

RECEIVED

FEB 15 2017

THE BOARD OF COMMISSIONERS OF UMATILLA COUNTY

UMATILLA COUNTY  
RECORDS

STATE OF OREGON

In the Matter of Co-Adopting	)	
City of Pilot Rock	)	ORDINANCE NO. 2017-02
Transportation System Plan	)	
and Pedestrian Transportation	)	
Development Plan	)	

WHEREAS the City of Pilot Rock and Umatilla County have previously entered into a Joint Management Agreement applying to lands within the City Urban Growth Area, and pursuant to the agreement, amendments to the City of Pilot Rock Comprehensive Plan and Implementing Ordinances for application to the Urban Growth Area, are referred to Umatilla County for adoption;

WHEREAS the City of Pilot Rock originally adopted its Transportation System Plan in 2001;

WHEREAS the City of Pilot Rock adopted a Pedestrian Transportation Development Plan (dated January 17, 2005) in 2005;

WHEREAS the Transportation System Plan was referred to Umatilla County to co-adopt, Text Amendment #T-16-071;

WHEREAS, at its December 15, 2016 meeting, the Umatilla County Planning Commission reviewed the plan and recommended that the Board of Commissioners co-adopt the plan;

WHEREAS the Board of Commissions held a public hearing on February 15, 2017, to consider the co-adoption and voted to co-adopt the plan.

NOW, THEREFORE the Board of Commissioners of Umatilla County ordains the co-adoption by Umatilla County, Oregon, of the City of Pilot Rock Transportation System Plan, and City of Pilot Rock Pedestrian Transportation Development Plan, a copy of which plans are attached to this document and incorporated by this reference.

DATED this 15th day of February, 2017.

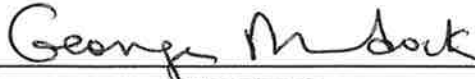
UMATILLA COUNTY BOARD OF COMMISSIONERS



W. Lawrence Givens, Chair



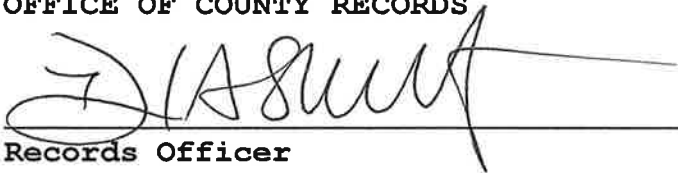
William J. Elfering, Commissioner



George L. Murdock, Commissioner

ATTEST:

OFFICE OF COUNTY RECORDS



Records Officer



**City of Pilot Rock**  
**Transportation System Plan**  
**Final Report**

**June 2001**

**Original Prepared by:**  
**David Evans and Associates, Inc.**



**City of Pilot Rock**  
**Transportation System Plan**  
**Final Report**

**June 2001**

**Original Prepared by:**  
**David Evans and Associates, Inc.**

**TABLE OF CONTENTS**

<b>CHAPTER 1: INTRODUCTION .....</b>	<b>1-1</b>
<b>PLANNING AREA.....</b>	<b>1-1</b>
<b>PLANNING PROCESS .....</b>	<b>1-1</b>
Community Involvement.....	1-2
Goals and Objectives .....	1-2
Review and Inventory of Existing Plans, Policies, and Public Facilities.....	1-2
Future Transportation System Demands .....	1-3
Transportation System Potential Improvements.....	1-3
Transportation System Plan.....	1-3
Funding Options.....	1-3
Recommended Policies and Ordinances.....	1-3
<b>RELATED DOCUMENTS.....</b>	<b>1-4</b>
Other Transportation System Plans Prepared Concurrently with the Pilot Rock TSP .....	1-4
Other State Plans.....	1-7
<b>CHAPTER 2: GOALS AND OBJECTIVES .....</b>	<b>2-1</b>
<b>OVERALL TRANSPORTATION GOAL .....</b>	<b>2-1</b>
Goal 1.....	2-1
Goal 2.....	2-1
Goal 3.....	2-2
Goal 4.....	2-2
Goal 5.....	2-3
<b>CHAPTER 3: TRANSPORTATION SYSTEM INVENTORY .....</b>	<b>3-1</b>
<b>STREET SYSTEM .....</b>	<b>3-1</b>
Street Classification.....	3-1
Street Layout.....	3-2
State Highways.....	3-3
US 395.....	3-3
<b>GENERAL PAVEMENT CONDITIONS.....</b>	<b>3-4</b>
City Streets .....	3-4
State Highways.....	3-4
<b>BRIDGES .....</b>	<b>3-4</b>
<b>PEDESTRIAN SYSTEM.....</b>	<b>3-5</b>
<b>BIKEWAY SYSTEM.....</b>	<b>3-5</b>
<b>PUBLIC TRANSPORTATION .....</b>	<b>3-6</b>
<b>RAIL SERVICE.....</b>	<b>3-6</b>
<b>AIR SERVICE.....</b>	<b>3-7</b>
<b>PIPELINE SERVICE.....</b>	<b>3-7</b>
<b>WATER TRANSPORTATION.....</b>	<b>3-7</b>
<b>CHAPTER 4: CURRENT TRANSPORTATION CONDITIONS.....</b>	<b>4-1</b>
<b>TRAFFIC VOLUMES.....</b>	<b>4-1</b>
Average Daily Traffic .....	4-1
Street Capacity.....	4-1
Alternative Work Schedules.....	4-3
Travel Mode Distribution .....	4-4

ACCIDENT ANALYSIS.....4-5  
 Historic .....4-5

**CHAPTER 5: TRAVEL FORECASTS..... 5-1**

LAND USE.....5-1  
 Historic Growth.....5-2  
 Projected Growth .....5-2

TRAFFIC VOLUMES .....5-3  
 Historic .....5-3  
 Future Traffic Volumes .....5-4

HIGHWAY SYSTEM CAPACITY .....5-4  
 Analysis Results.....5-5

**CHAPTER 6: IMPROVEMENT OPTIONS ANALYSIS..... 6-1**

EVALUATION CRITERIA.....6-1  
 STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM PROJECTS .....6-1  
 IMPROVEMENT OPTIONS EVALUATION.....6-2  
 SUMMARY .....6-4

**CHAPTER 7: TRANSPORTATION SYSTEM PLAN ..... 7-1**

STREET DESIGN STANDARDS .....7-1  
 Existing Street Standards .....7-1  
 Recommended Street Standards .....7-2

ACCESS MANAGEMENT .....7-7  
 Access Management Techniques .....7-7  
 Recommended Access Management Standards .....7-8

ACCESS CONTROL RIGHTS .....7-9

MODAL PLANS .....7-10  
 Street System Plan .....7-10  
 Pedestrian System Plan.....7-11  
 Bicycle System Plan .....7-13  
 Transportation Demand Management Plan.....7-13  
 Public Transportation Plan .....7-13  
 Rail Service Plan.....7-14  
 Air Service Plan .....7-14  
 Pipeline Service.....7-14  
 Water Transportation .....7-14

TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM .....7-14  
 20-Year Capital Improvement Program .....7-15

**CHAPTER 8: FUNDING OPTIONS AND FINANCIAL PLAN ..... 8-1**

HISTORICAL STREET IMPROVEMENT FUNDING SOURCES .....8-1  
 Transportation Funding in Umatilla County.....8-2  
 Historical Revenues and Expenditures in the City of Pilot Rock.....8-3  
 Transportation Revenue Outlook in the City of Pilot Rock .....8-4

REVENUE SOURCES .....8-6  
 Property Taxes .....8-7  
 System Development Charges .....8-8  
 State Highway Fund .....8-8  
 Local Gas Taxes .....8-8

Vehicle Registration Fees .....	8-8
Local Improvement Districts .....	8-9
GRANTS AND LOANS .....	8-9
Bike-Pedestrian Grants .....	8-9
Access Management.....	8-9
Enhancement Program .....	8-10
Highway Bridge Rehabilitation or Replacement Program .....	8-10
Transportation Safety Grant Program .....	8-10
Federal Transit Administration (FTA) Section 5311-Non-urbanized Area Formula Program.....	8-10
Surface Transportation Program (STP) Funds .....	8-11
Department of Labor Welfare-to-Work Program .....	8-11
FTA Section 5310 Discretionary Grants .....	8-11
Special Transportation Fund .....	8-11
County Allotment Program.....	8-11
Immediate Opportunity Grant Program .....	8-12
Oregon Special Public Works Fund .....	8-12
Oregon Transportation Infrastructure Bank.....	8-12
ODOT FUNDING OPTIONS.....	8-13
FINANCING TOOLS.....	8-13
General Obligation Bonds.....	8-14
Limited Tax Bonds .....	8-14
Bancroft Bonds.....	8-14
FUNDING REQUIREMENTS.....	8-14
<b>CHAPTER 9: RECOMMENDED POLICIES AND ORDINANCES .....</b>	<b>9-1</b>
ELEMENTS REQUIRED BY THE TRANSPORTATION PLANNING RULE.....	9-1
APPROVAL PROCESSES FOR TRANSPORTATION FACILITIES .....	9-2
Recommended Policies for Approval Process .....	9-2
Recommended Ordinances for Approval Process.....	9-2
PROTECTING EXISTING AND FUTURE OPERATION OF FACILITIES .....	9-2
Recommended Access Control Ordinances.....	9-3
PROCESS FOR COORDINATED REVIEW OF LAND USE DECISIONS .....	9-3
Recommended Process for Applying Conditions to Development Proposals .....	9-3
Recommended Regulations to Provide Notice to Public Agencies.....	9-4
Recommended Regulations to Assure that Amendments are Consistent with the Transportation System Plan.....	9-4
SAFE AND CONVENIENT PEDESTRIAN AND BICYCLE CIRCULATION.....	9-5
Recommended Ordinances for Bicycle and Pedestrian Circulation and Access .....	9-5



**APPENDICES**

- APPENDIX A:      REVIEW OF CITY PLANS AND POLICIES**
- APPENDIX B:      MAJOR STREET INVENTORIES**
- APPENDIX C:      UMATILLA COUNTY POPULATION DISCUSSION –  
UMATILLA COUNTY POPULATION ANALYSIS**

## LIST OF TABLES

TABLE 4-1: LEVEL OF SERVICE CRITERIA FOR ARTERIAL AND COLLECTOR STREETS .....	4-2
TABLE 4-2: SUMMARY OF OPERATIONS AT US 395 AND CEDAR STREET .....	4-3
TABLE 4-3: DEPARTURE TO WORK DISTRIBUTION .....	4-4
TABLE 4-4: JOURNEY TO WORK TRIPS .....	4-5
TABLE 4-5: HISTORIC ACCIDENT RATES FOR STATE HIGHWAYS .....	4-5
TABLE 4-6: ACCIDENT SUMMARIES FOR US 395 .....	4-6
TABLE 5-1: UMATILLA COUNTY POPULATION TRENDS .....	5-1
TABLE 5-2: HISTORIC TRAFFIC GROWTH RATES ON STATE HIGHWAYS .....	5-3
TABLE 5-3: FORECAST TRAFFIC VOLUMES AND TOTAL GROWTH ON STATE HIGHWAYS .....	5-4
TABLE 5-4: SUMMARY OF FUTURE OPERATIONS AT US 395 AND CEDAR STREET .....	5-5
TABLE 6-1: ROADWAY MAINTENANCE AND IMPROVEMENT PROGRAM .....	6-3
TABLE 6-2: TRANSPORTATION IMPROVEMENT OPTIONS: RECOMMENDATION SUMMARY .....	6-4
TABLE 7-1: ROAD DESIGN STANDARDS – BUSINESS/INDUSTRIAL .....	7-2
TABLE 7-2: ROAD DESIGN STANDARDS – RESIDENTIAL .....	7-2
TABLE 7-3: RECOMMENDED STREET DESIGN STANDARDS .....	7-3
TABLE 7-4: RECOMMENDED ACCESS MANAGEMENT STANDARDS .....	7-8
TABLE 7-5: RECOMMENDED STREET SYSTEM PROJECTS .....	7-11
TABLE 7-6: RECOMMENDED PEDESTRIAN SYSTEM PROJECTS .....	7-12
TABLE 7-7: CAPITAL IMPROVEMENT PROGRAM (1998 DOLLARS) .....	7-15
TABLE 8-1: SOURCES OF ROAD REVENUES BY JURISDICTION LEVEL .....	8-1
TABLE 8-2: UMATILLA COUNTY TRANSPORTATION-RELATED REVENUES .....	8-2
TABLE 8-3: UMATILLA COUNTY TRANSPORTATION-RELATED EXPENDITURES .....	8-3
TABLE 8-4: UMATILLA COUNTY BICYCLE PATH FUND REVENUES AND EXPENDITURES .....	8-3
TABLE 8-5: CITY OF PILOT ROCK STREET FUND REVENUES .....	8-4
TABLE 8-6: CITY OF PILOT ROCK STREET FUND EXPENDITURES .....	8-4
TABLE 8-7: ESTIMATED RESOURCES AVAILABLE TO CITY OF PILOT ROCK FROM STATE HIGHWAY FUND, 1998 DOLLARS .....	8-6
TABLE 8-8: RECOMMENDED PROJECTS AND FINANCIAL RESPONSIBILITY .....	8-15
TABLE 8-9: ESTIMATED CAPITAL FUNDING BALANCE .....	8-15

**LIST OF FIGURES**

**Follows Page**

FIGURE 1-1: PLANNING AREA - PILOT ROCK ..... 1-2  
FIGURE 3-1: ROADWAY FUNCTIONAL CLASSIFICATION - PILOT ROCK ..... 3-2  
FIGURE 3-2: PEDESTRIAN SYSTEM INVENTORY - PILOT ROCK ..... 3-6  
FIGURE 4-1: 1996 AVERAGE DAILY TWO-WAY TRAFFIC VOLUMES - PILOT ROCK ..... 4-2  
FIGURE 6-1: POTENTIAL TRANSPORTATION SYSTEM IMPROVEMENTS - PILOT ROCK ..... 6-1  
FIGURE 7-1: RECOMMENDED STREET STANDARDS - LOCAL RESIDENTIAL AND ALLEYS ..... 7-2  
FIGURE 7-2: RECOMMENDED STREET STANDARDS - COLLECTOR STREETS ..... 7-2  
FIGURE 7-3: RECOMMENDED STREET STANDARDS - INDUSTRIAL/COMMERCIAL STREETS ..... 7-2  
FIGURE 7-4: RECOMMENDED STREET STANDARDS - ARTERIAL STREETS ..... 7-2  
FIGURE 8-1: STATE HIGHWAY FUND ..... 8-5

## CHAPTER 1: INTRODUCTION

The City of Pilot Rock Transportation System Plan (TSP) guides the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. This Transportation System Plan constitutes the transportation element of the City's Comprehensive Plan and satisfies the requirements of the Oregon Transportation Planning Rule established by the Department of Land Conservation and Development. It identifies and prioritizes transportation projects for inclusion in the Oregon Department of Transportation's (ODOT's) Statewide Transportation Improvement Program (STIP).

### PLANNING AREA

The City of Pilot Rock's Transportation System Plan planning area covers the entire area within the Pilot Rock Urban Growth Boundary (UGB). The planning area is shown on Figure 1-1. Roadways included in the Transportation System Plan fall under three jurisdictions: the city of Pilot Rock, Umatilla County, and the state of Oregon.

Pilot Rock is located in the central portion of Umatilla County in the northeastern corner of Oregon. The City has a population of roughly 1,600 people. It is laid out in a grid pattern, which is broken up by three creeks and US 395 which runs through the middle of the City. The City's commercial development is concentrated along US 395 in the downtown. The City's biggest employers are lumber companies and there are numerous farms within the UGB. Pilot Rock has its own school district and is conveniently located approximately 15 miles south of Pendleton, which is the largest city in the county.

The US 395 runs northeast-southeast through Pilot Rock acting as both a through route and as the primary commercial street downtown. The highway connects the cities to Pendleton, Stanfield, Hermiston, Umatilla and Washington State to the north; and Ukiah, John Day, and California to the south. Five paved county roads also provide access to the City; (1) County Road No 1375 (East Birch Creek Road) which runs south from US 395, (2) County Road No. 1386 (Circle Road) which runs north from the City, (3) County Road No. 1150 (Stewart Creek Road) which runs east along the city limits, (4) County Road No. 1391 (known locally as Delwood Street) in the southwest, and (5) County Road No. 1151 (known locally as Elm Street) in the east. Additionally, County Road No. 1388 (Stock Drive Road), a dirt road, provides access to Pilot Rock from the west. These roadways allow easy access to the regional production, distribution, and marketing centers in the area and function as arterials and collectors throughout the City. The Oregon Department of Transportation (ODOT) has jurisdiction over US 395, the county has jurisdiction over the county roads, and the City has jurisdiction over the rest of the existing roadways.

The Union Pacific Railroad right-of-way runs northeast to southwest into the UGB and city limits stopping just north of downtown.

Pilot Rock is a major wood processing center for the county. The City's three largest employers in May 1986, were Louisiana Pacific, U.S. Gypsum (USG Industries), and Pine-Lam, Inc. The labor force is subject to seasonal unemployment due to the cyclical nature of natural resource-based industries.

### PLANNING PROCESS

The Pilot Rock Transportation System Plan was prepared as part of an overall effort in Umatilla County to prepare TSPs for Umatilla County and eight small municipalities: the cities of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston. Each plan was developed through a series of technical analyses

combined with systematic input and review by the county, the cities, the management team, the Transportation Advisory Committee (TAC), ODOT, and the public. The TAC consisted of staff, elected and appointed officials, residents, and business people from Umatilla County, and the eight cities. Key elements of the process include:

- Involving the Pilot Rock community (Chapter 1)
- Defining goals and objectives (Chapter 2)
- Reviewing existing plans and transportation conditions (Chapters 3, 4, and Appendices A and B)
- Developing population, employment, and travel forecasts (Chapter 5, and Appendix C)
- Developing and evaluating potential transportation system improvements (Chapter 6)
- Developing the Transportation System Plan and a capital improvement plan (Chapter 7)
- Evaluate funding options and develop financial plan(Chapter 8)
- Developing recommended policies and ordinances (Chapter 9)

### **Community Involvement**

Community involvement is an integral component in the development of a TSP for the city of Pilot Rock, Umatilla County and each of the other seven cities covered under the Umatilla County TSP process. Since the communities faced many similar transportation and land use issues, a public involvement program involving all the jurisdictions was used. This process allowed for individual attention when needed, and general problem solving for all jurisdictions as appropriate. Several different techniques were utilized to involve each local jurisdiction, ODOT, and the general public.

A combined management team and transportation advisory committee (TAC) provided guidance on technical issues and direction regarding policy issues to the consultant team. Staff members from each local jurisdiction, from ODOT, and a local resident from each community served on the TAC. This group met several times during the course of the project.

The second part of the community involvement effort consisted of community meetings within Umatilla County. The first public meeting was held in June 1998. The Pilot Rock general public was invited to learn about the TSP planning process and provide input on transportation issues and concerns. A second public meeting was held in July 1998. The third and final public meeting was held in September 1998. The public was notified of the public meetings through public announcements in the local newspapers and on the local radio station.

### **Goals and Objectives**

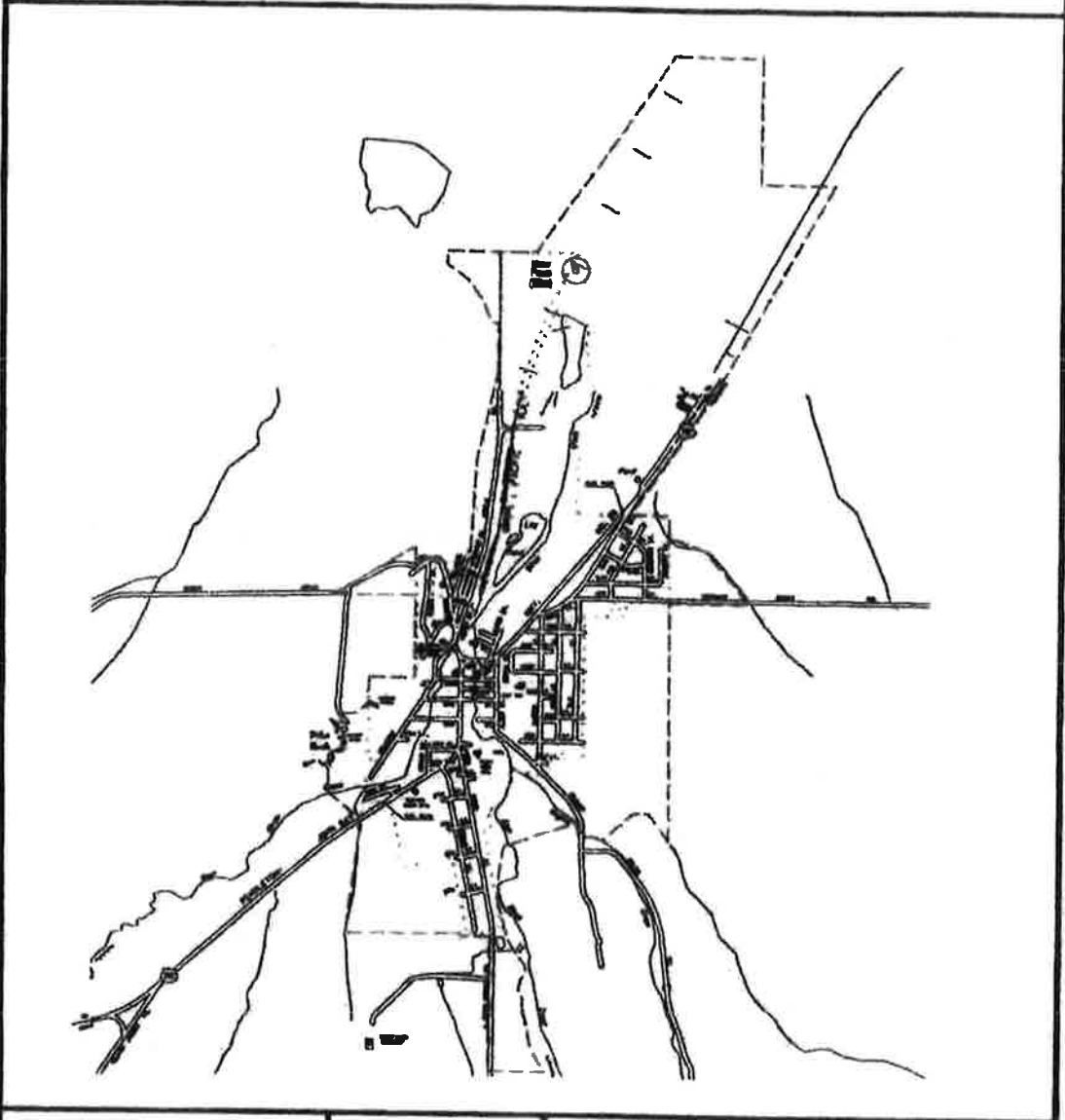
Based on input from the community, the county, and the management team/TAC, a set of goals and objectives were defined for the TSP. These goals and objectives were used to make decisions about various potential improvement projects. They are described in Chapter 2.

### **Review and Inventory of Existing Plans, Policies, and Public Facilities**

To begin the planning process, all applicable Pilot Rock and Umatilla County transportation and land use plans and policies were reviewed and an inventory of public facilities was conducted. The purpose of these

**LEGEND:**

- URBAN GROWTH BOUNDARY
- ..... CITY LIMITS



**DAVID EVANS  
AND ASSOCIATES, INC.**  
2828 S.W. CORBETT AVENUE  
PORTLAND, OR 97201-4830 (503) 237-6663

  
**NORTH**  
(NOT TO SCALE)

**FIGURE 1-1**

**Planning Area  
-Pilot Rock**

City of Pilot Rock TSP



efforts was to understand the history of transportation planning in the Pilot Rock area, including the street system improvements planned and implemented in the past, and how the City is currently managing its ongoing development. Existing plans and policies are described in Appendix A of this report.

The inventory of existing facilities catalogs the current transportation system. The results of the inventory are described in Chapter 3, while Chapter 4 describes how the system operates. Appendix B summarizes the inventory of the existing arterial and collector street system.

### **Future Transportation System Demands**

The Transportation Planning Rule requires the Transportation System Plan to address a 20-year forecasting period. Future traffic volumes for the existing and committed transportation systems were projected using ODOT's *Level 1 – Trending Analysis* methodology. The overall travel demand forecasting process is described in Chapter 5.

### **Transportation System Potential Improvements**

Once the travel forecasts were developed, it was possible to evaluate a series of potential transportation system improvements. The evaluation of potential transportation improvements was based on a qualitative review of safety, environmental, socioeconomic and land use impacts, as well as estimated cost. These improvements were developed with the help of the local working group, and they attempt to address the concerns specified in the goals and objectives (Chapter 2). After evaluating the results of the potential improvements analysis, a series of transportation system improvements were selected. These recommended improvements are described in Chapter 6.

### **Transportation System Plan**

The Transportation System Plan addresses each mode of transportation and provides an overall implementation program. The street system plan was developed from the forecasting and potential improvement evaluations described above. The bicycle and pedestrian plans were developed based on current usage, land use patterns, and the requirements set forth by the Transportation Planning Rule. The public transportation, air, water, rail, and pipeline plans were developed based on discussions with the owners and operators of those facilities. Chapter 7 details the plan elements for each mode.

### **Funding Options**

The city of Pilot Rock will need to work with Umatilla County and ODOT to finance new transportation projects over the 20-year planning period. An overview of funding and financing options that might be available to the community are described in Chapter 8.

### **Recommended Policies and Ordinances**

Suggested Comprehensive Plan policies and implementing zoning and subdivision ordinances are included in Chapter 9. These policies and ordinances are intended to support the TSP and satisfy the requirements of the Transportation Planning Rule (TPR).



## RELATED DOCUMENTS

The city of Pilot Rock TSP addresses the regional and rural transportation needs in the City. There are several other documents that address specific transportation elements or areas in Umatilla County that may directly or indirectly impact transportation elements in and around Pilot Rock.

### Other Transportation System Plans Prepared Concurrently with the Pilot Rock TSP

In addition to the Pilot Rock TSP, seven small city TSPs were prepared in conjunction with the Umatilla County TSP project. These documents include:

- City of Adams TSP
- City of Athena TSP
- City of Echo TSP
- City of Helix TSP
- City of Stanfield TSP
- City of Ukiah TSP
- City of Weston TSP

### *) Pilot Rock Comprehensive Plan*

The Pilot Rock Comprehensive Plan was adopted in 1978, and amended in 1986. The plan provides goals and policies for guiding the future growth and development of the City. Two of the City's 13 goals strongly impact the development of the Transportation System Plan – Goal K: Transportation and Goal J: Public Facilities and Services. The policies enacted by the City in support of these goals are summarized in Appendix A.

#### Goal K: Transportation

To provide and encourage a safe, convenient and economic transportation system.

#### Applicable Policies

1. To repave city streets and provide curbs and sidewalks as resources are available.
2. To encourage development and use of alternate means of transportation to the private automobile.
3. To work with ODOT to minimize conflicts between through and local traffic on US 395, to reduce traffic hazards and expedite the flow of traffic by limiting access to and from the highway with the Urban Growth Area, and planning for adequate access to property adjacent to the highway.

4. To development of good transportation linkages (vehicular, pedestrian, bicycle, etc.) between residential areas and major activity centers.
5. To encourage the continuing availability of rail transportation linkages to mainline services for the industrial area.
6. To work with Umatilla County to develop joint policies concerning local roads and streets within the Urban Growth Boundary.
7. To adopt the recommendation in the Oregon Department of Transportation Six-Year Highway Improvement Plan that occurs within the Urban Growth Boundary.

#### Goal J: Public Facilities and Services

To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban development.

#### Applicable Policies

1. To develop, maintain, update, and expand police and fire services, streets and sidewalks, water and sewer systems, and storm drains as necessary to provide adequate facilities and services to the community.

#### ***Pilot Rock Technical Report***

The Pilot Rock Technical Report offers background information for the City regarding the natural environment, the socioeconomic environment (including population indicators) and establishment of the Urban Growth Boundary (UGB). The report contains road classifications for roadways through the City. The classifications are listed in the Appendix: Table X, 1997 Major Street Inventory. This report was last revised in 1986. Therefore, much of the data is now outdated. Key findings regarding transportation facilities are summarized in Appendix A of this TSP.

#### ***Pilot Rock Subdivision Ordinance***

The city of Pilot Rock Subdivision Ordinance was adopted in 1986. It regulates all subdivisions and partitions of lands, within the city limits. (Umatilla County is responsible for regulating subdivision and partitions outside of the city limits but within the Urban Growth Boundary. However, the City reviews and comments on all plans, plats, or maps for those areas). It also regulates the construction of new or undeveloped streets within the City and Urban Growth Boundary as well as general requirements and design standards for streets including the provision of sidewalks and bicycle facilities to support safe and efficient pedestrian and bicycle mode use. The ordinance explains the Pilot Rock street classifications and street standards and are summarized in Appendix A of this TSP.

#### ***Pilot Rock Zoning Ordinance***

The Pilot Rock Zoning Ordinance was adopted in 1986. The purported purpose of zoning ordinance is as follows:

To promote the public health, safety, and welfare; to encourage the most appropriate use of property within the City; to stabilize and protect the value of property; to provide adequate light and air; to prevent overcrowding; to lessen traffic congestion; to facilitate adequate and economical provision for public improvements, all to implement the Comprehensive Plan of the city of Pilot Rock; to provide a method of administration and to provide penalties for violation of the provision herein.

The Ordinance contains 12 sections. The only section that applies directly to transportation is the section on off-street parking and loading.

### ***Umatilla County Comprehensive Plan***

The Umatilla County Comprehensive Plan was written in 1983 to meet the statewide requirements for planning. It was last amended in 1987. The plan is broken into three sections: the Introduction; Plan Elements – Findings, Recommended Policies; and the Plan Map. The Plan Elements section is broken into sections dealing with the fourteen goals. This includes a Transportation Element with findings and recommended policies.

### ***Umatilla County Development Code***

- The Umatilla County Development Ordinance was adopted in 1983, and last amended in November of 1991. In 1997 this ordinance was recodified and retitled as Chapter 1528 Development Code. The portions of the code most relevant to the Transportation System Plan include sections on off-street parking requirements, driveways, and road standards. Amendments to the development code include road standards for county roads.

### ***Corridor Strategies***

Corridor strategies have been prepared for both US 395 and OR 11.

The US 395 corridor is covered in two studies: *the US Highway 395 North (Umatilla-Stanfield) Draft Corridor Strategy* and the *US Highway 395 South (Pendleton-California Border) Corridor Strategy*. The Corridor Strategies were developed to identify projects for the Oregon State Transportation Improvement Program. Generally, the Corridor Strategies translate the policies of the Oregon Transportation Plan (OTP) into specific actions; describe the functions of each transportation mode, consider trade-offs, and show how they will be managed; identify and prioritize improvements for all modes of travel; indicate where improvements should be made; resolve any conflicts with local land use ordinances and plans; and establish guidelines for how transportation plans will be implemented.

The US 395 Corridor Strategies contain a corridor overview, which includes population and employment forecasts, highway data such as traffic volumes and pavement conditions and descriptions of other modes of travel (air, rail, bicycle, etc.). The overall corridor strategy is to, “accommodate efficient movement of through travel, while maintaining environmental integrity, enhancing travel safety and supporting economic development.” The reports set forth objectives that are intended to embody this overall strategy for the corridor, and to set direction and provide guidance for corridor-wide transportation plans and improvements.

### **Other State Plans**

In addition to the ODOT corridor strategy, coordination with the following state plans is required:

- Oregon Transportation Plan (1992)
- Oregon Highway Plan (1999)
- Oregon Bicycle and Pedestrian Plan (1995)
- Oregon Public Transportation Plan (1996)
- Oregon Rail Freight Plan (1994)
- Oregon Rail Passenger Policy and Plan (1992)
- Oregon Traffic Safety Action Plan (1995)
- Oregon Aviation System Plan (in development).

## CHAPTER 2: GOALS AND OBJECTIVES

The purpose of the TSP is to provide a guide for the city of Pilot Rock to meet its transportation goals and objectives. The following goals and objectives were developed from information contained in the City's Comprehensive Plan and reflect public concerns as expressed during public meetings. An overall goal was drawn from the plan, along with more specific goals and objectives. Throughout the planning process, each element of the plan was evaluated against these parameters.

### OVERALL TRANSPORTATION GOAL

To provide and encourage a safe, convenient, and economic transportation system.

#### Goal 1

Preserve the function, capacity, level of service, and safety of the nearby highways.

#### *Objectives*

- A. Develop access management standards.
- B. Develop alternative, parallel routes where practical.
- C. Promote alternative modes of transportation to the private automobile.
- D. Promote transportation demand management programs.
- E. Promote transportation system management.
- F. Develop procedures to minimize impacts and protect transportation facilities, corridors, or sites during the development review process.

#### Goal 2

Ensure that the road system within the City is adequate to meet public needs, including those of the transportation disadvantaged.

#### *Objectives*

- A. Meet identified maintenance level of service standards on the county and state highway systems.
- B. Repave city streets and provide curbs and sidewalks as resources are available.
- C. Develop and adhere to a five-year road program for maintenance and improvement of the existing city road system.
- D. Review and revise, if necessary, street cross section standards for local, collector, and arterial streets to enhance safety and mobility.

- E. Develop access management strategies with ODOT for US 395 through the Urban Growth Boundary to ensure adequate access to property adjacent to the highway while limiting access to and from the highway.
- F. Develop access management strategies for anywhere else needed.
- G. Evaluate the need for traffic control devices.
- H. Evaluate the safety of the street system and develop plans to mitigate any safety hazards.
- I. Encourage the provision of transportation alternatives for elderly and handicapped citizens.

### **Goal 3**

Improve coordination among Pilot Rock and nearby cities, the Oregon Department of Transportation (ODOT), the US Forest Service (USFS), the Federal Highway Administration (FHWA), and the county.

#### ***Objectives***

- A. Work with Umatilla County to coordinate roadway maintenance and improvements and to develop joint policies concerning local roads and streets within the Urban Growth Boundary.
- B. Work with ODOT to minimize conflicts between through and local traffic and reduce traffic hazards on US 395.
- C. Cooperate with ODOT in the implementation of the Statewide Transportation Improvement Program (STIP).
- D. Work with the county in establishing right-of-way needed for new roads identified in the Transportation System Plans.
- E. Take advantage of federal and state highway funding programs.
- F. Consider pooling resources with other cities and the county to provide services that benefit areas both in and outside the City.

### **Goal 4**

Increase the use of alternative modes of transportation (walking, bicycling, and public transportation) through improved access, safety, and service.

#### ***Objectives***

- A. Cooperate with other cities and the county to create inter-city transit service.
- B. Provide sidewalks or shoulders and safe crossings on collectors and arterials.
- C. Explore opportunities for bicycle facilities and coordinate with the county bicycle planning efforts.
- D. Seek Transportation and Growth Management (TGM) and other funding for projects evaluating and improving the environment for alternative modes of transportation.

**Goal 5**

Encourage the continued rail transportation linkage to mainline services.

**Objective**

- A. Maintain operational status of the Union Pacific rail line.

## CHAPTER 3: TRANSPORTATION SYSTEM INVENTORY

As part of the planning process, David Evans and Associates, Inc., conducted an inventory of the existing transportation system in Pilot Rock. This inventory covered the street system as well as the pedestrian, bikeway, public transportation, rail, air, water, and pipeline systems.

### STREET SYSTEM

The most common understanding of transportation is of roadways carrying cars and trucks. Most transportation dollars are devoted to building, maintaining, or planning roads to carry automobiles and trucks. The mobility provided by the personal automobile has resulted in a great reliance on this form of transportation. Likewise, the ability of trucks to carry freight to nearly any destination has greatly increased their use.

Encouraging the use of cars and trucks must be balanced against costs, livability factors, the ability to accommodate other modes of transportation, and negative impacts on adjacent land uses; however, the basis of transportation in nearly all American cities is the roadway system. This trend is clearly seen in the existing Pilot Rock transportation system, which consists almost entirely of roadway facilities for cars and trucks. Because of the rural nature of the area, the street system will most likely continue to be the basis of the transportation system for at least the 20-year planning period; therefore, the emphasis of this plan is on improving the existing street system for all users.

The existing street system inventory was conducted for all highways, arterial roadways, and collector roadways within Pilot Rock, as well as those in Umatilla County that are included in the TSP planning area. Inventory elements include:

- Street classification and jurisdiction
- Street width
- Number of travel lanes
- Presence of on-street parking, sidewalks, or bikeways
- Speed limits
- General pavement conditions

Figure 3-1 shows the roadway functional classification and jurisdiction. Appendix B lists the complete inventory.

### Street Classification

The Pilot Rock Technical Report, the background information for the City's Comprehensive Plan, provides functional classifications for the streets within the City. The Technical Report is not adopted as part of the Comprehensive Plan, but remains the supporting document that is subject to revisions as new technical data become available. When new data indicate that the City's plan should be revised, amendments to the technical report shall be made.

The Pilot Rock Technical Report designates streets within the City as arterials, major collectors or minor collectors. All streets not classified are assumed to be local streets. No definitions are provided for the street classifications. There is some inconsistency with the Pilot Rock Zoning Ordinance which classifies (but does not designate) streets as arterials, collectors, local streets, cul-de-sacs, alleys, and marginal access streets. The zoning ordinance also provides definitions for these roadway classifications, as well as road



design standards. DEA will recommend a consistent street classification system, including definitions and roadway design standards, as part of the development of this TSP.

Typically, a city the size of Pilot Rock would classify streets as either arterials, collectors, or local streets. Definitions for these classifications are provided below. Based on conditions observed during the field reconnaissance (traffic volumes, street widths, etc.), DEA verified the classification of the streets classified in the Pilot Rock Technical Report, as described below. The roadway classifications shown in Figure 3-1 reflect the classifications as designated in the Pilot Rock Technical Report. The inventory includes city, county, and state roadways.

### ***Arterials***

Arterials form the primary roadway network within and through a region. They provide a continuous road system that distributes traffic between cities, neighborhoods, and districts. Generally, arterials are high capacity roadways that carry high traffic volumes entering or leaving the City.

In Pilot Rock, there is one street which functions as an arterial: US 395 (also called Pendleton–John Day Highway). This roadway serves as the focus for most of the commercial development in the City.

### ***Collectors***

Collectors serve traffic within the commercial, industrial, and residential neighborhood areas. They connect local neighborhoods or districts to the arterial network. Collectors help form part of the grid system; however, they are not intended to function as alternate routes to the arterial system.

The Pilot Rock Technical Report classified six streets as major collectors: NW Cedar Street, Birch Street, Main Street (east of US 395), Alder Street (between Main Street and US 395), and 4th Street/Stewart Creek Road.

Seven streets were classified as minor collectors: Delwood Street (south of 2nd Street), 2nd Street (west of US 395), Alder Street, SE 5th Street, Cherry Street, Elm Street, and Delwood Place. Field reconnaissance by DEA indicated that Delwood Place is currently a dirt road and does not function as a collector, therefore it is not shown as a collector on Figure 3-1.

### ***Local Streets***

Local streets provide access to all parcels of land and serve travel over relatively short distances. They are designed to carry the very low traffic volumes associated with the local uses which abut them. Through traffic movements are discouraged on local streets.

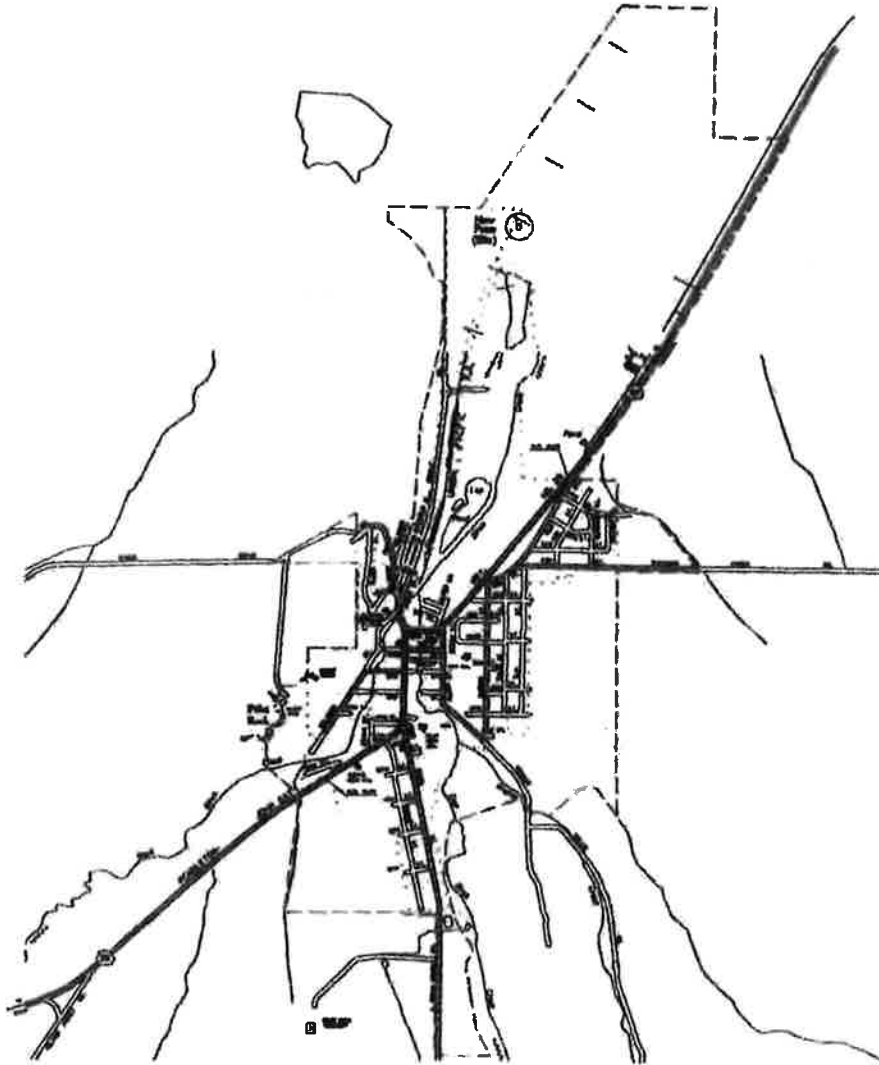
The local streets in Pilot Rock are comprised of all streets not classified as either arterials or collectors.

### **Street Layout**

The development of the Pilot Rock street system is constricted by natural hazards. Pilot Rock is situated at the confluence of three creeks. East and West Birch Creek come together just north of the downtown area and form Birch Creek. Also, Wegner Creek flows into East Birch Creek near the south city limits. In addition, the

**LEGEND:**

- |       |                 |       |                                  |       |                       |
|-------|-----------------|-------|----------------------------------|-------|-----------------------|
| ————— | ARTERIAL        | ————— | INDUSTRIAL/<br>COMMERCIAL STREET | ----- | URBAN GROWTH BOUNDARY |
| ===== | MAJOR COLLECTOR | ————— | LOCAL STREET                     | ..... | CITY LIMITS           |
| ----- | MINOR COLLECTOR |       |                                  |       |                       |



**DAVID EVANS  
AND ASSOCIATES, INC.**  
2528 S.W. CORBETT AVENUE  
PORTLAND, OR 97201-4830 (503) 282-6663



**FIGURE 3-1**

**Roadway Functional  
Classification  
-Pilot Rock**

City of Pilot Rock TSP

basalt rock formation on the west side of the City has steep slopes which constrain development. For these reasons, the City did not develop in a regular grid pattern, although there are small sections of the City which are laid out in a grid. The City also contains many discontinuous, or dead-end, streets due to a lack of vehicular bridges over the creeks; however, there are many useful pedestrian bridges over the creeks, which connect the dead-end streets. US 395 is the main arterial through the City and runs north-south, connecting Pilot Rock to Ukiah to the south, and to Pendleton to the north.

### State Highways

Discussion of the Pilot Rock street system must include the state highways that traverse the planning area. Although Pilot Rock has no direct control over the state highways, adjacent development and local traffic patterns are heavily influenced by the highways. Pilot Rock is served by one state highway, US 395. This highway serves as the major route through the City with commercial and industrial development focused along its corridor.

The 1999 Oregon Highway Plan (OHP) classifies the state highway system into five categories: Interstate, Statewide, Regional, District, and Local Interest. ODOT has established primary and secondary functions for each type of highway and objectives for managing the operations for each one.

### US 395

US 395 between Pendleton and John Day running through the city of Pilot Rock is classified as a State Highway. According to the 1999 OHP, the primary function of a State Highway is to "provide connections and links to larger urban areas, ports, and major recreation areas that are not directly served by interstate highways." The management objective for statewide highways is to provide for safe and efficient high-speed, continuous-flow operation in rural areas and high- to moderate-speed operations with limited interruptions of flow in urban and urbanizing areas. This means that design factors such as controlling access and providing passing lanes are of primary importance.

The stretch of US 395 between Pendleton and John Day is also known as the *Pendleton - John Day Highway* and is a State Highway. Beginning in Pendleton at the I-84 junction and extending south through Pilot Rock to John Day, it ends at the California State border. The rural stretch of highway is primarily two lanes with a speed limit of 55 mph, except within the Pilot Rock city limits where the highway is two to four lanes and traffic is subject to lower speeds varying between 25 and 45 mph with 20 mph school zones. US 395 traverses Pilot Rock from north to south and serves as the major route through the City with commercial and industrial development focused along its corridor.

In 1997, an ODOT study team and Corridor Management Team developed the US 395 South (Pendleton-California Border) Draft Corridor Strategy, an overall corridor strategy and objectives for managing, operating, and improving the transportation corridor between Pendleton and California over the next 20 years. The Corridor Strategy was developed to identify projects for the Oregon STIP. Development of the US 395 South Corridor Strategy is the first step in the corridor planning process. Corridor planning is intended to implement the goals and policies set for the by the 1992 Oregon Transportation Plan (OTP), the 1999 Highway Plan, and the recent modal plans for rail, freight, bike/pedestrian, aviation, and public transportation plus the safety action plan.

Generally, the Corridor Strategy translates the policies of the OTP into specific actions; describes the functions of each transportation mode, considers trade-offs, and shows how they will be managed; identifies and prioritizes improvements for all modes of travel; indicates where improvements should be made;

resolves any conflicts with local land use ordinances and plans; and establishes guidelines for how transportation plans will be implemented.

The US 395 South Corridor Strategy contains a corridor overview, which includes population and employment forecasts, highway data such as traffic volumes and pavement conditions and descriptions of other modes of travel (air, rail, bicycle, etc.). The overall corridor strategy is to accommodate efficient movement of through travel, while maintaining environmental integrity, enhancing travel safety and supporting economic development. The report sets forth objectives that are intended to embody this overall strategy for the corridor, and sets direction and provides guidance for corridor-wide transportation plans and improvements.

The US 395 South Corridor Strategy will be followed-up by the US 395 South Corridor Plan which will build upon objectives developed in the Strategy to identify, refine, and facilitate the acceptance of specific decisions related to corridor transportation management, capital improvements and service improvements. The Corridor Plan will identify and discuss the decisions considered to meet each objective, technical analysis of alternatives, and recommendations for action.

## **GENERAL PAVEMENT CONDITIONS**

### **City Streets**

The ODOT Pavements Unit published a 1994 report entitled, Pavement Rating Workshop, Non-National Highway System. This report thoroughly defines the characteristics that pavements must display to be categorized as Very Good and so on. The report also provides color photographs of roadways that display these characteristics, which aids in field investigation and rating of pavement condition. These established guidelines were employed by DEA in conducting a subjective evaluation of pavement condition for all collectors within the city of Pilot Rock.

An inventory of the City's collectors, conducted by DEA in November 1997, indicated that pavement on Birch Street, Cedar Street, Stewart Creek Road/4<sup>th</sup> Street and Elm Street is in fair condition, where pavement on Alder Street and Cherry Street is in poor condition.

### **State Highways**

The Oregon Department of Transportation's (ODOT's) Pavement Unit surveys the state highway system on an annual basis. Observed severity levels of certain distress types are used to determine a pavement condition rating score. These scores are used to stratify pavement segments into five condition categories: (1) Very Good, (2) Good, (3) Fair, (4) Poor, and (5) Very Poor. The *Umatilla County Transportation System Plan* briefly defines these condition categories.

The section of US 395 extending through Pilot Rock was repaved in 2000 and is in very good condition.

## **BRIDGES**

The Oregon Department of Transportation maintains an up to date inventory and appraisal of Oregon bridges. Part of this inventory involves the evaluation of three mutually exclusive elements of bridges. One element identifies which bridges are structurally deficient. This is determined based on the condition rating

for the deck, superstructure, substructure, or culvert and retaining walls. It may also be based on the appraisal rating of the structural condition or waterway adequacy. Another element identifies which bridges are functionally obsolete. This element is determined based on the appraisal rating for the deck geometry, under-clearances, approach roadway alignment, structural condition, or waterway adequacy. The third element summarizes the sufficiency ratings for all bridges. The sufficiency rating is a complex formula which takes into account four separate factors to obtain a numeric value rating the ability of a bridge to service demand. The scale ranges from 0 to 100 with higher ratings indicating optimal conditions and lower ratings indicating insufficiency. Bridges with ratings under 55 may be nearing a structurally deficient condition.

There are a total of five bridges within the city of Pilot Rock; three are city-owned and maintained, one is county owned and maintained, with the remaining bridge along US 395 under state jurisdiction. These bridges are all structurally sound.

### **PEDESTRIAN SYSTEM**

The most basic transportation option is walking. Walking is the most popular form of exercise in the United States and can be performed by people of all ages and all income levels. However, it is not often considered as a means of travel. Because pedestrian facilities are generally an afterthought, they are not planned as an essential component of the transportation system.

The relatively small size of Pilot Rock indicates that walking could be employed regularly, weather permitting, to reach a variety of destinations. Encouraging pedestrian activities may not only decrease the use of the personal automobile but may also provide benefits for retail businesses. Where people find it safe, convenient, and pleasant to walk, they may linger and take notice of shops overlooked before. They may also feel inclined to return to renew the pleasant experience time and again.

The sidewalk system in the core of Pilot Rock is relatively complete. Sidewalks exist on the east and west side of US 395 between 4th Place and Main Street. Sidewalk exists along the west side of the highway, between 4th Street and Main Street. Main Street has sidewalks on both sides between the pedestrian bridge West Birch Creek and Alder Street. Sidewalks exist on the west side of Alder Street from Main Street to just south of 5th Street. Short sections of sidewalk exist on 2nd Street and 3rd Street, west of US 395, but most are in poor condition. Curb cuts for wheelchair access are largely lacking even where sidewalks exist. There are some locations where there are built-up curb ramps; however, they are too steep to meet Americans with Disabilities Act (ADA) requirements. Crosswalks exist at the intersections of US 395 and 3rd Street, US 395 and Main Street and US 395 and Alder Drive. The complete pedestrian system inventory is shown in Figure 3-2.

### **BIKEWAY SYSTEM**

Like pedestrians, bicyclists are often overlooked when considering transportation facilities. Bicycles are not often considered as a serious mode of transportation. However, cycling is a very efficient mode of travel. Bicycles take up little space on the road or parked, do not contribute to air or noise pollution, and offer relatively higher speeds than walking. Because of the small size of Pilot Rock, a cyclist can travel to any destination in town within a matter of minutes.

Bicycling should be encouraged for short trips in order to reduce some of the negative aspects of urban growth and automobile use. Noise, air pollution, and traffic congestion could be mitigated if more short trips were taken by bicycle or on foot. Typically, a short trip that would be taken by bicycle is around two miles; on foot, the distance commonly walked is around one-half mile.

Pilot Rock currently has sanctioned bikeways in the northern part of town on two streets, Cedar Street and US 395. The bike lane on Cedar Street is 6 feet wide and roughly a mile long, running north on the west side of the street from the intersection with Delwood Street to the last mill near the city limits. The other bike lane is also 6 feet wide. It is located on the east side of US 395 from the intersection with Alder Street north to the intersection with 4th Street. On the rest of the city's streets, bicyclists must share the roadways with motorized vehicles. On low volume roadways, such as many of the local streets, bicyclists and automobiles can both safely and easily use the roadway. On higher volume roadways, particularly US 395, safety for the bicyclists is an important issue.

An impediment to bicycle use is the lack of parking and storage facilities for bikes throughout the city of Pilot Rock.

## **PUBLIC TRANSPORTATION**

The only intercity bus service in Umatilla County is provided by Greyhound bus lines which provides service along I-84, US 395, and OR 11 within Umatilla County. Greyhound has terminals located in Hermiston and Pendleton that connect these cities to each other and major population centers outside of the county. The Hermiston terminal has two departures heading southeast (with stops in Pendleton, La Grande, Boise, and Salt Lake City); three buses running west to Portland; and two buses heading north on US 395 to Pasco and Spokane daily. The Pendleton terminal has three departures southeast (with stops in La Grande, Boise and Salt Lake City); three departures west to Portland; and two departures north to Seattle via Walla Walla, Pasco, and Spokane daily. The line to Seattle could serve Milton-Freewater as it runs through the City along OR 11.

Pilot Rock has a dial-a-ride type service available for the transportation disadvantaged. Dial-a-ride service is defined as door-to-door service initiated by a user's request for transportation service from their origins to specific locations on an immediate or advance reservation basis. This service is provided by the Pilot Rock Lions Club.

Pilot Rock has no local fixed-route transit service at this time. The small size and low traffic volumes on city streets indicate that mass transit is not necessary or economically feasible at this time. The Transportation Planning Rule exempts cities with a population of less than 25,000 from developing a transit system plan or a transit feasibility study as part of their Transportation System Plans.

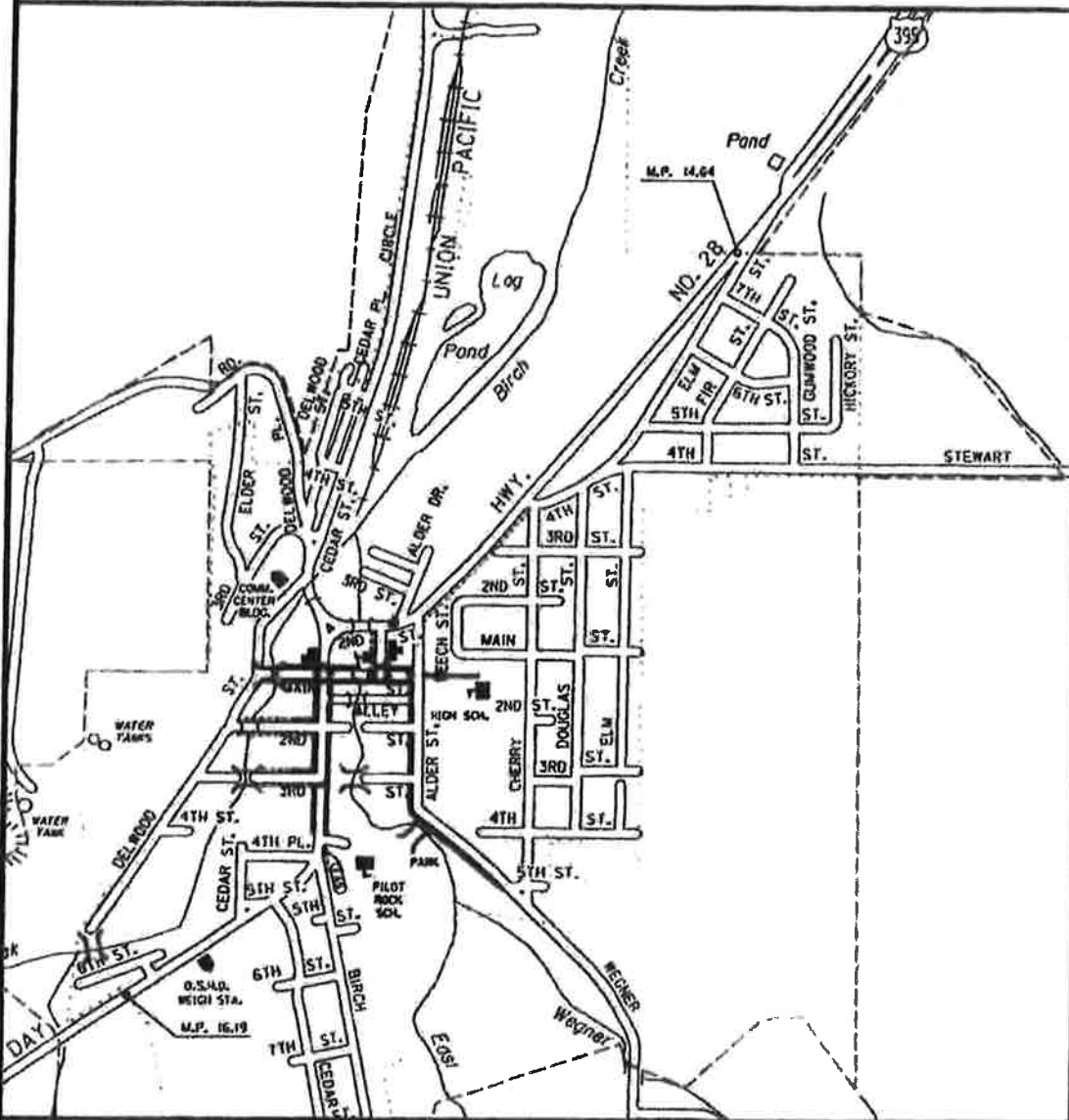
## **RAIL SERVICE**

Pilot Rock has freight rail service. Until recently, AMTRAK service was available in Hermiston and Pendleton along the rail line that follows the I-84 corridor from Portland to Boise, Idaho and points east. Amtrak is currently experiencing a funding crisis. As a result, passenger service between Portland and Denver, including service to cities within Umatilla County, was discontinued in May 1997. This line serves only freight traffic now.

The Union Pacific Railroad right-of-way runs northeast to southwest into the UGB and city limits stopping just north of downtown. This rail line carries freight between Pilot Rock and Pendleton one to two times per week. The line connects to the Union Pacific main line that runs through Pendleton. In addition to this line, there are two nearby lines. A major freight line owned and operated by Union Pacific Railroad, a Class I line-haul freight railroad, stops in Hermiston. Also, a limited rail service exists between Milton-Freewater and Weston on the Blue Mountain Railroad consisting of one freight train per day (maximum) or some local switching.

**LEGEND:**

- CONTINUOUS SIDEWALK
- ..... SIDEWALK IN POOR CONDITION
- )( PEDESTRIAN BRIDGE
- ‡ CROSSWALK
- ..... MULTI-USE PATH
- - - - - URBAN GROWTH BOUNDARY
- ..... CITY LIMITS



**DAVID EVANS AND ASSOCIATES, INC.**  
 2828 S.W. CORBETT AVENUE  
 PORTLAND, OR. 97201-4850 (503) 435-6667



**FIGURE 3-2**  
**Pedestrian System**  
**Inventory**  
**-Pilot Rock**

City of Pilot Rock TSP

## **AIR SERVICE**

The city of Pilot Rock is served by Eastern Oregon Regional Airport in Pendleton, which is approximately 20 miles north of Pilot Rock and by Hermiston Municipal Airport, which is approximately 40 miles northwest of Pilot Rock.

Eastern Oregon Regional Airport in Pendleton is a tower controlled airport with 40,600 annual operations. Passenger service includes 16 scheduled flights per day by Horizon Airlines, with flights to Portland and Seattle. The airfield is also home to 60 locally owned fixed-wing aircraft, 4 rotor, and 8 CH-47 Chinook helicopters with the Oregon Army Air Guard.

The city of Hermiston owns and operates a municipal airport. No commercial flights are available at the present time, but there is charter service available. The Hermiston Municipal Airport is located 1.5 miles from downtown Hermiston and had 12,380 annual operations in 1995. The airport is at an elevation of 641 feet above Mean Sea Level and has one runway which is 4,500 feet long and positioned in a northeast-southwest direction. The airport is often used by businesses such as Simplot, Gilroy Foods, Les Schwab Tires, UPS, and other large organizations such as PGE, Bonneville Power, and the Army Corps of Engineers. There is an agricultural spray operation based at the airport, and local residents also use the airport for recreational purposes.

## **PIPELINE SERVICE**

Although not often considered transportation facilities, pipelines carry liquids and gases very efficiently. The use of pipelines can greatly reduce the number of trucks and rail cars carrying fluids such as natural gas, oil, and gasoline. Cascade Natural Gas uses these lines to provide natural gas service to Pilot Rock residents.

## **WATER TRANSPORTATION**

Pilot Rock has no water transportation services. The nearest commercial port is the Port of Umatilla located in the northwest corner of the county along the Columbia River.



## CHAPTER 4: CURRENT TRANSPORTATION CONDITIONS

As part of the planning process, the current operating conditions for the transportation system were evaluated. This evaluation focused primarily on street system operating conditions since the automobile is by far the dominant mode of transportation in Pilot Rock. Census data were examined to determine travel mode distributions. Traffic counts were used to determine how well traffic is currently flowing.

### TRAFFIC VOLUMES

Historic traffic volume counts, documented in the ODOT *Traffic Volume Tables*, exist for US 395 in Pilot Rock.

#### Average Daily Traffic

The Average Daily Traffic (ADT) volumes on US 395 in Pilot Rock are shown in Figure 4-1. Traffic volumes are highest on US 395 in the center of town (between Second Street and Main Street), at 4,400 vehicles per day (vpd). Traffic volumes on US 395 range from 2,100 vpd to 3,700 vpd in the rest of the urbanized and drop off dramatically outside the urbanized area. US 395 volumes are approximately 1,300 vpd at the south city limit and approximately 3,100 at the north city limit. Traffic volumes on US 395 in Pilot Rock have seen little growth since 1990. Some locations showed an average annual growth rate of 2 to 3 percent per year; however, other locations reported lower average daily traffic volumes in 1996 than in 1990.

The traffic volumes shown on Figure 4-1 and other volume figures are average volumes for the year. Summer is the season when volumes are highest. ODOT data on US 395 west of Pilot Rock indicate that during the summer season, volumes are about 25 percent higher than average volumes.

No other daily or hourly traffic data were available for the city streets in Pilot Rock, nor were any counts taken. Because the daily volumes on US 395 in the City were fairly low, traffic volumes on the other city streets were expected to be very low, and capacity deficiencies on city streets do not appear to be an issue in Pilot Rock.

#### Street Capacity

Transportation engineers have established various standards for measuring traffic capacity of roadways or intersections. Each standard is associated with a particular level of service (LOS). The LOS concept requires consideration of factors that include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort and convenience, and operating cost. In the 1991 OHP, levels of service were defined by a letter grade from A-F, with each grade representing a range of volume to capacity (v/c) ratios. A volume to capacity ratio (v/c) is the peak hour traffic volume on a highway divided by the maximum volume that the highway can handle. If traffic volume entering a highway section exceeds the section's capacity, then disruptions in traffic flow will occur, reducing the level of service. LOS A represents relatively free-flowing traffic and LOS F represents conditions where the street system is totally saturated with traffic and movement is very difficult. The 1999 OHP maintains a similar concept for measuring highway performance, but represents LOS by specific v/c ratios to improve clarity and ease of implementation. Table 4-1 presents the level of service criteria for arterial roadways.

**TABLE 4-1**  
**LEVEL OF SERVICE CRITERIA FOR ARTERIAL AND COLLECTOR STREETS**

Service Level <sup>(1)</sup> (v/c Ratio) <sup>(2)</sup>	Typical Traffic Flow Conditions
A (0.00-0.48)	Relatively free flow of traffic with some stops at signalized or stop sign controlled intersections. Average speeds would be at least 30 miles per hour.
B (0.49-0.59)	Stable traffic flow with slight delays at signalized or stop sign controlled intersections. Average speed would vary between 25 and 30 miles per hour.
C (0.60-0.69)	Stable traffic flow with delays at signalized or stop sign controlled intersections. Delays are greater than at level B but still acceptable to the motorist. The average speeds would vary between 20 and 25 miles per hour.
C-D (0.70-0.73)	
D (0.74-0.83)	Traffic flow would approach unstable operating conditions. Delays at signalized or stop sign controlled intersections would be tolerable and could include waiting through several signal cycles for some motorists. The average speed would vary between 15 and 20 miles per hour.
D-E (0.84-0.87)	
E (0.84-0.97)	Traffic flow would be unstable with congestion and intolerable delays to motorists. The average speed would be approximately 10 to 15 miles per hour.
E-F (0.98-0.99)	
F ( $\geq 1.00$ )	Traffic flow would be forced and jammed with stop and go operating conditions and intolerable delays. The average speed would be less than 10 miles per hour.

Source: (1) Transportation Research Board, *Highway Capacity Manual*, Special Report 209. National Research Council, 1985.

(2) ODOT, *SIGCAP Users Manual*. ODOT, 1994.

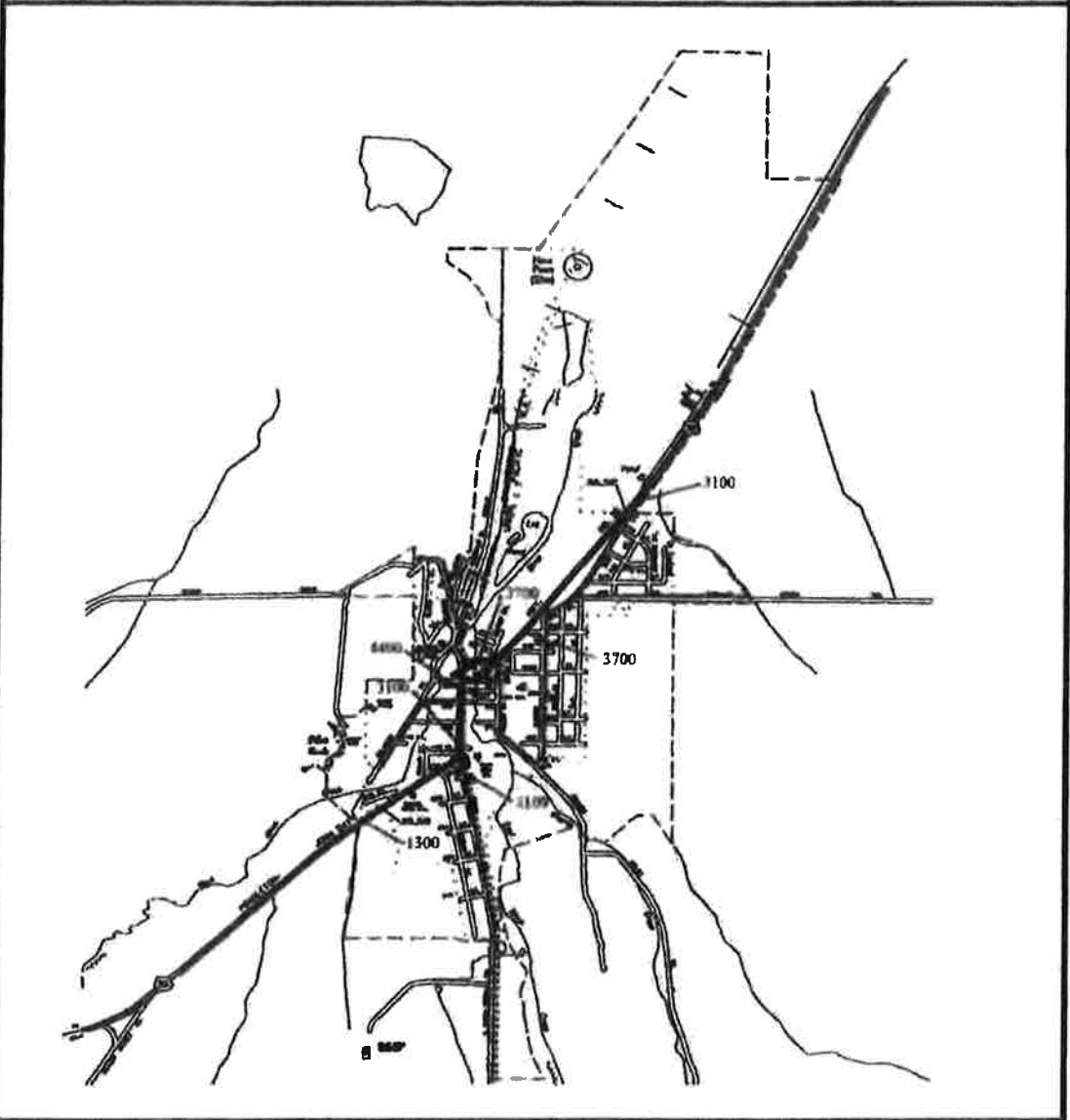
The 1999 *Oregon Highway Plan* (OHP) establishes mobility standards for the state highway system<sup>1</sup>. Highways of statewide importance, such as US 395, should operate at a v/c ratio of 0.80 where the average speeds are less than 45 mph in urban and urbanizing areas inside the urban growth boundary.

The traffic operation was determined at a representative intersection (Cedar Street) along US 395 using the 1985 Highway Capacity Software for unsignalized intersections. This software is based on the 1985 Highway Capacity Manual, Special Report 209, published by the Transportation Research Board. Since all intersecting streets and driveways are controlled by stop signs in the City, the analysis was performed for an unsignalized intersection. The peak hour traffic on the highway was assumed to be 10 percent of the 24-hour ADT volume and the directional split was assumed to be 60/40. Because side street traffic volumes were unavailable, an assumed volume of 100 vph was used and unsignalized intersection level-of-service calculations were made for the intersection. The peak hour operations at the intersection are shown in Table 4-2.

<sup>1</sup>1999 *Oregon Highway Plan*, Table 6. MAXIMUM VOLUME TO CAPACITY RATIOS OUTSIDE METRO.

**LEGEND:**

- |       |                                |           |                            |
|-------|--------------------------------|-----------|----------------------------|
| ————— | ARTERIAL                       | —————     | LOCAL STREET               |
| ===== | MAJOR COLLECTOR                | - - - - - | URBAN GROWTH BOUNDARY      |
| ----- | MINOR COLLECTOR                | .....     | CITY LIMITS                |
| ----- | INDUSTRIAL / COMMERCIAL STREET | ———       | 1000 AVERAGE DAILY TRAFFIC |



**DAVID EVANS AND ASSOCIATES, INC.**  
 2525 S.W. CORBETT AVENUE  
 PORTLAND, OR. 97201-4810 (503) 253-6663

  
 NORTH  
 (NOT TO SCALE)

**FIGURE 4-1**  
**1996 Average Daily Two-Way Traffic Volumes -Pilot Rock**  
 City of Pilot Rock TSP

**TABLE 4-2**  
**SUMMARY OF OPERATIONS AT US 395 AND CEDAR STREET**

Location	Movement	1996 LOS (v/c)
US 395 and Cedar Street	Northbound; Left	A (<0.48)
	Eastbound; Left, Right	A (<0.48)

Note: The level of service is shown for all evaluated movements of the unsignalized intersection.

In general, the intersection currently operates very well at LOS A (v/c ratio less than 0.48). Traffic on the arterial streets flow smoothly and the northbound left turn at this T-intersection. These left-turn movement levels of service correlate to maximum v/c ratios of less than 0.48.

### TRANSPORTATION DEMAND MANAGEMENT MEASURES

In addition to inventorying the transportation facilities in Pilot Rock, an inventory was performed of any Transportation Demand Management (TDM) strategies that may currently be in place. TDM strategies are designed to relieve congestion on the street system by spreading peak hour traffic over a longer period of time, encouraging the use of alternative modes of transportation (i.e. sidewalks, bike lanes, public transit), and encouraging the single car driver to ride with others through local carpool programs. Other than the sidewalk and bicycle facilities that exist in Pilot Rock, no formal TDM strategies exist in the City.

This following sections briefly describe two elements that may impact future transportation demand management decisions in the City: 1) distribution of departure time to work, and 2) distribution of travel modes.

#### Alternative Work Schedules

One way to maximize the use of the existing transportation system is to spread peak traffic demand over several hours instead of a single hour. Statistics from the 1990 Census show the spread of departure to work times over a 24-hour period (see Table 4-3). Morning to work trips are spread over a wider time period than is the case for most Oregon cities. Approximately 45 percent of the total employees (those not working at home) depart for work between 6:00 and 8:00 a.m. Another 23 percent depart in either the hour before or the hour after the peak. Therefore, over two-thirds of all morning commute trips occur between 5:00 a.m. and 9:00 a.m.

**TABLE 4-3  
DEPARTURE TO WORK DISTRIBUTION**

Departure Time	1990 Census	
	Trips	Percent
12:00 a.m. to 4:59 a.m.	45	7.5%
5:00 a.m. to 5:59 a.m.	98	16.2%
6:00 a.m. to 6:59 a.m.	136	22.5%
7:00 a.m. to 7:59 a.m.	138	22.8%
8:00 a.m. to 8:59 a.m.	42	7.0%
9:00 a.m. to 9:59 a.m.	11	1.8%
10:00 a.m. to 10:59 a.m.	6	1.0%
11:00 a.m. to 11:59 a.m.	0	0%
12:00 p.m. to 3:59 p.m.	91	15.1%
4:00 p.m. to 11:59 p.m.	37	6.1%
<b>Total</b>	<b>604</b>	<b>100.0%</b>

Source: US Bureau of Census.

Assuming an average nine-hour workday, the corresponding afternoon peak can be determined for work trips. Using this methodology, the peak work travel hour would occur between 3:00 and 5:00 p.m. which, in many cases, corresponds with the peak hour of measured traffic volumes.

#### Travel Mode Distribution

Although the automobile is the primary mode of travel for most residents in the Pilot Rock area, some other modes are used as well. Modal split data is not available for all types of trips. The 1990 Census statistics that were reported for journey to work trips are shown in Table 4-4 and reflect the predominant use of the automobile in this area.

In 1990, 90.3 percent of all trips to work were in a private vehicle (auto, van, or truck). Trips in single-occupancy vehicles made-up 90.1 percent of these trips, and carpooling accounted for 9.9 percent.

The 1990 census data indicated that bicycles were not utilized for transportation. Since the census data do not include trips to school or other non-work activities, overall bicycle usage may be greater. Two roadways in northern Pilot Rock include dedicated bicycle lanes. Dedicated bicycle lanes can encourage bicycle commuting, as can other facilities such as bicycle parking, showers, and locker facilities.

Pedestrian activity was average (4.6 percent of trips to work) in 1990. Statewide, 4.2 percent of trips to work were made on foot. Again, the census data only report trips to work; trips to school or other non-work activities are not included.

**TABLE 4-4  
JOURNEY TO WORK TRIPS**

Trip Type	1990 Census	
	Trips	Percent
Private Vehicle	567	90.3%
<i>Drove Alone</i>	511	90.1%
<i>Carpooled</i>	56	9.9%
Public Transportation	0	0%
Motorcycle	0	0%
Bicycle	0	0%
Walk	29	4.6%
Other	8	1.3%
Work at Home	24	3.8%
<b>Total</b>	<b>628</b>	<b>100.0%</b>

Source: US Bureau of Census.

## ACCIDENT ANALYSIS

The Oregon Department of Transportation (ODOT) collects detailed accident information on an annual basis along US 395 (Pendleton-John Day Highway) within the Pilot Rock city limits (MP 14.64 to MP 16.19). The accident information data show overall accident rates for the routes and accident locations. The accident rate for a stretch of roadway is typically calculated as the number of accidents per million vehicle miles traveled along that segment of roadway.

### Historic

Table 4-5 shows the accident rates for US 395 in Pilot Rock as well as the Oregon statewide average for urban non-freeway primary state highways from January 1, 1994 to December 31, 1996. The accident rates for US 395 during 1994 and 1995 are substantially lower than the statewide average for similar highways. The 1996 accident rate slightly exceeds the statewide average.

**TABLE 4-5  
HISTORIC ACCIDENT RATES FOR STATE HIGHWAYS  
(ACCIDENTS PER MILLION VEHICLE MILES TRAVELED)**

Highway	1996	1995	1994
US 395 in Pilot Rock	3.64	0.71	1.42
Average for all Urban Non-freeway Primary State Highways	3.63	3.98	3.45

Source: Oregon Department of Transportation Accident Rate Tables.

Table 4-6 contains detailed accident information on US 395 in Pilot Rock from January 1, 1994 to December 31, 1996. It shows the number of fatalities and injuries, property damage only accidents, the total number of accidents, and the overall accident frequencies and rates for the segments of these roadways in Pilot Rock.

**TABLE 4-6**  
**ACCIDENT SUMMARY FOR US 395**  
**(JANUARY 1, 1994 TO DECEMBER 31, 1996)**

Location	Fatalities	Injuries	Property Damage Only	Total Accidents	Accident Frequency (acc/mi/yr)	Accident Rate (acc/mvm)
MP 14.59 to MP 16.19	1	4	4	8	1.67	1.92

Source: Oregon Department of Transportation Accident Summary Database Investigative Report.

During the three-year period, there were a total of eight accidents, four of which were reported as resulting in property damage only. There was one fatality and four injuries on this roadway segment during the period. Five of the accidents occurred at intersections and three occurred on wet or icy pavement. The accidents were scattered along the roadway segment and overall, there were no definitive patterns in the accident locations, types or causes. There is no evidence to suggest that intersection operations (signals, signing, striping, etc.) were a contributing factor in any of the accidents.

## CHAPTER 5: TRAVEL FORECASTS

The traffic volume forecasts for Umatilla County and its municipalities are based on historic growth of the state highway system taking into account historic and projected population growth. Forecasts were only prepared for the state highway system in the county, since the volumes on these roadways are much higher than on any of the county roads.

### LAND USE

Land use and population growth plays an important part in projecting future traffic volumes. Population forecasts were developed to help determine future transportation needs since the amount of growth and where it occurs will affect traffic and transportation facilities in the study area. The population analysis presented here is not intended to provide a complete economic forecast or housing analysis, and it should not be used for any purpose other than that for which it was designed.

The population projections for Umatilla County are based on historic growth rates, the original population and employment forecasts made by the State of Oregon Office of Economic Analysis (OEA), and a recent study<sup>1</sup> identifying new economically-driven factors that will result in a higher population total than what was initially projected in the DEA forecast.

Historic and projected population estimates for Umatilla County, Pilot Rock, and seven other cities in the county are summarized in Table 5-1. Factors that will affect the future growth rates of the county and incorporated cities include employment opportunities, available land area for development, and community efforts to manage growth.

**TABLE 5-1  
UMATILLA COUNTY POPULATION TRENDS**

	1970 <sup>1</sup>	1980 <sup>1</sup>	1990 <sup>1</sup>	1996 <sup>1</sup> Estimate	2017 <sup>2</sup> Projected
Umatilla County	44,923	58,855	59,249	65,500	80,073
<b>Incorporated Cities</b>					
<b>Pilot Rock</b>	<b>1,612</b>	<b>1,630</b>	<b>1,478</b>	<b>1,570</b>	<b>1,650</b>
Adams	219	240	223	260	310
Athena	872	965	997	1,105	1,360
Echo	479	624	499	530	660
Helix	152	155	150	185	230
Stanfield	891	1,568	1,568	1,755	2,490
Ukiah	NA	249	250	280	340
Weston	660	719	606	680	730

Sources:

- 1) Portland State University Center for Population Research and Census.
- 2) The population forecast shown for the county has been officially adopted, however there is no official breakdown in population for the incorporated cities in the county. The projected population numbers shown for the eight cities are based on the initial OEA forecast, solely for the purpose of producing travel forecasts for these cities.

<sup>1</sup> Umatilla County Population Analysis, December 16, 1998, produced by David Evans and Associates, Inc.



Umatilla County recently worked with the OEA to increase the official population projections for the county. Even though higher estimates have been adopted for the county than were used for the forecasting in this document, the new estimates will not impact travel projections for the TSP. This is because travel forecasts are based primarily on historic traffic levels taking into account population and land use. The difference between the original estimates and new official estimates is not great enough to impact travel projections.

A detailed description of existing and future land use projections, including the methodology and data sources used, is contained in the Umatilla County Population Analysis located in Appendix C. This appendix contains both the original estimates of the OEA and the new official estimates for the county.

As mentioned, Umatilla County has adopted new population estimates for the county as a whole. The new estimates have been disaggregated to determine how much growth is likely to occur in each city.

### **Historic Growth**

The population of Umatilla County has grown since the 1970s, with significantly slower growth in the 1980s, reflecting a general slowdown in the state's economy. Helix, Pilot Rock, and Weston actually experienced a net population loss between 1970 and 1990. Pilot Rock did grow between 1970 and 1980, but population losses in the 1980's reduced its population by 10 percent from the 1970 census figures. Other communities saw similar growth, but did not experience any losses for 1980 to 1990. In Stanfield, the number of people nearly doubled between 1970 and 1980. This population growth may have been fueled by some significant housing developments and the location of several food processing plants in Stanfield during this time.

Estimated at 65,500 in 1997, the population of Umatilla County has grown relatively rapidly since the 1990 Census, with an average annual growth rate of 1.44 percent. Most of the jurisdictions in Umatilla County have grown at a healthy rate, comparable to the annual growth rate of 1.44 percent for the county overall. Since 1990, Pilot Rock has grown at a slightly slower rate than the rest of the county at 1.0 percent per year.

### **Projected Growth**

The State Office of Economic Analysis prepared long-term population projections by county, but since the county has not yet allocated adopted population numbers to incorporated cities, preliminary population forecasts for the jurisdictions of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston were developed in five-year increments based on the initial OEA population forecast. (See Umatilla County Population Discussion – Appendix C.) This was done only for the purpose of producing the future traffic forecast and should not be used for anything other than the intended purpose.

The population forecast for Pilot Rock projects continued growth, although at a significantly slower rate than it experienced in the 1990's. It should maintain an average growth rate of .3 percent, which will increase its population to 1650 people in the next 20 years, which is an increase of 80 people since 1996 (Table 5-1).

Overall, Umatilla County is also expected to experience healthy rates of population growth, averaging nearly one percent annually over the next 20 years. The western portion of Umatilla County is expected to grow faster than the rest of Umatilla County. However, like much of rural Oregon, the economy of Umatilla

County remains largely seasonal, with nearly one-quarter of all employment agriculture-based. This makes population projections difficult, and are not likely to be as stable as the forecasts imply.

## TRAFFIC VOLUMES

Traffic volume projections for the year 2018 are based on historic growth trends of highway volumes taking into account current and future land use projections.

### Historic

Before projecting future traffic growth, it is important to examine past growth trends on the Pilot Rock roadway system. Historic data are only available for the state highway system in Pilot Rock; however, this highway carries far more traffic than any other roads in the City. The Oregon Department of Transportation (ODOT) collects traffic count data on the state highways (rural and urban sections) every year at the same locations. These counts have been conducted at seven locations on US 395 (Pendleton-John Day Highway) in Pilot Rock.

Historical growth trends on US 395 in and around Pilot Rock were established using the average annual daily traffic (AADT) volume information presented in the ODOT Traffic Volume Tables for the years 1976 through 1996. The AADT volumes were obtained for each of these years at selected locations along the highway. Using a linear regression analysis of the average AADT volumes between 1976 and 1996, an average annual growth rate was determined. Table 5-2 summarizes the historic average growth rate on each of these sections.

**TABLE 5-2  
HISTORIC TRAFFIC GROWTH RATES ON STATE HIGHWAYS**

Highway Section	Average Annual Growth Rate 1976- 1996	Total Growth 1976-1996
<b>US 395 (Pendleton-John Day Hwy)</b>		
Rural section- Pendleton to Pilot Rock	1.45%	33.3%
Pilot Rock- north city limits	1.18%	26.5%
Pilot Rock- 0.01 miles south of 3rd Street	-0.69%	-12.9%
Pilot Rock- south city limits	1.63%	38.3%
Rural section- Pilot Rock to Long Creek	2.04%	49.7%

Source: ODOT 1976-1996 Transportation Volume Tables; information compiled by DEA.

Based on volumes from ODOT's annual count locations over the 20-year period from 1976 to 1996, the average annual growth rate on US 395 in Pilot Rock has ranged from approximately -0.7 to 1.6 percent per year. On the rural section of the highway north of Pilot Rock, traffic has been growing at a rate of approximately 2.1 percent per year. South of Pilot Rock, traffic has also been growing at a rate of nearly 2.1 percent per year. In general, the increase in the number of trips over the 20-year period considered is highest north of Pilot Rock and lowest south of Pilot Rock. The higher growth rates at the south city limits and on the southern rural section from Pilot Rock to Long Creek are somewhat misleading since these locations experienced the smallest net increases in the number of trips; however, these locations experience low traffic volumes so the small increases in trips resulted in a higher percentage of the location's base year trips.

Traffic growth on US 395 in Pilot Rock averaged 0.61 percent per year over the last 20 years. Although modest, traffic growth between 1976 and 1996 exceeded the population growth in Pilot Rock itself, which was negative during that period. Pilot Rock experienced a growth spurt between 1990 and 1996 where

population growth averaged 1.0 percent per year (the result of an increase of 92 residents over the six years); however, traffic volumes on the highway grew at less than 1 percent per year during that period. Typically, the rate of traffic growth exceeds that of population growth, as it did over the past 20 years; however, that has not been the case in Pilot Rock since 1990.

### Future Traffic Volumes

Based on the official OEA estimates for the county, the population in Pilot Rock is forecast to grow at a rate of 0.3 percent per year over the next 20 years. It was decided that the most appropriate growth rate to project future traffic is that rate which was calculated from the historic traffic growth and not those rates which were calculated from the historic and future population forecasts. Using the same linear regression analysis used to calculate the historic growth rate of traffic, forecasts were made for the years 1996 through 2018. Traffic volumes are expected to grow at a rate of 0.61 percent per year (14.3 percent by the year 2018) to 3,085 vpd on the highway. This estimate is consistent with the traffic forecasts in the *Corridor Strategy of US Highway 395 South (Pendleton-California Border)*.

It is important to note that using the historical growth trends assumes that future traffic patterns will remain consistent with historical patterns, without consideration of future planned developments.

The forecast future traffic volumes and total growth from 1996 to 2018 are shown in Table 5-3.

**TABLE 5-3  
FORECAST TRAFFIC VOLUMES AND TOTAL GROWTH ON STATE HIGHWAYS**

Location	1996 ADT (vehicles/day)	2018 ADT (vehicles/day)	Total Growth 1996-2018
<i>US 395 (Pendleton-John Day Hwy)</i>			
Pilot Rock- north city limits	3,100	3,545	14.3%
Pilot Rock- 0.01 miles south of 3rd Street	3,700	4,230	14.3%
Pilot Rock- south city limits	1,300	1,485	14.3%

Source: ODOT 1976-1996 Transportation Volume Tables; information compiled by DEA.

### HIGHWAY SYSTEM CAPACITY

For the year 2018, unsignalized intersection analyses were performed using the overall growth (14.3 percent) expected on US 395 at the same intersection in Pilot Rock for which the existing conditions were analyzed. The analyses indicated that all three intersections are expected to exceed ODOT level of service standards over the 20-year forecast period. The results of the unsignalized intersection analyses are shown in Table 5-4. Traffic operations were determined at the intersection using the 1985 Highway Capacity Software for unsignalized intersections. This software is based on the 1985 *Highway Capacity Manual*, Special Report 209, published by the Transportation Research Board.

**TABLE 5-4**  
**SUMMARY OF FUTURE OPERATIONS AT US 395 AND CEDAR STREET**

<b>Location</b>	<b>Movement</b>	<b>1996 LOS</b>	<b>2018 LOS</b>
US 395 and Cedar Street	Northbound; Left	A(< 0.48)	A(< 0.48)
	Eastbound; Left, Right	A(< 0.48)	A(< 0.48)

Note: The level of service is shown for all evaluated movements of the unsignalized intersection.

### **Analysis Results**

Traffic movement volumes at the intersection of US 395 and Cedar Street are forecast to increase by nearly 15 percent over the 20-year forecast period. However, all traffic movements at the intersection are expected to continue to operate at LOS A (v/c ratio less than 0.48) throughout the 20-year forecast period.

## CHAPTER 6: IMPROVEMENT OPTIONS ANALYSIS

As required by the Oregon Transportation Planning Rule (TPR), transportation alternatives were formulated and evaluated for the Pilot Rock Transportation System Plan (TSP). These potential improvements were developed with the help of the TAC, and city and state officials. Each of the transportation system improvements options was developed to address specific deficiencies, access, or safety concerns and attempt to address the concerns specified in the goals and objectives (Chapter 2).

The following list includes all of the potential transportation system improvements considered. Improvement Options 2 through 7 are illustrated in Figure 6-1.

1. Extend North 6th Street to US 395.
2. Replace pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street.
3. Replace vehicle bridge over East Birch Creek on alley road.
4. Establish a roadway maintenance and improvement program.
  - 4A. Pave Hickory Street up to Fir Street.
  - 4B. Pave Alder/Beech Street between 5th Street and US 395.
  - 4C. Pave SW 4th Place and SW Cedar Street.

The proposed transportation system improvements evaluated for the Pilot Rock TSP include state highway, county, and local road projects. **It should be noted that not all of the transportation improvement options recommended along the county and state systems have identified funding. Therefore, recommended transportation improvements cannot be considered as committed projects, but are subject to the county's and ODOT's abilities to meet these current and future needs financially.**

### EVALUATION CRITERIA

The evaluation of the potential transportation improvements in the city of Pilot Rock was based on a quantitative analysis of existing and future traffic volumes and a qualitative review of four factors: 1) safety; 2) access; 3) environmental factors, such as air quality, noise, and water quality; and 4) socioeconomic and land use impacts, such as community livability, right-of-way requirements and impacts on adjacent lands.

Another factor considered in the evaluation of the potential transportation improvements was cost. Costs were estimated in 1998 dollars based on preliminary alignments for each potential transportation system improvement.

### STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM PROJECTS

The Oregon Department of Transportation (ODOT) has a comprehensive transportation improvement and maintenance program that covers the entire state highway system. The Statewide Transportation Improvement Program (STIP) identifies all the highway improvement projects in Oregon. The STIP lists specific projects, the counties in which they are located, and their construction year.

The 2000 to 2003 STIP Update, recently released by ODOT Region 5, identifies two improvements within the city of Pilot Rock. The first improvement to replace West Birch Creek Bridge (County Bridge #

59C900) on SW 2<sup>nd</sup> Road was completed in the year 2000. The total cost of the project was estimated at \$275,000. The second STIP project includes roadway preservation work along US 395 between the north city limits of Pilot Rock to McKay Dam, north of the City including development of a deceleration lane at the entrance of Kinzua. This project is scheduled for construction by the year 2003 with an estimated cost of \$2,720,000. Both STIP projects are also shown in Figure 6-1.

## **IMPROVEMENT OPTIONS EVALUATION**

Through the transportation analysis and input provided from the public involvement program, multiple improvement projects were identified. These options included constructing new and reconstructing existing roadways, bridge replacement, and providing improved pedestrian and bicycle facilities.

### **Option 1. Extend North 6th Street To US 395**

The city of Pilot Rock has identified a potential safety hazard at the highly skewed intersection of Elm Street at US 395. This intersection was created when US 395 was realigned and Elm Street was established along the highway's original alignment. The unrestricted sight distance along the highway from Elm Street is adequate. However, the potential hazard lies in a sight distance restriction along the highway to the south created by the orientation of a driver's vehicle when making a right turn.

Rather than realign this intersection to mitigate this restriction, the city of Pilot Rock has identified an alternative solution to extend North 6th Street to US 395. This would create a standard T-shaped intersection and would provide unrestricted sight distance in both directions along the highway.

The extension of 6th Street would require the construction of only 60 feet of new roadway. Sidewalks and curbs should also be included along the new road.

The area along the proposed 6th Street alignment is open land and a new connection to US 395 would not have any adverse impacts to the current land use. There are some grade problems associated with extending 6<sup>th</sup> Street to connect with US 395. As a result, the new connection to US 395 would be slightly offset from the newly constructed entrance to the Kinzua lumber mill but would allow an opportunity to also consider the addition of a truck deceleration lane on US 395.

The existing skewed intersection at Elm Street and US 395 would be removed. The estimated cost for the new roadway extension is around \$130,000. Funding for this project will be provided by the State to address the potential safety hazard at the existing skewed intersection.

This option is scheduled for construction in 2002.

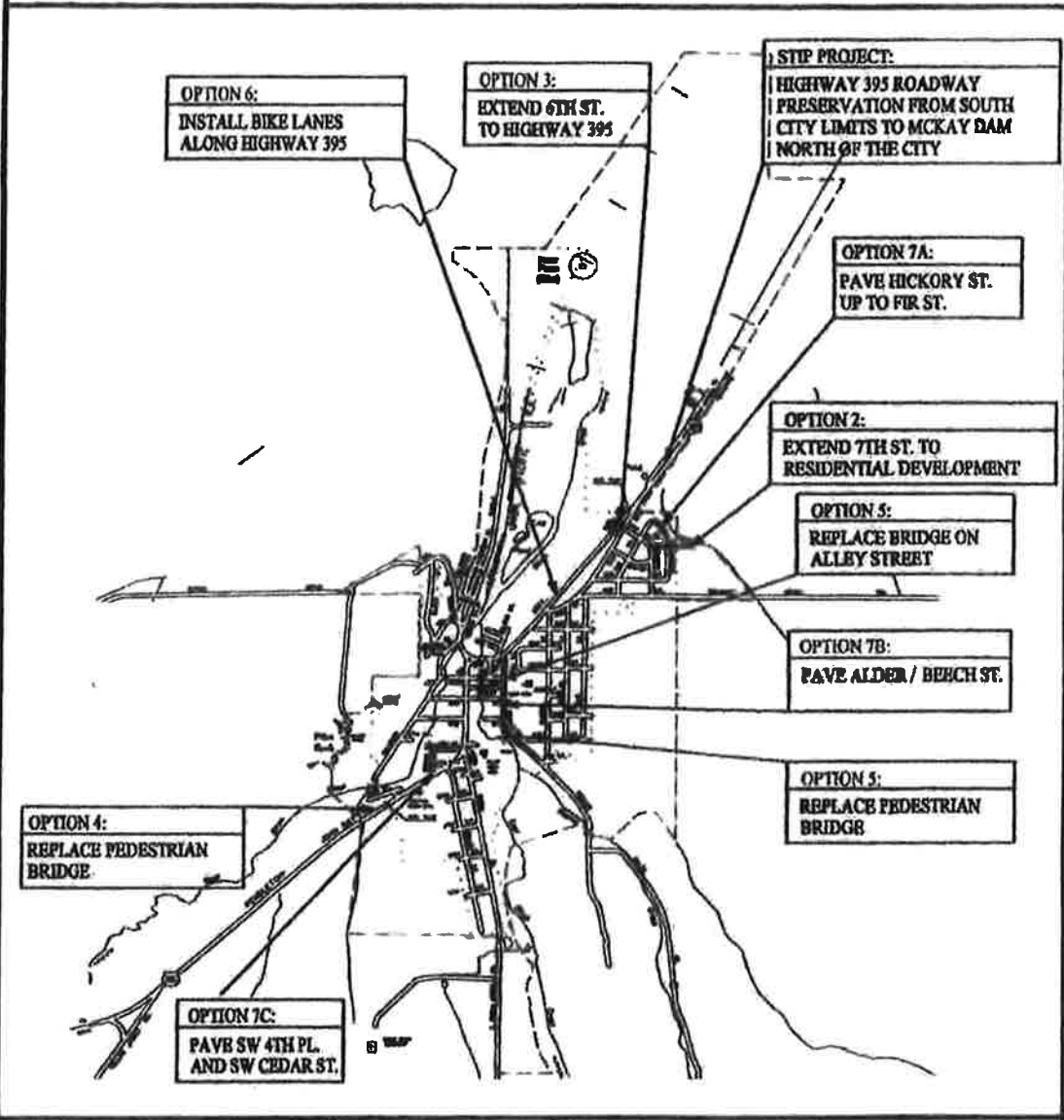
### **Option 2. Replace Pedestrian Bridge Over West Birch Creek Between Delwood Street and South 6th Street**

This project includes the replacement of the pedestrian bridge over West Birch Creek located between Delwood Street and South 6th Street, over the next three to five years (2001-2003). The city of Pilot Rock has been monitoring the degradation of this bridge over the years and has recommended its replacement.

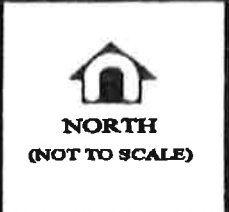
Replacement of the existing bridge will maintain this important pedestrian link between Delwood Street and South 6th Street. This bridge provides pedestrians with an alternative to walking downtown other than by way of US 395.

**LEGEND:**

- ROADWAY IMPROVEMENT
- INTERSECTION IMPROVEMENT
- I BRIDGE IMPROVEMENT
- - - URBAN GROWTH BOUNDARY
- CITY LIMITS



**DAVID EVANS AND ASSOCIATES, INC.**  
 2828 S.W. CORBETT AVENUE  
 PORTLAND, OR 97201-4830 (503) 839-6663



**FIGURE 6-1**  
**Potential Transportation System Improvements -Pilot Rock**  
 City of Pilot Rock TSP

The total cost for the bridge replacement is around \$7,500. This was determined from the costs of other previous bridge replacements in the City.

This option is recommended within the next 10 to 20 years, or when replacement becomes critical.

**Option 3. Replace Vehicle Bridge Over East Birch Creek On Alley Road**

City of Pilot Rock officials believe the vehicle bridge over East Birch Creek on the alley road located between Main Street and South 2nd Street, will be in need of replacement in the next 10 to 20 years.

The total cost to remove and replace the existing bridge was determined using 1997 square foot construction cost estimates, supplied by ODOT, which were taken from the latest prospectus' completed for the federal Highway Bridge and Roadway Rehabilitation (HBRR) fund. These estimates assume a cost of \$6 per square foot for bridge removal and \$54 per square foot for construction of a bridge with a span between zero and 60 feet. Assuming the existing bridge is around 50 feet long by 20 feet wide, the estimated bridge removal cost is around \$6,000. Assuming the new bridge will be around 50 feet long and 25 feet wide, the estimated bridge construction cost is around \$67,500. An additional 5 feet was added to the bridge width to account for two lanes of traffic and a sidewalk along one side. The total cost, therefore, for the entire project is estimated at \$73,500.

Because of limited city funds, the removal and replacement of this bridge may not be feasible. The City may apply for state or federal grants to secure the necessary funds, or the City may choose to construct a bridge similar to the existing steel structure.

This option is recommended over the next 10 to 20 years, or when ever the bridge becomes structurally deficient.

**Option 4. Establish a Roadway Maintenance and Improvement Program**

Many of the local streets in Pilot Rock are substandard gravel roads and are in need of paving. In response to this need, city officials have developed a six-year roadway maintenance and improvement plan to upgrade local city streets to paved roads. At this time, the plan includes a prioritized list of six projects. The following table describes the location of these projects along with each project's length and estimated total cost.

**TABLE 6-1  
ROADWAY MAINTENANCE AND IMPROVEMENT PROGRAM**

Project No.	Description/Location	Project Length	Total Cost
4A.	Pave Hickory Street up to Fir Street.	400 feet	\$11,300
45B.	Pave Alder Street between 5th Street and US 395	1,900 feet	\$62,200
4C.	Pave SW 4th Place and SW Cedar Street	900 feet	\$25,400
<b>Total</b>			<b>\$98,900</b>

The cost estimates for each project identified above assumes a pavement width that is consistent with the street design standards recommended in Chapter 7. Since Hickory Street, SW 4th Place, and SW Cedar Street, are designated as local streets, a pavement width of 34 feet was selected in conformance with the local street design standard. Alder Street which is designated as a minor collector street, a pavement width



of 38 feet was selected. A pavement width of 46 feet was selected for Alder Street, between Main Street and US 395, corresponding to a major collector street standard.

The estimates above also assume a total unit cost of \$0.83 per square foot of asphalt. The unit cost estimate was obtained from Humbert Asphalt Inc., an asphalt laying company based in Milton-Freewater. This cost also includes cutting and cleaning the edges of streets, patching pot holes, tacking, preleveling the entire street with an average of 1 inch of asphalt, and then overlaying the entire street with 2 inches of asphalt, for a total asphalt overlay of around 3 inches.

Funding for these roadway projects will be provided by the City as funds become available. City officials indicate the City has an annual budget of around \$30,000 to \$50,000 for street improvements.

Paving or repaving the city streets will improve the aesthetics of the local street system and community livability for the residents who reside on these streets. For these reasons, all street paving projects are recommended. However, it is also recommended that each of these projects include the addition of a pedestrian facility in correspondence with the recommended street design standards for all types of streets.

**SUMMARY**

Table 6-1 summarizes the recommendations of the transportation improvement options based on the evaluation process described in this chapter. Chapter 7 discusses how these improvement options fit into the modal plans for the Pilot Rock area.

**TABLE 6-2  
TRANSPORTATION IMPROVEMENT OPTIONS: RECOMMENDATION SUMMARY**

Option	Recommendation
1. Extend North 6th Street to US 395	• Implement
2. Replace pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street	• Implement
3. Replace vehicle bridge over East Birch Creek on alley road	• Implement
4. Establish a maintenance and improvement program	• Implement

## CHAPTER 7: TRANSPORTATION SYSTEM PLAN

The purpose of this chapter is to provide detailed operational plans for each of the transportation systems within the community. The Pilot Rock Transportation System Plan covers all the transportation modes that exist and are interconnected throughout the urban area. Components of the TSP include street classification standards, access management recommendations, transportation demand management measures, modal plans, and a system plan implementation program.

### STREET DESIGN STANDARDS

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

#### Existing Street Standards

Street designations for Pilot Rock are contained in the *Pilot Rock Technical Report*, while street definitions and standards are listed in the *City of Pilot Rock Subdivision Ordinance (1986)*. The city of Pilot Rock Technical Report designates streets in the city as arterials, major collectors or minor collectors. All streets not classified are assumed to be local streets. The Technical Report is not adopted as part of the Comprehensive Plan, but acts as a supporting document. An inconsistency between the Technical Report and Subdivision Ordinance exists in that the Subdivision Ordinance definitions and standards do not distinguish between major and minor collectors and add an additional classification, alleys. Furthermore, standards for street types are broken into two groups – business/industrial streets and residential streets as shown in Tables 7-1 and 7-2.

The Subdivision Ordinance regulates the construction of new or undeveloped streets within the city and Urban Growth Boundary. It defines the different streets as follows:

*Alley:* A narrow street through a block primarily for vehicular service access to the back or side of properties otherwise abutting on another street.

*Arterial:* A street of considerable continuity that is primarily a traffic artery for travel between large areas.

*Collector:* A street supplementary to the arterial street system and a means of travel between this system and smaller areas, used to some extent for through traffic and to some extent for access to abutting properties.

*Cul-de-sac:* A short street having one end to traffic and being terminated by a vehicle turn-around.

*Local Street:* A street intended primarily for access to abutting properties.

*Marginal Access Street:* A local street parallel and adjacent to an arterial street providing access to abutting properties, but protected from through traffic.

The Ordinance also lists general requirements and design standards for streets. General requirements include the frontage requirements, grading, topography and arrangement of streets, road names, sign

requirements, and street light requirements. Design standards include widths for rights-of-way, pavement, grade, speed, and sidewalks as follows:

**TABLE 7-1  
ROAD DESIGN STANDARDS – BUSINESS/INDUSTRIAL**

Road Classification	Minimum Right-of-way	Minimum Surface Width	Maximum Grade	Speed	Sidewalks
Arterial Street	100 ft	48 ft	5 %	45 mph	Both sides 5 ft
Collector Street	70 ft	44 ft	7 %	40 mph	One sides 4 ft
Local Street	60 ft	38 ft	8 %	30 mph	One side 4 ft
Alleys	24 ft	24 ft	nl	nl	nl

nl - no standard listed

**TABLE 7-2  
ROAD DESIGN STANDARDS – RESIDENTIAL**

Road Classification	Minimum Right-of-way	Minimum Surface Width	Maximum Grade	Speed	Sidewalks
Arterial Street	80 ft	44 ft	8 %	40	Both sides 4 ft
Collector Street	60 ft	38 ft	10 %	35	Optional*
Local Street	50 ft	38 ft	12 %	25	Optional*
Alleys	20 ft	20 ft	nl	nl	nl

nl - no standard listed

\* Sidewalks may be required by the City Council on these streets.

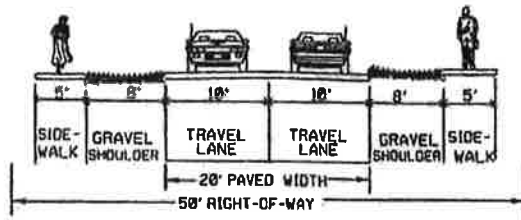
Subdivisions are required to provide frontage on and access to an existing street. Streets must be improved to city, county or state standards. Sidewalks may be required at the discretion of the City Council on local or collector residential streets.

Pedestrian accesses may be required by the City Council to facilitate pedestrian access from streets to schools, parks, playgrounds, or other nearby streets. These are perpetual unobstructed easements at least 20 feet in width. The City Council may also require installation of separate bicycle lanes within streets or on separate paths.

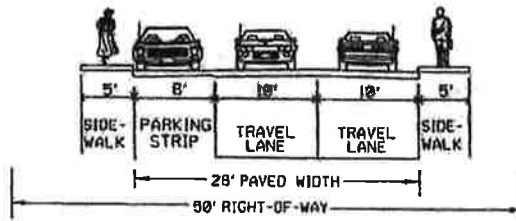
### Recommended Street Standards

The development of the Pilot Rock Transportation System Plan provides the city with an opportunity to review and revise street design standards to resolve the discrepancies between the Subdivision Ordinance and the Technical Report. The recommended standards take into account the existing Subdivision Ordinance standards and revise them to fit more closely with the functional street classifications, and the goals and objectives of the Transportation System Plan. The recommended street standards for all types of functional classifications are shown graphically in Figure 7-1 through Figure 7-4, and are summarized in Table 7-3. These standards are consistent with the existing roadway functional classification shown in Figure 3-1. Further discussion of each type of street standard follows below.

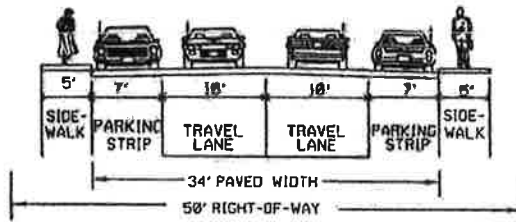
Since the Pilot Rock Transportation System Plan includes all land within the UGB, the recommended street standards should be applied to the areas within and outside the city limits that are within the UGB. Although some of the outlying areas may presently have a rural appearance, these lands will ultimately be part of the urban area. Retrofitting rural streets in these areas as well as all rural streets within the city limits



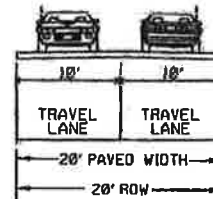
OPTION 1: TWO TRAVEL LANES, NO ON-STREET PARKING, GRAVEL SHOULDERS



OPTION 2: TWO TRAVEL LANES, ON-STREET PARKING ON ONE SIDE ONLY



OPTION 3: TWO TRAVEL LANES, ON-STREET PARKING ON BOTH SIDES



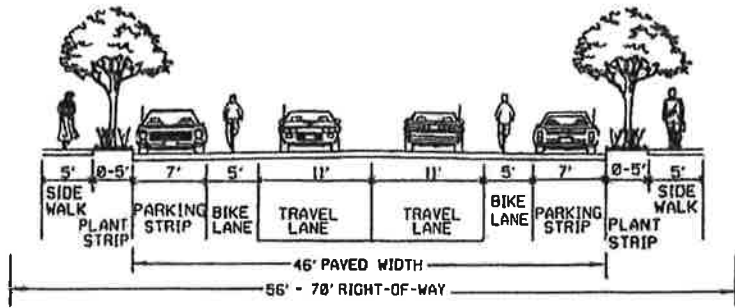
ALLEYS

  
**DAVID EVANS AND ASSOCIATES, INC.**  
 2828 S.W. CORBETT AVENUE  
 PORTLAND, OR 97201-4830 (503) 233-6663

FIGURE 7-1

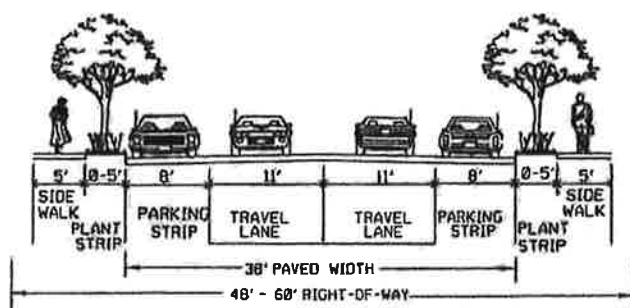
Street Standards  
Local Residential and Alleys

City of Pilot Rock TSP



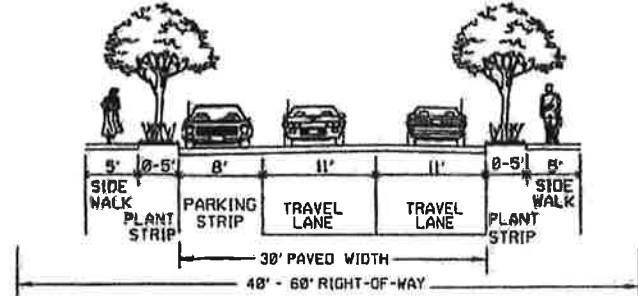
**MAJOR COLLECTOR**

**TWO TRAVEL LANES WITH BIKE LANES AND ON-STREET PARKING ON BOTH SIDES**



**MINOR COLLECTOR**

**OPTION 1: TWO TRAVEL LANES WITH ON-STREET PARKING ON BOTH SIDES**



**MINOR COLLECTOR**

**OPTION 2: TWO TRAVEL LANES WITH ON-STREET PARKING ON ONE SIDE ONLY**

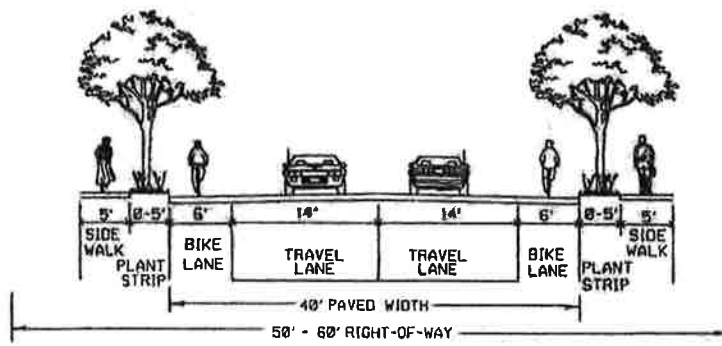
**FIGURE 7-2**

**Street Standards  
Collector Streets**

City of Pilot Rock TSP



**DAVID EVANS  
AND ASSOCIATES, INC.**  
2828 S.W. CORBETT AVENUE  
PORTLAND, OR. 97202-4850 (503) 223-6663



TWO TRAVEL LANES WITH BIKE LANES ON BOTH SIDES

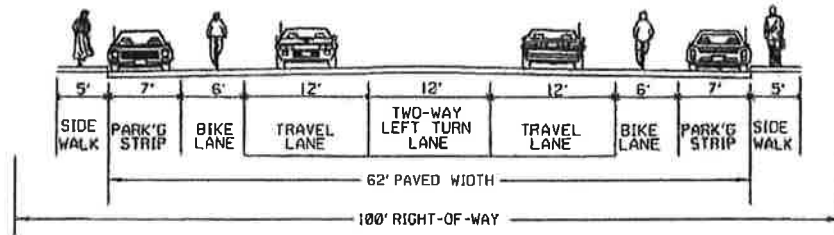
**DAVID EVANS  
AND ASSOCIATES, INC.**  
1828 S.W. CORBETT AVENUE  
PORTLAND, OR. 97201-4830 (503) 253-6663



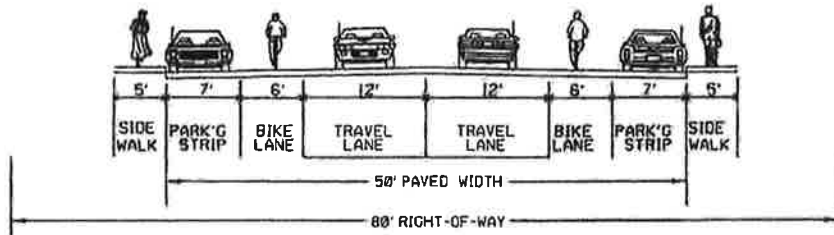
FIGURE 7-3

**Street Standards  
Industrial / Commercial Streets  
(Collector or Local)**

City of Pilot Rock TSP



OPTION 1: TWO TRAVEL LANES, CENTER TURN LANE, BICYCLE LANES, ON-STREET PARKING ON BOTH SIDES



OPTION 2: TWO TRAVEL LANES, BICYCLE LANES, ON-STREET PARKING ON BOTH SIDES

**DAVID EVANS AND ASSOCIATES, INC.**  
 2828 S.W. CORBETT AVENUE  
 PORTLAND, OR 97202-4830 (503) 243-6663



FIGURE 7-4

Street Standards  
 Arterial Streets

City of Pilot Rock TSP

to urban standards in the future is expensive and controversial; it is better to initially build them to an acceptable urban standard.

**TABLE 7-3  
RECOMMENDED STREET DESIGN STANDARDS**

Classification	Pavement Width	Right-of-Way Width	Sidewalks	Bike-Lanes	Min. Posted Speed
Arterial – Option 1	62 ft.	80 ft.	5 ft. (both sides)	6 ft. (both sides)	25-45 mph
Arterial – Option 2	50 ft.	80 ft.	5 ft. (both sides)	6 ft. (both sides)	25-45 mph
Major Collector	46 ft.	70 ft.	5 ft. (both sides)	5 ft. (both sides)	25-35 mph
Minor Collector – Option 1	38 ft.	60 ft.	5 ft. (both sides)	none	25-35 mph
Minor Collector – Option 2	30 ft.	60 ft.	5 ft. (both sides)	none	25-35 mph
Industrial/Commercial (Collector or Local)	40 ft.	70 ft.	5 ft. (both sides)	collector - 6 ft. local - none	25-35 mph
Residential (Local) – Option 1	20 ft.	50 ft.	5 ft. (both sides)	none	15-25 mph
Residential (Local) – Option 2	28 ft.	50 ft.	5 ft. (both sides)	none	15-25 mph
Residential (Local) – Option 3	34 ft.	50 ft.	5 ft. (both sides)	none	15-25 mph
Alley	20 ft.	20 ft.	none	none	15 mph

Sidewalks should be included on all urban streets as an important component of the pedestrian system. Ideally, sidewalks should be buffered from the street by a planting strip to eliminate obstructions in the walkway, provide a more pleasing design and a buffer from traffic. When sidewalks are located directly adjacent to the curb, they can include such impediments as mailboxes, street light standards, and sign poles, which reduce the effective width of the walk. To maintain a safe and convenient walkway for at least two adults, a 5 foot sidewalk should be used in residential areas.

#### ***Residential Streets (Local)***

The design of a residential local street affects its traffic operation, safety, and livability. The residential street should be designed to enhance the livability of the neighborhood while accommodating less than 1,200 vehicles per day. Design speeds should be 15 to 25 mph. When traffic volumes exceed approximately 1,000 to 1,200 vehicles per day, the residents on that street will perceive the traffic as a noise and safety problem. To maintain neighborhoods, residential streets should be designed to encourage low speed travel and to discourage through traffic. Narrower streets discourage speeding and through traffic as well as improve neighborhood aesthetics. They also reduce right-of-way needs, construction costs, storm water runoff, and the need to clear vegetation.

Three recommended street standard options are provided for local streets, as shown in Figure 7-1. Each option provides a minimum of 20 feet of pavement and provides varying degrees of on-street parking. The city should choose one of these options for each residential street based on the existing right-of-way and neighborhood character.



### **Option 1**

This first option for a local residential street is a 20 foot paved roadway surface within a 50 foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with 8 foot wide gravel shoulders on both sides of the street for parking. Five-foot sidewalks should also be provided on each side of the roadway.

### **Option 2**

This option provides a 28 foot paved roadway surface within a 50 foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking on one side. Five-foot sidewalks should be provided on each side of the roadway, adjacent to the curb.

### **Option 3**

A third option for a residential street provides a 34 foot paved roadway within a 50-foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking present along both sides of the road. A five-foot wide sidewalk should be provided on each side of the roadway, adjacent to the curb.

### ***Alleys***

Alleys can be a useful way to diminish street width by providing rear access and parking to residential, commercial, and industrial areas. Including alleys in a residential subdivision allows homes to be placed closer to the street and eliminates the need for garages to be the dominant architectural feature. This pattern, once common, has been recently revived as a way to build better neighborhoods. In addition, alleys can be useful in commercial and industrial areas, allowing access for delivery trucks which is off the main streets. Alleys should be encouraged in the urban area of Pilot Rock. Alleys should be 20 feet wide, with a 20 foot right-of-way (see Figure 7-1).

### ***Cul-de-Sac Streets***

Cul-de-sac, or "dead-end" residential streets are intended to serve only the adjacent land in residential neighborhoods. These streets should be short (less than 400 feet long) and serve a maximum of 20 single-family houses. Because the streets are short and the traffic volumes relatively low, the street width can be narrower than a standard residential street, allowing for the passage of two lanes of traffic when no vehicles are parked at the curb and one lane of traffic when vehicles are parked at the curb.

Because cul-de-sac streets limit street and neighborhood connectivity, they should only be used where topographical or other environmental constraints prevent street connections. Where cul-de-sacs must be used, pedestrian and bicycle connections to adjacent cul-de-sacs or through streets should be included.

### ***Collector Streets***

Collectors are intended to carry between 1,200 and 10,000 vehicles per day, including limited through traffic, at a design speed of 25 to 35 mph. A collector can serve residential, commercial, industrial, or mixed land uses. Collectors are primarily intended to serve local access needs of residential neighborhoods by

connecting local streets to arterials. Bike lanes are typically not needed in smaller cities like Pilot Rock due to slower traffic speeds and low traffic volumes.

Four recommended street standard options are provided for collectors, as shown in Figure 7-2. All four options provide one lane of moving traffic in each direction. The collectors can be striped to provide two travel lanes plus left-turn lanes at intersections or driveways by removing parking for short distances. One of the options is intended for industrial/business areas. This option would be appropriate for the Cedar Street/Circle Street route north of its intersection with US 395. The City should choose which option is most appropriate for each collector based on the existing right-of-way and neighborhood character.

### **Major Collector**

This option provides a 46 foot paved roadway surface within a 70 foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking on both sides of the street. Five foot sidewalks should be provided on each side of the roadway along with an optional planting strip with a width up to 5 feet.

### **Minor Collector– Option 1**

This option is similar to the major collector. It also provides a 38 foot paved roadway surface within a 60 foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking on both sides of the street. Four foot sidewalks should be provided on one side of the roadway along with an optional planting strip with a width up to 5 feet.

### **Minor Collector – Option 2**

This option provides a 30 foot roadway surface within a 60 foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking on one side. Five foot sidewalks should be provided on each side of the roadway, adjacent to the curb along with an optional planting strip with a width up to 5 feet.

### **Industrial/Commercial Collector or Local Street**

This option calls for a 70 foot right-of-way and a 40 foot paved width. The 40 foot curb face-to-curb face distance allows two 14 foot travel lanes and two 6 foot wide bicycle lanes. Five-foot sidewalks shall be provided on each side of the roadway and a 5-foot wide planting strip is optional. In areas where truck loading and unloading is necessary, the sidewalks can be widened to 8 feet and located adjacent to the curb (see Figure 7-3).

The industrial/commercial street in a residential area has the same design standards except that bicycle lanes are optional.

### **Arterial Streets**

Arterial streets form the primary roadway network within and through a region. They provide a continuous roadway system that distributes traffic between different neighborhoods and districts. Generally, arterial streets are high capacity roadways that carry high traffic volumes with minimal localized activity. Design speeds should be between 25 and 45 mph (see Figure 7-4).

### **Option 1**

This option consists of a 80 foot right-of-way and a 62 foot paved width. This standard allows for two 12 foot travel lanes, a 12 foot center turn lane, two 6 foot bike lanes, and curbside parking along both sides of the roadway at 7 feet wide. Sidewalks, at least 5 feet in width, should also be provided on each side of the roadway.

### **Option 2**

This option is similar to Option 1, but without the center turn lane. This standard provides a 50 foot paved surface within an 80 foot right-of-way to allow for two 12 foot travel lanes, two 6 foot bike lanes, and curbside parking along both sides of the roadway at 7 feet wide. Sidewalks, at least 5 feet in width, should also be provided on each side of the roadway.

### ***Bike Lanes***

In cases where a bikeway is proposed within the street right-of-way, 5 to 6 feet of roadway pavement should be striped on each side and reserved for bike lanes. The striping should be done in conformance with the *State Bicycle and Pedestrian Plan* (1995). In cases where curb parking will exist with a bike lane, the bike lane will be located between the parking and travel lanes. In some situations, curb parking may have to be removed to permit a bike lane.

Bikeways should be added when a new street is built or improvements are made to existing streets.

- ) On arterial and collector streets that are not scheduled to be improved as part of the street system plan, bike lanes may be added to the existing roadway at any time to encourage cycling, or when forecast traffic volumes exceed 2,500 to 3,000 vehicles per day. The striping of bike lanes on streets that lead directly to schools should be high priority.

### ***Sidewalks***

A complete pedestrian system should be implemented in the urban portion of Pilot Rock. Every urban street should have sidewalks on both sides of the roadway as shown on the cross sections in Figure 7-1 through Figure 7-4. Sidewalks on residential streets should be at least 4 feet wide. In addition, pedestrian and bicycle connections should be provided between any cul-de-sac or other dead-end streets.

Another essential component of the sidewalk system is street crossings. Intersections must be designed to provide safe and comfortable crossing opportunities. Tools to accomplish this include crosswalks, signal timing (to ensure adequate crossing time) when traffic signals are present, and other enhancements such as curb extensions which are used to decrease pedestrian crossing distance and act as traffic calming measures.

### ***Curb Parking Restrictions***

Curb parking should be prohibited at least 25 feet from the end of an intersection curb return to provide sight distance at street crossings.

### **Street Connectivity**

Street connectivity is important because a well-connected street system provides more capacity and better traffic circulation than a disconnected one. Developing a grid system of relatively short blocks can minimize excessive volumes of motor vehicles along roads by providing a series of equally attractive or restrictive travel options. Street connectivity in Pilot Rock is constricted due to a number of natural features. Three creeks run through town (East and West Birch Creek, which become one creek just north of downtown, and Wegner Creek). Therefore, Pilot Rock contains a broken grid system with many discontinuing, or dead-end streets. There are many pedestrian bridges over the creeks, however. When feasible, vehicle bridges should be created to connect the grid system. New development should maintain square short blocks (under 400 feet in length) whenever possible. Short interconnected blocks benefit cars, pedestrians and bicyclists by shortening travel distances and making travel more convenient. The average block size within the City's grid system is around 300 feet square, which is an ideal block size. New development should have a maximum block perimeter of 1,200 feet. Good street connectivity is critical to Pilot Rock's continued livability.

### **ACCESS MANAGEMENT**

Access management is an important tool for maintaining a transportation system. Too many access points along arterial streets lead to an increased number of potential conflict points between vehicles entering and exiting driveways, and through vehicles on the arterial streets. This not only leads to increased vehicle delay and deterioration in the level of service on the arterial, but also leads to a reduction in safety. Research has shown a direct correlation between the number of access points and collision rates. Experience throughout the United States has also shown that a well-managed access plan for a street system can minimize local cost for transportation improvements needed to provide additional capacity and/or access improvements along unmanaged roadways. Therefore, it is essential that all levels of government maintain the efficiency of existing arterial streets through better access management.

The Transportation Planning Rule (TPR) defines access management as measures regulating access to streets, roads and highways from public roads and private driveways and requires that new connections to arterials and state highways be consistent with designated access management categories. As the city of Pilot Rock continues to develop, the arterial/collector/local street system will become more heavily used and relied upon for a variety of travel needs. As such, it will become increasingly important to manage access on the existing and future arterial/collector street system as new development occurs.

One objective of the Pilot Rock TSP is to develop an access management policy that maintains and enhances the integrity (capacity, safety, and level-of-service) of the city's streets. Too many access points along a street can contribute to a deterioration of its safety, and on some streets, can interfere with efficient traffic flow.

#### **Access Management Techniques**

The number of access points to an arterial can be restricted through the following techniques:

- Restrictions on spacing between access points (driveways) based on the type of development and the speed along the arterial.
- Sharing of access points between adjacent properties.
- Providing access via collector or local streets where possible.

- Constructing frontage roads to separate local traffic from through traffic.
- Providing service drives to prevent spill-over of vehicle queues onto the adjoining roadways.
- Providing acceleration, deceleration, and right-turn only lanes.
- Offsetting driveways to produce T-intersections to minimize the number of conflict points between traffic using the driveways and through traffic.
- Installing median barriers to control conflicts associated with left-turn movements.
- Installing side barriers to the property along the arterial to restrict access width to a minimum.

**Recommended Access Management Standards**

Access management is hierarchical, ranging from complete access control on freeways to increasing use of streets for access purposes, parking and loading at the local and minor collector level. Table 7-4 describes recommended general access management guidelines by roadway functional classification.

**TABLE 7-4  
RECOMMENDED ACCESS MANAGEMENT STANDARDS**

Functional Classification	Intersections			
	Public Road		Private Drive <sup>(2)</sup>	
	Type <sup>(1)</sup>	Spacing	Type	Spacing
ARTERIAL STREETS				
US 395 (Pendleton-John Day Highway) <sup>(3)</sup>				
OTHER ARTERIAL STREETS WITHIN UGB				
COLLECTOR STREETS <sup>(4)</sup>				
Major: Alder Dr., Birch St., Main St., and Birch Crk Rd. (Co. Road # 1375)	at-grade	250 ft.	L/R Turns	100 ft.
Industrial/Commercial: Cedar St./Circle Rd. (north of US 395), Alder St., Cherry St., and Elm St.				
Minor: 2nd St., 4th St./Stewart Crk. Rd., Delwood St., Delwood Pl.,				
RESIDENTIAL STREETS	at-grade	250 ft.	L/R Turns	Access to Each Lot
ALLEYS (URBAN)	at-grade	100 ft.	L/R Turns	Access to Each Lot

Notes:

- (2) Allowed moves and spacing requirements may be more restrictive than those shown to optimize capacity and safety. Also, see section below on "Access Control Rights" along state highways.
- (3) See section on Special Transportation Area below.
- (4) Some sections of these roads are designated as minor collectors or residential streets, where the corresponding access management standard is applicable.

**Application**

The access management standards above apply mainly to new development accesses. They are not intended to eliminate existing intersections or driveways. It is important to note, however, that existing developments and legal accesses on the transportation network will not be affected by the recommended access management techniques until a land use action is proposed, a safety or capacity deficiency is identified that

requires specific mitigation, a specific access management strategy/plan is developed, existing properties along the highway are redeveloped, or a major construction project is initiated on the street.

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

### ***State Highways***

Access management is important to promoting safe and efficient travel for both local and long distance users along US 395 in Pilot Rock. The *1999 Oregon Highway Plan (OHP)* specifies an access management spacing standards and policies for state facilities.

Although Pilot Rock may designate state highways as arterial roadways within their transportation system, access management for these facilities follows the Access Management Spacing Standards of the *1999 Oregon Highway Plan*. These spacing standards are based on highway classification, type of area and speed, which are shown in the appendix to this document. Access to State Highways is permitted under Oregon Administrative Rules Division 51. This section of the TSP describes the state highway access management objectives and specific highway segments where special access spacing standards apply.

US 395 in Pilot Rock is categorized in the 1999 Oregon Highway Plan as a Statewide Highway. The primary function of these highways is to provide connections to larger urban areas, ports, and major recreation areas of the state not served by freeways. The management objective to statewide urban highways is to provide high to moderate speed operations with limited interruptions in traffic flow. There are no special highway segments identified in the 1999 Oregon Highway Plan that apply to US 395 in Pilot Rock at this time.

### **ACCESS CONTROL RIGHTS**

Historically, owners of property abutting public roadways have enjoyed a common law abutter's right of access to the roadway. However, in order to provide for a transportation system that would accommodate changing public needs, legislation has been passed to modify the rights of access. Oregon Revised Statutes specify among other property rights, the right of access can be purchased or condemned as deemed necessary for rights-of-way. The Oregon Department of Transportation has purchased access control rights from many properties along state highways.

Once the state has acquired the access rights to a property, road approach permits can only be issued at locations on the property where the right of access has been reserved. These "reservations of access" give the property owner the common law right of access to the state highway only at specific locations and they are clearly identified in the deed where the property owner sold the right of way to the state. If the owner wants to gain additional access rights to the highway, they must apply for a "grant" of access.

There may be local street connections shown in this Transportation System Plan that will require modifying the existing access rights or gaining additional access rights to the state highway system. Review of this TSP by ODOT does not imply tacit approval to modify or grant additional access rights. This must be accomplished by applying to ODOT for such modification or grant.

An "indenture of access" is used to modify existing access rights such as moving or widening the reservation or lifting other restrictions that may have been placed on it. A "grant of access" is required to gain an

additional access point to the highway and, depending on the circumstances, may require payment to the state for the market value of the grant. Application for both the indenture and grant of access is made to local ODOT district office.

## MODAL PLANS

The Pilot Rock modal plans have been formulated using information collected and analyzed through a physical inventory, forecasts, goals and objectives, and input from area residents. The plans consider transportation system needs for Pilot Rock during the next 20 years assuming the growth projections discussed in Chapter 5. All transportation system needs identified in this section have been assigned a project number in consecutive order, beginning with the projects identified in the street system plan. The timing of these projects will be guided by the changes in land use patterns, growth of the population in future years, and available funds. Specific projects and improvement schedules may need to be adjusted depending on when and where growth occurs within Pilot Rock.

### Street System Plan

The street system plan recommends any changes necessary to the current street classification system and outlines a series of improvements that are recommended for construction within the city of Pilot Rock during the next 20 years. These options have been discussed in Chapter 6 (Improvement Options Analysis). Projects that make up the proposed street system plan are summarized in Table 7-5.

#### *Street System Functional Classification*

Street system functional classifications relate the design of a roadway to its function. The function is determined by operational characteristics such as travel demand, street capacity, and the operating speed of the roadway. The city of Pilot Rock Technical Report currently classifies all streets within the Urban Growth Boundary as arterial, major collector, minor collector, commercial/industrial roads, or local streets. The Subdivision Ordinance includes an additional category (alleys) and specifies different development standards depending on whether the street is considered residential or industrial/commercial. A review of the existing street system inventory, the recommended street design standards, and all new projects recommended in the street system plan, indicates the Technical Report's functional classifications are appropriate. The recommended street classifications are described as follows:

- Pendleton-John Day Highway (US 395) – classified as an arterial roadway, as it is a highway of statewide level of importance, it carries the highest traffic volumes through the City, and it is a primary route to other cities in the county and state.
- Alder Drive (US 395 to Main Street) – classified as a major collector street, as its function is to connect local neighborhoods to the downtown area and with US 395.
- Birch Creek Road, Co. Road #1375 (from US 395 south) – classified as a major collector street, as its function is to connect local neighborhoods with US 395 and provides a primary route out of town.
- Main Street (US 395 to Alder Street) – classified as a major collector street, as its function is to connect local neighborhoods to the downtown area and to US 395.
- Cedar Street and Circle Road (north of 3rd Street) – classified as an industrial/commercial street, as the function of this roadway is to provide access to the industrial areas north of downtown and connect these areas with US 395.

- 2nd Street (Delwood Street to US 395) – classified as a minor collector street, as its function is to connect local neighborhoods with the downtown area.
- 4th Street/Stewart Creek Road (intersection with US 395 to east city limit) – classified as major collector streets, as they function is to connect local neighborhoods to US 395 and provide a primary connection to areas east of town.
- Alder Street (Main Street to Cherry Street) – classified as a major collector, as its function is to connect local neighborhoods to the downtown area.
- Cherry Street (Alder Street to US 395) – classified as a major collector street, as its function is to connect local neighborhoods with the downtown area.
- Delwood Place (city limits to 2nd Street) – classified as a minor collector street, as it connects local neighborhoods to the downtown area.
- Elm Street (4th Street to US 395) – classified as a minor collector street, as it connects local neighborhoods with US 395.
- All other roads – classified as local streets.

### ***Street Improvement Projects***

Table 7-5 presents all street and bridge improvement projects within the urban area that compose the street system plan. Prioritization of these projects is at the discretion of the City and/or county depending upon jurisdiction over the project.

**It should be noted that the inclusion of a project in the TSP does not constitute a commitment by ODOT or the county that either agency will participate in the funding of the project.** ODOT's participation will be determined via the biennial updates of the multi-year STIP process, and the construction of any project is contingent upon the availability of future revenues. The county's participation will be according to project prioritization as indicated in the Capital Improvement Plan, and contingent upon available funding.

**TABLE 7-5  
RECOMMENDED STREET SYSTEM PROJECTS**

Project Number	Location/Description	Cost
1.	Extend North 6th St. to US 395.	\$130,000
4A.	Pave Hickory Street up to Fir Street	\$11,300
4B.	Pave Alder Street between 5th Street and US 395	\$62,200
4C.	Pave SW 4th Place and SW Cedar Street	\$25,400
3.	Replace vehicle bridge over East Birch Creek on alley roadway.	\$73,500
<b>Total</b>		<b>\$302,400</b>

### **Pedestrian System Plan**

A complete interconnected pedestrian system should be implemented in the City when feasible. A sidewalk inventory revealed that Pilot Rock's urban core has a fairly developed sidewalk system. Sidewalks exist



through the downtown area on both sides of US 395, Main Street, 2nd Street, and 3rd Street. Unfortunately, many of these sidewalks are in poor condition and curb cuts for wheelchairs are lacking. Crosswalks exist at three intersections and pedestrian bridges traverse the City's creeks in six locations. Every paved street should have sidewalks on both sides of the roadway, except in extenuating circumstances, meeting the requirements set forth in the recommended street standards. Pedestrian access on walkways should be provided continuously between businesses, parks, and adjacent neighborhoods. (Ordinances specifying these requirements are included in Chapter 9.)

Because of the small size of Pilot Rock and the limited public resources available for transportation system improvements, sidewalk construction on a large scale may not be feasible. However, the City should require sidewalks to be constructed as part of any major roadway improvements, or as adjacent land is developed.

The primary goal of establishing a pedestrian system is to improve pedestrian safety; however, an effective sidewalk system has several qualitative benefits as well. Providing adequate pedestrian facilities increases the livability of a city. When pedestrians can walk on a sidewalk, separated from vehicular street traffic, it makes the walking experience more enjoyable and may encourage walking, rather than driving, for short trips. Sidewalks enliven a downtown and encourage leisurely strolling and window shopping in commercial areas. This "Main Street" effect improves business for downtown merchants and provides opportunities for friendly interaction among residents. It may also have an appeal to tourists as an inviting place to stop and walk around.

The cost to construct a concrete sidewalk facility is around \$25 per linear foot. This assumes a sidewalk width of 5 feet with curbing. The cost estimate also assumes the sidewalks are composed of 4 inches of concrete and 6 inches of aggregate. As an alternative, asphalt walkways could be provided instead of a concrete sidewalk at a lower initial cost. Construction costs for this type of facility are typically about 40 percent of the costs for concrete sidewalks; however, maintenance, such as sealing and resurfacing the asphalt, must occur more frequently.

All new sidewalk construction in the City should include curb cuts for wheelchairs at every street corner to comply with the Americans with Disabilities Act (ADA). The addition of crosswalks should also be considered at all major intersections. As street improvements are made to the existing street system, projects involving the construction of new sidewalks may require on-street parking to be implemented in place of parking on grass or gravel shoulders.

In Chapter 6, four pedestrian-related projects were identified. These projects include: providing safety measures at the intersection of US 395 and Main Street, constructing sidewalks along US 395, replacing a pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street, and replacing a pedestrian bridge over East Birch Creek between the city park and Alder Street. These projects are summarized below in Table 7-6.

**TABLE 7-6  
RECOMMENDED PEDESTRIAN SYSTEM PROJECTS**

<b>Project Number</b>	<b>Location/Description</b>	<b>Cost</b>
2.	Replace pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street.	\$7,500
<b>Total</b>		<b>\$7,500</b>

### **Bicycle System Plan**

On the collector and local streets in Pilot Rock, bicyclists share normal vehicle lanes with motorists. Due to low travel speeds and traffic volumes observed in the City shared usage of the roadway between bicyclists and automobiles is appropriate. However, on highways such as US 395, where travel speeds and traffic volumes are much higher, the need to separate bicyclists from highway traffic becomes an issue. US 395 functions as an arterial through Pilot Rock. The *Oregon Bicycle and Pedestrian Plan* recommends that for a facility such as this, a shoulder bikeway should be present. Existing shoulder widths along the highway in the vicinity of Pilot Rock range between 4 feet to over 6 feet. Street standards recommended in this Plan call for 6 foot wide bike lanes on arterial streets.

Bicycle parking is lacking in Pilot Rock. Bike racks should be installed in front of downtown businesses and all public facilities (schools, post office, library, city hall, and parks). Typical rack designs cost about \$50 per bike plus installation. Bike rack installation can be implemented as finances and/or grant funding is available.

### **Transportation Demand Management Plan**

Through transportation demand management (TDM), peak travel demands can be reduced or spread over time to more efficiently use the existing transportation system, rather than building new or wider roadways. Techniques that have been successful and could be initiated to help alleviate some traffic congestion include carpooling and vanpooling, alternative work schedules, bicycle and pedestrian facilities, and programs focused on high density employment areas.

In Pilot Rock, because traffic volumes are low, capacity of the local street system is not an issue. Therefore, implementing TDM strategies may not be practical in most cases

Because intercity commuting is a factor in Umatilla County, residents who live in Pilot Rock and work in other cities should be encouraged to carpool with a fellow coworker or someone who works in the same area. Implementing a local carpool program in Pilot Rock alone is not practical because of the City's small size; however, a county-wide carpool program is feasible. The city of Pilot Rock should support state and county carpooling and vanpooling programs, which could further boost carpooling ridership.

No costs have been estimated for the TDM plan. Grants may be available to set up programs; other aspects of transportation demand management can be encouraged through ordinances and policy.

### **Public Transportation Plan**

As described in Chapter 3, the only intercity bus service in Umatilla County is provided by Greyhound bus lines which provides service along I-84, US 395, and OR 11 within Umatilla County. Greyhound has terminals located in Hermiston and Pendleton that connect these cities to each other and major population centers outside of the county. The Hermiston terminal has two departures heading southeast (with stops in Pendleton, La Grande, Boise, and Salt Lake City); three buses running west to Portland; and two buses heading north on US 395 to Pasco and Spokane daily. The Pendleton terminal has three departures southeast (with stops in La Grande, Boise and Salt Lake City); three departures west to Portland; and two departures north to Seattle via Walla Walla, Pasco, and Spokane daily.

Because of the small size of Pilot Rock, ridership demand is not high enough for Greyhound bus lines to feasibly provide service to the City. Pilot Rock does have a dial-a-ride type service available for the

transportation disadvantaged provided by the Pilot Rock Lions Club. This service provides door-to-door service initiated by a user's request for transportation.

Pilot Rock has no local fixed-route transit service at this time. The small size and low traffic volumes on city streets indicate that mass transit is not necessary or economically feasible at this time. The Transportation Planning Rule exempts cities with a population of less than 25,000 from developing a transit system plan or a transit feasibility study as part of their Transportation System Plans.

### **Rail Service Plan**

Pilot Rock has no passenger rail service, but does have freight rail service. Until recently, AMTRAK service was available in Hermiston and Pendleton along the rail line that follows the I-84 corridor from Portland to Boise, Idaho and points east. Amtrak is currently experiencing a funding crisis. As a result, passenger service between Portland and Denver, including service to cities within Umatilla County, was discontinued in May 1997. This line serves only freight traffic now.

The Union Pacific Railroad right-of-way runs northeast to southwest into Pilot Rock's UGB and city limits stopping just north of the downtown area. While these lines are not active, it may be possible for rail service to be resumed at some future time. It is recommended that the City support the reactivation of these lines if market forces make such activity feasible in the future.

### **Air Service Plan**

Pilot Rock does not have its own air service within the City. However, there are many airport facilities nearby. Eastern Oregon Regional Airport is located in Pendleton, approximately 20 miles north of Pilot Rock, and provides commercial air service. Hermiston Municipal Airport is located in Hermiston, approximately 45 miles northwest of Pilot Rock, and provides chartered flights. Other small nearby airports in the county include: Barrett Field northwest of Athena, the Pea Growers' Field south of Athena, and Curtis Airfield northwest of Pendleton. These airports are small, private, uncontrolled airstrips mainly used for crop dusting operations. Good access to these facilities (especially the Eastern Oregon Regional Airport) should be maintained.

### **Pipeline Service**

There is one natural gas line serving Pilot Rock.

### **Water Transportation**

Pilot Rock has no water transportation services.

## **TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM**

Implementation of the Pilot Rock Transportation System Plan will require adoption of the amended City Comprehensive Plan and zoning and land division ordinances and preparation of a 20-year Capital Improvement Plan. These actions will enable Pilot Rock to address both existing and emerging transportation issues throughout the urban area in a timely and cost effective manner.

One part of the implementation program is the formulation of a 20-year Capital Improvement Plan (CIP). The purpose of the CIP is to detail what transportation system improvements will be needed as Pilot Rock grows and provide a process to fund and schedule the identified transportation system improvements. It is expected that the Transportation System Plan Capital Improvement Plan can be integrated into the existing city and county CIP and the ODOT STIP. This integration is important since the Transportation System Plan proposes that city, county, and state governmental agencies fund all or some of the transportation improvement projects.

Model policy and ordinance language that conforms with the requirements of the Transportation Planning Rule is included in Chapter 9. The proposed ordinance amendments will require approval by the City Council and those that affect the unincorporated urban area will also require approval and adoption by the Board of County Commissioners.

### 20-Year Capital Improvement Program

Table 7-7 summarizes the CIP and provides cost information. The cost estimates for all the projects listed on the CIP were prepared on the basis of 1998 dollars. These costs include design, construction, and some contingency costs. They are preliminary estimates and generally do not include right-of-way acquisition, water or sewer facilities, or adding or relocating public utilities. The following schedule is not a prioritized list and scheduled implementation of these projects is at the discretion of the City and/or county, depending upon jurisdiction.

Pilot Rock has identified a total of 6 projects in its CIP with a cost of \$309,900.

**TABLE 7-7**  
**CAPITAL IMPROVEMENT PROGRAM (1998 DOLLARS)**

Project	Location /Description	Costs (\$ X 1,000)				Total
		City	County	State	Private	
1.	Extend North 6th St. to US 395.			\$130.0		\$130.0
4A..	Pave Hickory Street up to Fir Street	\$11.3				\$11.3
4B.	Pave Alder Street between 5th Street and US 395	\$62.2				\$62.2
4C.	Pave SW 4th Place and SW Cedar Street	\$25.4				\$25.4
3.	Replace vehicle bridge over East Birch Creek on alley roadway.	\$73.5				\$73.5
2.	Replace pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street.	\$7.5				\$7.5
<b>Total</b>		<b>\$179.9</b>		<b>\$130.0</b>		<b>309.9</b>

## CHAPTER 8: FUNDING OPTIONS AND FINANCIAL PLAN

The Transportation Planning Rule requires Transportation System Plans to evaluate the funding environment for recommended improvements. This evaluation must include a listing of all recommended improvements, estimated costs to implement those improvements, a review of potential funding mechanisms, and an analysis of existing sources' ability to fund proposed transportation improvement projects. Pilot Rock's TSP identifies 14 specific projects totaling over \$679,000 over the next 20 years. This section of the TSP provides an overview of Pilot Rock's revenue outlook and a review of some funding and financing options that may be available to the city of Pilot Rock to fund the improvements.

Pressures from increasing growth throughout much of Oregon have created an environment of estimated improvements that remain unfunded. Pilot Rock will need to work with Umatilla County and ODOT to finance the potential new transportation projects over the 20-year planning horizon. The actual timing of these projects will be determined by the rate of population and employment growth actually experienced by the community. This TSP assumes Pilot Rock will grow at a rate comparable to past growth, consistent with the county-wide growth forecast. If population growth exceeds this rate the improvements may need to be accelerated. Slower than expected growth will relax the improvement schedule.

### HISTORICAL STREET IMPROVEMENT FUNDING SOURCES

In Oregon, state, county, and city jurisdictions work together to coordinate transportation improvements. Table 8-1 shows the distribution of road revenues for the different levels of government within the state by jurisdiction level. Although these numbers were collected and tallied in 1991, ODOT estimates that these figures accurately represent the current revenue structure for transportation-related needs.

**TABLE 8-1**  
**SOURCES OF ROAD REVENUES BY JURISDICTION LEVEL**

Revenue Source	Jurisdiction Level			All Funds
	State	County	City	
State Road Trust	58%	38%	41%	48%
Local	0%	22%	55%	17%
Federal Road	34%	40%	4%	30%
Other	9%	0%	0%	4%
Total	100%	100%	100%	100%

Source: ODOT 1993 Oregon Road Finance Study.

At the state level, nearly half (48 percent in Fiscal Year 1991) of all road-related revenues are attributable to the state highway fund (state road trust), whose sources of revenue include fuel taxes, weight-mile taxes on trucks, and vehicle registration fees. As shown in the table, the state road trust is a considerable source of revenue for all levels of government. Federal sources (generally the federal highway trust account and federal forest revenues) comprise another 30 percent of all road-related revenue. The remaining sources of road-related revenues are generated locally, including property taxes, LIDs, bonds, traffic impact fees, road user taxes, general fund transfers, receipts from other local governments, and other sources.

As a state, Oregon generates 94 percent of its highway revenues from user fees, compared to an average of 78 percent among all states. This fee system, including fuel taxes, weight distance charges, and registration fees, is regarded as equitable because it places the greatest financial burden upon those who create the greatest need for road maintenance and improvements. Unlike many states that have indexed user fees to

inflation, Oregon has static road-revenue sources. For example, rather than assessing fuel taxes as a *percentage* of price per gallon, Oregon's fuel tax is a fixed amount (currently 24 cents) per gallon.

### Transportation Funding in Umatilla County

Historically, sources of road revenues for Umatilla County have included federal grants, state revenues, intergovernmental transfers, interest from the working fund balance, and other sources. Transportation revenues and expenditures for Umatilla County are shown in Table 8-2 and Table 8-3.

**TABLE 8-2**  
**UMATILLA COUNTY TRANSPORTATION-RELATED REVENUES**

	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
	Actual	Actual	Actual	Actual	Budget	Budget
Beginning Balance	\$1,187,957	\$992,044	\$903,997	\$1,762,230	\$1,600,000	\$1,300,000
DMV License & Gas Tax Fees	\$2,956,777	\$3,145,649	\$3,258,762	\$3,356,616	\$3,400,000	\$3,400,000
Misc. State Receipts			\$635,655	\$222,990	\$209,000	\$219,000
National Forest Rental	\$1,061,341	\$589,248	\$534,150	\$189,902	\$180,000	\$180,000
Mineral Leasing 75%				\$125		
Misc. Federal Receipts	\$1,968	\$1,670	\$1,208	\$77,681		
Interest on Invested Funds	\$72,834	\$38,672	\$77,885	\$92,220	\$75,000	\$75,000
Refunds & Reimbursements		\$75		\$338		
Sale of Public Lands	\$20,144	\$14,363	\$5,443	\$102	\$15,000	\$5,000
Rentals/Sale of Supplies	\$15,318	\$16,565	\$51,748	\$74,498	\$45,000	\$27,000
BLM Maintenance Agreement		\$2,000				
Misc. Receipts-Local	\$26,662	\$102,916	\$143,691	\$48,997		
Service Center	\$46,996	\$55,961	\$53,361	\$61,189	\$58,500	\$64,000
Rural Address fund					\$30,000	
	\$5,389,996	\$4,959,163	\$5,665,900	\$5,886,887	\$5,612,500	\$5,270,000

Source: Umatilla County.

As shown in Table 8-2, revenues remained relatively stable (between a low of just under \$5 million in 1993-1994 to a high of nearly \$5.9 million in 1995-1996). Approximately \$3 million of the annual revenues come from the state highway fund, rising slightly from \$3 million in 1992-1993 to an estimated \$3.4 million in 1996-1997. A declining amount has come from Federal apportionment (mostly federal forest receipts). Twenty-five percent of federal forest revenue (the 25-percent fund) is returned to the counties based on their share of the total acreage of federal forests. Westside national forests in Oregon and Washington are subject to the Spotted Owl Guarantee, which limits the decline of revenues from these forests to 3 percent annually. Oregon forests under the Owl Guarantee include the Deschutes, Mount Hood, Rogue River, Siskiyou, Siuslaw, Umpqua, and Willamette national forests. Forest revenues distributed to Umatilla County are from the Umatilla and Whitman forests, not subject to the Owl Guarantee and, therefore, more difficult to predict. With a healthy working capital balance, the county has also been able to generate between \$40,000 and \$90,000 annually in interest on its invested funds.

**TABLE 8-3  
UMATILLA COUNTY TRANSPORTATION-RELATED EXPENDITURES**

	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
	Actual	Actual	Actual	Actual	Budget	Budget
Personal Services	\$1,908,211	\$1,878,969	\$1,956,968	\$2,077,603	\$2,260,676	\$2,304,704
Materials and Services	\$1,897,273	\$1,961,106	\$1,564,591	\$1,735,853	\$2,131,925	\$1,972,800
Capital Outlay	\$601,846	\$225,074	\$385,176	\$404,357	\$400,000	\$400,000
Contingency					\$568,840	\$334,224
Transfer to Road Improvement Fund					\$11,555	
Transfer to General Fund						\$58,272
	4,407,330	\$4,065,149	\$3,906,735	\$4,217,813	\$5,372,996	\$5,070,000

Source: Umatilla County.

As shown in Table 8-3, Umatilla County has spent between \$225,000 and \$600,000 annually in capital improvements. The county also transfers money to a road improvement fund for larger-scale capital improvements. The bulk of expenditures in the road fund are for personal services and materials and services relating to maintenance.

In addition to the road department fund, Umatilla County has a separate bicycle path fund. Its revenues and expenditure history are shown below in Table 8-4. Like the road fund, the bicycle path fund is developing a health working capital balance, supporting additional interest income, thereby reducing its dependence on the gas taxes collected through the state highway fund.

**TABLE 8-4  
UMATILLA COUNTY BICYCLE PATH FUND REVENUES AND EXPENDITURES**

	1994-1995	1995-1996	1996-1997	1997-1998
	Actual	Actual	Budget	Budget
Beginning Fund Balance	\$230,059	\$260,652	\$299,775	\$349,775
Resources				
DMV License & Gas Tax Fees	\$32,917	\$32,946	\$34,000	\$34,000
Interest	\$13,073	\$16,251	\$16,000	\$18,000
	\$45,989	\$49,197	\$50,000	\$52,000
Expenditures				
Materials & Services	\$15,396		\$150,000	\$100,000
Capital Outlay				
	\$15,396	\$-	\$150,000	\$100,000

Source: Umatilla County.

### Historical Revenues and Expenditures in the City of Pilot Rock

Revenues and expenditures for the city of Pilot Rock's street fund are shown in Table 8-5 and Table 8-6. Sources of revenues available for street operations and maintenance include the state highway fund, interest from the working capital balance, and grants for specific projects.

**TABLE 8-5  
CITY OF PILOT ROCK STREET FUND REVENUES**

	1994-1995	1995-1996	1996-1997	1997-1998
Cash on Hand	\$30,549	\$57,638	\$17,900	\$24,000
Interest	\$1,605	\$1,737	\$1,000	\$1,000
Misc. Revenue	\$73	\$1,478		\$1,000
State Hwy Fund	\$69,428	\$71,156	\$73,800	\$73,000
Jobs Plus Program				\$1,500
NW Cedar Grant	\$12,500	\$12,500		
	\$83,606	\$86,871	\$74,800	\$76,500

Source: The City of Pilot Rock

As shown in Table 8-5, funds from the state highway fund provide a large proportion (over 90 percent excluding grant funds) of the revenues available to the city of Pilot Rock's street fund. The city of Pilot Rock has benefited from several recent grants from the Small Cities Allocation (SCA) Grant Program. The 1996-97 and 1997-98 proposed budgets anticipate the benefit of a \$25,000 SCA grant.

**TABLE 8-6  
CITY OF PILOT ROCK STREET FUND EXPENDITURES**

	1994-1995	1995-1996	1996-1997	1997-1998
Personal Services	\$17,727	\$19,096	\$23,970	\$25,400
Materials and Services	\$38,062	\$96,834	\$54,684	\$50,700
Capital Outlay	\$728	\$10,659	\$11,046	\$14,500
	\$56,517	\$126,589	\$89,700	\$90,600

Source: City of Pilot Rock

Most of the street fund expenditures are for maintenance, with spending disaggregated to the following categories: personal services, materials and equipment, capital outlay and transfers. The largest categories have historically been personal services and materials and equipment. The capital outlay expenditures have been limited to the amounts available from grant funds. The street fund has also transferred \$2,000 annually for the last two years. In order to ensure conservative estimates, this analysis does assume grant funding will necessarily be available in future years, as shown in the 1996-97 and 1997-98. Instead, this analysis assumes that the amount available for transfers is equivalent to the amount available for new capital expenditures.

**Transportation Revenue Outlook in the City of Pilot Rock**

ODOT's policy section recommends certain assumptions in the preparation of transportation plans. In its *Financial Assumptions* document prepared in May 1998, ODOT projected the revenue of the state highway fund through year 2020. The estimates are based on not only the political climate, but also the economic structure and conditions, population and demographics, and patterns of land use. The latter is particularly important for state-imposed fees because of the goals in place under Oregon's Transportation Planning Rule (TPR) requiring a 10-percent reduction in per-capita vehicle miles of travel (VMT) in Metropolitan Planning Organizations (MPO) areas by year 2015, and a 20-percent reduction by year 2025. This requirement will affect the 20-year revenue forecast from the fuel tax. ODOT recommends the following assumptions:

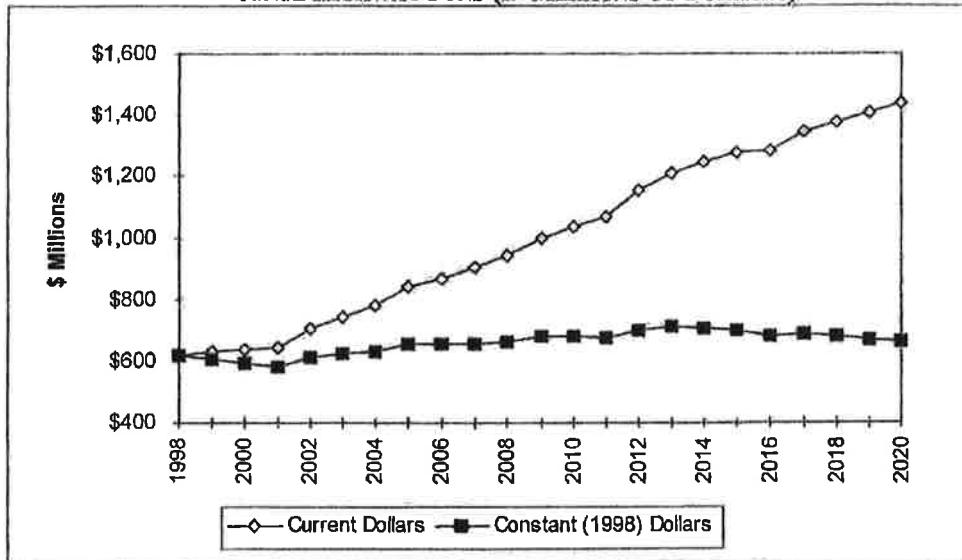
- Fuel tax increases of one cent per gallon per year (beginning in year 2002), with an additional one cent per gallon every fourth year.



- Vehicle registration fees would be increased by \$10 per year in 2002, and by \$15 per year in year 2012.
- Revenues will fall halfway between the revenue-level generated without TPR and the revenue level if TPR goals were fully met.
- Revenues will be shared among the state, counties, and cities on a “50-30-20 percent” basis rather than the previous “60.05-24.38-15.17 percent” basis.
- Inflation occurs at an average annual rate of 3.6 percent (as assumed by ODOT).

Figure 8-1 shows the forecast in both current-dollar and inflation-deflated constant (1998) dollars. As highlighted by the constant-dollar data, the highway fund is expected to grow slower than inflation early in the planning horizon. until fuel-tax and vehicle-registration fee increases occur in year 2002, increasing to a rate somewhat faster than inflation through year 2015, continuing a slight decline through the remainder of the planning horizon.

**FIGURE 8-1**  
**STATE HIGHWAY FUND (IN MILLIONS OF DOLLARS)**



Source: ODOT Financial Assumptions.

As the state highway fund is expected to remain a significant source of funding for Pilot Rock, the City is highly susceptible to changes in the state highway fund. As discussed earlier, funds from the state highway fund provide a large proportion (over 90 percent excluding grant funds) of the revenues available to the City of Pilot Rock’s street fund.

In order to analyze the City’s ability to fund the recommended improvements from current sources, DEA applied the following assumptions:

- ODOT state highway fund assumptions as outlined above.
- The state highway fund will continue to account for the majority of the City’s street fund.

- Interest and other local sources continue to provide stable revenue streams.
- The proportion of revenues available for capital expenditures for street improvements will remain a stable, but small, proportion of the state tax resources.

Applying these assumptions to the estimated level of the state highway fund resources, as recommended by ODOT, resources available to the Pilot Rock for all operations, maintenance, and capital outlay purposes are estimated at approximately \$67,000 to \$82,000 annually (in current 1998 dollars), as shown in Table 8-7.

**TABLE 8-7  
ESTIMATED RESOURCES AVAILABLE TO CITY OF PILOT ROCK  
FROM STATE HIGHWAY FUND, 1998 DOLLARS**

Year	Total Estimated Resources from State Highway Fund	Estimated Funds Available for Capital Outlay
1999	\$70,500	\$2,300
2000	\$68,900	\$2,300
2001	\$67,300	\$2,200
2002	\$71,300	\$2,300
2003	\$72,200	\$2,400
2004	\$73,200	\$2,400
2005	\$76,400	\$2,500
2006	\$75,800	\$2,500
2007	\$76,200	\$2,500
2008	\$76,500	\$2,500
2009	\$78,700	\$2,600
2010	\$78,600	\$2,600
2011	\$78,300	\$2,600
2012	\$81,400	\$2,700
2013	\$82,700	\$2,700
2014	\$82,000	\$2,700
2015	\$81,300	\$2,700
2016	\$79,000	\$2,600
2017	\$79,700	\$2,600
2018	\$78,700	\$2,600
2019	\$77,800	\$2,500
2020	\$76,800	\$2,500

The amount actually received from the state highway fund will depend on a number of factors, including:

- the actual revenue generated by state gasoline taxes, vehicle registration fees, and other sources; and
- the population growth in Pilot Rock (since the distribution of state highway funds is based on an allocation formula which includes population).

Based on the amount of resources historically available to fund capital improvements this analysis suggests that the City of Pilot Rock will have between \$2,200 and 2,700 available annually for capital improvements.

**REVENUE SOURCES**

In order to finance the recommended transportation system improvements requiring expenditure of capital resources, it will be important to consider a range of funding sources. Although the property tax has

traditionally served as the primary revenue source for local governments, property tax revenue goes into general fund operations, and is typically not available for road improvements or maintenance. Despite this limitation, the use of alternative revenue funding has been a trend throughout Oregon as the full implementation of Measures 5 and 47 have significantly reduced property tax revenues (see below). The alternative revenue sources described in this section may not all be appropriate in Pilot Rock; however, this overview is being provided to illustrate the range of options currently available to finance transportation improvements during the next 20 years.

### **Property Taxes**

Property taxes have historically been the primary revenue source for local governments. However, property tax revenue goes into general fund operations, and is not typically available for road improvements or maintenance. The dependence of local governments on this revenue source is due, in large part, to the fact that property taxes are easy to implement and enforce. Property taxes are based on real property (i.e., land and buildings) which has a predictable value and appreciation to base taxes upon. This is as opposed to income or sales taxes, which can fluctuate with economic trends or unforeseen events.

Property taxes can be levied through: 1) tax base levies, 2) serial levies, and 3) bond levies. The most common method uses tax base levies, which do not expire and are allowed to increase by 6 percent per annum. Serial levies are limited by the amounts and times they can be imposed. Bond levies are for specific projects and are limited by time based on the debt load of the local government or the project.

The historic dependence on property taxes is changing with the passage of Ballot Measure 5 in the early 1990s. Ballot Measure 5 limits the property tax rate for purposes other than payment of certain voter-approved general obligation indebtedness. Under full implementation, the tax rate for all local taxing authorities is limited to \$15 per \$1,000 of assessed valuation. As a group, all non-school taxing authorities are limited to \$10 per \$1,000 of assessed valuation. All tax base, serial, and special levies are subject to the tax rate limitation. Ballot Measure 5 requires that all non-school taxing districts' property tax rate be reduced if together they exceed \$10 per \$1,000 per assessed valuation by the county. If the non-debt tax rate exceeds the constitutional limit of \$10 per \$1,000 of assessed valuation, then all of the taxing districts' tax rates are reduced on a proportional basis. The proportional reduction in the tax rate is commonly referred to as compression of the tax rate.

Measure 47, an initiative petition, was passed by Oregon voters in November 1996. It is a constitutional amendment that reduces and limits property taxes and limits local revenues and replacement fees. The measure limits 1997-98 property taxes to the lesser of the 1995-96 tax minus 10 percent, or the 1994-95 tax. It limits future annual property tax increases to 3 percent, with exceptions. Local governments' lost revenue may be replaced only with state income tax, unless voters approve replacement fees or charges. Tax levy approvals in certain elections require 50 percent voter participation.

The state legislature created Measure 50, which retains the tax relief of Measure 47 but clarifies some legal issues. This revised tax measure was approved by voters in May 1997.

The League of Oregon Cities (LOC) estimated that direct revenue losses to local governments, including school districts, will total \$467 million in fiscal year 1998, \$553 million in 1999, and increase thereafter. The actual revenue losses to local governments will depend on actions of the Oregon Legislature. LOC also estimates that the state will have revenue gains of \$23 million in 1998, \$27 million in 1999, and increase thereafter because of increased personal and corporate tax receipts due to lower property tax deduction.

Measure 50 adds another layer of restrictions to those which govern the adoption of tax bases and levies outside the tax base, as well as Measure 5's tax rate limits for schools and non-schools and tax rate exceptions for voter

approved debt. Each new levy and the imposition of a property tax must be tested against a longer series of criteria before the collectible tax amount on a parcel of property can be determined.

### **System Development Charges**

System Development Charges (SDCs) are becoming increasingly popular in funding public works infrastructure needed for new local development. Generally, the objective of systems development charges is to allocate portions of the costs associated with capital improvements upon the developments, which increase demand on transportation, sewer or other infrastructure systems.

Local governments have the legal authority to charge property owners and/or developers fees for improving the local public works infrastructure based on projected demand resulting from their development. The charges are most often targeted towards improving community water, sewer, or transportation systems. Cities and counties must have specific infrastructure plans in place that comply with state guidelines in order to collect SDCs.

SDCs are collected when new building permits are issued. Transportation SDCs are based on trip generation of the proposed development. Residential calculations would be based on the assumption that a typical household will generate a given number of vehicle trips per day. Nonresidential use calculations are based on employee ratios for the type of business or industrial uses. The SDC revenues would help fund the construction of transportation facilities necessitated by new development.

### **State Highway Fund**

Gas tax revenues received from the state of Oregon are used by all counties and cities to fund roads, and road construction and maintenance. In Oregon, the state collects gas taxes, vehicle registration fees, overweight/overheight fines and weight/mile taxes and returns a portion of the revenues to cities and counties through an allocation formula. Like other Oregon cities, the city of Pilot Rock uses its state gas tax allocation to fund street construction and maintenance.

### **Local Gas Taxes**

The Oregon Constitution permits counties and incorporated cities to levy additional local gas taxes with the stipulation that the moneys generated from the taxes will be dedicated to road-related improvements and maintenance within the jurisdiction. At present, only a few local governments (including the cities of Woodburn and The Dalles and Multnomah and Washington counties) levy a local gas tax. The city of Pilot Rock may consider raising its local gas tax as a way to generate additional road improvement funds. However, with relatively few jurisdictions exercising this tax, an increase in the cost differential between gas purchased in Pilot Rock and gas purchased in neighboring communities may encourage drivers to seek less expensive fuel elsewhere. Any action will need to be supported by careful analysis to minimize the unintended consequences of such an action.

### **Vehicle Registration Fees**

The Oregon vehicle registration fee is allocated to the state, counties and cities for road funding. Oregon counties are granted authority to impose a vehicle registration fee covering the entire county. The Oregon Revised Statutes would allow Umatilla County to impose a biannual registration fee for all passenger cars licensed within the county. Although both counties and special districts have this legal authority, vehicle

registration fees have not been imposed by local jurisdictions. In order for a local vehicle registration fee program to be viable in Umatilla County, all the incorporated cities and the county would need to formulate an agreement which would detail how the fees would be spent on future road construction and maintenance.

### **Local Improvement Districts**

The Oregon Revised Statutes allow local governments to form Local Improvement Districts (LIDs) to construct public improvements. LIDs are most often used by cities to construct localized projects such as streets, sidewalks or bikeways. The statutes allow formation of a district by either the city government or property owners. Cities that use LIDs are required to have a local LID ordinance that provides a process for district formation and payback provisions. Through the LID process, the cost of local improvements is generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation. The types of allocation methods are only limited by the Local Improvement Ordinance. The cost of LID participation is considered an assessment against the property which is a lien equivalent to a tax lien. Individual property owners typically have the option of paying the assessment in cash or applying for assessment financing through the City. Since the passage of Ballot Measure 5, cities have most often funded local improvement districts through the sale of special assessment bonds.

### **GRANTS AND LOANS**

There are a variety of grant and loan programs available, most with specific requirements relating to economic development or specific transportation issues, rather than for the general construction of new streets. Many programs require a match from the local jurisdiction as a condition of approval. Because grant and loan programs are subject to change and statewide competition, they should not be considered a secure long-term funding source. Most of the programs available for transportation projects are funded and administered through ODOT and/or the Oregon Economic Development Department (OEDD). Some programs that may be appropriate for the city of Pilot Rock are described below. The primary contact for information on the following programs is ODOT Region 5, which can be reached at (541) 963-3177.

#### **Bike-Pedestrian Grants**

By law (ORS 366.514), all road, street or highway construction or reconstruction projects must include facilities for pedestrians and bicyclists, with some exceptions. ODOT's Bike and Pedestrian Program administers two programs to assist in the development of walking and bicycling improvements: local grants, and Small-Scale Urban Projects. Cities and counties with projects on local streets are eligible for local grant funds. An 80 percent state/20 percent local match ratio is required. Eligible projects include curb extensions, pedestrian crossings and intersection improvements, shoulder widening and restriping for bike lanes. Projects on urban state highways with little or no right of way taking and few environmental impacts are eligible for Small-Scale Urban Project Funds. Both programs are limited to projects costing up to \$100,000. Projects that cost more than \$100,000, require the acquisition of ROW, or have environmental impacts should be submitted to ODOT for inclusion in the STIP.

#### **Access Management**

The Access Management Program sets aside approximately \$500,000 a year to address access management issues. One primary component of this program is an evaluation of existing approach roads to state highways.

These funds are not committed to specific projects, and priorities and projects are established by an evaluation process.

### **Enhancement Program**

This federally funded program earmarks \$8 million annually for projects in Oregon. Projects must demonstrate a link to the intermodal transportation system, compatibility with approved plans, and local financial support. A 10.27 percent local match is required for eligibility. Each proposed project is evaluated against all other proposed projects in its region. Within the five Oregon regions, the funds are distributed on a formula based on population, vehicle miles traveled, number of vehicles registered and other transportation-related criteria. The solicitation for applications was mailed to cities and counties the last week of October 1998. Local jurisdictions have until January 1999 to complete and file their applications for funding available during the 2000-2003 fiscal years that begin October 1999.

### **Highway Bridge Rehabilitation or Replacement Program**

The Highway Bridge Rehabilitation or Replacement Program (HBRR) provides federal funding for the replacement and rehabilitation of bridges of all functional classifications. A portion of the HBRR funding is allocated for the improvement of bridges under local jurisdiction. A quantitative ranking system is applied to the proposed projects based on sufficiency rating, cost factor, and load capacity. They are ranked against other projects statewide, and require state and local matches of 10 percent each. It includes the Local Bridge Inspection Program and the Bridge Load Rating Program.

### **Transportation Safety Grant Program**

Managed by ODOT's Transportation Safety Section (TSS), this program's objective is to reduce the number of transportation-related accidents and fatalities by coordination a number of statewide programs. These funds are intended to be used as seed money, funding a program for three years. Eligible programs include programs in impaired driving, occupant protection, youth, pedestrian, speed, enforcement, bicycle and motorcycle safety. Every year, TSS produces a Highway Safety Plan that identifies the major safety programs, suggests countermeasures to existing safety problems, and lists successful projects selected for funding, rather than granting funds through an application process.

### **Federal Transit Administration (FTA) Section 5311-Non-urbanized Area Formula Program**

Section 5311 is a federally sponsored program for general public transit services in small urban and rural areas. It supports both capital and operation needs. The ODOT Public Transit Division distributes these funds. In FY00, the cities of Pendleton and Milton-Freewater received these funds to support transportation programs for the general public. The city of Pilot Rock would be eligible for these funds if it implemented intercity service or intracity services open to the general public. The recipient of these funds must provide matching funds of up to 50 percent for operating uses and up to 20 percent for capital expenses.

Section 5311(f) – Part of 5311 funds is allocated to intercity services. Intercity transit services connect communities to rail, bus and air hubs. These funds can be used for both capital and operating expenses. Local revenues must match these funds. Match requirements are the same as those for 5311 funds.

### **Surface Transportation Program (STP) Funds**

TEA-21, the Federal Transportation Efficiency Act for the 21<sup>st</sup> Century, that funds programs for highways and transit, permits surface transportation program funding flexibility between modes. This gives the state more latitude in selecting the modal alternatives that would best address local congestion problems. STP funds are generally limited to capital projects with a few exceptions. In non-urbanized areas ODOT has the responsibility of allocating these funds. In Pilot Rock, ODOT Region 5 makes funding decisions with public input.

### **Department of Labor Welfare-to-Work Program**

The US Department of Labor provides grants to communities to give transitional assistance to move welfare recipients into unsubsidized employment. One of the areas applicants are encouraged to consider is the development of responsive transportation systems to move people to work or to career training. These grants must serve at least 100 welfare recipients. The Department of Labor expects the grants to range from one million to five million dollars over a period of three years. Applications must be a coordinated effort between transportation providers and Oregon Adult and Family Services. The funding can be used for capital and operating expenses and will cover up to 50 percent of the cost of a program.

ODOT has submitted a grant application for funding for Oregon programs. ODOT identified the Bend/Redmond area as the first demonstration program. Other areas of the state may be eligible after that. To be eligible for this funding, it is essential that communities bring together local ODOT staff, transit providers and AFS staff to begin the coordination process.

### **FTA Section 5310 Discretionary Grants**

This program funds vehicles and other capital projects for programs that serve elderly and disabled people. In FY99 the city of Pendleton received \$36,000 to purchase a new vehicle.

### **Special Transportation Fund**

The Special Transportation Fund (STF) awards funds to maintain, develop, and improve transportation services for people with disabilities and people over 60 years of age. Financed by a two-cent tax on each pack of cigarettes sold in the state, the annual distribution is approximately \$5 million. Three-quarters of these funds are distributed on a per-capita formula to mass transit districts, transportation districts, where such districts do not exist, and counties. The remaining funds are distributed on a discretionary basis.

### **County Allotment Program**

The County Allotment Program distributes funds to counties on an annual basis; the funds distributed in this program are in addition to the regular disbursement of state highway fund resources. The program determines the amount of total revenue available for roads in each county and the number of road miles (but not lane miles) of collectors and arterials under each county's jurisdiction. Using these two benchmarks, a "resource-per-equivalent" ratio is calculated for each county. Resources from the \$750,000 program are provided to the county with the lowest resource-per-equivalent road-mile ratio until they are funded to the level of the next-lowest county. The next-lowest county is then provided resources until they are funded to the level of the third-lowest county, and so on, until the fund is exhausted.

### **Immediate Opportunity Grant Program**

The Oregon Economic Development Department (OEDD) and ODOT collaborate to administer a grant program designed to assist local and regional economic development efforts. The program is funded to a level of approximately \$7 million per year through state gas tax revenues. The following are primary factors in determining eligible projects:

- Improvement of public roads.
- Inclusion of an economic development-related project of regional significance.
- Creation or retention of primary employment.
- Ability to provide local funds (50/50) to match grant.
- Improvement to the quality of the community.

The maximum amount of any grant under the program is \$500,000. Local governments that have received grants under the program include Washington County, Multnomah County, Douglas County, the city of Hermiston, port of St. Helens, and the city of Newport.

### **Oregon Special Public Works Fund**

The Special Public Works Fund (SPWF) program was created by the 1995 State Legislature as one of several programs for the distribution of funds from the Oregon Lottery to economic development projects in communities throughout the state. The program provides grant and loan assistance to eligible municipalities primarily for the construction of public infrastructure which support commercial and industrial development that result in permanent job creation or job retention. To be awarded funds, each infrastructure project must support businesses wishing to locate, expand, or remain in Oregon. SPWF awards can be used for improvement, expansion, and new construction of public sewage treatment plants, water supply works, public roads, and transportation facilities.

While SPWF program assistance is provided in the form of both loans and grants, the program emphasizes loans in order to assure that funds will return to the state over time for reinvestment in local economic development infrastructure projects. Jurisdictions that have received SPWF funding for projects that include some type of transportation-related improvement include the cities of Baker City, Bend, Cornelius, Forest Grove, Madras, Portland, Redmond, Reedsport, Toledo, Wilsonville, Woodburn, and Douglas County.

### **Oregon Transportation Infrastructure Bank**

The Oregon Transportation Infrastructure Bank (OTIB) program is a revolving loan fund administered by ODOT to provide loans to local jurisdictions (including cities, counties, special districts, transit districts, tribal governments, ports, and state agencies). Eligible projects include construction of federal-aid highways, bridges, roads, streets, bikeways, pedestrian accesses, and right of way costs. Capital outlays such as buses, light-rail cars and lines, maintenance yards and passenger facilities are also eligible.



## **ODOT FUNDING OPTIONS**

The state of Oregon provides funding for all highway related transportation projects through the Statewide Transportation Improvement Program (STIP) administered by the Oregon Department of Transportation. The STIP outlines the schedule for ODOT projects throughout the state. The STIP, which identifies projects for a three-year funding cycle, is updated on an annual basis. Starting with the 1998 budget year, ODOT will then identify projects for a four-year funding cycle. In developing this funding program, ODOT must verify that the identified projects comply with the Oregon Transportation Plan (OTP), ODOT Modal Plans, Corridor Plans, local Comprehensive Plans, and TEA-21 planning requirements. The STIP must fulfill federal planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on federal planning requirements and the different state plans. ODOT consults with local jurisdictions before highway related projects are added to the STIP.

The highway-related projects identified in Pilot Rock's TSP will be considered for future inclusion on the STIP. The timing of including specific projects will be determined by ODOT based on an analysis of all the project needs within Region 5. The city of Pilot Rock, Umatilla County, and ODOT will need to communicate on an annual basis to review the status of the STIP and the prioritization of individual projects within the project area. Ongoing communication will be important for the city, county, and ODOT to coordinate the construction of both local and state transportation projects.

ODOT also has the option of making some highway improvements as part of their ongoing highway maintenance program. Types of road construction projects that can be included within the ODOT maintenance programs are intersection realignments, additional turn lanes, and striping for bike lanes. Maintenance related construction projects are usually done by ODOT field crews using state equipment. The maintenance crews do not have the staff or specialized road equipment needed for large construction projects.

An ODOT funding technique that will likely have future application to Pilot Rock's TSP is the use of state and federal transportation dollars for off-system improvements. Until the passage and implementation of ISTEA, state and federal funds were limited to transportation improvements within highway corridors. ODOT now has the authority and ability to fund transportation projects that are located outside the boundaries of the highway corridors. The criteria for determining what off-system improvements can be funded has not yet been clearly established. It is expected that this new funding technique will be used to finance local system improvements that reduce traffic on state highways or reduce the number of access points for future development along state highways.

## **FINANCING TOOLS**

In addition to funding options, the recommended improvements listed in this plan may benefit from a variety of financing options. Although often used interchangeably, the words financing and funding are not the same. Funding is the actual generation of revenue by which a jurisdiction pays for improvements, some examples include the sources discussed above: property taxes, SDCs, fuel taxes, vehicle registration fees, LIDs, and various grant programs. In contrast, financing refers to the collecting of funds through debt obligations.

There are a number of debt financing options available to the city of Pilot Rock. The use of debt to finance capital improvements must be balanced with the ability to make future debt service payments and to deal with the impact on its overall debt capacity and underlying credit rating. Again, debt financing should be viewed not as a source of funding, but as a time shifting of funds. The use of debt to finance these

transportation-system improvements is appropriate since the benefits from the transportation improvements will extend over the period of years. If such improvements were to be tax financed immediately, a large short-term increase in the tax rate would be required. By utilizing debt financing, local governments are essentially spreading the burden of the costs of these improvements to more of the people who are likely to benefit from the improvements and lowering immediate payments.

### **General Obligation Bonds**

General obligation (GO) bonds are voter-approved bond issues, which represent the least expensive borrowing mechanism available to municipalities. GO bonds are typically supported by a separate property tax levy specifically approved for the purposes of retiring debt. The levy does not terminate until all debt is paid off. The property tax levy is distributed equally throughout the taxing jurisdiction according to assessed value of property. GO debts typically are used to make public improvement projects that will benefit the entire community.

State statutes require that the GO indebtedness of a city not exceed 3 percent of the real market value of all taxable property in the city. Since GO bonds would be issued subsequent to voter approval, they would not be restricted to the limitations set forth in Ballot Measures 5, 47, and 50. Although new bonds must be specifically voter approved, Measure 47 and 50 provisions are not applicable to outstanding bonds, unissued voter-approved bonds, or refunding bonds.

### **Limited Tax Bonds**

Limited tax general obligation (LTGO) bonds are similar to GO bonds in that they represent an obligation of the municipality. However, a municipality's obligation is limited to its current revenue sources and is not secured by the public entity's ability to raise taxes. As a result, LTGO bonds do not require voter approval. However, since the LTGO bonds are not secured by the full taxing power of the issuer, the limited tax bond represents a higher borrowing cost than GO bonds. The municipality must pledge to levy the maximum amount under constitutional and statutory limits, but not the unlimited taxing authority pledged with GO bonds. Because LTGO bonds are not voter approved, they are subject to the limitations of Ballot Measures 5, 47, and 50.

### **Bancroft Bonds**

Under Oregon Statute, municipalities are allowed to issue Bancroft bonds, which pledge the City's full faith and credit to assessment bonds. As a result, the bonds become general obligations of the City but are paid with assessments. Historically, these bonds provided a city with the ability to pledge its full faith and credit in order to obtain a lower borrowing cost without requiring voter approval. However, since Bancroft bonds are not voter approved, taxes levied to pay debt service on them are subject to the limitations of Ballot Measures 5, 47, and 50. As a result, since 1991, Bancroft bonds have not been used by municipalities that were required to compress their tax rates.

## **FUNDING REQUIREMENTS**

Pilot Rock's TSP identifies both capital improvements and strategic efforts recommended during the next 20 years to address safety and access problems and to expand the transportation system to support a growing population and economy. The TSP identifies 6 projects, totaling an estimated \$309,900. One of the

projects, that affects traffic operations around US 395, has identified state funding for the recommended project. The balance of the projects are within the City's jurisdiction and will require the City to take the financial lead.

Estimated costs by project are shown in Table 8-8.

**TABLE 8-8**  
**RECOMMENDED PROJECTS AND FINANCIAL RESPONSIBILITY**

Project Location /Description	Costs (\$ X 1,000)				
	City	County	State	Private	Total
1. Extend North 6th St. to US 395.			\$130.0		\$130.0
4A Pave Hickory Street up to Fir Street	\$11.3				\$11.3
4B. Pave Alder Street between 5th Street and US 395	\$62.2				\$62.2
4C. Pave SW 4th Place and SW Cedar Street	\$25.4				\$25.4
3. Replace vehicle bridge over East Birch Creek on alley roadway.	\$73.5				\$73.5
2. Replace pedestrian bridge over West Birch Creek between Delwood	\$7.5				\$7.5
<b>Total</b>			<b>\$130.0</b>	<b>\$</b>	<b>\$309.9</b>
	<b>\$179.9</b>				

Notes:

(1) To be determined at a later time.

The city of Pilot Rock is expected to be able to fund projects of up to approximately \$52,800 over the 20-year planning horizon. Based on current revenue sources for the city of Pilot Rock and the improvements identified in this Transportation System Plan, the City would face a funding deficit of \$127,100, as shown in Table 8-9.

**TABLE 8-9**  
**ESTIMATED CAPITAL FUNDING BALANCE**

	Amount
Capital Available from Existing Revenue Sources	\$52,800
Capital Needed to Fund Projects Identified as City-Funded Projects	\$179,900
Surplus (Deficit)	(\$127,100)

Given the existing cost estimates, the resources available as estimated in Table 6, and financial partners currently identified, Pilot Rock is expected to experience a funding deficit of over \$127,100 over the 20-year planning period. Some of the projects may be eligible for alternative funding sources. For example, one project serves to enhance the pedestrian connectivity of the City, making it potentially eligible for bike and pedestrian funding, as described earlier in this chapter., a pedestrian bridge over East Birch. Securing grant funding for this project, estimated to total \$7,500 would allow the city of Pilot Rock to implement these projects within the 20-year planning horizon. Additional analysis would be required to evaluate the feasibility of this funding option.

This Transportation System Plan identifies 6 projects recommended over the next 20 years. Based on existing revenue sources and the estimated costs to implement the improvements, the city of Pilot Rock is expected to experience a budget shortfall of over \$127,100 over the 20-year planning horizon. The City will need to work with Umatilla County and ODOT to explore alternative funding sources, including SDCs, bike and pedestrian grants, and other programs described in this chapter, to implement the recommended improvements.

## CHAPTER 9: RECOMMENDED POLICIES AND ORDINANCES

In 1991, the Oregon Transportation Planning Rule was adopted to implement State Planning Goal 12 — Transportation (amended in May and September 1995). The Transportation Planning Rule requires counties and cities to complete a Transportation System Plan (TSP) that includes policies and ordinances to implement that plan. The city of Pilot Rock Comprehensive Plan, Zoning Ordinance, and Subdivision Ordinance was revised in 1986. The Transportation discussion in the Comprehensive Plan has not been significantly updated since the implementation of the Transportation Planning Rule. The City's ordinances also need updating to meet the requirements of the Transportation Planning Rule and this TSP.

### ELEMENTS REQUIRED BY THE TRANSPORTATION PLANNING RULE

The applicable portion of the Transportation Planning Rule is found in Section 660-12-045: Implementation of the Transportation System Plan. In summary, the Transportation Planning Rule requires that local governments revise their land use regulations to implement the Transportation System Plan in the following manner:

- Amend land use regulations to reflect and implement the Transportation System Plan.
- Clearly identify which transportation facilities, services, and improvements are allowed outright, and which will be conditionally permitted or permitted through other procedures.
- Adopt land use or subdivision ordinance measures, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions, that include the following topics:
  - ⇒ access management and control;
  - ⇒ protection of public use airports;
  - ⇒ coordinated review of land use decisions potentially affecting transportation facilities;
  - ⇒ conditions to minimize development impacts to transportation facilities;
  - ⇒ regulations to provide notice to public agencies providing transportation facilities and services of land use applications that potentially affect transportation facilities; and
  - ⇒ regulations assuring that amendments to land use applications, densities, and design standards are consistent with the Transportation System Plan.
- Adopt land use or subdivision regulations for urban areas and rural communities to provide safe and convenient pedestrian and bicycle circulation and bicycle parking, and to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel.
- Establish street standards that minimize pavement width and total right-of-way.

These elements are discussed in the following sections, where they are grouped by similarity in terms of appropriate policy and ordinance.

## **APPROVAL PROCESSES FOR TRANSPORTATION FACILITIES**

Section 660-12-045(1) of the Transportation Planning Rule requires that cities and counties amend their land use regulations to conform with the jurisdiction's adopted Transportation System Plan. This section of the Transportation Planning Rule is intended to clarify the approval process for transportation-related projects.

### **Recommended Policies for Approval Process**

Policies should clarify the approval process for different types of projects. The following policies are recommended to be adopted in the Pilot Rock Comprehensive Plan:

- The Transportation System Plan is an element of the city of Pilot Rock Comprehensive Plan. It identifies the general location of transportation improvements. Changes in the specific alignment of proposed public road and highway projects that shall be permitted without plan amendment if the new alignment falls within a transportation corridor identified in the Transportation System Plan.
- Operation, maintenance, repair, and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.
- Dedication of right-of-way, authorization of construction and the construction of facilities and improvements for projects authorized in the Transportation System Plan, the classification of the roadway and approved road standards shall be allowed without land use review.
- For state projects that require an Environmental Impact Statement (EIS) or Environmental Assessment (EA), the draft EIS or EA shall serve as the documentation for local land use review, if local review is required.

### **Recommended Ordinances for Approval Process**

Projects that are specifically identified in the Transportation System Plan and for which the jurisdiction has made all the required land use and goal compliance findings are permitted outright, subject only to the standards established by the Plan.

- A. However, a city may not allow outright an improvement that is included in the Transportation System Plan but for which no site-specific decisions have been made. Therefore, it is recommended that small jurisdictions review these transportation projects within the Urban Growth Boundary as regulated land use actions, using conditional use process.

## **PROTECTING EXISTING AND FUTURE OPERATION OF FACILITIES**

Section 60-12-045(2) of the Transportation Planning Rule requires that jurisdictions protect future operation of transportation corridors. For example, an important arterial for through-traffic should be protected in order to meet the community's identified needs. In addition, the proposed function of a future roadway must be protected from incompatible land uses.

Other future transportation facilities that the city of Pilot Rock may wish to protect include the space and building orientation necessary to support future transit, and right-of-ways or other easements for accessways, paths, and trails.

Protection of existing and planned transportation systems can be provided by ongoing coordination with other relevant agencies, adhering to the road standards, and to the access management policies and ordinances suggested below. Comprehensive Plan Policies will be established by the City of Pilot Rock and incorporated into the Comprehensive Plan to protect existing and future operation of transportation facilities.

### **Recommended Access Control Ordinances**

Appropriate provisions to provide access management should be included in a revised Section 3.94 of the City of Pilot Rock Zoning Ordinance.

### **PROCESS FOR COORDINATED REVIEW OF LAND USE DECISIONS**

- A lack of coordination between state and local decision processes can result in costly delays and changes in public road and highway projects, as well as some maintenance and operation activities. Section 660-12-045(2)(d) of the Transportation Planning Rule requires that jurisdictions develop a process for the coordinated review of land use decisions affecting transportation facilities. .

### **Recommended Process for Applying Conditions to Development Proposals**

Section 660-12-045(2)(e) of the Transportation Planning Rule requires that jurisdictions develop a process to apply conditions to development proposals in order to minimize impacts on transportation facilities.

The site plan review process is a useful tool for a small jurisdiction. The city of Pilot Rock may want to amend its site plan review process so that it requires applicants to provide data on the potential traffic impacts of a project through a traffic impact study or, at least, an estimation of the number of trips expected to be generated. Recommended language to be included under site plan criteria is as follows:

- *The proposed use shall not impose an undue burden on the public transportation system. For developments that are likely to generate more than 400 average daily motor vehicle trips (ADTs), the applicant shall provide adequate information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding street system. The developer shall be required to mitigate impacts attributable to the project.*
- *The determination of impact or effect and the scope of the impact study should be coordinated with the provider of the affected transportation facility.*

If the city of Pilot Rock decides to implement a Site Plan review process, conditions such as the following may be included in the ordinance, to be applied in the event that a proposed project is demonstrated to have potentially adverse effects on the transportation system. These are additional to the conditions imposed by the recommended Access Management Ordinance included previously.

- *Dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or accessways shall be required where the existing transportation system will be impacted by or is inadequate to handle the additional burden caused by the proposed use.*

- *Improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways, paths, or streets that serve the proposed use where the existing transportation system may be burdened by the proposed use.*

### **Recommended Regulations to Provide Notice to Public Agencies**

Review of land use actions is typically initiated by a notice. This process is usually defined by a procedures ordinance or noticing policy. This ordinance or policy should be amended to provide for notice to ODOT regarding any land use action on or adjacent to US 395. This provision should be included in Article 12: Administrative Provisions of the Pilot Rock Zoning Ordinance. Similarly, all actions by the City potentially affecting a county road should provide notice to Umatilla County.

Information that should be conveyed to reviewers includes:

- *Project location.*
- *Proposed land use action.*
- *Location of project access point(s).*

### **Recommended Regulations to Assure that Amendments are Consistent with the Transportation System Plan**

Section 660-12-045(2)(g) of the Transportation Planning Rule requires that jurisdictions develop regulations to assure that all development proposals, plan amendments, or zone changes conform with the Transportation System Plan. This requirement can be addressed by adding a policy to the Comprehensive Plan, as follows:

- *All development proposals, plan amendments, or zone changes shall conform with the adopted Transportation System Plan.*

Within the zoning ordinance, development proposals can be addressed through site plan review, discussed above. Zone changes and plan amendments can be partially addressed by the following language:

- *The applicant must show that the proposed change conforms with the Comprehensive Plan.*

The following statements should be added to the local ordinance and policy language governing zone changes and plan amendments:

- A. *A plan or land use regulation amendment significantly affects a transportation facility if it:*
  1. *Changes the functional classification of an existing or planned transportation facility;*
  2. *Changes standards implementing a functional classification system;*
  3. *Allows types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or*



4. *Would reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.*
- B. *Amendments to the Comprehensive Plan and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:*
1. *Limiting allowed land uses to be consistent with the planned function of the transportation facility.*
  2. *Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or*
  3. *Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.*

## **SAFE AND CONVENIENT PEDESTRIAN AND BICYCLE CIRCULATION**

Bicycling and walking are often the most appropriate mode for short trips. Especially in small cities where the downtown area is compact, walking and bicycling can replace short auto trips, reducing the need for construction and maintenance of new roads. However, the lack of safe and convenient bikeways and walkways can be a strong discouragement to use these mode choices. The Transportation Planning Rule (660-12-045(3)) requires that urban areas and rural communities plan for bicycling and walking as part of the overall transportation system.

### **Recommended Ordinances for Bicycle and Pedestrian Circulation and Access**

Sections 660-12-045(3)(b), (c), and (d) of the Transportation Planning Rule deals with providing facilities for safe and convenient pedestrian and bicycle circulation and access, both within new residential and commercial development, and on public streets. In order for walking and bicycling to be viable forms of transportation, especially in smaller cities where they can constitute a significant portion of local trips, the proper facilities must be supplied. In addition, certain development design patterns, such as orienting commercial uses to the street and placing parking behind the building, make a commercial district more accessible to non-motorized transportation and to existing or future transit.

- A. The Transportation Planning Rule specifies that, at a minimum, sidewalks and bikeways be provided along arterials and collectors in urban areas. Separate bicycle and pedestrian facilities should be provided where these would safely minimize trips distances by providing a "short cut." Small cities should enhance existing ordinances by including language, additions and recommendations. The recommendations should be placed within the appropriate section of the Pilot Rock zoning ordinance (Section 1.5) or subdivision ordinance (Section 1.13).

If the city of Pilot Rock decides to implement a Site Plan review process, it should include a requirement to show the design and location of bicycle parking and bicycle and pedestrian circulation elements such as accessways and walkways.

**APPENDIX A**

**Pilot Rock Plans**

## PILOT ROCK PLANS

### **Pilot Rock Comprehensive Plan**

The Pilot Rock Comprehensive Plan was adopted in 1978, and amended in 1986. The plan provides goals and policies for guiding the future growth and development of the city. Two of the city's 13 goals strongly impact the development of the Transportation System Plan-- Goal K: Transportation and Goal J: Public Facilities and Services.

### ***Goal K: Transportation***

To provide and encourage a safe, convenient and economic transportation system.

#### ***Policies***

1. To repave city streets and provide curbs and sidewalks as resources are available.
2. To encourage development and use of alternate means of transportation to the private automobile.
3. To work with ODOT to minimize conflicts between through and local traffic on US Highway 395, to reduce traffic hazards and expedite the flow of traffic by limiting access to and from the highway with the Urban Growth Area, and planning for adequate access to property adjacent to the highway.
4. To development of good transportation linkages (vehicular, pedestrian, bicycle, etc.) between residential areas and major activity centers.
5. To encourage the continuing availability of rail transportation linkages to mainline services. (Note: There is no active rail service to Pilot Rock at this time.)
6. To work with Umatilla County to develop joint policies concerning local roads and streets within the Urban Growth Boundary.
7. To adopt the recommendation in the Oregon Department of Transportation Six-Year Highway Improvement Plan that occurs within the Urban Growth Boundary.

### ***Goal J: Public Facilities and Services***

To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as a framework for urban development.

### ***Applicable Policies***

7. To develop, maintain, update, and expand police and fire services, streets and sidewalks, water and sewer systems, and storm drains as necessary to provide adequate facilities and services to the community.

### **Pilot Rock Technical Report**

The Pilot Rock Technical Report offers background information for the city regarding the natural environment, the socioeconomic environment (including population indicators) and establishment of the Urban Growth Boundary (UGB). The report contains road classifications for roadways through the city. The classifications are listed in the Appendix: Table X: 1997 Major Street Inventory. This report was last revised in 1986. Therefore, much of the data is now outdated.

Key finding regarding transportation facilities include the following:

- Approximately 80 percent of Pilot Rock's existing streets are paved. These streets are mainly paved to 20 feet and a few major collector streets are paved to 24 foot widths.
- There are few existing curbs or sidewalks in Pilot Rock. The ones which do exist consist mainly of short lengths of the downtown section Highway 395.
- The major road access provided to Pilot Rock is through US Highway 395. Two county roads also access the areas: County Road # 1375 and # 1386.
- The roadways allow easy access to highway transportation facilities which link the city with regional production, distribution, and marketing centers.

The development of Pilot Rock is constricted by natural hazards. Pilot Rock is situated at the confluence of three creeks. East and West Birch Creek come together just north of the downtown area and form Birch Creek. Also, Wegner Creek flows into East Birch Creek near the southern city limits. The floodplains and natural habitats associated with the creeks has limited development. The city has zoned much of the area for permanent open space.

- The basalt rock formation on the west side of town has steep slopes which constrain development.

### **Pilot Rock Subdivision Ordinance**

The City of Pilot Rock Subdivision Ordinance was adopted in 1986. It regulates all subdivisions and partitions of lands, within the city limits. (Umatilla County is responsible for regulating subdivision and partitions outside of the city limits but within the urban growth boundary. However, the city reviews and comments on all plans, plats, or maps for those areas.) It also regulates the construction of new or undeveloped streets within the city and urban growth boundary.

The ordinance explains the Pilot Rock street classifications. The different streets are defined as:

Alley: A narrow street through a block primarily for vehicular service access to the back or side of properties otherwise abutting on another street.

Arterial: A street of considerable continuity which is primarily a traffic artery for travel between large areas.

Collector: A street supplementary to the arterial street system and a means of travel between this system and smaller areas, used to some extent for through traffic and to some extent for access to abutting properties.

Cul-de-sac: A short street having one end to traffic and being terminated by a vehicle turn-around.

Local Street: A street intended primarily for access to abutting properties.

Marginal Access Street: A local street parallel and adjacent to an arterial street providing access to abutting properties, but protected from through traffic.

The Ordinance lists general requirements and design standards for streets. General requirements include the frontage requirements, grading, topography and arrangement of streets, road names, sign requirements, and street light requirements. Design standards include widths for rights-of-way, pavement, grade, speed, and sidewalks as follows:

<b>ROAD DESIGN STANDARDS - BUSINESS/INDUSTRIAL</b>					
<b>Road Classification</b>	<b>Minimum Right-of-way</b>	<b>Minimum Surface Width</b>	<b>Maximum Grade</b>	<b>Speed</b>	<b>Sidewalks</b>
Arterial Street	100 ft	48 ft	5 %	45 mph	Both sides 6 ft
Collector Street	70 ft	44 ft	7 %	40 mph	Both sides 6 ft
Local Street	60 ft	38 ft	8 %	30 mph	Both sides 6 ft
Alleys	24 ft	24 ft	nl	nl	nl

nl - no standard listed

<b>ROAD DESIGN STANDARDS - RESIDENTIAL</b>					
<b>Road Classification</b>	<b>Minimum Right-of-way</b>	<b>Minimum Surface Width</b>	<b>Maximum Grade</b>	<b>Speed</b>	<b>Sidewalks</b>
Arterial Street	80 ft	44 ft	8 %	40	Both sides 4 ft
Collector Street	60 ft	38 ft	10 %	35	Optional*
Local Street	50 ft	38 ft	12 %	25	Optional*
Alleys	20 ft	20 ft	nl	nl	nl

nl - no standard listed

\* Sidewalks may be required by the City Council on these streets.

Subdivisions are required to provide frontage on and access from an existing street. Streets shall be improved to City, County or State standards. Sidewalks may be required at the discretion of the City Council on local or collector residential streets.

Pedestrian accesses may be required by the City Council to facilitate pedestrian access from streets to schools, parks, playgrounds, or other nearby streets. These are perpetual unobstructed easements at least 20 feet in width. The City Council may also require installation of separate bicycle lanes within streets or on separate paths.

## **Pilot Rock Zoning Ordinance**

The Pilot Rock Zoning Ordinance was adopted in 1986.

The purported purpose of Zoning Ordinance is as follows:

promoting the public health, safety, and welfare; to encourage the most appropriate use of property within the city; to stabilize and protect the value of property; to provide adequate light and air; to prevent overcrowding; to lessen traffic congestion; to facilitate adequate and economical provision for public improvements, all to implement the Comprehensive Plan of the City of Pilot Rock; to provide a method of administration and to provide penalties for violation of the provision herein.

The Ordinance contains 12 sections. The only section that applies directly to the transportation is the section on off-street parking and loading.

**APPENDIX B**  
**Major Streets Inventory**

1997 MAJOR STREETS INVENTORY

Pilot Rock Transportation System Plan

Roadway Segment Location	Jurisdiction	Level of Importance	Speed Limit (mph)	Street Width (feet)	No. of Travel Lanes	Passing Lanes (direction)	Width (feet)	Shoulders	Paving	On-Street Parking	Curbs	Sidewalks	Bikeway	1997 Pavement Condition*
<b>Arterials</b>														
US 395 (Pendleton-John Day Rwy)	State	Statewide	55	32	2	No	4-6	NA	NA	No	No	No	No	Fair
NE UGB limits to NE City Limits (MP 14.6A)	State	Statewide	30-40	32	2	No	4-6	NA	NA	No	No	No	No	Fair
MP 14.24 to NE 4th Street	State	Statewide	25	48-56	4	No	4-6	NA	NA	No	No	No	No	Fair
NE 4th Street to Main Street to SW Birch St.	State	Statewide	25	32	2	No	4-6	NA	NA	No	East side	Both Sides	No	Fair
Main Street to 4th Place to SW Birch St.	State	Statewide	30	32	2	No	4-6	NA	NA	No	No	No	No	Fair
4th Place to SW UGB Limits to SW Birch Pl.	State	Statewide	30	32	2	No	4-6	NA	NA	No	No	No	No	Fair
<b>Major Collectors</b>														
Alder Street	City	NA	25	18	2	No	No	NA	NA	No	No	No	No	Poor
NW 2nd Street to Main Street	City	NA	25	18	2	No	No	NA	NA	No	No	No	No	Poor
N Alder Place	City	NA	25	46	2	No	No	NA	NA	Yes	Yes	Both sides (1/2 block)	No	Fair
NW 2nd Street and Main Street	City	NA	25	46	2	No	No	NA	NA	Yes	Yes	Both sides (1/2 block)	No	Fair
<b>County Road No. 1375 to SW Birch SNE Birch Creek Rd</b>														
US 395 junction to South UGB Limits	County	NA	25	24	2	No	No	NA	NA	No	No	No	No	Fair
<b>County Road No. 1150 to 4th Street/Stewart Creek Road</b>														
2nd Street to Masonite Corporation Driveway	City	NA	25	30	2	No	No	NA	NA	No	No	No	Yes	Good (covery in 1996)
Circle Road	County	NA	25	28	2	No	No	NA	NA	No	No	No	No	Fair
Masonite Corp. Driveway to NW UGB Limits	County	NA	25	28	2	No	No	NA	NA	No	No	No	No	Fair
Main Street	City	NA	25	70	2	No	No	NA	NA	diagonal	Yes	Both Sides	No	Fair
5th Street	City	NA	25	18	2	No	No	NA	NA	No	No	No	No	Poor
Alder Street to Cherry Street	City	NA	25	22	2	No	No	NA	NA	No	No	No	No	Fair
Cherry Street to SE UGB City Limits	County	NA	25	24	2	No	No	NA	NA	No	No	No	No	Fair
Elm Street to E UGB Limits	County	NA	25	18	2	No	No	NA	NA	No	No	West Side	No	Poor
Main Street to 5th Street	City	NA	25	18	2	No	No	NA	NA	No	No	West Side	No	Poor
<b>Minor Collectors</b>														
SW 2nd Street	City	NA	25	22	2	No	No	NA	NA	No	No	Both Sides (poor)	No	Fair
SW Birch Street to Belmont Street	City	NA	25	22	2	No	No	NA	NA	No	No	Both Sides (poor)	No	Fair



1997 MAJOR STREETS INVENTORY														
Pilot Rock Transportation System Plan														
roadway Segment Location	Jurisdiction	Level of Importance	Speed Limit (mph)	Street Width (feet)	No. of Travel Lanes	Passing Lanes (direction)	Width (feet)	Shoulders	Parag	On-Street Parking	Curb	Sidewalks	Bikerway	1997 Pavement Condition*
Cherry Street NE 4th Street to SE 5th Street	City	NA	25	24	2	No	No	NA	NA	No	No	No	No	Poor
Delwood Street SE 2nd to south end of street	City	NA	25	18	2	No	No	NA	NA	No	No	No	No	Fair
Elm Street NE 4th Street to US 395	City	NA	25	22	2	No	No	NA	NA	No	No	No	No	Fair

\* Pavement condition information for arterials is from the 1997 ODOT Pavement Condition Report. Condition information for collectors is based on field survey conducted by DEA in November 1997.

**APPENDIX C**

**Umatilla County Population Discussion**

## **Umatilla County Population Discussion**

### **METHODOLOGY AND DATA SOURCES**

Population estimates and projections were developed from historical data, official annual estimates, official long-range forecasts, and an impact analysis of four major employers entering or expanding in western Umatilla County. Historical data are compiled as reported by the Census Bureau. Portland State University's Center for Population Research and Census developed annual population estimates for cities and counties for the purpose of allocating certain state tax revenues to cities and counties. The State of Oregon Office of Economic Analysis (OEA) provided long-term (through year 2040) state population forecasts, disaggregated by county, for state planning purposes.

The Office of Economic Analysis used business-cycle trends (as reflected by the Employment Department's employment forecasts) as the primary driver of population and employment for the short term. For the long term, the forecasts shift to a population-driven model, which emphasizes demographics of the resident population, including age and gender of the population, with assumptions regarding life expectancy, fertility rate, and immigration. DEA used a methodology based on OEA's county-distribution methodology in developing population and employment forecasts for each of the cities in Umatilla County. DEA calculated a weighted average growth rate for each jurisdiction (weighting recent growth more heavily than past growth) and combined this average growth rate with the projected county-wide growth rate. This methodology assumes convergence of growth rates because of the physical constraints of any area to sustain growth rates beyond the state or county average for long periods of time. These constraints include availability of land and housing, congestion, and other infrastructure limitations.

These preliminary forecasts were used as a basis for discussion with individuals who have local knowledge and expertise. The projections were then revised based on local input and analysis. One element that had a significant impact on the population analysis was the HUES (Hermiston, Umatilla, Echo, and Stanfield) Growth Impact Study, conducted by the Benkendorf Associates Corporation, Hobson Johnson & Associates, and Martin Davis Consulting, which quantifies the impact of the construction and operation of four major employers.

As required by state policy, this forecast is consistent with the State of Oregon Office of Economic Analysis forecast at the end of the 20-year planning period. Because of the impact of the four large employers, however, the growth of Umatilla County will occur faster in the beginning of the planning horizon, slowing to compensate near the end of the planning period.

These population and employment forecasts were developed to determine future transportation needs. The amount of growth, and where it occurs, will affect traffic and transportation facilities in the study area. This report is not intended to provide a

complete economic forecast or housing analysis, and it should not be used for any purpose other than that for which it was designed.

### **CURRENT POPULATION AND EMPLOYMENT LEVEL**

Estimated at 65,500 in 1997, the population of Umatilla County has grown relatively rapidly since the 1990 Census, with an average annual growth rate of over one-and-one-half percent. The following table shows the estimated change in population for Umatilla County and the jurisdictions of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston for 1990 and 1996.

#### **Umatilla County Population Level 1990 and 1996**

	1990	1997	1990-1997 Change	
			Number	CAARG*
Umatilla County	59,249	65,500	6,251	1.4%
Adams	223	265	42	2.5%
Athena	997	1,120	123	1.7%
Echo	499	585	86	2.3%
Helix	150	190	40	3.4%
Pilot Rock	1,478	1,585	107	1.0%
Stanfield	1,568	1,770	202	1.7%
Ukiah	250	240	-10	-0.6%
Weston	606	680	74	1.6%

\* *Compound Average Annual Rate of Growth*

*Source: Portland State University Center for Population Research and Census.*

Most of the jurisdictions in Umatilla County have grown at a healthy rate, comparable to the annual growth rate of 1.4 percent for the county overall. The smaller jurisdictions of Adams and Helix have grown at a slightly faster rate, starting from the smaller population bases of 223 (Adams) and 150 (Helix) in 1990.

#### **Populations with Specific Transportation Needs**

Certain populations have been identified as having more intensive transportation needs than the general population. These populations include people under the legal driving age, those under the poverty level, and those with mobility limitations.

As stated above, Portland State University's Center for Population and Census estimates the Umatilla County's population as 65,500 in 1997. The Center further estimates that 18,623 of these people, or about 28 percent of the population, is under the age of 18 and that 5,505 are under age 5. Because the purpose of this analysis is to determine the number of people with specific transportation needs, DEA used PSU's age disaggregation to estimate that 16,617 people are under 16, the legal driving age in Umatilla County.

According to the 1990 Census, 16.5 percent of the 57,046 persons living in Umatilla County (for whom poverty status is determined) were below poverty level. Poverty statistics are based on a threshold of nutritionally-adequate food plans by the Department of Agriculture for the specific size of the family unit in question. The distribution of the population below poverty level shows that a larger proportion of younger persons than older populations are affected by this indicator, as shown in the following table.

**Poverty Status  
Umatilla County--1990 Census**

	<b>Below Poverty Level</b>			<b>Total*</b>	<b>Percent of Total Population Below Poverty</b>
	<b>Male</b>	<b>Female</b>	<b>Total Below Poverty Level</b>		
11 and under	1,408	1,175	2,583	10,929	23.6%
12 to 17	481	517	998	5,223	19.1%
18 and over	2,300	3,538	5,838	40,894	14.3%
<b>Total</b>	<b>4,189</b>	<b>5,230</b>	<b>9,419</b>	<b>57,046</b>	<b>16.5%</b>

\* For whom poverty status is determined.

Source: U.S. Census Bureau.

The Census Bureau reports that 3.3 percent of the population 16 and older had a mobility limitation in 1990. Persons were identified as having a mobility limitation if they had a health condition (physical and/or mental) that lasted for six or more months and which made it difficult to go outside the home alone. A temporary health problem, such as a broken bone that was expected to heal normally, was not considered a health condition.

Using the proportion of the population with mobility limitations and below the poverty level<sup>1</sup> in 1990, DEA estimated the number of people with specific transportation needs in 1996. The following table shows that an estimated 34.8 percent of the population may have specific transportation needs. (There is likely to be some overlap between the 3.3 percent of the population with mobility limitations and the 14.5 percent below the poverty level; therefore, the sum of the figures may overstate the proportion of the population with specific transportation needs.)

**Estimated Population with Specific Transportation Needs  
1996, Umatilla County**

	<b>Percent of Total Population</b>	<b>Estimated Number</b>
Persons between the ages of 5 and 15	17.0%	11,115
Persons 16 and older under Poverty Level	14.5%	9,480
Persons 16 and older with Mobility Limitation	3.3%	2,130
<b>Total Specific Transportation Needs Population</b>	<b>34.8%</b>	<b>22,725</b>

<sup>1</sup> DEA used the Census Bureau's age disaggregation to estimate that 10.7 percent of the population over the age of 16 was under the poverty level in 1990.

Source: U.S. Census Bureau.

Planning for the overall transportation system will need to consider the special needs of these populations.

## HISTORICAL GROWTH

The population of Umatilla County has grown since the 1970s, with significantly slower growth in the 1980s, reflecting a general slowdown in the state's economy. Helix, Pilot Rock, and Weston actually experienced a net population loss between 1970 and 1990. The following table shows the population trend for Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston, and Umatilla County as a whole.

### Umatilla County Historical Population Trend

	1970	1980	1985	1990	1995	1997	1970-1990 Change	
							Number	CAARG*
Umatilla County	44,923	58,855	60,000	59,249	65,200	65,500	14,326	1.4%
Adams	219	240	245	223	260	265	4	0.1%
Athena	872	965	955	997	1,080	1,120	125	0.7%
Echo	479	624	605	499	530	585	20	0.2%
Helix	152	155	155	150	170	190	(2)	(0.1%)
Pilot Rock	1,612	1,630	1,630	1,478	1,560	1,585	(134)	(0.4%)
Stanfield	891	1,568	1,660	1,568	1,700	1,770	677	2.9%
Ukiah	N.A.	249	230	250	270	240	N/A	N/A
Weston	660	719	730	606	655	680	(54)	(0.4%)

\* Compound Average Annual Rate of Growth

Ukiah was incorporated in July 1972.

Source: Portland State University Center for Population Research and Census.

The number of people residing in Stanfield nearly doubled between 1970 and 1980. This population growth may have been fueled by some significant housing developments and the location of several food processing plants in Stanfield during this time.

## POPULATION AND EMPLOYMENT FORECASTS

Umatilla County is expected to experience population gains for the next 20 years. Like much of rural Oregon, the economy of Umatilla County remains largely seasonal, with nearly one-quarter of all employment agriculture-based. Therefore, population increases are difficult to predict, and are not likely to be as stable as the forecasts appear to imply.

The State Office of Economic Analysis prepared long-term population projections by county. Based on these projections and the methodology described above, preliminary population forecasts for the jurisdictions of Adams, Athena, Echo, Helix, Pilot Rock, Stanfield, Ukiah, and Weston were developed in five-year increments.

An ad-hoc HUES (Hermiston, Umatilla, Echo, and Stanfield) Impact Planning Group was formed in early 1997 to lead cooperative efforts to address growth concerns in western Umatilla County arising from four major employers locating or expanding in the region. The HUES Growth Impact Study, conducted by the Benkendorf Associates Corporation, Hobson Johnson & Associates, and Martin Davis Consulting, quantifies the impact of the construction and operation of these four facilities. Employment impacts are translated into household and population impacts, and disaggregated across the four HUES communities, Pendleton, and rural Umatilla County.

Of these four employers (the Two Rivers Correctional Institution, the Umatilla Chemical Agent Disposal Facility, the Union Pacific Railroad Hinkle Locomotive Shop, and the Wal-Mart Distribution Center and Truck Maintenance Facility), only one (the Wal-Mart Distribution Center) had been announced and incorporated in the long-range population and employment forecast prepared by the Office of Economic Analysis. Because the Umatilla County site was selected as the location for the Wal-Mart Distribution Center in 1994, its impacts were already incorporated in the Office of Economic Analysis long-term population and employment forecast. Applying the HUES methodology, DEA, Inc. subtracted out the impact of the Wal-Mart Distribution Center, in order to identify the population impacts resulting from the three "big four" employers otherwise not accounted for in the OEA forecast.

**HUES Population Impacts by Community**  
**HUES Study "Scenario One" Less Wal-Mart Distribution Center**

	Base Population	Population Impact		
	1996	2000	2005	2007
Hermiston	11,050	1,681	2,354	1,412
Umatilla	3,310	503	705	423
Echo*	530	81	113	68
Stanfield	1,755	267	374	224
HUES communities subtotal		2,531	3,545	2,128
Pendleton		223	313	188
Rural Umatilla County		223	313	188
<b>Total Population Impact</b>		<b>2,978</b>	<b>4,171</b>	<b>2,503</b>

\* The HUES study estimates Echo's base population using utility hook-up data and a 2.5 average household size. However, this methodology yields a base-year estimate inconsistent with the "official" state estimate. As required by state policy, the Transportation System Plan uses the official state estimate as the base population. As appropriate, the TSP uses utility hook-up data as the base number of households.

Source: HUES Growth Impact Study and David Evans and Associates, Inc.

These estimated impacts were then applied to the original population forecast for Echo and Stanfield by the mathematical model. The resulting population forecast is shown in five-year increments in the table below.

**Umatilla County Population Forecast**

	1995						1995-2000	1995-2017
		2000	2005	2010	2015	2017	CAARG	CAARG
Umatilla County	65,200	72,800	77,000	78,300	79,500	80,073	2.2%	0.9%
Adams	260	270	280	290	300	310	0.7%	0.8%
Athena	1,080	1,160	1,210	1,270	1,330	1,360	1.4%	1.1%
Echo	530	610	640	650	660	660	2.9%	1.0%
Helix	170	190	210	220	230	230	2.7%	1.4%
Pilot Rock	1,560	1,580	1,600	1,610	1,640	1,650	0.3%	0.3%
Stanfield	1,700	2,020	2,130	2,290	2,430	2,490	3.5%	1.8%
Ukiah	270	290	310	320	340	340	1.6%	1.1%
Weston	655	690	700	710	720	730	1.0%	0.5%

Source: 1995 estimates developed by Portland State University Center for Population Research and Census; long-term County forecasts developed by State of Oregon Office of Economic Analysis; and Jurisdiction forecasts and intermediate County forecasts developed by David Evans and Associates, Inc.



Overall, Umatilla County is expected to experience healthy rates of population growth, averaging nearly one percent annually over the planning horizon. As shown in the table, the western portion of Umatilla County is expected to grow faster than the rest of Umatilla County, fueled by the four major employers. Of all jurisdictions included in this analysis, Stanfield is expected to grow the fastest, at an annual average of 3.5 percent at the beginning of the planning horizon, slowing somewhat, but still achieving a very rapid average annual rate of 1.8 percent for the 20-year planning period.

City of  
**Pilot Rock**

# **Pedestrian**

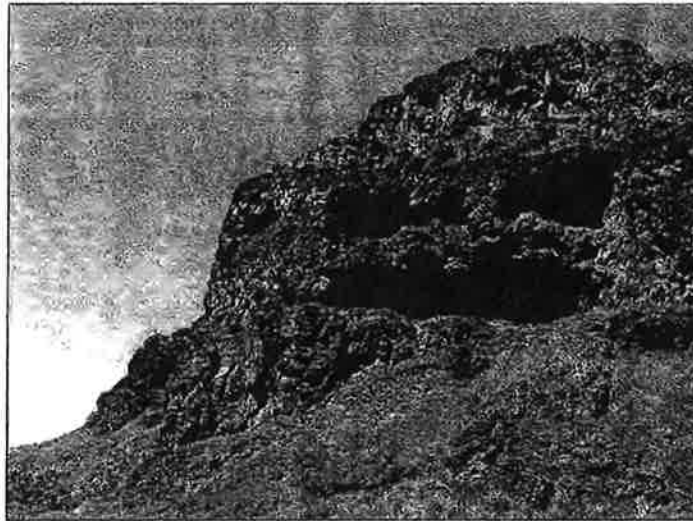
## **Transportation Development Plan**



January 17, 2005



DAVID EVANS  
AND ASSOCIATES, INC.



**Pilot Rock as seen from foot bridge  
at south end of Delwood St.**

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Transportation Equity Act for the 21st Century (TEA-21), local government, and State of Oregon funds.

The contents of this document do not necessarily reflect the views or policies of the State of Oregon.

# Contents

## **Part I — Facts & Findings**

27 pages

<b>Chapter 1 — Scope</b> . . . . .	<b>1</b>
<b>Chapter 2 — Background Research</b> . . . . .	<b>2</b>
2.1 Sources . . . . .	2
2.2 Area Description . . . . .	2
2.3 Jurisdictions . . . . .	2
2.4 Nonmotorized Traffic Generators . . . . .	3
2.5 Implementation Plan . . . . .	5
<b>Chapter 3 — Inventory and Map</b> . . . . .	<b>6</b>
3.1 Street System . . . . .	6
3.2 Pedestrian Facilities . . . . .	7
3.3 Bicycle Facilities . . . . .	12
<b>Chapter 4 — Highway Traffic and Safety</b> . . . . .	<b>13</b>
4.1 Traffic Analysis . . . . .	13
4.2 Traffic Safety . . . . .	15
4.3 Speeding . . . . .	16
<b>Chapter 5 — Birch Street Neighborhood</b> . . . . .	<b>18</b>
5.1 Opportunities . . . . .	18
5.2 Constraints . . . . .	20
5.3 Objectives . . . . .	20

### **Figures**

1. Pedestrian Inventory . . . . .	8
2. Hwy 395 Traffic in Pilot Rock by Location . . . . .	13
3. Hwy 395 Traffic in Pilot Rock by Month . . . . .	14
4. Birch Street Area . . . . .	19
5. Birch Street Cross-Sections — 4 Examples . . . . .	23
6. Some Design Options . . . . .	24
7. Birch Street Tax Lots (foldout) . . . . .	25

### **Tables**

1. Existing Street System . . . . .	6
2. Critical Movements at Two Highway Intersections . . . . .	14
3. Traffic Volumes in 2004 . . . . .	15

# Contents (cont'd)

<b>Part II — Final Plan</b>	32 pages
Chapter 1 — Introduction . . . . .	1
Chapter 2 — Project Selection Criteria . . . . .	2
Chapter 3 — System Map . . . . .	4
3.1 Pedestrian Network . . . . .	4
3.2 Bicycle Network . . . . .	4
Chapter 4 — Proposed Projects . . . . .	7
4.1 Corridors . . . . .	7
4.2 Crossings . . . . .	11
4.3 Linkages . . . . .	13
4.4 Other . . . . .	15
4.5 Funding Sources . . . . .	16
Chapter 5 — Typical Sections and Street Standards . . . . .	17
5.1 Highway . . . . .	17
5.2 Collector Streets . . . . .	17
5.3 Local Streets . . . . .	19
5.4 Pedestrian Facilities . . . . .	19
5.5 On-Road Bicycle Facilities . . . . .	23
5.6 Multi-Use Paths . . . . .	26
5.7 Signs, Pavement Markings and Signals . . . . .	29

## Figures

1. Pedestrian Network . . . . .	5
2. Bicycle Network . . . . .	6
3. Birch Street Area . . . . .	8
4. Suggested Residential Street Cross-Sections . . . . .	18

## Tables

1. Project Criteria & Summary . . . . .	4
2. Birch Street Project Costs . . . . .	10

<b>Part III — Code, Ordinance &amp; Plan Revisions</b>	13 pages
--	----------

1. Background . . . . .	1
2. Zoning Ordinance . . . . .	1
3. Subdivision Code . . . . .	2
4. Transportation System Plan . . . . .	6

<b>Appendix — Glossary</b>	4 pages
----------------------------	---------

# Introduction

The Pedestrian Transportation Development Plan provides a 20-year framework for improving pedestrian conditions in the City and increasing opportunities for walking and bicycling. It expands on the existing Transportation System Plan.

The Plan was developed over about 5 months starting with a kick-off meeting and walk-through on June 14, 2004 (see timeline at right). An initial facts and findings report in Task 1 gathered background information on existing conditions, opportunities and constraints. A community open house (Task 2) provided further inputs to help select projects and strategies. A policy review (Task 3) examined existing City policies and potential changes to support a list of projects and typical street sections (Task 4). The results were presented at a public workshop (Task 5) and to the Planning Commission. Task 6, this report, covers the final plan developed from the previous work.

The results are presented as follows:

**Part I, Facts & Findings**, is a reprint of the Task 1 report.

**Part II, Final Plan**, covers the project selection criteria, system maps, proposed projects, potential funding sources, and typical sections and street standards.

**Part III, Code, Ordinance & Plan Revisions**, recommends changes to the Pilot Rock Code, Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan needed to implement the Pedestrian Plan.

**Appendix** has a Glossary of terms and abbreviations.

In the end, 16 improvements were recommended. Of these, 5 are of a general nature with no specific cost and would typically be done as part of routine maintenance or as opportunities arise. Eleven projects of roughly \$825,000 over 20 years were chosen as described in Part II. The largest project at \$670,000 is installing sidewalks, bike lanes and crosswalks on Birch Street.

# 1

*This report is Task 6  
out of 6:*

Task 1 – Base Map, Scoping,  
and Facts & Findings Report

June 14, 2004 Kick-Off  
July 27, 2004 Draft  
September 20, 2004 Final



Task 2 – Community  
Open House and  
Stakeholder Outreach

July 27, 2004



Task 3 – Policy Review and  
Update

September 20, 2004



Task 4 – Pedestrian & Bicycle  
System Map; Draft Plan, Street  
Standards and Typical Sections

September 21, 2004

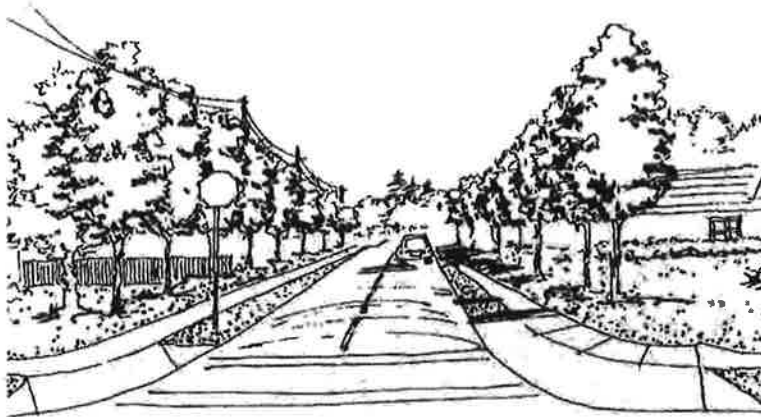


Task 5 – Display Graphics and  
Public Workshop

October 5, 2004

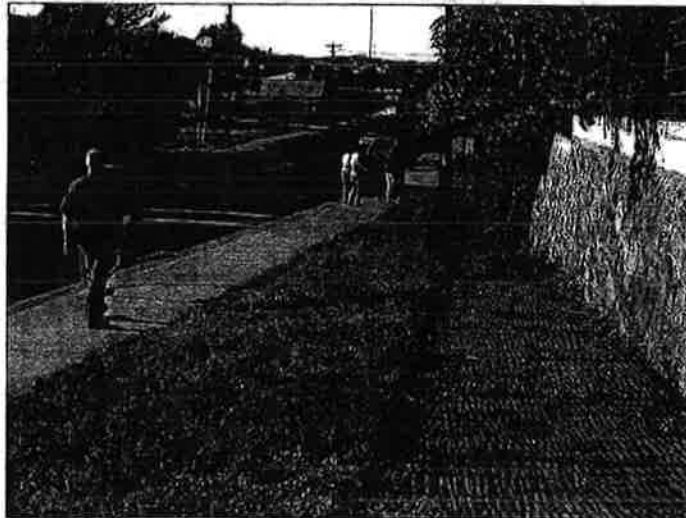


**Task 6 – Final Plan and  
Adoption**



*Part I*

# *Facts & Findings*



**Old paths and new along Highway 395**



# Contents

---

## **Part I — Facts & Findings**

<b>Chapter 1 — Scope</b> . . . . .	<b>1</b>
<b>Chapter 2 — Background Research</b> . . . . .	<b>2</b>
2.1 Sources . . . . .	2
2.2 Area Description . . . . .	2
2.3 Jurisdictions . . . . .	2
2.4 Nonmotorized Traffic Generators . . . . .	3
2.5 Implementation Plan . . . . .	5
<b>Chapter 3 — Inventory and Map</b> . . . . .	<b>6</b>
3.1 Street System . . . . .	6
3.2 Pedestrian Facilities . . . . .	7
3.3 Bicycle Facilities . . . . .	12
<b>Chapter 4 — Highway Traffic and Safety</b> . . . . .	<b>13</b>
4.1 Traffic Analysis . . . . .	13
4.2 Traffic Safety . . . . .	15
4.3 Speeding . . . . .	16
<b>Chapter 5 — Birch Street Neighborhood</b> . . . . .	<b>18</b>
5.1 Opportunities . . . . .	18
5.2 Constraints . . . . .	20
5.3 Objectives . . . . .	20

## **Figures**

1. Pedestrian Inventory . . . . .	8
2. Hwy 395 Traffic in Pilot Rock by Location . . . . .	13
3. Hwy 395 Traffic in Pilot Rock by Month . . . . .	14
4. Birch Street Area . . . . .	19
5. Birch Street Cross-Sections — 4 Examples . . . . .	23
6. Some Design Options . . . . .	24
7. Birch Street Tax Lots (foldout) . . . . .	25

## **Tables**

1. Existing Street System . . . . .	6
2. Critical Movements at Two Highway Intersections . . . . .	14
3. Traffic Volumes in 2004 . . . . .	15

# Scope

---

The Facts & Findings Report was developed from six activities:

- 1) **Kick-off meeting** with Research Committee.  
The consultants and the City's Research Committee reviewed the project's purpose, expectations and schedule on June 14. The primary focus of the project will be access to the public schools, City Park and downtown. An area of concern is the neighborhood along Birch Street.
- 2) **Walking and driving tour.**  
The consultants and the Research Committee toured the central area of the City on foot and North 4th Street by car. The next day the consultants revisited these areas and other neighborhoods.
- 3) **Review existing plans and materials.**  
Recent planning documents that address bicycling and walking were reviewed:
  - a. City of Pilot Rock Transportation System Plan, June 2001.
  - b. City of Pilot Rock Property Tax Map.
  - c. City of Pilot Rock Development Code.
  - d. Highway Speed Zone Investigation, April 2001.Additional maps and photos were also examined.
- 4) **Compile base map and inventory.**  
A base map was created from the ODOT city map and updated to reflect current conditions. An inventory was compiled from existing documents and field inspection, supplemented by photographs.
- 5) **Develop opportunities and constraints.**  
The opportunities and constraints (O&C) developed from the above activities were summarized.
- 6) **Analyze traffic and safety data.**  
Traffic analysis is pending new ODOT counts at two intersections in the City. Safety data from ODOT were examined.

The results are presented in the following sections:

- Chapter 2, Background Research*, presents the information gathered during the scoping tour, kick-off meeting and review.
- Chapter 3, Inventory and Maps*, summarizes the existing bikeway and walkway facilities.
- Chapter 4, Highway Traffic and Safety*, looks at current and projected traffic volumes in the City as well as historic crash data.
- Chapter 5, Birch Street Neighborhood*, looks at this corridor and discusses opportunities and constraints.

# 2

## Background Research

- 2.1 Sources
- 2.2 Area Description
- 2.3 Jurisdictions
- 2.4 Nonmotorized Traffic Generators
- 2.5 Implementation Plan

### 2.1 Sources

The inventory consisted of identifying, researching, field-checking, and analyzing opportunities and constraints within the Pilot Rock Urban Growth Boundary. Using a base map provided by ODOT, the identified opportunities and constraints were mapped in layers to reveal the location of possible bikeway and walkway alignments.

### 2.2 Area Description

Pilot Rock is situated at the base of a prominent bluff where Wegner Creek and two forks of Birch Creek meet. From the 2003 Census update, the City had a population of 1540, similar to at least 36 other communities such as Amity, Brownsville, Clatskanie, Columbia City, Elgin, Hines, Mill City, and North Plains. With a land area of 0.78 square miles, population density is 1,974 people per square mile which is near the median density in the U.S. (about half of the population lives above and below this density).

The elevation is about 1,635 to 1,750 feet with the nearby bluff (outside the city) at 1,957 feet. The region gets only 13 inches of rain per year. Average temperatures range from 32 F in January to 74 F in July. Overall, the area has an outstanding environment for walking and bicycling.

According to the 2000 Census, the population includes 658 workers over age 15 (43% of population) and 397 students (26%). Among the workers, 95% reported that their usual mode of transportation was a car. About 2.7% usually commuted by walking and 1.5% worked at home, both below the state average and relatively low for

a small city. There is no public transit available. (Note that work trips comprise only one in five trips nationally and do not include trips to school, shopping or recreation.)



Looking east from on top of Pilot Rock. Photo from City's webpage and credited to Jim McMahon.

### 2.3 Jurisdictions

Transportation facilities in the City are under control of several agencies:

- City of Pilot Rock
  - 2nd Street (Delwood to U.S. 395) — minor collector
  - Alder Place and Street (U.S. 395 to Main) — major collectors
  - NW Cedar Street and Circle Road — industrial
  - Cherry Street — major collector
  - Delwood Place — minor collector
  - Elm Street — minor collector
  - Main Street (U.S. 395 to Alder) — major collector
  - Others (local streets)
- Umatilla County (regional roads within the City)
  - NE 4th Street (becomes Stewart Creek Road) — major collector
  - Birch Street (becomes East Birch Creek Road) — major collector
- Oregon Department of Transportation, District 12
  - Highway 395 — arterial street,
- Pilot Rock School District (3 schools at 2 sites) with internal accessways

## 2.4 *Nonmotorized Traffic Generators*

The following important nonmotorized traffic generators and trip destinations exist in Pilot Rock.

### *Schools (District 2R)*

- Pilot Rock Elementary School (enrollment about 225)
- Pilot Rock Junior High and High School (enrollment about 225)

### *Parks/Sport Fields/Recreation*

- Pilot Rock Elementary School track and ball field
- Pilot Rock High School ball field
- City Park & public rest rooms

### *Work Destinations*

- Downtown core (Highway 395 and Main Street area including market, bank, gas station, etc.)
- Pilot Rock High School (Cherry Street)
- Pilot Rock Elementary School (Vern McGowan Drive off Birch Street)
- Kinzua Resources sawmill (NW Cedar Street)

### *Other Traffic Generators*

- Post Office (Alder Place in downtown)
- Public Library (Alder Place in downtown)
- City Hall (Alder Place in downtown)
- Market (U.S. 395 in downtown)
- Community Center (Delwood Street)
- Senior Center (Main Street)

In addition to identifying major traffic generators and trip destinations, the areas of existing and future residential densities are considered to have higher potential to generate trips; namely, the 4th Street, Cherry Street, Birch Street, and West Birch Creek neighborhoods.

Trip generators are important because every trip, even those counted as an automobile trip, involves a walking component. Furthermore, efficient walkway and bikeway systems can substitute pedestrian or bicycle trips for auto trips, especially for shorter distances (from one-half up to five miles). Nearly every destination within Pilot Rock is within a mile.

In addition to reducing auto trips, nonmotorized trips have other benefits:

- They provide healthy exercise.
- They tie the community together in ways that motorized travel cannot.
- They reduce the amount of hydrocarbons released into the atmosphere by motor vehicle emissions. About 60% of hydrocarbon emissions occur within a mile of the motor vehicle trip origin, nearly 85% of the emissions occur within the first five miles after the starting an automobile.

Because many trips are of short distance, a system for nonmotorized transportation could have a significant effect on local air quality, as well as other benefits such as noise and dust reduction. According to the 1990 Nationwide Personal Transportation Survey (NPTS), 27% of travel trips are one mile or less, 40% are two miles or



Downtown including businesses, the post office and city hall, as well as the nearby schools and park are within easy walking distance of nearly all residents.

less, and 63% are five miles or less. From the traffic volumes (see Chapter 4) about one-third of highway motor vehicle trips in Pilot Rock are local (within a mile of the downtown).

While the NPTS data cover all trips in the nation, the 2000 Census data provide a look at how Pilot Rock residents commute (the survey was taken in March 2000). Travel time to work was less than 5 minutes for 10% of workers who commuted, and less than 10 minutes for 26%. Many of these trips would be suitable for walking or bicycling if a comprehensive network of pathways, sidewalks, and bicycle facilities existed.



Most trips are for purposes other than going to work or school.

Walking trips help define a community's livability.



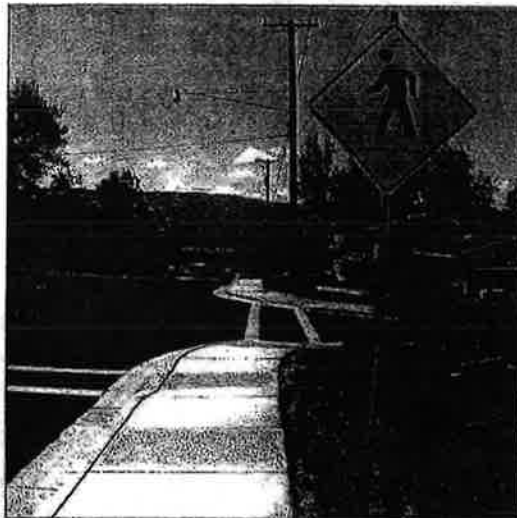
## 2.5 *Implementation Plan*

The 20-year Transportation Improvement Program outlined in the TSP lists 4 pedestrian projects:

- Safety measures at the U.S. 395-Main intersection (completed).
- Sidewalks along U.S. 395 (completed).
- Replacing foot bridge over West Birch Creek at Delwood Street.
- Replacing traffic bridge over East Birch Creek at "Alley Road."

In addition, several paving projects to include sidewalks were recommended. However, these did not include the two county roads, Birch and 4th Streets, which have only 22 ft of pavement width — far below the standard for collector streets — and no sidewalks.

The TSP notes that the City's annual Street Fund of roughly \$80,000 is dedicated primarily to the operation and maintenance of the existing facilities. The few capital improvement projects realized have been funded by grants; for example, several sidewalk segments on Elm, 4th, Cherry and Alder Streets through State grants.



Recently constructed sidewalks and crosswalks on Cherry Street.



Alleys such as this one between U.S. 395 and Alder Street are a great shortcut for pedestrians and a place to locate utility lines. Any improvements should recognize foot traffic.

## 3.1 Street System

A priority of the Pedestrian Transportation Development Plan is connecting neighborhoods to the downtown and to the schools. Successful walking and bicycling networks depend on good street facilities; this connectivity provides the kind of access and mobility needed to make nonmotorized modes attractive.

The existing street system within the City Limits is summarized in Table 1 (the Urban Growth Boundary extends far into undeveloped land and so is not included in the summary). There are roughly 1.5 mi of arterial streets (U.S. 395), 4.6 mi of collector streets, and 8.7 mi of local streets. There are about 3.4 mi of sidewalks on one side of the 6.1 mi of arterial and collector streets, so 28% have sidewalks (looking at both sides of the street). From another perspective, there are over 50 feet of 2-lane roadway for every resident and 13 feet of sidewalk; ideally, there would be twice the length of sidewalk as roadway if sidewalks were present on both sides of every street.

- 3.1 Street System
- 3.2 Pedestrian Facilities
- 3.3 Bicycle Facilities



**Table 1. Existing Street System (City Limits)**

Street	Length, ft	Walkways	Bikeways
Arterials — 8,185 ft (1.55 mi)			
Highway 395 central	4,440	Partial (82%)	Shared
Highway 395 fringe	3,745	None	Shoulder
Major Collectors — 15,980 ft (3.0 mi)			
NE 4th Street	4315	Partial (8%)	Shared
Alder Place (south of U.S. 395)	350	Partial (70%)	Shared
Alder Street	2850	Partial (43%)	Shared
Birch Street	4620	No	Shared
Cherry Street	3145	Partial (50%)	Shared
Main Street (east of U.S. 395)	700	Yes	Shared
Minor & Industrial Collectors — 8,290 ft (1.6 mi)			
2nd Street (west of U.S. 395)	700	Yes	Shared
Cedar Street-Circle Drive	4390	No	Shared
NW Delwood Place	1500	No	Shared
NE Elm Street	1700	Partial (35%)	Shared
Local Streets — 46,170 ft (8.7 mi)			
Cedar Street (south of U.S. 395)	3335	No	Shared
Delwood Street	3270	No	Shared
Others	39565	Partial (3%)	Shared

Highway 395 is the only arterial street in Pilot Rock. The central segment has sidewalks on one or both sides but only shared lanes for bicyclists.

## 3.2 Pedestrian Facilities

### 3.2.1 Existing Walkways

Existing pedestrian facilities consist primarily of sidewalks, crosswalks (marked and unmarked), multi-use paths, trails, bridges and stairs. Other facilities that enhance the pedestrian environment include street furniture (benches, lighting, awnings, etc.), rest rooms, and trees and landscaping.

Existing sidewalks and crosswalks are summarized in Section 3.1, Street System, and shown on the map in Figure 1. In addition, there are these key facilities:

- 1) Three pedestrian bridges over West Birch Creek and three over East Birch Creek.
- 2) A stairway connecting the downtown with the Junior High & High Schools.
- 3) An asphalt path along the west side of East Birch Creek in the City Park.
- 4) Several unpaved connections and user paths between streets or walkways.
- 5) A flashing beacon on the northbound highway north of Birch Street to alert drivers of the school zone; also flashing beacon southbound.

Two street bridges over West Birch Creek — on 2nd Street and NW Cedar Street — have sidewalks although the Cedar roadway does not. Two of the three street bridges over East Birch Creek — U.S. 395 and Main Street — have sidewalks; the “Alley Road” south of Main Street does not.

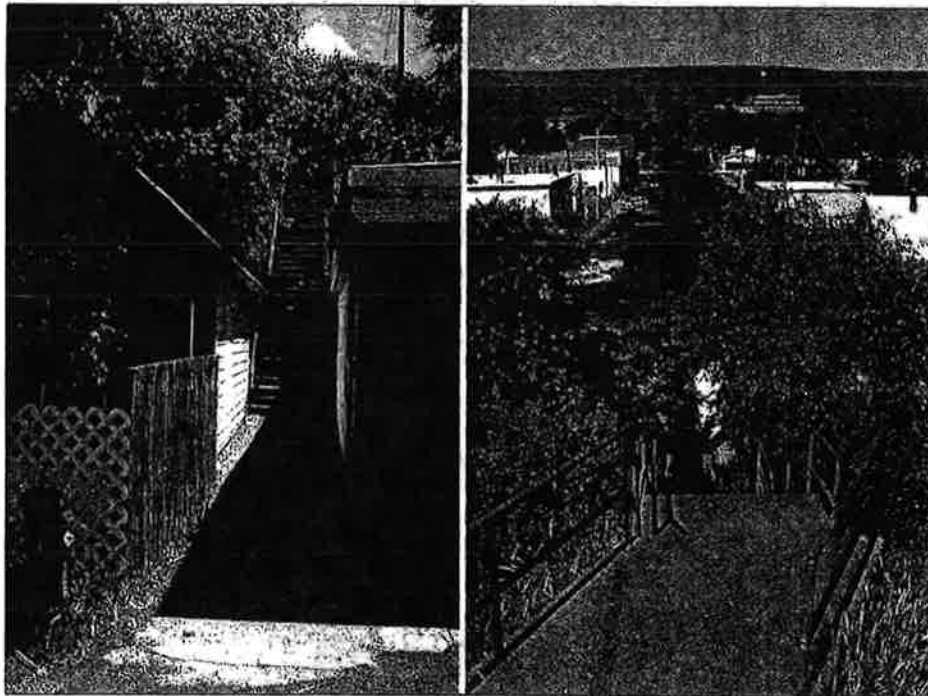
There are 21 striped crosswalks at 14 intersections, including 4 crossing U.S. 395 (out of 15 intersections).

### **Transportation Planning Rule (TPR)**

660-012-0045 (3)(b)(B)

Implementation of the  
Transportation System Plan

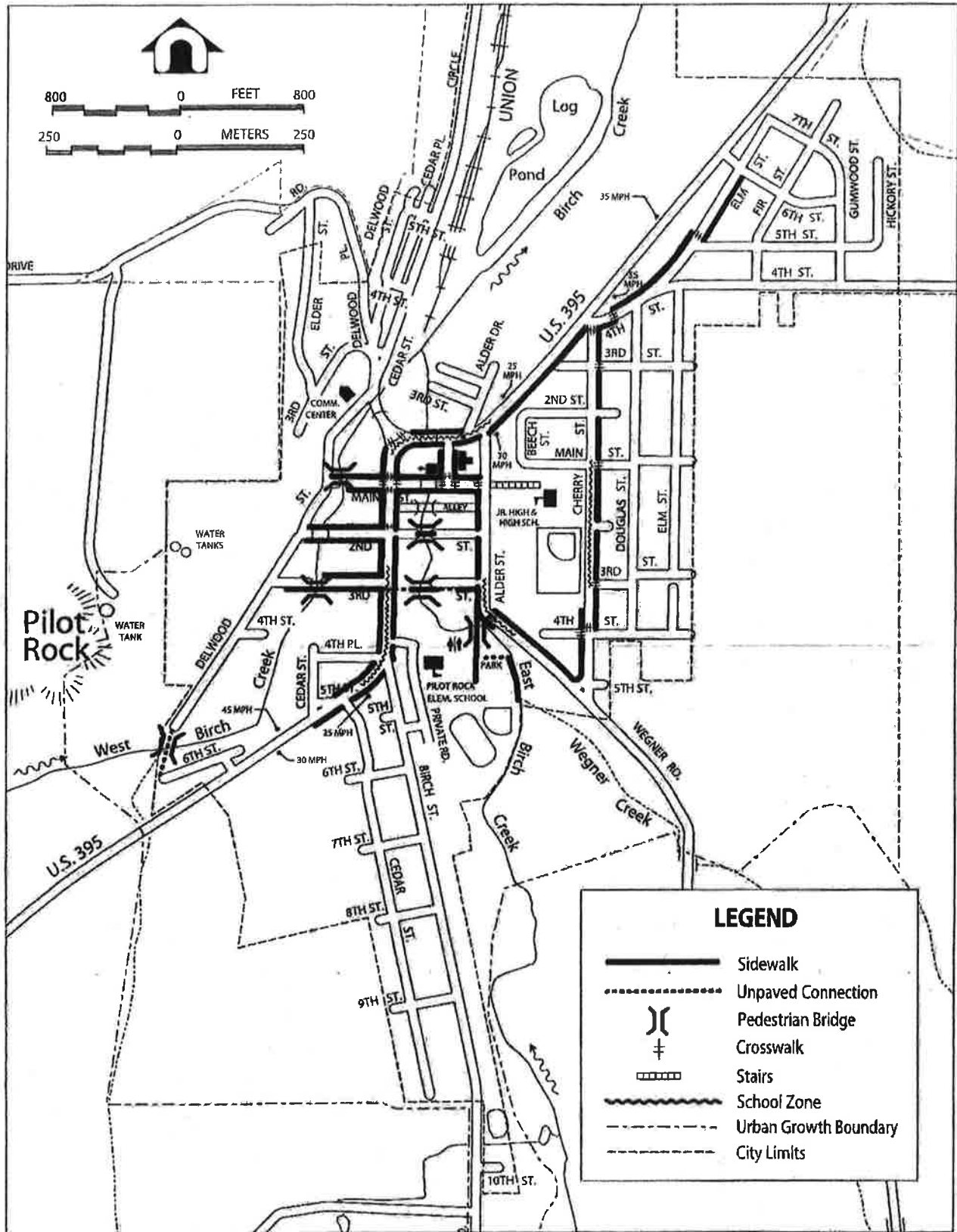
Bikeways shall be required along arterials and major collectors. Sidewalks shall be required along arterials, collectors and most local streets in urban areas, except that sidewalks are not required along controlled access roadways, such as freeways.



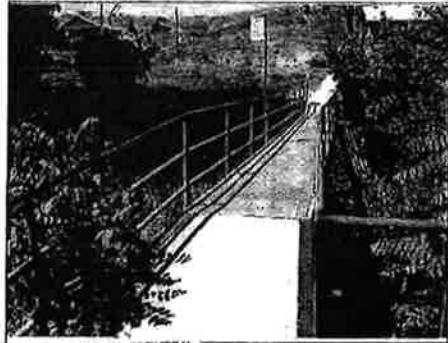
The stairway connecting the downtown to the High School and Cherry Street Neighborhood is a key pedestrian facility.



**Figure 1. Pilot Rock Pedestrian Inventory**



LEGEND	
	Sidewalk
	Unpaved Connection
	Pedestrian Bridge
	Crosswalk
	Stairs
	School Zone
	Urban Growth Boundary
	City Limits



Six key foot bridges span the two branches of Birch Creek. From top to bottom:

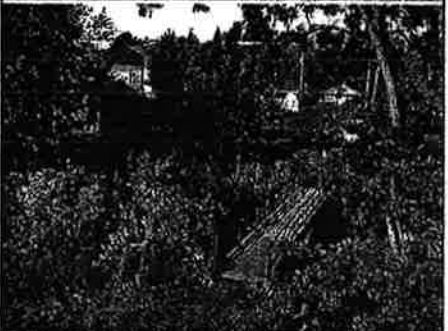
- Main Street (west)
- 3rd Street (west)
- Delwood to 6th Street (east)
- 3rd Street (east)
- Alder Street to park (east)
- 2nd Street (east) not shown

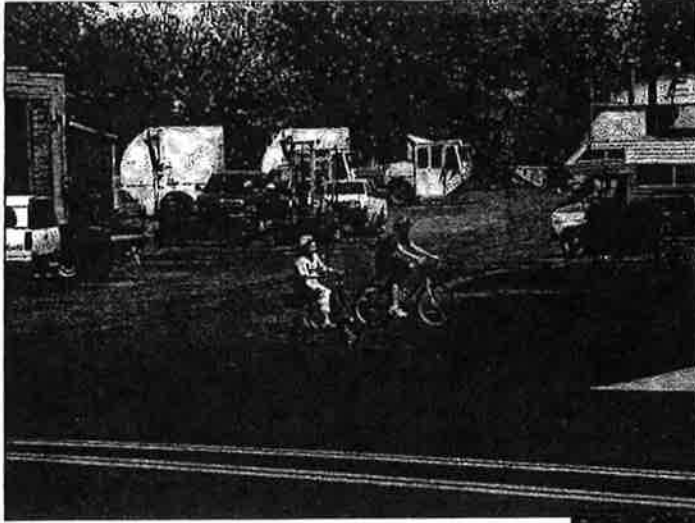


A short path in the City Park runs along East Birch Creek and connects to the ball field to the south.

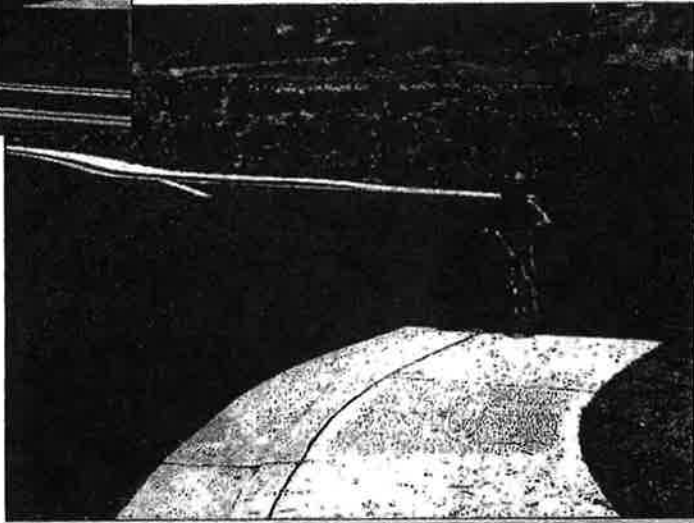


NE 4th Street is a County road with no sidewalks and a 4.8% grade in one spot. Future residential development may occur along this corridor.





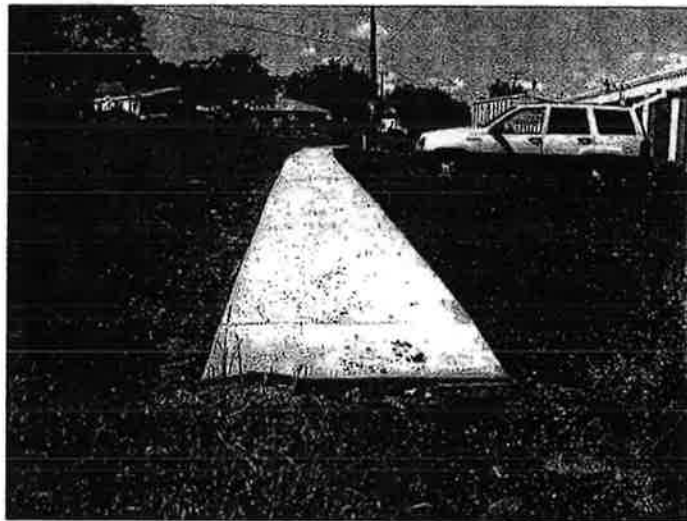
Wide, uncontrolled property access (left) and extremely wide curb returns without crosswalks (below) are difficult to cross safely.



Many sidewalks end abruptly (above) or need a short pavement connection to crosswalks (right).



The sidewalk on Elm Street (below) does not meet its potential because of an abrupt ending, no connection for crossing the street, an inadequate drainage system that allows water to undermine the base, and poor protection from motor vehicles on the street and on adjacent property.



### 3.2.2 Planned Walkways

Sidewalks and curb ramps are being constructed as grant opportunities become available. The priority is school routes and access to downtown. Also, two pedestrian bridges (West Birch Creek at Delwood and 6th Street, and East Birch Creek at 3rd Street) have been considered for replacement.

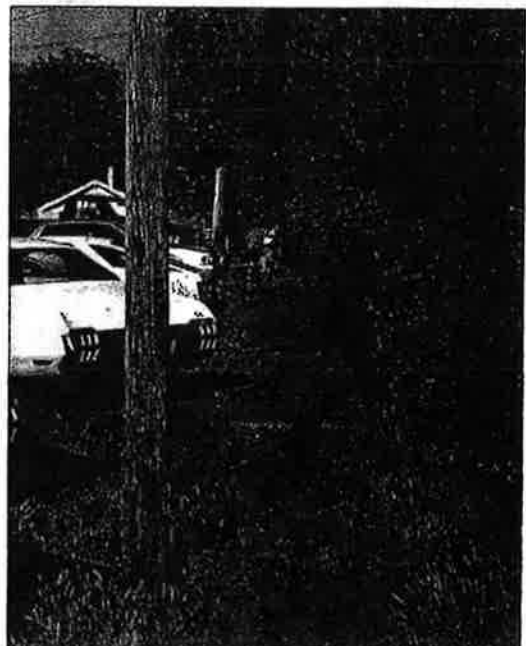
### 3.2.3 Pedestrian Access Routes

All neighborhoods except Birch Street in the southwest and the industrial northwest have at least one pedestrian route connecting to downtown. There are many sidewalk gaps and obstacles such as unpaved cross-streets and uncontrolled driveway accesses. Three major intersections with the highway — NE 4th Street, Alder Street and Birch Street — have long crossing distances and no marked crosswalks.

The Americans with Disabilities Act (ADA) requires that access for persons with disabilities is provided wherever a pedestrian way is newly built or altered, and that the same degree of convenience, connection, and safety afforded the public generally is available to pedestrians with disabilities. The basic requirement is for a continuous, unobstructed route. Guidelines cover pedestrian access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, parking, and other components of public rights-of-way. The guidelines can be found at the U.S. Access Board website <[www.access-board.gov](http://www.access-board.gov)>.

Within the City, very few public walkways are accessible for more than a block. Recent construction generally does not meet ADA guidelines in regards to a continuous smooth surface, ramp design and detectable crossings.

Gaps and encroaching vegetation and cars obstruct some sidewalks, such as on U.S. 395 (left) and 3rd Street (right).



### 3.3 *Bicycle Facilities*

#### 3.3.1 *Existing Bikeways*

Bicycle travel within the city occurs on the roadways as built with no special provisions for bicyclists. All County and City streets are shared roadways without paved shoulders. U.S. 395 has paved shoulders from 4 to 6-feet wide outside the downtown but the entire central area including both school zones was reconstructed with only a wide outside lane. Many children were observed to be riding on sidewalks where available, often conflicting with pedestrians.

#### 3.3.2 *Planned Bikeways*

Potential bicycle facilities consist of striped lanes, shoulder bikeways and multi-use paths. The TSP calls for bike lanes on all arterial and collector streets, although the recent improvements on U.S. 395 did not include bike lanes.

As a rule of thumb traffic volumes below 2,000 ADT generally allow for safe shared use, so that it could be argued that a shared roadway is sufficient on all streets except for U.S. 395. However, peak volumes on Birch Street are near 2,000 ADT and are expected to exceed it in the next 10 years.

#### 3.3.3 *Regional Connections*

While the focus of this Plan is travel within the City, the importance of regional bike-way connections should not be overlooked. Some Pilot Rock residents and visitors have reason to bicycle or walk to areas outside the City, so facility segments which provide nonmotorized access should be preserved and improved.

The major regional links for bicyclists include U.S. 395, East Birch Creek Road (extension of Birch Street), and Stewert Creek Road (extension of NE 4th Street).

Where there are inadequate bikeways on the street, such as U.S. 395, many bicyclists will take to the sidewalks where they conflict with pedestrians and have a high crash rate with cars at driveways where motorists are not expecting them.



# 4

## Highway Traffic and Safety

General traffic and safety conditions were examined from historical data supplemented by new traffic counts.

- 4.1 Traffic Analysis
- 4.2 Traffic Safety
- 4.3 Speeding

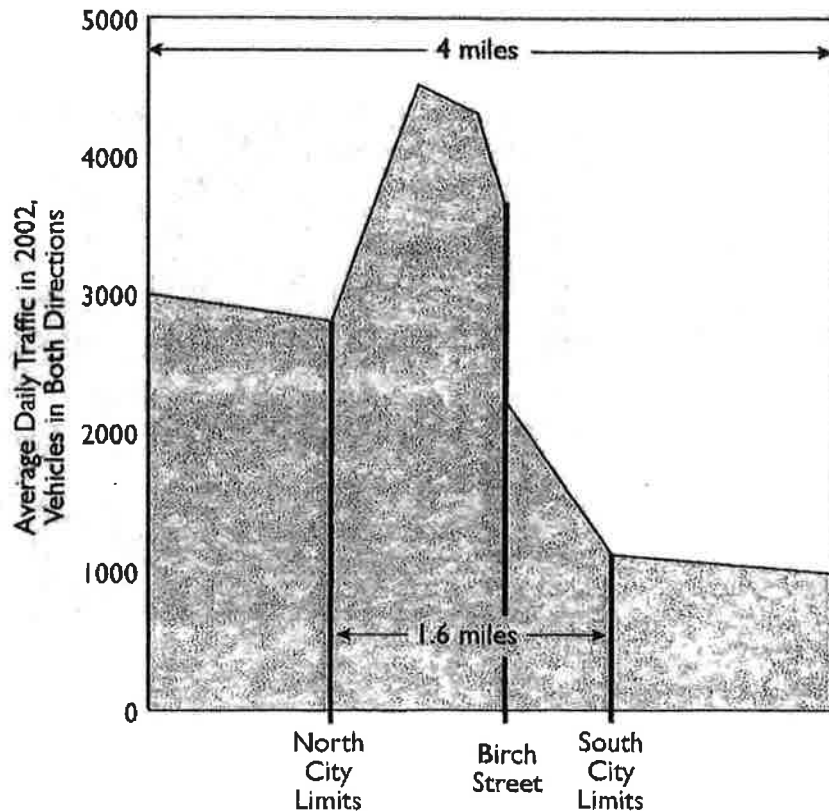
### 4.1 Traffic Analysis

The TSP determined that existing and forecast traffic volumes in the City were too low to cause any operational problems. The unsignalized intersection at U.S. 395 and Cedar Street (North) was excepted to operate at a volume-to-capacity ratio of less than 0.48 (LOS A) throughout the analysis period (1996-2018). An annual traffic growth rate of 0.61% was assumed.

A different perspective of traffic volume is the distribution of trips along the highway and the seasonal variation. Figure 2 shows the ADT for 2002 over 4 miles of U.S. 395 with Pilot Rock in the middle. The traffic peaks strongly in the middle of town, reflecting the many local trips. External trips are 3 times higher from the north (Pendleton) than the south. South of downtown about 40% of the traffic diverts to Birch Street.

Figure 3 shows the percentage of average ADT for 2002 over the year. Traffic peaks during the 6 months from May to November with the greatest traffic (127% of the annual ADT) in September. January is the lowest at 68% of annual ADT. However, even peak volume at the busiest point on the highway is a relatively low 5,715 trips.

**Hwy 395 Traffic in Pilot Rock by Location**



**Figure 2**

The highway is not part of the State's Highway Freight System and carries a relatively low volume of trucks. At the Automatic Recording Station at the south end of town, 71% of vehicles are 4-axle trucks or larger. This computes to about 70 per day at the station where the ADT is roughly 1,000. There is probably more truck traffic north of town where there is an entrance to the lumber mill.

Traffic counts were taken in July 2004 at two intersections: U.S. 395 at Birch Street and U.S. 395 at 4th Street. Both intersection are skewed with side streets. The locations were chosen because they are major collector streets that provide much of the access to U.S. 395.

The Birch Street intersection includes 4th Place, a residential street, on the eastbound leg. This intersection was analyzed using the two-way stop control (TWSC) procedures from the 1994 Highway Capacity Manual (HCM); see worksheet in Appendix. The results would not be significantly different using ODOT's UNSIG10 program which is based on the 1988 HCM.

The 4th Street intersection includes Cherry Street which intersects 4th Street to the east of U.S. 395. The intersection of U.S. 395 and 4th Street was analyzed using TWSC procedures for a T-intersection from the 1994 HCM; see worksheet in Appendix. Again, the results would not be significantly different using ODOT's UNSIG10 program.

The results are summarized in Table 2 for the critical vehicle movements in 2004 and 2024. The 2024 volumes assume a one percent per year growth rate (rounded up from the TSP's 0.6 percent) which is very aggressive considering that traffic has actually declined over the last ten years.

The volume-to-capacity (v/c) ratio and vehicle delay were determined from the 30th-hour volume (about 13 percent of 24-hour volume). For all critical movements the v/c ratios remain extremely low (high mobility) through 2024 with maximum delays of 2 to 6 seconds. Note that westbound Birch Street could be changed to a

### Hwy 395 Traffic in Pilot Rock by Month

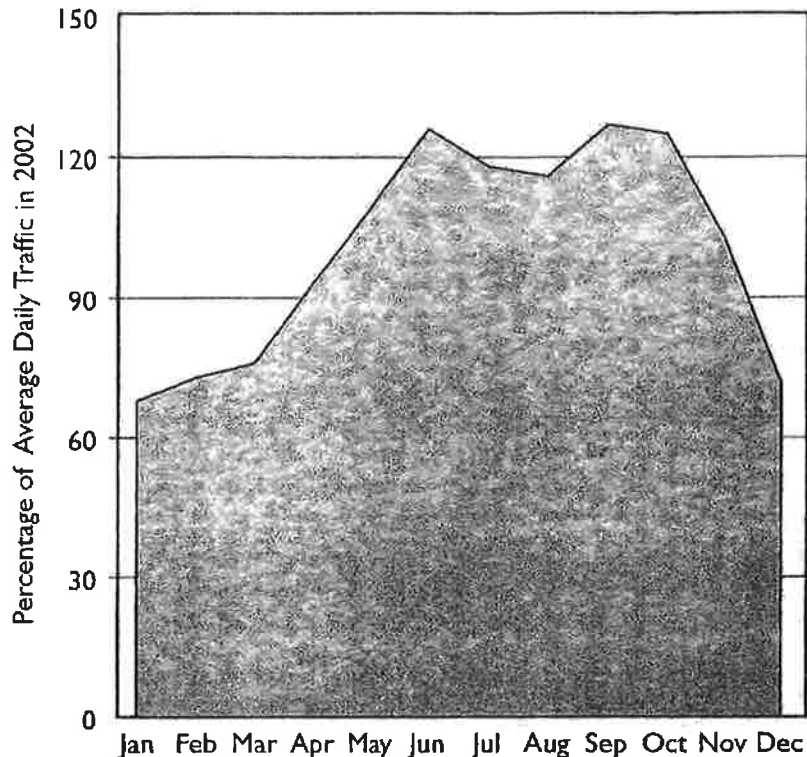


Figure 3

Table 2. Critical Movements at Two Highway Intersections

Movement	2004		2024	
	v/c	delay, sec	v/c	delay, sec
U.S. 395 at Birch St. and SW 4th St. — TWSC Intersection				
U.S. 395 Northbound Left	0.00	2	0.00	2
U.S. 395 Southbound Left	0.05	3	0.06	3
Birch St. Westbound L	0.01	5	0.01	6
Eastbound SW 4th St. LTR	0.01	6	0.02	6
U.S. 395 at NE 4th St. — TWSC T-Intersection				
U.S. 395 Southbound Left	0.01	3	0.02	3
NE 4th St. Westbound LR	0.05	6	0.19	6

v/c = Volume-to-Capacity Ratio  
 LTR = Combined Left-Through-Right  
 LR = Combined Left-Right

combined left-through-right lane (from the existing left with through-right) and v/c would be 0.09 in 2024 with only 4 seconds average delay.

Two-way volumes from the counts are shown in Table 3 and are lower than expected compared to the ODOT Volume Tables for 2002. In particular, Birch Street has only 1105 vpd or 63% of the estimate; the closing of a major employer in 2000 may have contributed to this decline.

**Table 3. Traffic Volumes in 2004**

Location	July 2004	2002 Est.
U.S. 395 North of NE 4th St.	2492	3300
U.S. 395 North of Birch St.	2887	4350
Birch St.	1105	1750
NE 4th St.	1101	—
Cherry St.	510	—

Two-way volume.  
2002 estimate from ODOT Volume Tables for July.

## 4.2 Traffic Safety

The State's Accident Summary Database splits highways into segments and includes crashes on the public roadway that result in a fatality, bodily injury or damage to one person's property over \$1000. The TSP looked at crash data within the City (MP 14.59 to 16.19) from 1994 through 1996 and noted 8 crashes involving one fatality and 4 injuries. The total crash rate per vehicle mile was below the statewide average for similar highways. According to the TSP, the crashes were scattered along the highway and showed no pattern as to location, type or causes. There was no evidence to suggest that intersection operations were a contributing factor.

The highway data for the 5 years from 1998 through 2002 are similar: Crashes per million vehicle miles (cpmvm) for 1.23 miles of highway in Pilot Rock were:

2002 — 1.40 cpmvm (2 crashes total)

2001 — 1.40 cpmvm

2000 — 1.41 cpmvm

1999 — 0.65 cpmvm

1998 — 1.31 cpmvm

This is roughly half of the state average for similar highways (urban primary non-freeways) that ranged from 2.71 to 3.52 during the same period.

Note that most, perhaps 90% according to some estimates, of pedestrian and bicycle crashes are not recorded consistently in any database. Many occur on secondary streets, in parking lots, and on private property. Injuries requiring medical attention often happen in isolated walking or bicycling situations where a motor vehicle is not involved. Some of the major causes include alcohol, tripping hazards, bicycle mechanical problems and inattention.

Among bicycle-motor vehicle collisions on public roads, nearly half occur at intersections and driveways; among those, the motorist is more often at fault for failing to yield. Other major collision causes include wrong-way riding (bike lanes help discourage this behavior) and driveway interactions (aggravated by bicyclists using sidewalks).



### 4.3 *Speeding*

An ODOT speed study in Pilot Rock was conducted in 2001 after highway reconstruction. As a result there are posted speeds on U.S. 395 as follows:

#### Southbound

- 45 mph at MP 14.64 (north City Limits)
- 35 mph at MP 14.90 (about 0.1 mi north of 4th Street)
- 25 mph at MP 15.18 (Alder Street)
- 45 mph at MP 16.04 (north of Weigh Station)

#### Northbound

- 30 mph at MP 16.08 (Weigh Station)
- 25 mph at MP 15.63 (north of Cedar Street)
- 30 mph at MP 15.18 (north of Alder Street)
- 40 mph at MP 14.97 (north of 4th Street)
- 55 mph at MP 14.72 (before north City Limits)

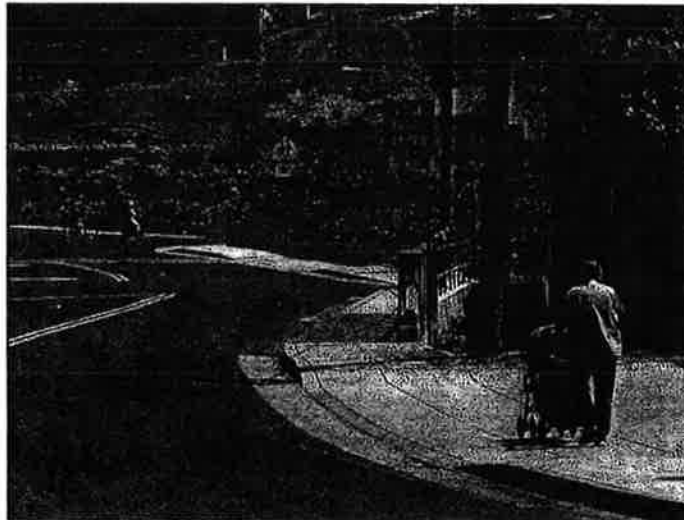
The 85th percentile speed observed was 32 mph downtown and from 40 to 48 mph outside the downtown but still in the City. The study had the effect of doubling the length of the existing 25 mph speed zone from 0.45 mi to 0.90 mi. No follow-up speed measurement was made.

Two school zones were noted near Alder Street north of downtown and Vern McGowan Drive south of downtown (see Figure 1). There is no school zone in the downtown area although both Main and 2nd Streets have crosswalks and would be expected to have foot traffic to the schools. ORS 811.105 states that both school zones and business districts shall have a speed of 20 mph, although this speed is typically raised on State highways after speed studies show that motorists are going faster than the speed limit.

Per the new School Zone Legislation (Senate Bill 179) that went into effect July 1, 2004 new signing may be needed to clarify speeds in the school zones. Portions of Cherry Street and Main Street adjacent to the Junior and High Schools should have a speed limit of 20 mph.



This flashing beacon was installed on northbound U.S. 395 just before Vern McGowan Drive.



Of the two signs related to the school zone on U.S. 395 northbound approaching Alder Street, one is hidden by a utility pole and the other is far to the right where it is difficult to see. The most visible sign is for the creek. Where there is competition for the driver's attention signs should be chosen carefully and the street designed to encourage proper behavior without relying on signage.

# 5

## *Birch Street Neighborhood*

A priority for the City is pedestrian and bicycle improvements in the Birch Street neighborhood. The area includes roughly 130 dwellings served by Birch Street, a major collector, and SW Cedar Street, a local street, over 0.7-mile from U.S. 395 to 10th Street. The Elementary School and City Park are at the north end (see Figure 4).

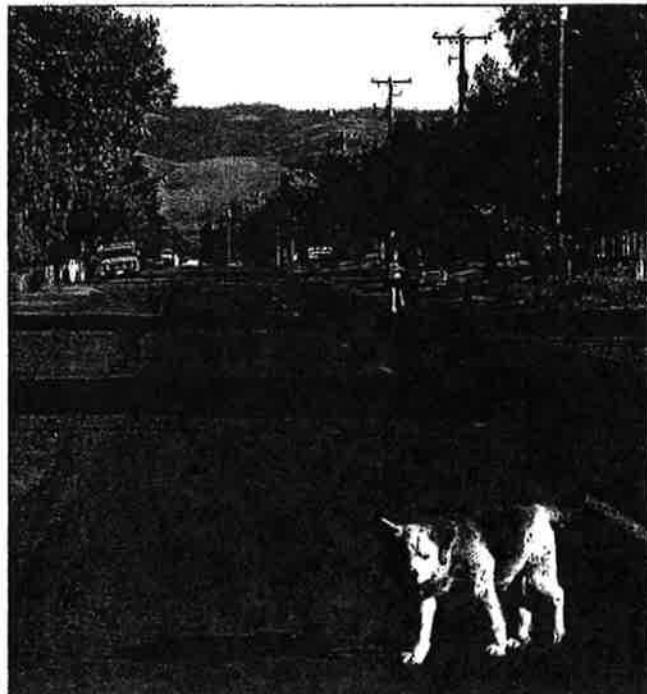
- 5.1 Opportunities
- 5.2 Constraints
- 5.3 Objectives

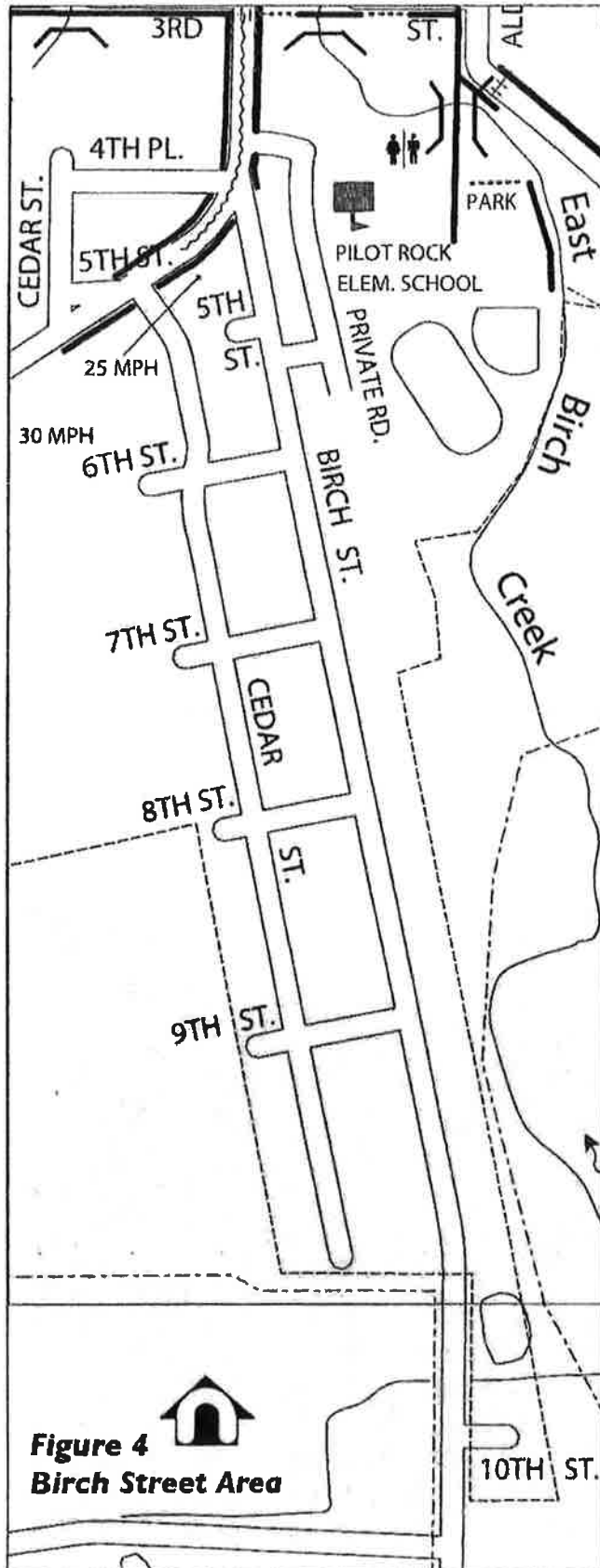
### 5.1 *Opportunities*

Opportunities are defined as conditions or alignments with the potential to support a walkway or bikeway, either because of land use, existing easements, established travel patterns, or expected future need. Major opportunities include:

- **Identified need**  
The established neighborhood, adjacent school, and proximity to downtown provide many potential pedestrians and bicyclists. The Research Committee has this area as their first priority.
- **Public support**  
Previous projects in the City have gotten a good response and neighborhood property owners have shown initial support for improving the street.
- **Adequate ROW**  
The 60-foot right-of-way is generally unobstructed and provides options for a street cross-section. A few options for Birch are shown in Figures 5 and 6.
- **Straightforward geometry**  
All of the streets have a relatively straight alignment with simple “cross” or “T” intersections. Cross-slope is slight.
- **Moderate traffic**  
Average daily traffic is around 1,500 which should present no special operational or capacity problems.
- **Existing street grid with school access on side street**

NW Cedar Street provides a parallel route to Birch which could be especially useful during construction. Other side streets provide good connectivity and a choice of routes for pedestrians.





## 5.2 Constraints

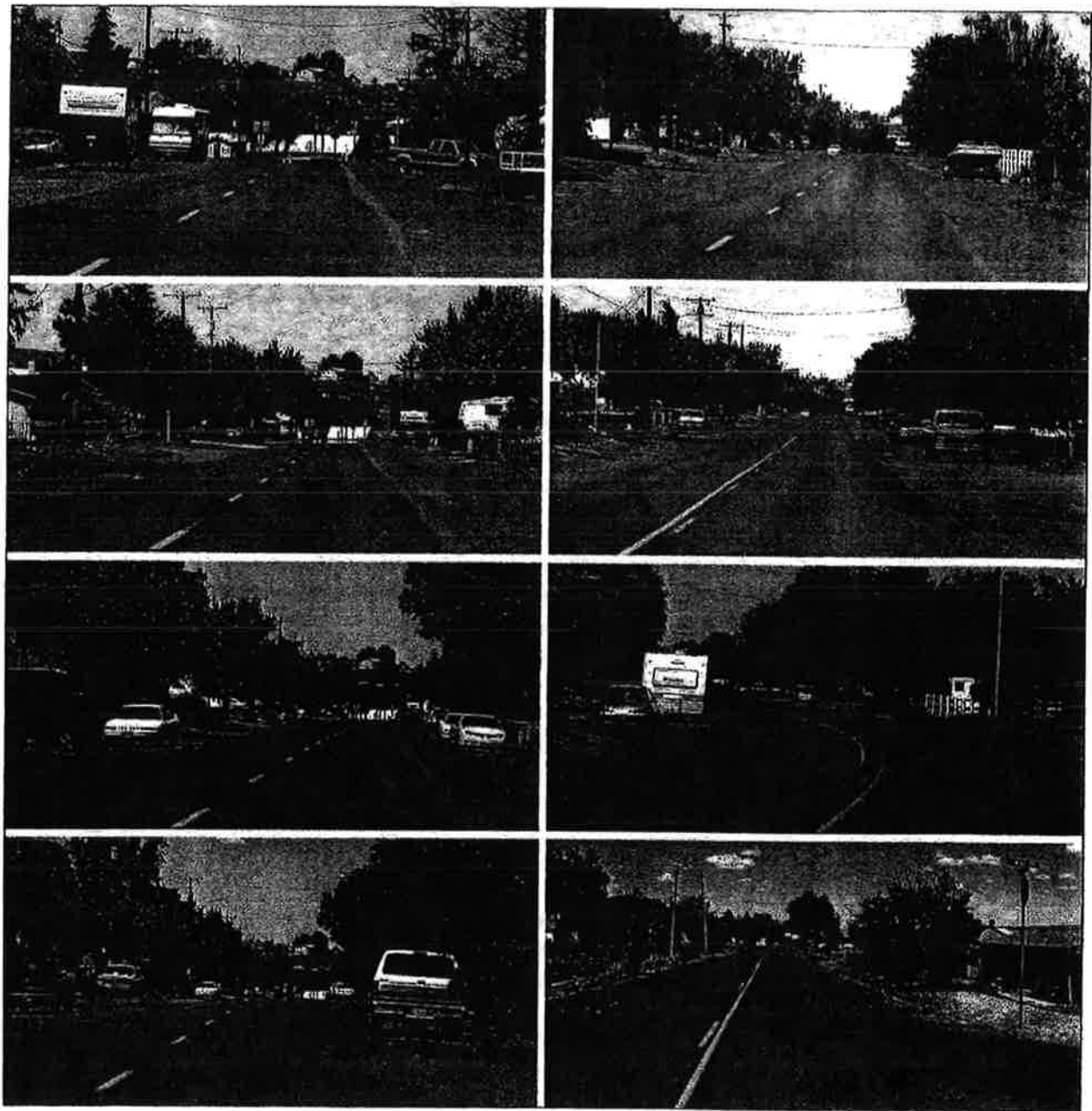
Constraints are defined as barriers or challenges, either physical or institutional, to walkway and bikeway development. Major constraints include:

- ***Birch Street is a County road***  
Any improvements must be coordinated with the County.
- ***Narrow pavement***  
The existing pavement width is only 22 feet.
- ***Uncertain road base***  
Any improvements must be coordinated with the County.
- ***No drainage system***  
Any improvements must be coordinated with the County and residents.
- ***On-street parking needed***  
Any improvements must be coordinated with the County and residents.
- ***Significant through traffic on Birch***  
Birch continues south out of the City into the mountains. During the summer and fall there is significant recreational traffic including vehicles towing trailers. During the agricultural season there are some farm vehicles and log trucks.
- ***Existing right-of-way not surveyed***  
A fold-out map at the end of this Chapter contains a blow-up of the low-resolution aerial with available tax-lot boundaries (not all lots were included in supplied maps). This is the best available information for planning but does not give adequate detail for determining exactly where the public right-of-way is located and how the project would affect individual properties.
- ***School access road is substandard***  
The private school road connecting the Elementary School parking lot with 5th Street is narrow and unpaved. Also, Vern McGowan Drive into the City Park and school has no sidewalks.
- ***No identified funding***  
Neither the City, County or School District has budgeted for road improvements.

## 5.3 Objectives

The initial objectives for the Birch Street neighborhood are:

- ***Establish goals for street design.***  
Weigh goals such as safety, security, comfort, speeding, crossing, access, congestion and cost.
- ***Choose street cross-section and design elements.***  
Balance goals with appropriate design.
- ***Price options.***  
Determine least-cost approach.
- ***Identify funding.***  
Find multiple funding sources.

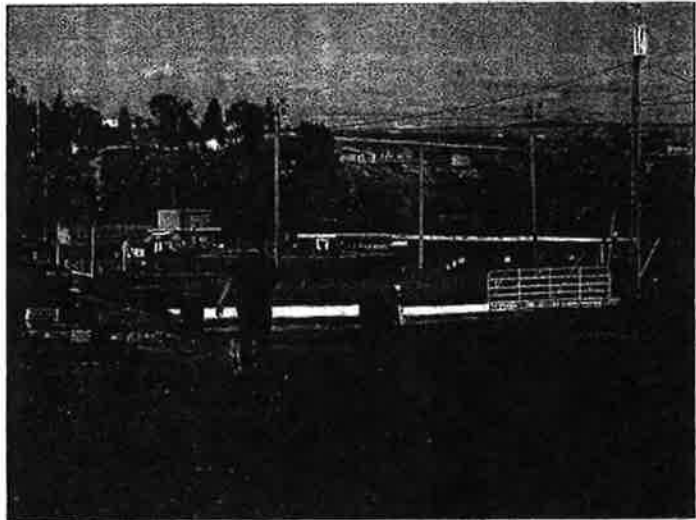


Traveling north on Birch Street from 10th Street  
(lower right) to 5th Street (upper left).

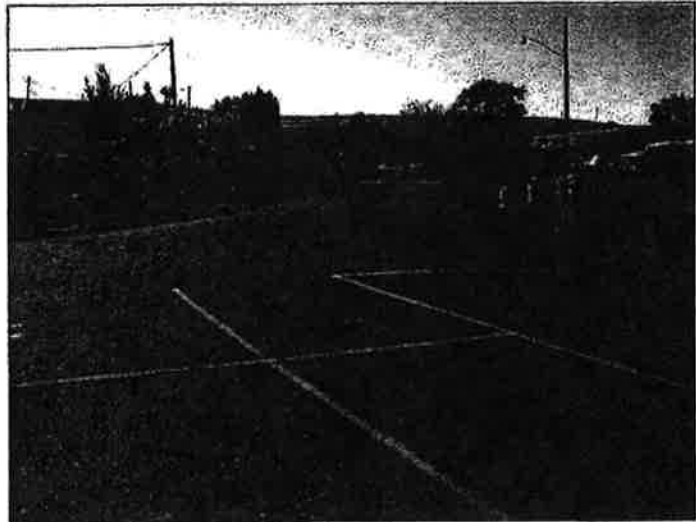
70-foot crossing distance of Birch at U.S. 395 is long with wide-radius turns and no marked crosswalk.



5th Street access to school is undeveloped.



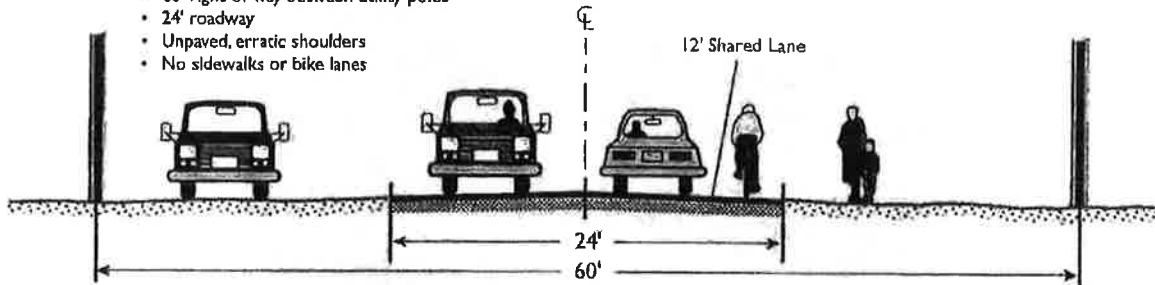
McGowan Drive access has no walkways. Children must traverse large parking lot.



**Figure 5. Birch Street Cross-Section — 4 Examples**

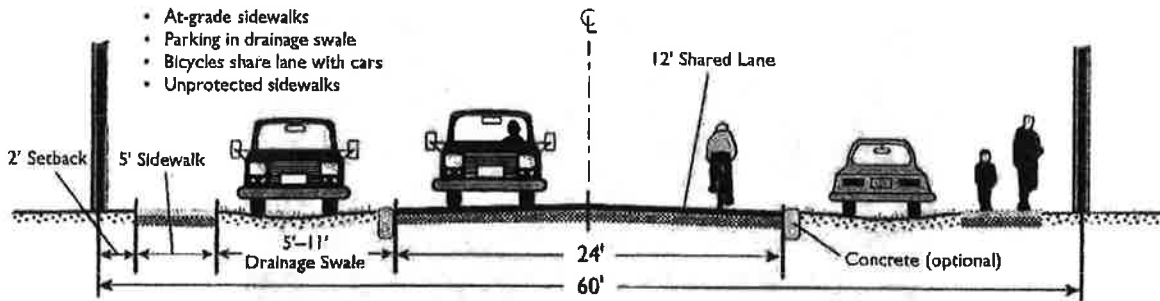
**Existing**

- 60' right-of-way between utility poles
- 24' roadway
- Unpaved, erratic shoulders
- No sidewalks or bike lanes



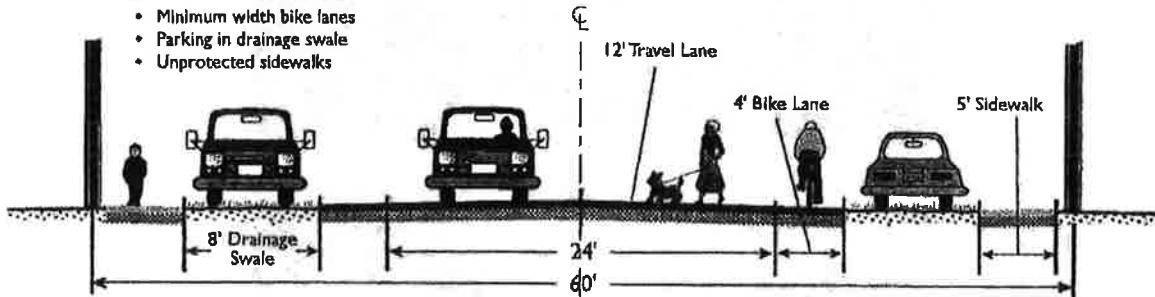
**Add Sidewalks**

- At-grade sidewalks
- Parking in drainage swale
- Bicycles share lane with cars
- Unprotected sidewalks



**Add Bike Lanes**

- Minimum width bike lanes
- Parking in drainage swale
- Unprotected sidewalks



**Adopted Standard**

- 5-foot curbed sidewalks (State recommended min.)
- 5-foot bike lanes (State recommended min.)
- 11-foot travel lanes (State recommended)
- 7-foot parking lane (minimum)

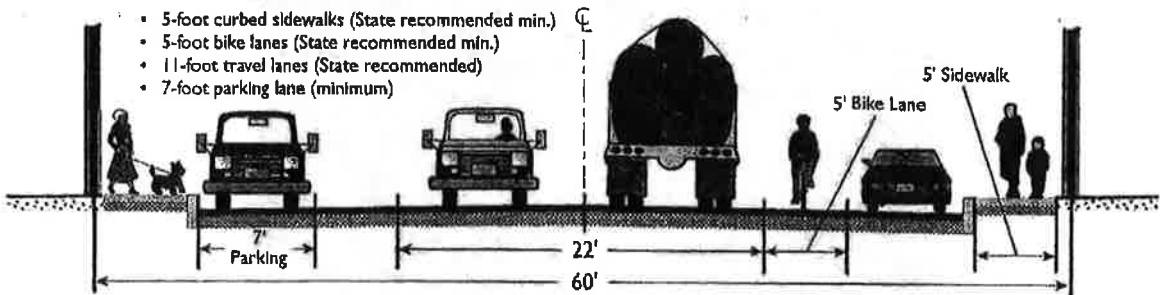


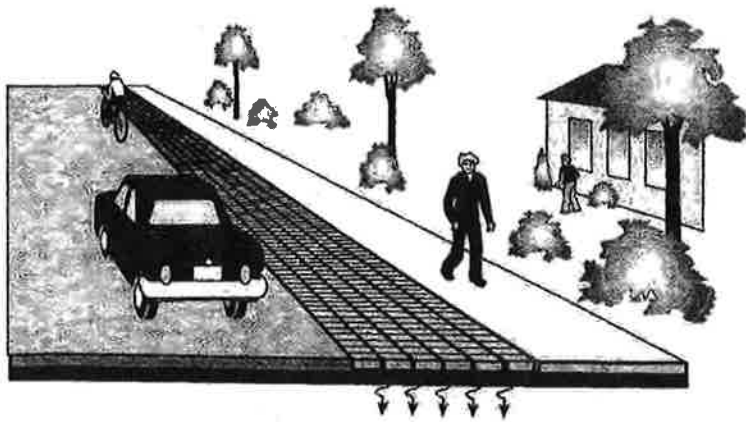


Figure 6.

## Some Design Options

### At-Grade Sidewalks

- Drainage swale or permeable surface between roadway and sidewalk.
- At least 5 feet wide.
- Up to 12 feet wide to accommodate parking.



#### Advantages

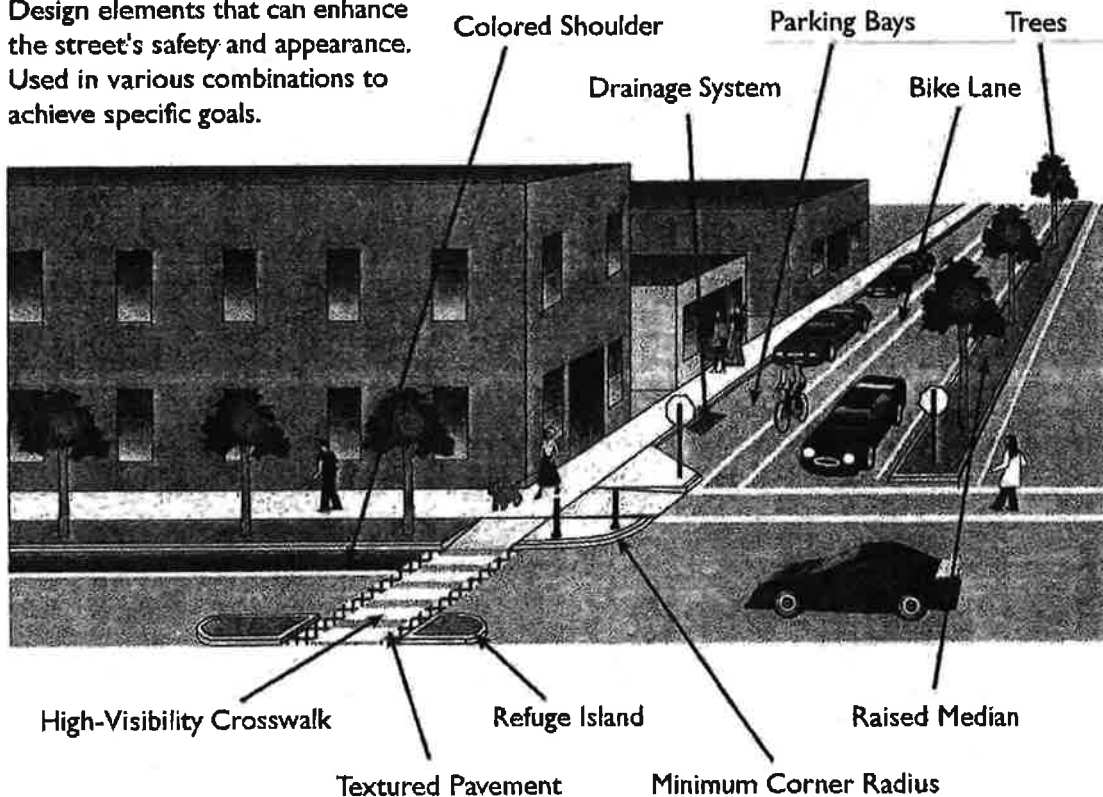
- + Rural appearance.
- + Less expensive than curbs.
- + Set-back sidewalk can be kept at constant grade through driveways.

#### Disadvantages

- Less protection for pedestrians than curbs.
- Cars will tend to park on sidewalk.
- Handles less water runoff.
- Tends to collect more debris.

### Traffic Calming

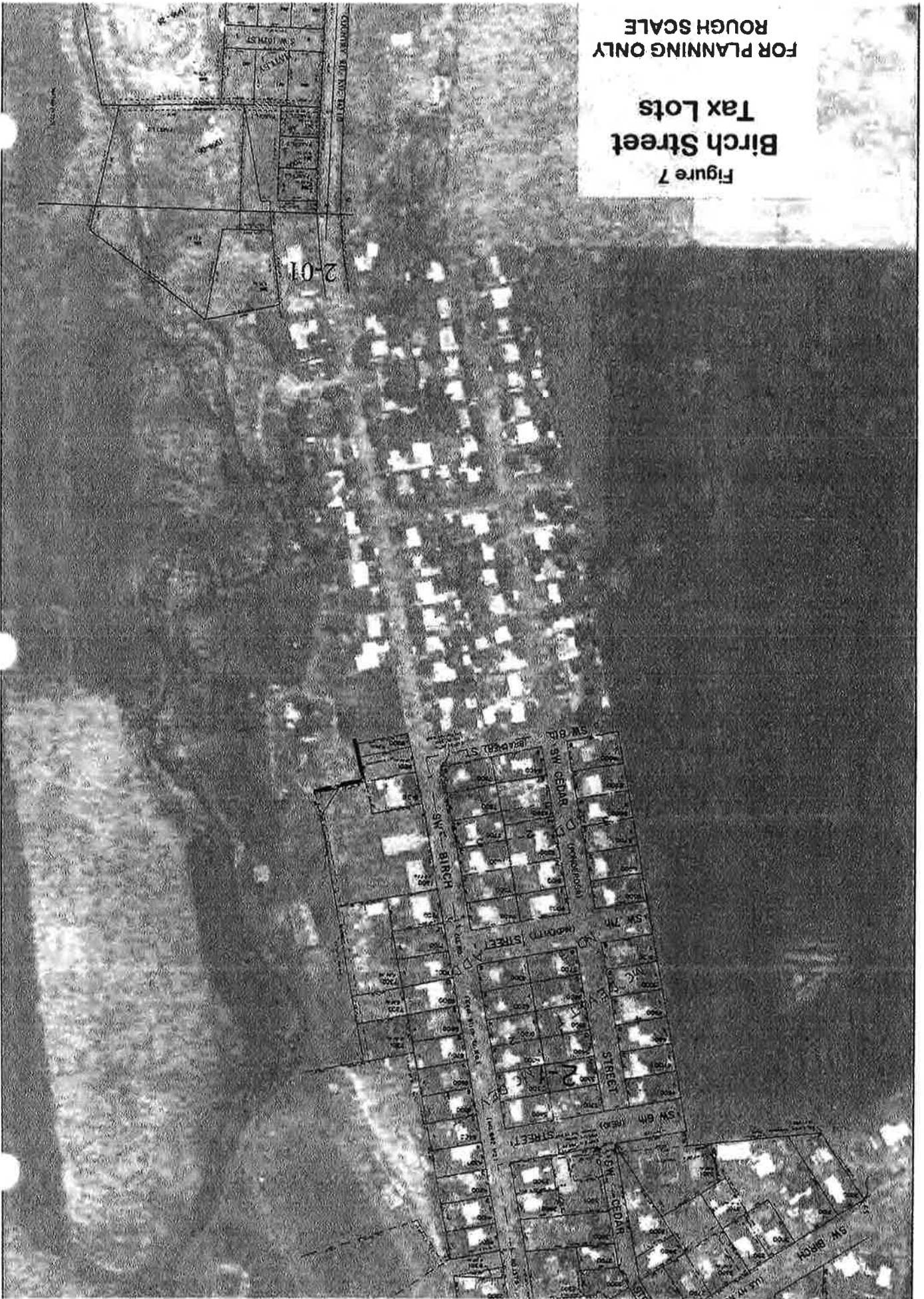
- Design elements that can enhance the street's safety and appearance.
- Used in various combinations to achieve specific goals.



FOR PLANNING ONLY  
ROUGH SCALE

# Birch Street Tax Lots

Figure 7



*Part II*

*Final Plan*



# Contents

---

## **Part II — Final Plan**

<b>Chapter 1 — Introduction</b> . . . . .	<b>1</b>
<b>Chapter 2 — Project Selection Criteria</b> . . . . .	<b>2</b>
<b>Chapter 3 — System Map</b> . . . . .	<b>4</b>
3.1 Pedestrian Network . . . . .	4
3.2 Bicycle Network . . . . .	4
<b>Chapter 4 — Proposed Projects</b> . . . . .	<b>7</b>
4.1 Corridors . . . . .	7
4.2 Crossings . . . . .	11
4.3 Linkages . . . . .	13
4.4 Other . . . . .	15
4.5 Funding Sources . . . . .	16
<b>Chapter 5 — Typical Sections and Street Standards</b> . . . . .	<b>17</b>
5.1 Highway . . . . .	17
5.2 Collector Streets . . . . .	17
5.3 Local Streets . . . . .	19
5.4 Pedestrian Facilities . . . . .	19
5.5 On-Road Bicycle Facilities . . . . .	23
5.6 Multi-Use Paths . . . . .	26
5.7 Signs, Pavement Markings and Signals . . . . .	29

## **Figures**

1. Pedestrian Network . . . . .	5
2. Bicycle Network . . . . .	6
3. Birch Street Area . . . . .	8
4. Suggested Residential Street Cross-Sections . . . . .	18

## **Tables**

1. Project Criteria & Summary . . . . .	4
2. Birch Street Project Costs . . . . .	10

# Introduction

---

1

Details and projects for the Pedestrian Plan were developed in Task 4 of the project. The results were presented at a public workshop (Task 5) and to the Planning Commission. The final results include:

- **Proposed projects.**  
The opportunities and constraints discussed in the Facts and Findings Report from Task 1 were examined for possible projects. Projects are rated based on seven criteria and costs are estimated.
- **Map pedestrian and bicycle systems.**  
The walkway and bikeway networks existing and proposed over 20 years (2024) are mapped.
- **Recommend typical sections and street standards.**  
Local and collector street standards appropriate to new development are set out for both curbed and uncurbed sections. Typical standards are summarized for pedestrian and bicycle facilities.

The results are presented in the following sections:

*Chapter 2, Project Selection Criteria*, explains what each criterion addresses.

*Chapter 3, System Map*, shows the existing and proposed bikeway and walkway facilities.

*Chapter 4, Proposed Projects*, discusses each project in more detail; potential funding sources are discussed

*Chapter 5, Typical Sections and Street Standards*, shows the cross-sections and explains the options.

## ***Project Selection Criteria***

---

The projects from the opportunities and constraints developed in Task 1 were looked at in terms of seven criteria:

### ***1. Relevance to plan goals — High is best***

Projects that strongly support multiple transportation and community goals are preferable.

- Is the project part of the city's transportation plan?
- Is there a bicycle or pedestrian transportation problem that the project will solve or alleviate?
- Will the project support business, health or other community goals?

### ***2. Need — High is best***

Areas or corridors that serve pedestrians and bicyclists poorly are better candidates for projects than those that already have facilities.

- Is the existing road a deterrent to bicycling or walking? Roads with narrow lanes and heavy traffic, or that are difficult to cross, receive priority treatment. Other factors include high truck volumes, poor sight distance, dangerous intersections or other obstacles to direct travel by bicyclists and walkers.
- Does the project upgrade a major roadway (arterial or major collector street), bridge an obstacle, provide a more direct route (reducing significant out-of-direction travel), or provide access to important destinations such as schools?
- Will the facility link, complete or extend the system? Are there clear origin and destination points along the corridor served?

### ***3. Available funding — More is best***

Projects that have identified funding sources are preferable.

- Can the project be funded from existing transportation sources?
- Are special grants or loans available?
- Are private or community interests willing to invest in the project?
- Can the project be timed to take advantage of other road work being performed?

### ***4. Technical implementation — Simple is best***

Straightforward projects with standard designs are preferable.

- Is the project the appropriate treatment for the problem?
- Does the project meet current design standards?
- Are highway design exceptions needed?
- Are there any unusual engineering problems such as a steep slope, poor drainage, or constrained right-of-way?
- Does the project involve many elements or complex phasing?

### ***5. Political implementation — Easy is best***

Non-controversial projects with strong support are preferable.

- Is a substantial amount of public involvement necessary?
- Does the project require additional right-of-way?
- Is removal of on-street parking necessary?
- Has the public shown support for the project?
- Do affected or adjacent property owners agree to the project?

- Does the business community support the project?
- Do government officials support the project?
- Does the responsible agency agree to maintain the facility?
- Is there a willing party to see the project through to completion?

## **6. Potential use — High is best**

Projects that attract large numbers of pedestrians and bicyclists are preferable.

- Is the potential use high compared to similar facilities? Factors to consider include proximity to residential areas, schools, parks, shopping centers, business, and industrial districts.
- Does the project consider the needs of both bicyclists and pedestrians? In most cases, bicyclists and pedestrians require separate facilities. If the project provides for only one mode, the design should not preclude use by the other mode, where appropriate.
- Does the project help meet the needs of the young, the elderly, the low-income, and the disabled?
- Does the project provide connectivity to other modes? Facilities that provide bicycle and pedestrian access to existing or future bus stops and park-and-ride sites enhance intermodal transportation.

## **7. Realistic cost — Low is best**

Projects that provide a good return on investment are preferable.

- Are the estimated engineering and construction costs typical for this type of project?
- Are expected maintenance costs reasonable?
- Are there secondary benefits that help mitigate the cost such as economic vitality, lower crime or improved safety?

There is no particular weighting to these criteria. In general, if the majority of criteria rate well above average, then the project is a good candidate. However, one extremely negative criterion tends to offset several positive ones.

A given project may have alternative designs with different tradeoffs. In particular, it may be tempting to accept a design with low standards to avoid confrontation with affected property owners, to avert perceived inconvenience to motorists, or to simply keep construction costs down. Except in special circumstances, minimum standards in the Oregon Bicycle and Pedestrian Plan should be used, and attention should always be paid to long-term goals. The liability and waste of investment in inadequate facilities outweigh any temporary gains.

# 3

## System Map

### 3.1 Pedestrian Network

The existing and proposed walkways through 2024 are shown in Figure 1. These include sidewalks, crossings, off-street paths, and supporting facilities. Projects are keyed to the list in Chapter 4 and are summarized in Table 1. Greatest use is along the sidewalks between the neighborhoods and the schools and downtown.

### 3.2 Bicycle Network

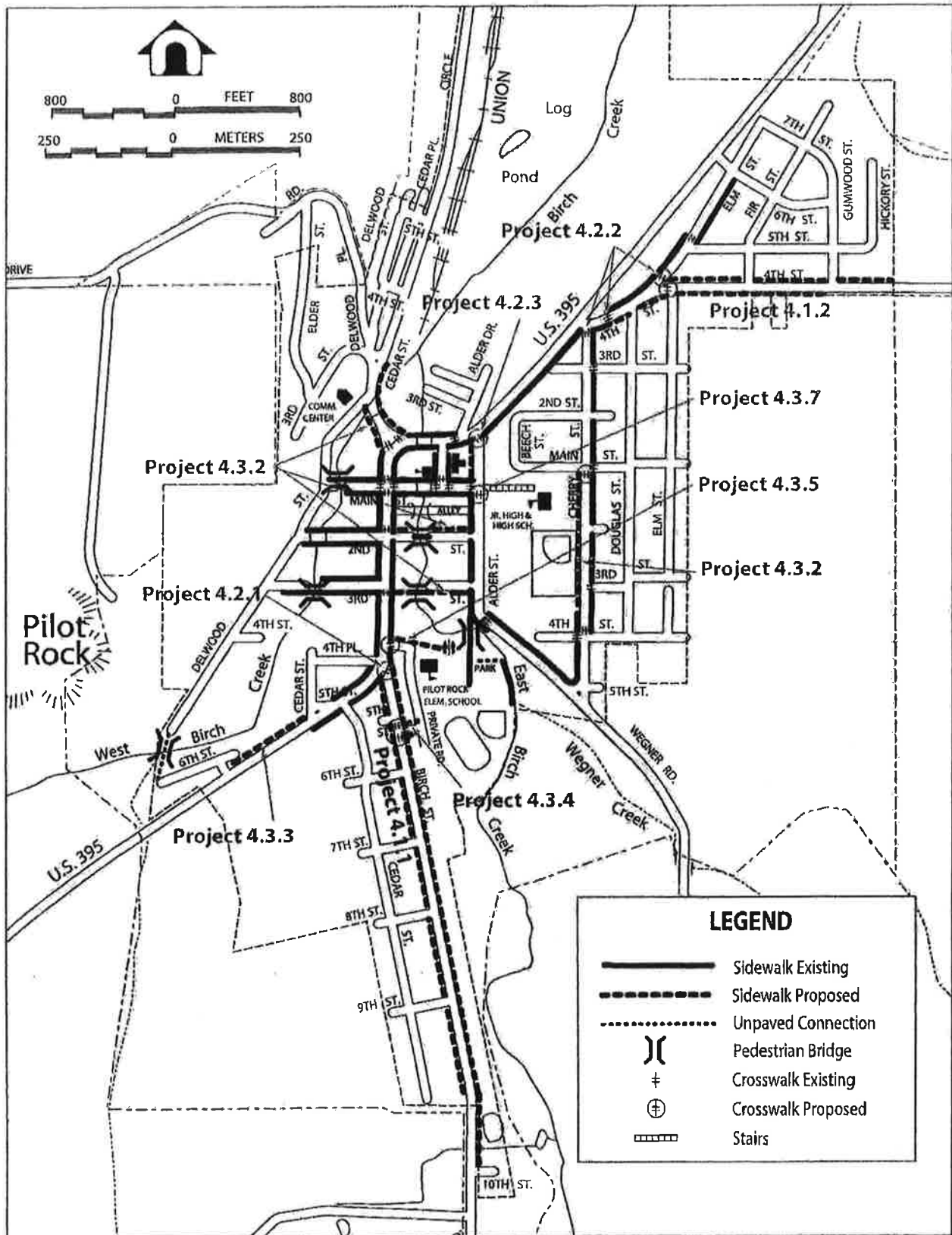
The existing and proposed bikeways through 2024 are shown in Figure 2. These include bike lanes, paved shoulders, shared travel lanes, and off-street paths. Projects are keyed to the list in Chapter 4 and are summarized in Table 1. Greatest use is along the major streets between the neighborhoods and the schools and downtown.

**Table 1.  
Project Criteria & Summary**

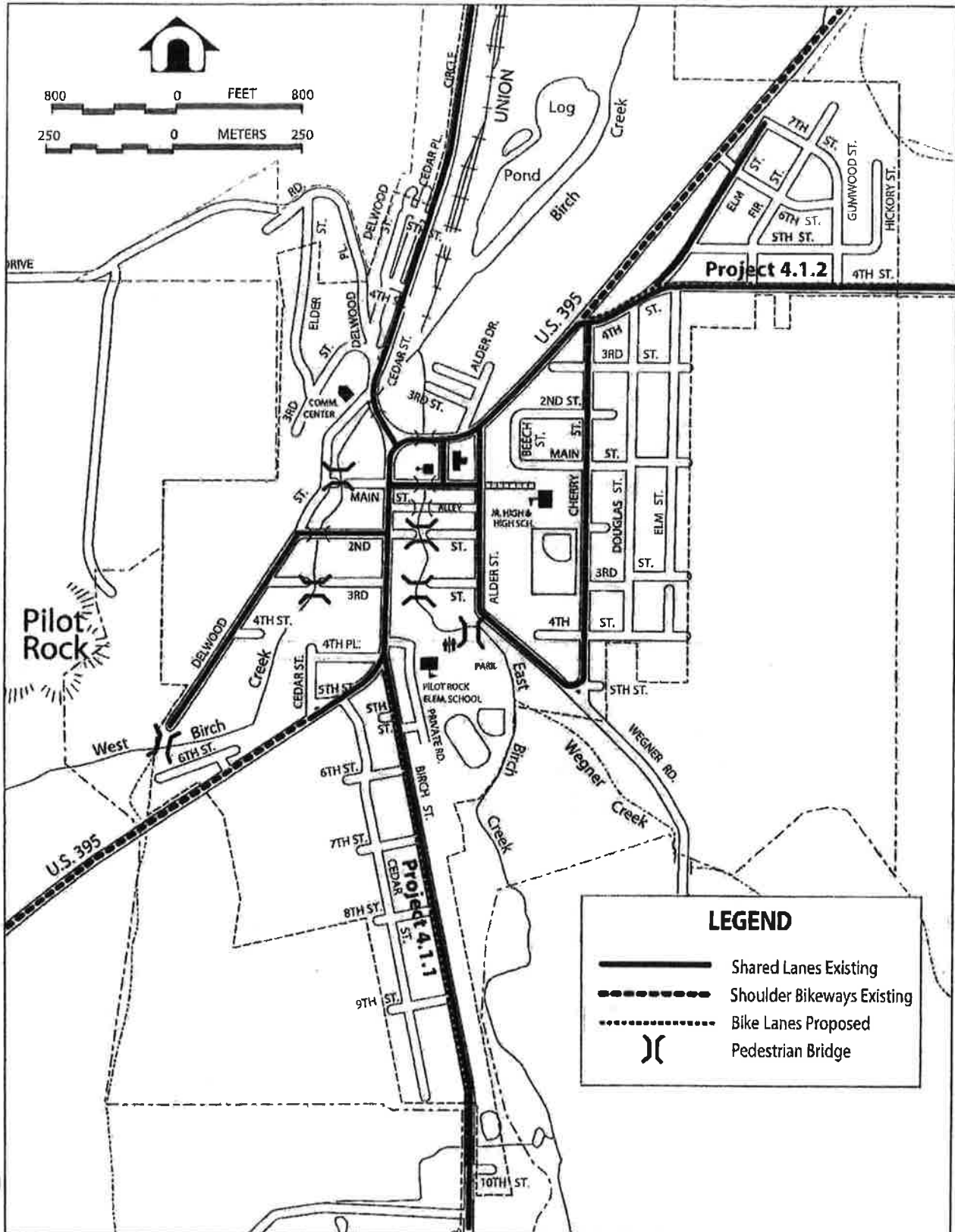
Project		<div style="border: 1px solid black; padding: 2px; display: inline-block;">                     ◆ = Low or Poor                      ◆◆ = Medium or Fair                      ◆◆◆ = High or Good                 </div>			Relevance	Need	Funding	Technical	Political	Use	Cost
		<b>Corridors</b>									
☞ Birch Street	4.1.1	◆◆◆	◆◆◆	◆	◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆◆	\$670,000
☞ NE 4th Street	4.1.2	◆◆◆	◆◆◆	◆	◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	\$30,000
☞ Bikeways on major roads	4.1.3	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆	◆	◆	—
<b>Crossings</b>											
☞ Crosswalk on Birch at U.S. 395	4.2.1	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆	\$575
☞ Crossings on NE 4th St.	4.2.2	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆	\$350
☞ Crosswalk on Alder at U.S. 395	4.2.3	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆	\$5,000
☞ Connect sidewalks to crosswalks	4.2.4	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆	—
☞ Upgrade pedestrian bridges	4.2.5	◆◆	◆◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	—
<b>Linkages</b>											
☞ Sidewalk interruptions	4.3.1	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆◆	◆◆◆	—
☞ Sidewalk gaps	4.3.2	◆◆	◆◆◆	◆	◆◆	◆	◆◆	◆	◆◆◆	◆◆◆	\$50,000
☞ Sidewalk on South U.S. 395	4.3.3	◆◆	◆◆◆	◆	◆◆◆	◆	◆◆◆	◆◆	◆	◆	\$24,000
☞ Access to sports field	4.3.4	◆◆	◆◆◆	◆	◆◆	◆	◆◆	◆◆◆	◆◆◆	◆◆◆	\$6,000
☞ Access to Elem. School & Park	4.3.5	◆◆	◆◆◆	◆	◆◆◆	◆	◆◆	◆◆	◆◆◆	◆◆◆	\$12,500
☞ ADA compliance	4.3.6	◆◆	◆◆	◆	◆	◆	◆	◆	◆	◆	—
☞ Improve stairs	4.3.7	◆◆	◆◆	◆	◆◆	◆	◆◆	◆	◆◆◆	◆◆◆	\$15,000
<b>Other</b>											
☞ Pocket park SW 3rd St.	4.4.1	◆◆	◆◆◆	◆	◆	◆	◆	◆	◆◆	◆◆	\$10,000



**Figure 1. Pilot Rock Pedestrian Network**



**Figure 2. Pilot Rock Bicycle Network**



# Proposed Projects

The projects below are divided into four categories that reflect their general function:

- **Corridors** — Covers an entire street segment with many changes aimed at improving overall conditions.
- **Crossings** — Facilities that cross a manmade or natural obstacle including highways, streets, railroads and rivers. The most common crossing is a crosswalk. Bridges are another example.
- **Linkages** — Short gaps in the transportation fabric such as poor or missing sidewalk segments, stairs and curb ramps.
- **Other** — Not directly involved with a transportation facility but supports good walking and bicycling conditions. Examples are parks, rest rooms, benches and trees.

The project list should be updated annually or more often as needed to respond to opportunities or unexpected conditions. Complex projects, especially those involving the highway, may go through many phases over several years as they evolve.

On-going maintenance of existing facilities, although not a part of the capital improvement program, is just as essential for good walking and bicycling conditions. The City currently has streets swept and restriped annually, clears snow as necessary, and blows debris from sidewalks. These important activities should continue to be funded and expanded when possible. Frequent sweeping and patching of walkways and bikeways prolongs the life and utility of these investments.

## 4.1 Corridors

### 4.1.1 Improve Birch Street

**Description:** Add walkways, bikeways, swales, and widen pavement on Birch Street from U.S. 395 to 10th Street (see Figure 3). Include crosswalks at 5th Street. There is no survey information with which to determine exactly where the right-of-way is located but it appears to be where the utility poles are located. From general appearance construction should be straightforward with minor terrain alteration and landscaping removal. If an uncurbed cross-section with drainage swales is used, driveways can be easily accommodated. In order to provide unobstructed sidewalks, a small setback from the 60-foot right-of-way will be needed to clear the utility poles. Therefore, the recommended cross-section includes 30 feet of pavement (11-foot travel lanes and 4-foot bike lanes); 9-foot drainage swales; and 5-foot sidewalks with a 1-foot shy distance from the property line. The City indicated that the existing roadbed and pavement are sound.

**Period of completion:** long-term.

**Cost:** roughly \$670,000 (see Table 2).

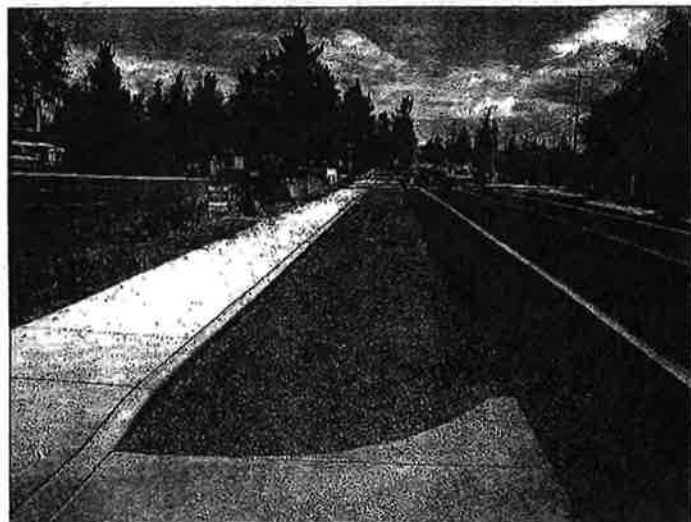
**Ownership:** County.

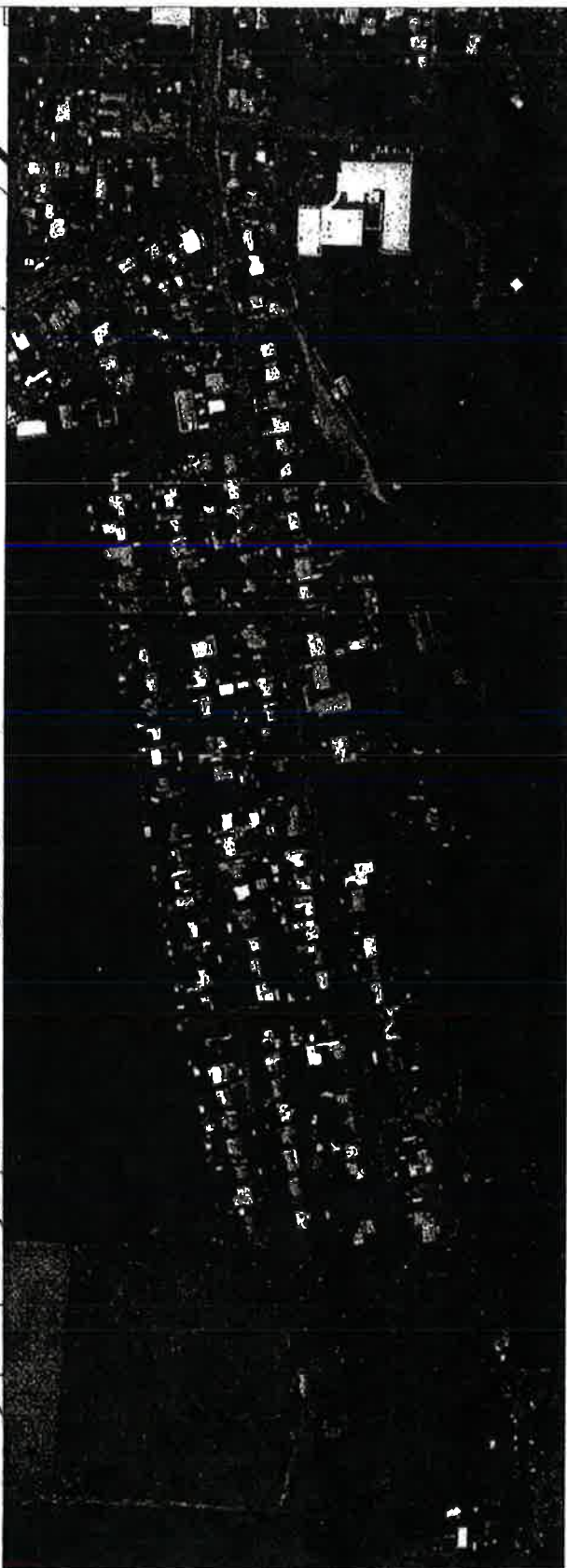
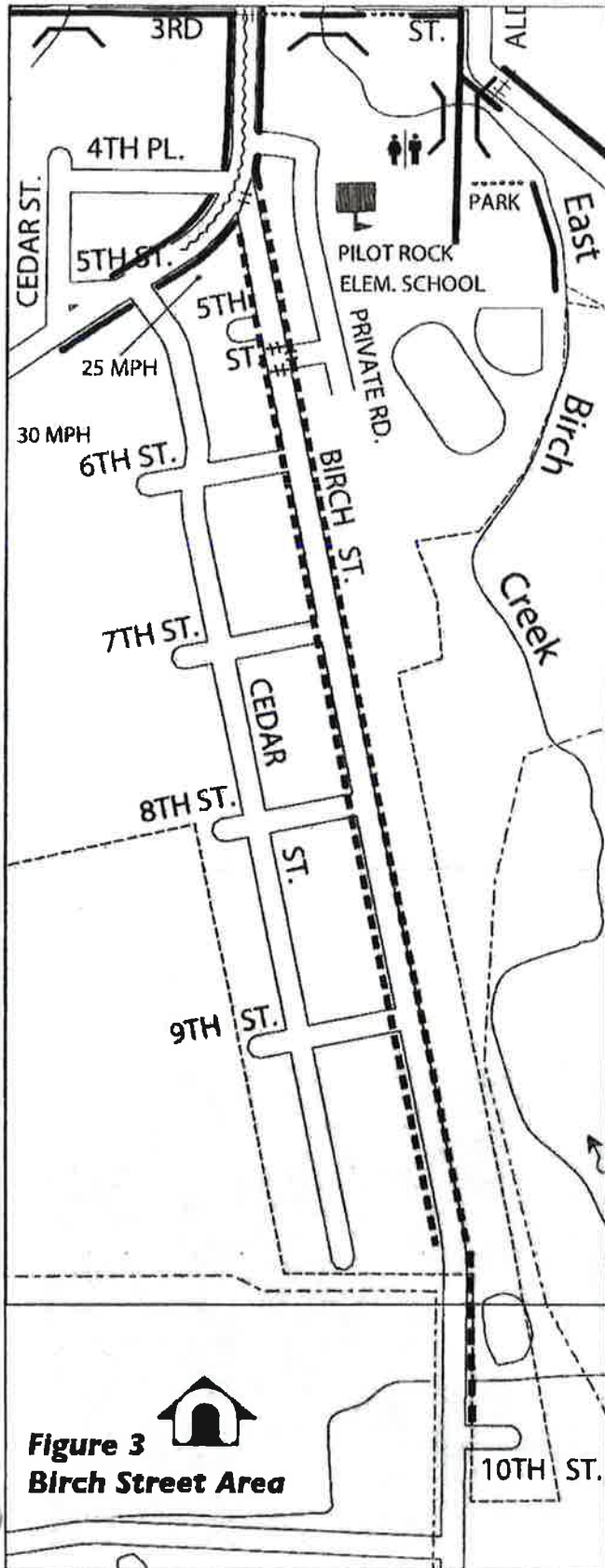
**Funding authority:** County and City.

**Funding sources:** County and City.

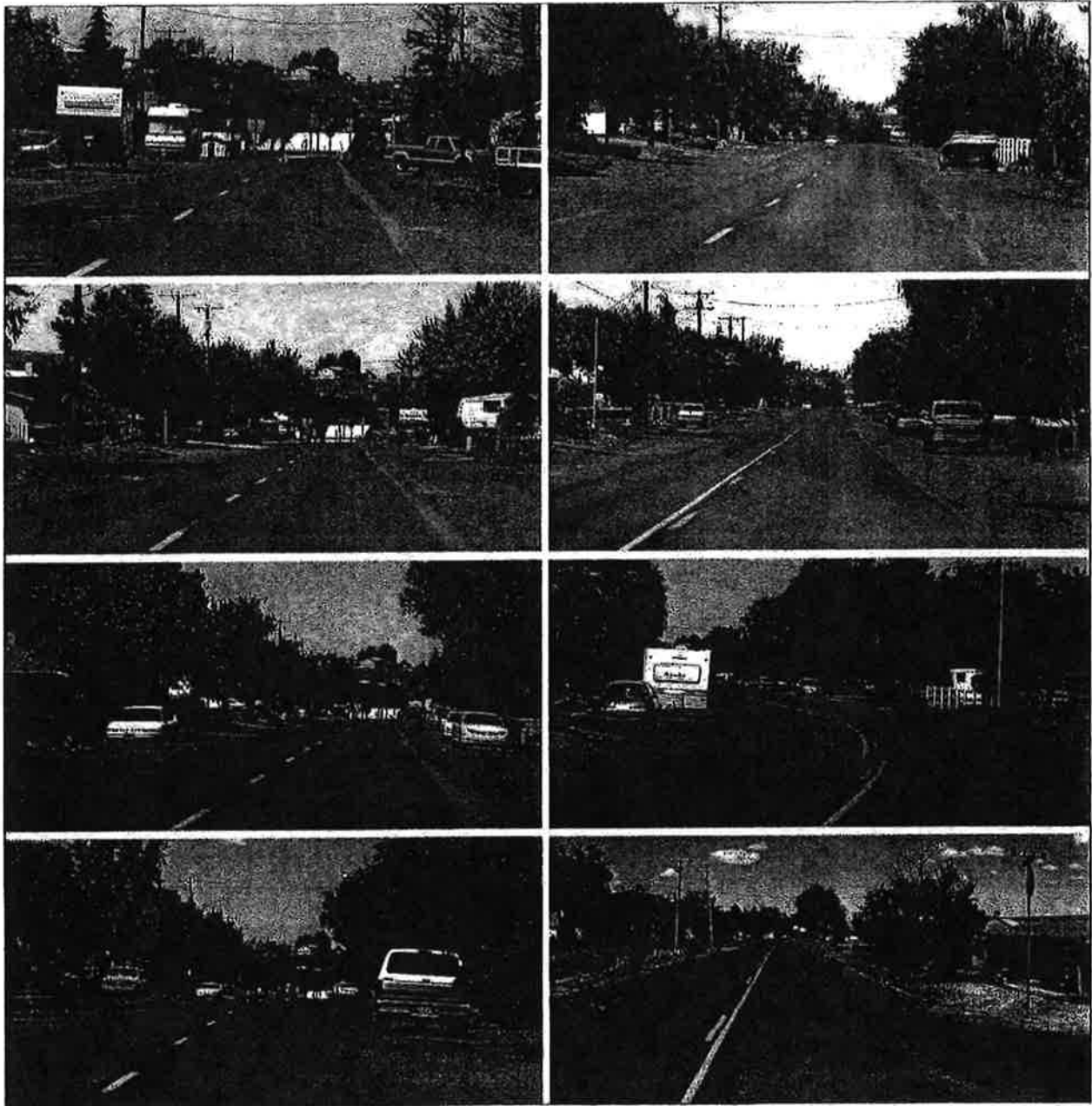
**Feasibility:** Medium.

Street in Tumalo, Oregon with similar section to proposed Birch project

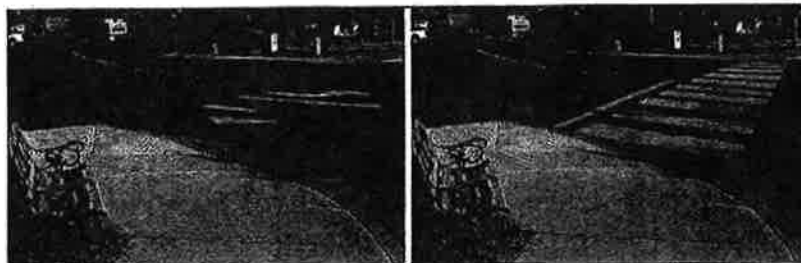




**Figure 3**  
**Birch Street Area**



Traveling north on Birch Street from 10th Street  
(lower right) to 5th Street (upper left).



Crosswalk of Birch Street at U.S. 395  
existing (left) and with recommended  
ladder striping (right).

**Table 2. Birch Street Project Costs**

Design Element	Comment	Units	Unit Cost	Project Cost
Roadway, 3" Asphaltic Concrete Depth, 8" Aggregate Base Depth, 22' existing				
Add two 4' bike lanes*	Two 11' travel, 4' bike	3300 LF	\$1.50/SF	\$40,000
Add two 5' bike lanes (option)	Two 11' travel, 5' bike	3300 LF	\$1.50/SF	\$50,000
New 30-foot width (option)	Two 11' travel, 4' bike	3300 LF	\$1.50/SF	\$150,000
New 32-foot width (option)	Two 11' travel, 5' bike	3300 LF	\$1.50/SF	\$160,000
Drainage Swale, 8" Aggregate Depth with Porous Paving Matrix				
9-foot width*	Both sides	6000 LF	\$0.75/SF	\$81,000
8-foot width (option)	Both sides	6000 LF	\$0.75/SF	\$72,000
Concrete corner aprons*	Accessibility	24 places	\$950	\$22,800
Sidewalks, 4" Portland Cement, 4" Aggregate Base				
5-foot width*	West side	2750 LF	\$16.65/SF	\$228,940
5-foot width*	East side	3250 LF	\$16.65/SF	\$270,560
Other Options				
Trees	3" caliper	—	\$400	—
Lighting	Lamps and electrical	—	\$2000	—
Driveway aprons*	Protects swale & sidewalk	60	\$450	\$27,000

\*Used in estimate of \$670,000.

#### 4.1.2 Improve NE 4th Street

**Description:** There is no simple way to accommodate all pedestrians given the existing conditions. As the area evolves there should be sidewalks—preferably curbed—on both sides of all streets and clearly defined crosswalks at all intersections. Cost may be shared with future development based on proportional traffic contribution.

**Period of completion:** long-term.

**Cost:** \$30,000 for 1000 feet of sidewalks and curbs at \$30 per linear foot on 4th Street from U.S. 395 to Elm Street (plus cost of reconstructing roadway).

**Ownership:** County.

**Funding authority:** County and City.

**Funding sources:** County and City.

**Feasibility:** Low.

#### 4.1.3 Provide room for bicycles on major roads

**Description:** As standard practice and per the adopted City TSP bike lanes are added to urban highways when they are modernized. This was not done on U.S. 395 in Pilot Rock. Instead, there is a shared lane from 12 to 15 feet wide. Given the relatively low traffic volumes and speeds a shared lane is acceptable but not ideal. In a few sections where lane width is minimal the striping can be adjusted to provide another foot or so and should be considered when restriping. On the collectors a paved shoulder or bike lane is preferred although a shared lane can suffice on low-traffic streets. At present only Birch and NE 4th Streets are likely long-term projects.

**Period of completion:** long-term.

**Cost:** see Birch Street for typical unit cost.

**Ownership:** State, County, City

**Funding authority:** State, County, City

**Funding sources:** State, County, City

**Feasibility:** Medium.

## 4.2 Crossings

### 4.2.1 Improve crosswalk on Birch Street at U.S. 395

**Description:** The existing crossing has several undesirable features including a long crossing distance (70 feet), no marked crosswalk (not even a stop bar), large curb returns, and a skewed intersection. The best solution for safe operation would have been to realign the intersection; however, existing structures and utilities would have made that costly. Given the recent design choices when the highway was modernized, the best approach now is to add a marked crosswalk. A crosswalk will help guide pedestrians across the expanse of pavement and tell drivers where to stop. The existing westbound turn lane markings can be dropped as they are unnecessary for vehicle capacity and interfere with the pedestrian crossing.

**Period of completion:** short-term.

**Cost:** \$575 for stop bar and 70 feet of ladder crosswalk at \$7 per linear foot. Additional labor to remove existing turn-lane markings.

**Ownership:** County (Birch St.) and ODOT (U.S. 395).

**Funding authority:** ODOT.

**Funding sources:** ODOT.

**Feasibility:** High.



### 4.2.2 Improve crossings near NE 4th Street and U.S. 395

**Description:** The area near this intersection is actually a series of close T-intersections that include U.S. 395, NE 4th Street, Cherry Street, Douglas Street and Elm Street. The existing walkways attempt to avoid the 395-4th and Elm-4th intersections and instead have pedestrians cross at the Cherry-4th intersection and then across 4th mid-block between Cherry and Douglas. This arrangement serves some users but is out-of-direction and unobvious, and does not serve many directions of travel.

The crosswalks are signed but the parallel stripes are faded and hard to see. High-visibility ladder crosswalks are preferable. Another problem involving dirt gaps between the at-grade sidewalks and crosswalks has been addressed recently by paving the dirt strip.

**Period of completion:** short-term.

**Cost:** \$350 for 50 feet of ladder crosswalk at \$7 per linear foot.

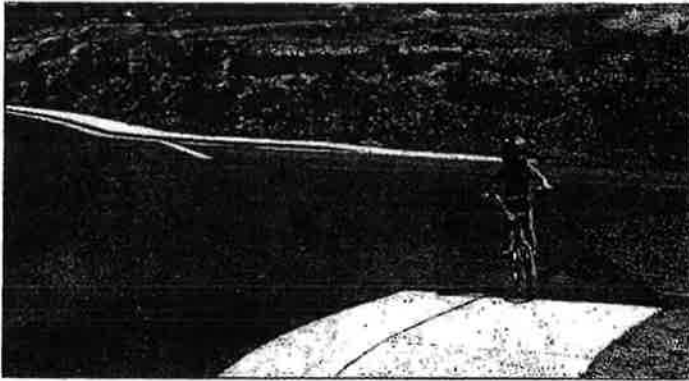
**Ownership:** City and County.

**Funding authority:** City and County.

**Funding sources:** State, City, County and future developers.

**Feasibility:** Medium.

#### 4.2.3 Improve crosswalk on Alder Street at U.S. 395



**Description:** The existing crossing has several undesirable features including a long crossing distance (90 feet), no marked crosswalk (not even a stop bar), large curb returns, and a skewed intersection. It would be best to rebuild the curb returns so that they are tighter and closer together (no more than 36 feet). Alternately, the existing curb returns could remain and a refuge island could be added to break up the exceptionally long crossing distance. With either design, a marked crosswalk will help guide pedestrians across the angled intersection and tell drivers where to stop.

**Period of completion:** short-term.

**Cost** with new curb returns: \$5,000 for two curb extensions with ramps.

**Cost** with refuge island: \$680 for stop bar and 85 feet of ladder crosswalk at \$7 per linear foot; \$900 for small median refuge; total cost \$1,580.

**Ownership:** City (Alder St.) and ODOT (U.S. 395).

**Funding authority:** ODOT.

**Funding sources:** ODOT.

**Feasibility:** High.

#### 4.2.4 Connect at-grade sidewalks to crosswalks across swales and unpaved areas



**Description:** As originally constructed the at-grade sidewalks on Elm Street, NE 4th Street and Cherry Street stopped short of intersections and crosswalks, so that a section of unpaved area must be crossed. These areas have been recently paved on NE 4th Street and other areas should follow. All walkway surfaces must be stable, firm and slip resistant per ADA requirements.

**Period of completion:** short-term.

**Cost:** spot projects with varying cost.

**Ownership:** City.

**Funding authority:** City.

**Funding sources:** City.

**Feasibility:** High.

#### 4.2.5 Upgrade wooden pedestrian bridges

**Description:** The City plans to replace wooden decks on pedestrian bridges with steel plates on SW 3rd Street (over East Birch Creek) and Delwood Street (over West Birch Creek).

**Period of completion:** short-term and long-term.

**Cost:** unknown.

**Ownership:** City.

**Funding authority:** City.

**Funding sources:** City.

**Feasibility:** High.



## 4.3 *Linkages*

### 4.3.1 *Connect sidewalks across unpaved areas*

**Description:** Unpaved sections interrupt the sidewalks in several locations such as on Cherry Street at NW 2nd Street and SW 2nd Street. In other cases sidewalks across alleys or driveways are broken. These should all be paved to provide a continuous route. Paving should extend about 10 feet past the sidewalk or crosswalk to help keep debris from being swept onto the walkway by cars.

**Period of completion:** short-term.

**Cost:** spot projects with varying cost.

**Ownership:** City and landowners.

**Funding authority:** City.

**Funding sources:** City.

**Feasibility:** High.

### 4.3.2 *Fix bad or missing sidewalk sections*

**Description:** Older sidewalks on SW 2nd and 3rd Streets are in generally poor condition and should be repaired. NW Cedar Street, the main access to the northwest neighborhood and industrial area, should have sidewalks at least to the Community Center.

A gap in the sidewalks on Alder Place at U.S. 395 need to be filled. The sidewalk on the west side of Cherry Street next to the High School should be extended.

**Period of completion:** short-term and long-term.

**Cost:** \$50,000 for 2,000 feet of 5-foot-wide sidewalk at \$25 per linear foot.

**Ownership:** City.

**Funding authority:** City.

**Funding sources:** City and adjoining property owners.

**Feasibility:** Medium.



### 4.3.3 *Add sidewalks on South U.S. 395 from Cedar Street to 6th Street*

**Description:** The residences along the highway south of SW Cedar Street have no sidewalk access. The highway shoulder is unpleasant to walk on and the route on Delwood Street is out-of-direction. The sidewalk should be extended to SW 6th Street on the west side of the highway.

**Period of completion:** long-term.

**Cost:** \$24,000 for 800 feet of 6-foot sidewalk and curb at \$35 per linear foot.

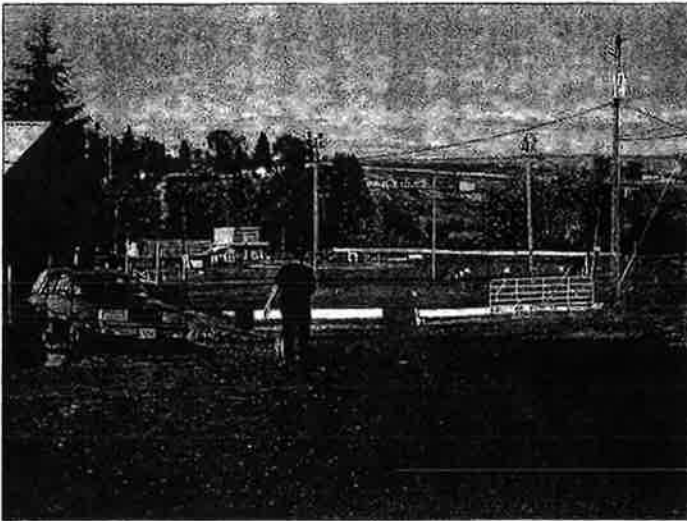
**Ownership:** ODOT.

**Funding authority:** ODOT.

**Funding sources:** ODOT.

**Feasibility:** Medium.

#### 4.3.4 *Improve access to elementary school sports field*



**Description:** The western access is via a short unpaved section of SW 5th Street leading from Birch Street. This intersects with a narrow, unpaved school road that also provides access from the school's parking lot. Pedestrians and motor vehicles must share the roadways. This is certainly unpleasant when dusty or muddy and would benefit in that respect from paving. At the least, paved walkways on 5th Street should be provided. If motor vehicle conflicts are a problem during events, parking monitors could be used to direct traffic.

**Period of completion:** long-term.

**Cost:** \$6,000 for 240 feet of sidewalk at \$30 per linear foot.

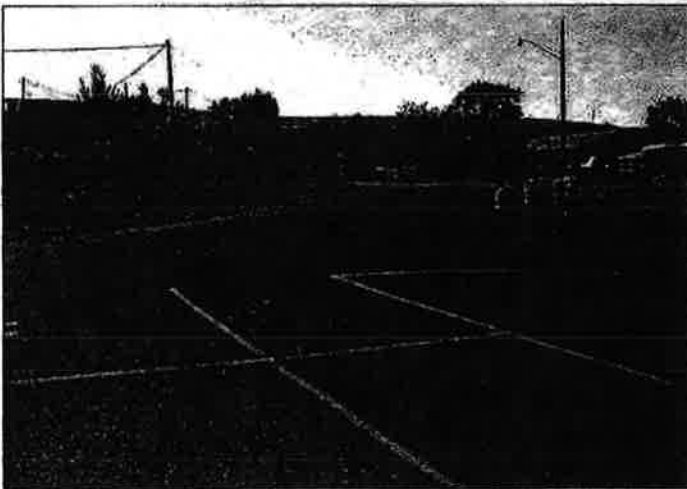
**Ownership:** City.

**Funding authority:** City.

**Funding sources:** City.

**Feasibility:** High.

#### 4.3.5 *Improve access to elementary school and park*



**Description:** The primary access is from the west via paved Vern McGowan Drive leading from U.S. 395. This short street leads directly into a large parking lot with no walkways. Pedestrians and motor vehicles must share the illdefined roadway. Nor is there a crosswalk across the entrance on U.S. 395. A crosswalk on Vern McGowan and separated sidewalk along the north side should be provided.

**Cost:** \$12,500 for 500 feet of sidewalk at \$25 per linear foot.

**Ownership:** City.

**Funding authority:** City.

**Funding sources:** City.

**Feasibility:** High.

#### 4.3.6 *Bring walkways up to ADA specifications*

**Description:** Even in a small city such as Pilot Rock there are hundreds of potential ADA compliance problems with the walkways. It is difficult to find a technically accessible route on even the newest highway sidewalks, curb ramps and crosswalks. Typical discrepancies include slopes and cross-slopes that exceed maximums, ramps that do not line up with crosswalks, oblique (corner) ramps that direct users into the roadway, vertical change of level over 0.5-inch, irregular detectable warnings and contrast, and inadequate landings. This is a systemic problem with no easy solution except attention to detail when facilities are constructed. Project managers and planners in all agencies and their contractors should take ADA courses offered by ODOT's Bicycle and Pedestrian Program.

**Period of completion:** short-term and long-term.

**Cost:** varies.

**Ownership:** State, County, City, private.

**Funding authority:** State, County, City, private.

**Funding sources:** State, County, City, private.

**Feasibility:** Low.

### **4.3.7 Improve stairs**

**Description:** The stairs leading up the hill east of Main Street are deteriorating, unlit and uninviting. Needed improvements include repairing the steps and railing, lighting the steps, and widening the bottom access.

**Period of completion:** long-term.

**Cost:** \$15,000 for rebuilding 300 feet of stairs at \$50 per linear foot.

**Ownership:** City.

**Funding authority:** City.

**Funding sources:** City and State.

**Feasibility:** Low.

## **4.4 Other**

### **4.4.1 Develop pocket park at SW 3rd Street on west side of East Birch Creek**

**Description:** The vacant land between U.S. 395 and the pedestrian bridge would make an attractive green space. It is marked as "Site of Old Fort - 1878" and may qualify for historic or parks grants.

**Period of completion:** long-term.

**Cost:** \$10,000 to clean up, gravel or asphalt a walkway and install some landscaping.

**Ownership:** City.

**Funding authority:** City.

**Funding sources:** City, State and Federal.

**Feasibility:** Low.



## **4.5 Funding Sources**

The Pilot Rock TSP includes a chapter entitled Funding Options and Financial Plan (Chapter 8). However, the TSP was not fiscally constrained. The TSP included a brief discussion of the City's Capital Improvement Program (CIP) as it stood in 2001. At that time, the CIP included one pedestrian project, the replacement of a pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street for \$7,500; and one bicycle system improvement project, adding bike lanes to US 395 for \$155,000. The total 20-year CIP budget was \$512,700. Based on the analysis included in the TSP, the City's budget shortfall for projects identified in 2001 was approximately \$127,000. Little has changed to increase the City's revenue since that time; in fact, one major employer has left town, further reducing property tax revenues.

The following discussion touches on the potential for partnering and other financing methods for implementing the projects listed in this Plan.

### **4.5.1 Partnering with Umatilla County**

If adopted, this Pedestrian and Bicycle Plan could potentially add as much as \$825,000 to the CIP. Of that total, around 80% is the cost of improving Birch Street. Since Birch Street is a County roadway, Umatilla County has indicated its willingness to contribute towards the improvements for pedestrians and bicyclists out of its Gas Tax Revenues for Bicycle and Pedestrian Projects. This would also be true for long-term improvements to 4th Street.

### **4.5.2 Partnering with ODOT**

The most important proposed crosswalk projects in Pilot Rock are located at the interface of US 395 and City or County streets. ODOT may participate in these improvements as part of regular highway maintenance. These requests are coordinated between the City Public Works department and the ODOT District Manager.

In addition, the State is obligated to spend a minimum of 1% of its gas tax revenues on improvements for pedestrians and bicyclists. The ODOT Bicycle and Pedestrian Program regularly queries its Region and District managers for smaller, "quick-fix" projects to help the State meet its requirements.

### **4.5.3 Other Sources**

The TSP identifies a number of other revenue sources, grants and loans, ODOT funding options, and financing tools for transportation projects. Many of these sources, options, and tools are appropriate for the projects listed within this Plan. Pilot Rock has the advantage of prepared and adopted plans; however, the City's small population along with the relatively small size of the projects can make competition difficult for many funding sources.

It is most likely that Pilot Rock will continue to have its best successes the same way they have in the past - accomplishments based on the City's strong sense of self-reliance and worth, a creative and flexible approach, and the hard work of its citizens.

# Typical Sections and Street Standards

# 5

Standard street classifications are difficult to apply to small cities. There is not the range of land uses and traffic to justify many street categories. Basically, streets in Pilot Rock are the highway, several collector-type streets that join the highway, and all other local streets. Appropriate street design must generally be done on a block-by-block, or sometimes lot-by-lot, basis with much attention paid to the adjoining land uses.

## 5.1 Highway

The highway, U.S. 395, is the only “arterial” street and not only connects the city to the outside world but is also an important business, and to some extent residential, street. The central one-third mile of highway from Alder Street to SW 4th Place is classified by the State as a Special Transportation Area (STA). STA standards are explained in the 2003 Highway Design Manual. The Manual states:

*The primary objective of an STA is to provide access to community activities, businesses, and residences, and to accommodate pedestrian, bicycle, and transit movement along and across the highway. Providing and encouraging a well-designed pedestrian, bicycle, and transit friendly environment should be a major goal of the designer in these areas.*

Features of an STA include sidewalks at least 10 feet wide, crossings of every leg of intersections, 5-foot shoulders or bike lanes, travel lanes of 11 feet for most situations, on-street parking, and traffic calming techniques to enhance the pedestrian environment.

## 5.2 Collector Streets

Collectors are multi-purpose streets that “distribute” traffic between the highway and local streets within the neighborhoods. In other words, they are “through” streets but are also very important to those who live on the collector. Preserving neighborhood livability is a priority.

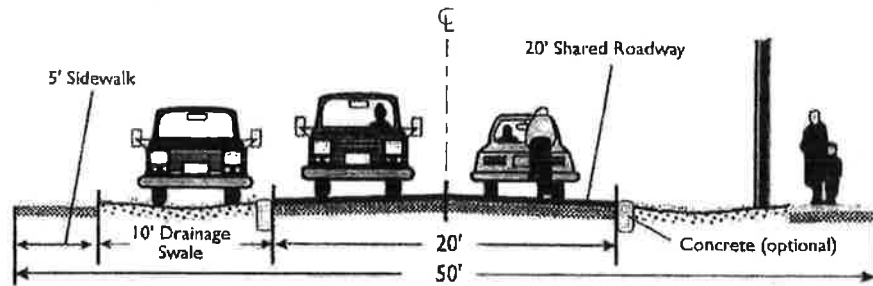
Pilot Rock has a modest number of collector streets that, depending on their location and access to storm water drainage, may be curbed or uncurbed. Two designs for new residential collector streets are recommended in Figure 3, one employing drainage swales that double as parking strips, and the other with curbs. Both feature a 60-foot right-of-way with sidewalks and bike lanes.

A few short street segments serving businesses or industrial uses are also classified as collectors. When these streets are reconstructed or when new streets are built, they should be designed to fit their adjacent land uses. For example, downtown core streets should have wide sidewalks and ample on-street parking, whereas industrial service streets must accommodate large trucks but need little or no on-street parking.

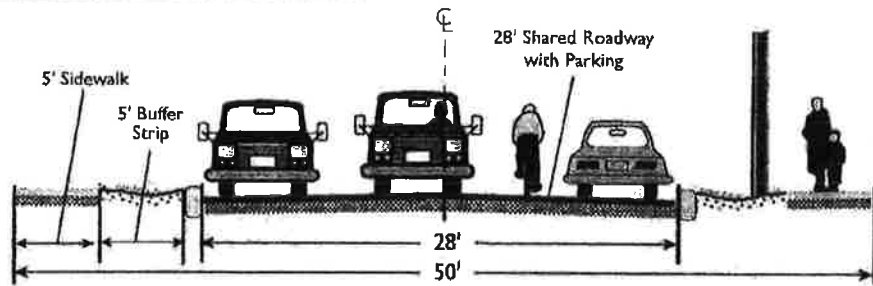
Figure 4.

## Suggested Residential Street Cross-Sections

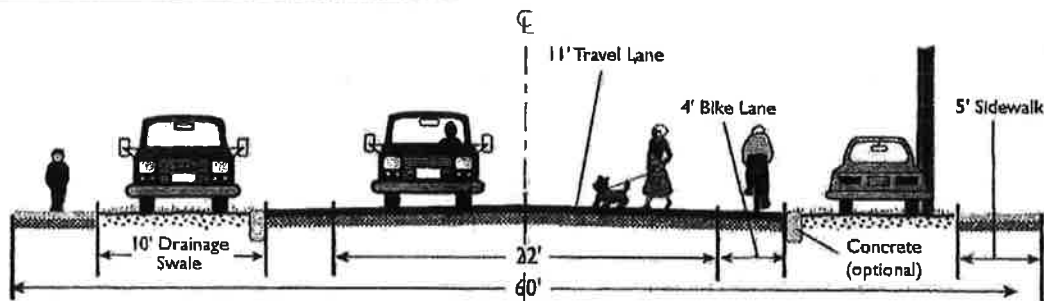
### Local — Uncurbed



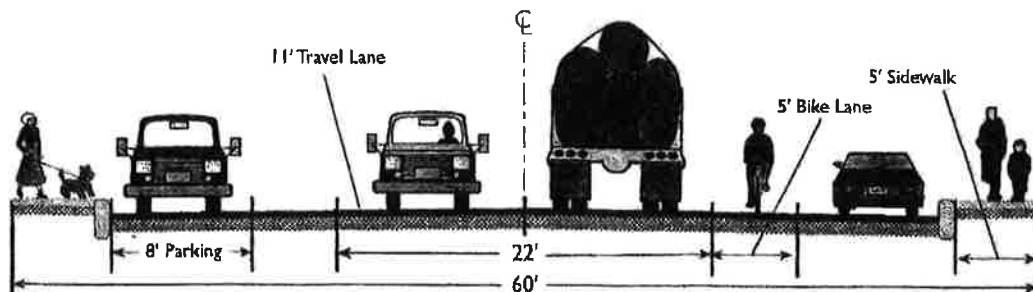
### Local — Curbed



### Collector — Uncurbed



### Collector — Curbed



### 5.3 Local Streets

Local streets should be attractive and complement the neighborhoods. The narrowest possible right-of-way with minimal pavement width is recommended. Narrow roadways have many advantages such as reduced construction and maintenance costs, less stormwater runoff, less heat gain in summer, lower traffic speeds, shorter crossing distance, and more room for sidewalks, landscaping and parking.

### 5.4 Pedestrian Facilities

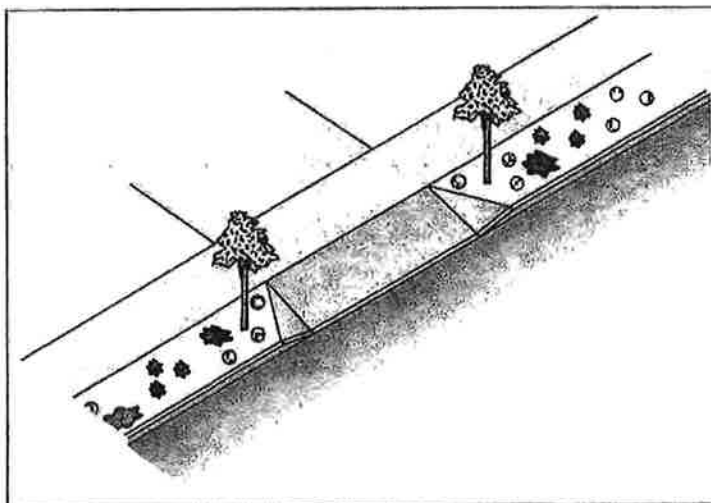
#### 5.4.1 Sidewalks

##### Location

- Commercial centers and downtowns: both sides of all streets.
- Major residential streets: both sides.
- Local residential streets: preferably both sides, but at least one side.
- Low-density residential (1-4 units/ac): preferably both sides, but at least one side with shoulder on other side.
- Rural residential (less than 1 unit/ac): preferably one side with shoulder on other side, but at least a shoulder on both sides.

##### Width

- Local streets outside central business district:  
5 to 8 ft.
- Commercial areas outside central business district:  
10 ft; more width in areas of high pedestrian activity, sidewalk cafes and transit stops.
- Buffer zone (aka landscape strip) between sidewalk and roadway:  
5 to 10 ft on local and collector streets; or where street trees, high speeds, high truck use, or space exists;  
10 ft minimum swale for uncurbed sidewalk.



Buffer zone enhances the walking environment and allows the sidewalk to remain level at driveways.

#### Standard Sidewalk Dimensions

Width (varies by type of street, larger number preferred):

- Local = 5 to 8 ft
- Commercial areas = 10 ft

Horizontal Clear Space = 3 to 5 ft

Vertical Clear Space = 7 to 8 ft

Planting Strip (buffer zone) Between sidewalk and street = 5 to 10 ft

Surface vertical change (abrupt, such as sidewalk cracks) = 1/4 in. maximum

Surface gap = 1/2 in. maximum

Slope in direction of travel = 5 percent maximum (1:20)

Cross-slope across direction of travel = 2 percent maximum (1:50)

#### Standard Bikeway Width

(One-way travel; recommended width depends on motor vehicle speed and volume.)

Bike Lane = 4 to 6 ft

Paved Shoulder = 4 to 6 ft

Wide Curb Lane (shared by cars and bikes) ≥ 14 to 16 ft

### ***Horizontal Clearance***

#### Accessibility:

5 ft (3 ft minimum) unobstructed width.

Additional 2 to 3 ft for shoulder-high barriers such as walls, railings and fences.

#### On-street parking:

2 ft for parallel parking stalls;

3 ft for angled or perpendicular parking stalls.

#### Ditch or swale:

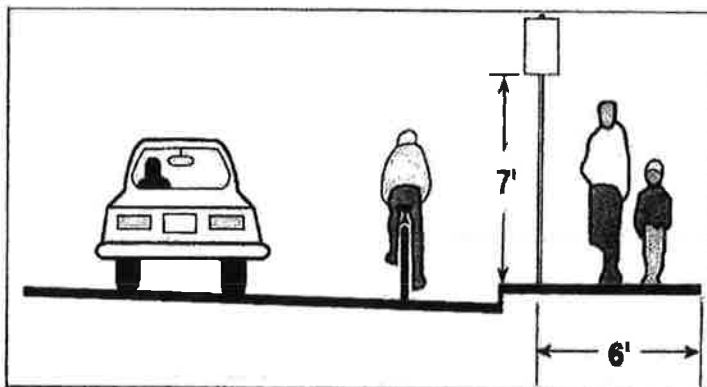
2 ft minimum.

Ditch side slope should not exceed a 3:1.

### ***Vertical Clearance***

8 ft to continuous structures such as undercrossings and permanent canopies.

7 ft to spot items such as traffic signs and tree branches.



Sidewalk clearances. Add an additional 2' horizontal clearance to shoulder-high barriers such as walls and fences.

### ***Surface***

Minimum slope consistent with roadway.

5% (1:20) running slope.

2% maximum cross-slope including driveways.

Stable, firm, and slip-resistant.

0.25 in. maximum vertical change in level; 0.5 in. if beveled.

0.5 in. maximum gratings/gaps in direction of travel.

2.5 in. maximum gap at rail flangeway.

Continuity across driveways.



### 5.4.2 Corner Radius

- No turning movements: 4 ft.
- On-street parking or bike lanes: 5 ft.
- Minor street with minimal truck and bus turning: 15 to 25 ft.
- Major street with occasional trucks: 30 ft.

### 5.4.3 Curb Ramps

- One at each crossing perpendicular to curb line.
- Within crosswalk at foot of ramp.
- No exposure to moving traffic lane.
- Maximum running slope:

- 1:12 (8.33%) in new construction.
- 1:10 (10%) for 6 in. rise in existing retrofit.
- 1:8 (16.67%) for 3 in. rise in historic retrofit.
- 1:48 (2%) maximum cross-slope.
- 1:20 (5%) maximum counter-slope at gutter.
- 1:10 (10%) side flare slope.
- 3 ft minimum width.

#### Length:

- 3 ft long if toe room available.
- 4 ft long if constrained.
- 5 ft long if between ranges.

#### Level landing at top and bottom:

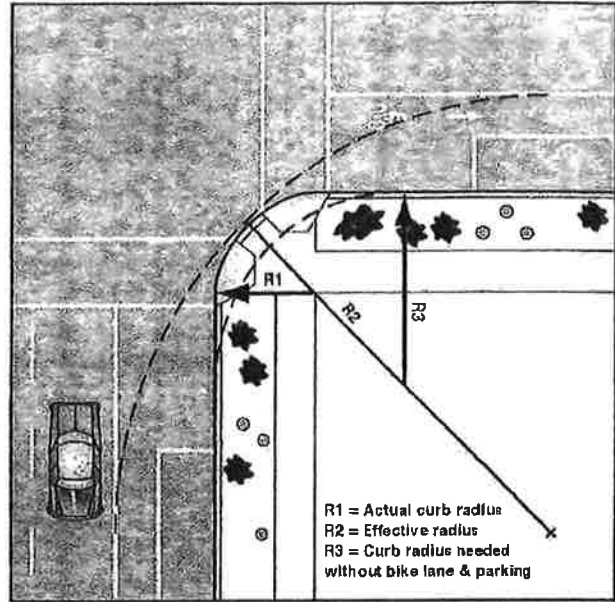
- 5 ft (4 ft minimum) landing length at perpendicular curb ramp.
- 5 ft minimum landing length at parallel curb ramp.
- 1:48 (2%) maximum slope in the two perpendicular directions of travel.

#### Flush (no lip) connection at street.

2 ft detectable warning full width of the curb ramp.

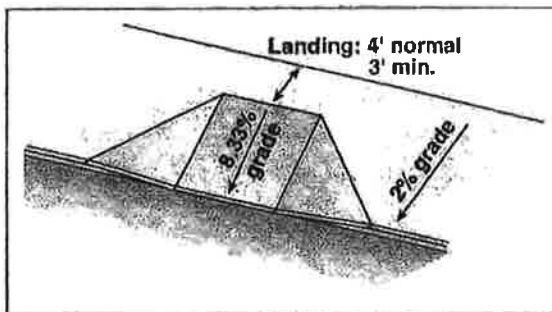
Two curb-cuts per corner at intersections.

A 3 ft wide passage with a cross-slope of 2% behind curb cuts.



Sharp corners shorten and align crosswalks, improve pedestrian visibility, and reduce vehicle turning speed.

On-street parking and bike lanes permit a tighter corner, often as little as a 25 ft radius.



Curb ramp clearance, grade and cross-slope.

## 5.4.4 Crosswalks

### *Location (Marked)*

All open legs of a signalized intersection.

Across a roadway approach controlled by a STOP or a YIELD sign if there is a sidewalk or a shoulder on both sides of the approach.

At intersections on roadway approaches not regulated by signals, STOP signs or YIELD signs if the speed limit is 35 mph or less, and there are sidewalks or shoulders on both sides of the approach.

Mid-block as needed.

Unmarked crosswalks at other intersections.

### *Striping*

8 ft (6 ft minimum) width.

Extra width for high pedestrian volumes or to increase conspicuity of crossing.

Zebra-type (aka Continental) patterns:

12 to 24 in. wide stripes.

12 to 24 in. stripe spacing.

Stop lines (when used) 10 ft (4 ft minimum) in advance.

Use curb extensions with on-street parking.

No parking within 20 ft from crosswalk without curb extension.



Zebra (aka Continental) crosswalks are more visible to drivers than standard double lines.

## 5.5 *On-Road Bicycle Facilities*

### 5.5.1 *Bicycle Lanes*

#### *Location*

General: one-way facilities not physically separated from travel lanes.

Urban areas: both sides of most highways, arterial streets and collector streets (generically referred to as "streets" below).

Rural areas: typically not used (paved shoulders or shared lanes preferred).

#### *Width*

Curbed street without on-street parking:

4 to 6 ft;

6 ft where use is high, in-line skaters are expected, or grades exceed 5%.

Curbed street with on-street parking:

5 to 6 ft;

6 ft where use is high, in-line skaters are expected, or grades exceed 5%.

Uncurbed street with parking in swale:

4 to 5 ft.

Add 1 ft:

on bridges, or

where there are 30 or more heavy vehicles per hour in the outside lane.

#### *Striping*

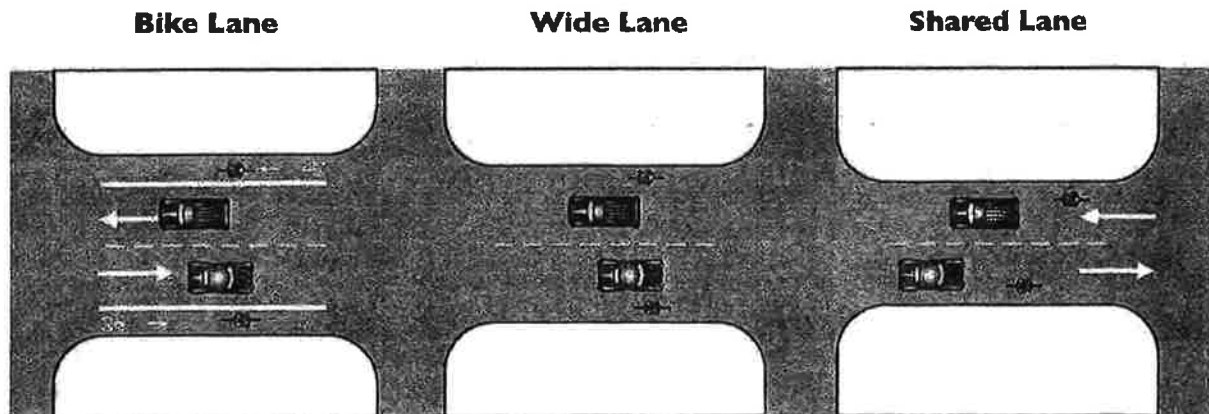
8 in. solid white stripe standard; or (optional) 8 in. solid white stripe.

On-street parking (right side of lane) marked with 4 in. solid white stripe or tick marks.

Do not extend striping through intersections (except across from T-intersection) and crosswalks.

Dotted guidelines (2 ft dots and 6 ft spaces) may be extended through complex intersections.

At intersections controlled by signals or stop signs and where right-turn lanes exist, use a dotted line with 2 ft dots and 6 ft spaces for the approach in lieu of solid striping for 50 to 200 ft.



Where sufficient width exists, place a separate through bicycle lane between the right-turn lane and the through travel lane.

At ramps and dedicated right-turn slip lanes, use a minimal turning radius or a compound curve to reduce entry speed.

#### **Marking**

Bicycle symbol with directional arrow on pavement; or (optional) word legend "BIKE ONLY" with directional arrow.

Symbol with arrow on far side of each intersection no closer than 65 ft from intersection; additional symbols placed periodically along uninterrupted sections.

#### **Signing**

MUTCD signs R3-16 and R3-17 designate the presence of a bike lane.

Many other signs are available for special situations; refer to MUTCD Part 9 and the Oregon Bicycle and Pedestrian Plan.

### **5.5.2 Wide Curb Lanes**

Urban streets with insufficient width for bike lanes.

13 ft wide without on-street parking and 14 ft wide with on-street parking.

Where 15 ft or more width is available, consider striping bicycle lanes or shoulders.

### **5.5.3 Paved Shoulders**

#### **Location**

Rural: most roads and highways.

Urban areas: both sides of lower volume major streets where bike lanes are not appropriate.

#### **Width**

5 ft:

- on steep up-grades where bicyclists require maneuvering room or where downgrades exceed 5% for 0.6 mi;
- where there are 30 or more heavy vehicles per hour in the outside lane; or
- where motor vehicle posted speeds exceed 50 mph.

4 ft against guardrail, curb or other roadside barrier.

3 ft minimum.

#### **Striping**

4 in. solid white edge line.

### **5.5.4 Shared Lanes**

Roads are as they exist with no special provisions for bicyclists.

Common on neighborhood streets, low-volume (< 500 ADT) rural roads and highways, and commercial and downtown centers with constrained right-of-way.

### 5.5.5 Marginal Improvements

Add usable riding surface to right of roadway edge stripe by:

- paving extra width—as little as 2 ft extra width is beneficial;
- reducing travel lane width;
- eliminating unneeded travel lanes; or
- eliminating parking on one or both sides.

Bicycle-safe drainage grates.

Bicycle-friendly railroad crossings.

Pavement surfaces free of irregularities.

Bicycle-oriented signs and bicycle-sensitive traffic detection devices.

Roadway maintenance including removal of accumulated dirt, broken glass and other debris.

Reducing and enforcing posted speed limits.

### 5.5.6 Joint between Bikeway and Existing Roadway

The following techniques should be used to add paved shoulders to roadways where no overlay project is scheduled:

**Saw Cut:** A saw-cut 1 ft. inside the existing edge of pavement provides the opportunity to construct a good tight joint. This eliminates a ragged joint at the edge of the existing pavement.

**Feathering:** “Feathering” the new asphalt onto the existing pavement can work if a fine mix is used and the feather does not extend across the area traveled by bicyclists.

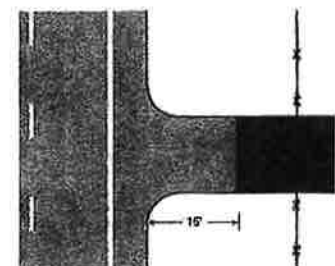
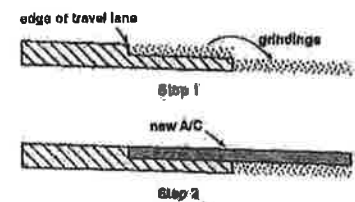
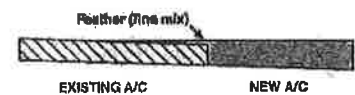
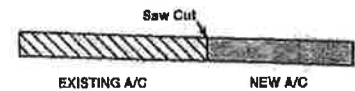
**Grinder:** Where there is already some shoulder width and thickness available, a pavement grinder can be used to make a clean cut at the edge of travel lane, grade the existing asphalt to the right depth and cast aside the grindings in one operation, with these advantages:

- less of the existing pavement is wasted;
- the existing asphalt acts as a base;
- there will not be a full-depth joint between the travel lane and the shoulder; and
- the grindings can be recycled as base for the widened portion.

New asphalt can then be laid across the entire width of the shoulder bikeway with no seams.

### 5.5.7 Unpaved Driveways and Side Streets

Wherever a street is constructed, widened or overlaid, all unpaved driveways and approaches should be paved back 15 ft to prevent loose gravel and dirt from spilling onto the shoulders.



## 5.6 Multi-Use Paths

### 5.6.1 Location

- Within highway right-of-way or within an independent right-of-way.
- Physically separated from motorized traffic by open space or barrier.
- Shortcuts between neighborhoods, parks, schools, and business areas.
- Access to areas served only by controlled-access highways where pedestrians and bicycles are prohibited; otherwise, not a substitute for on-road facilities.
- Access to areas not well served by roads such as streams, lakes, rivers, greenways, abandoned or active railroad and utility rights of way, school campuses, and planned unit developments and community trail systems.

### 5.6.2 Path Design

#### Width

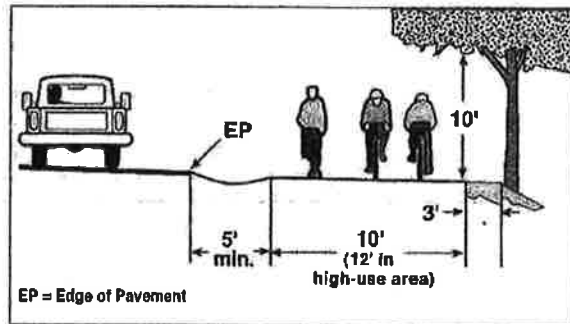
- Paved shared use:
  - 10 to 14 ft [8 ft minimum (rare)];
  - 14 ft or more with separated bicycle, horse or running lanes.
- Unpaved shared use: 8 to 10 ft.
- One-way shared use (rare): 6 ft (5 ft minimum).
- Paved pedestrian only: 6 ft (5 ft minimum).

#### Shoulders

- Width on both sides: 2 ft.
- Side slope: 4%.

#### Recovery Area

- If side slope greater than 1:4:
  - 5 ft recovery area at maximum 1:6 slope from edge of path; or barrier.



Standard multi-use path dimensions.

#### Clearance

- Lateral: 6 ft (5 ft minimum).
- Vertical 10 ft (8 ft minimum), 12 ft minimum for equestrians.

#### Separation from Roadway

- Curbed section: 4 ft minimum.
- Uncurbed section: 5 ft minimum; at least 3 ft of which is a buffer zone or landscape strip.

### Surface

Stable, firm, and slip-resistant.

At unpaved roadway or driveway crossings of paved paths, pave the roadway or driveway at least 10 ft on each side of crossing.

Unpaved surface: 4 in. layer of granular stone no larger than 3/8 in. in diameter over prepared subgrade of at least 6 in. of crushed gravel (top layer) and 8 in. of gravel (bottom layer), roller compacted.

### Grade

5% for up to 800 ft.

8% for up to 300 ft.

11% or more for up to 50 ft.

Running grade over 8.33% less than 30% of the total path length.

### Cross Slope

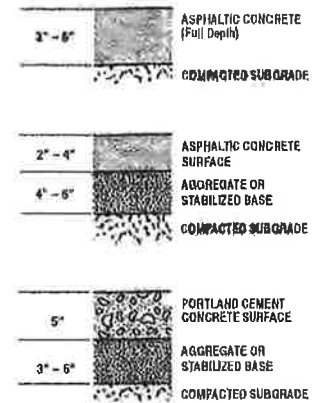
Sloping in one direction instead of crowning preferred.

Paved: 2% maximum.

Unpaved: 5% maximum.

Superelevation: 2% maximum.

### Multi-Use Path Pavement Alternatives



Source: Oregon Bicycle and Pedestrian Plan

### Summary of Surface Materials for Multi-Use Paths

Surface Material	Firmness	Stability	Slip Resistance (dry)
Asphalt	firm	stable	slip resistant
Concrete	firm	stable	slip resistant
Soil with Stabilizer	firm	stable	Slip resistant
Soil with High Organic Content	soft	unstable	Not slip resistant
Crushed rock (3/4" minus) with Stabilizer	firm	Stable	Slip resistant
Crushed Rock w/o Stabilizer	firm	stable	Not slip resistant
Wood Planks	firm	stable	Slip resistant
Engineered Wood Fibers – that comply with ASTM F1951	Moderately firm	Moderately stable	Not slip resistant
Grass or Vegetative Ground Cover	Moderately firm	Moderately stable	Not slip resistant
Engineered Wood Fibers that do not comply with ASTM F1951	soft	unstable	Not slip resistant
Wood Chips (bark, cedar, generic)	Moderately firm to soft	Moderately stable to unstable	Not slip resistant
Pea Stone or 1-1/2" minus Aggregate	soft	unstable	Not slip resistant
Sand	soft	unstable	Not slip resistant

Source: Adapted from Federal Highway Administration Designing Sidewalks and Trails for Access, Part II, Best Practices Design Guide.

### Design Speed

Paved: 20 mph; 30 mph for downgrades over 4% for 800 ft.

Unpaved: 15 mph.

### 5.6.3 Barriers

Purpose: Safety and security, protection from falls, screening of adjacent uses, separation from adjacent roadway or other uses, vertical or grade separation, or enhanced aesthetics.

Need: Protective barrier use based on clear area, side slope steepness and material, and type of hazard.

Types: Fences, walls, vegetation, guardrails, jersey barrier, and railing.

Retaining walls no closer than 2 ft from path edge.

Railings should be at least 3.5 ft high.

### 5.6.4 Crossings

Marking: Either none, crosswalk stripes, or dotted guidelines.

At-grade:

Mid-block: Not near intersection, angled 75 degrees maximum.

Parallel path: Near intersection

Complex intersection: highly skewed or multiple-leg, often with two-step crossing.

Refuge island:

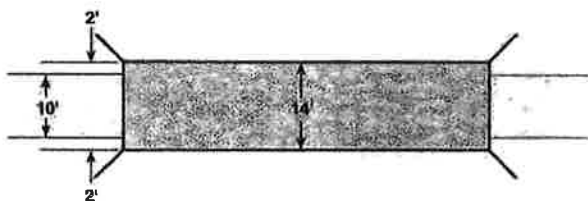
Necessary with marked crossing of more than 2 lanes.

12 ft (8 ft minimum) wide.

Cut-through angled 30 degrees towards oncoming traffic.

### 5.6.5 Bridges

Typical Bridge for Multi-Use Path



Width: approach width plus 2 ft on each side.

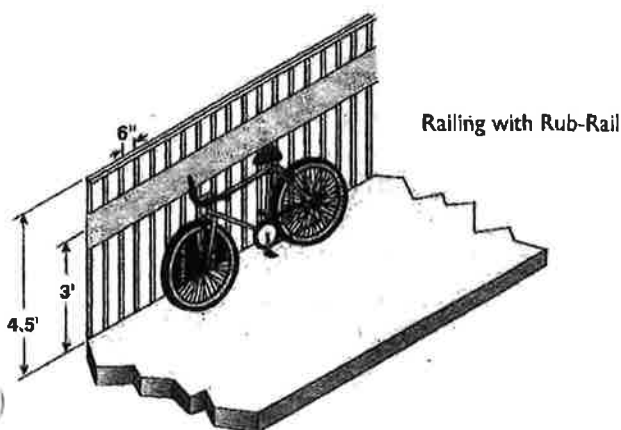
Vertical clearance: same as for path.

Loading: H10 or a 10-ton load for a two-axle vehicle.

Approach railing: Extend 15 ft from end of bridge and flared.

Decking: Transverse (90 degrees to the direction of travel).

Railing: height of 4.5 ft; openings no more than 6 in. wide; optional rub-rail at 3 ft.





## 5.7 *Signs, Pavement Markings and Signals*

### 5.7.1 *General Application*

Warranted by use and need per latest Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).

All signs and markings retroreflective or illuminated.

### 5.7.2 *Pedestrian Facilities*

#### *Signs*

Intended for motorists: warning signs for pedestrian crossings.

Intended for pedestrians: regulatory signs for pedestrian signals; special wayfinding signs.

Intended for all users: most guide signs.



#### *Markings*

Crosswalks, detectable warnings and vertical markers per Oregon Bicycle and Pedestrian Plan.

#### *Signals*

##### Timing:

Adult pedestrian clearance interval of 4 fps measured from the curb-to-curb or edge-of-roadway to edge-of-roadway distance.

Child or elderly pedestrian clearance interval of 3 fps measured from the curb-to-curb or edge-of-roadway to edge-of-roadway distance.

Options to address slower walking speeds include:

increase crossing time,

decrease crossing distance,

subdivide crossing distance (medians or refuge islands, with separate pedestrian controls), or

provide a pedestrian-actuated control that permits extended-time crossing on demand.

##### Midblock Pedestrian Activated:

Based on MUTCD Warrants 4 (Pedestrian Volume), 5 (School Crossing), or 7 (Crash Experience).

Note if any potential users not reflected in the data because the lack of a signal discourages them from crossing.

##### Accessibility:

Refer to Section 4G.06 of the MUTCD and U.S. Access Board guidelines.

### 5.7.3 *On-Road Bicycle Facilities*

Most signs, pavement markings, signals, and delineators for motorists apply to bicycles.

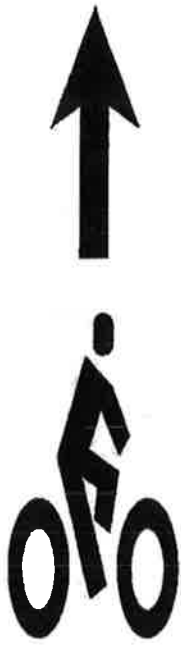
Part 9 of the MUTCD covers specific traffic controls for bicycles.

#### *Signs*

Bike lanes: MUTCD signs R3-16 and R3-17 designate the presence of a bike lane.

Warning: signs denoting unexpected or changed conditions.

Bicycle Route: used to guide cyclists to destinations or to mark regional, interstate and international facilities.



### **Markings**

Bike lane:

8 in. wide retroreflectorized white stripe; and symbol of cyclist with directional arrow in lane.

Object markings:

Delineate presence of potentially hazardous objects and obstructions.

### **Signals**

Timing:

5 ft (3 ft minimum) unobstructed width.

2 to 3 ft for shoulder-high barriers such as walls, railings and fences.

Demand actuated signal:

Adjust detector sensitivity for bikes and mark most sensitive location.

Mark pavement where sensitivity is highest.

Consider alternatives to pavement loops (video, microwave, infrared).

Programmable signal heads:

Ensure that cyclist can see signals.

Signal synchronization:

Add 2 to 3 sec. to automobile green time.

Yellow interval of 3 sec.

All-red clearance interval greater than 2 sec.

### **5.7.4 Shared Use Paths**

Requires its own signing because separate alignment from roadway.

Signs reduced size per MUTCD.

Special markings for railroad crossings.

Supplemental markings may be used (center line, stop bar, etc.).

### **5.7.5 School Areas**

Part 7 of the MUTCD discusses school routes, crossings, signs, markings, signals, and other considerations.

*Part III*

*Code, Ordinance &  
Plan Revisions*



# *Contents*

---

## **Part III — Code, Ordinance & Plan Revisions**

<b>1. Background . . . . .</b>	<b>1</b>
<b>2. Zoning Ordinance . . . . .</b>	<b>1</b>
<b>3. Subdivision Code . . . . .</b>	<b>2</b>
<b>4. Transportation System Plan . . . . .</b>	<b>6</b>

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

---

**1. BACKGROUND**

As part of the Pilot Rock Pedestrian and Bicycle Master Plan, the City's Comprehensive Plan, Zoning and Subdivision Ordinances, and Transportation System Plan were reviewed to ensure that the Master Plan's goals could be implemented. Certain revisions are recommended, as summarized in this report.

The Pilot Rock Zoning and Subdivision Ordinances were updated in 2001, following the adoption of the Transportation System Plan. With a few exceptions, the Zoning and Subdivision Ordinances reflect both the requirements of the Transportation Planning Rule and general "smart growth" principles appropriate to a town of Pilot Rock's size.

Throughout this document, suggested new text is shown in **bold, underline**. Suggested text for deletion is shown in ~~strikethrough~~.

**2. ZONING ORDINANCE**

→ **Add to Section 1.70, Definitions:**

**Sidewalk. A pedestrian walkway separated from a road, with or without a curb, constructed of a durable, hard surface, usually concrete.**

**Finding:** The purpose of this addition is to add a clear definition of sidewalk to the code since sidewalks are a part of the city street network.

→ **Change to Section 3.12, Dimensional Standards in an R-1 Zone:**

- (1) The front yard shall be a minimum of ~~twenty-(20)~~ **ten (10) feet from the edge of the eave to front property line, providing the garage or carport is setback a minimum of 20 feet from the edge of the eave to the front property line.**

**Finding:** The purpose of this change is to allow houses to be closer to the street, especially the sidewalk. This pattern of development creates safer neighborhoods, with "eyes on the street," and has been demonstrated to encourage higher pedestrian uses. It also can increase the efficiency with which lots can be developed, reducing sprawl and thereby supporting a walkable community.

→ **Revise Article 9, Off-Street Parking and Loading.**

**9.21 Parking Spaces** are required as follows:

Bank or professional offices	1 space per 300 square of floor area plus 1 space per employee <b><u>plus 1 bicycle space per 10 motor vehicle parking spaces with a minimum of 2 spaces per use.</u></b>
Eating or drinking establishment	1 space per 200 feet of floor area plus 1 space per 2 employees <b><u>plus 1 bicycle space per 10 motor vehicle parking spaces with a minimum of 2 spaces per use.</u></b>
Bowling alley.	3 spaces per lane plus 1 space per employee <b><u>plus 2 bicycle spaces per lane.</u></b>

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

---

**9.24. Bicycle Racks Parking. A minimum of two (2) bicycle parking spaces shall be provided for any commercial, industrial, and multi-family residential uses. Bicycle parking spaces shall be a minimum of six (6) feet long and two (2) feet wide.** Bicycle racks shall be designed....

**Finding:** In order to comply with the Transportation Planning Rule, the City must provide bicycle parking. The recommendation additions reinforce or clarify the City's existing code.

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

**3. SUBDIVISION CODE**

Recommended changes to the Subdivision Code are centered around street standards and pedestrian facilities. All other components of the Subdivision Code appear to be adequate to meet the City's goals.

➔ **Revise Street Standards on page 28:**

<b>Classification</b>	<b>Pavement Width</b>	<b>Right-of-Way-Width</b>
<sup>1</sup> Local Street Option 1	20 ft.	50 ft.
<sup>2</sup> Local Street Option 2	28 ft.	50 ft.
<sup>3</sup> Local Street Option 3	34 ft.	50 ft.
Alley	20 ft.	20 ft.
<sup>7</sup> Major Collector	46 ft.	70 ft.
<sup>4</sup> Minor Collector Option 1	38 ft.	60 ft.
<sup>5</sup> Minor Collector Option 2	30 ft.	60 ft.
<sup>7</sup> Industrial/Commercial (Collector or Local)	40 ft. 62 ft.	70 ft. 80 ft.
<sup>6</sup> Arterial Option 1	62 ft.	80 ft.
<sup>7</sup> Arterial Option 2	50 ft.	80 ft.

1. Two lanes, no on street parking, gravel shoulders
2. Two lanes, on street parking, one side only
3. Two lanes, on street parking both sides
4. Two lanes, on street parking both sides
5. Two lanes, on street parking one side only
6. Two travel lanes, center turn lane, bike lanes, on street parking both sides
7. Two lanes, center turn lane, bike lanes, on street parking both sides

**ROAD STANDARDS**

<b>Zone</b>	<b>Road Type</b>	<b>ROW</b>	<b>Pavement Width Min.-Max.</b>	<b>Swale/ Buffer Minimum<sup>1</sup></b>	<b>Parking<sup>2</sup></b>	<b>Sidewalks<sup>3</sup> Minimum</b>	<b>Bike Lanes<sup>4</sup> Min.-Max.</b>	<b>Setback Taken From<sup>5</sup></b>
<b>Residential</b>	<b>Local Uncurbed</b>	50-60 ft	20-24 ft	8 ft swales	In swale	5 ft	None	Swale
	<b>Local Curbed</b>	50-60 ft	34-38 ft	5 ft buffer	7-8 ft.	5 ft	None	Buffer strip
	<b>Collector Uncurbed</b>	50-60 ft	28-32 ft	8 ft swales	In swale	5-ft	4-6 ft	Swale
	<b>Collector Curbed</b>	50-60 ft	44-48 ft	None	7-8 ft.	5-ft	5-6 ft	Parking lane
	<b>Alleys<sup>6</sup></b>	20 ft.	20 ft.	None	None	None	None	N/A
<b>Industrial</b>	<b>Local</b>	50-60 ft	24-28 ft	5 ft buffer	None	5-ft	None	Buffer strip
	<b>Collector</b>	70-80 ft	36-48 ft. <sup>7</sup>	None	Optional	5 ft	6 ft	Center median
	<b>Arterial</b>	80-90 ft	36-48	None	None	10 ft	6 ft	Center median
<b>Commercial</b>	<b>Collector</b>	60-70 ft	36-48 ft	None	Both sides <sup>8</sup>	10 ft	Optional	Center median

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

<u>Arterial</u>	<u>80-90 ft</u>	<u>36-48 ft</u>	<u>None</u>	<u>None</u>	<u>10 ft</u>	<u>6 ft</u>	<u>Center median</u>
-----------------	-----------------	-----------------	-------------	-------------	--------------	-------------	----------------------

1. All mailboxes, utility vaults, sign poles and similar features shall be located within the swale or buffer. Swales and buffers shall be located on both sides of the street. The City encourages mailboxes to be grouped in a central location by block.
2. Parking may be on one or both sides of the street.
3. Sidewalks shall be located on both sides of the street. Five feet is the minimum; sidewalks may be wider.
4. Bike lanes shall be located on both sides of the street.
5. Setbacks may be needed to accommodate utility poles, retaining walls, etc. Needed setback widths shall be taken as noted in this column and not from sidewalk width
6. Alleys in all zones have the same requirements.
7. Includes center turn lane where needed
8. Includes parking bays and curb extensions.

**Finding:** The recommended street standards are based on the public and Staff input that the existing street standards are not sufficiently flexible to allow the retrofit of certain roadways, such as Birch Street, to increase pedestrian access and safety. The recommended standards increase flexibility and make improvements to all streets more feasible. (Note: Umatilla County will need to adopt these street standards for Birch Street and 4<sup>th</sup> Street.)

→ **Revise Page 30:**

**LOCAL STREET STANDARDS**

- ~~1. Local Streets. The standard for a local residential street shall be a 28-foot roadway with parking on both sides. A roadway width of 24 can be used with parking on one side. Five-foot wide sidewalks shall be provided on each side of the roadway, located one foot from the right-of-way line to provide a five-foot planting strip.~~
1. Residential Streets. Residential streets may be curbed or uncurbed.
  - A. Local Uncurbed. All new uncurbed residential local streets shall be a 50-60 ft- right of way with a paved roadway of 20-24 ft. A drainage swale shall be provided on each side of the street for the location of off-street parking, mailboxes, sign poles and other street furniture. Sidewalks shall be provided on both sides of the street. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; with width taken from drainage swale.
  - B. Local Curbed. All new curbed residential local streets shall be a 50- 60 ft right of way with a paved roadway of 34-38 ft; parking shall be permitted on one or both sides (may be staggered to create passing areas). Where there is sufficient right-of-way, a buffer strip shall be provided on each side for the location of mailboxes, sign poles and other street furniture. Sidewalks shall be provided on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from buffer strip.
- ~~2. Collectors. All new collectors shall include two 10-foot travel lanes, two 5-foot bicycle lanes, and parking on both sides of the street. The roadway can also be striped to provide two travel lanes plus left turn lanes at intersections or driveways by removing parking for short distances. Four-foot sidewalks shall be provided on one side of the roadway. In commercial or business areas, the sidewalks shall be a minimum of eight feet wide and may be located adjacent to the curb to facilitate loading and unloading at the curb.~~



**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

---

- C. Collector Uncurbed.** All new uncurbed residential collector streets shall be a 50-60 ft right of way with a paved roadway of 28-32 ft total with bike lanes and swales. Sidewalks shall be provided on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from parking lane.
- D. Collector Curbed.** All new curbed residential collectors shall be a 50-60 ft right of way with a paved roadway of 44-48 ft, bike lanes, parking lanes and sidewalks on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from parking lane.
- 2. Industrial Streets are located in the Industrial Zone and are designed to accommodate larger trucks.**

  - A. Local Industrial.** All new local industrial streets shall be 50-60 ft right of way with a paved roadway width of 24-28 ft, no parking required. Buffer strip shall be provided on both sides for placement of mailboxes, sign poles and other street furniture. Sidewalks shall be provided on both sides.
  - B. Collector Industrial.** All new collector industrial streets shall be 70-80 ft right of way with a paved roadway of 36-48 ft total, optional center turn lane depending on expected truck access needs or median (optional), bike lanes; no parking permitted. Sidewalks shall be provided on both sides.
  - C. Arterial Industrial.** All new industrial arterials shall be 80-90 ft right of way with a paved roadway of 36-48 ft total, optional center turn lane depending on expected truck access needs or median (optional), bike lanes; no parking permitted. Sidewalks shall be provided on both sides.
- 3. Commercial Streets are located in the Commercial Zone and are designed for commercial traffic.**

  - A. Commercial Local.** All new commercial local streets shall be a 50- 60 ft right of way with a paved roadway of 34-38 ft; parking on both sides. Sidewalks shall be provided on both sides.
  - B. Collector Commercial Streets.** All new commercial collector streets shall have a right of way of 60-70 ft with a paved roadway of 36-48 ft total, bike lanes optional, on-street parking both sides, sidewalks shall be provided on both sides of the street .
  - C. Arterial Commercial.** All new commercial arterials shall be 80-90 ft right of way with a paved roadway of 36-48 ft total, optional center turn lane depending on expected access needs, bike lanes; parking both sides. Sidewalks shall be provided on both sides.

3-4. Arterials. All new arterials shall have two 11-12 foot ....

**Findings:** The recommended street standards are based on the public and Staff input that the existing street standards are not sufficiently flexible to allow the retrofit of certain roadways, such as Birch Street, to increase pedestrian access and safety. The recommended standards increase flexibility and make improvements to all streets more feasible. In particular, the lack of a city-wide storm drainage system makes curbed streets difficult to implement and a swale-type cross-section desirable.

→ Revise page 42:

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

4.6 Curbs, Gutters and Sidewalks

(1) REQUIRED IMPROVEMENTS.

(b) Sidewalks shall be included within the dedicated non-pavement right-of-way of all streets as given in Table 2. ~~Sidewalks may be required at the discretion of the City Council on local or residential streets.~~

**Findings:** This change corrects the existing code's inconsistencies regarding sidewalk requirements. The City has a goal of enforcing the pedestrian-friendly environment of the existing infrastructure with new projects; requiring that sidewalks be included is necessary to support this goal. The Transportation Planning Rule also requires sidewalks on all streets, including local or residential streets.

➔ **Revise Tables 1 and 2 on page 49 and 50:**

**TABLE 1  
MINIMUM DESIGN STANDARDS FOR ROADS**

	Residential	<u>Commercial/ Business-Industrial</u>
<u>Minimum Right of Way Width (in feet)</u>		
Arterial Street	80 <del>None</del>	80- 80-90
Collector Street	60-50-60	60 <u>80</u>
Local Street	50-50-60	<u>50-60</u>
<u>Minimum Surfaced Width (in feet) <sup>1</sup></u>		
Arterial Street	50 <del>None</del>	62- <u>36-48</u>
Collector Street	40	<u>46</u>
▪ <u>Uncurbed</u>	<del>28-32</del>	<u>Not applicable</u>
▪ <u>Curbed</u>	<del>44-48</del>	<u>36-48 ft</u>
Local Street	38	48
▪ <u>Uncurbed</u>	38-20-24	48 <u>Not applicable</u>
▪ <u>Curbed</u>	<u>34-38</u>	<u>34-38ft</u>
Alleys	20	24 <u>30</u>

*All other sections of Table 1 remain unchanged.*

**1. Includes bike lanes and/or paved parking strips**

**TABLE 2  
SIDEWALKS REQUIRED**

Type of Street	Residential	<u>Business Commercial-Industrial</u>
Local	<u>Optional<sup>2</sup> Both sides five (5) ft min.</u>	<u>Both sides, five (5) ft min</u>
Collector Street	<u>Optional<sup>2</sup> Both sides five (5) ft min.</u>	<u>Industrial: Both sides, five (5) ft min</u> <u>Commercial: Both sides 10 ft min</u>
Arterials	Both sides four (4) <del>ten</del> (10) ft min	Both sides five (5) <del>ten</del> (10) ft min.

• NOTE: Optional but where provided by the developer or required by the City Council, five (5) feet minimum on one side of the road with concrete curbs and gutters.

**Findings:** Changes to these two tables are needed in order to make it consistent with the Road Standards and the rest of the Code. Sidewalks should not be optional, as discussed above.

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

**4. TRANSPORTATION SYSTEM PLAN**

The City of Pilot Rock updated the Transportation System Plan (TSP) in 2001. For the most part, the TSP provides the City with adequate guidance for its transportation future. However, the following changes are needed to bring the TSP into conformance with the revised street standards proposed herein as well as the projects described in the Pilot Rock Pedestrian and Bicycle Plan.

→ Revise Table 7-3:

**TABLE 7-3  
RECOMMENDED STREET DESIGN STANDARDS**

Classification	Pavement Width	Right-of-Way Width	Sidewalks	Bike Lanes	Min. Posted Speed
Arterial—Option 1	62 ft.	100 ft.	5 ft. (both sides)	6 ft. (both sides)	25-45 mph
Arterial—Option 2	50 ft.	80 ft.	5 ft. (both sides)	6 ft. (both sides)	25-45 mph
Major Collector	38 ft.	60 ft.	5 ft. (both sides)	6 ft. (both sides)	25-35 mph
Minor Collector—Option 1	38 ft.	60 ft.	5 ft. (both sides)	none	25-35 mph
Minor Collector—Option 2	30 ft.	60 ft.	5 ft. (both sides)	none	25-35 mph
Industrial/Commercial (Collector or Local)	40 ft.	60 ft.	5 ft. (both sides)	collector—6 ft. local—none	25-35 mph
Residential (Local)—Option 1	20 ft.	50 ft.	5 ft. (both sides)	none	15-25 mph
Residential (Local)—Option 2	28 ft.	50 ft.	5 ft. (both sides)	none	15-25 mph
Residential (Local)—Option 3	34 ft.	50 ft.	5 ft. (both sides)	none	15-25 mph
Alley	20 ft.	20 ft.	none	none	15 mph

Zone	Road Type	ROW	Pavement Width Min.-Max.	Swale/ Buffer Minimum <sup>1</sup>	Parking <sup>2</sup>	Sidewalks <sup>3</sup> Minimum	Bike Lanes <sup>4</sup> Min.-Max.	Posted Speed
Residential	Local Uncurbed	50-60 ft	20-24 ft	8 ft swales	In swale	5 ft	None	15-25 mph
	Local Curbed	50-60 ft	34-38 ft	5 ft buffer	7-8 ft.	5 ft	None	15-25 mph
	Collector Uncurbed	50-60 ft	28-32 ft	8 ft swales	In swale	5-ft	4-6 ft	15-25 mph
	Collector Curbed	50-60 ft	44-48 ft	None	7-8 ft.	5-ft	5-6 ft	15-25 mph
	Alleys <sup>5</sup>	20 ft.	20 ft.	None	None	None	None	10 mph
Industrial	Local	50-60 ft	24-28 ft	5 ft buffer	None	5-ft	None	15-25 mph
	Collector	70-80 ft	36-48 ft. <sup>7</sup>	None	Optional	5 ft	6 ft	25-35 mph
	Arterial	80-90 ft	36-48	None	None	10 ft	6 ft	25-35 mph
Commercial	Collector	60-70 ft	36-48 ft	None	Both sides <sup>8</sup>	10 ft	Optional	25-35 mph
	Arterial	80-90 ft	36-48 ft	None	None	10 ft	6 ft	25-35 mph

1. All mailboxes, utility vaults, sign poles and similar features shall be located within the swale or buffer. Swales and buffers shall be located on both sides of the street. The City encourages mailboxes to be grouped in a central location by block.
2. Parking may be on one or both sides of the street.
3. Sidewalks shall be located on both sides of the street. Five feet is the minimum; sidewalks may be wider.
4. Bike lanes shall be located on both sides of the street.

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

---

5. Setbacks may be needed to accommodate utility poles, retaining walls, etc. Needed setback widths shall be taken as noted in this column and not from sidewalk width
6. Alleys in all zones have the same requirements.
7. Includes center turn lane where needed
8. Includes parking bays and curb extensions.

→ Revise Text on pages 7-4 through 7-5:

*Residential Streets (Local)*

The design of a residential local street affects its traffic operation, safety, and livability. The residential street should be designed to enhance the livability of the neighborhood while accommodating less than 1,200 vehicles per day. Design speeds should be 15 to 25 mph. When traffic volumes exceed approximately 1,000 to 1,200 vehicles per day, the residents on that street will perceive the traffic as a noise and safety problem. To maintain neighborhoods, residential streets should be designed to encourage low speed travel and to discourage through traffic. Narrower streets discourage speeding and through traffic as well as improve neighborhood aesthetics. They also reduce right-of-way needs, construction costs, storm water run-off, and the need to clear vegetation.

Three Recommended local street standard options are ~~provided for local streets, as shown in Figure 7-1 (revised 4/05).~~ Each option provides a minimum of 20 feet of pavement and provides varying degrees of on-street parking. The city should choose one of these options for each residential local street based on the existing right-of-way, zoning, and neighborhood character.

*Option-1*

~~This first option for a local residential street is a 20 foot paved roadway surface within a 50 foot right of way. This standard will accommodate passage of one lane of moving traffic in each direction, with 8 foot wide gravel shoulders on both sides of the street for parking. Five foot sidewalks should also be provided on each side of the roadway.~~

*Option-2*

~~This option provides a 28 foot paved roadway surface within a 50 foot right of way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking on one side. Five foot sidewalks should be provided on each side of the roadway, adjacent to the curb.~~

*Option-3*

~~A third option for a residential street provides a 34 foot paved roadway within a 50 foot right of way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking present along both sides of the road. Five foot wide sidewalks should be provided on the roadway, adjacent to the curb.~~

**Option 1. Local Residential Uncurbed. All new uncurbed residential local streets shall be a 50-60 ft- right of way with a paved roadway of 20-24 ft. total. A drainage swale shall be provided on each side of the street for the location of off-street parking, mailboxes, sign poles and other street furni-**

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

---

ture. Sidewalks shall be provided on both sides of the street. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; with width taken from drainage swale.

Option 2. Local Residential Curbed. All new curbed residential local streets shall be a 50-60 ft right of way with a paved roadway of 34-38 ft; parking shall be permitted on one or both sides (may be staggered to create passing areas). A buffer strip shall be provided on each side for the location of mailboxes, sign poles and other street furniture. Sidewalks shall be provided on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from buffer strip.

Option 3. Local Industrial. All new local industrial streets shall be 50-60 ft right of way with a paved roadway width of 24-28 ft; parking optional. Buffer strip shall be provided on both sides each for placement of mailboxes, sign poles and other street furniture. Sidewalks shall be provided on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from buffer strip.

#### *Alleys*

Alleys can be a useful way to diminish street width by providing rear access and parking to residential, commercial, and industrial areas. Including alleys in a residential subdivision allows homes to be placed closer to the street and eliminates the need for garages to be the dominant architectural feature. This pattern, once common, has been recently revived as a way to build better neighborhoods. In addition, alleys can be useful in commercial and industrial areas, allowing access for delivery trucks which is off the main streets. Alleys should be encouraged in the urban area of Pilot Rock. Alleys should be 20 feet wide, with a 20 foot right-of-way (see Figure 7-1 revised 3/05).

#### Cul-de-Sac Streets

Cul-de-sac, or "dead-end" residential streets are intended to serve only the adjacent land in residential neighborhoods. These streets should be short (less than 400 feet long) and serve a maximum of 20 single-family houses. ~~Because the streets are short and the traffic volumes relatively low, the street width can be narrower than a standard residential street, allowing for the passage of two lanes of traffic when no vehicles are parked at the curb and one lane of traffic when vehicles are parked at the curb.~~

Because cul-de-sac streets limit street and neighborhood connectivity, they should only be used where topographical or other environmental constraints prevent street connections. Where cul-de-sacs must be used, pedestrian and bicycle connections to adjacent cul-de-sacs or through streets should be included.

#### Collector Streets

Collectors are intended to carry between 1,200 and 10,000 vehicles per day, including limited through traffic, at a design speed of 25 to 35 mph. A collector can serve residential, commercial, industrial, or mixed land uses. Collectors are primarily intended to serve local access needs of residential neighborhoods by connecting local streets to arterials. Bike lanes are typically not needed in smaller cities like Pilot Rock due to slower traffic speeds and low traffic volumes.

Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan

---

Four recommended street standard options are provided for Collectors may be located in the residential, commercial, or industrial zones. Residential collectors may be curbed or uncurbed, as shown in Figure 7-2 (revised 3/05). All four options provide one lane of moving traffic in each direction. In industrial and commercial zones, collectors can be striped to provide two travel lanes plus left-turn lanes at intersections or driveways by removing parking for short distances. One of the options is intended for industrial/business areas. This option would be appropriate for the Cedar Street/Circle Street route north of its intersection with US 395. The City should choose which option is most appropriate for each collector based on the existing right-of-way, zoning, and neighborhood character.

**Residential Collector Uncurbed.** All new uncurbed residential collector streets shall be a 50-60 ft right of way with a paved roadway of 28-32 ft total; with bike lanes, swales and sidewalks on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from parking lane.

**Residential Collector Curbed.** All new curbed residential collectors shall be a 50-60 ft right of way with a paved roadway of 44-48 ft., bike lanes, parking lanes and sidewalk provided on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from parking lane.

**Industrial Collector.** All new collector industrial streets shall be 70-80 ft right of way with a paved roadway of 36-48 ft total, center turn lane (optional depending on expected truck access needs) or median (optional), bike lanes; parking optional, sidewalks provided on both sides. Setback from property line shall be provided as needed to accommodate utility poles, retaining walls, etc.; width taken from center median.

**Commercial Collector Streets.** All new commercial collector streets shall have a right of way of 60-70 ft with a paved roadway of 36-48 ft total, bike lanes, parking bays inside curb extensions optional, and sidewalks be provided on both sides of the street.

***Major-Collector***

This option provides a 46-foot paved roadway surface within a 70-foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking on both sides of the street. Five-foot sidewalks should be provided on each side of the roadway along with an optional planting strip with a width up to 5 feet.

***Minor-Collector—Option 1***

This option is similar to the major collector. It also provides a 38-foot paved roadway surface within a 60-foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside parking on both sides of the street. Five-foot sidewalks should be provided on each side of the roadway along with an optional planting strip with a width up to 5 feet.

***Minor-Collector—Option 2***

This option provides a 30-foot roadway surface within a 60-foot right-of-way. This standard will accommodate passage of one lane of moving traffic in each direction, with curbside

Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan

---

~~parking on one side. Five foot sidewalks should be provided on each side of the roadway, adjacent to the curb.~~

*Industrial/Commercial Collector or Local Street*

~~This option calls for a 60-foot right-of-way and a 40-foot paved width. The 40-foot curb face-to-curb face distance allows two 14-foot travel lanes and two 6-foot wide bicycle lanes. Five foot sidewalks shall be provided on each side of the roadway and a 5-foot wide planting strip is optional. In areas where truck loading and unloading is necessary, the sidewalks can be widened to 8 feet and located adjacent to the curb (see Figure 7-3).~~

~~The industrial/commercial street in a residential area has the same design standards except that bicycle lanes are optional.~~

→ Delete Sections entitled "Pedestrian Plan" and "Bicycle System Plan" on pages 7-11 through 7-13:

Pedestrian System Plan

~~A complete interconnected pedestrian system should be implemented in the City when feasible. A sidewalk inventory revealed that Pilot Rock's urban core has a fairly developed sidewalk system. Sidewalks exist through the downtown area on both sides of US 395, Main Street, 2nd Street, and 3rd Street. Unfortunately, many of these sidewalks are in poor condition and curb cuts for wheelchairs are lacking. Crosswalks exist at three intersections and pedestrian bridges traverse the City's creeks in six locations. Every paved street should have sidewalks on both sides of the roadway, except in extenuating circumstances, meeting the requirements set forth in the recommended street standards. Pedestrian access on walkways should be provided continuously between businesses, parks, and adjacent neighborhoods. (Ordinances specifying these requirements are included in Chapter 9.)~~

~~Because of the small size of Pilot Rock and the limited public resources available for transportation system improvements, sidewalk construction on a large scale may not be feasible. However, the City should require sidewalks to be constructed as part of any major roadway improvements, or as adjacent land is developed.~~

~~The primary goal of establishing a pedestrian system is to improve pedestrian safety; however, an effective sidewalk system has several qualitative benefits as well. Providing adequate pedestrian facilities increases the livability of a city. When pedestrians can walk on a sidewalk, separated from vehicular street traffic, it makes the walking experience more enjoyable and may encourage walking, rather than driving, for short trips. Sidewalks enliven a downtown and encourage leisurely strolling and window shopping in commercial areas. This "Main Street" effect improves business for downtown merchants and provides opportunities for friendly interaction among residents. It may also have an appeal to tourists as an inviting place to stop and walk around.~~

~~The cost to construct a concrete sidewalk facility is around \$25 per linear foot. This assumes a sidewalk width of 5 feet with curbing. The cost estimate also assumes the sidewalks are composed of 4 inches of concrete and 6 inches of aggregate. As an alternative, asphalt walkways could be provided instead of a concrete sidewalk at a lower initial cost. Construction costs for~~

**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

this type of facility are typically about 40 percent of the costs for concrete sidewalks; however, maintenance, such as sealing and resurfacing the asphalt, must occur more frequently.

All new sidewalk construction in the City should include curb cuts for wheelchairs at every street corner to comply with the Americans with Disabilities Act (ADA). The addition of crosswalks should also be considered at all major intersections. As street improvements are made to the existing street system, projects involving the construction of new sidewalks may require on-street parking to be implemented in place of parking on grass or gravel shoulders.

In Chapter 6, four pedestrian-related projects were identified. These projects include: providing safety measures at the intersection of US 395 and Main Street, constructing sidewalks along US 395, replacing a pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street, and replacing a pedestrian bridge over East Birch Creek between the city park and Alder Street. These projects are summarized below in Table 7-6.

**TABLE 7-6  
RECOMMENDED PEDESTRIAN SYSTEM PROJECTS**

Project Number	Location/Description	Cost
4.	Replace pedestrian bridge over West Birch Creek between Delwood Street and South 6th Street.	\$7,500
6.	Construct bike lanes along US 395.	\$154,800
<b>Total</b>		<b>\$162,300</b>

Bicycle System Plan

On the collector and local streets in Pilot Rock, bicyclists share normal vehicle lanes with motorists. Due to low travel speeds and traffic volumes observed in the City shared usage of the roadway between bicyclists and automobiles is appropriate. However, on highways such as US 395, where travel speeds and traffic volumes are much higher, the need to separate bicyclists from highway traffic becomes an issue. US 395 functions as an arterial through Pilot Rock. The *Oregon Bicycle and Pedestrian Plan* recommends that for a facility such as this, a shoulder bikeway should be present. Existing shoulder widths along the highway in the vicinity of Pilot Rock range between 4 feet to over 6 feet. Street standards recommended in this Plan call for 6 foot wide bike lanes on arterial streets.

The only major bicycle project that has been identified for Pilot Rock involves creating bike lanes along US 395 within the city limits. Installation of bicycle lanes within the city limits would involve striping in some areas and minimal widening of highway shoulders in others. As is the case for the sidewalk project along the highway discussed above, the bicycle lanes could be installed as part of the US 395 highway preservation project, currently listed on the 2000-2003 STIP Update. This project (assigned as Project No. 14) is considered medium priority and is estimated to cost \$154,800.

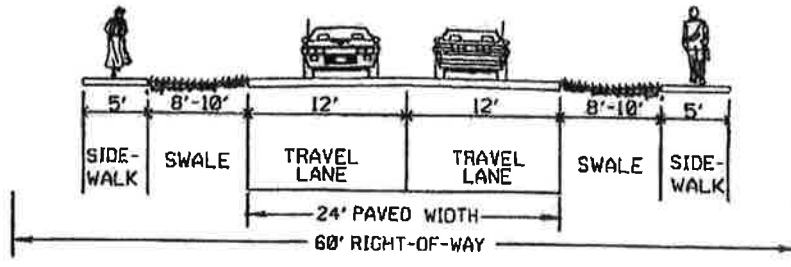
In addition, bicycle parking is lacking in Pilot Rock. Bike racks should be installed in front of downtown businesses and all public facilities (schools, post office, library, city hall, and parks). Typical rack designs cost about \$50 per bike plus installation. An annual budget of approximately \$1,500 to \$2,000 should be established so that Pilot Rock can begin to place racks where needs are identified and to respond to requests for racks at specific locations. Bicycle parking requirements are further addressed in Chapter 9 (Policies and Ordinances).



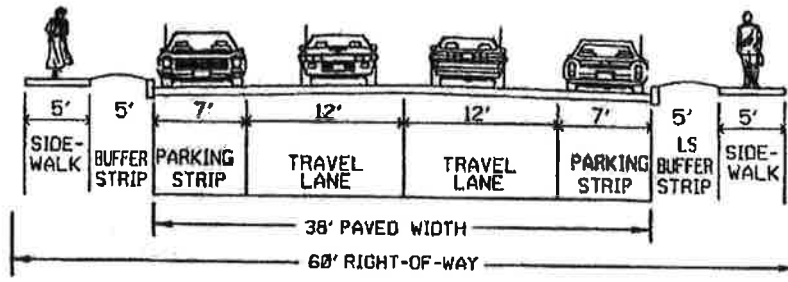
**Findings & Recommended Revisions to Pilot Rock Code Comprehensive Plan, Zoning & Subdivision Ordinances, and Transportation System Plan**

---

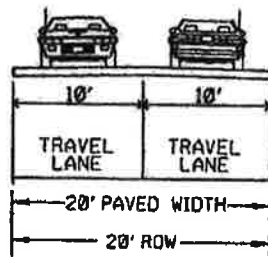
**For pedestrian and bicycle system plan implementation, refer to the City of Pilot Rock's Pedestrian and Bicycle Plan, adopted on XXX, 2005.**



UNCURBED RESIDENTIAL LOCAL



CURBED, PARKING ON ONE OR BOTH SIDES  
RESIDENTIAL LOCAL



ALLEYS

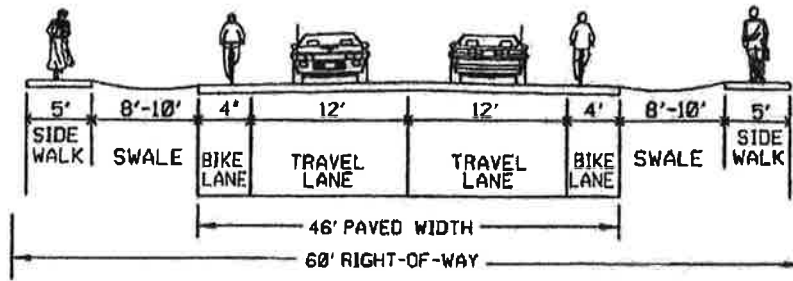
**DAVID EVANS  
AND ASSOCIATES, INC.**  
2828 S.W. CORBETT AVENUE  
PORTLAND, OR 97202-4830 (503) 223-6663



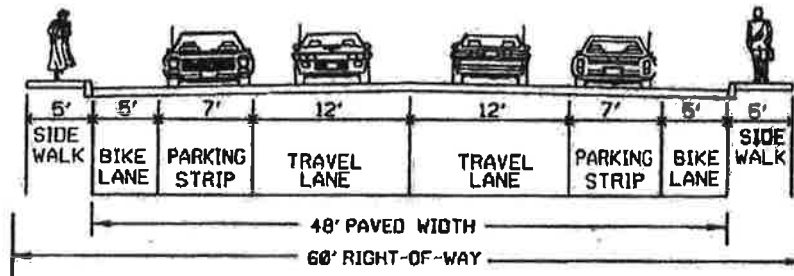
FIGURE 7-1 (REVISED 1/05)

Street Standards  
Local Residential and Alleys

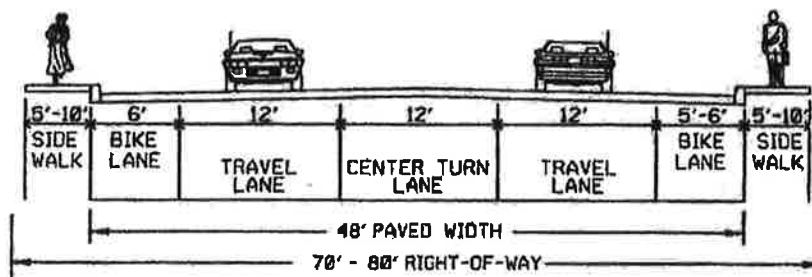
City of Pilot Rock TSP



UNCURBED RESIDENTIAL COLLECTOR



CURBED RESIDENTIAL COLLECTOR



INDUSTRIAL / COMMERCIAL COLLECTOR

FIGURE 7-2 (REVISED 1/05)

## Street Standards Collector Streets

City of Pilot Rock TSP



DAVID EVANS  
AND ASSOCIATES, INC.  
2828 S.W. CORBETT AVENUE  
PORTLAND, OR 97201-4830 (503) 229-6663

## *Glossary*

---

# Appendix

- AASHTO – American Association of State Highway and Transportation Officials.  
They publish national road and bicycle facility design guidelines which have been used by the State with modifications.
- ADA – The Americans with Disabilities Act. Civil rights legislation passed in 1990, became effective July 1992.
- ADAAG – Americans with Disabilities Act Accessibility Guide.
- ADT – Average daily traffic. The average traffic volume in both directions of travel at a given point on a road.
- Arterial street – A higher classification of street designated to carry traffic, mostly uninterrupted, through an urban area, or to different neighborhoods within an urban area. Arterial streets may be further broken down into major and minor categories, major often referring to State highways.
- Bicycle – A vehicle having two tandem wheels, a minimum of 14 inches in diameter, propelled solely by human power, upon which any person or persons may ride. Three-wheeled adult tricycles and four-wheeled quadracycles are considered bicycles; tricycles for children are not.
- Bicycle facilities – A general term denoting improvements and provisions made to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically designated for bicycle use.
- Bicycle lane (or bike lane) – A portion of the roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.
- Bikeway – A generic term for a facility that is created when a road has the appropriate design treatment for bicyclists, based on motor vehicle traffic volumes and speeds; shared roadway, shoulder bikeway and bike are the most common. Another type of facility is separated from the roadway: multi-use path.
- BPAC – Bicycle and Pedestrian Advisory Committee.
- BID – Business Improvement District.
- CBD – Central business district. A traditional downtown area usually characterized by established businesses fronting the street, sidewalks, slow traffic speeds on-street parking and a compact grid system.
- CDBG – Community Development Block Grant
- CENWP – Corps of Engineers, Portland District
- CENWW – Corps of Engineers, Walla Walla District
- CIP – Capital Improvement Program
- Collector street – A street designated to carry traffic between local streets and arterials, or from local street to local street.
- CPTED – Crime Prevention Through Environmental Design.
- Cross-slope – Lateral slope across a road or path, typically designed for drainage.

Crosswalk – Portion of a roadway designated for pedestrian crossing, marked or unmarked. Unmarked crosswalks are the natural extension of the shoulder, curb line or sidewalk.

EID – Economic Improvement District

Enhancement funds – Set aside funds for certain transportation projects including bicycle and pedestrian facilities and paths.

DLCD – Department of Land Conservation and Development.

Grade – A measure of the steepness of a roadway, bikeway or walkway, expressed as a ratio of vertical rise per horizontal distance, usually in%. For example, a 5% grade equals a 5 unit rise over a 100 unit horizontal distance.

Grade separation – The vertical separation of conflicting travelways with a structure. Overpasses and tunnels are examples of common grade separations used to avoid conflicts.

Interchange – A system of interconnecting roadways providing for traffic movement between two or more highways that are grade separated.

LID – Local Improvement District.

Local street – A street designated to provide access to and from residences and businesses.

MOU – Memorandum of Understanding.

MP – Milepost.

Multi-use path – A path physically separated from motor vehicle traffic by an open space or barrier and either within a highway right-of-way or within an independent right-of-way, used by bicyclists, pedestrians, joggers, skaters and other non-motorized travelers. Sometimes called a shared-use path.

MUTCD – Manual on Uniform Traffic Control Devices. The national standard, approved by the Federal Highway Administration, for selection and placement of all traffic control devices on or adjacent to all highways open to public travel.

O&C – Opportunities and constraints.

ODOT – Oregon Department of Transportation.

OECDD – Oregon Economic and Community Development Department

ORS – Oregon Revised Statute, the laws that govern the state of Oregon, as proposed by the legislature and signed by the Governor.

OTC – Oregon Transportation Commission, a five-member, Governor-appointed commission, whose primary duty is to develop and maintain a state transportation policy and a comprehensive, long-term plan for a multimodal transportation system.

OTIB – Oregon Transportation Infrastructure Bank

OTP – Oregon Transportation Plan.

Path (or pathway) – a sidewalk, trail or shared-use path.

Paved shoulder – The portion of a shoulder which is paved.

Pavement markings – Painted or applied lines or legends placed on a roadway surface for regulating, guiding or warning traffic.

Pedestrian – A person on foot, in a wheelchair, or walking a bicycle.

Pedestrian facilities – A general term denoting improvements and provisions made by public agencies to accommodate or encourage walking, including walkways, crosswalks, signs, signals, illumination and benches. -

Rail trail – A shared use path, either paved or unpaved, built within the right-of-way of an existing or former railroad.

Rail with trail – A shared-use path, either paved or unpaved, built within the right-of-way of an active railroad.

Right-of-way – A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Roadway – The paved portion of the road.

Shared roadway – A type of bikeway where bicyclists and motor vehicles share a travel lane.

SDC – System Development Charge.

SHPO – State Historic Preservation Office.

Shoulder – The portion of a road that is contiguous to the travel lanes and provided for pedestrians, bicyclists, emergency use by vehicles and for lateral support of base and surface courses.

Shoulder bikeway – A type of bikeway where bicyclists travel on a paved shoulder.

Sidewalk – A walkway separated from the roadway with a curb, constructed of a durable, hard and smooth surface, designed for preferential or exclusive use by pedestrians.

STIP – State Transportation Improvement Program

TEA-21 – Transportation Efficiency Act for the 21st Century. Federal legislation that guides the expenditure of federal highway funds from 1998 through 2002, replaced ISTEA.

TPR – Transportation Planning Rule 12 (OAR 660-12).

Traffic – Pedestrians, ridden or herded animals, vehicles, streetcars and other conveyances either singly or together while using any highway for purposes of travel.

Traffic volume (see ADT) – The given number of vehicles that pass a given point for a given amount of time (hour, day, year).

Trail – a path of travel within a park, natural environment or designated corridor.

Travelway (also traveled way) – The portion of a roadway provided for the movement of vehicles, exclusive of shoulders.

TSP – Transportation System Plan, the overall plan for all transportation modes for the City

UGB – Urban Growth Boundary, the area surrounding an incorporated city in which the city may legally expand its city limits.

URD – Urban Renewal District.

USACE – US Army Corps of Engineers.

USGS – United States Geological Survey.

Vehicle – Every device in, upon or by which any person or property is or may be transported or drawn upon a highway, including vehicles that are self-propelled or powered by any means.

**Walkway** – A transportation facility built for use by pedestrians, including persons in wheelchairs. Walkways include sidewalks, paths and paved shoulders.

**Wide curb lane (also wide outside lane)** – A wide travel lane adjacent to a curb, parking lane or shoulder provided for ease of bicycle operation where there is insufficient room for a bike lane or shoulder bikeway



