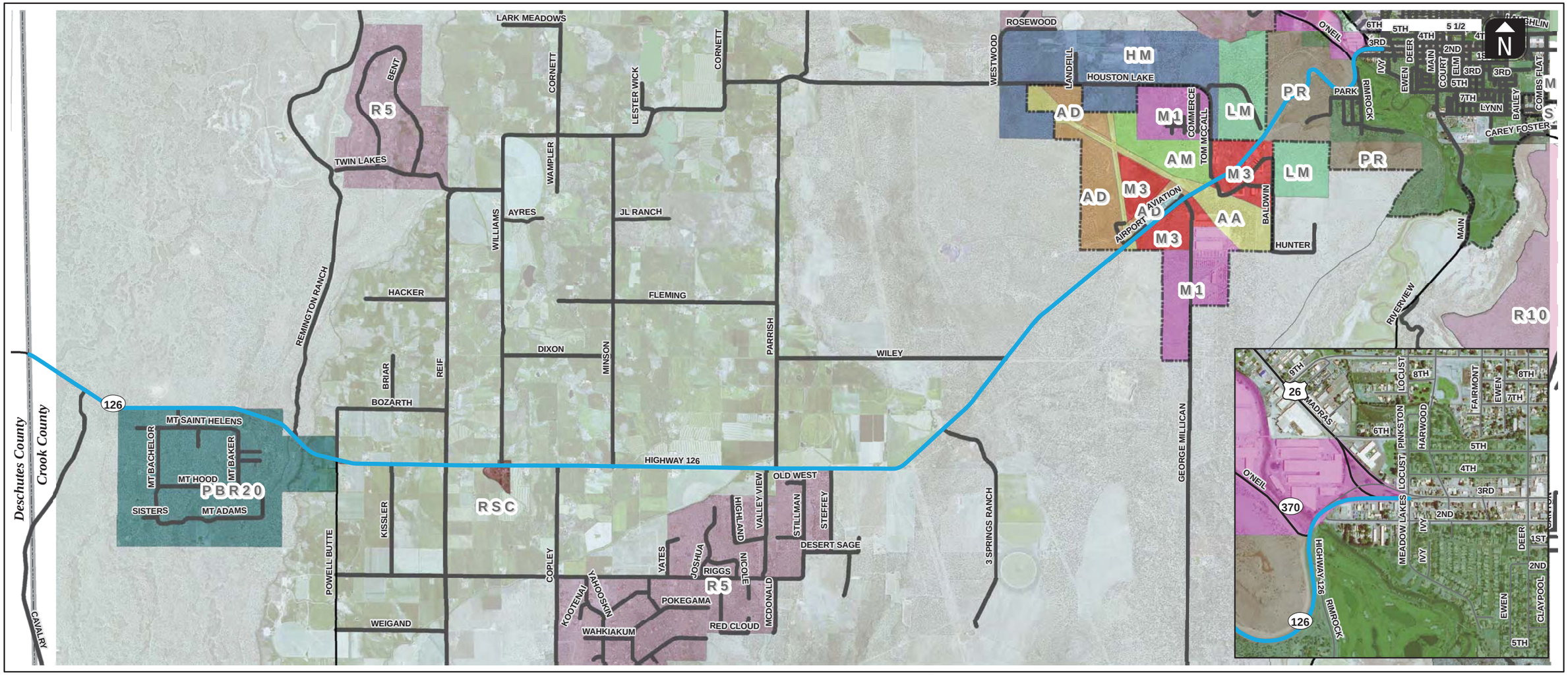
Exhibit 4-2 Farming Equipment on the Highway at Williams Road

Nine different zoning designations are found along the OR Highway 126 right-of-way within City limits. The majority of the property adjacent to OR Highway 126 between the west Crook County line and the City limits is zoned for Exclusive Farm Use (EFU-3), which results in farm equipment on the highway (see Exhibit 4-2). Near the airport the majority of the property is zoned for various airport and industrial zoning. Existing zoning is illustrated in Figure 4-1.

Roadway Classification

The roadway classifications within the OR Highway 126 study segment are illustrated in Figure 4-2. Within the study area there are two other State highways: OR 370 (O'Neil Highway), which is classified as a *District Highway,* and US 26, which is classified as a *Regional Highway* west of Prineville and as a *Statewide Highway* where it shares its alignment with OR Highway 126 east of the Prineville "Y". Jurisdictional ownership of the Powell Butte Highway was transferred to Crook and Deschutes County and is no longer a State facility.

[2] See Chapter 5, Economy, of the City of Prineville Urban Area Comprehensive Plan (2007).



LEGEND

- Study Corridor
- City_Boundary
- County_Boundaries
- <all other values>
- HWY

Zone Description

- Airport Approach Overlay (AA)
- Airport Business-Industrial (AM)
- Airport Commercial (AC)
- Airport Development (AD)
- Exclusive Farm Use (EFU)
- General Residential (R2)
- Heavy Industrial (HM)
- Industrial Park (M3)
- Light Industrial (LM)
- Limited Industrial (M1)
- Park Reserve (PR)
- Powell Butte Rural Residential (PBR20)
- Rural Residential (R5)
- Rural Service Center (RSC)

CITY OF PRINEVILLE

CROOK COUNTY Serving You EST. 1882

Oregon Department of Transportation

EXISTING LAND USE
CROOK COUNTY, OREGON

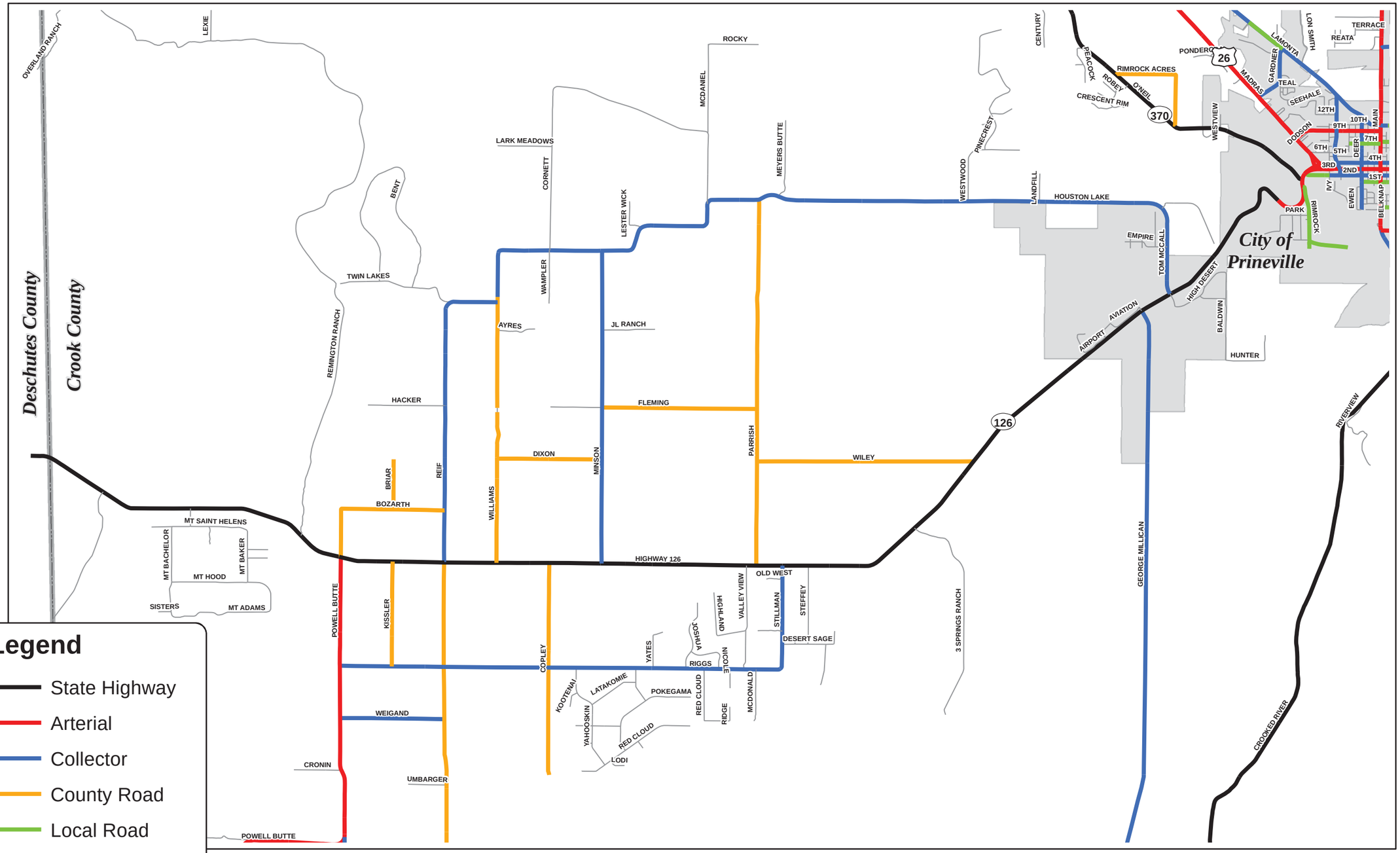
FIGURE 4-1

H:\profile\11168 - OR 126 Powell Butte Corridor Evaluation\gis

KITTELSON & ASSOCIATES, INC. TRANSPORTATION ENGINEERING / PLANNING

WHPacific

Angelo planning group



H:\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\gis\Fig4-2_RoadClass.mxd

Oregon Department of Transportation

ROADWAY CLASSIFICATION
CROOK COUNTY, OREGON

FIGURE 4-2

Kittelson & Associates, Inc. Transportation Engineering / Planning · WHPacific · Angelo planning group

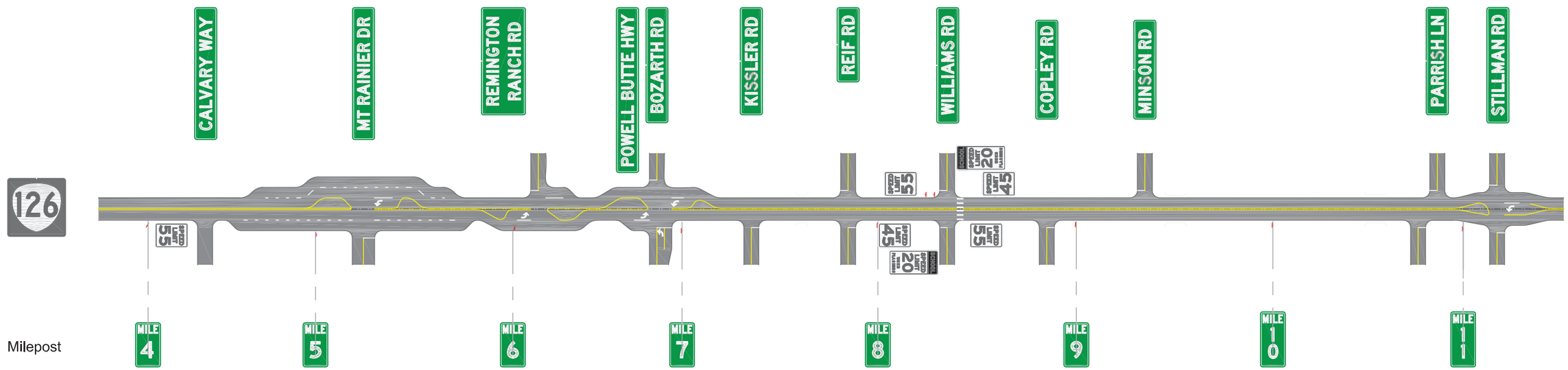
Alignment and Cross-Section

Within the facility plan area, the cross-section for OR Highway 126 varies between two and through travel lanes. West of Tom McCall Road, it is generally a narrow two-lane section with limited passing opportunities, narrow shoulders, and limited right-of-way. A typical cross-section on OR Highway 126 west of Powell Butte Highway is shown in Exhibit 4-3. Along several segments there are rock outcroppings, utility poles, trees, and other obstructions resulting in limited width (i.e., clear zone) to allow a driver to recover if a vehicle goes off the road.

Exhibit 4-3 Existing shoulder along OR Highway 126 with rock outcroppings, utility poles, and guardrail within the clear zone.

West of Powell Butte Highway, the highway has a series of horizontal curves. Between Powell Butte Highway and Tom McCall Road the alignment is straight except for one horizontal curve east of Steffy Lane. The vertical grade increases at an average rate of less than one percent from the west Crook County line to Wiley Road and begins to descend slightly to Tom McCall Road.

East of Tom McCall Road the highway transitions into a three-lane section with an uphill (westbound) passing lane up the grade with several horizontal curves that are posted with speeds of 45 and 30 miles per hour. In this area, the highway has an approximately four-percent grade which requires heavy breaking to reduce speed to safely negotiate the curves. Figure 4-3 illustrates the highway cross-section throughout the study segment, the location of passing lanes, the posted speed, and the location of auxiliary turn lanes.



ROADWAY SECTION INFORMATION
MILEPOST 3.58 TO 11.51
CROOK COUNTY, OREGON

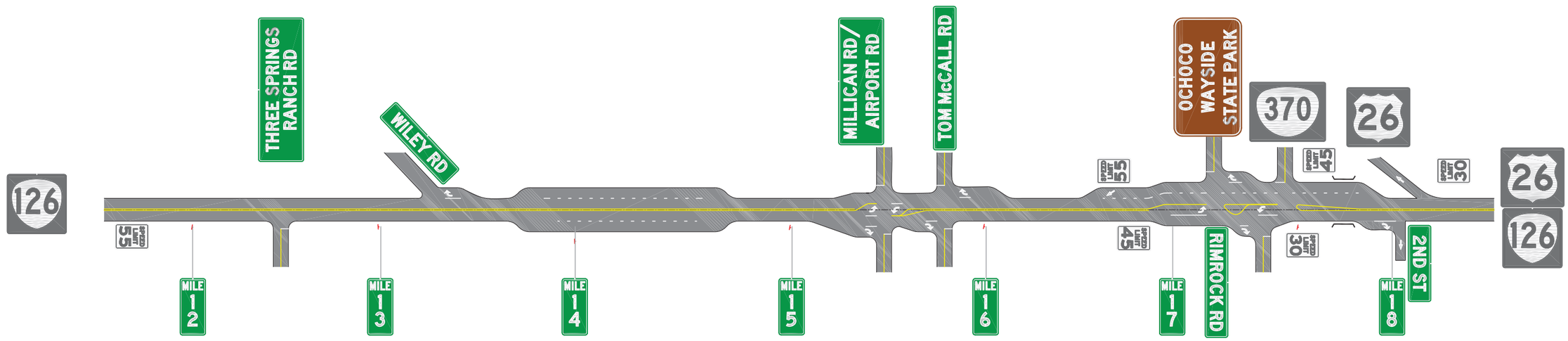
FIGURE **4-3**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

WHPacific

Angelo planning group

H:\profile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\figs\Fig4-3.dwg Sep 30, 2011 - 5:30pm - cbergh Layout Tab: Fig03



ROADWAY SECTION INFORMATION
MILEPOST 11.51 TO 18.24
CROOK COUNTY, OREGON

FIGURE **4-3**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\profile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\figs\Fig4-3.dwg Sep 30, 2011 - 5:29pm - cbergh Layout Tab: Fig04

Highway Access

There are approximately 27 public and 56 private access locations through the nearly 15-mile study segment, many of which are only used occasionally for farm access. The most densely spaced accesses along the study corridor are along the south side of OR 126 at the Prineville "Y" and within the Powell Butte community (east of Williams Road). Within these areas access is not well defined, which has resulted in drivers exiting and entering the highway at various informal locations. The frequency of access points and the lack of left-turn lanes throughout much of the highway can result in sudden decelerations for through vehicles and can be difficult for motorists to expect. Figure 4-4 illustrates the existing access locations throughout the corridor.

Traffic Safety

Within the study corridor, the crash rate for the past five years is lower than the statewide average for similar facilities and lower than the average rate on the Ochoco Highway from its beginning to end. Short segments (0.1 to 0.5 miles) along the study corridor were evaluated where the frequency of crashes was higher than other segments of similar length during the study period. The evaluation did not identify geometric factors that likely contributed to the crashes.

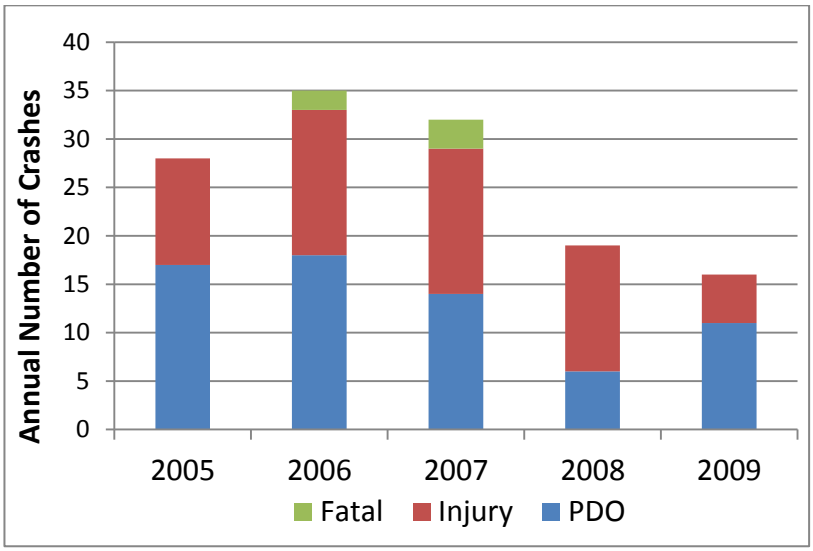
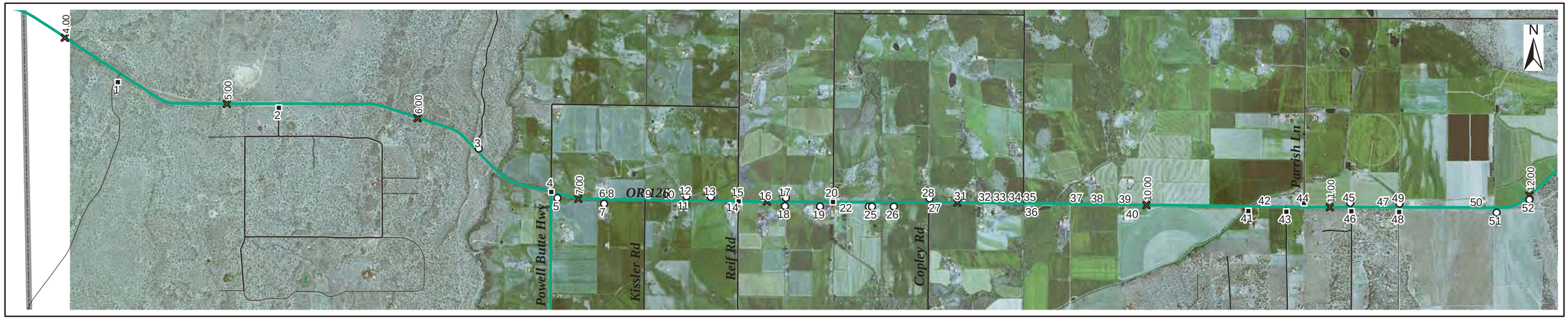
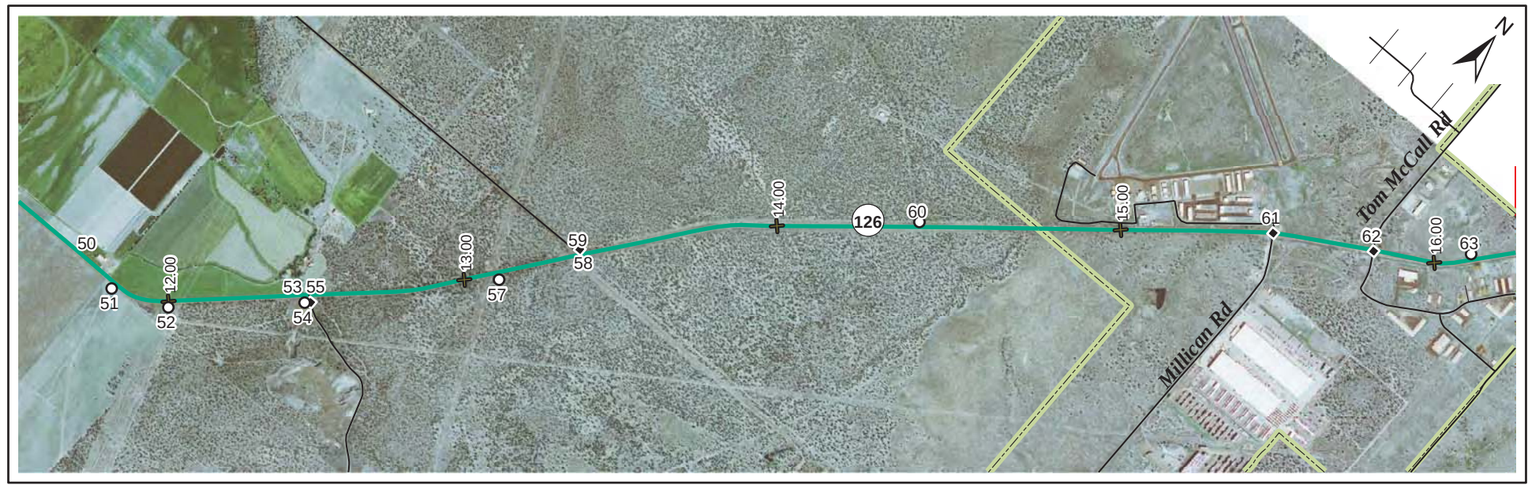


Exhibit 4-4 Year 2005 through 2009 crash severity throughout the corridor.

As shown in Exhibit 4-4, the highest frequency of crashes during the study period occurred in 2006 and 2007, which included four fatalities. No identified pedestrian-related crashes were reported along the corridor throughout the five-year period.

The OR Highway 126/Powell Butte Highway and the Prineville "Y" intersections were in the 85th to 89.9th percentile on ODOT's Safety Priority Index System (SPIS) list based on 2007 to 2009 data. This ranking indicates that the number of crashes is higher than other intersections in the state, but there are still others that are in the top 5 percent, which are a higher priority for ODOT.





LEGEND

- × Milepost

Highway Access

- ○ Private
- ▪ Public

EXISTING ACCESS INVENTORY
CROOK COUNTY, OREGON

FIGURE **4-4**

Existing Traffic Operations

Turning movement counts and vehicle classification counts were conducted along OR Highway 126 from the western Crook County boundary to the Prineville "Y" in October 2010 to identify the current traffic volumes and peaking characteristics along the corridor. The average hourly volumes collected on OR Highway 126 over a 24-hour period are summarized in Exhibit 4-5.

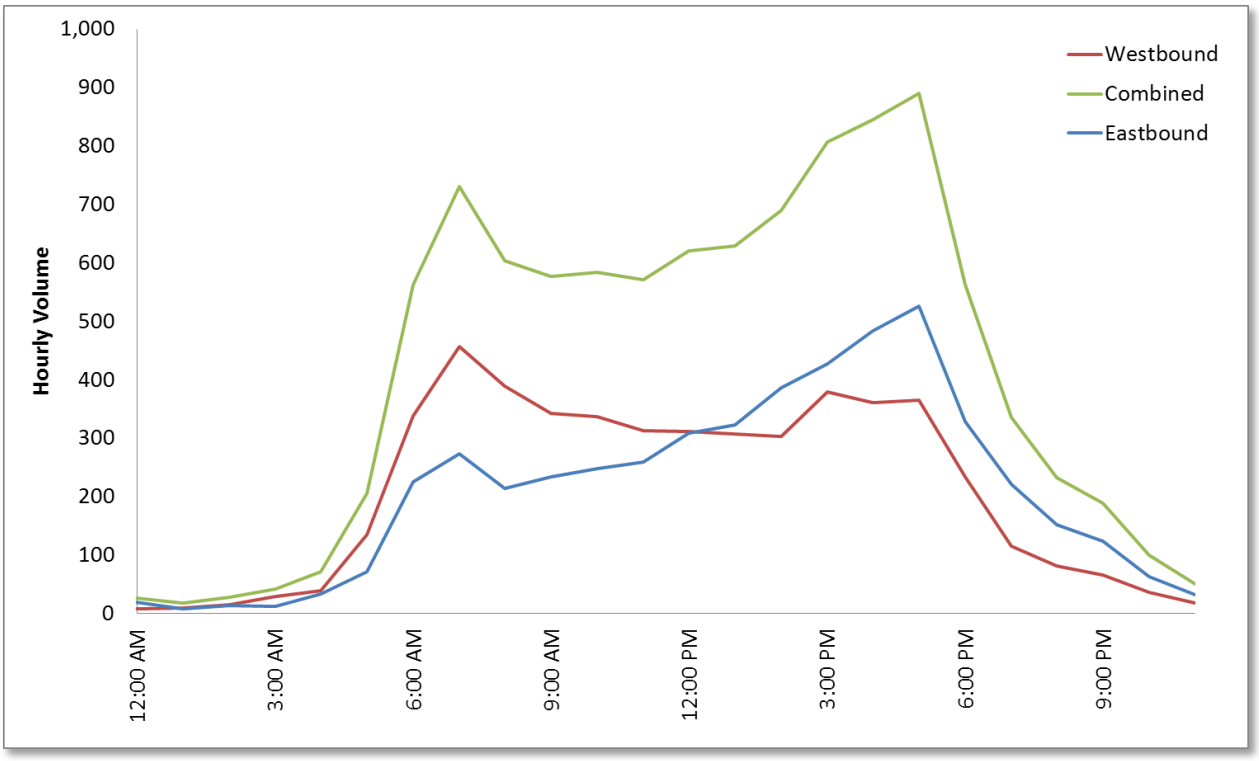


Exhibit 4-5 Midweek volume profile of OR Highway 126 east of the Powell Butte Highway.

Weekday commute patterns reflect a high volume of westbound traffic in the morning and a higher eastbound return flow in the evening, with the evening experiencing the highest bi-directional flow.

Throughout the year traffic volumes fluctuate by approximately 20 percent along the corridor, with peak conditions occurring during the summer, as shown in Exhibit 4-6. Throughout an average week volumes on the highway increase from Monday to Friday, and are significantly lower on weekends.

Operations analysis found that during the peak seasonal evening commute period all of the stop-controlled intersections operate at Level of Service "C" or better and with volume-to-capacity (v/c) ratios below 0.70, with the exception of the Tom McCall Road and O'Neil Highway intersections. As v/c ratios approach 1.0 there is a greater need to provide capacity improvements at the intersection. The Tom McCall Road and O'Neil Highway intersections exceed allowable ODOT mobility standards of

0.70,and during the peak hour the Tom McCall intersection is shown to provide no reserve capacity to handle growth in southbound traffic.

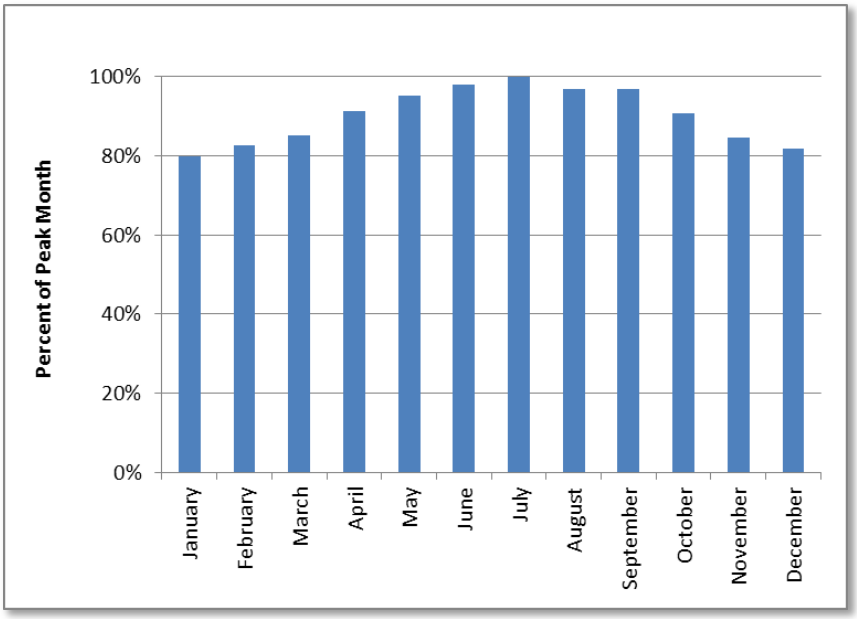
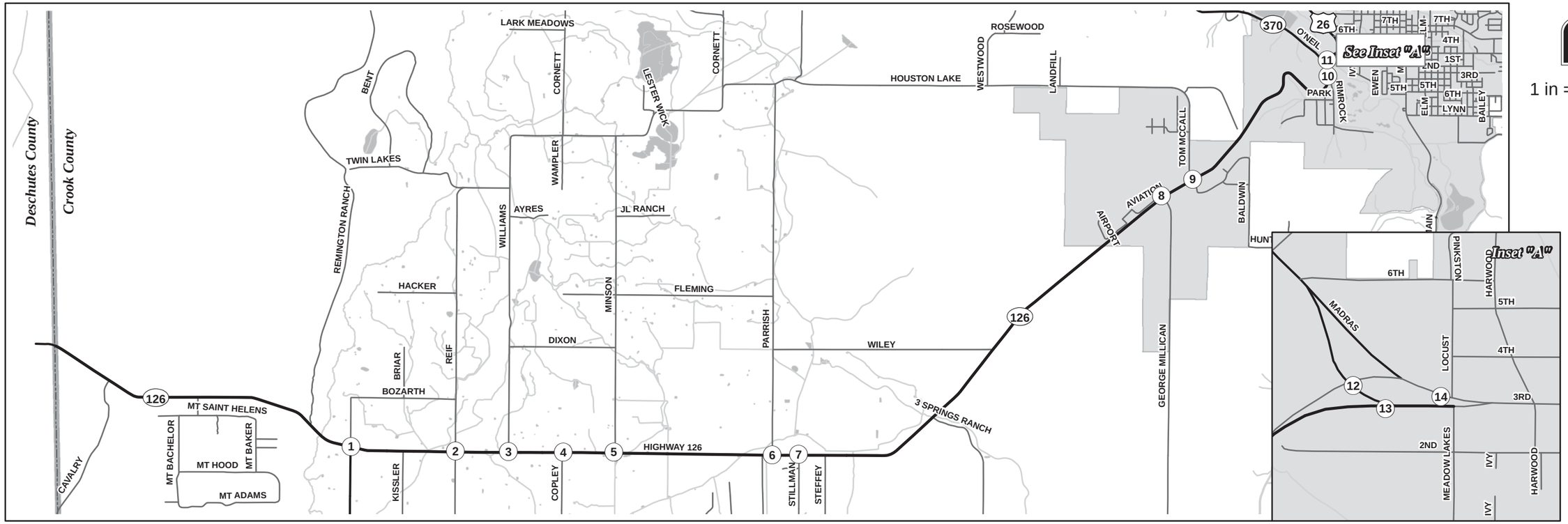


Exhibit 4-6 Illustration of the average monthly volume patterns based on data from the Automatic Traffic Recorder located west of the Crook County line.

Figure 4-5 illustrates the operations of the study intersections along the corridor during the existing weekday design (30th Highest) hour.

Segment capacity was analyzed on OR Highway 126 east of Powell Butte Highway and west of Airport Road/Millican Road, based on Highway Capacity Manual methods. Volumes at these points on the highway are expected to be representative of the entire segment. Based on the analysis the highway operates at less than 40 percent of the segment capacity, well below ODOT's mobility standard of 70 percent.



1 in = 1 mile

OR 126 & SW Powell Butte Hwy (1)
CM=SB
LOS=E
Del=38.3
V/C=0.01
5, 390, 50, <5, 295, 115, 40, <5, 140, <5, <5, <5

OR 126 & SW Reif Rd (2)
CM=NB
LOS=C
Del=19.7
V/C=0.02
20, 485, <5, <5, 405, <5, <5, <5, <5, 10, <5, <5

OR 126 & SW Williams Rd (3)
CM=NB
LOS=C
Del=24.7
V/C=0.01
25, 490, <5, 10, 380, <5, <5, <5, <5, 25, 10

OR 126 & SW Copley Rd (4)
CM=NB
LOS=C
Del=18.4
V/C=0.02
<5, 470, 10, <5, 395, <5, <5, <5, <5, <5, <5, <5

OR 126 & Minson Rd (5)
CM=SB
LOS=B
Del=14.2
V/C=0.01
5, 460, <5, 390, <5, <5

OR 126 & SW Parrish Ln (6)
CM=SB
LOS=B
Del=11
V/C=0.01
<5, 455, <5, 390, <5, <5

OR 126 & Stillman Rd (7)
CM=SB
LOS=C
Del=19.5
V/C=0.00
455, <5, 385, 20, <5, 15

OR 126 & Millican Rd (8)
CM=SB
LOS=C
Del=24.3
V/C=0.06
<5, 480, 10, <5, 390, 35, 10, <5, 70, <5, <5, 5

OR 126 & Tom McCall Rd (9)
CM=SB
LOS=F
Del=>50
V/C=0.96
10, 530, <5, 50, 370, 20, 10, 10, 65, 45, 5, 60

OR 126 & Rimrock Rd (10)
CM=NB
LOS=C
Del=15.3
V/C=0.10
625, 10, 445, 50, <5, 35

OR 126 & O'Neil Hwy (11)
CM=SB
LOS=F
Del=>50
V/C=0.72
25, 640, 100, 490, 5, 85

OR 126 Westbound & US 26 Southbound (12)
CM=SB
LOS=B
Del=14.7
V/C=0.27
410, 130

OR 126 Eastbound & US 26 Eastbound (13)
CM=SB
LOS=C
Del=17.9
V/C=0.33
635, 130

US 26 Westbound & OR 126 Westbound (14)
CM=NB
LOS=B
Del=14.6
V/C=0.26
470, 125

LEGEND

CM = Critical Movement

LOS = Critical Movement Level of Service

Del = Critical Movement Control Delay

V/C = Critical Volume-to-Capacity Ratio

EXISTING TRAFFIC CONDITIONS – WEEKDAY DESIGN HOUR
CROOK COUNTY, OREGON

FIGURE **4-5**

H:\profile\11168 - OR 126 Powell Butte Corridor Evaluation\gis\Fig4-6_ExVolumes.mxd

KITTELSON & ASSOCIATES, INC. TRANSPORTATION ENGINEERING / PLANNING
WHPacific
Angelo planning group

Section 5 Future Conditions

5. FUTURE CONDITIONS

The assessment of year 2030 conditions for the corridor includes a forecast of 20-year traffic volume growth, future traffic operations, and future traffic safety. This assessment was used to identify needed intersection and corridor segment mitigations. Additional details on the methodology, findings, and future analysis can be found in *Technical Memorandum #3 in the Technical Appendix*.

Traffic Volume Growth

There are a variety of methodologies that can be used to forecast traffic growth in the OR 126 corridor, such as use of historical growth rates, use of existing State models, and a subarea analysis. A Cumulative Analysis (as defined by ODOT) was ultimately selected as the most appropriate method for predicting future volumes on OR Highway 126. This methodology accounts for historical growth trends as well as the potential for increases in traffic on Tom McCall Road, Powell Butte Highway, and other destination resort access routes.

The cumulative growth analysis applied for this study considered a range of new industrial and resort development and annual expected regional growth. The range of development was intended to take into account the economic uncertainties associated with many of the approved developments that will access OR Highway 126, as well as the magnitude of the developments. There are five approved destination resorts surround the corridor that will affect traffic volumes on Powell Butte Highway and along OR Highway 126. There is also approximately 1,000 acres of vacant industrial land that is available for future development within the vicinity of Tom McCall Road and Airport Road. Full build-out of the approved destination resorts could create approximately 7,000 resort units, and build-out of the available industrial lands could produce 5,000,000 to 7,000,000 square-feet of building space.

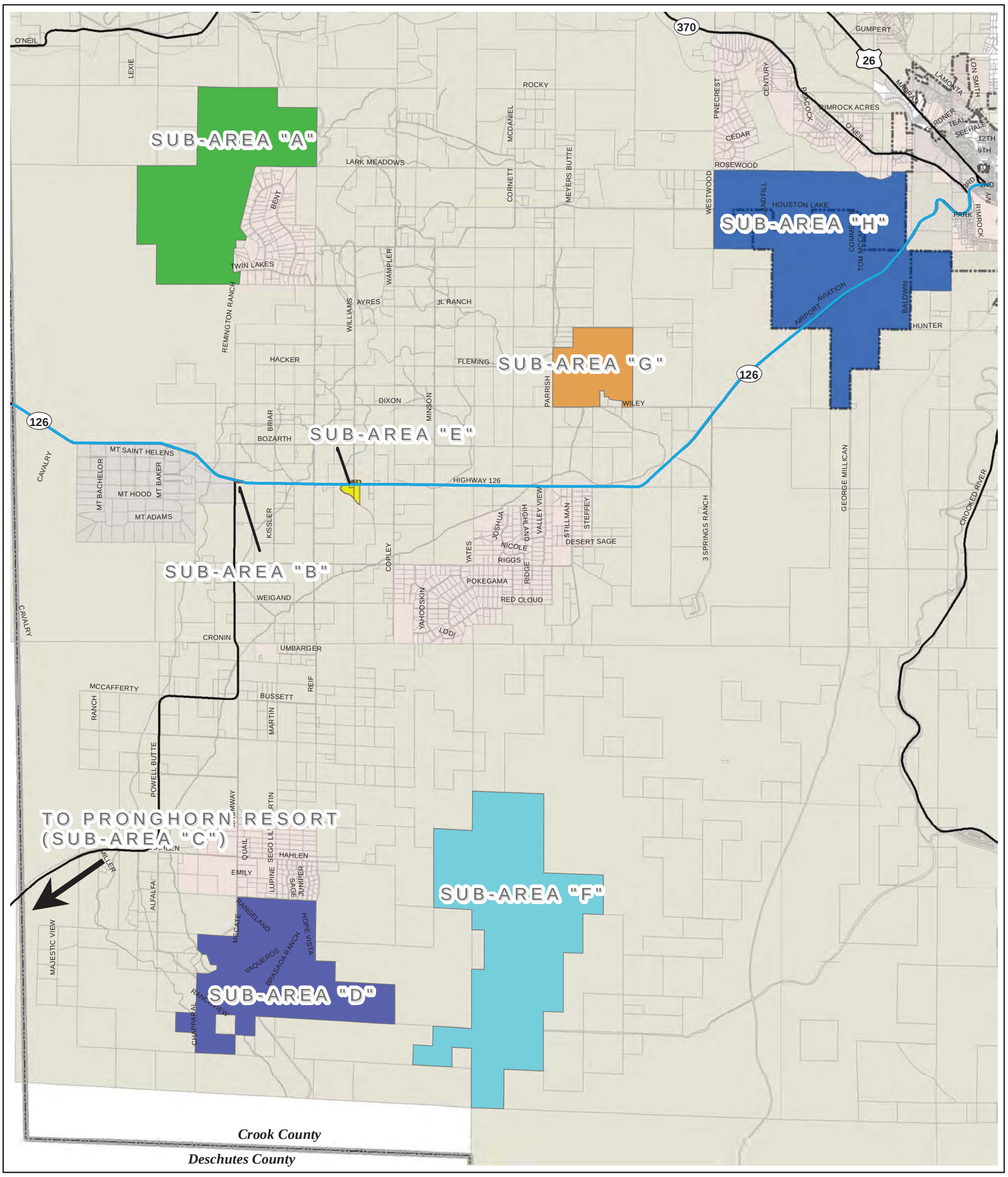
The areas with potential for development were further divided into sub-areas based on where development traffic is expected to access OR Highway 126. Figure 5-1 illustrates the various subareas that were considered in the traffic volume projections. Figure 5-2 illustrates sub-area “G”, which includes the industrial lands near the Prineville airport.

The characteristics of each subarea and prior land use approvals were reviewed to estimate likely ranges of development potential and routing of new trips. An analysis was then conducted identifying the corridor and intersection needs with a range forecasting methodology to understand the viability of various roadway treatments with varying levels of development.

Various growth scenarios were analyzed and the scenario applied in the forecasts includes development of 20 percent of the resort units and industrial lands in addition to an annual regional growth rate of 2.2 percent. This growth scenario is equivalent to a total of approximately eight-percent growth per year for 20 years, and was selected for the following reasons:

- Eight-percent annual growth considerably exceeds historical volume trends and forecast growth included in both the City and County Transportation System Plans and ODOT projections without constraining development over the 20-year planning horizon (References 2, 3).
- Eight-percent annual growth reasonably accounts for expected absorption levels within the City's industrial lands and for destination resorts.
- Growth beyond eight percent per year is constrained by the western OR Highway 126 connection to US 97 and the eastern connection to US 26 in downtown Prineville.
- Sustained annual growth of eight percent for 20-years is higher than experienced for a 20-year timeframe within the most recent 30-year period.

While this growth may or may not occur by 2030, accommodating this level of growth presents a reasonable but aggressive planning goal for the facility plan.



LEGEND

Sub-Areas

- A — Remington Ranch Resort
- B — W. Powell Butte Service Center
- D — Brasada Ranch
- E — E. Powell Butte Service Center
- F — Hidden Canyon Resort
- G — Crossing Trails Resort
- H — Airport/Industrial

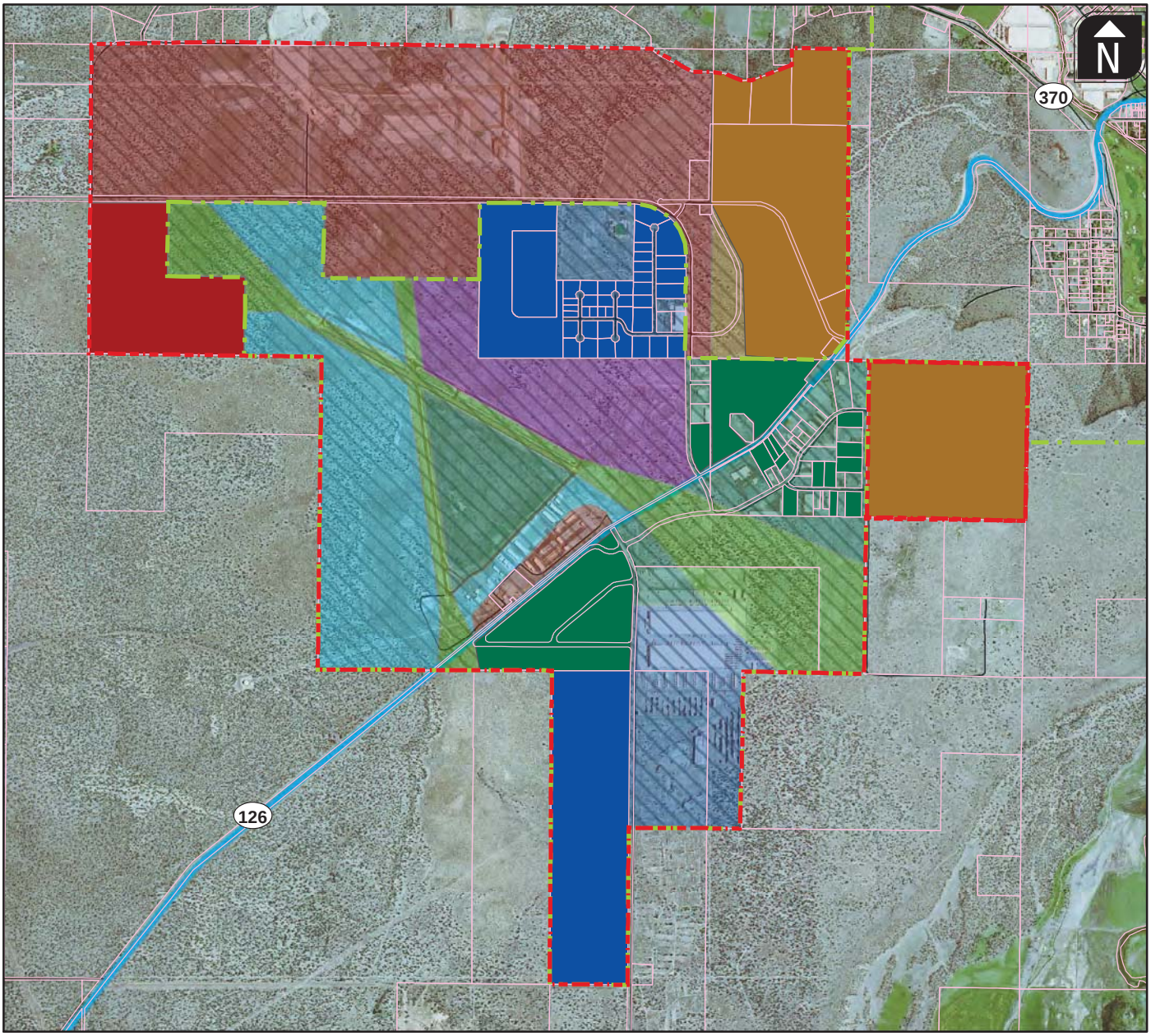
- Study Corridor
- City Boundary
- County Boundary
- Roads
- Parcels

SUB-AREA ANALYSIS ZONES
CROOK COUNTY, OREGON

FIGURE **5-1**

H:\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\gis\Fig5-1_Sub-Areas.mxd

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
WHPacific



LEGEND

- Sub-Area Boundary
- City/County Boundary
- Study Corridor

Vacant/Developable Lands

- Heavy Industrial
- Light Industrial
- Limited Industrial
- Industrial Park
- Airport Business-Industrial

Developed Land

- Airport Approach Overlay
- Airport Business-Industrial
- Airport Commercial
- Airport Development
- Heavy Industrial
- Industrial Park
- Light Industrial
- Limited Industrial

SUB-AREA "G"
CROOK COUNTY, OR

FIGURE
5-2

H:\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\gis\Fig5-2_Sub-AreaG.mxd

Traffic Operations

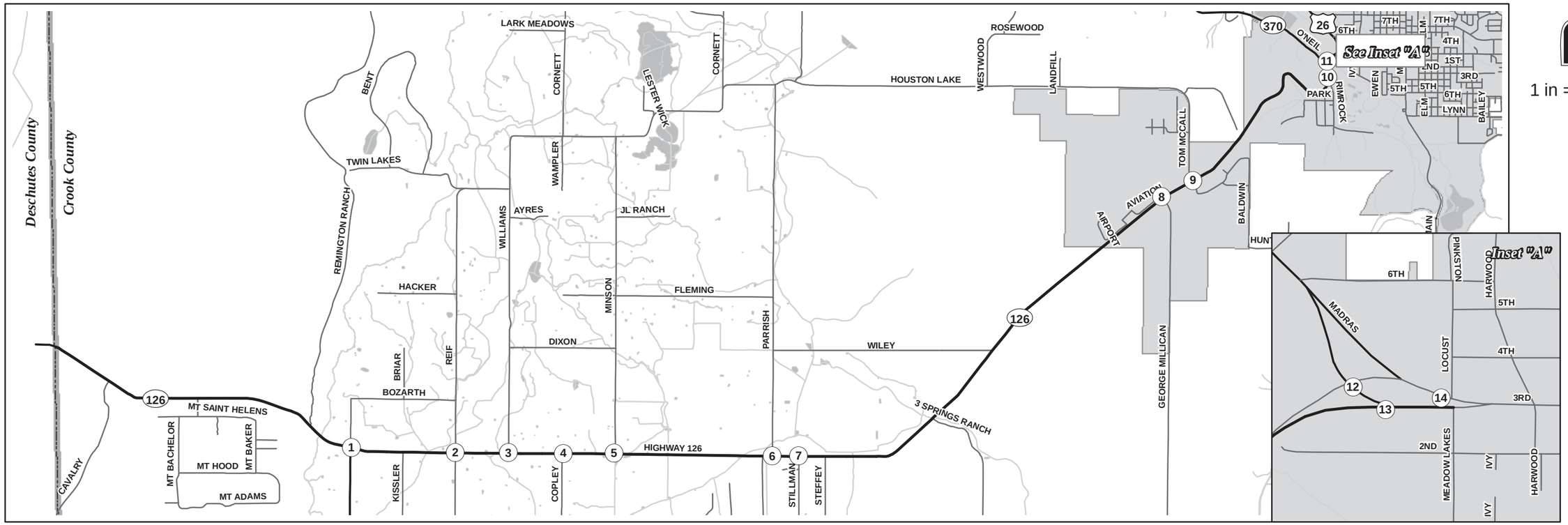
Based on forecast 2030 traffic volumes, stop-sign intersection control is not expected to provide adequate intersection capacity throughout the corridor. This analysis was used to identify the type and size of treatment that may be needed over time, recognizing that further refinement of the treatments would be provided as part of subsequent refinement efforts. Table 5-1 illustrates the various growth scenarios developed through the range forecasting methodology and resultant general facility sizing needs at intersections and segments within the selected growth scenario (as outlined in red). Figure 5-3 presents the year 2030 no-build traffic conditions.

Under an eight-percent annual growth rate scenario, the following needs were identified:

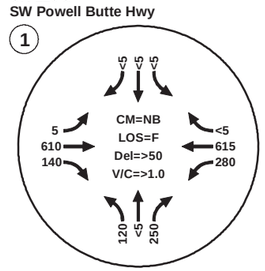
- All of the intersections along the corridor (with exception of Tom McCall Road) can likely remain at-grade with OR 126 and still meet mobility standards.
- The intersection with Tom McCall Road will likely require grade separation in the 15 to 20 year timeframe, provided the growth in traffic volumes occurs as forecasted. The desire to consolidate the closely-spaced Tom McCall Road and Millican Road approaches to form a single intersection will accelerate when grade-separation may be required (see project phasing summary in Table 8-3).
- Any intersection improvements in the corridor will generally involve additional turn lanes or auxiliary lanes within the intersection vicinity.
- The OR Highway 126 intersections at Tom McCall Road, Millican Road, O'Neil Highway, Prineville "Y", and the Powell Butte Highway will need capacity improvements before other locations.
- West of Tom McCall Road, OR Highway 126 can likely function acceptably while retaining its current two-lane section. East of Tom McCall Road, a four-lane section will be required. This need for widening is within the most topographically constrained portion of the corridor. Further the design of this widening will need to consider how to appropriately transition the highway into downtown Prineville.

Table 5-1 Summary of Roadway and Intersection Needs

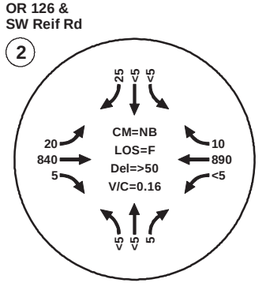
Note: Red outline highlights the selected growth scenario.



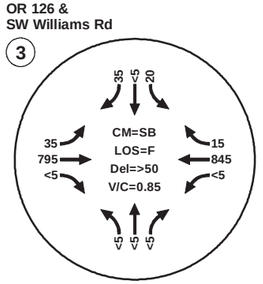
OR 126 & SW Powell Butte Hwy (1)



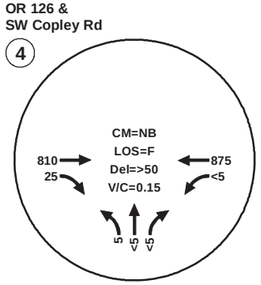
OR 126 & SW Reif Rd (2)



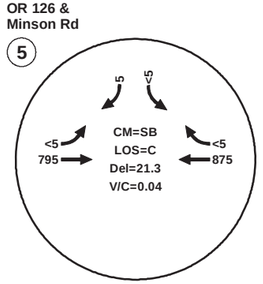
OR 126 & SW Williams Rd (3)



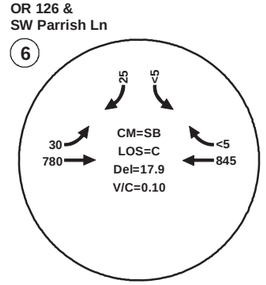
OR 126 & SW Copley Rd (4)



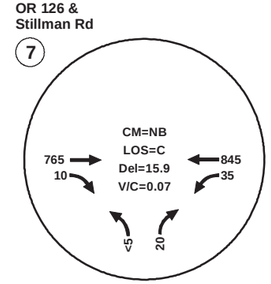
OR 126 & Minson Rd (5)



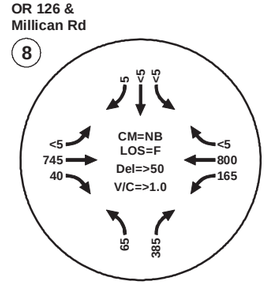
OR 126 & SW Parrish Ln (6)



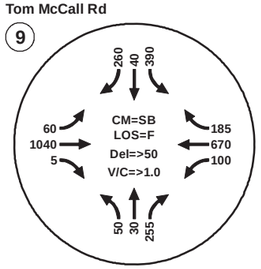
OR 126 & Stillman Rd (7)



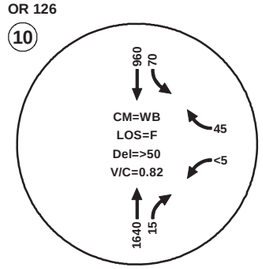
OR 126 & Millican Rd (8)



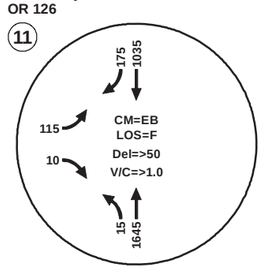
OR 126 & Tom McCall Rd (9)



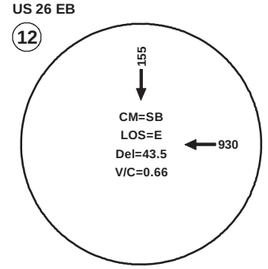
Rimrock Rd & OR 126 (10)



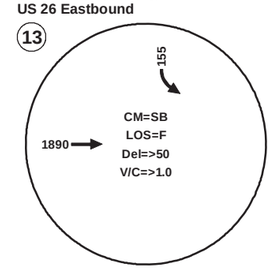
O'Neil Hwy & OR 126 (11)



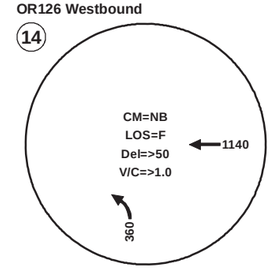
OR 126 WB & US 26 EB (12)



OR 126 Eastbound & US 26 Eastbound (13)



US 26 Westbound & OR126 Westbound (14)



LEGEND

CM = Critical Movement

LOS = Critical Movement Level of Service

Del = Critical Movement Control Delay

V/C = Critical Volume-to-Capacity Ratio

YEAR 2030 NO-BUILD TRAFFIC CONDITIONS, WEEKDAY DESIGN HOUR
CROOK COUNTY, OREGON

FIGURE **5-3**

H:\profile\11168 - OR 126 Powell Butte Corridor Evaluation\gis\Fig5-3_No-Build_updatedgraphic.mxd

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

Angelo planning group

Future Highway Safety

An assessment of future safety within the corridor was based on the Safety Performance Function for two-lane rural roads, as published by the American Association of State Highway Transportation Officials (AASHTO) in the *Highway Safety Manual* (HSM, Reference 4). Without future changes in enforcement, driver behaviors, or design crashes along the corridor are expected to generally increase in proportion to growth in traffic volumes (up to approximately eight percent annually).

Section 6 Concept Development and Analysis

6. CONCEPT DEVELOPMENT AND ANALYSIS

This section summarizes the development of future "build" concepts and the screening process that was used to identify the Preferred Corridor Alternative. Conceptual intersection and corridor segment sketches were first developed by the PPMT, PAC, and the public, as shown in Exhibit 7-1. The process of translating these sketches into design concepts, refining these to meet mobility and safety needs, and screening and comparing these options are further described within this section. Further details can be found in *Technical Memorandums #4 and #5 provided in the Technical Appendix*. Exhibit 6-1 illustrates the concept development and analysis process.

Initial Concept Development

The development of the initial intersection and corridor segment concepts began with three concept development workshops. The first two workshops were held for members of the PPMT and PAC committees, while the third workshop was held for interested citizens, business owners, and landowners in a public workshop setting. All three workshops were held on February 2, 2011 in the Prineville City Hall.

Within each workshop, participants were presented with an overview of the project goals and objectives, technical materials, existing and future traffic demand within the project study area, and identified operational and safety deficiencies. Participants were also provided a brief introduction to applicable intersection forms and basic design parameters to provide fundamental principles and guidance.

Participants were asked to sketch and describe their ideas for improving operations, safety, and circulation at the intersections along the OR Highway 126 study corridor. Feedback from these workshops included 140 concept sketches of various intersection treatments and 21 pages of "other" comments regarding conditions and needs along the corridor. An example of a sketch that was prepared from the workshops is illustrated in Exhibit 6-2.

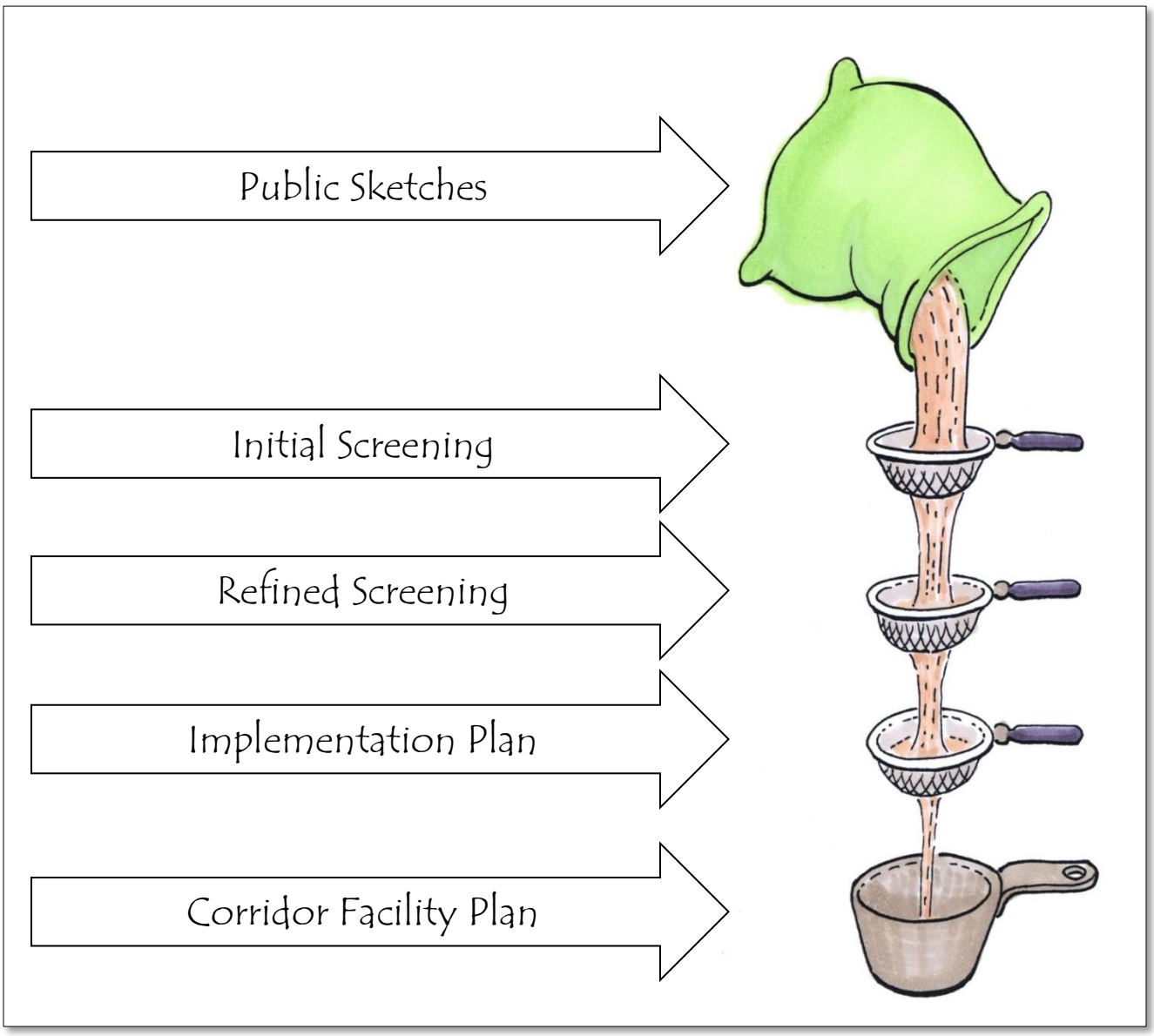


Exhibit 6-1 Concept development and analysis process.

After the completion of the PPMT, PAC, and public workshops, individual sketches were grouped by intersection and segment location. Each group was further sorted into similar intersection sketches (e.g., signalized alternatives, roundabout alternatives, interchanges, etc.) and corridor segment sketches. Based on this process, some refinements were made to the sketches to properly account for scaling, connectivity, and other technical details. This overall grouping process identified 32 unique intersection and corridor segment concepts. Exhibit 6-2 provides a graphical illustration of how one sketch was translated into a concept; additional details of this process are provided in Technical Memorandums #4 and #5 in the Technical Appendix.

Initial Qualitative Concept Screening

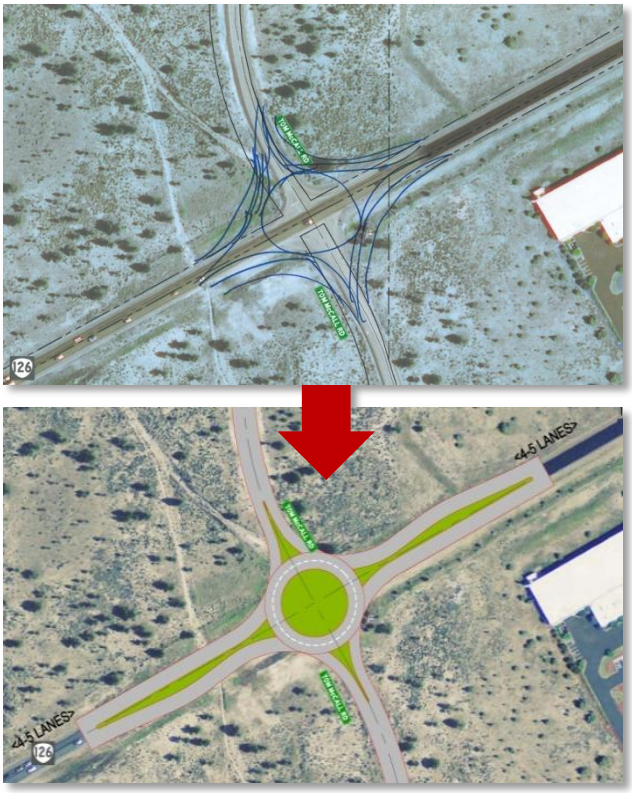


Exhibit 6-2 Concept development process.

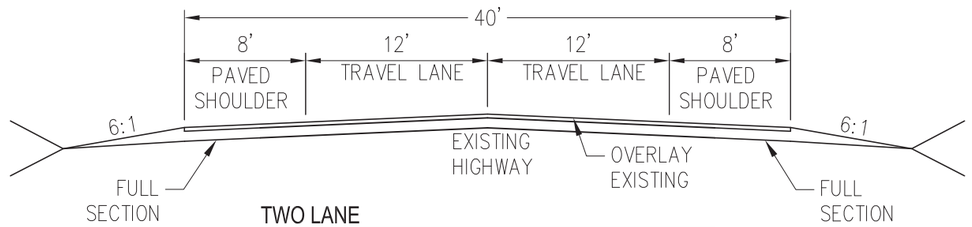
CORRIDOR CROSS-SECTION OPTIONS

The OR Highway 126 study corridor was divided into six segments based on the County Line and the primary public intersections including: Powell Butte Highway, Williams Road, Millican Road/Airport Road, Tom McCall Road, O'Neil Highway, and the Prineville "Y." The various cross-section options considered for the corridor are shown in Figure 6-1. Within each segment, the impacts of achieving the desired cross-sections were evaluated to determine whether widening should occur to the north, the south, or around the centerline.

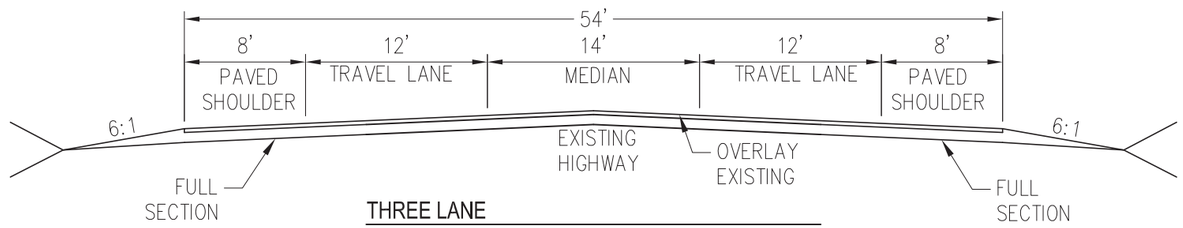
These variations were considered to understand the most effective means of widening the highway with respect to right-of-way, environmental impacts, cost, and impact to existing structures. During the final design process, any potential widening could shift north or south of the current centerline to limit the impact to specific structures or areas.

PURPOSE AND NEED SCREENING

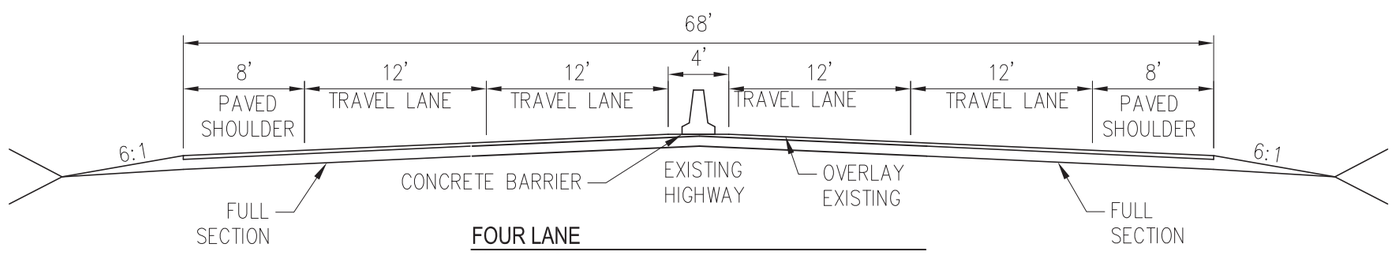
The first level of screening was an assessment of the concept's ability to meet the purpose and need of the project in improving intersection capacity and safety. Of the 32 concepts considered, this purpose and need screening identified only one concept that did not meet the long-term corridor plan intent. This concept provided a near-term improvement option at the Prineville "Y" but did not meet the long-term needs. However, this concept can be incorporated into a phasing plan (as detailed within Table 8-3).



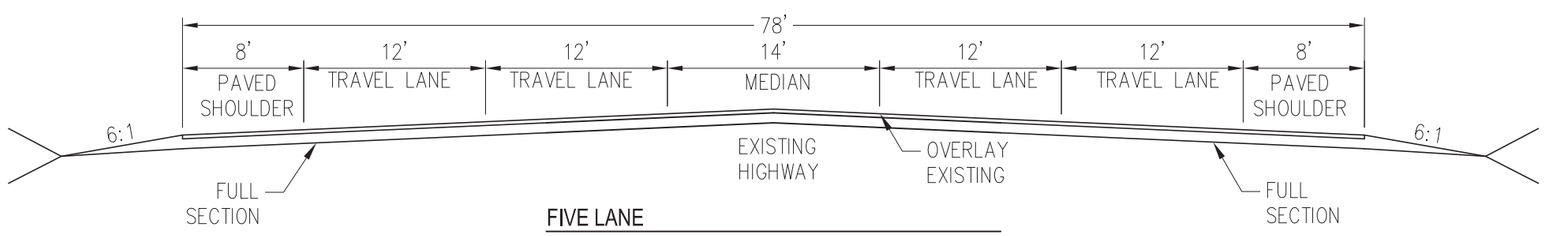
TWO LANE
SCALE: N.T.S.



THREE LANE
SCALE: N.T.S.



FOUR LANE
SCALE: N.T.S.



FIVE LANE
SCALE: N.T.S.

TYPICAL CROSS-SECTION OPTIONS
CROOK COUNTY, OREGON

FIGURE
6-1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

\\bndfs\wrk\profile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\figs\Fig6-2.dwg Sep 13, 2011 - 4:41pm - cbergh Layout Tab: TS1 CL2-CL3-CL4-CL5

QUALITATIVE SCREENING

The second level of screening was a qualitative assessment of the concept's ability to serve the highway mobility needs, to minimize impacts to the built and natural environment, and a comparison of costs. The purpose of this second level of screening was to advance concepts that provided more potential for selection as the "Preferred" concept in comparison to others.

The qualitative screening was conducted by assigning a red, green, or yellow circle to distinguish those concepts that performed relatively better, neutrally, or poorer than other concepts, respectively. These recommendations were summarized in workbooks (as shown in Exhibit 6-3) and then further reviewed and refined.

Exhibit 6-3 Illustration of PPMT and PAC Initial Screening Concept Workbooks

The qualitative screening resulted in 15 intersection concepts and 8 segment concepts remaining for further assessment and refined analysis. The primary reason for eliminating concepts considered but dismissed from further assessment is summarized in Table 6-1 and Table 6-2.

Table 6-1 Initial Intersection Concepts Dismissed

Intersection	Concept #	Description	Basis of Elimination
Powell Butte Highway	PB1	Single-Lane Roundabout	Inadequate capacity
	PB3	2-3 Lane Signal	Inadequate capacity
	PB5	Eastbound Acceleration Lane	Inadequate capacity
	PB6	Interchange	Excessive cost relative to capacity needs
Williams Road	W1	Single-Lane Roundabout	Inadequate capacity
	W2	Double-Lane Roundabout	Built environment impacts
	W4	4-5 Lane Signal	Built environment impacts
	W5	5- to 3-Lane Signal	Inadequate capacity
	W8	North Reroute, Unsignalized	Inadequate capacity
	W9	Northern Interchange	Excessive cost relative to capacity needs
Millican Road/ Airport Road	M1	Single-Lane Roundabout	Inadequate capacity
	M2	Double-Lane Roundabout	Excessive cost in consideration of proposed improvements to the Tom McCall Road intersection
	M3	2-3 Lane Signal	Inadequate capacity
	M4	4-5 Lane Signal	Excessive cost in consideration of proposed improvements to the Tom McCall Road intersection
Tom McCall Road	T1	Single-Lane Roundabout	Inadequate capacity
	T3	2-3 Lane Signal	Inadequate capacity
O'Neil Highway	O1	Double-Lane Roundabout	Excessive cost associated with limited roadway width and natural environment impacts
	O2	3-Lane Signal	Inadequate capacity and safety concerns on grade
Prineville "Y"	Y1	Single-Lane Roundabout	Inadequate capacity

Table 6-2 Initial Corridor Segment Concepts Dismissed

Corridor Segment	Option Description	Basis of Elimination
County Line to Powell Butte Highway	**Cross-section Options**	
	Three Lanes	Excessive cost given limited access in section
	Four Lanes (Divided)	Excessive cost without capacity need
	Five Lanes	Excessive cost without capacity or access need
	Alignment Options (None Dismissed)	
Powell Butte Highway to Williams Road	**Cross-section Options**	
	Three Lanes	Excessive cost given limited access in section
	Four Lanes (Divided)	Excessive cost without capacity need
	Five Lanes	Excessive cost without capacity or access need
	Alignment Options	
	Centerline	Higher cost due to construction traffic control
	South	Higher built environment impacts
Williams Road to Millican Road - Tom McCall Road	**Cross-section Options**	
	Two Lanes	Higher access needs within section
	Four Lanes (Divided)	Excessive cost without capacity need
	Five Lanes	Excessive cost without capacity need
	Alignment Options	
	Centerline	Higher cost due to construction traffic control
	North	Higher built environment impacts

Design Considerations

Over time, some of the unsignalized intersections will require changes in traffic control. The transition from uninterrupted through movements to new traffic control will require design considerations that account for a variety of highway users. These design considerations will need to address the safety implications and driver expectation approaching new intersections, and will also need to physically accommodate the wide range of

Exhibit 6-4 OR Highway 126 highway users.

highway vehicles, their acceleration and deceleration traits, and maintenance needs. Highway users include passenger cars, slow moving and/or over-dimensional farming equipment, bicyclists, and over-dimensional or heavy trucks from industrial, manufacturing, and surface mining uses.

GEOMETRIC INTERSECTION NEEDS

Within this plan, the identified short-, medium-, and long-term project concepts will need to be further refined and ultimately constructed to accommodate trucks while not reducing the vehicle-carrying capacity of the highway. Further evaluation of the preferred corridor concepts will be required at the time of implementation to ensure compliance with ORS 366.215. This will require special design considerations for over-dimensional vehicles where roundabouts are identified as the phased or ultimate treatment.

Examples of types of treatments that allow for over-dimensional vehicles to effectively navigate roundabouts are shown in Exhibit 6-5 and Exhibit 6-6. More information regarding the ability for roundabouts to accommodate oversize loads is provided at http://www.kittelson.com/toolbox/roundabouts/myths.

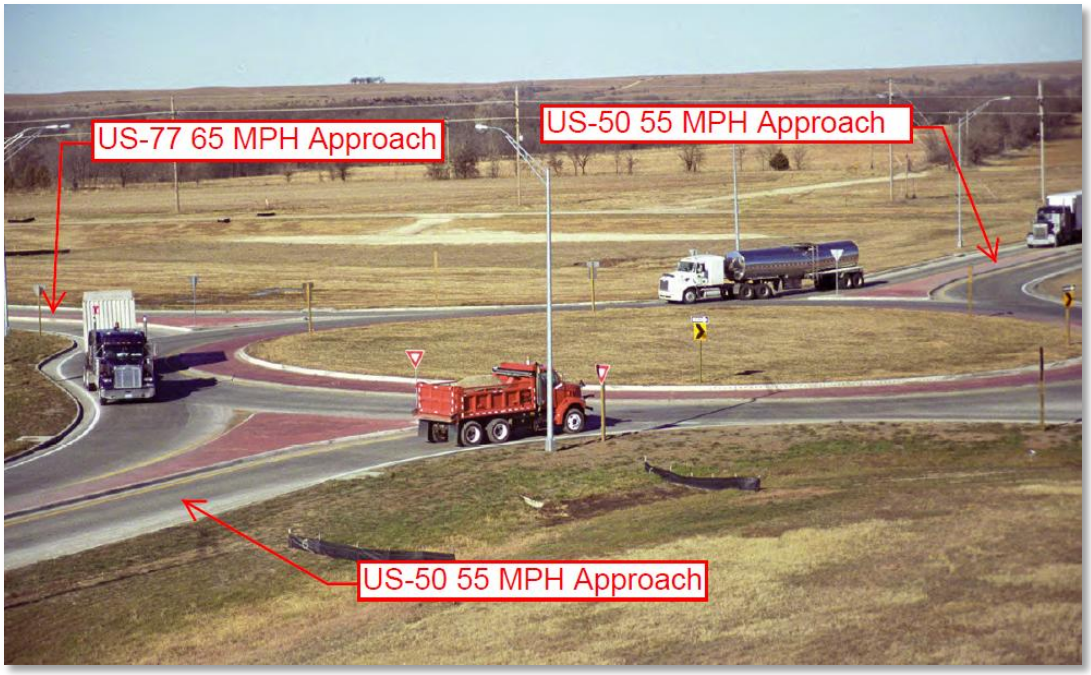


Exhibit 6-5 US 50/US 77 Roundabout in Florence, Kansas

As shown in Exhibit 6-5, roundabouts in Kansas have been designed to accommodate large trucks on rural, high-speed facilities that contain similar characteristics as OR Highway 126 through the

inclusion of mountable truck aprons for trailer tracking and larger circulatory diameter roundabout designs.

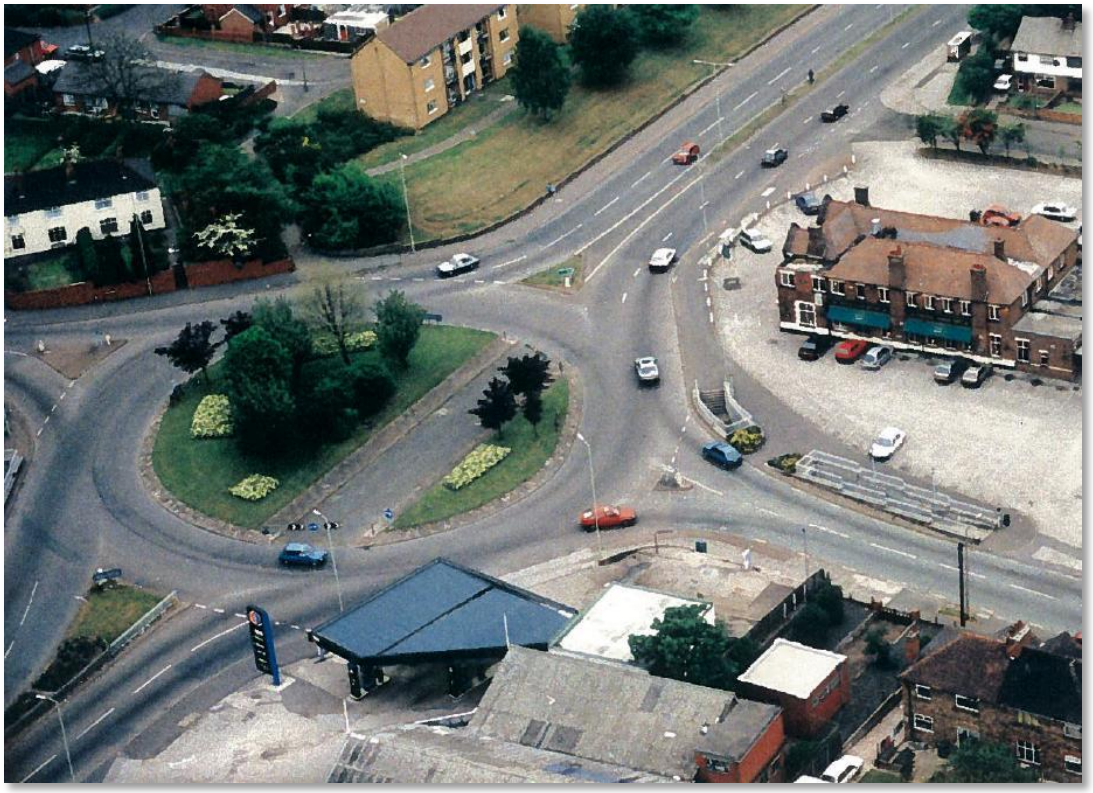


Exhibit 6-6 Example of a gated cut-through for heavy vehicles at a roundabout

As shown in Exhibit 6-6, roundabouts can be designed with a gated path straight through the central island to accommodate oversize and super-load freight while maintaining safe and efficient flow for typical road users.

INTERSECTION APPROACH SAFETY NEEDS

At future signals or roundabouts in the corridor, the design of the at-grade intersections will need to safely accommodate vehicles decelerating in preparation for the possibility of a stopped condition. This includes adequate advance cues to drivers of the changing roadside character (as discussed below) and the need to make a decision along a rural and otherwise uncontrolled highway facility.

At roundabouts or signals, a series of gradually increasing curves will be necessary in advance of the intersection to transition drivers from their free flow operating speed to a lower speed. This extent to which this occurs will depend on the selected intersection control treatment. Exhibit 6-7 illustrates

the entry approaches to a rural roundabout; similar treatments could be provided with signalization with consideration of maintaining clear sight lines to the approaching signal displays.

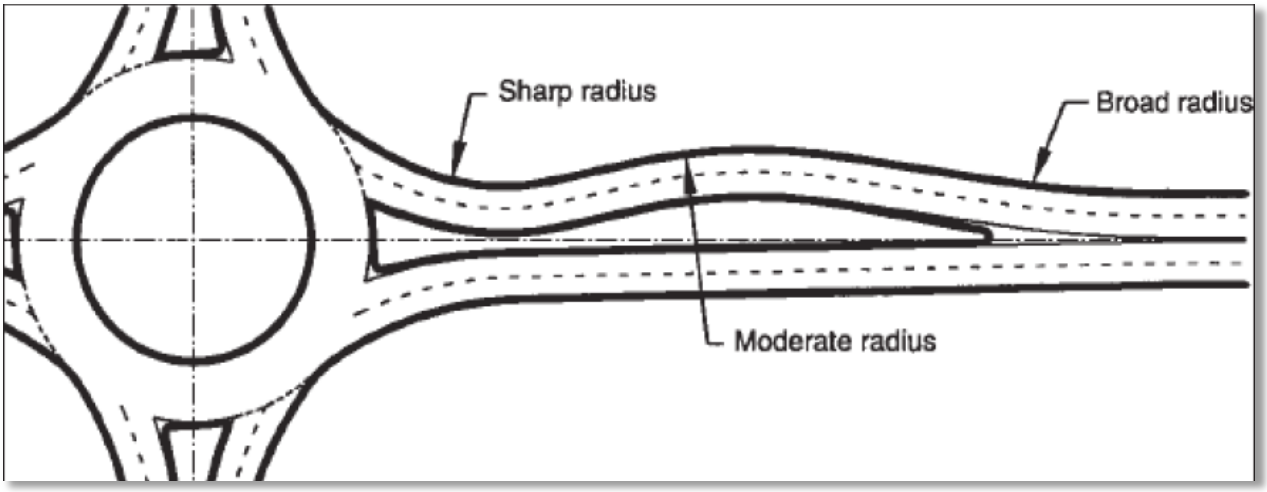


Exhibit 6-7 Typical rural roundabout approach treatments illustrating a gradually increasing degree of curvature to safely reduce approach speeds to traverse the roundabout.

Additional treatments, including advance signing (with or without supplemental beacons), dynamic message signs (including speed radar signs), overhead warnings, striping changes, rumble strips, or changes to roadside character (such as illumination, curbing, pavement coloring, etc.) need to be considered as elements of the design. While these treatments significantly add to the construction costs (as included within this plan), they form a vital component of the design and ensure that the treatment can improve overall safety and better meet driver expectation.

Refined Concept Development

Intersection concepts were refined to a greater level of detail to properly plan for any additional through or turning lanes needed at specific locations. These intersection concepts were developed to maintain mobility standards through the 20-year planning horizon, assuming traffic will grow at a rate of eight percent per year.

The refined concepts were analyzed using the following evaluation criteria:

- Mobility/Operations: Can the concept provide adequate capacity to accommodate future traffic growth?
- Safety Benefits: To what degree does the concept reduce the number and severity of crashes?
- Right-of-Way Impacts: How much additional right-of-way (ROW) will need to be purchased?

- Impacts to Natural Environment: What are the concept footprint impacts on the natural environment (wetlands, water sheds, etc.)?
- Impacts to the Built Environment: Will there be potential impacts to the built environment (existing businesses, historical buildings, etc.)?
- Construction and ROW Cost: How much will construction and ROW acquisition cost?
- Flexibility of Implementation: Can the preferred concepts be constructed in phases?

Review of these criteria and project goals resulted in identification of preferred intersection and corridor segment concepts that collectively make up the corridor facility plan, as summarized in Table 6-3 and Table 6-4. The key considerations and factors that led to selection of the preferred intersection and corridor segment concepts are discussed in the following sections.

PREFERRED INTERSECTION CONCEPT IDENTIFICATION

Preferred intersection concepts described in this section are illustrated in Appendix "B."

Powell Butte Highway

A multilane roundabout or a signal with 4 or 5 lanes on OR Highway 126 can provide adequate capacity through and beyond the horizon period. Given the available right-of-way and limited environmental constraints, the multilane roundabout concept is preferred because is it expected to provide greater safety benefits than a signalized intersection.

Williams Road

An offset "T" intersection concept was developed, as shown in Exhibit 6-8, and reviewed during the concept refinement stage. This intersection concept would retain the northern approach in its current location and realign the southern approach to the east. This treatment would provide space between the two offset "T" intersections to be used by southbound left-turn vehicles to make a left-turn in two separate stages. The first stage is to cross the westbound through lane and turn into the median. The second stage is to merge into a gap in eastbound through traffic. A short-term improvement of eastbound and westbound left-turn lanes at the existing Williams Road approaches can serve as a short-term improvement and phase into the offset "T" treatment. The eastern intersection would serve as a consolidated access point to the parcels and parking areas south of the highway.

Exhibit 6-8 Offset "T" Intersection Concept at Williams Road.

As compared to other options evaluated, the offset "T" intersection is forecast to serve horizon period capacity needs, cost less, and can be phased. Therefore, the offset "T" concept is identified as the preferred intersection concept at Williams Road.

Millican Road

Refined screening at the Millican Road intersection supports consolidation of turn movements at Millican Road with Tom McCall Road along with construction of frontage roads to maintain connectivity. Consolidation of the intersections reduces costs and can be completed without restricting access to businesses. Options to retain some level of limited access (such as right-in, right-out only) should be considered in conjunction with the construction of new roadway connections to Tom McCall Road.

Tom McCall Road

At Tom McCall Road, four concepts were refined and evaluated, including: (T2) multilane roundabout, (T4) 4-5 lane signal, (T5) interchange, and an offset "T". Land surrounding the intersection is largely undeveloped, with portions in agency ownership. Forecast operations for the intersection show that the at-grade signalized and roundabout concepts would operate with marginal reserve capacity in the

horizon period with the realignment of Millican Road. Further, an offset "T" intersection would not provide capacity in the horizon period.

Although the interchange cost is greater than that of at-grade improvements, this concept provides reserve capacity beyond the horizon year and is recommended as the preferred concept at the OR Highway 126/Tom McCall Road intersection. Given that the cost of an interchange is expected to exceed $10 million, the potential to phase improvements over time was evaluated. In the interim, a traffic signal could be installed to provide acceptable operations and minimize throw-away costs associated with the ultimate interchange configuration. Constructing a multilane roundabout at this location would result in excess cost that would not directly phase into the interchange concept, though its safety benefits and longevity could retain this treatment as a viable option. A phasing plan including a signalized intersection treatment would include:

1. Install eastbound and westbound left-turn lanes on the highway and a new southbound right-turn on Tom McCall Road. Extend the eastbound right-turn lane to better accommodate deceleration outside of the travel lane.
2. Signalize the intersection, providing adequate approach treatments to ensure driver awareness and expectation of the traffic control.
3. Construct frontage roads between Tom McCall Road and Millican Road. Restrict Millican Road to right-in, right-out access as alternative access at the signalized intersection is made available.
4. Widen the highway to a five-lane cross-section. This would extend into the Prineville downtown.
5. Grade-separate the intersection and provide a median between the eastbound and westbound travel lanes.

If safety-related funding were obtained the intersection could be phased with a multi-lane roundabout as an interim treatment. The roundabout would replace the need for the interim turn lanes and could be modified over time to add auxiliary lanes as needed. Frontage and access treatments at Millican Road would also be integrated with this concept, and may be more flexible given the ability to make u-turns. Illustrations showing the phasing concepts with the signalized option and the roundabout concept are included in Attachment "B".

O'Neil Highway

Improvement options are limited at the O'Neil Highway intersection due to the presence of rimrock, the Ochoco River, and limited bridge width. The concepts considered at this location included rerouting O'Neil Highway to connect to US 26 to the west or signalizing the existing O'Neil Highway/OR Highway 126 intersection. Further review of the potential signal revealed that this concept would require a merge maneuver over a short distance, which increases the potential for crashes. Therefore, a reroute of the O'Neil Highway to US 26 west of the City is identified as the preferred concept. The specific location of this new connection will be determined as part of the City's upcoming Transportation System Plan (TSP) update.

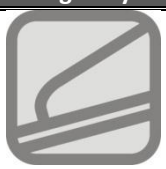
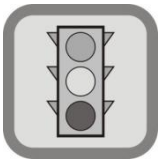
Prineville "Y"

The refined operational analysis found that the Prineville "Y" can operate acceptably with a multi-lane roundabout or a traffic signal through the next twenty years. Final determination of the appropriate treatment will be evaluated during the City's TSP update.

PREFERRED CORRIDOR SEGMENT CONCEPT IDENTIFICATION

The segment of highway between Tom McCall Road and the Prineville "Y" is the only section of OR Highway 126 that requires additional through lanes to accommodate 2030 forecast traffic volumes. The existing two-lane cross-section is sufficient on all other segments, although shoulder widening is recommended to facilitate vehicle recovery, emergency stops, and service vehicles.

Table 6-3 Preferred Intersection Concepts

Criteria	Powell Butte Highway	Williams Road	Tom McCall Road	O'Neil Highway	Prineville "Y"
Preferred (Long-Term) Intersection Concepts	**PB2: Multilane Roundabout**	**W10: Offset "T" Intersections**	**T5: Interchange**	 **O4: Reroute O'Neil Hwy**	**Y2: Multilane Roundabout or**  **Y3: 4-5 Lane Signal**
2030 Mobility/Operations • Volume/Capacity[1] • Growth accommodated beyond 2030[2]	0.60 60-70%	0.56 15%	0.59 >100%	N/A -	0.79 5-30%
Safety • Number of crashes expected relative to current stop control	68% to 76% Crash Reduction	47% Crash Reduction[3]	22% to 62% Crash Reduction	No Quantitative Data Available	41% to 47% Crash Reduction
Cost • Construction (millions) • Right-of-Way (millions) • Total Cost (millions)	$3.5 $0.30 $3.8	$1.8 $0.2 $2.0	$11.7[4] $0.8 $12.5	$7.5 to $10 $0.5 to 2.5 $8 to $12.5	$2.0 - $2.5 $0.1 $2.1 to $2.6
Impacts • Built Environment	Relocate US Post Office	Dry utilities, Potential impacts to the outside fueling positions in the northeast quadrant, potential canal	Existing utilities	Multiple, depending on alignment chosen	Local access modifications, transition to downtown
Flexibility of Implementation • Interim improvement options • Interim improvement accommodates 2030 forecast volume?	Single-lane Roundabout No[5]	Construct left-turn lanes on existing alignment Construct new eastern connection Yes	T2: Multilane Roundabout No	Implement Concept O3 4-5 Lane Unsignalized, or adopt a reroute alternative in the Prineville TSP Update Yes	Concept Y1: Single-Lane Roundabout No

[1] Roundabout and unsignalized intersection capacity reflects the critical approach; signal delay and capacity reflects all vehicles.
[2] Potential growth beyond 2030 is measured as percent of 2030 forecast volumes.
[3] Reliability of this crash reduction factor is low, although this is the best available information at this time.
[4] Includes $1.6 million for construction of a full reroute of traffic from Millican Road to Tom McCall Road, as shown in Concept M5.
[5] A single-lane roundabout at Powell Butte Highway can accommodate up to 90 percent of 2030 forecast volumes.

Table 6-4 Initial Preferred Segment Concepts

Criteria	County Line to Powell Butte Highway	Powell Butte Highway to Williams Road	Williams Road to Tom McCall Road	Tom McCall Road to O'Neil Highway	O'Neil Highway to Prineville "Y"
Initial Recommended Segment Concepts	**Two Lanes Centerline Alignment**	**Two Lanes Centerline Alignment**	**Two Lanes Centerline Alignment**	**Four Lanes North Alignment**	**Four Lanes Centerline Alignment**
2030 Mobility					
• Two-Lane Highway Capacity, Eastbound	0.50	0.58	0.59	0.56	0.63
• Two-Lane Highway Capacity, Westbound	0.49	0.60	0.59	0.34	0.40
Cost					
• Construction (millions)	$1.3	$1.5	$4.9	$7.1	Included in Intersection Costs
• Right-of-Way (millions)	-	-	$0.1	$0.2	
• Total (millions)	$1.3	$1.5	$5.0	$7.4	
Impacts					
• Natural Environment	-	1 wetland impacted	2 irrigation ponds	Cut into rimrock to widen lanes	Included in Intersection Summary
• Built Environment	-	-	-	-	-

Land Use Strategies in Concept Development

In parallel with the development of the future "build" concepts, local policies and land use and development regulations were explored as means to support the transportation objectives of the Facility Plan. A number of land use strategies, as presented in *Technical Memorandum #4B provided in the Technical Appendix,* were discussed and evaluated in PAC and PPMT meetings, and by participants at the public workshops and open house. In addition to the screening process that was used to identify the transportation elements of the Preferred Corridor Alternative, members of the public also provided feedback regarding various land use approaches via "evaluation preferences." Subsequent PPMT and PAC discussion on the subject resulted in a recommendation to further pursue three land use strategies in the corridor: 1) mixed uses in employment areas, 2) employment retention, and 3) planning for alternative modes and connectivity. *Technical Memorandum #5B provided in the Technical Appendix* includes an overview of the land use approaches and a summary of this screening process.

In order to implement the three land use strategies, recommendations for modifications to local policies and land use and development regulations were vetted and refined with City and County staff assistance. *Technical Memorandum #5B, provided in the Technical Appendix,* includes the initial recommendations that were ultimately refined and developed into draft policy in support of the recommendations of the Facility Plan and City of Prineville code language. Proposed policy language is found under the heading "Policy Framework" in Section 8, Facility Plan. Proposed amendments to the City of Prineville's *Subdivision, Partitioning and Land Development Ordinance* are found in *Technical Memorandum #7, provided in the Technical Appendix.*

Section 7 Economic, Social, Environmental and Energy Analysis

7. Economic, Social, Environmental and Energy Analysis

An Economic, Social, Environmental and Energy (ESEE) analysis was conducted to evaluate impacts associated with the preferred intersection and corridor segment concepts described in Section 6. The evaluation focused on potential impacts to properties outside of the existing OR Highway 126 right-of-way as discussed in the following sections and summarized in Table 7-1.

ESEE Intent

The intent of the ESEE analysis is to identify possible benefits and potential conflicting uses resulting from the preferred facility plan elements. The identification of these secondary impacts and associated mitigating strategies enable projects of importance to proceed with a more informed understanding of issues and needs that can be incorporated into future project scoping.

Economic Impacts

For the purposes of this analysis, the economic impacts of the specified improvements in the facility plan consider the consequences during construction, construction costs, and post construction. Negative impacts during construction include potential inconveniences due to construction delays and access impacts on residences and businesses, and post-construction impacts could include changes that affect land use viability.

Although the greatest potential for economic impact is within the Powell Butte Community where two businesses, a school, a church, and general community events occur, retention of the highway along its current alignment with improved accessibility and safety would be beneficial to the community despite delays during construction.

The highway improvements could provide economic development benefits with improved service to Prineville's industrial lands. The costs associated with the short-, medium-, and long-term improvements at the Tom McCall intersection are higher than costs at other intersections, but the potential for economic stimulus to the area are more significant. With the success of attracting Facebook to the region, this area west of Prineville has become the focus for other potential large scale facilities. Job creation and a reduction in unemployment will have a positive economic impact on the region.

Table 7-1 Expected ESEE Impacts of OR Highway 126 Corridor Facility Plan Projects

Location	Project Description	Primary Project Purpose	Implementation Phase	ESEE Benefits	ESEE Impacts	Summary	Conclusion
Highway Corridor	Shoulder Widening	Safety	Short	Social	-	These short-term projects will improve safety conditions by reducing run-off-road and median cross-over crashes, as well as accommodating emergency parking outside of the travel lanes, accommodating non-motorized travel, delivery services, and farm equipment movements.	Immediate positive results
Powell Butte Highway	Single-lane roundabout	Safety	Medium	Social	Economic, Environmental	The single-lane roundabout will require development of lands not currently being used for highway purposes, thereby causing environmental impacts to vegetation. Economic impacts include potential right-of-way acquisition. Social impacts are positive with safety concerns being improved, but these are potentially balanced with social impacts with regards to the Powell Butte Post Office. A recent list of post offices that might close did not include this site. Any improvements to the intersection would require a relocation of the existing facilities.	Medium-term positive results. Mitigatable terms*
Powell Butte Highway	Multilane roundabout	Safety and Capacity	Long	Social	Economic, Environmental	The multilane roundabout will similarly effect the adjacent lands currently not used as part of the highway corridor. As mentioned above, the social safety measures are a positive result. The multilane roundabout will require acquisition of additional lands. Social impacts with regards to the Powell Butte Post Office are difficult to measure. A recent list of post offices that might close did not include this site. Any improvements to the intersection would require a relocation of the existing facilities.	Long-term positive results. Mitigatable terms
Williams Road	Left-turn lanes on OR 126	Safety	Short	Social, Economic	Environmental	Left turn lanes added to the Williams Road intersection improve safety and can enhance economic stability for local businesses with minimal impacts on the environment.	Immediate positive results. Mitigatable terms
Williams Road	Offset "T" Intersections	Capacity	Medium	Social, Economic	Environmental	The offset "T" intersections will improve safety and can enhance economic stability for local businesses and institutions with minimal impacts on the environment.	Medium-term positive results. Mitigatable terms
Airport Road/Millican Road	Closure/Consolidation with Tom McCall Road	Safety	Short	Social	Economic	With the rerouting of access to Tom McCall Road the impacts to the Airport Road/Millican Road intersection are positive in nature. Social, including safety concerns, are addressed. Economic impacts to the airport, resulting from new accessibility, are unchanged.	Immediate positive results.
Tom McCall Road	Left-turn lanes on OR 126, Signal	Safety	Short	Social, Economic		Left turn lanes at the Tom McCall intersection are the first step in a series of improvements. Social and economic impacts are positive because of the improvements to accessibility, safety, and resulting economic opportunities within the Industrial lands.	Immediate positive results. Mitigatable terms
Tom McCall Road	Frontage Roads, Widen to 5-Lane Section	Capacity	Medium	Social, Economic	Environmental, Energy	Medium range phase improvements expand the ESEE impacts to include environmental and energy. The environmental component exists as a result of incorporating lands not currently being used for transportation. Energy impacts are associated with elimination and introduction of vegetation along the new routes.	Medium-term positive results. Mitigatable terms
Tom McCall Road	Interchange	Safety and Capacity	Long	Social, Economic, Energy	Environmental, Energy	Moving from the medium-term improvements to long-term proposal does not cause more ESEE impacts but improves mitigation opportunities. A significant benefit will be the opportunity to attract future businesses to the area without intersection capacity constraints. Positive business opportunities for potential energy source providers are enhanced with access improvements.	Long-term positive results. Mitigatable terms
Tom McCall Road to O'Neil Highway	Widen highway to four-lanes	Capacity	Medium	-	Environmental	Widening this section of highway will require cutting into the existing slope section on the north side of the highway. Minimal vegetation will be removed. Revegetation to disturbed areas will be required.	Medium-term positive results. Mitigatable terms
O'Neil Highway	Restripe bridge and channelize eastbound through lane	Safety and Capacity	Short	-	Environmental	Using proper application, restriping the bridge section will not affect the bridge and waters below therefore the environmental impacts are mitigated. Social benefits from the improved safety and accessibility.	Immediate positive results.
O'Neil Highway	Reroute to US 26	Safety and Capacity	Long	Social	Economic	Economic impacts are a result of redirecting traffic out of direction across previously undisturbed lands. This project however has been reassigned to the Prineville TSP.	By Others
Prineville "Y"	Multilane roundabout or signal	Safety and Capacity	Long	Social	Economic	Long-term impacts from the proposed improvements may reduce access to adjacent businesses. The resulting economic and social effects can be mitigated with proper connections to the improved section.	Long-term positive results. Mitigatable terms

* Mitigatable Terms – denotes options for mitigation of negative impacts including financial, recovery, improvements to existing conditions, and positive short-, medium-, long-term benefits.

Preliminary cost estimates associated with implementation of the preferred intersection and corridor segment improvements are provided in Table 8-3.

Social Impacts

Social Impacts of the ESEE analysis include safety, planned growth, open space, views, educational opportunities, and appearance/appeal. The social consequences associated with the OR Highway 126 Corridor Facility Plan are mixed. By allowing improvements primarily within highway right-of-way planned growth, open space, and views will not dramatically change. The length of the corridor is an open area, with magnificent views of the Cascade Range to the west, and views of lower elevation mountains to the east.

Improved safety is one of the primary purposes of the plan. Short– and medium-term highway/shoulder widening, and the addition of turn lanes as well as many of the long-term improvements are safety focused.

Slight reductions to open space will be the result of the intersection and highway improvements that occur outside the existing right-of-way. The appearance of the improvements will add appeal to the corridor although the formal nature of the improvements could be construed as modernization to a rural setting.

Limited impacts to the Powell Butte school and educational opportunities in the region are expected as the facility plan continues to provide access to the school, albeit through an improved connection.

Environmental Impacts

Critical elements of the environmental component of the ESEE analysis include vegetation, sediment trapping, nutrient attenuation, water quality, wildlife, stormwater management, and the visual/aesthetic qualities associated with the Cascade Range to the west and lower elevation mountains to the east. Maintenance and reduction of native vegetation will be a part of the consequences associated with the improvements identified in the facility plan. Where the impacts remain within the right-of-way, the improvements are assumed as acceptable and without environmental consequence. As noted above, the majority of the plan impacts will remain within the existing OR 126 right-of way. Where the improvements occur outside of the rights-of-way, especially where new temporary or permanent roadways are required, vegetation removal will take place. It is expected that revegetation of disturbed areas will occur as part of the construction process.

Review of County records, information, and discussion with staff did not uncover any archaeological or historical resources, endangered species, or note differentiation between any hazardous material impacts within the study corridor, so further review of these resources and impacts were dismissed as part of this ESEE evaluation as a non-distinguishing feature between alternatives[3]. Noise impacts were generally expected to be a non-differentiating factor between alternatives as all the options seek to retain mobility goals for the corridor, and the increased volume of traffic is largely a function of expected growth from beyond the corridor periphery.

Wetlands impacts along the Powell Butte to Williams Road segment could occur within the seasonally active irrigation ditches. These ditches may require realignment and reconstruction farther from the highway but will not be compromised. Where the roadway widening occurs the irrigation ditches could be separated from the roadside ditch, largely reducing or effectively eliminating the road surface runoff from entering the irrigation facilities.

Water quality is an important component of maintenance and construction. Where the corridor crosses the Crooked River entering the City's downtown core and at other critical areas, appropriate precautions will be required to prevent runoff impacts. Stormwater flows must be diverted away from the river waters, an important element in water quality. The proposed typical road section identifies a ditch section adjacent to the road, thereby creating infiltration and conveyance opportunities for stormwater away from adjacent parcels.

County records do not indicate any significant wildlife habitat areas or corridors along this length of OR Highway 126 in the corridor study area. No formal existing bird nesting areas of significance have been recorded within the project limits, though it was noted that the potential for nesting is present. No mineral sites were noted or anticipated to be impacted. While there are impacts to the farming lands along the corridor, none of the agricultural lands are qualified high value crop lands nor are the soils present considered to be prime and unique[4]. Within the study segment the Crooked River is the only surface water, though projects considered within the Corridor Plan would be required to

[3] For ESEE purposes County records and information was obtained and reviewed. This assessment did not include consultation with Oregon Department of Fish and Wildlife or Oregon Natural Heritage Information Center. Discussions with these agencies and formal assessments would be required as part of the design process.

[4] Further assessment of Exclusive Farm Use impacts are presented within the *Goal 3: Agricultural Lands* section of Technical Memorandum #7.

mitigate impacts and would not differentiate alternatives. There are intermittent surface waters within the irrigation ditches and canals, these would largely be improved (separated from runoff as described above) as part any of the roadway improvement options.

Energy Impacts

Energy impacts relevant to this analysis include consequences related to removal of or additions to vegetation, including shade trees and vegetation windbreaks, reduction to solar access, and fuel usage and efficiency. Statewide Goal 13 addresses energy conservation.

The vegetation along the corridor is not significant. The rerouted areas are not densely vegetated and therefore shade and windbreaks, or solar impacts provided by existing vegetation or removal of vegetation as part of the widening or reroutes will not result in a significant impact. In some areas of improvements, such as roundabouts and interchanges, additional shading vegetation may be introduced.

The preferred roadway alignments, signals, roundabouts, and interchanges, in some cases diverting traffic away from the main and existing straight corridor, will improve traffic flow which in turn will improve fuel efficiency.

Solar access is not anticipated to be affected. There is the potential in the industrial areas of Prineville that alternative energy uses may be included in future land uses. Solar arrays are being used to augment power supplies at the Facebook site. Manufacturing of alternative energy components have been discussed and are being evaluated as potential uses of the lands in this area. The alternatives within the analysis area do not reduce the supply of industrial and commercial lands available for said development and resources. Access to the parcels in the industrial areas will be improved and could be more of an attractant to the region for potential alternative energy producers/developers.

Section 8 Facility Plan

8. FACILITY PLAN

This section presents the 20-year facility plan for OR Highway 126 between the US Highway 26 Junction in Prineville (Prineville "Y") and the Crook County-Deschutes County line. The following elements are addressed:

- Policy framework
- Transportation improvement plan (highway segment cross-section and intersection projects)
- Access management considerations
- Right-of-way needs
- Phasing plan
- Project Descriptions

Exhibit 8-1 OR Highway 126 facing west from Millican Rd.

Background

The OR Highway 126 Corridor Facility Plan includes a Transportation Improvement Plan and phasing plan for short-, mid-, and long-term implementation. As described in Section 6, the long-term improvement plan can accommodate an aggressive eight-percent growth scenario through the 2030 planning horizon.

The Facility Plan also includes access management strategies to consider as adjacent properties redevelop or when the transportation improvement plan is implemented. The Access Management section also identifies future public roadway closures previously approved by the County, and goals and policies that will guide evaluation of existing access.

The Facility Plan was developed consistent with the project goals and objectives (see Introduction chapter). The outcome of the planning process is an updated policy framework for the implementation of the identified transportation improvement plan and for future land use decisions that impact the corridor.

Through adoption by the City of Prineville, Crook County, and ODOT, the facility plan will:

- Preserve the functional integrity of the study corridor over time and ensure viable access to existing and future land uses;
- Establish funding goals for highway capacity and safety improvement projects at intersections and along corridor segments; and,
- Identify right-of-way dedications for future capacity improvements.

Policy Framework

The Prineville Airport and industrial areas in the vicinity of OR Highway 126 are vital to the economic vitality of the region and have been identified by local decision makers in Crook County and the City of Prineville as top priorities for focusing infrastructure planning and economic expansion incentives. Businesses in this area rely on OR Highway 126 for safe and easy access for their employees and the efficient goods to and from their sites. Successfully growing and marketing this industrial area hinges on the future capacity and operational efficiency of OR Highway 126 as its primary transportation route. Consistent with these employment needs, the planned transportation improvements in the Facility Plan improve both the safety and the function of OR Highway 126. Specifically, the short- and medium-term improvements, which include left turning lanes on OR Highway 126 and the rerouting of Airport Road/Millican Road to Tom McCall Road, will have the immediate effect of improving safety.

Capacity on OR Highway 126 has been recently identified in Central Oregon Regional Large-Lot Economic Opportunities Analysis as a challenge or disadvantage to site suitability for large-lot industrial in Prineville (Reference 5). Capacity improvements, which will be warranted in the future based on traffic volume thresholds, ultimately will provide relief to expected future traffic congestion and will help ensure that access to this employment area is safe and efficient. In particular, improvements on OR 126 will improve access to the growing data center and the warehousing and distribution activities in the area. Improvements included in the Facility Plan will support the findings of the Regional EOA, which recommends Prineville as a location for one of three regional employment sites that will need to be accommodated outside of the current urban growth boundary (UGB).

The planned improvements to OR Highway 126 will also be a key consideration in the City's work that will need to follow the Regional EOA: creating and analyzing an inventory of potential suitable sites in the area. Consistent with the Statewide Planning Goal 9, Economic Development, the Regional

EOA outlined the particular site needs and characteristics associated with potential targeted industries in the region. The next steps, as outlined in Goal 14, Urbanization, and ORS 197.298, will be an alternatives analysis of land that is consistent with Goal 14 "factors" (including considering exception/non-resource lands first) and compares potential sites against a consistent set of suitability factors. In addition to the regional need, the City identified a potential local employment lands deficit in the 2007 Comprehensive Plan. The City will need to take undertake a similar Goal 14 alternatives analysis process to justify a UGB expansion to satisfy local employment needs.

The following goal and objectives related to OR Highway 126 are intended to be applicable to decision making within both the City of Prineville and Crook County:

Goal:

- Recognize the vital role of OR Highway 126 to facilitate future economic development and serve expected population growth in Crook County and Prineville by working with ODOT to improve corridor congestion and improve safety, consistent with the OR Highway 126 Corridor Facility Plan.

Objectives:

- Work with ODOT and the [City/County] to develop an interagency funding strategy for needed improvements on OR 126, one that outlines improvement prioritization, the affected area, agency roles and responsibilities, and necessary condition of approval revisions to previously approved land uses.
- Work with ODOT and the [City/County] to develop an interagency monitoring program that includes periodic safety and operational reviews to determine the need and timing of improvements on OR 126.
- Review long-term right-of-way and access management needs identified in the OR 126 Facility Plan prior to adopting local plan amendments or approving local land use actions.
- Support implementation of the recommended transportation improvements for OR Highway 126 to help ensure the economic vitality of the area and support employment growth in western Prineville and Crook County, in the vicinity of the airport.

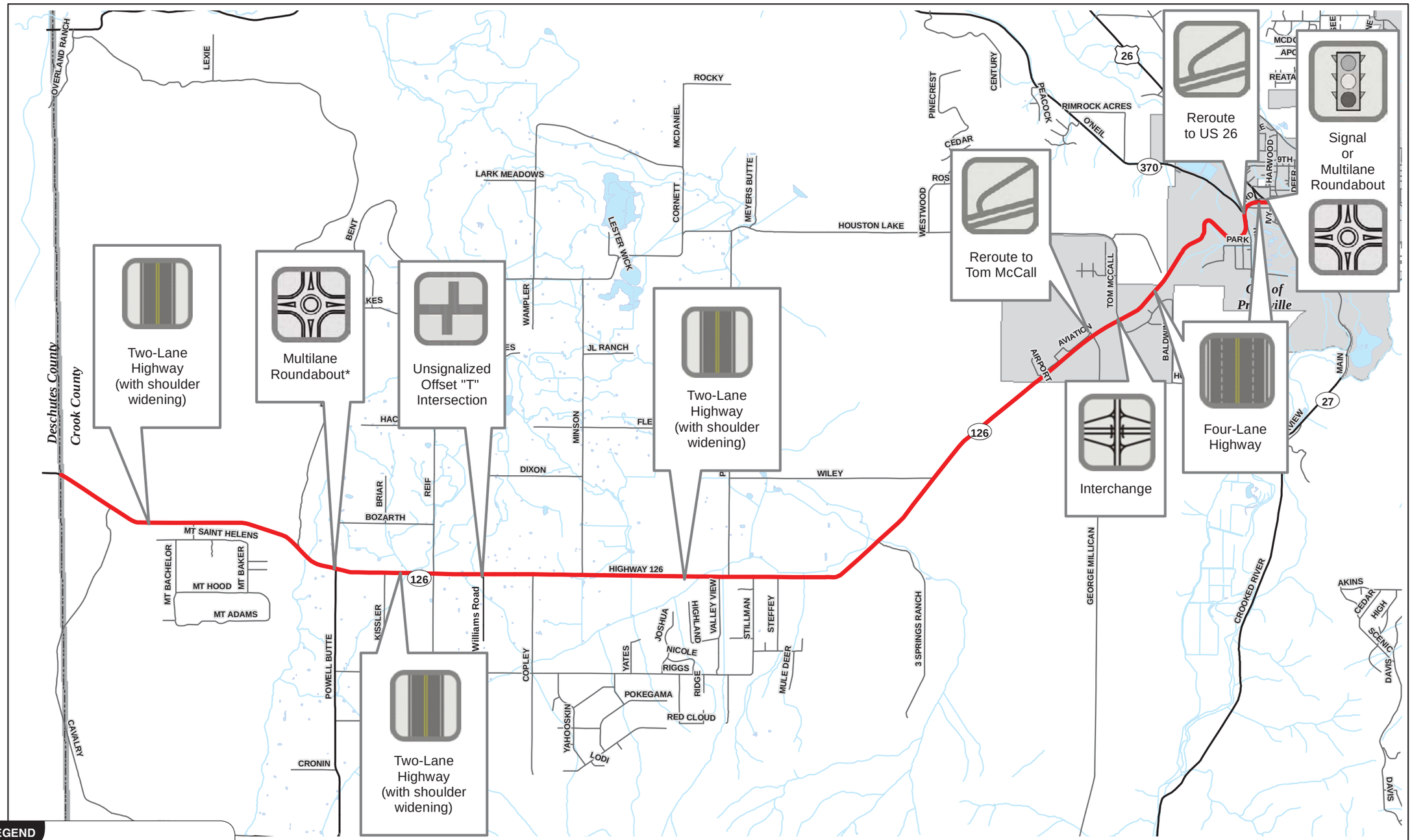
Transportation Improvement Plan Overview

The Facility Plan includes a comprehensive transportation improvement plan that can be used to establish a long-term vision for the corridor, address anticipated congestion, improve safety, support economic development and population growth. The plan was developed based on the alternative screening and evaluations outlined in Section 6. Figure 8-1 illustrates an overview of the Preferred Corridor Plan including proposed intersection configurations and corridor widening. Figure 8-2 through Figure 8-7 illustrates the long-term corridor improvements at each intersection and along each corridor segment. Each transportation improvement identified in Figure 8-1 is described in Table 8-1. C*onceptual drawings illustrating lane configurations and traffic control of each intersection improvement is included in Appendix B.*

Table 8-1 OR Highway 126 Facility Long-Term Transportation Improvements

App "B" Reference	Location	Project Description
-	County Line to Powell Butte Highway	Widen highway shoulders along two-lane section
PB1[1]	Powell Butte Highway	Multilane roundabout
-	Powell Butte Highway to Williams Road	Widen highway shoulders along two-lane section
W1	Williams Road	Two offset "T" intersections
-	Williams Road to Tom McCall Road	Widen highway shoulders along two-lane section
M1	Airport Road/ Millican Road	Reroute to Tom McCall Road
T1	Tom McCall Road	Interchange
-	Tom McCall Road to Prineville "Y"	Widen highway to four-lanes
01[2]	O'Neil Highway	Reroute to US 26
Y1[3]	Prineville "Y"	Signal or multilane roundabout

[1] A roundabout is the preferred option at the OR Highway 126/Powell Butte Hwy intersection. Pending ODOT policy regarding roundabouts along state highways, signalization could be an alternative intersection treatment option.
[2] Ultimate route will be defined as part of the City of Prineville TSP process.
[3] Ultimate intersection control will be defined as part of City of Prineville's TSP process.



LEGEND

Study Corridor

** A roundabout is the preferred alternative at this location; however, ODOT policy on roundabouts will need to change to allow this traffic control treatment. if this policy does not change to allow roundabouts on state highways, traffic signals will be installed in lieu of a roundabout.*

0 0.5 1 2 Miles

Oregon Department of Transportation

TRANSPORTATION FACILITY IMPROVEMENT PLAN
CROOK COUNTY, OREGON

FIGURE 8-1

H:\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\gis

KITTELSON & ASSOCIATES, INC. TRANSPORTATION ENGINEERING / PLANNING
WHPacific
Angelo planning group

OR HIGHWAY 126 CORRIDOR FACILITY PLAN
WEST CROOK COUNTY LINE TO WEST OF POWELL BUTTE HIGHWAY
CROOK COUNTY, OREGON

FIGURE **8-2**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

WHPacific

\\bndfs\wrk\profile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\Final\Concepts\Civil\037213-TRANS-CORRIDOR.dwg Sep 14, 2011 - 8:59am - openbnd Layout Tab: CR-1

OR HIGHWAY 126 CORRIDOR FACILITY PLAN
POWELL BUTTE HIGHWAY TO WILLIAMS ROAD
CROOK COUNTY, OREGON

FIGURE **8-3**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

WHPacific

\bnds\wrk\profile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\FinalConcepts\Civil\037213-TRANS-CORRIDOR.dwg Sep 14, 2011 - 9:08am - openbnd Layout Tab: CR-2

OR HIGHWAY 126 CORRIDOR FACILITY PLAN
WILLIAMS ROAD TO STEFFY LANE
CROOK COUNTY, OREGON

FIGURE **8-4**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

WHPacific

\\bndfs\wrk\profile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\FinalConcepts\Civil\037213-TRANS-CORRIDOR.dwg Sep 14, 2011 - 9:10am - openbnd Layout Tab: CR-3

OR HIGHWAY 126 CORRIDOR FACILITY PLAN
STEFFY LANE TO WILEY ROAD
CROOK COUNTY, OREGON

FIGURE **8-5**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

WHPacific

\\bndfs\wrk\proj\file\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\FinalConcepts\Civil\037213-TRANS-CORRIDOR.dwg Sep 14, 2011 - 9:12am - openbnd Layout Tab: CR-4

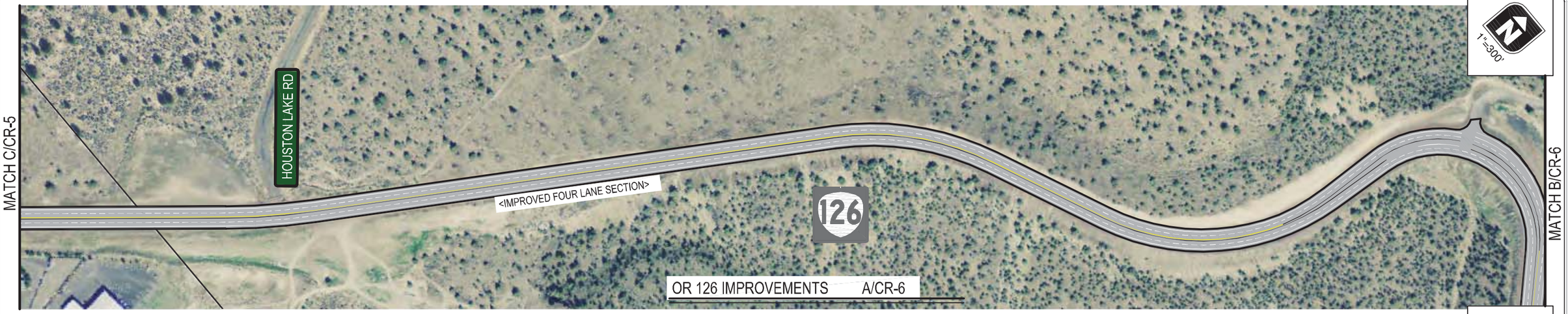
OR HIGHWAY 126 CORRIDOR FACILITY PLAN
MILLICAN ROAD TO TOM MCCALL ROAD
CROOK COUNTY, OREGON

FIGURE **8-6**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

WHPacific

\\bndfs\wrk\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\FinalConcepts\Civil\037213-TRANS-CORRIDOR.dwg Sep 14, 2011 - 9:13am - openbnd Layout Tab: CR-5



OR HIGHWAY 126 CORRIDOR FACILITY PLAN
HOUSTON LAKE ROAD TO PRINEVILLE "Y"
CROOK COUNTY, OREGON

FIGURE 8-7

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

WHPacific

\\bndfs\wrk\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\dwgs\Final\Concepts\Civil\037213-TRANS-CORRIDOR.dwg Sep 14, 2011 - 9:20am - openbnd Layout Tab: CR-6

The projects identified in Table 8-1 provide improved safety and travel and access efficiencies through the 20-year planning horizon. Depending on the actual rate of development and regional growth, some of these projects may not be needed within the 20-year planning horizon. Therefore, to allow for incremental implementation and to provide ODOT, Crook County, and the City of Prineville the ability to obtain necessary funding over time, implementation projects were developed that build toward these ultimate long-term improvements.

Highway Segment Cross-Section Improvements

Two basic highway cross-sections were identified to meet the long-term needs of the OR Highway 126 corridor. Between the Crook County line and Millican Road, a two-lane section can be maintained, with additional shoulder widening to better facilitate vehicle recovery, emergency stops, and service vehicles. This basic cross-section should be further improved to include left- and right-turn lanes at public intersections, as needed, and could include additional passing lanes in the future beyond the 20-year horizon. Exhibit 8-2 illustrates the two-lane section.

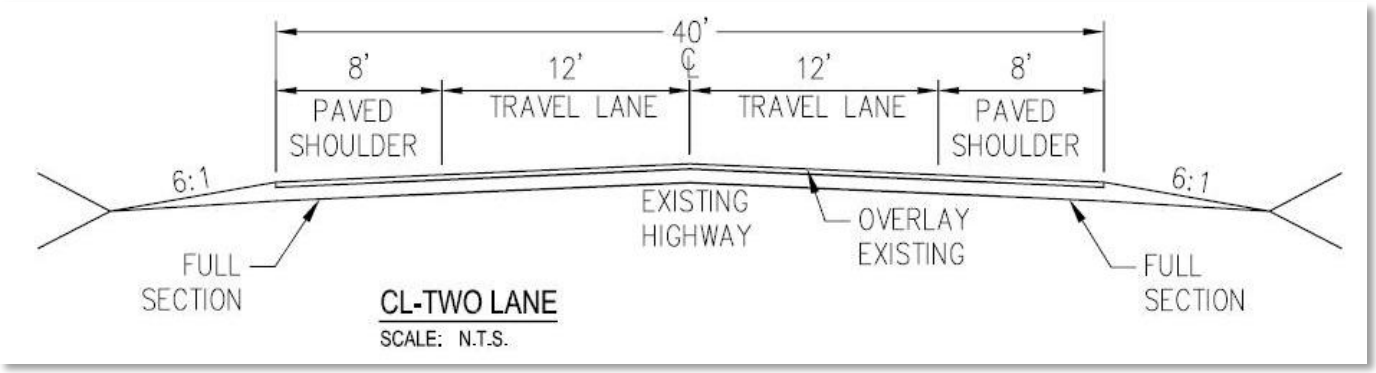


Exhibit 8-2 Crook County line to Millican Road basic roadway cross-section.

East of Millican Road, the additional traffic demand from the development of the adjacent industrial lands is projected to require two travel lanes in each direction into Prineville. Due to the steep terrain along the grade within this segment, widening to accommodate this cross-section would likely occur to the north of the centerline. Consideration of how these lanes would be received into the City's downtown core will be separately assessed as part of the City's Transportation System Plan. Exhibit 8-3 illustrates the four-lane cross-section.

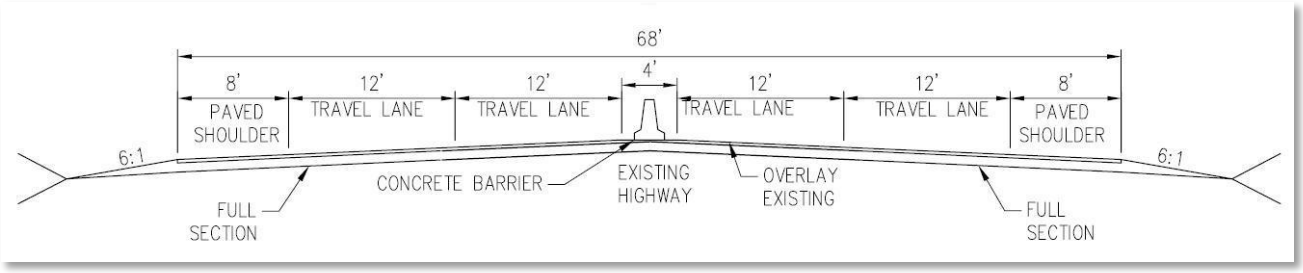


Exhibit 8-3 Millican Road to downtown Prineville basic roadway cross-section.

Throughout the corridor, centerline and shoulder rumble strip treatments should be implemented to improve driver attentiveness and reduce the high incidence of run off road and head-on collisions.

Access Management Considerations

In order to achieve ODOT's access management goals outlined in the Oregon Highway Plan (OHP), several considerations need to be evaluated as improvements are made to the corridor and/or additional private development land use actions occur. Policy 3A of the OHP specifies that rural expressways (as OR Highway 126 is classified) are intended to provide safe and efficient high-speed and high-volume movements. To achieve this goal, new private access is discouraged and consolidation of existing approaches is encouraged through long-term planning efforts.

These Access Management considerations will guide the evaluation of the location of public and private driveways and internal circulation routes for properties located adjacent to the OR Highway 126 study corridor that are likely to develop or redevelop at some point in the future.

As traffic volumes increase with new development and regional growth, access management can help maintain the operational integrity and safety of the primary roadways. Redevelopment or capital improvements will trigger the need to evaluate and determine how to modify access to move in the direction of meeting the access spacing standards and long-term vision of driveway consolidation while still providing access as defined in OAR 734-051.

IMPLEMENTATION

Implementation of the access management along the corridor is dependent and reactive to agency driven and private development projects. ODOT guarantees Access Permit protection, as allowed within ORS 374.305 & 310, to all existing private accesses. Each will remain a valid access as long as the existing uses remain on property/site (per OAR 734-051-0045) and there is no capital improvement project that would trigger review of the access (per OAR 734-051-0285). An access evaluation will be required, but is not limited to, when any of the following land use actions occur on property that is adjacent to OR Highway 126:

- Modifications to existing land use or zoning;
- Changes to plan amendment designations;
- Construction of new buildings;
- Increases in floor space of existing buildings;
- Division or consolidation of property boundaries;
- Changes in the character of traffic using the driveway/approach;
- Safety or operational improvements;
- Changes to internal site circulation design or inter-parcel circulation;
- Reestablishment of a property's use (after discontinuance for two years or more that trigger a Traffic Impact Assessment) that occurs on the parcels served by the approaches; or,
- Capital improvement projects.

As each parcel redevelops, or upon capital improvement, their access will be evaluated to determine how to modify access to move in the direction of meeting the access spacing standards and long-term vision of driveway consolidation while still providing access as defined in OAR 734-051.

FUTURE PUBLIC ROADWAY CLOSURES

In addition to the access management considerations described above, the County, in coordination with and at the request of ODOT, plans to close the following public access points to OR Highway 126 in the future as part of capital, maintenance, and or development related projects:

- Bozarth Road
- Kissler Road
- Copley Road
- Minson Road
- DA Yates
- Wiley Road

The closure of these six intersections will reduce the number of highway entrances and allow investments in auxiliary turn lanes and intersection capacity improvements that can improve safety and circulation within the Powell Butte Rural Service Center.

Right-of-Way (ROW) Dedication Needs

Right-of-way needs along the corridor have been identified to ensure the preservation of the space required to implement the Preferred Corridor Plan. When redevelopment or other capital improvements occur, the ROW identified in Table 8-2 should be acquired for the long-term transportation improvements. The minimum ROW accounts for future lane additions and additional space beyond the edge of pavement for vehicle recovery space, drainage, and side slopes. Additional ROW surrounding the intersections will also be required per the long-term improvement plans included in Appendix B.

Table 8-2 Minimum Right-of-Way Needs by Segment

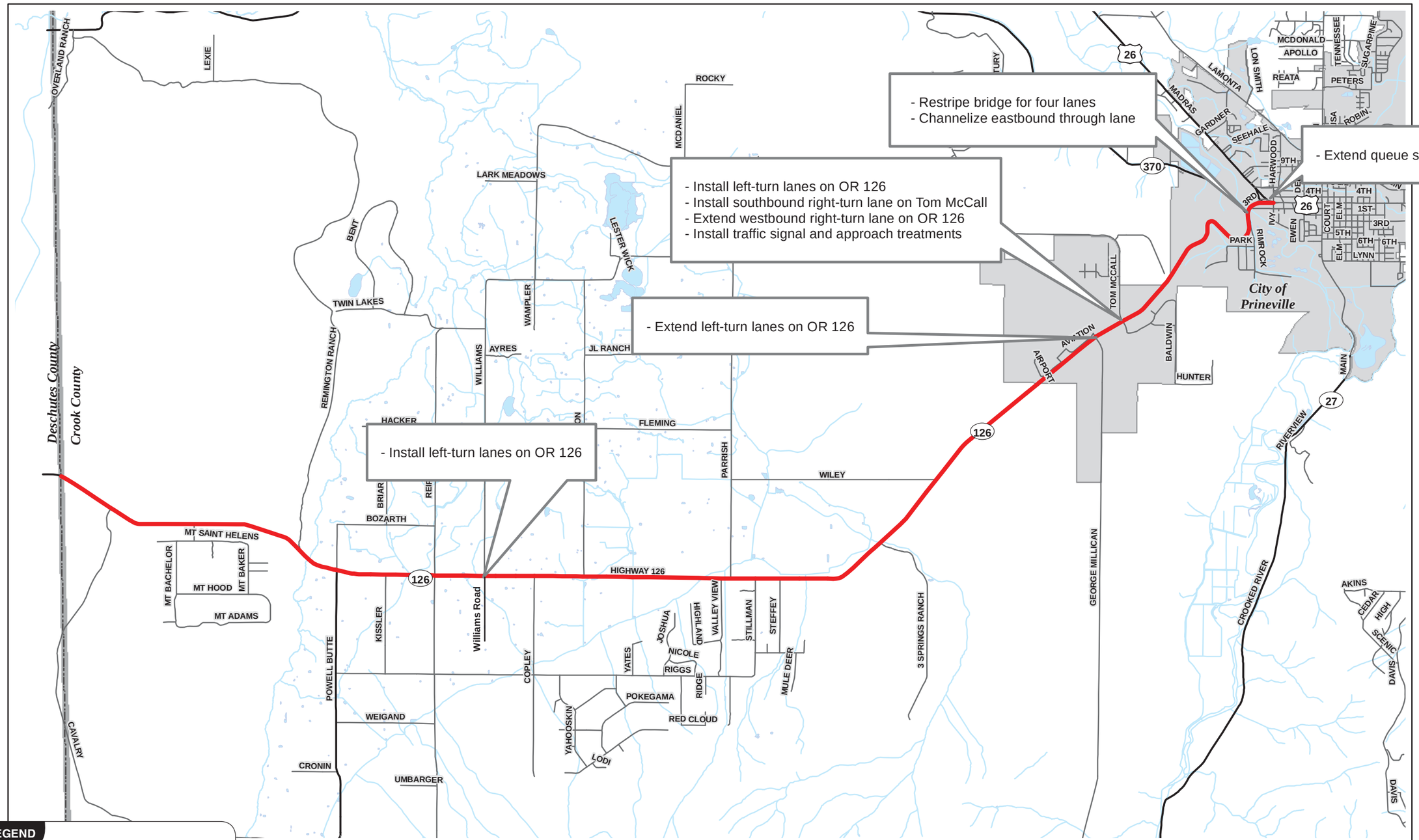
OR Highway 126 Segment/ Intersection	Section	Pavement Width (feet)	ROW Dimension (feet)[1]	Measure	Notes
Crook County Line to Airport Road/Millican Road	2-Lanes	40	100	50 feet from existing two-lane section centerline	
Millican Road to O'Neil Highway	4-Lanes	68	200	100 feet from existing highway centerline	Rimrock Constraints
O'Neil Highway to Prineville "Y"	4-Lanes	68	200	100 feet from existing highway centerline	Bridge limits ROW

[1]Additional right-of-way may be required for side-slopes, drainage, passing or auxiliary lanes, retaining walls, or maintenance.

As shown in Table 8-2, where a four-lane section is planned a minimum ROW of 200 feet is identified as a future need. Currently 200 feet of ROW is dedicated along OR Highway 126 between Wiley Road and the Prineville "Y", except within a short segment (less than one mile) east of Millican Road that has 60 feet of ROW.

Phasing Plan

Three improvement phases (near-, medium-, and long-term) were developed in order to provide lower-cost options that can serve as planning milestones to gauge when improvements will incrementally be needed. The phases are based on the amount of traffic growth that can occur on OR Highway 126 before additional improvements are needed. The major components of each improvement phase are illustrated in Figure 8-8 through Figure 8-10 and summarized in Table 8-3. Cost estimates, which assume phased implementation, are also provided in Table 8-3. *Phasing concepts are illustrated in Appendix B.*



LEGEND

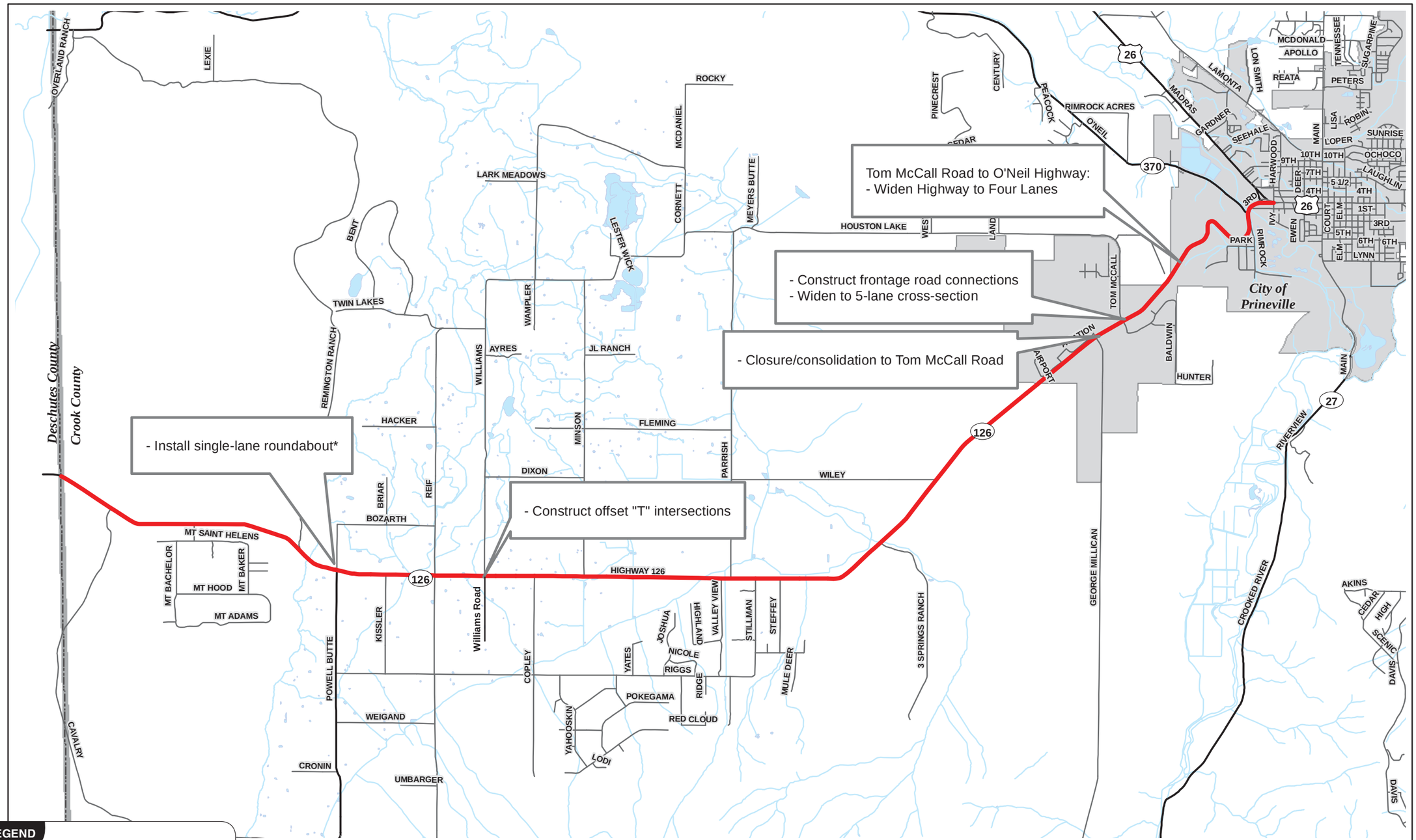
Study Corridor

SHORT-TERM FACILITY IMPROVEMENT PROJECTS
CROOK COUNTY, OREGON

FIGURE 8-8

H:\profile\11168 - OR 126 Powell Butte Corridor Evaluation\gis

KITTELSON & ASSOCIATES, INC. TRANSPORTATION ENGINEERING / PLANNING
WHPacific
Angelo planning group



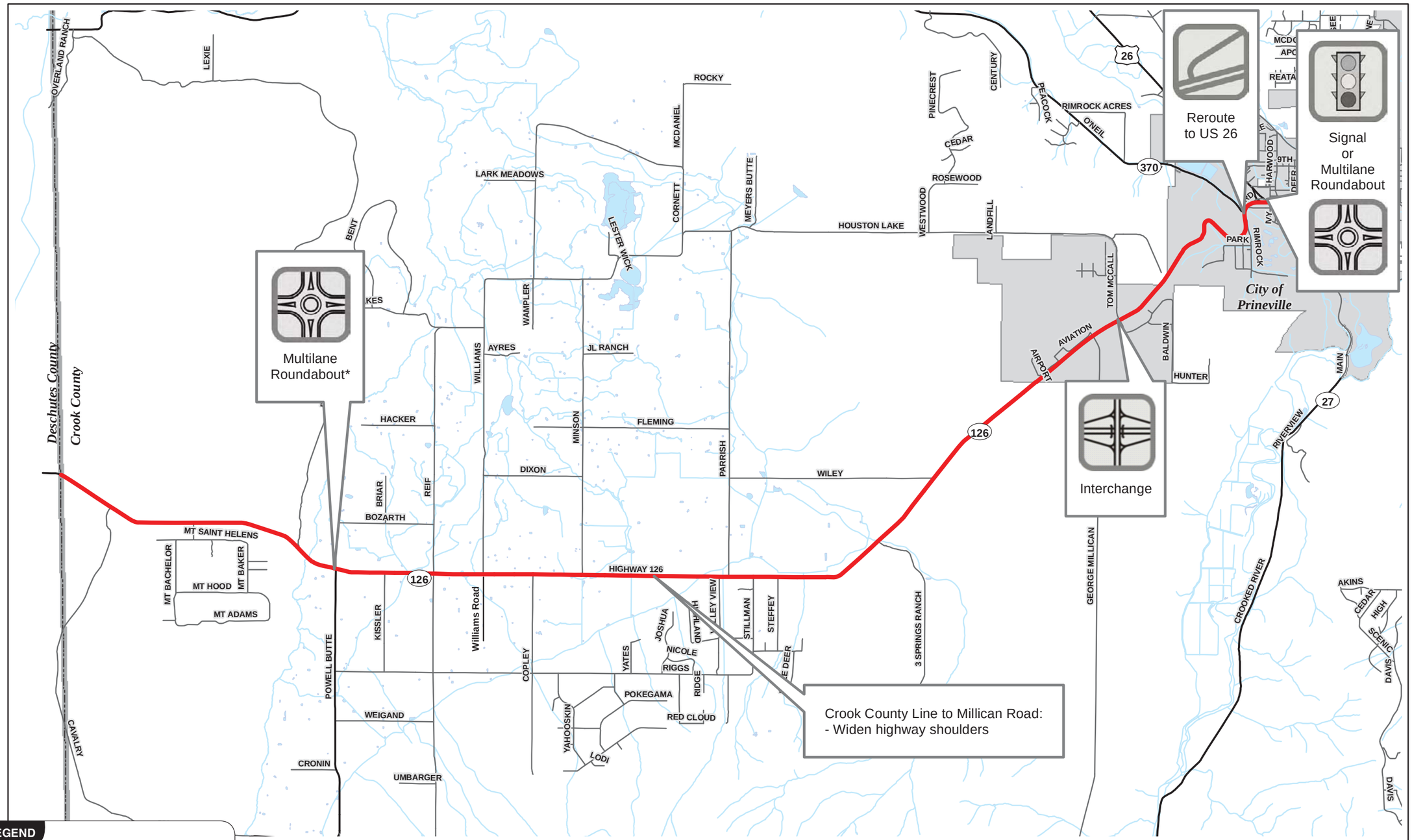
** A roundabout is the preferred alternative at this location; however, ODOT policy on roundabouts will need to change to allow this traffic control treatment. if this policy does not change to allow roundabouts on state highways, traffic signals will be installed in lieu of a roundabout.*

MEDIUM-TERM FACILITY IMPROVEMENT PROJECTS
CROOK COUNTY, OREGON

FIGURE 8-9

H:\profile\11168 - OR 126 Powell Butte Corridor Evaluation\gis

Kittelson & Associates, Inc. Transportation Engineering / Planning · WHPacific · Angelo planning group · Oregon Department of Transportation



LEGEND

Study Corridor

** A roundabout is the preferred alternative at this location; however, ODOT policy on roundabouts will need to change to allow this traffic control treatment. if this policy does not change to allow roundabouts on state highways, traffic signals will be installed in lieu of a roundabout.*

0 0.5 1 2 Miles

Oregon Department of Transportation

LONG-TERM FACILITY IMPROVEMENT PROJECTS
CROOK COUNTY, OREGON

FIGURE 8-10

H:\projfile\11168 - OR 126 Powell Butte Corridor Evaluation\gis

Kittelson & Associates, Inc. Transportation Engineering / Planning · WHPacific · Angelo planning group

Table 8-3 Implementation Projects

Intersection/Project	Reference[1]	Phase	Est. Current ADT	ADT Threshold (veh/day)	Cost ($ millions)[2]
Crook County Line to Millican Road					
Shoulder widening	Exhibit 8-2	Long	7,000 to 9,400	N/A	$7.75
Powell Butte Highway					
Single-lane roundabout[3]	PB1a	Medium	9,300	12,500	$3.1
Convert to Multilane roundabout[3]	PB1	Long	9,300	14,500	$0.6
Williams Road					
Left-turn lanes on OR Highway 126	W1a	Short	8,800	N/A	$0.7
Offset "T" Intersections	W1	Medium/Long	8,800	13,000	$1.2
Millican – Airport Road					
Extend storage for left-turn lanes	T1a	Short	11,000	N/A	Shown Below
Closure/Consolidation with Tom McCall Road	T1c	Medium	9,400	N/A	Shown Below
Tom McCall Road					
Install left-turn lanes on OR Highway 126 Extend westbound right-turn lane Add southbound right-turn lane	T1a	Short	11,000	N/A	$1.3
Signalize Intersection[4] and provide approach treatments	T1b	Short	11,000	Current ADT	$1.25
Frontage Road Connections	T1c	Medium	11,000	N/A	$2.9
Widen to 5-Lane Section	T1d	Medium	11,000		$1.0
Construct Interchange	T1	Long	11,000	17,000[5]	$10.9
Tom McCall Road to O'Neil Highway					
Widen Highway to Four Lanes	Exhibit 8-3	Medium	10,200	18,000	$7.4
O'Neil Highway					
Restripe bridge and channelize eastbound through lane	O1a	Short	12,500	Current ADT	$0.3
Reroute to US 26[6]	O1	Long	12,500	19,000[7]	
Prineville "Y"					
Extend queue storage for eastbound OR Highway 126 to westbound US 26	Y1a	Short	14,800	N/A	$0.4
Signal or multilane roundabout[6]	Y1	Long	5,700 westbound 7,000 eastbound	8,000 westbound 11,000 eastbound	$2.0 or $2.5

[1] See Appendix B for detailed intersection concept drawings.
[2] See Appendix C for cost estimates.
[3] A roundabout is the preferred alternative at this location; however, ODOT policy on roundabouts will need to change to allow this traffic control treatment. If this policy does not change to allow roundabouts on state highways, traffic signals will be installed in lieu of a roundabout (see option PB1a – Alt and PB1 – Alt)
[4] A signal is the preferred alternative at this location; however, a roundabout can also serve as a viable option (see Option T1b – Alt).
[5] ADT threshold east of Tom McCall Road is approximately 26,000 when including eastbound vehicles entering the highway at Tom McCall Road.
[6] Concept design and cost estimate will be updated as part of TSP process.
[7] O'Neil Highway improvements are needed when ADT equals 19,000 vehicles per day or when OR Highway 126 is widened to four lanes from Tom McCall Road east to the Prineville "Y" intersection.

Project Descriptions

This section describes the segment and intersection improvements and phasing plans throughout the study area.

OR HIGHWAY 126 SEGMENT (CROOK COUNTY LINE TO MILLICAN ROAD)

The segment of OR Highway 126 from the Crook County line to Millican Road will remain as a two-lane section as it will be adequate to accommodate the projected year 2030 traffic volumes. Recommended changes to the section include a paved shoulder widening on both sides of the highway (8 feet) and improved gravel side-slopes. This treatment is intended to accommodate emergency stops, service and maintenance vehicles, and allow wide loads and farming equipment to more safely traverse the highway. It should be noted that in constrained or built areas, such as over bridges and through the Powell Butte Rural Service Center, flexibility in the eight-foot shoulder treatment may be required, as other treatments (guardrails, lower posted speeds, etc.) will continue to maintain adequate highway safety.

Existing passing lanes located west of the Powell Butte Highway will be retained, and auxiliary turn lanes at public intersections should be provided as funding allows. The two-lane section does not preclude additional passing lanes east of Williams Road which could be constructed to reduce driver delay. The basic two-lane roadway section should also contain centerline and shoulder rumble strips to help reduce the occurrence of run off the road and head-on collisions.

Implementation of the segment changes will occur over time as part of routine maintenance or capital improvement projects.

POWELL BUTTE HIGHWAY INTERSECTION

The intersection of the Powell Butte Highway with OR Highway 126 is planned to be reconstructed as a multi-lane roundabout. Depending on the planned closure of Bozarth Road, this intersection could become a “T” intersection. Given the rural location and character of both highways, appropriate approach treatments will be required to adequately transition drivers from a 55 MPH posted speed to 20 to 25 MPH speed at the roundabout entrances. As shown in the concepts, introduction of gradually increasing curvature on the intersection approaches will facilitate this deceleration and will be supplemented with illumination and other treatments.

The design of the roundabout will need to include consideration of over-dimensional farming and freight vehicles, as well as bicyclists and pedestrians. Treatments discussed include use of a larger

diameter design, mountable truck apron around the central island, or even treatments such as gates through the center.

The roundabout would initially be designed as a multi-lane roundabout but with modified channelization to operate upon opening as a single-lane design. The additional eastbound and westbound through lanes could be opened when warranted based on growth in traffic volumes. This phasing of the multi-lane roundabout would maximize the safety benefits of the treatment by reducing the potential for sideswipe crashes.

Pending ODOT policy regarding roundabouts along state highways, signalization would be an alternative intersection treatment option, but would also require significant approach treatments to ensure adequate driver awareness and expectation. A traffic signal could also be phased into its ultimate footprint.

WILLIAMS ROAD INTERSECTION

In the long-term, the Williams Road full intersection will be converted into two offset "T" intersections. This treatment would include consolidation and relocation of all accesses on the south side of the highway to a new intersection east of the current Williams Road alignment. This would allow the southern land uses to retain access to the highway by traveling south along a short loop to connect back north. The northern Williams Road approach would remain in its current location. The specific alignment of the new southern connection will be refined at the time of project development; the alignment shown in the concept is intended only to show the connection as coordination with the school and other neighboring properties will be required as part of the project design process.

This construction of offset "T" intersections could reduce conflicts between northbound and southbound drivers and would include the installation of a center median area allowing motorists to cross the highway in two separate maneuvers, as well as provide left-turn lanes along the highway for both intersections. Both intersections could remain stop-sign controlled on the minor approaches.

Implementation could be phased at Williams Road to initially include the installation of left-turn lanes at the current intersection. This interim treatment would ultimately be converted to provide the left-turn lanes and median refuge space in the long-term treatment. Narrower shoulders than the standard 8-foot width may be appropriate through the Powell Butte Rural Service Center as this area contains a lower posted speed than other highway segments and contains land uses that could otherwise be unnecessarily impacted.

AIRPORT ROAD-MILLICAN ROAD AND TOM MCCALL ROAD INTERSECTIONS

The intersections of OR Highway 126 at Airport Road-Millican Road and Tom McCall Road will ultimately be combined into a single access point served by a grade-separated interchange with merging and diverging movements onto and off of OR Highway 126. Frontage roads will be developed to allow continued access to the surrounding land uses.

Implementation of an interchange could be phased with several incremental steps that build toward the ultimate solution. An outline of the phasing is provided below:

- Left-turn lanes will be constructed at Tom McCall Road and extended at the Millican Road intersection. This widening would provide a three-lane cross-section between the two existing intersections.
- The westbound right-turn lane on OR Highway 126 will be extended to better separate decelerating traffic from through vehicles.
- A new southbound right-turn lane will be constructed on Tom McCall Road to separate the higher-delay left-turns from right-turning traffic. The turn lane could include channelization to improve visibility around adjacent vehicles.
- When warranted, the Tom McCall Road intersection will be signalized. This improvement will require intersection approach treatments, such as signal ahead signage and changes in the roadway characteristics, to improve driver awareness and expectation of the upcoming traffic signal. The design should place the signal poles in their ultimate location (i.e., accommodating a five-lane section on the highway).
- Frontage roads will be developed between Tom McCall Road and Millican Road to benefit from signalized access. These frontage roads would be designed and located to contribute toward the ultimate interchange layout. With the frontage road connections, Millican Road will either be closed or maintain limited right-in, right-out movements only with a raised median.
- Additional highway widening will be provided when necessary to allow a five-lane cross-section on OR Highway 126. The need to widen the highway beyond the intersection influence area can be separated from the intersection improvements and assessed and implemented independently.
- An interchange would be constructed near the Tom McCall Road alignment and a median would extend through the existing intersection. All turning movements will occur via the on-

and off-ramps as merge/diverge maneuvers and all remaining Millican Road access will be restricted due to access spacing considerations.

The timing of these incremental improvements will be based on a monitoring program and occur as needed and as funding becomes available. A multi-lane roundabout could be implemented as an alternative to the identified at-grade signal, if future funding and/or policies make such modification desirable. A roundabout concept would replace the need for auxiliary turn lanes in the interim period and would provide improved safety as compared to the signalized option.

OR HIGHWAY 126 SEGMENT (MILLICAN ROAD TO PRINEVILLE "Y")

Two travel lanes in each direction will ultimately be needed to connect between Millican Road and the City's downtown core. Development of this cross-section will require widening to the north into the rimrock. Centerline and shoulder rumble strip treatments should be implemented as part of the widening which may also include additional median width along the curves. This four-lane section will continue through the O'Neil Highway intersection (which would ultimately be relocated to connect into US 26) and into the Prineville "Y".

The ultimate long-term transition of this corridor into the downtown Prineville core will be considered as part of the City's Transportation System Plan (TSP) Update.

O'NEIL HIGHWAY INTERSECTION

Due to the topography and proximity to the Crooked River, the O'Neil Highway (OR 370) intersection will ultimately be closed and rerouted to US 26. The specific alignment of this connection will be developed as part of the City's TSP Update.

If additional capacity at the intersection is needed prior to the long-term route, an interim treatment could be provided that would allow left-turns from the O'Neil Highway to turn into a center refuge lane and merge into downhill traffic. This would allow highway traffic to continue to flow unimpeded.

PRINEVILLE "Y"

The junction of OR Highway 126 and US 26 will serve as a transition point as the expressway enters the City's downtown core. Long-term, either a traffic signal or a multi-lane roundabout could serve as a viable intersection treatment. The selection and development of either treatment should consider the long-term plans for the City's downtown, as the decision to move toward a couplet option, transition to a five-lane 3rd Street section, or providing parallel capacity could each influence the

selection of a preferred ultimate treatment. Accordingly, the ultimate intersection treatment will be identified as part of the City's TSP Update.

To address potential queue spillover issues at the existing intersection, a short-term treatment was identified that could retain the same configuration and traffic control while extending the eastbound OR Highway 126 to westbound US 26 storage. While this improvement would not contribute to a long-term solution, it could enhance the viability of the intersection until funding was available.

Section 9 Implementation Plan

9. IMPLEMENTATION PLAN

This section identifies the process and steps required to fully adopt, monitor, and implement the Facility Plan. The implementation plan also includes discussion of financing mechanisms and monitoring procedures that will ensure transportation improvements are constructed and funded to ensure adequate corridor mobility and safety over time.

Exhibit 9-1 Lone Pine Roadway Paving in Crook County.

Implementation Overview

To ensure that the Facility Plan remains relevant and flexible to respond to changes over time, the following steps should be implemented by the affected jurisdictions, at a minimum:

- The City and County should amend their respective Transportation System Plans (TSP) to adopt the OR Highway 126 Corridor Facility Plan by reference, and then incorporate its findings and recommendations into future TSP updates.
- ODOT, the City and the County should develop an interagency funding strategy outlining improvement prioritization, affected area, agency roles and responsibilities, and necessary condition of approval revisions to previously-approved land uses. As part of this process the jurisdictions should consider how this could impact previous land use decisions and approval conditions.
- ODOT, the City and the County should review right-of-way and access management needs for the long-term solutions prior to adopting local plan amendments or as part of local land use actions.
- ODOT, the City and the County should develop an interagency monitoring program that includes safety and operational review to determine the need for and timing of improvements.
- The City should review the proposed code amendments that seek to limit transportation reliance and impacts to the highway, and should incorporate these amendments as part of their periodic plan review.

Adoption Elements

Implementation of the OR Highway 126 Corridor Facility Plan will occur at several levels of government. The City of Prineville and Crook County will need to amend their Transportation System Plans and Comprehensive Plans to incorporate the relevant elements of the facility plan. In addition, new ordinances, or amendments to existing ordinances, resolutions, and Inter-Governmental Agreements (IGA) will be required to ensure that the access management, land use management, and coordination elements of the facility plan are achieved in a way that will allow the transportation system to build toward the long-term needs.

This adoption process will include City Planning Commission and City Council hearings at the city level and Planning Commission and County Court hearings at Crook County. Following successful adoption at the City and County, the facility plan will be presented to the Oregon Transportation Council (OTC) for adoption as an amendment to the Oregon Highway Plan, if necessary.

To implement the facility plan, the following actions should occur:

1. The City of Prineville should adopt the OR Highway 126 Facility Plan as an amendment to the City's Transportation System Plan and Comprehensive Plan. The facility plan will serve as the long-range comprehensive management plan for providing the transportation facilities that are specifically addressed in this plan, including specific improvements, access management considerations, and right-of-way needs.
2. Crook County should adopt the OR Highway 126 Facility Plan as an amendment to its Transportation System Plan and Comprehensive Plan.
3. The City of Prineville should amend its land use code to adopt the land use strategies that are targeted at reducing reliance on OR 126, amending allowable supporting uses within the airport industrial area, and ensuring interconnectivity within and between industrial sites (see *Technical Memorandum #7* in the *Technical Appendix* for specific amendment materials).
4. The Oregon Transportation Commission shall amend the Oregon Highway Plan to include the OR Highway 126 Corridor Facility Plan, if deemed necessary.
5. Subsequent to the local adoption of the facility plan, the City of Prineville, Crook County, and ODOT should explore potential funding sources, monitoring and improvement responsibilities, and project prioritization. These efforts should be captured within an Intergovernmental Agreement (IGA) or similar agreement.

Exhibit 9-2 illustrates the overall adoption process.

Exhibit 9-2 OR Highway 126 Corridor Facility Plan Adoption Process.

Implementation Plan Framework

Steps necessary to adopt the facility plan include the following:

1) Draft City of Prineville land use code amendments
2) Obtain an endorsement for the facility plan by the Planning Project Management Team.
3) Provide 45-day notice to the Department of Land Conservation and Development (DLCD).
4) Conduct City and County Planning Commission hearings on the facility plan. A joint hearing with separate votes will ensure both parties receive the same information and are able to discuss interaction between agencies.
5) Conduct City Council and County Court hearings to locally adopt the plan. Similarly, hearings can be held jointly with separate City and County votes.
6) Following City Council and County Court will require 30 days and a second reading of the decision.
7) Following local adoption, forward the facility plan to the Oregon Transportation Commission (OTC) for review and adoption as an amendment to the Oregon Highway Plan, if deemed necessary.

Implementation of Plan Elements through Private Development Actions

The following section outlines the transportation requirements for development and land use amendment applications and describes how the City of Prineville and Crook County should coordinate with ODOT in the review of these applications. The intent of the facility plan and associated transportation requirements is to allow development within the City and County to rely upon the planning work completed for this facility plan that identifies the transportation needs in the area and utilize a streamlined development review process (if agreed to by the agencies through an IGA) requiring limited additional transportation analysis if the development is consistent with the facility plan. For proposed amendments to the underlying plan assumptions (such as zone changes) this section highlights the relevant review criteria to demonstrate consistency with the adopted plan.

TRANSPORTATION ASSESSMENT REPORT

For all non-zone change development applications located in Crook County and the City of Prineville the applicant shall prepare and submit a Transportation Assessment Report based on relevant ODOT, Crook County, and City of Prineville Transportation Impact Analysis requirements. Prior to development and adoption of an IGA inclusive of funding mechanisms, needed transportation mitigation will require negotiations with the City, County, and ODOT, as applicable, and could be in the form of exactions or improvements toward phased or the long-term improvements identified in the facility plan. Transportation impact studies can further inform the monitoring process with detailed review of safety and operational data.

Zone change applications will need to demonstrate compliance with the applicable Transportation System Plan and the Transportation Planning Rule. With the adoption of this facility plan into the City and County TSP, this document will form the relevant horizon period and guiding document for future transportation forecasts and for an assessment of consistency with the adopted plans.

Other Recommended Actions and Considerations

This section details other considerations that should be further developed and addressed as part of upcoming agreements or planning efforts:

PRINEVILLE TRANSPORTATION SYSTEM PLAN (TSP) UPDATE

As part of its upcoming TSP update, the following issues should be further discussed and refined:

- The alignment and connection of the O'Neil Highway intersection with US 26 should consider modification of the current alignment shown in the City's TSP.
- The City should consider how it will accommodate long term growth in traffic volumes and the ability of 3rd Street to accommodate these future demands. The decision on what type of treatment (e.g., widening or a one-way couplet with 2nd or 4th Street) is desired for 3rd Street will inform the selection of a preferred alternative at the Prineville "Y".
- The City's plan should also address the Rimrock Road connection to OR 126 and seek alternative access options.

FUNDING AGREEMENT

A funding agreement should be developed between the City, County, and ODOT that defines the following elements:

- What near-, mid-, and long-term improvement options will have identified funding sources?
- What type of funding mechanism will be utilized?
- What will the percentage funding split between new development, city, county, state, and federal resources?
- Which agency will be responsible for the collection and dispersion of funds?
- How will priorities be established?
- Which agency is responsible for implementing a monitoring program?
- What is the effect of a funding mechanism on previous approval conditions?

Monitoring Process

The purpose of the facility plan is to ensure that adequate safety and capacity is provided for highway users throughout the 20-year horizon. While general monitoring thresholds are included within the plan to assist agencies in reviewing the need and timing of phased implementation, the facility plan should remain dynamic and responsive to development and changes to the adopted land use and transportation plans. To accomplish this goal, a monitoring process should be agreed upon by the City, County, and ODOT in an Inter-Governmental Agreement that identifies triggers for reviewing the facility plan and how development within the surrounding area will be reviewed and coordinated with all parties.

INTER-GOVERNMENTAL AGREEMENT

To ensure that the facility plan continues to preserve operational integrity and safety of the OR 126 corridor, the City of Prineville, Crook County, and ODOT should develop an Inter-Governmental Agreement stipulating each agency's funding obligations to the transportation improvements in the facility plan and to the following monitoring and update program:

- The agencies will review the facility plan pursuant to the "triggers" described below to ensure that the original assumptions and recommendations regarding the facility plan, funding obligations, access management, land use management, and coordination efforts are still appropriate and effective given the current and projected future conditions. This review should be conducted through a meeting initiated by the City of Prineville, Crook County, and/or ODOT.
- In addition to the established triggers for the facility plan review, the agencies can request a review of the facility plan at any time if, in their determination, specific land use or transportation changes warrant a review of the underlying assumptions and/or recommendations within the facility plan.

- If the participants in the facility plan review meeting agree that, once the impacts of the "trigger" that necessitated the review are examined, an amendment to the facility plan is not warranted a recommendation of "no action" may be documented and submitted in the form of a letter to the City of Prineville City Council, Crook County Court, and Oregon Transportation Commission.
- If the findings and conclusions of the facility plan review meeting demonstrate the need for an update to the plan, review participants will initiate a facility plan update process. Initial steps in updating the facility plan will include scoping the planning process, identifying funding, and outlining a schedule for plan completion.

Facility Plan Review Triggers

Periodically, the facility plan implementation program will need to be evaluated to ensure it is meeting the needs of the managing agencies. Events that will trigger a review of the facility plan include:

- Every fifth year from the date of facility plan adoption or its latest update.
- Identified safety issues as noted by periodic review of crash data, statewide ranking and prioritization, and findings from traffic impact studies.
- Identified mobility failures as noted through periodic agency review and findings from traffic impact studies.
- Zone change applications.

Section 10 References

10. REFERENCES

1. Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999.
2. City of Prineville. *Prineville Transportation System Plan.* 2005.
3. Crook County. *Crook County Transportation System Plan*. 2005.
4. AASHTO. *Highway Safety Manual*. 2010.
5. Joint Committee of Central Oregon Cities and Counties. *Central Oregon Regional Large-Lot Economic Opportunities Analysis – Phase I*. 2009.