

TRANSPORTATION SYSTEMS PLAN

City of Cascade Locks, Oregon



TABLE OF CONTENTS
Revised Draft – November 1, 2001

	Page
INTRODUCTION.....	vii
1. PLANS AND STUDIES	1-1
1.1 INTRODUCTION	1-1
1.2 PLANS AND STUDIES AFFECTING ALL JURISDICTIONS IN HOOD RIVER COUNTY.....	1-1
1.2.1 Federal and Statewide Plans and Studies	1-1
1.3 PLANS FOR THE CITY OF CASCADE LOCKS	1-5
1.3.1 City of Cascade Locks Comprehensive Plan (May 2001)	1-5
1.3.2 City of Cascade Locks Design Handbook for a Downtown Street Theme (September 1992)	1-6
1.3.3 Resource Team Report for Cascade Locks, OR (October 1998)	1-6
1.3.4 Cascade Locks Housing Study (September 1997)	1-8
1.3.5 Cascade Locks Street Design Standards	1-8
1.3.6 Comprehensive Economic Development Plan for the City of Cascade Locks (1995).....	1-8
1.3.7 Finding of Compliance with Statewide Planning Goals and Acknowledged Plan Policies...	1-9
2. COMMUNITY INVOLVEMENT/GOALS AND OBJECTIVES	2-1
2.1 INTRODUCTION	2-1
2.2 ROLE/FUNCTIONS	2-1
2.3 ASSUMPTIONS.....	2-1
2.4 COMMUNITY AND AGENCY INVOLVEMENT	2-1
2.4.1 Project Management Team.....	2-2
2.4.2 Technical Advisory Committee	2-2
2.4.3 Issues Survey	2-2
2.4.4 Project Newsletters.....	2-2
2.4.5 Open Houses.....	2-2
2.4.6 Agency Review	2-3
2.4.7 Other	2-3
2.5 GOALS, POLICIES, AND IMPLEMENTATION STRATAGIES FOR CITY OF CASCADE LOCKS ..	2-3
2.5.1 Goal A. Transportation Balance.....	2-3
2.5.2 Goal B. Regional Connectivity	2-7
2.5.3 Goal C. Highway Congestion.....	2-7
2.5.4 Goal D. Roadway Conditions.....	2-8
2.5.5 Goal E. Safety.....	2-8
2.5.6 Goal F. Environmental and Energy Impacts	2-9
2.5.7 Goal G. Social and Land Use Impacts	2-10
2.5.8 Goal H. Economic Impacts	2-10
2.5.9 Goal I: Funding	2-11

TABLE OF CONTENTS

	Page
3. CURRENT CONDITIONS.....	3-1
3.1 INTRODUCTION	3-1
3.2 URBAN AND CULTURAL FEATURES	3-1
3.3 HIGHWAY SYSTEM	3-2
3.3.1 Congestion.....	3-2
3.3.2 Safety.....	3-3
3.3.3 Pavement Conditions.....	3-4
3.4 RAIL SERVICE	3-5
3.4.1 Freight	3-5
3.4.2 Passenger Rail	3-5
3.5 AIR SERVICE.....	3-5
3.6 WATER TRANSPORTATION	3-5
3.7 TRANSIT	3-6
3.7.1 Local Service.....	3-6
3.7.2 Intercity Transit.....	3-6
3.8 BICYCLE	3-6
3.9 PEDESTRIANS.....	3-6
3.10 OIL AND GAS PIPELINES.....	3-7
3.11 INTERMODAL LINKS	3-7
3.12 POPULATION AND EMPLOYMENT	3-7
4. ACCESS MANAGEMENT	4-1
4.1 NEED FOR MANAGEMENT	4-1
4.2 ACCESS MANAGEMENT STRATEGIES AND TECHNIQUES.....	4-1
4.3 CURRENT ACCESS CONDITIONS	4-2
4.4 GENERAL ACCESS MANAGEMENT GUIDELINES FOR COLLECTOR AND LOCAL STREETS.....	4-3

TABLE OF CONTENTS

Page

5. TRAFFIC FORECASTS AND ANALYSIS	5-1
5.1 LAND USE.....	5-1
5.1.1 Historical Land Use.....	5-2
5.1.2 Projected Land Use	5-3
5.1.3 Work Trips	5-3
5.2 HISTORICAL HIGHWAY GROWTH TRENDS	5-3
5.3 TRAFFIC FORECASTING PROCESS	5-4
5.3.1 Through Traffic	5-4
5.3.2 Locally Generated Traffic	5-4
5.3.3 Trip Generation	5-5
5.3.4 Trip Distribution.....	5-5
5.3.5 Trip Assignment.....	5-5
5.4 FUTURE ANALYSES	5-6
5.4.1 Future Operating Conditions.....	5-6
5.4.2 2015 No-Build With Existing Street Network.....	5-6
5.4.3 2015 Build-Out With Existing Street Network.....	5-7
5.4.4 2015 Build-Out With Proposed Street Network	5-7
5.4.5 2015 Build-Out With Proposed Street Network and Proposed Interchange.....	6-1
6. TRANSPORTATION SYSTEM PLAN	6-1
6.1 CLASSIFICATION STANDARDS	6-2
6.2 STREET DESIGN STANDARDS	6-2
6.2.1 Local Residential Streets.....	6-4
6.2.2 Local Industrial Streets	6-5
6.2.3 Collector Streets	6-5
6.2.4 Minor Arterial Streets	6-6
6.2.5 Wa Na Pa Street	6-6
6.2.6 Alleys.....	6-6
6.2.7 Bike Lanes.....	6-7
6.2.8 Side Walks	6-7
6.2.9 Curb Parking Restrictions	6-7
6.2.10 Street Connectivity.....	6-7
6.3 ACCESS MANAGEMENT	6-7
6.3.1 Potential Access Management Techniques	6-7
6.3.2 Recommended Access Management Techniques	6-8
6.3.3 Access Management Guidelines	6-9
6.4 MODAL PLANS	6-10
6.4.1 Pedestrian System Plan	6-11
6.4.2 Bicycle System.....	6-13
6.4.3 Street System Plan.....	6-14

TABLE OF CONTENTS

	Page
6.5 TRANSPORTATION DEMAND MANAGEMENT PLAN	6-15
6.5.1 Alternative Work Schedules.....	6-15
6.5.2 Carpooling and Vanpooling	6-15
6.5.3 Bicycle/Pedestrian Facilities	6-16
6.5.4 Telecommuting.....	6-16
6.6 PUBLIC TRANSPORTATION PLAN	6-16
6.7 RAIL SERVICE PLAN	6-16
6.8 AIR SERVICE PLAN	6-17
6.9 PIPELINE SERVICE PLAN	6-17
6.10 TRUCK FREIGHT SERVICE PLAN	6-17
6.11 WATER TRANSPORT/PORTS SERVICE PLAN	6-17
6.12 TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM	6-18
 7. FUNDING	 7-1
7.1 PROJECT FUNDING IN THE CITY OF CASCADE LOCKS.....	7-1
7.1.1 City of Cascade Locks.....	7-1
7.1.2 Port of Cascade Locks.....	7-1
7.2 STATE FUNDING FOR PROJECTS IN HOOD RIVER COUNTY	7-1
7.3 PROJECT COSTS AND FUNDING IN THE CITY OF CASCADE LOCKS.....	7-2

APPENDICES

- A. Questionnaire Responses
- B. Access Management Strategies and Techniques

LIST OF TABLES

No.	Title	Page
3-1.	EXISTING V/C AND LOS OF ROADWAYS IN CASCADE LOCKS	3-3
4-1.	INTERSTATE 84 INTERCHANGE SPACING IN HOOD RIVER COUNTY	4-2
5-1.	CASCADE LOCKS POPULATION, EMPLOYMENT, AND HOUSING UNIT TRENDS	5-1
5-2.	TRIP ORIGINS FOR EMPLOYMENT WITHIN CASCADE LOCKS	5-3
5-3.	EMPLOYMENT DESTINATIONS FOR RESIDENTS OF CASCADE LOCKS	5-3
5-4.	PROPOSED DEVELOPMENT TRIP GENERATION	5-5
5-5.	DISTRIBUTION OF FUTURE TRIPS	5-5
5-6.	2015 NO-BUILD WITH EXISTING STREET NETWORK ESTIMATED V/C AND LOS OF STREET ROADWAYS IN CASCADE LOCKS	5-6
5-7.	2015 BUILD-OUT WITH EXISTING STREET NETWORK ESTIMATED V/C AND LOS STREET ROADWAYS IN CASCADE LOCKS	5-7
5-8.	2015 BUILD-OUT WITH PROPOSED STREET NETWORK ESTIMATED V/C AND LOS OF ROADWAYS IN CASCADE LOCKS	5-7
5-9.	2015 BUILD-OUT WITH PROPOSED STREET NETWORK AND PROPOSED INTERCHANGE ESTIMATED V/C AND LOS OF ROADWAYS IN CASCADE LOCKS	5-8
6-1.	STREET DESIGN STANDARDS	6-2
6-2.	ACCESS MANAGEMENT GUIDELINES	6-10
6-3.	RECOMMENDED SIDEWALK PROJECTS	6-12
6-4.	RECOMMENDED BIKEWAY PROJECTS	6-14
6-5.	RECOMMENDED ROADWAY IMPROVEMENT PROJECTS	6-12
7-1.	SUMMARY OF PROJECT COSTS IN THE CITY OF CASCADE LOCKS	7-2

LIST OF FIGURES

No.	Title	Follows Page
1-1.	PLANNING AREA.....	vii
3-1.	EXISTING STREET CLASSIFICATION.....	3-1
3-2.	1994 ADT VOLUMES.....	3-2
4-1.	ACCESS LOCATIONS SUMMARY.....	4-2
5-1.	2015 NO-BUILD ADT VOLUMES WITH EXISTING STREET NETWORK.....	5-4
5-2.	2015 BUILD-OUT ADT VOLUMES WITH EXISTING STREET NETWORK.....	5-6
5-3.	2015 BUILD-OUT ADT VOLUMES WITH PROPOSED STREET NETWORK.....	5-6
5-4.	2015 BUILD-OUT ADT VOLUMES WITH PROPOSED STREET NETWORK AND FOREST LN. INTERCHANGE.....	5-6
6-1.	PROPOSED FUTURE STREET CLASSIFICATION	6-1
6-2.	PROPOSED STREET DESIGN STANDARDS-LOCAL STREETS	6-1
6-3.	PROPOSED STREET DESIGN STANDARDS- INDUSTRIAL, COLLECTOR, AND ARTERIAL STREETS	6-1
6-4.	PROPOSED STREET DESIGN STANDARDS-CUL-DE-SAC.....	6-1
6-5.	PROPOSED STREET DESIGN STANDARDS-COMMERCIAL/INDUSTRIAL STREETS	6-1
6-5.	RECOMMENDED PEDESTRIAN PROJECTS	6-13
6-6.	RECOMMENDED BIKEWAY PROJECTS.....	6-13
6-7.	STREET IMPROVEMENT PROJECTS	6-14

INTRODUCTION

In the mid-1970s, Oregon adopted 19 statewide planning goals to be implemented through local comprehensive plans. The aim of Goal 12, Transportation, is "to provide and encourage a safe, convenient, and economic transportation system."

The City of Cascade Locks has updated the transportation element of their comprehensive plans according to the following guidelines set forth in Goal 12:

"A transportation plan shall (1) consider all modes of transportation including mass transit, air, water, pipeline, rail, highway, bicycle and pedestrian; (2) be based upon an inventory of local, regional, and state transportation needs; (3) consider the differences in social consequences that would result from utilizing differing combinations of transportation modes; (4) avoid principal reliance upon any one mode of transportation; (5) minimize adverse social, economic, and environmental impacts and costs; (6) conserve energy; (7) meet the needs of the transportation disadvantaged by improving transportation services; (8) facilitate the flow of goods and services so as to strengthen the local and regional economy; and (9) conform with local and regional comprehensive land use plans.

This Transportation System Plan (TSP) for the City of Cascade Locks will guide the management of existing transportation facilities and the design and implementation of transportation 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.

PLANNING AREA

The Cascade Locks planning area includes the entire urban growth boundary as illustrated in Figure 1-1. This encompasses all the land east of MP 43.4 on I-84 (a mile or so south of the Bridge of the Gods), the land west of MP 47.1 on I-84, the land south of the Columbia River (including Thunder Island and the southern half of the Bridge of the Gods), and all land north of I-84 plus areas to south of the highway near Moody Avenue, Ruckel Street, the Cascade Locks Port of Entry, and the electric substation.

PLAN ORGANIZATION

The TSP was developed through technical analysis combined with input and review by the City of Cascade Locks, a technical advisory committee, a project management team, and the public. This TSP was prepared as part of a coordinated effort involving the TAC, the City of Cascade Locks, Hood River County, the City of Hood River, and the Oregon Department of Transportation (ODOT). Key elements of this TSP include:

- Plans and Studies (Chapter 1)
- Community Involvement/Project Goals and Objectives (Chapter 2, Appendix A)
- Current Conditions (Chapter 3)
- Access Management (Chapter 4, Appendix B)
- Population/Employment and Traffic Forecasts (Chapter 5)
- Transportation Systems Plan (Chapter 6)
- Funding (Chapter 7)

REVIEW OF EXISTING PLANS AND POLICIES

Chapter 1 provides an overview of the existing plans and policies that will impact or guide the decision making process for this Transportation Systems Plan. These include city, county, and state policies and plans.

COMMUNITY INVOLVEMENT/GOALS AND OBJECTIVES

Community involvement was an important part of developing the TSP. Interaction with the community was achieved by holding open community meetings and forming a Management Team and a Transportation Advisory Committee (TAC). The Management Team and the Advisory Committee included representatives from the City of Cascade Locks, Hood River County, the City of Hood River, ODOT, and the public. These two groups were formed to provide guidance to the consultant, review work products, and aid the ~~county city~~ in making decisions regarding the TSP.

The open houses were held jointly in Cascade Locks and Hood River. One open house was held in each community and included discussion and inquiry about the countywide and community efforts. This enabled residents throughout the county to learn about and provide input on both rural and urban transportation issues. Through this process, both the county and the cities became better positioned to coordinate future transportation system projects.

Project goals, objectives, and implementation actions were developed for each jurisdiction early in the planning process by the Management Team and the Transportation Advisory Committee and reviewed by the general public. The goals and objectives were used to formulate and evaluate system improvements. The project goals and objectives are discussed in Chapter 2.

Review and Inventory of Existing Public Facilities and Conditions

To begin the planning process, existing plans and policies were reviewed and an inventory of public facilities was conducted. The purposes of these efforts were twofold. The review establishes the history of planning in the city, including how population and employment were projected and how those projections compare with current measurements, what street system improvements were planned and which were implemented, how other transportation facilities were planned and implemented, and how the county and the cities currently manage their ongoing development.

The inventory of existing facilities catalogs the current transportation system and identifies how that system currently operates. The results of the inventory are described in Chapter 3 (Current Transportation Conditions), while Chapter 6 (Transportation Improvement Projects) describes measures to address existing system deficiencies.

Access Management

Access management is a set of strategies to maintain acceptable levels of operation on the street networks in the future. These strategies and guidelines for implementation are described in Chapter 4.

Future Transportation System Demands

The Transportation Planning Rule requires the TSP to address a 20-year forecasting period. The 20-year travel forecasts were developed based on traffic volumes along the state highways and projections of population and employment. This process (described in greater detail in Chapter 5) provides a conservative estimate of the transportation needs of the City of Cascade Locks.

Transportation System Improvements

Based upon public and TAC input, and travel forecasting, this study identifies a series of roadway system improvement options. The first alternative evaluated was a "No-Build" system, which only used the existing street system plus any committed street system improvements. Capacity deficiencies for county highways were projected within the 20-year planning period. This "No-Build" option illustrated future capacity, safety, and access management problems. Improvement options to correct or mitigate these problems were identified. After comparing the options with the goals and objectives established at the beginning of the process and with criteria for determining the benefits and costs of each alternative, a number of transportation system improvements were identified. The specific transportation system improvements recommended for the TSP are detailed in Chapter 6.

Modal Plans and Implementation Program

The TSP addresses the following transportation modes: automobile, freight, bicycle, pedestrian, rail, transit (intercity and intracity), pipeline, and air. The street system plan was developed from the inventory, forecasting, and public input process described above. The bicycle and pedestrian plans were developed based on the requirements set forth by the Transportation Planning Rule and on public input. The public transportation, air, water, rail, and pipeline plans were developed based on existing plans and discussions with service providers. Road standards, access management guidelines, modal plans, and an implementation program are detailed in Chapter 6.

Funding

This chapter discusses project funding for the City of Cascade Locks. Since many of the selected improvement options are on or adjacent to state highways, the city will need to closely coordinate future funding with ODOT.

1. PLANS AND STUDIES

1.1 INTRODUCTION

Improvements recommended in the TSP will need to take into account relevant applicable plans and policies as well as previously approved projects. This section of the plan summarizes the major findings of recent plans and studies conducted in or affecting the study area. These documents can be broken into three categories: federal and statewide plans and studies, jurisdictional specific studies, and other related plans/studies.

1.2 PLANS AND STUDIES AFFECTING ALL JURISDICTIONS IN HOOD RIVER COUNTY

1.2.1 Federal and Statewide Plans and Studies

1.2.1.1 ~~ISTEA (The Intermodal Surface Transportation Efficiency Act) — 1991 Transportation Equity Act for the 21st Century (TEA-21)~~

~~This federal legislation sets forth the federal highway funding eligibility requirements. It mandates consistency between state, regional, and local transportation improvement plans; and requires that local plans include only projects with identified funding sources. ISTEA requires the planning process to include: cooperation with all interested and affected parties; data collection, analysis, and development of various management systems; consideration of various factors designed to enhance the performance of the system; consideration of the transportation options available to meet transportation needs, including all modes and their connections; and development of the Statewide Transportation Improvement Program (STIP).~~

The Transportation Equity Act for the 21st Century (TEA-21) authorized highway, highway safety, transit and other surface transportation programs for federal fiscal years 1998-2003. Signed into law in June 1998, it replaces the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the last major authorizing legislation for surface transportation.

TEA-21 builds on the initiatives established in ISTEA, emphasizing balanced investment in highways, transit, and intermodal projects, and allowing state and local governments flexibility in the use of federal funds. Funding through TEA-21 is targeted to improvements that help implement a region's transportation systems plan, enhance the multi-modal nature of the transportation system and meet local land use, economic, and environmental goals.

Federal funds authorized through TEA-21 will make up approximately one-third of Oregon's highway budget. The average federal funds available to state highway programs are approximately \$57.8 million per year. The actual amount that Oregon will receive depends on spending limitations placed by Congress and future gas tax receipts.

1.2.1.2 1996-1998-2000-2001 Statewide Transportation Improvement Program (STIP) — June 1995

The Statewide Transportation Improvement Program (STIP) fulfills the requirements of ISTEA TEA-21 and the TPR by providing a staged, statewide, intermodal program of transportation projects. The STIP is not a planning document, rather it is a project prioritization and scheduling document developed through various planning processes with local and regional agencies and transportation agencies. Projects listed in the document receive funding by ODOT.

1.2.1.3 The Oregon Transportation Plan (~~1991~~ 1999)

The **Oregon Transportation Plan (OTP)**, ~~adopted by the OTC in September 1992,~~ identifies how the state will meet the transportation and land use requirements of the Oregon Statewide Planning Goals and ~~ISTEA~~ TEA-21. It lays out planning and performance guidelines to help ensure that city and county plans are consistent with the state plan. (The Transportation Planning Rule requires that local plans be consistent with the OTP.)

The OTP establishes standards for each mode of travel and minimum levels of service. Standards applying to Hood River County and the City of Cascade Locks include:

- Local public transit services and elderly and disadvantaged service providers should regularly connect with intercity passenger service. Intercity passenger service should be available for an incorporated city or groups of cities within five miles of one another having a combined population of over 2,500, and located 20 miles or more from the nearest Oregon city with a larger population and economy. Service should include a round-trip made within a day.
- Air service connections between Portland, or other West Coast hubs, and other areas of Oregon should be provided whenever commercially viable.
- Open access should be provided to and from all railroad facilities and to major ports.
- Bicycle and pedestrian networks should be developed and promoted in all urban areas to provide safe, direct, and convenient access to all major employment, shopping, educational, and recreational destinations in a manner that would double person trips by bicycle and walking.
- Secure and convenient bicycle storage available to the public should be provided at all major employment and shopping centers, park and ride lots, passenger terminals, and recreation destinations.

1.2.1.4 ~~1991~~1999 Oregon Highway Plan

The Oregon Highway Plan (OHP) is one of the modal elements of the Oregon Transportation Plan. It outlines the current status of the highway system and standards for modernization, preservation, maintenance, bridge operations, and other programs. The plan projects growth trends and provides a vision for the future with policies and strategies to meet that vision. It also outlines specific policies to meet transportation needs including level of importance (LOI), access management, access Oregon highways (AOH), and truck load restrictions, as well as revenue requirements to meet needs from 1991 to ~~2010~~ 2019.

Inventory

The OTP identifies several transportation facilities of significance in Hood River County. Interstate 84 is classified as an interstate highway level of importance (LOI). As defined in the OHP, the function of an interstate highway is “to provide for safe and efficient high-speed, continuous-flow operation in urban and rural areas.”

Interstate 84 is expected to operate at LOS C within urban and urbanizing areas and LOS B in rural areas (outside of urban growth boundaries and rural development centers).

Access Management

The Oregon Highway Plan establishes a policy for access management on the highway system. The access management categories for I-84 and US 30 are discussed in the Transportation System Plan (Chapter 6).

1.2.1.5 The Transportation Planning Rule

The Transportation Planning Rule (TPR), adopted by the Oregon Land Conservation and Development Commission (LCDC) in 1991, is implementing regulation of Statewide Planning Goal 12.

Among other things, the Transportation Planning Rule requires that cities, counties, metropolitan planning organizations, and state agencies prepare and adopt Transportation System Plans. A Transportation System Plan is “a plan for one or more facilities that is planned, developed, operated, and maintained in a coordinated manner to supply continuity of movement between modes, and within and between geographic and jurisdictional areas.”

The goal of the TPR is to encourage a multimodal transportation network throughout the state that will reduce reliance on the automobile and ensure that local, state, and regional transportation systems “support a pattern of travel and land use in urban areas which will avoid the air pollution, traffic, and livability problems faced by other areas of the country.”

TPR requirements vary based on population size and geographic location of each jurisdiction. The County of Hood River is responsible for creating a regional transportation plan for the area that is consistent with adopted elements of the OTP, while the City of Hood River is required to prepare a transportation system plan as part of its comprehensive plan that is consistent with the county’s regional transportation system plan.

The City of Cascade Locks falls into the jurisdictional category of an urban area with a population less than 2,500. Therefore, the following ~~seven~~ **six** plan elements are required for the City of Cascade Locks to satisfy the TPR.

1. A determination of transportation needs.
2. A street system plan for a network of arterial and collector roadways.
3. A public transportation plan.
4. A bicycle and pedestrian plan.
5. An air, rail, water, and pipeline plan.
6. Policies and land use regulations for implementing the transportation system plan.

The TPR states that its intent is not to duplicate or to supplant existing applicable transportation plans and programs. The jurisdictions may incorporate existing plans into their transportation system plans to meet some or all of the rules’ requirements.

1.2.1.6 Oregon Benchmarks

The State of Oregon has set measures to assess how well it is attaining its goals of developing an outstanding quality of life; exceptional people; and a diverse, robust economy. Each of the benchmarks listed have a goal that is to be attained by the year 2010. A number of these benchmarks affect transportation.

The urban mobility benchmark sets the goal of increasing the percentage of Oregonians commuting during peak hours by means other than single-occupancy automobiles to 60 percent. The air quality benchmark is measured by the percentage of Oregonians living where the air meets government ambient air quality standards. Its goal is for 100 percent of the population to live where the air meets these standards. Livability benchmarks call for 88 percent of Oregonians to be commuting (one-way) between work and home within 30 minutes; the percent of limited access highways in urban areas not heavily congested during peak hours to increase to 60 percent; and the transit hours per capita per year in metropolitan areas to increase to 1.7 hours. Also, economic prosperity benchmarks pertaining to Hood River County call for the percentage of Oregonians living within 50 miles of an

airport with daily scheduled air passenger service to increase to 75 percent; and the backlog of city, county, and state roads and bridges in need of repair and preservation to be reduced to five percent.

1.2.1.7 Oregon Bicycle and Pedestrian Plan (June 1995)

The Oregon Bicycle and Pedestrian Plan, an element of the Oregon Transportation Plan, provides direction for establishing efficient and interconnected bicycle and pedestrian facilities on state, county, and city transportation systems. The plan is divided into two sections. Section One establishes policies and implementation strategies, while Section Two presents design, maintenance, and safety information.

The plan envisions Oregon developing “a transportation system where walking and bicycling are safe and convenient transportation modes for urban trips.” Its primary goal is “to provide safe, accessible, and convenient bicycling and walking facilities and to support and encourage increased levels of bicycling and walking.”

1.2.1.8 Oregon Rail Passenger Policy and Plan (1992)

The Oregon Rail Passenger Policy and Plan (ORPP) is a comprehensive long-range plan for rail passenger service prepared in coordination with the OTP. The ORPP provides detailed strategies for the rail passenger mode and policies based upon OTP rail policies. The ORPP was created to meet the requirements of Senate Bill 763 which states that ODOT “shall develop and maintain a state transportation policy for railroad passenger service and a comprehensive, long-range plan for railroad passenger service....” It is the policy of the State of Oregon to support intercity rail passenger service as part of a balanced transportation system. According to the ORPP, the rail passenger system “shall operate efficiently, be reliable, provide access to all potential users, and comply with state environmental and land use standards.” It will also have convenient connections with all other modes of transportation.

The ORPP specifies the Union Pacific (UP) mainline, which runs along the Columbia Gorge through Hood River County, as a corridor of statewide significance warranting further study. This is because it contains cities with populations greater than 2,500 (Hood River). According to the Multimodal System Element of the OTP, cities with populations over 2,500 are required to have at least one daily round-trip to the nearest city of higher importance.

1.2.1.9 Oregon Transportation Safety Action Plan (1995)

The Oregon Transportation Safety Action Plan (OTSAP) was developed as the safety element of the Oregon Transportation Plan and is considered part of the Statewide Transportation Plan. It is one of several modal or multimodal plans called for in the OTP that defines in greater detail system improvements and legislative and financial needs. The OTSAP lists 70 actions that could be taken to improve Oregon transportation safety. Of these key actions, 11 were identified to reduce transportation-related deaths and injuries. These key actions are intended to be implemented by the year 2000.

1.2.1.10 State of Oregon Continuous Aviation System Plan Draft

The Draft Oregon Continuous Aviation System Plan outlines the roles of Oregon’s system airports and evaluates their adequacy to meet the state’s economic development needs.

The plan defines the Cascade Locks State Airport. The Cascade Locks State Airport is a Level 4 airport. Level 4 airports support the system through community, remote, emergency, and US government access; accommodate agricultural business, recreation/tourism, or commercial aviation-related businesses, or support the

Portland Metropolitan Area Airport System; and are non-NPIAS (National Plan of Integrated Airport Users) and public-use.

The Oregon Continuous Aviation System Plan also projects the level of operations for each state system airport. It projects constant activity for the Cascade Locks State Airport with operations remaining at 1,100 per year through 2014, and the airport maintaining a Level 4 significance.

1.2.1.11 Historic Columbia River Highway Master Plan

The Master Plan for the Historic Columbia River Highway (HCRH) provides direction for the rehabilitation of the highway and the construction of connecting trails along the abandoned sections. The highway, constructed from 1914 to 1922, originally ran from Portland to The Dalles. Much of the original highway in Hood River County was abandoned or destroyed when I-84 was built. Many short, discontinuous segments still remain parallel to I-84 in various stages of disrepair. The HCRH (defined in ORS 366.550) exists as city streets through Cascade Locks. In Cascade Locks, it is Wa-Na-Pa Street and Forest Lane Roads.

1.2.1.12 Management Plan for the Columbia River Gorge National Scenic Area

The Management Plan for the Columbia River Gorge National Scenic Area (NSA) was prepared to ensure that land within the National Scenic Area is used consistently with the purposes and standards of the Columbia River Gorge National Scenic Area Act. The Act divides the gorge into three distinct categories: Special Management Area (SMA), General Management Area (GMA), and Urban Areas. The land within the SMA and GMA are managed to maintain the scenic, natural, cultural, and recreational resources. Urban Areas (including Cascade Locks) are exempt from Scenic Area requirements.

1.2.1.13 Intelligent Transportation System Study (I-84 Portland to Boise)

The Federal Highway Administration and Oregon, Washington, and Idaho Transportation Departments ~~are currently conducting~~ conducted a study to determine how the use of Intelligent Transportation System (ITS) technology could improve service in the Interstate 84 corridor from Portland to Boise. The study ~~will~~ evaluated the benefits of using available technologies like electronic traffic signs to alert drivers to accidents, road closures, and adverse weather conditions on the highway. It ~~will~~ also looks at transportation on a corridor basis including alternate highways (SR 14 in Washington), the Columbia River, and both railroads (Union Pacific and Burlington Northern).

1.3 PLANS FOR THE CITY OF CASCADE LOCKS

1.3.1 City of Cascade Locks Comprehensive Plan (Updated 1985) (May 2001)

The Comprehensive Plan is ~~intended to be~~ a statement of official long-range policy for the City of Cascade Locks. The Plan is organized in two parts with the first containing the goals, policies, and implementation strategies. The Plan goal calls for the city “to provide safe, convenient, and economical transportation opportunities for all Cascade Locks residents and businesses as provided in the Cascade Locks Transportation System Plan”. The second part of the Plan provides background information to support the goals ~~provides an introduction to Cascade Locks, an inventory of the natural and human environment, an element outlining goals and objectives, a land use element including land use designations, and a technical reference list. The transportation inventory lists the modes available to residents, but needs to be updated to reflect changes (for example, Greyhound no longer stops in Cascade Locks). At the time the TSP draft was prepared, the City was beginning to update its Comprehensive Plan as part of Periodic Review.~~ The goals,

policies, and implementation strategies in Chapter 2 of this document are incorporated as part of the Cascade Locks Comprehensive Plan.

The plan allocates land use ~~zoning~~ designations for the entire area inside the urban growth boundary (corporate limits and unincorporated areas alike). Since the county is responsible for all unincorporated regions, the designations for these areas ~~are only recommendations that must be adopted by Hood River County~~ will only take effect following annexation into the City.

~~Goal 12 of the Comprehensive Plan is, "to provide and encourage a safe, convenient, and economical transportation system." There is one objective listed under the goal, "the city shall encourage further development of the Senior Citizen's bus."~~

1.3.2 City of Cascade Locks Design Handbook for a Downtown Street Theme (September 1992)

The Design Handbook is an overall guide for the city to develop and redevelop with a strategy of accentuating the unique attributes and qualities that will make the downtown "a more pleasant experience for residents and visitors." The guidelines in the handbook have not yet been integrated into the Comprehensive Plan or the zoning code and are not therefore mandatory.

Guidelines which affect the transportation system include:

- Create and/or enhance the views of the surrounding area from downtown for motorists and pedestrians.
- Establish a more friendly pedestrian/bicycling environment that will reduce the impact of automobiles. This would involve providing bike lanes on both sides of Wa-Na-Pa Street (**portion of US 30 through Cascade Locks**), increasing the street's sidewalk widths to 12 feet, narrowing its lane widths, ~~adding a four-foot planting area next to its curb for street trees and benches;~~ as well as improving circulation by adding walking loops within downtown and out to the locks, and developing more clearly defined crosswalks. Finally, this plan calls for limiting vehicular access onto Wa-Na-Pa Street.
- Accommodate parking needs for autos, trucks, and buses in a manner that is screened from view.

1.3.3 Resource Team Report for Cascade Locks, Oregon (October 1998)

This report provided some additional concepts to the handbook for the design of the downtown. The primary elements include:

- Design of public spaces.
- Business infill and mix.
- Image and marketing.
- Potential project funding sources.

The report proposes a different Wa Na Pa Street cross section than the handbook. ~~The primary variation is the introduction of a center turn lane.~~ A recommended street tree list is provided.

1.3.4 Cascade Locks Housing Study (September 1997)

This study was undertaken to better understand the factors which affect housing supply and availability for all income levels in Cascade Locks and to develop a program to improve the quantity and quality of housing opportunities for city residents. Background information for the report indicated that there was approximately 493 acres of undeveloped residential land are located in the city with a reasonable potential for over 800 homes which could accommodate more than 2,000 new residents if completely developed.

1.3.5 Cascade Locks Street Design Standards Resolution No. 283

The city has a two-tier street classification system including "commercial" streets (those serving high density residential development or business areas) and "residential" streets (those serving low density and low traffic flow areas).

The following standards are required except in special circumstances:

Two-Way Street Standard City of Cascade Locks		
Standard	Commercial	Residential
Roadway Width	40 feet	44 feet
Pavement Width	24 feet	24 feet
Curb Type	A, B, C	none
Sidewalks	4 feet	none
Minimum Base Rock Thickness	6 inches	6 inches
Minimum Surface Rock Thickness	2 inches	2 inches
Minimum Asphaltic or Oil Mat Thickness	2 inches	2 inches
Shoulders	none	2 feet wide gravel
Ditches	none	yes
Parking	none	none

One-Way Street Standards City of Cascade Locks

Standard	Commercial	Residential
Roadway Width	32 feet	32 feet
Pavement Width	16 feet	12 feet
Curb Type	A,B,C	none
Sidewalks (when required)	4 feet	none
Minimum Base Rock Thickness	6 inches	6 inches
Minimum Surface Rock Thickness	2 inches	2 inches
Minimum Asphaltic or Oil Mat Thickness	2 inches	2 inches
Shoulders	none	2 feet wide gravel
Ditches	none	yes
Parking	none	none

1.3.6 Comprehensive Economic Development Plan for the City of Cascade Locks (1995)

The Comprehensive Economic Development Plan contains a community description, a vision statement describing how the citizen Action Team would like its community to develop, a community assessment, goals and objectives, top priority projects, criteria and standards to evaluate potential projects, a work force analysis, economic assistance opportunities, a description of city and port district roles in economic development, and a comparison of economic conditions for the County of Hood River and the city.

One of the plan's goals is to create better transportation and visual access to the business area. Objectives to achieve the goal include: providing an interstate interchange for the Forest Lane route with a new rest stop; constructing a belt-line road; providing shuttle service from the airport; increasing the viewing opportunities to the city and the bridge from the interstate; creating a covered walkway from the riverside park area to downtown; adding informational signs on the interstate; and improving relations and cooperation between the city and the railroad. Another goal is to improve and enhance all aspects of the city's infrastructure including roads, sewer, water, and electrical. An objective of this goal is to build a railroad crossing for access to Government Island.

Top priority projects listed were building an emergency services building and a water storage reservoir. No transportation projects were listed as top priority for the city.

1.3.7 Findings of Compliance with Statewide Planning Goals and Acknowledged Plan Policies

As a result of reviewing and comparing the plans and studies with this TSP for the City of Cascade Locks, it was found that this TSP couples with the statewide goals and acknowledged plan policies.

2. COMMUNITY INVOLVEMENT/GOALS AND OBJECTIVES

2.1 INTRODUCTION

This document identifies goals, objectives, and implementation actions for the City of Cascade Locks TSP. These TSP elements are derived, for the most part, from objectives identified for the Hood River Transportation. That plan is a cooperative effort of ODOT, the cities of Hood River and Cascade Locks, and Hood River County to prepare a countywide transportation plan. The objectives in that plan were developed by a project management team, consisting of ODOT and local government staff and consultants, and by a Technical Advisory Committee (TAC) consisting of key stakeholders.

Separate goals, objectives and implementation actions have been prepared for the City of Hood River and Hood River County transportation system plans. In addition, long-term management objectives for the Hood River-Mt. Hood Summit (OR 35) Corridor have been established in an Interim Corridor Strategy.

2.2 ROLE/FUNCTIONS

The City of Cascade Locks transportation system includes local streets, a portion of the Historic Columbia River Highway (US 30 west through downtown and Forest Lane to the eastern city limit), the Cascade Locks State Airport, and the Port of Cascade Locks. Key functions include:

- Access to and from I-84;
- Connection between I-84 and SR 14 via the Bridge of the Gods;
- Port-of-Entry; and
- Access to tourist and recreation facilities, e.g., locks and excursion boats.

2.3 ASSUMPTIONS

A number of assumptions are made related to other planning efforts, use of the transportation system, and other factors. These assumptions, which are not repeated as goals, objectives, or implementation actions, include:

- Standard levels of roadway maintenance and repair.
- Increasing recreational use of the transportation system, including bicycle and pedestrian traffic.
- Environmental constraints to highway improvements.
- Establishment of management direction for the Historic Columbia River Highway (HCRH) through the HCRH Master Plan.
- Limitation on new road construction to "local" and not state roads.
- Development of an additional I-84 rest area at the ODOT sandshed or Forest Lane area.
- No I-84 capacity improvements except for interchange improvements where warranted.

2.4 COMMUNITY AND AGENCY INVOLVEMENT

The City of Cascade Locks TSP has been developed with the active participation of local governments in the county, transportation and other stakeholder groups, and the general public. These participants have been involved in development of the plan through the following mechanisms.

2.4.1 Project Management Team

The Project Management Team (PMT) is composed of local government and ODOT staff representatives and transportation planning and public involvement consultants. The 10-member PMT serves as the project staff, developing draft products for Technical Advisory Committee and local government review and approval.

2.4.2 Technical Advisory Committee

The Technical Advisory Committee (TAC) is composed of representatives of the City of Cascade Locks, the Confederated Tribes of the Warm Springs Reservation, the ports and other local governments within the county, other transportation service providers in the county, and key stakeholder groups. The 35-member group serves as a review and steering committee for development of the Transportation Plan. It has met eight times since initiation of the planning process in October 1995.

2.4.3 Issues Survey

A survey of transportation interest groups and other parties was distributed in October 1995 to solicit input on issues to be addressed in the Plan. This survey and other information about the planning process was also distributed at the October 1995 Hood River Harvest Festival.

2.4.4 Project Newsletters

A newsletter update on the Transportation Plan was widely distributed in September 1996. The newsletter provided notice of open houses to be conducted on the Plan and solicited input through a questionnaire on key objectives drafted by the TAC. (A report on questionnaire responses is included as Appendix A).

2.4.5 Open Houses

As part of the Goals and Objectives development phase of the City of Cascade Locks Transportation System Plan, public open houses were held in September 1996.

The purpose of the open houses was to disseminate information on the transportation planning process and to solicit public input on preliminary goals, objectives and implementation actions to be addressed in the Transportation Systems Plan (TSP) for the City of Cascade Locks. The open houses were advertised through a September 1996 newsletter, press releases, public service announcements and paid advertisements in the *Hood River News*. ~~Prior to adopting the TSP, the city held a public open house and a Planning Commission hearing in October 2001, followed by a public hearing before the City Council in November 2001.~~

Activities included:

- Live/work map – using dots, attendees indicated where they lived and worked;
- Storyboards on the transportation planning processes and schedule;
- Prioritization of key objectives – using dots, participants prioritized key objectives and identified additional objectives that should be prioritized;
- Site-specific transportation issues and improvements – ~~using stiekees,~~ participant identified site-specific issues and transportation system improvements on maps of the City of Cascade Locks;

- Cascade Locks Comprehensive Plan Amendment Project – participants reviewed and **made** comments on a Vision Statement and Preferred Alternative, including citywide objectives and objectives for specific areas within the city; and
- Miscellaneous questions.

2.4.6 Agency Review

The Issues and Objectives component of the plan, as well as a preliminary draft Plan, were reviewed by ODOT headquarters and regional staff and by two statewide groups established by ODOT to provide input on the agency's corridor planning process – the Statewide Agency Coordinating Committee and the Statewide Stakeholder's Group.

2.4.7 Other

Information on the planning process has also been distributed and input on draft plan products solicited through briefings with local government officials, interest groups, and local community planning organizations.

2.5 GOALS, POLICIES, AND IMPLEMENTATION STRATEGIES FOR THE CITY OF CASCADE LOCKS

2.5.1 Goal A. Transportation Balance

Design a balanced transportation system that maximizes the efficiency of the existing system, provides transportation options at appropriate minimum service standards, reduces reliance on the single occupant automobile where other modes or choices can be made available, ~~and~~ takes advantage of the inherent efficiencies of each mode, **and provides safe, convenient and economical transportation opportunities for all Cascades Locks residents and businesses.**

A1. Automobile

Objectives Policies

- Improve traffic circulation and safety throughout the city.
- **Develop and improve the city's street system by connecting all important destinations in a manner which is compatible with nearby land uses.**
- Provide convenient access and adequate parking to support downtown commercial and service centers.
- **Develop and improve the city's transportation system to provide multimodal links between all important destinations developed areas on either side of I-84 with multimodal access.**
- **Require new development to provide street improvements in a manner that is commensurate with its related traffic impacts.**

Implementation Actions Strategies

- Establish a network of arterials, collectors and local streets that are interconnected, appropriately spaced to meet needs, and minimize out-of-direction travel.
- **Adopt standards that are appropriate for arterial, collector, and local streets and apply these standards to future street improvement projects.**
- ~~Accommodate needs for all modes of travel through transportation demand management (TDM) strategies and other measures.~~
- Develop an interconnected system of streets to serve existing and planned development.
- Accommodate increased tourist traffic through better access to attractors, improved signage, and other measures.
- **Develop a non-remonstrance agreement policy.**

A2. Bicyclists and Pedestrians

Objective Policies

- Provide a network of safe and convenient bicycle and pedestrian facilities linking activity centers and connecting to a countywide system.
- **Provide properly designed facilities for bicyclists and pedestrians.**
- **Require new development to provide appropriate facilities for bicyclists and pedestrians.**

Implementation Actions Strategies

- **Amend the city street improvement standards to address needs for pedestrians and bicyclists.**
- **Work with the Oregon Department of Transportation (ODOT) to implement the Downtown Street Theme.**
- Recognize both local and through travel needs in designing bicycle and pedestrian facilities.
- Improve signing of bikeways, particularly destination signing.
- Add or improve bike lanes or widen shoulders as part of improvements to the roadway system.
- ~~Create alternative routes to avoid conflicts with other modes, per the city's bicycle plan.~~
- ~~Provide bicycle lanes where feasible and, at a minimum, provide five-foot shoulders to accommodate bicycle use, per the city's bicycle master plan on the routes shown in Figure 6-1.~~
- ~~At a minimum, provide unobstructed six-foot sidewalks on both sides of state highways, minor arterials, and urban collectors and Wa Na Pa Street along with convenient and safe pedestrian crossings. In residential areas, provide at least five-foot sidewalks on one or both sides of local streets whenever practical.~~
- **At a minimum, provide unobstructed six-foot sidewalks on one or both sides of the routes shown in Figure 6-1.**
- **When bicycle lanes or sidewalks are not feasible along the routes shown in Figure 6-1, provide five-foot paved shoulders to accommodate bicycling and walking.**
- Provide connections to local bicycle and hiking systems where feasible.
- **Develop a direct pedestrian connection between Marine Park and downtown.**
- **Continue the Historic Columbia River Highway pedestrian and bicycle system through the city.**
- To the extent feasible, utilize pipeline and utility easements as bicycle and pedestrian pathways and wildlife corridors.
- Improve lighting of pedestrian crossings.
- ~~Develop an interconnected pedestrian system that includes Trail 400~~ **the Pacific Crest Trail, HCRH, and Chinook Trail (loop hiking trail).**

- Investigate alternative funding sources, use of volunteer groups, and other methods for off-highway bikeway maintenance.

A3. Public Transit

Objective Policies

- Promote the increased use of transit as an alternative to automobiles and to serve the transportation disadvantaged.
- **Work with public, non-profit, and private agencies and organizations to develop improved transportation opportunities for disadvantaged individuals in the community.**
- **Encourage housing and services to be located close together to improve transportation convenience and efficiency.**

Implementation Actions Strategies

- Ensure the continuity of transit services. Encourage stops in Cascade Locks.
- Utilize transit as a primary means to ensure transportation accessibility for the transportation disadvantaged.
- **Work with Greyhound and Grayline to provide regular bus service.**
- **Work with CAT – Columbia Area Transit to provide service to Hood River and Portland.**
- **Work with other transportation companies, such as Columbia Gorge Tours and the airport shuttle to provide improved transportation services.**
- Incorporate transit service needs in land use decisions.
- Investigate opportunities to provide shuttle services to ski areas.
- Establish a multi-modal transportation center.
- ~~Encourage the Transit District to conduct an education campaign on available transit services.~~
- ~~Ensure ongoing intercity bus service between Cascade Locks and Portland.~~
- Develop “Park and Ride” and “Park and Pool” lots and additional bus stops and shelters.

A4. Rail Service

Objectives Policies

- ~~Accommodate the movement of freight and excursion uses on rail.~~
- **Encourage continued rail service for freight.**
- **Support the return of rail passenger service.**
- Ensure interconnection of rail with other modes.

Implementation Actions Strategies

- Make infrastructure improvements (railroad, streets, utilities, etc.) to enhance the investment climate for rail users.
- Upgrade rail crossings in conjunction with other roadway improvements.
- Maintain historic access points across the railroad to the river and to recreation sites; develop additional formal crossings to allow recreational access to the Columbia River.

- Promote excursion tourism uses on **Union Pacific**, with connections to the Washington side of the Gorge.
- Explore opportunities for dedicated service to ski areas from Portland via railroad/buses.
- ~~Provide additional signage, flashing lights at railroad crossings, e.g., at Government Rock.~~
- Consistent with environmental constraints, promote double-tracking of **Union Pacific** sections to provide more capacity.

A5. Truck Freight

Objective Policy

- Accommodate needed truck movements in the design of the city's street system.

Implementation Actions Strategies

- To the extent feasible, separate local truck traffic from through traffic.
- Investigate methods to reduce truck speeding on US 30 ~~and Forest Lane~~ through the city.
- Improve truck access to industrial sites, including turn and acceleration/deceleration lanes where appropriate.
- Review and modify if needed, the current hazardous materials response program. Identify potentially unsafe locations (e.g., access/egress points to industrial sites) and develop necessary improvements to accommodate customary freight transport needs.

A6. Water Transport/Ports

Objectives Policies

- Assess opportunities for increased water transportation.
- Improve access by all modes to port facilities.

Implementation Actions Strategies

- Identify means to reduce conflicts among commercial and recreational waterway users.
- Develop transit connections from the waterfront to downtown.

A7. Other Modes (e.g., air service, pipelines, telecommunications)

Objective Policy

- Promote transportation modes that reduce the reliance upon automobiles as the primary transportation mode.

Implementation Actions Strategies

- Develop improved emergency landing facilities.
- Encourage the Port to develop aircraft refueling facilities.

- Encourage private airport shuttle service to Portland.
- Accommodate pipelines in highway rights-of-way.
- Promote telecommunication technologies and programs that reduce vehicle miles traveled.
- Consolidate telecommunications facilities to reduce the number of towers and visual impacts.
- Coordinate the installation of fiber optics with highway improvements.

2.5.2 Goal B. Regional Connectivity

Provide a transportation system with connectivity among modes within and between all areas of the city and with ease of transfer among modes and between local and state transportation systems.

Objectives Policies

- In lieu of major capacity expansions, strive to maintain existing travel times for both autos and freight through high levels of facility management (acceleration/deceleration lanes, turn refuges, ~~coordinated signals~~ and access management).
- Provide an interconnected network of local streets.
- Provide an interconnected network of pedestrian facilities.

Implementation Actions Strategies

- Establish travel times compatible with the promotion of compact, pedestrian friendly "Main Streets".
- Promote use of parallel routes to reduce reliance on state facilities for local trips.
- Improve existing I-84 interchanges as needed to promote the efficient movement of goods and people, e.g., eastbound on and off ramps to Cascade Locks at same interchange.
- Improve/expand signage to inform travelers of route choices available.

2.5.3 Goal C. Highway Congestion

Define minimum levels of service and assure balanced, multimodal accessibility to existing and new development to achieve the goal of a compact, highly livable city.

Objective Policy

- Adopt ~~the highest applicable (most restrictive)~~ access management categories, consistent with existing or planned adjacent land uses, to reduce congestion and intermodal conflicts.

Implementation Actions Strategies

- Ensure consistency in street classifications, and speed and access standards with other jurisdictions in the county.
- Develop parallel streets (e.g., south side of I-84) to redirect truck traffic off OR 30.
- Achieve LOS C or better on all collectors and arterials.
- Improve traffic signalization to improve safety and livability.
- Investigate signalization on US 30 (~~Charburger~~) in downtown Cascade Locks to address congestion.

- Address conflicts between pedestrians, ~~Main Street~~ commercial uses, and through traffic in downtown Cascade Locks (US 30) ~~by providing sidewalk and street crossing improvements in coordination with ODOT.~~

2.5.4 Goal D. Roadway Conditions

Ensure adequate roadway conditions to meet goals regarding accessibility, levels of service and reduced congestion.

Objective Policy

- Maintain existing facilities as the highest priority for the allocation of resources.

Implementation Actions Strategies

- Preserve the roadway by investing in roadbed and pavement reconstruction as needed to minimize maintenance costs.
- Maintain roadway surface conditions at 90 percent fair/better by the year 2010.
- Ensure that speed limits are coordinated with roadway geometry and congestion.
- Improve intersections with limited sight distances by realignment and other means.
- Target realignment and widening to sections with above average accident rates and to sections with high congestion rates where there is a favorable cost/benefit ratio.
- In the short term, target pavement of substandard shoulders to "easy fix"/low cost area.
- Strengthen enforcement of speed and weight restrictions to extend roadway longevity.
- Upgrade substandard guard rails and shoulders.
- Address drainage problems including those that affect the function and condition of the roadway; water ponding; lack of drainage systems for older highway sections; and drainage from I-84, US 30 and other state, county and city facilities onto private property.
- Require mitigation for storm runoff with new developments.

2.5.5 Goal E. Safety

Integrate safety as a primary consideration in the design, improvement and maintenance of the transportation system.

Objective Policy

- Identify and implement measures to enhance transportation user safety.

Implementation Actions Strategies

- Target improvements to highway sections with above average accident rates.
- Apply facility management techniques, including access management, to improve safety in congested areas.
- Promote cooperative enforcement among police and sheriff offices and target enforcement activities to high-accident locations.
- ~~Improve signing and realign the intersection at School Road/Watts Street/US 30.~~

- Improve lighting at key locations and maintain delineation (e.g., fog lines, reflector buttons) to be highly visible.
- Install safety barriers, e.g., guard rails, gabions, in high hazard locations to meet highway safety standards.
- ~~Install weather condition monitoring devices at strategic locations.~~
- Investigate the need for improvements (in addition to stop signs) to address poor sight distances at the Port of Entry/I-84 intersection.
- Review and modify if needed, the current hazardous materials response program. Identify potentially unsafe locations (e.g., access/egress points to industrial sites) and develop necessary improvements to accommodate customary freight transport needs.
- Improve bicycle/pedestrian facilities.

2.5.6 Goal F. Environmental and Energy Impacts

Avoid effects to the natural and built environments in the design, construction and operation of the transportation system. Where adverse effects cannot be avoided, minimize or mitigate their effect on the environment.

Objectives Policies

- As part of transportation improvement projects, seek opportunities to rectify negative impacts to previously impacted scenic and natural resources.
- Avoid transportation system improvement impacts to identified scenic resources and sensitive natural areas.

Implementation Actions Strategies

- ~~Integrate vegetation management measures into road management and maintenance activities to create and protect scenic vistas, e.g., scenic buffers for timber harvests, and to replace or mitigate for vegetation lost to transportation system projects.~~
- **Where feasible, transportation system improvements shall be designed to avoid unnecessary removal of significant vegetation.**
- **When vegetation must be removed to accommodate transportation system improvements, reasonable efforts will be made to mitigate this impact by planting trees, ground cover, and/or other appropriate vegetation in the area affected by construction.**
- Remove and prohibit scenic intrusions such as billboards. Investigate alternatives to billboards, e.g., Oregon Tourism Alliance and Travel Information Council travel information programs.
- Identify and construct additional roadside turnoffs at scenic viewpoints.
- Improve signing of existing attractions.
- Develop protection measures for identified scenic resources.
- Promote the marketing of the Mt. Hood Loop and other tour routes within the county.
- Design for aesthetics in the siting of telecommunications towers.
- Use vegetation management practices, e.g. thinning, to improve visual access to Cascade Locks and to the Columbia River.
- Implement recommendations on road improvement and maintenance practices from the Governor's Salmon Recovery Plan.
- Modify/remove barriers to fish passage as part of road maintenance and improvements projects.
- Promote more energy-efficient freight movement by rail and water.
- Promote the use of alternative fuels.

- Design roadway improvements and new facilities to minimize surface runoff and pollutants.
- ~~Improve the collection of sand and gravel from roadways to avoid/minimize impacts to water courses.~~
- **Improve the street sweeping program to reduce impacts of water runoff.**

2.5.7 Goal G. Social and Land Use Impacts

Develop a transportation system that supports planned land uses and balances the expansion of transportation facilities with the protection of social, cultural and environmental resources.

Objectives Policies

- Design transportation system improvements to preserve community livability and to avoid, minimize or eliminate impacts to sensitive cultural resources and other community resources.
- Encourage transportation-efficient land use patterns that reduce vehicle miles traveled and promote a live/work balance.
- Ensure that land use regulations support the provision of efficient transportation services.

Implementation Actions Strategies

- Develop land use regulations that encourage transportation efficient land use patterns, e.g., increased densities, infill and clustered development, mixed uses, maximum parking ratios, and circulations systems that reduce out-of-direction travel.
- ~~Promote~~ **Continue** to cooperate with ODOT in planning and project development.
- Utilize access management to limit the impacts of new development on highway congestion.
- Establish standards for setbacks adjacent to state rights-of-way.
- Take advantage of multi-modal capabilities/capacities to promote development that is not solely auto/truck dependent.
- Consider use of noise barriers to reduce noise impacts and visual mitigation techniques as part of arterial and urban collector improvements near residentially zoned areas.
- Encourage building siting and design to reduce noise and visual impacts from adjacent transportation facilities.
- **If implemented, design the Forest Lane overpass to ensure access to vacant industrial properties and no adverse impact upon the Historic Columbia River Highway.**

2.5.8 Goal H. Economic Impacts

Expand and diversify the city's economy through the efficient movement of goods, services and passengers in a safe, energy-efficient and environmentally sound manner.

Objectives Policies

- Recognize Regional Strategies for ~~software, agriculture~~ **technology, industry**, and tourism.
- Grant high priority to projects that promote efficient transportation system connections to existing and planned industrial and commercial sites.

- Improve convenient access to a variety of recreational opportunities.

Implementation Actions Strategies

- Support projects identified through the Regional Strategies Program and other economic development activities through appropriate transportation system improvements.
- Promote I-84/OR 35 as an alternative route from Portland to Mt. Hood recreation areas.
- Provide adequate parking for downtown businesses and services.
- Investigate opportunities to improve access to vacant industrial lands in east Cascade Locks.
- ~~Maintain public access to Government Rock and Government Cove across the railroad.~~
- Provide connections between local pedestrian/bicycle systems and recreational trails.
- Promote excursions and other water recreation uses, including recreational opportunities associated with seaplanes and commercial helicopter services.

2.5.9 Goal I: Funding

Ensure adequate funding of needed transportation system improvements.

Objective Policy

- Identify sources and strategies to fund needed transportation system improvements.

Implementation Actions Strategies

- Allocate resources to transportation projects according to the following priorities:
 1. Maintenance of the existing facility to ensure that it remains safe and functional, e.g., fixing potholes;
 2. Preservation of the roadway by investing in roadbed and pavement reconstruction as needed to minimize maintenance costs;
 3. Safety improvements;
 4. Managing the existing system to maximize capacity/operation; and
 5. Capacity improvements.
- Investigate alternative financing mechanisms to finance transportation system improvements, e.g., public/private partnerships, tollways, road maintenance improvement districts, etc.

3. CURRENT CONDITIONS

3.1 INTRODUCTION

Current transportation conditions of the planning area serve as a basis for the Transportation System Plan. These conditions are the result of many factors, including policies, employment, population, and funding availability. The traffic generated in the city is a combination of both external and internal forces. The existing roadway and traffic conditions illustrated in this chapter will be used as the basis for forecasts made in Chapter 5.

The City of Cascade Locks is the second largest city in Hood River County with a 1991 population of 975. It is located about 45 miles east of Portland and 19 miles ~~east-west~~ of Hood River. Cascade Locks provides a wealth of recreational opportunities for visitors and residents with access to the Columbia River, Oregon and Washington national forests, Mount Hood, many creeks, and numerous hiking trails, including the Pacific Crest National Scenic Trail.

Cascade Locks' road system includes an interstate bridge across the Columbia River, two state highways, urban collector streets, and residential streets. Street classifications for Cascade Locks are illustrated in Figure 3-1. The Bridge of the Gods is located in the western part of the city and connects Cascade Locks to Stevenson, Washington, and Washington State Route 14. I-84 runs east and west through the city with two partial interchanges. The western partial interchange for eastbound off and westbound on traffic is just west of the city limits near the Bridge of the Gods and the eastern partial interchange for westbound off and eastbound on traffic is located near the port of entry at the intersection with Highway 30 (Wa-Na-Pa Street). Highway 30 (Historic Columbia River Highway) or Wa-Na-Pa Street, runs east-west through the western half of the city. It is designated as a minor arterial. Forest Lane, which runs east-west through the eastern portion of the city, is designated an ~~urban~~ collector. The rest of the streets are designated ~~commercial and residential as local streets~~.

Highway and street configurations constrain movement in Cascade Locks. The construction of I-84 created 19 dead end streets. The resulting lack of interconnectivity has forced a majority of the traffic in the city onto Wa-Na-Pa Street and Forest Lane. It has also added to the desire for another interchange with I-84 at Forest Lane.

The city provides some facilities for forms of transportation other than ~~the~~ automobiles. The Cascade Locks Airport is located in the northern part of the city, providing local area service that supports 1,100 flights per year.¹ The Union Pacific Railroad line is located north of the city center along the shoreline. The railroad is used to transport cargo, mainly wood products, from Cascade Locks to destinations east and west. Rail facilities consist of a main line switching track and spur lines. Although the nearest passenger service is in White Salmon, Washington, facilities for passengers still exist in the city. The Columbia Area Transit District (CAT) provides dial-a-ride transit service. This service links passengers to other areas within the city and county. Except for the excellent hiking trails around the city and walking and biking areas in the parks, pedestrian and bicycling facilities are lacking. However, ~~bicycle lanes have recently been added along Wa-Na-Pa Street, and there are plans to also add improve~~ pedestrian facilities, including sidewalks and ~~bicycle lanes along Wa-Na-Pa Street~~.

3.2 URBAN AND CULTURAL FEATURES

The city has many historical features. The Bridge of the Gods is a popular tourist attraction and photo opportunity. This bridge was constructed in 1926, spanning the Columbia River to connect the city to Stevenson, Washington. The bridge was named for a huge landslide, which occurred about 1,000 years ago creating a temporary dam and legendary land bridge across the river. Navigational locks were built at Cascade Locks in

¹ 1996 Transportation Volume Tables, Oregon Department of Transportation.

1896. They provided safe passage for riverboat traffic until the locks at the Bonneville Dam were opened in 1937. The locks provide outstanding examples of stone masonry and are used by sport and native American fishermen today. Located near the locks is the Cascade Locks' Sternwheeler Museum. This museum is located in one of three "Lock Tenders" residences built in 1905. It provides information, photos, and artifacts of Oregon's early transportation and houses the "Oregon Pony," the first steam locomotive used in the Oregon Territory. The Historic Columbia River Highway runs through the city along Wa-Na-Pa Street and Forest Lane and has been posted with signs denoting the historic significance of the route. **The Historic Columbia River Highway was the first highway in the country specifically designed as a scenic highway and the first major paved highway in the Pacific Northwest.**

3.3 HIGHWAY SYSTEM

Figure 3-2 displays the 1994 ADT volumes for Cascade Locks. Daily traffic volumes for the city were determined from ODOT's 1994 Traffic Volume Tables and several road tube counts performed in 1995. The year 1994 was chosen as the base year since ODOT's traffic volume tables for 1995 were not yet published when the traffic forecast for the city was performed. The ADT volume on the Bridge of the Gods was obtained from the Port of Cascade Locks.

Because the 1994 ADT volumes were low, traffic volumes were not recorded for the PM peak hour. ~~More recent counts are not available, however, traffic volumes have not changed appreciably between 1994 and 2000. ODOT traffic counts for 2000 are generally consistent with the 1994 information with 3,300 to 4,300 vehicles per day on US 30 and 17,000 to 20,900 vehicles per day on I-84.~~

3.3.1 Congestion

Transportation engineers have established various standards for measuring traffic flow, congestion, or traffic operations of intersections and roadways. Each standard is associated with a particular level of service (LOS). The LOS concept requires consideration of factors that include traffic demand, capacity of intersection or street, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort, and convenience and operating cost. Six standards have been established ranging from LOS "A" where traffic flow is relatively free-flowing, to LOS "F", where the street system is totally saturated with traffic and movement is very difficult.

The OHP calls for providing a LOS of B or better in rural areas and LOS C or better in urban portions of the county. To determine if highways were meeting these standards, ODOT used the HPMSAP analytical package to compute congestion on many of Oregon's interstate and statewide highways. The package computed the volume to service flow ratios (V/SF) at peak hour conditions. The V/SF ratio is defined as the ratio of the amount of traffic demand to roadway capacity. These ratios were then broken into three categories: low/no, moderate, and high congestion.

Low/no congestion corresponds to a V/SF ratio that indicates stable to free flowing traffic conditions with low to moderate traffic volumes (LOS A, B, or C). Speed is restricted only slightly by traffic if at all. There is high maneuverability and driving comfort and convenience with little or no delays.

Moderate congestion corresponds to V/SF ratios for traffic flows approaching unstable levels (LOS D). On rural two-lane highways, speeds fall below 50 miles per hour, fairly long lines of cars form, and passing becomes extremely difficult. In urban areas, average travel speeds fall to about 40 percent of free-flow speeds and small increases in traffic can significantly increase delay at intersections.

High congestion corresponds to V/SF ratios for traffic flow conditions that are unstable or that exceed roadway capacity (LOS E or F). Under conditions of high congestion, a driver on a rural two-lane highway will be traveling in long lines of traffic at considerably less than the posted speed and passing will be virtually impossible. A driver on an urban road will be traveling at substantially reduced speeds and will experience considerable delays at intersection. Under these conditions, even minor incidents can trigger stop and go traffic.

The HPMSAP analysis does not provide data for urban roadways in the City of Cascade Locks. However, congestion on the street system was determined from the operations analyses of the most highly traveled sections of road. The 1994 ADT volumes were used to determine the volume-to-capacity (V/C) ratio and Level of Service (LOS) on specific roadways. The V/C ratio is a measure of traffic demand divided by the capacity of the roadway. ADT volumes were converted to PM peak hour traffic volumes using a 10 percent peak hour factor, which is typical for most cities. It was assumed that an urban street would have a capacity of about 900 vehicles per lane per hour (vplph), and that interstate highway would have a capacity of about 1,700 vplph. The calculated V/C ratios were then used in conjunction with travel speeds to determine the LOS as described in Chapter 7, "Rural and Suburban Highways," in the *Highway Capacity Manual*, 1994 Edition.

Table 3-1 shows that the existing V/C ratio and LOS for each segment of the roadway in Cascade Locks. All V/C ratios are less than 0.32 and all segments operate at LOS A. These conditions allow drivers freedom to maneuver and travel at their desired speed.

**TABLE 3-1
EXISTING V/C AND LOS OF ROADWAYS IN CASCADE LOCKS**

Location	V/C Ratio	Speed	LOS
US 30, north of foot of the Bridge of the Gods	0.28	35 mph	A
I-84 westbound on-ramp at Exit 44	0.14	45 mph	A
I-84 eastbound off-ramp at Exit 44	0.14	45 mph	A
I-84 west of Exit 44	0.32	65 mph	A
I-84 westbound off-ramp at Exit 44	0.04	45 mph	A
I-84 eastbound on-ramp at Exit 44	0.14	45 mph	A
I-84 east of Exit 44	0.26	65 mph	A
Wa-Na-Pa Street east of Edgewood Avenue	0.11	55 mph	A

~~The TAC indicates that the three-way intersection of School Road, Watts Street, and US 30 becomes congested when the school nearby lets out.~~

3.3.2 Safety

The Oregon Transportation Plan calls for the creation of a transportation system that is not only "balanced, efficient, accessible, environmentally sound, and connective," but also safe and secure. Accident rates and locations have been inventoried to identify safety problem areas. Accident locations are summarized below for both the urban and rural areas.

3.3.2.1 Interstate 84

The accident rate along the urban portions of the highway was 0.40, which is lower than the statewide average of 0.93 for an urban primary freeway.

Accidents recorded along the highway vary by location. Eleven accidents were recorded along a 3.56-mile stretch through Cascade Locks in 1994. Accidents in this area have increased in the last four years from 0.10 accidents per million vehicle miles in 1990, to ~~0.49~~ ~~0.40~~ accidents per million vehicle miles in ~~1994~~ 1999.

3.3.2.2 Urban Area

The City of Cascade Locks has no locations with more than one accident reported during the period of analysis. This implies that there are no roadways with safety problems within the city at this time. Safety conditions on the transportation system may change as the number of vehicles increase.

3.3.3 Pavement Conditions

The OHP requires for improving and maintaining pavement to fair or better conditions. The state highways in Hood River County were rated by the Pavement Services Unit of ODOT in 1995. Interstate 84, being part of the National Highway System, was rated using the NHS Objective Rating procedure. US 30 ratings are the same as I-84 for most of the county (they share a common alignment). Where US 30 has an independent alignment, the ODOT GFP (Good/Fair/Poor) Rating procedure was used.

According to the 1995 Pavement Condition Report, the Objective Rating procedure rates highways using index values to represent pavement conditions. These index values are based on distress type, severity, and quantity present in the pavement surface. Data on distress are collected frequently along the roadways (roughly every 0.1 mile). Index values range from zero to 100, with larger index values indicating better pavement conditions, and are broken into five descriptive categories-Very Good (99-100), Good (76-98), Fair (46-75), Poor (11-45), and Very Poor (0-10).

The GFP Rating method used for non-NHS highways involves driving highways, conducting a visual survey, and scoring pavement sections with a subjective value. The five rating categories are: Very Good (1.0-1.9) – stable, no cracking, no patching, no deformation, excellent riding quality, in short, nothing would improve the roadway; Good (2.0-2.9) – stable, minor cracking (generally hairline and hard to detect), minor patching and possibly some minor deformation evident, dry or light colored appearance, rutting less than 1/2 inch, and very good riding quality; Fair (3.0-3.9) – generally stable, minor areas of structural weakness, cracking is easier to detect, patched but not excessively, deformation more pronounced and easily noticed, riding qualities are good to acceptable; Poor (4.0-4.9) – areas of instability, marked evidence of structural deficiency, large crack patterns (alligating), heavy and numerous patches, deformation very noticeable, riding qualities range from acceptable to poor; and Very Poor (5.0) – pavement in extremely deteriorated condition, numerous areas of instability, majority of section showing structural deficiency, ride quality is unacceptable (probably should slow down).

3.3.3.1 Pavement Conditions off the State Highway System

The pavement conditions off the state highway system in Cascade Locks were rated using a subjective system. Data was collected through a visual survey of the arterial and collector streets ~~of both cities~~. Roadways were put in three categories: Good if they were stable, had minor cracking and patching if any, and a very good riding quality; Fair if they were generally stable, had more easily detected cracking, were patched but not excessively, and had acceptable riding quality, and Poor if they had areas of instability, numerous cracks and patches, were in need of immediate repair, and had poor riding quality.

The city's three collector roads were surveyed – Forest Lane, Highway 30 (Wa-Na-Pa Street), and Frontage Road. The overall condition of the roads was good. Of the roughly five and one half miles of pavement surveyed, 64 percent were rated Good and 36 percent were rated Fair. Frontage Road was in the best condition (100 percent

rated Good) followed by Highway 30 (95 percent rated Good and five percent rated Fair). Highway 30 was also rated using the GFP method (see above). Forest Lane received the lowest rating with 68 percent of its pavement deemed Fair and 32 percent deemed Good. No portions of the roadways received a Poor rating.

3.4 RAIL SERVICE

Rail service in the city is provided on the Union Pacific main line, which runs through the Gorge near I-84.

3.4.1 Freight

The Union Pacific line runs through northern part of the county hauling freight to Portland where it links with north and south lines. It also travels south to Colorado, then east to Chicago. From its Cascade Locks interchange, the line primarily hauls wood products.

3.4.2 Passenger Rail

Passenger service is not provided anywhere in Hood River County. Passenger service on AMTRAK on the Union Pacific Line was discontinued in November 1996 due to a lack of federal funding. The nearest passenger rail line for the Hood River County area is located in Bingen, Washington. AMTRAK provides service on the Northern Pacific Line, which runs from Portland to Vancouver, Washington, then east to Bingen and White Salmon, then north to Spokane. In Spokane, the train meets the Empire Builder Line. The two merged lines then run east to Chicago. **This Northern Pacific passenger line runs four times a week.** Direct Portland to Denver rail service no longer exists.

Although Cascade Locks does not have passenger rail service, there are passenger facilities adjacent to the Union Pacific. Therefore, if federal funding is reinstated, it would be easy to supply service.

3.5 AIR SERVICE

Cascade Locks State Airport is located within the city limits and is administered by the State Aeronautics Division. With one 1,800-foot paved runway, it is classified as a Level 4 facility, because it plays a supportive role to the system in terms of recreational and emergency uses.

The closest commercial air service is approximately 40 miles west of Cascade Locks at the Portland International Airport in Portland. Portland International Airport is a full service airport, handling both passengers and cargo. The accessibility of Portland Airport and the wide range of services it offers limit the likelihood of significant expansions of the smaller airports in Hood River County.

3.6 WATER TRANSPORTATION

The Port of Cascade Locks owns a marine facility, two passenger carrying sternwheeler boats, the Bridge of the Gods, a campground and visitor center, and roughly 150 acres of industrial lands. The marine facility is in the western portion of the city adjacent to the Union Pacific mainline near US 30 and I-84. The shallow draft port is used for recreational trips by the sternwheeler boats, which make up the majority of river traffic. No commercial shipping or freight movement occurs at the port. The Bridge of the Gods toll bridge is operated by the Port and connects the city to Skamania County, Washington. Except for some forest products business, the Port's

industrial lands are largely undeveloped. These lands are located within Cascade Locks and will be available for commercial, industrial, and recreation/resort development when the city completes the upgrade of its wastewater treatment facility.

The Port of Cascade Locks does not plan on adding commercial or shipping uses to its port operations. However, the development of its industrial property is anticipated, as well as an increase in use of its recreational facilities.

3.7 TRANSIT

Transit is an important part of a multi-modal transportation system, and is an essential service for those without access to automobile travel. The *Transportation Planning Rule* calls for the creation of a multimodal transportation network that will reduce reliance on the automobile and “support a pattern of travel and land use in urban areas which will avoid the air pollution, traffic and livability problems faced by other areas of the country.”

3.7.1 Local Service

Public transit service within Hood River County is coordinated by Columbia Area Transit District (CAT). The district provides demand responsive service county wide, and regular trips to Portland.

CAT’s demand-responsive, door-to-door service operates weekly between Cascade Locks and Parkdale. Also, “as needed” trips to the Portland area are made primarily for people needing access to medical attention, but others wishing to go to Portland may use the service.

As of July 1996, the CAT had thirteen, thirty-two passenger, wheelchair-accessible buses. Transit services in the region are going to be expanded in the future with plans for a commuter service to Portland that would connect to the MAX light rail line, Portland International Airport, and other major destinations.

3.7.2 Intercity Transit

Besides the demand responsive service provided by CAT, there is no intercity bus line in Cascade Locks. The nearest intercity bus service is provided by Greyhound bus lines in Hood River. The buses stop in Hood River en route to Portland on Interstate 84 west, and to The Dalles and Boise, Idaho, on Interstate 84 east. This service operates three times a day. Greyhound also runs a bus from Hood River to Biggs and then north to Spokane, Washington. Although Greyhound runs past Cascade Locks on I-84, currently it does not stop in the city.

3.8 BICYCLE

In Cascade Locks, bicyclists must share the roadway with motorists on most roads except on Wa-Na-Pa Street from I-84 westbound off-ramp to Forest Lane where shoulders are provided. Apart from the downtown core of Cascade Locks, bicyclists might share the roadways with motorists in areas where population densities are low and destinations are widely spaced.

3.9 PEDESTRIANS

In most of Cascade Locks, pedestrians share the roadway with motor vehicles and bicycles by using roadway shoulders; except for portions of Wa-Na-Pa Street and Forest Lane. On Wa-Na-Pa Street, sidewalks are provided on both sides of the street from the foot of the Bridge of the Gods to Oneonta Street and on the north side of the

roadway from Oneonta Street to Lakeside Drive. On Forest Lane, sidewalks are available on the south side of the roadway from Wa-Na-Pa Street to Wheeler Avenue.

Cascade Locks, in its Design Theme for a Downtown Street Plan, has identified the need to establish a more pedestrian-friendly environment through its downtown on Wa-Na-Pa Street (US 30). The plan proposes increasing sidewalk widths to 12 feet, adding areas for street trees and benches, ~~narrowing pedestrian crossings,~~ and developing numerous walking loops within the downtown and the locks. An obstacle to creating a better pedestrian environment is the large number of dead end streets in the city.

3.10 OIL AND GAS PIPELINES

There are no major pipelines or natural gas service in Cascade Locks.

3.11 INTERMODAL LINKS

The Oregon Transportation Plan identifies connectivity between different modes of travel as a key element in meeting the state's quality-of-life and economic development goals. Many of the major transportation facilities in the county are clustered, making intermodal connections possible. In Cascade Locks, the airport is located adjacent to the Union Pacific Railroad, and very near I-84 and the Port of Cascade Locks. Pedestrian and bicycle access to these transportation hubs is currently limited. However, the demand responsive transit service operated by the Columbia Area Transit District can bring passengers to any of the transportation facilities.

3.12 POPULATION AND EMPLOYMENT

Population and employment within the study area strongly impact the service levels of the highways, local roads, and parts of the transportation system. **Population forecasts for Hood River County and the city show a potential maximum population of approximately 3,200. However, the city expects substantially less growth over the planning period. Additional employment opportunities are expected, particularly in the eastern portion of the city. The Port of Cascade Locks owns land which is available primarily for commercial and industrial development.**

4. ACCESS MANAGEMENT

4.1 NEED FOR MANAGEMENT

Access management is a process of managing vehicular access to adjacent land use while simultaneously preserving the flow of traffic on the surrounding road system. This management is achieved by providing standards for accessing the roadway via driveways or curb cuts. On high volume arterials or highways, frequent driveways can reduce the capacity and safety of the roadway. Access management strategies and guidelines are therefore needed for arterial and collector streets. Local streets primarily serve as access streets and the access guidelines in this report generally do not apply on local streets.

Access management is essential to preserving the 'functional integrity' of the street system by reserving the high speed and high capacity roads for longer distance trips, and assigning the lowest restriction of access to local roads. Additional driveways along arterial streets lead to an increased number of potential conflict points between vehicles entering and exiting the driveway, and through vehicles on the arterial streets. This not only leads to increased vehicle delay and a deterioration in the level of service on the arterial, but also leads to a reduction in safety. Thus, it is essential that all levels of government try to maintain the efficiency of existing arterial streets through better access management, by reserving the high speed and high capacity roads for longer distance and higher speed travel, and assigning the lowest restriction of access to local roads.

Access management is best implemented by integrating it into the land development and permitting process. The problem of applying access management to a developed major arterial poses a much greater challenge due to right-of-way limitations and concerns by the owners of the adjacent properties and the affected businesses. In such cases, access management can be implemented as part of roadway improvement plans or as part of roadway retrofit plans.

4.2 ACCESS MANAGEMENT STRATEGIES AND TECHNIQUES

The main goals of an access management program are enhanced mobility and improved safety. This is achieved by limiting the number of traffic conflicts. A traffic conflict point occurs where the paths of two traffic movements intersect. Vehicle maneuvers on the street system in the order of increasing severity of conflict are diverge, merge, and cross. In each case, drivers of one or more vehicles may need to take appropriate action in order to avoid a collision.

A wide variety of access management strategies were reviewed by the TAC and the public through various public involvement opportunities. The following strategies were selected for more detailed description and for having the most potential for application:

- Optimize traffic signal installations, spacing, and coordination;
- Regulate minimum spacing of driveways;
- Consolidate access for adjacent properties;
- Consolidate existing access whenever separate parcels are assembled under one purpose, plan, entity, or usage;
- Restrict parking on roadways adjacent to driveways to increase driveway turning speeds;
- Provide direct access on lower functional class street when available;
- Encourage connections between adjacent properties; and
- Require adequate internal design and circulation plan.

A complete listing and descriptions of the selected strategies are included in Appendix B.

4.3 CURRENT ACCESS CONDITIONS

The following is a summary of the access conditions for Cascade Locks.

The average spacing between interchanges was determined on I-84 in Hood River County. For the other state highways, the average spacing between accesses was determined. Accesses included driveways, streets, and ramps.

The segment of Interstate 84, MP 42.08 to MP 67.72, runs east-west through Hood River County. It consists of three half interchanges and five full interchanges. The average spacing is about 3.3 miles between interchanges. Table 4-1 summarizes the spacing between the midpoints of each interchange. (see Figure 4-1).

Two segments of US 30 were evaluated. One segment, MP 30 to MP 33.25, runs through the City of Cascade Locks with a total of 47 access points. The average spacing is about 14 access points per mile (see Figures 4-1). The access density is considerably less than the rule of thumb for high density access of over 60 access points per mile.

TABLE 4-1
INTERSTATE 84 INTERCHANGE SPACING IN HOOD RIVER COUNTY

Interchange Location	MP	Spacing From Previous Interchange (mile)
Bonneville Dam (Multnomah County)	40.27	
West Cascade Locks City Limits*	43.54	3.27
East Cascade Locks City Limits*	45.11	1.57
Herman Creek*	47.53	2.42
Wyeth Interchange	50.99	3.46
Starvation Creek	54.93	3.94
Viento Park Interchange	56.04	5.05
Mitchell Point	58.51	3.58
Frontage Road	59.96	0.70
Ruthton Point	60.66	1.40
Mt. Hood Hwy Junction	62.06	6.02
Hood River 2nd Street Interchange	63.92	1.86
East Hood River Interchange	64.44	0.52
Mosier-The Dalles Hwy Junction (Wasco County)	69.79	5.35
Average Spacing		3.01

Note: * indicates that the interchange is a half interchange. See the following discussion on safety for additional information on half interchange spacing impacts:

Economic, Safety and Historic Highway Preservation

Economic. Half interchanges limit access to commercial and industrial areas. Full interchanges would enhance the ability to attract and retain commercial and industrial employers.

The lack on full interchanges also impacts retail businesses that cater to travelers and tourists. If eastbound travelers miss the off-ramp at the west end of town at MP 43.54 they must travel 7.45 miles to Wyeth to turn around and return 4.84 miles to the off-ramp at MP 45.11 at the east end of the commercial district on Wa-Na-Pa;

a total of 12.29 miles. If westbound travelers miss the off-ramp onto Wa-Na-Pa at the east end of town (MP 45.11), they must travel 4.84 miles to the Bonneville Interchange to turn around and return 3.27 miles to the west end of the commercial district; a total of 8.11 miles.

Safety. The Cascade Locks Fire and Ambulance departments serve I-84 in addition to the city of Cascade Locks. Fire and rescue responses outside the city represent 90 percent of the Fire Department's calls. Ambulance responses outside the city represent about 50 percent of the Ambulance Department's calls. The half interchanges mean that the response vehicles often must travel extensive distances, as mentioned in the previous paragraph, to reach emergencies.

Historic Highway Preservation. Westbound industrial traffic from the Port Industrial Park must travel over Forest Lane and Wa-Na-Pa street (the Historic Highway) to reach the westbound I-84 access by the Bridge of the Gods. Wa-Na-Pa is a wide thoroughfare and has been improved, so the impact is from traffic volume and truck noise. Forest Lane is a two lane road and the addition of industrial truck traffic would be detrimental to the Historic Highway. Houses and driveways enter onto Forest Lane, and industrial truck traffic would negatively impact the residences along this street. **Forest Lane should remain residential in character from Edgewood Avenue east to the city limit. An alternative route(s) for trucks should be developed in coordination with ODOT and Hood River County. The frontage road on the south side of I-84 is being considered to provide this alternative.** A full interchange at Forest Lane and I-84 would alleviate truck traffic on the Historic Highway.

4.4 GENERAL ACCESS MANAGEMENT GUIDELINES FOR COLLECTOR AND LOCAL STREETS

Access management is hierarchical, ranging from complete access control on freeways to increasing the use of streets for access purposes, parking and loading at the local and minor collector level. ~~Table 4-2 describes some typical general access management guidelines by roadway functional classification and appropriate adjacent land use type for collector and local streets.~~

~~These a~~ Access management restrictions are not intended to eliminate existing intersections or driveways. Rather, they are best implemented by instituting them into the land use permitting process and applying them as new development occurs.

The challenge is greater in applying access management guidelines to a developed major arterial due to right-of-way limitations, costs, and concerns by the owners of the adjacent properties and the affected businesses. In such cases, access management can be implemented as part of roadway improvement plans or as part of roadway retrofit plans.

To summarize, access management strategies consist of managing the access points and the solution is a balanced, comprehensive program which provides reasonable access while maintaining the safety and efficiency of traffic movement.

TABLE 4-2
GENERAL ACCESS MANAGEMENT GUIDELINES

Functional Classification	Minimum Posted Speed	Minimum Spacing Between Driveways and/or Streets ²	Minimum Spacing Between Intersections	Appropriate Adjacent Land Use Type
Collector Street	25-50 mph	300 feet	600 feet	light industry/offices and buffered medium or low density residential neighborhood commercial near some major intersections
Major Local Street	25 mph	50 feet	300 feet	primarily lower density residential
Minor Local Street	25 mph	access to each lot permitted	300 feet	primary residential

Source: Washington County Department of Land Use and Transportation and Oregon Department of Transportation.

Table 6-2 in Chapter 6 shows more specific guidelines for arterial and collector streets in Cascade Locks. Chapter 6 includes the access management plan for Cascade Locks which is based on information collected in this chapter, Appendix B, and from the TAC.

² Desirable design spacing (existing spacing will vary).

5. TRAFFIC FORECASTS AND ANALYSIS

Travel demand forecasting helps identify future traffic demand along streets and at intersections. Future traffic volumes were projected based on existing and future land use projections and historical growth trends in traffic on the highway system. Forecasts focused on existing (1995) and future year (2015) traffic conditions during either an average weekday (24-hour period) or the PM peak hour which occurs between 4:00 PM and 5:00 PM for an average weekday. The PM peak hour is the time period when traffic volumes on the highway and local street system are usually the greatest.

The traffic volume forecasts for Cascade Locks are based on historical and projected population growth, proposed land use, and historical traffic growth on Interstate 84 and Wa-Na-Pa Street (Historic Columbia River Highway). Traffic volumes for the future year (2015) are in terms of ADT volumes. Traffic volumes were also estimated for the PM peak hour of a typical weekday to reflect the critical time period for traffic operations. Traffic forecasts were prepared for Interstate 84, Wa-Na-Pa Street, and related roadways since the volumes on these roadways are much higher than on any of the other roads in Cascade Locks.

5.1 LAND USE

Land use and population growth play an important part in projecting future traffic volumes. The land use characteristics which define growth in the City of Cascade Locks are population, employment, and number of housing units. Historical trends and their relationship to historical traffic demand are the basis of the future projections. Table 5-1 summarizes both the historical and projected populations, employment, and number of housing units for Cascade Locks.

**TABLE 5-1
CASCADE LOCKS POPULATION, EMPLOYMENT, AND
HOUSING UNIT TRENDS**

Year	Population	Employment	Housing Units
1980	838	N/A	357
1990	848	374	420
1995	1080	487	N/A
2015	1605 ¹	1500 ²	1300 ³

Source: McKeever/Morris, Inc.

Notes:

1. The population is projected with the continuation of recent trends.
2. The employment projection is the sum of current employment and the proposed employment in the Port Area Industrial Park and hotel/resorts.
3. The housing unit projection is the sum of the current housing unit and proposed potential units from undeveloped land.

5.1.1 Historical Land Use

Cascade Locks has experienced a slow population growth over the last 15 years. The average annual growth rate was about 1.2 percent from 1980 to 1990, and 2.3 percent from 1990 to 1995.

In Cascade Locks, tourism is a major summer employment generator. Tourism generated over one hundred part-time jobs in 1995, which is about 25 percent of all employment in Cascade Locks.

The housing vacancy rate is low in the City of Cascade Locks. New housing units are expected to support some of the new employment.

5.1.2 Projected Land Use

Factors that will affect the future population growth rate of Cascade Locks include employment opportunities, available land area for development, and community efforts to manage growth. The following future land use and development could occur considerably before or after the year 2015. For the purposes of the analysis in this study, it was estimated the development will occur by 2005.

The City of Cascade Locks provided information on future proposed land use for the 2015 Build-Out scenario. This scenario was based upon general land use changes in the revised Cascade Locks Comprehensive Plan (adopted in May 2001) as well as several specific developments which were anticipated at the time the TSP was being formulated. For conservative forecasting, about 890 new housing units and 1,000 employees in the Port of Cascade Locks industrial area were estimated before 2015.

Although most of the specific projects listed below did not materialize, they are indicative of the type of development, which will ultimately occur. The proposed developments consist of a:

- 29-unit condominium subdivision on the east side of Sadie Avenue.
- 45-unit motel near the Bridge of the Gods.
- 100-room resort along the Columbia River north of the Port Area Light Industrial Park.
- 250-room resort will be developed on Government Rock.
- 75-room resort on Forest Lane west of I-84 westbound off ramp.

~~The proposed developments consist of a 29-unit condominium, a Port Area Light Industrial Park, a 45-unit hotel, a 100-unit resort, a 75-unit resort, a 250-unit resort, and 890 potential residential units.~~

~~The community of Cascade Locks is expecting four major hotel/resort developments in the near future. A new 45-room hotel/motel will be developed on Wa-Na-Pa Street. A new 75-room resort will be developed on Forest Lane west of I-84 westbound off ramp. A new 100-room resort will be developed along the Columbia River north of the Port Area Light Industrial Park. Finally, a new 250-room resort will be developed on Government Rock east of Cascade Locks.~~

~~Most of the undeveloped land south of I-84 will be available for new housing projects. A 29-unit condominium subdivision is expected to developed on the east side of Sadie Avenue. For conservative forecasting, about 880 new housing units are expected before 2015.~~

~~The Port Authority is expected to develop the Port Area Light Industrial Park after the completion of the nearby industrial waste water treatment plant. The Port Area Light Industrial Park expects to employ a thousand employees before 2015.~~

5.1.3 Work Trips

The 1990 census indicate that 39.5 percent of the total population in Cascade Locks were employed. There were 366 full time employees and 121 part-time employees in 1995. In general, most of the part-time employment is tourism-related summer positions.

Historically, half of the new employment was steadily filled by residents living outside Cascade Locks. Table 5-2 shows the origins of employees.

TABLE 5-2
TRIP ORIGINS FOR EMPLOYMENT WITHIN CASCADE LOCKS

Employee Origin	Percentage
Within Cascade Locks	47.8 %
Outside of Cascade Locks	52.2 %
Total	100.0 %

Source: McKeever/Morris, Inc.

Note: The percentage is based on the number of employees.

At the same time as new employment in Cascade Locks was filled by outside commuters, approximately half (48 percent) of the working population in Cascade Locks found employment outside of the city. For those workers who worked outside of Cascade Locks, 24 percent worked outside of Hood River County (most are believed to be working in the Portland Area); plus 11 percent worked outside of Oregon (they are believed to be working in Stevenson and its surrounding communities); the remaining 65 percent worked in Hood River County (most are believed to be working in the City of Hood River and its surrounding communities). Table 5-3 shows the distribution of employment destinations for residents of Cascade Locks.

TABLE 5-3
EMPLOYMENT DESTINATIONS FOR RESIDENTS OF
CASCADE LOCKS

Employment Location	Percentage
<i>Within Cascade Locks</i>	52%
<i>Outside of Cascade Locks</i>	
Portland (24 %)	12%
Stevenson (11 %)	5%
Hood River County (65 %)	31%
Subtotal (100 %)	48%
Total	100%

Source: ECONorthwest.

Note: The percentage is based on the total number of employees.

5.2 HISTORICAL HIGHWAY GROWTH TRENDS

ODOT annually collects traffic count data at several locations along Interstate-84. The traffic on Interstate-84 has a 4.5 percent average annual growth rate in and around Cascade Locks.

Average Daily Traffic (ADT) counts on Wa-Na-Pa Street, a segment of the Historic Columbia Highway from mile post 30.41 to 31.26, were collected at several locations in three year intervals. The last count was conducted in 1995. The traffic on Wa-Na-Pa Street had a less than two percent average annual growth rate.

The Port Authority provided the historical traffic counts on the Bridge of the Gods. The traffic counts indicated a 4.5 percent average annual traffic growth rate on the bridge.

5.3 TRAFFIC FORECASTING PROCESS

The traffic forecast for the year 2015 included two traffic components: growth in through traffic on the highways and bridges and future additional locally generated traffic. The through traffic is a function of historical highway growth while the locally generated traffic is a function of the growth of the city. Traffic volumes for the year 2015 without any street improvements are illustrated in Figure 5-1. Traffic conditions with specific street improvements are discussed in the next section.

5.3.1 Through Traffic

The first step in developing traffic projections was to break out the existing through traffic volumes from total traffic on Interstate-84 and the Bridge of the Gods.

On Interstate 84, a 50 percent directional split westbound and eastbound was assumed. The through traffic was calculated by subtracting the on-ramp and off-ramp traffic from the traffic on the through segment on Interstate 84. A 4.5 percent average annual growth rate for Interstate 84 through traffic was used based on the historical trend.

On the Bridge of the Gods, two thirds of the traffic was assumed to be through traffic between Interstate 84 and Washington. The through traffic was then assigned to two on-ramps and two off-ramps in the proportion of the existing traffic on these ramps.

Growth on Interstate 84 and the Bridge of the Gods exceeded the population growth in Cascade Locks (traffic volumes are growing at a higher rate than the city population). This relationship reflects the modern trend toward an increase in per person vehicle miles traveled. It also supports the assumptions that trips in and out of Cascade Locks, such as intercity commuter trips among Portland, Stevenson, and Hood River County, are also increasing.

5.3.2 Locally Generated Traffic

The forecasting methodology used to project locally generated traffic in 2015 has two assumptions: 1) the relationship of the existing population and traffic demand will continue to remain the same; 2) all future additional traffic will be generated by new developments and new housing units. The first assumption is that the remaining traffic volumes after the through traffic has been removed will remain unchanged between 1995 and 2015 on Interstate-84, Bridge of the Gods, and Wa-Na-Pa Street. Traffic from new developments will then be distributed and added to existing local traffic.

5.3.3 Trip Generation

The new site generated trips are calculated based on the Institute of Transportation Engineers (ITE) *Trip Generation* 5th Edition. Table 5-4 illustrates the 24-hour trips generated by each development.

**TABLE 5-4
PROPOSED DEVELOPMENT TRIP GENERATION**

Land Use	Size	24-Hour Two-Way Volume
Condominium	29 Units	170
Port-Area Light Industrial	1,000 Employees	3,020
Hotel	45 Rooms	459
Resort Hotel	75 Rooms	762
Resort Hotel	100 Rooms	1,016
Resort Hotel	250 Rooms	2,540
Mix Housing	890 Units	6,221

Source: ITE *Trip Generations* 5th Edition.

5.3.4 Trip Distribution

Trips to be generated by hotel/resort developments were assumed to be made by tourists mostly from the Portland area. For the future Light Industrial Park development, it was assumed that 50 percent of trips generated would be distributed to Cascade Locks and 50 percent to Portland, Stevenson, and Hood River County. Trips generated by future residential developments were assumed to be made within Cascade Locks, Stevenson, and Hood River County. Table 5-5 illustrates the trip distribution of each land use type.

**TABLE 5-5
DISTRIBUTION OF FUTURE TRIPS**

New Developments	Cascade Locks	Portland	Stevenson	Hood River County
Hotel/Resort	10%	60%	10%	20%
Light Industrial Park	50%	12%	5%	33%
Residential	50%	0%	17%	33%

5.3.5 Trip Assignment

This is the final step in the City of Cascade Locks modeling process. Once the distribution of traffic is determined, future additional traffic is now assigned to the street network. This was done using a manual assignment. A manual assignment is performed by hand, assigning trips from one zone to another using one or more paths on the street network.

The goal of a manual assignment is to choose travel paths that simulate real life choices made by the driver. Typically, a driver wants to take the quickest route, one which takes the least amount of time. This methodology was applied in the manual assignment considering several factors which determine the quickest routes. These include the geographical orientation, and speed and capacity characteristics of each roadway.

Once the future additional traffic is assigned it is then added to existing local traffic on the street network.

5.4 FUTURE ANALYSES

A "No-Build" alternative, transportation system management measures, and three improved roadway system alternatives were developed, analyzed, and compared as part of the future system analysis. These alternatives were developed with the help of the City of Cascade Locks and ODOT, keeping in mind the goals and objectives of the transportation plan.

Each of the alternatives was developed to address specific street system deficiencies and/or access concerns. The list below briefly describes the alternatives.

- 2015 No-Build with existing street network - assumes no new site generated traffic on existing street system.
- 2015 Build-Out with existing street network - assumes new site generated traffic on existing street system.
- 2015 Build-Out with proposed street network - assumes new site generated traffic on the new proposed street network in Cascade Locks.
- 2015 Build-Out with proposed street network and proposed interchange - assume new site generated traffic on the new proposed street network in Cascade Locks and the new Forest Lane interchange east of I-84, Exit 44.

The 2015 No-Build scenario with the existing street network is shown in Figure 5-1. The future through traffic was added to the existing non-through traffic on and off the Bridge of The Gods and I-84.

The 2015 Build-Out with existing street network scenario is shown in Figure 5-2. The new site generated traffic was added to the 2015 No-Build scenario with the existing street network.

The 2015 Build-Out with proposed street network scenario is shown in Figure 5-3. The new site generated traffic was added to the 2015 No-Build scenario with the proposed street network.

The 2015 Build-Out with proposed street network and proposed interchange scenario is shown in Figure 5-4. The new site generated traffic was added onto the 2015 No-Build scenario with the proposed street network and proposed interchange.

5.4.1 Future Operating Conditions

The same standards used for measuring existing operating conditions are used for measuring future operating conditions.

5.4.2 2015 No-Build With Existing Street Network

Table 5-6 shows the estimated V/C ratios and LOS for selected segments of the roadways in Cascade Locks for the 2015 No-Build with existing Street network. Interstate 84 and the on- and off-ramps along the interstate are expected to be at LOS C or better with V/C ratios of 0.72 or less. Highway 30, north of the Bridge of the Gods is expected to operate at LOS C with a V/C ratio of 0.57. On the remaining roadways, the traffic operations will be LOS A with V/C ratios of 0.15 or less.

TABLE 5-6
2015 NO-BUILD WITH EXISTING STREET NETWORK ESTIMATED V/C AND
LOS OF STREET ROADWAYS IN CASCADE LOCKS

Location	V/C Ratio	Speed	LOS
I-84 west of Exit 44	0.72	65 mph	C
I-84 east of Exit 44	0.65	65 mph	C
I-84 westbound on-ramp at Exit 44	0.26	45 mph	A
I-84 eastbound off-ramp at Exit 44	0.32	45 mph	B

I-84 westbound off-ramp at Exit 44	0.09	45 mph	A
I-84 eastbound on-ramp at Exit 44	0.20	45 mph	A
US 30, north of foot of the Bridge of the Gods	0.57	35 mph	C
Wa-Na-Pa Street east of Edgewood Avenue	0.15	55 mph	A

5.4.3 2015 Build-Out With Existing Street Network

Table 5-7 shows the estimated V/C ratios and LOS for selected segments of the roadways in Cascade Locks for the 2015 Build-Out, with the existing street network. Interstate 84 and the on- and off-ramps along the interstate are expected to be at LOS of C or better with V/C ratios of 0.77 or less. On Highway 30, north of the Bridge of the Gods, a V/C ratio 0.67 and a LOS of D is anticipated. On the remaining roadways, the traffic conditions are estimated to be LOS B or better with V/C ratios of 0.36 or less.

TABLE 5-7
2015 BUILD-OUT WITH EXISTING STREET NETWORK ESTIMATED V/C AND
LOS STREET ROADWAYS IN CASCADE LOCKS

Location	V/C Ratio	Speed	LOS
I-84 west of Exit 44	0.77	65 mph	C
I-84 east of Exit 44	0.73	65 mph	C
I-84 westbound on-ramp at Exit 44	0.31	45 mph	B
I-84 eastbound off-ramp at Exit 44	0.37	45 mph	B
I-84 westbound off-ramp at Exit 44	0.21	45 mph	A
I-84 eastbound on-ramp at Exit 44	0.31	45 mph	B
US 30, north of foot of the Bridge of the Gods	0.67	35 mph	D
Wa-Na-Pa Street east of Edgewood Avenue	0.36	55 mph	B

5.4.4 2015 Build-Out With Proposed Street Network

Table 5-8 shows the estimated V/C ratios and LOS for selected segments of the roadways in Cascade Locks for the 2015 Build-Out, with the proposed street network. Interstate 84 and the on- and off-ramps along the interstate are expected to be at LOS of C or better with V/C ratios of 0.77 or less. On Highway 30, north of the Bridge of the Gods, a V/C ratio 0.67 and a LOS of D is anticipated. On the remaining roadways, the traffic conditions are estimated to be LOS A or better with V/C ratios of 0.27 or less.

It appears that an additional collector street would reduce the V/C ratio and improve the LOS on Wa-Na-Pa Street.

TABLE 5-8
2015 BUILD-OUT WITH PROPOSED STREET NETWORK
ESTIMATED V/C AND LOS OF ROADWAYS IN CASCADE LOCKS

Location	V/C Ratio	Speed	LOS
I-84 west of Exit 44	0.77	65 mph	C
I-84 east of Exit 44	0.73	65 mph	C
I-84 westbound on-ramp	0.31	45 mph	B
I-84 eastbound off-ramp	0.37	45 mph	B
I-84 westbound off-ramp	0.21	45 mph	A
I-84 eastbound on-ramp	0.31	45 mph	B
US 30, north of foot of the Bridge of the Gods	0.67	35 mph	D
Wa-Na-Pa Street east of Edgewood Avenue	0.27	55 mph	A
Proposed street south of I-84 (two lanes)	0.14	35 mph	A

5.4.5 2015 Build-Out With Proposed Street Network and Proposed Interchange

Table 5-9 shows the estimated V/C ratios and LOS for selected segments of the roadways in Cascade Locks for the 2015 Build-Out, with the proposed street network and proposed interchange. Interstate 84 and the on- and off-ramps along the interstate are expected to be at LOS of C or better with V/C ratios of 0.77 or less. On Highway 30, north of the Bridge of the Gods, a V/C ratio of 0.59 and a LOS of C is also anticipated. On the remaining roadways, the traffic conditions are estimated to be LOS A or better with V/C ratios of 0.26 or less.

It appears that the proposed interchange would shift some of the new traffic from using I-84, Exit 44, to this new interchange. The new interchange would reduce the V/C ratio on all four ramps at I-84 Exit 44; and it would also improve their LOS except on the I-84 eastbound off-ramp.

TABLE 5-9
2015 BUILD-OUT WITH PROPOSED STREET NETWORK AND PROPOSED
INTERCHANGE ESTIMATED V/C AND LOS OF ROADWAYS IN CASCADE LOCKS

Location	V/C Ratio	Speed	LOS
I-84 west of Exit 44	0.77	65 mph	C
I-84 east of Exit 44	0.73	65 mph	C
I-84 westbound on-ramp	0.27	45 mph	A
I-84 eastbound off-ramp	0.34	45 mph	B
I-84 westbound off-ramp	0.17	45 mph	A
I-84 eastbound on-ramp	0.28	45 mph	A
US 30, north of foot of the Bridge of the Gods	0.59	35 mph	C
Wa-Na-Pa Street east of Edgewood Avenue	0.26	55 mph	A
Proposed street south of I-84 (two lanes)	0.14	35 mph	A
Forest Lane north of proposed interchange	0.19	45 mph	A

6. TRANSPORTATION SYSTEM PLAN

The purpose of this chapter is to provide long-range plans for each mode of the transportation system within the City of Cascade Locks. Components of the transportation system plan include: 1) street classification standards, 2) access management recommendations, 3) transportation demand management measures, 4) modal plans, and 5) a systems plan implementation program.

6.1 RECOMMENDED STREET CLASSIFICATION STANDARDS

Street classification standards relate the design of a roadway to its function. The function is determined by operational characteristics such as traffic volume, traffic composition (through/local), operating speed, safety, and capacity. Street standards are necessary to provide a community with roadways which are relatively safe, aesthetically pleasing, 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 classification standards for Cascade Locks are summarized in Chapter 3.

The street specifications do not include sidewalks as part of the cross section, although separate drawings for sidewalks and ADA-standard curb cuts are provided, showing a five-foot minimum width, except in the historical area, which has a six-foot minimum width. Bikeways are not shown.

The development of the TSP provides the City of Cascade Locks with an opportunity to review and revise the existing street classification and street design standards to more closely meet the goals and objectives of the Transportation System Plan. The recommended future street classifications are illustrated in Figure 6-1. Included in these figures are the street classifications for all proposed future roadways, as well as for existing streets. The alignment of new roadways may vary considerably from the illustration (Figure 6-1) depending on topography, etc. More exact alignments will be determined as part of project refinement. The recommended street design standards are shown graphically in Figures 6-2 through 6-6, summarized in Table 6-1, and described in detail in the following sections.

Although portions of the study areas, especially immediately outside city boundaries but within urban growth boundaries, may presently have a rural appearance, these lands will ultimately be part of the urban area. Urban road standards should also be applied to these outlying areas. Retrofitting rural streets to urban standards in the future is expensive and controversial; it is better to initially build them to an acceptable urban standard if expected to be urban in the future.

TABLE 6-1
RECOMMENDED STREET DESIGN STANDARDS

Classification	Pavement Width	Right-of-Way Width	Minimum Posted Speed
<i>Urban</i>			
→ Local Residential	28 28-38 ft.	50-60 ft.	none
Local Industrial	40 ft.	60-80 ft.	25 mph
Collector	40 ft.	60 ft.	25 mph
Major Arterial	74 ft.	90 ft.	30 mph
Minor Arterial	46-52 ft.	80 ft.	30 mph
Commercial/Industrial	40 ft.	60-80 ft.	20-30 mph
Downtown	50-56 ft.		
Wa Na Pa Street			

6.2 RECOMMENDED STREET DESIGN STANDARDS

The street design standards are intended to apply to new streets or major street construction. The standards represent the ideal designs to be applied for local, collector, and minor arterial streets in the City. As noted in the following subsections, allowances should be made to adjust the standards to accommodate significantly constrained circumstances, such as steep topography, environmentally sensitive areas, and existing improvements that cannot be reasonably removed or modified. In these circumstances, it is appropriate to modify the standards only to the degree necessary while allowing the facility to function appropriately.

6.2.1 Local Residential Streets

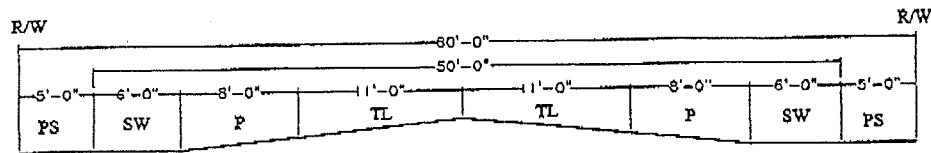
The design of a residential street affects its traffic operation, safety, and livability. The residential street should be designed to enhance the livability of the neighborhood, as well as to generally accommodate less than 1,200 vehicles per day. Speeds are normally not posted, with a statutory 25 mph applying. When traffic volumes exceed approximately 1,000 to 1,200 vehicles day, traffic becomes a noise and safety problem. To maintain neighborhoods, local residential streets should be designed to encourage low speed travel and to discourage through traffic.

A well-connected grid system of relatively short blocks can minimize excessive volumes of motor vehicles by providing a series of equally attractive or restrictive travel options. This street pattern is also beneficial to pedestrians and bicyclists.

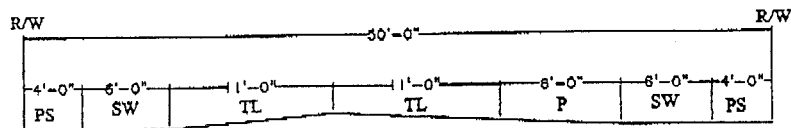
The proposed standard for a local residential street is a ~~40-28~~ 28 to 38-foot roadway, curb face-to-curb face within a 50- to 60-foot right-of-way, as shown on Figure 6-2. Six-foot-wide sidewalks should be provided on each side of the roadway, with up to six-foot planting strips, depending on right-of-way limitations. A zero to ten 0 to 5-foot utility easement is also recommended on both sides of the road, as needed.

The 38-foot cross section will accommodate passage of two lanes of moving traffic in each direction with curb parking on both sides. The 30-foot cross section allows parking on only one side. On low volume residential streets where curb parking may occur on both sides of the ~~28-foot wide~~ street, traffic will move freely but slowly. Narrower streets improve neighborhood aesthetics and discourage speeding and through traffic. They also reduce right-of-way needs, construction costs, stormwater run-off, and the need to clear vegetation unnecessarily. Narrower “skinny” street standards may be appropriate in some cases where adequate off-street parking is provided. These “skinny” streets have to be wide enough for fire emergency vehicles and sanitary service trucks. Minimum street widths should be 20 feet without parking.

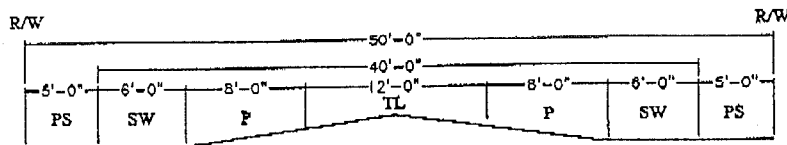
LOCAL - RESIDENTIAL - 38 FEET WIDE
PARKING BOTH SIDES



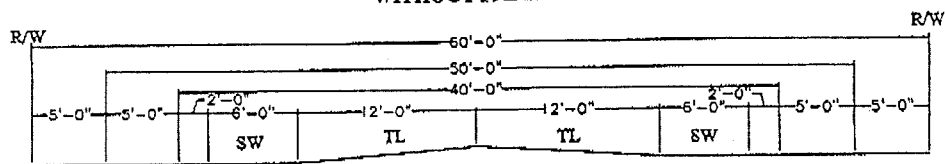
PARKING - ONE SIDE ONLY



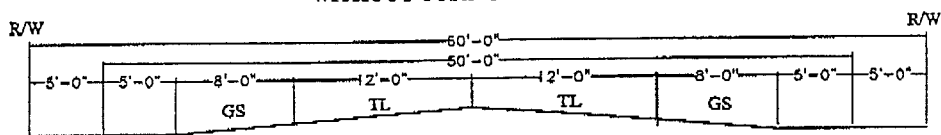
LOCAL - RESIDENTIAL - 28 FEET WIDE
PARKING BOTH SIDES



CUL-DE-SAC
WITHOUT PARKING



COUNTRY LANE
WITHOUT CURB OR SIDEWALK



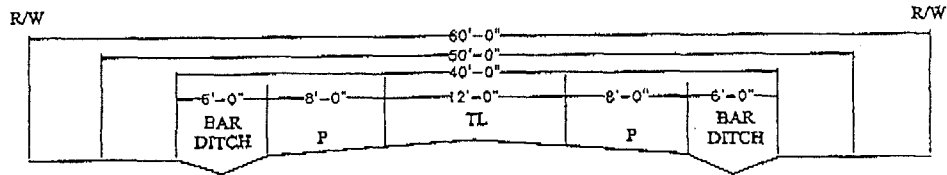
LEGEND

TL - TRAVEL LANE
P - PARKING
PS - PUBLIC STRIP
SW - SIDEWALK
R/W - RIGHT OF WAY LINE
GS - GRAVEL SHOULDER

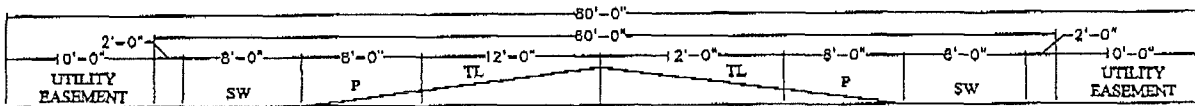
FIGURE 6-2
PROPOSED STREET
DESIGN STANDARDS
Local Streets
Not to Scale

City of CL
TSP

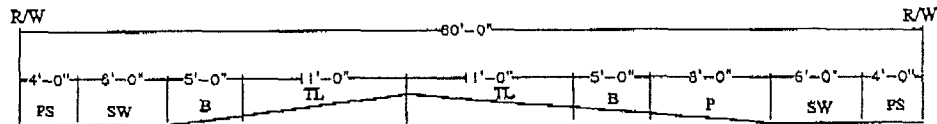
LOCAL ONE WAY STREET



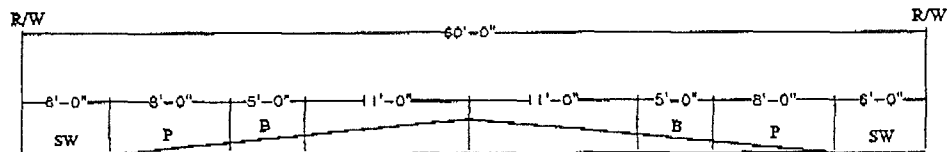
LOCAL INDUSTRIAL STREET



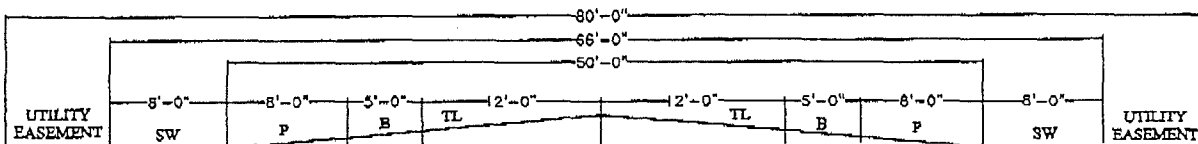
COLLECTOR - 40 FEET WIDE



COLLECTOR - 48 FEET WIDE



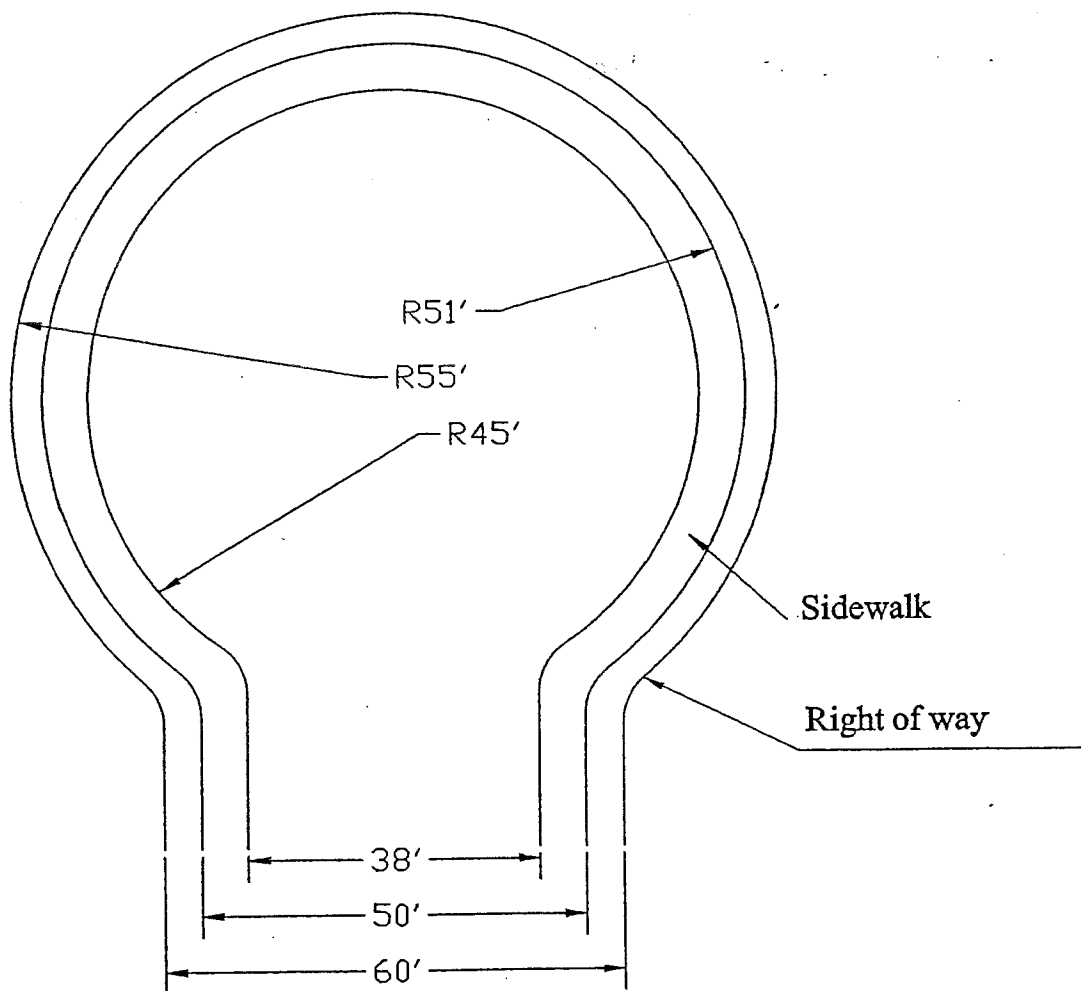
MINOR ARTERIAL



LEGEND

TL = TRAVEL LANE
P = PARKING
PS = PLANTING STRIP
SW = SIDEWALK
R/W = RIGHT OF WAY LINE
B = BIKE LANE

FIGURE 6-3
**PROPOSED STREET
DESIGN STANDARDS**
Industrial, Collector and Arterial Streets
Not to Scale



City of CL
TSP
FIGURE 6-4
PROPOSED STREET
DESIGN STANDARDS
Cul-De-Sac
Not to Scale

Sidewalks are normally included on all urban streets. ~~When sidewalks are located directly adjacent to the curb, impediments such as mailboxes, street light standards, and sign poles, will reduce the effective width of the walkway. Sidewalks buffered from the street by a planting strip eliminate obstructions in the walkway, provide a more pleasing design and buffer from traffic, and make the sidewalk more useable by disabled persons.~~ To maintain a safe and convenient walkway for at least two adults, a six-foot sidewalk standard with a five-foot minimum is applied in residential areas. Steep slopes, dead end streets, and new development on existing streets (infill) are all cases where it may be appropriate to approve modifications such as narrower streets and sidewalk modifications.

Cul-de-sac, or “dead end” residential streets are intended to serve only the adjacent land in residential neighborhoods. These streets should be short, serving 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 or one lane of traffic when vehicles are parked at the curb.

The street width of a cul-de-sac is 24 feet, curb face-to-curb face within a 50-foot right-of-way, as shown in Figures 6-2 and 6-4. ~~A five six-foot-wide sidewalk may shall be located one foot from the right-of-way line on each side of the roadway, adjacent to the curb, providing a five-foot planting strip.~~

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

The majority of the residential streets in the city do not meet the local street standards described herein. For many of these neighborhoods, which typically are fully developed, there is realistically no financing available for street widening, curbs, and sidewalks in the foreseeable future. For minor developments that occur within these neighborhoods, such as a partition, it is not prudent to develop isolated sections of local street to the desired local street standards. It will be more reasonable to match new street improvements with those in the area. A country lane standard, which is also shown in Figure 6-2, is intended for these situations.

Local Residential Application Guidelines

Street Type

38 feet parking both sides	Intended for new residential or mixed residential/commercial development with anticipated average daily traffic (ADT) for the street of over 600 vehicles per day. Anticipated on-street parking demand is relatively high due to existing uses with limited on-site parking, nearby commercial uses, or other factors. Generally, this standard should be required for developments with more than 40 residential units. If parking is considered critical and physical constraints prevent construction of all design elements, travel-lane curb-to-curb pavement width should be reduced first, followed by omitting a sidewalk on one side of the street.
30 feet parking one side or 28 feet parking both sides	Intended for new residential development with anticipated average daily traffic (ADT) for the street of less than 600 vehicles per day. Anticipated on-street parking demand is relatively low because of sufficient on-site parking, low density uses, or other factors. Generally, this standard should always be required for developments with more than 20 residential units. This standard is also appropriate for infill development of any size when comparable street improvements, such as curb and sidewalk, exist or are anticipated in the immediate vicinity. If physical constraints prevent construction of all design elements, travel-lane curb-to-curb pavement width should be reduced first, followed by omitting a sidewalk on one side of the street.
Cul-de-sac	Intended for new residential development with anticipated average daily traffic (ADT) for the street of less than 200 vehicles per day. Street width and cul-de-sac bulb radii should be designed to accommodate anticipated on-street parking and emergency access. Generally should be allowed to serve a maximum of 20 residential units.
Country Lane	Intended for new residential development with anticipated average daily traffic (ADT) for the street of less than 600 vehicles per day. Anticipated on-street parking demand is relatively low because of sufficient on-site parking, low density uses, or other factors. This standard should be required for developments of any size only when it is determined that the 38-foot or 30-foot standards are not appropriate.

6.2.2 Local Industrial Streets

This type of local street is solely intended for industrial and commercial areas in the city. The wider street cross section is designed to accommodate maneuvering needs of larger trucks. The street design is shown on Figure 6-3.

6.2.3 Urban-Collector Streets

Urban-e-Collectors are intended to carry between 1,200 and 10,000 vehicles per day, including limited through traffic, at a minimum posted speed of 25 mph. A collector can serve residential, commercial, industrial, or mixed land uses. Major-e-Collectors focus on connecting arterials, typically in higher volume commercial areas.

Figure 6-3 shows two alternative cross sections with a 60-foot right-of-way. Alternative 1 is a 40-foot paved width. This allows two travel lanes, two bicycle lanes, and parking on one side 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. Alternative 2 allows two travel lanes and parking on both sides without separate bicycle lanes. If the topography limits street width and the development provides for off street parking, narrower streets may be approved.

Six-foot sidewalks should be provided on each side of the roadway. In commercial or business areas, the sidewalks may be eight feet wide, and may be located adjacent to the curb to facilitate loading and unloading at the curb.

A ~~zero to ten~~ 0 to 4-foot utility easement is also recommended on both sides of the road, as needed.

The maximum grade under normal circumstances ~~would~~ **should** be 12 percent. However, this may be reduced by 2 percent due to the ice and snow, or made 2 percent steeper for short lengths (less than 500 ft) on low volume collectors.

If traffic volume forecasts exceed 5,000 vehicles per day on a collector, new driveways serving single- or multi-family houses should ~~not be permitted~~ **limited**.

Collector Street Type	Application Guidelines
40 feet parking one side	Intended for designated collector streets where the anticipated on-street parking demand is relatively low because of low intensity uses and/or sufficient on-site parking. Although it may take a long time to complete, sidewalks and bicycle lanes should be planned for and ultimately provided on both sides of the street. This street design should be used in areas with difficult topography or similar physical constraints. For significantly constrained situations, consideration should be given to omit design features in the following general order: 1. Sidewalk on one side; 2. Bicycle lanes; and 3. Prohibit parking on both sides. Safety and anticipated need should be evaluated to determine which features to omit.
48 feet parking both sides	Intended for designated collector streets where the anticipated on-street parking demand is relatively high due to existing uses with limited on-site parking, nearby commercial uses, or other factors. Although it may take a long time to complete, sidewalks and bicycle lanes should be planned for and ultimately provided on both sides of the street.

6.2.4 Urban Minor Arterial Streets

Minor arterials provide service between collectors and major arterials. They generally provide high volume connections, but still serve adjacent land uses. These streets are often the “main street” in a neighborhood shopping district.

Two-way minor arterial streets consist of two 12-foot travel lanes, two six-foot bike lanes, and two eight-foot parking lanes, as shown in Figure 6-3. These streets will include six-foot sidewalks on both sides of the roadway ~~with six-foot planter strips~~. Urban ~~m~~ Minor arterials should have an 80-foot right-of-way.

One way minor arterial streets have a similar cross section to two way minor arterials, but with only one bike lane. **The street cross sections are shown in Figure 6-3.**

6.2.5 Urban Downtown Commercial and Industrial Wa Na Pa Street

Wa Na Pa Streets ~~that serves~~ the downtown core of Cascade Locks. It must meet special demands for on-street parking and pedestrian comfort and accessibility. If possible, sidewalks are to be **8 to 12** ~~at least eight~~ feet wide for commercial streets (six feet wide for industrial streets), and such details as clearly marked crossings, ~~curb~~

~~extensions~~ street furniture and landscaping should be considered. Diagonal parking is to be avoided if possible. A utility easement is also recommended, ranging from zero to ten feet on each side of the road.

6.2.6 Alleys

Alleyways can be a useful way to diminish street width by providing rear access and parking to residential areas. Including alleys in a subdivision design allows homes to be placed closer to the street and eliminates the need for garages to be the dominant architecture 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 by delivery trucks that is off of the main streets. Alleys are encouraged when appropriate. Alleys are to be 12+5 to 20 feet wide, with a 20-foot right-of-way.

6.2.7 Urban-Bike Lanes

In cases where a bikeway is proposed within the street right-of-way, ~~12~~ 10 feet of roadway pavement (between curbs) should be provided for a ~~six~~ five foot bikeway (major collector and arterial streets) on each side of the street. Except in rare circumstances, bike lanes on one-way streets are located on the right side of the roadway and flow in the same direction as vehicular traffic. The striping is 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 must be integrated with the construction of new streets or as part of street improvement projects. The implementation program identifies an approximate schedule for street improvements.

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

6.2.8 Urban Sidewalks

A complete pedestrian system should be implemented in the Cascade Locks. Every ~~urban~~ street should have sidewalks on both sides of the roadway. Sidewalks on residential streets should have a six-foot wide paved width ~~with up to a 6-foot wide planting strip separating it from the street.~~ Collector and arterial streets should have six-foot-wide sidewalks ~~with two-foot planting strips.~~ Arterial streets should have six-foot sidewalks ~~with a two-to six-foot planting strip, and commercial downtown streets are to~~ Where possible, Wa Na Pa Street should have 12-foot wide curb sidewalks. In addition, pedestrian and bicycle connections should be provided between any cul-de-sac or other dead-end streets.

Another essential component of the ~~urban~~ sidewalk system is street crossings. Intersections must be designed to provide safe and comfortable crossing opportunities. ~~This includes not only signal timing to ensure adequate crossing time and crosswalks, but also such enhancements as curb extensions and center medians.~~

6.2.9 Urban 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. In addition, parking restrictions may be necessary to provide planned bike lanes.

6.2.10 Street Connectivity

Street connectivity is important because a well-connected street system provides more capacity than a disconnected one, provides alternate routes for local traffic, and is more pedestrian and bicycle-friendly. It is critical that the street grid system be extended as development occurs in Cascade Locks. To this end, a maximum block perimeter of 1,600 feet is recommended as a guideline. Street connectivity is a problem due to the river, topography, I-84, and the railroad. Projects have been included in the street system plan to improve connectivity. In addition, the city shall adopt a new street standards resolution, which will include requirements for

6.3 ACCESS MANAGEMENT

Access management is an important tool for maintaining an efficient and safe transportation system. The lack of a prudent access management plan can result in excessive numbers of access points along arterial streets. Too many access points can diminish the function of an arterial, mainly due to delays and safety hazards created by turning movements. Traditionally, the response to this situation is to add lanes to the street. However, this can lead to increases in traffic and, in a cyclical fashion, require increasingly expensive capital investments to continually expand the roadway.

Reducing capital expenditures is not the only argument for access management. Additional driveways along arterial streets lead to an increased number of potential conflict points between vehicles entering and exiting the driveway, and through vehicles on the arterial streets. This not only leads to increased vehicle delay and a 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. In addition, the wider arterial streets that can ultimately result from poor access management can diminish the livability of a community.

6.3.1 Potential Access Management Techniques

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

- Restricting 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.

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. The access management techniques and standards in this report are applicable to the arterial and collector streets. Local streets are intended to primarily provide access; therefore access management techniques are not needed along local streets.

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

6.3.2 Recommended Access Management Techniques

Based upon public and TAC review, a variety of potential access management techniques were reviewed. The following techniques are identified as key strategies for access management. Other techniques may be applied as appropriate to meet access management goals. These techniques would be applied to arterials and collectors, not local streets.

- Optimize traffic signal installation, spacing and coordination;
- Regulate minimum spacing of driveways;
- Regulate maximum number of driveways per property frontage;
- Consolidate access for adjacent properties;
- Restrict parking on roadway adjacent to driveways to increase driveway turning speeds;
- Provide direct access on lower functional class street when available;
- Encourage connections between adjacent properties; and
- Require adequate internal design and circulation plan.

These eight access management techniques are described in more detail in Appendix B. ~~Table 6-2 depicts recommended access management standards.~~

TABLE 6-2
RECOMMENDED ACCESS MANAGEMENT STANDARDS

Highway Section Description	Class	Urban	Rural	Signal Spacing* (feet)	Access Category	Min. Street Spacing (feet)	Min. Access** Spacing (feet)
US 30 through Cascade Locks	Minor Arterial	Y		1,500	5	300	300
Forest Lane and Frontage Road in Cascade Locks	Collectors	Y		1,500	—	250	250 (see text)

Note: *spacing for signals may vary based on traffic engineering analysis, including signal coordination.

**exceptions reviewed on a case-by-case basis.

6.3.3 Special Access Management Guidelines Areas Standards

Access management is important for promoting safe and efficient travel for both local and long distance users within the planning area. The ~~1991~~ 1999 Oregon Highway Plan (OHP) classifies I-84 as an interstate facility and the Historic Columbia River Highway as a district highway. These highways are to be managed to ensure that each will continue to serve its intended function by maintaining the capacity and condition of each facility. The OHP establishes six access management categories for state routes ranging from full control for freeways to partial control for regional or district highways. Generally, the highest potential access category is assigned, corresponding to existing or planned adjacent land uses.

Access Management Category I applies to I-84, which is fully access controlled (access only at interchanges). Access management Category 6 applies to US 30 which is a district highway. This means that in urban areas, intersection spacing for future improvements is limited to ~~325 400 500~~ feet, with a distance between driveways of at least ~~275 175 250~~ feet. Some of these spacings are not practical to meet in the next 20 years particularly in the highly developed areas. The recommended spacings are shown in Table 6-2. The driveway spacing shown for collectors would be applicable for commercial development, but would have to be considerably less (~~100 ft~~) for single family residential development.

The City or Hood River County have jurisdiction regarding access management for the collector and local streets within the Cascade Locks Urban Growth Boundary. The access management guidelines for these streets are also shown in Table 6-2.

TABLE 6-2
RECOMMENDED ACCESS MANAGEMENT GUIDELINES STANDARDS

Highway Section Description	Class	Urban	Rural	Signal Spacing* (feet)	Access Category	Min. Street Spacing (feet)	Min. Access** Spacing (feet)
<i>State Jurisdiction</i>							
US 30 through Cascade Locks	Minor Arterial	Y		1,500	5	325 400 300	275 175 300
Forest Lane and Frontage Road in Cascade Locks	Collector	Y		1,500	--	325 250	275 175 250 (see text)
<i>City/County Jurisdiction</i>							
Forest Lane	Collector			1,500	--	250	100
New Collector Streets	Collector			1,500	--	250	100
New Local Streets – Residential and Industrial	Local Street			--	--	100	--

Note: *spacing for signals may vary based on traffic engineering analysis, including signal coordination.

**exceptions reviewed on a case-by-case basis.

It is acknowledged by ODOT, Hood River County, and the City that it is not always possible to satisfy the access management guidelines. Therefore, procedures have been established to review requests for street access which do not meet the guidelines. For roads under state jurisdiction, Section OAR 734.051.0329 Requests for Deviations to Access Management Standards, of the Oregon Administrative Rules is used to judge such requests. Deviations are approved or denied by the ODOT Region Manager based on consideration of traffic operation and safety, circumstances which make compliance with the guidelines impractical (e.g., topography, environmentally sensitive areas, existing improvements, no alternate access).

Deviations from City and/or County streets shall be approved or denied by the City Engineer. The decision will also be based similar consideration of traffic operation and safety, circumstances, which make compliance with the guidelines impractical. For County streets, the City shall request a recommendation from the County.

6.4 MODAL PLANS

The modal plans are based on TSP goals and objectives, physical inventory, forecasts, input from transportation service providers, and public input. The plans consider transportation system needs for the City of Cascade Locks. Specific transportation system improvement projects for all modes of travel were identified to address identified needs. The timing for individual improvements will be guided by the changes in land use patterns and growth of the population in future years. Adjustment to specific projects and improvement schedules will likely need to be adjusted depending on where growth occurs within the planning area.

This chapter discusses ten modal plans. These are: 1) Pedestrian System, 2) Bicycle System, 3) Street System, 4) Transportation Demand Management, 5) Public Transportation Plan, 5) Rail Service, 6) Air Service, 7) Pipeline Service, 8) Truck Freight, 9) Water Transport/Ports, and 10) Telecommunications. All of these plans closely

interrelate; for example, the street system plan, although primarily designed around the motor vehicle traffic forecasts, will also serve pedestrians, bicyclists, and transit users.

Projects for the transportation modes are short-range (0-5 years), intermediate-range (5-10 years), and long-range (10-20 years). Each modal plan also includes a budgetary cost estimate. Funding for the Transportation System Plan is discussed in Chapter 7.

6.4.1 Pedestrian System Plan

A complete pedestrian system should be implemented in the city. Every paved street should have sidewalks on both sides of the roadway meeting ~~the requirements set forth in the street standards described above.~~ Pedestrian access on walkways ~~should~~ **shall** be provided between all buildings including shopping centers and abutting streets and adjacent neighborhoods. **Priority for pedestrian improvements should be given to routes that will provide connections between important destinations.**

Within Cascade Locks, sidewalks are lacking in **most neighborhoods** ~~a number of sections~~ and pedestrians must frequently share roads with cars. The City of Cascade Locks has identified the need to establish a more pedestrian-friendly environment throughout its downtown on Wa-Na-Pa Street/US 30. This plan aims to **generally** increase sidewalk widths to 12 feet, provide additional areas for street trees and benches, shorten pedestrian crossings, and develop numerous walking loops within the downtown and ~~the locks~~ **Marine Park**. An obstacle to creating a better pedestrian environment is the large number of dead end streets.

Table 6-3 contains a list of specific pedestrian improvements that **are planned for construction** ~~will be needed~~ over the next 20 years. (Figure 6-65 shows where most of these projects are located.)

The pedestrian improvements include only sidewalk projects. Although shoulder additions can serve pedestrians, they are not ideal because they are not separated from the roadway. However, in rural areas where development may not occur quickly, the addition of shoulders is often the most practical improvement that can be implemented. Generally, shoulders are more of a benefit to cyclists than to pedestrians; therefore, proposed shoulder-widening or additions are discussed in the Bicycle System Plan section of this chapter.

A six-foot wide sidewalk with curbs already in place costs about \$30 per linear foot. Adding a curb as well as a six-foot wide sidewalk costs about \$35 per linear foot. In commercial areas, an eight-foot wide sidewalk with a curb would cost about \$45 per linear foot. A typical block in Cascade Locks would require about 300 linear feet of sidewalk (2 x 150 ft). For a six-foot-wide sidewalk including curbs, the cost would be approximately \$10,500. With curbs already in place, the cost would be approximately \$9,000.

Other Streets: Missing sidewalk segments should be ~~infilled~~ **completed** whenever an opportunity presents itself (such as infill development, special grants, etc.), concentrating on arterial streets, collectors, and school routes.

Pedestrian Crossings: Improve the safety of pedestrian crossings through additional/improved signing and lighting, curb extensions, and speed control measures.

**TABLE 6-3
RECOMMENDED SIDEWALK PROJECTS**

Project No.	Location	Description	Length (feet)	Cost (\$K)
Short-Range				
NCL3	School Access Road, South From Wa-Na-Pa St. (west side – completed in 1998)	Install sidewalks	650	\$20,000
NCL4	Various	Curb ramps at 20 locations	NA	\$9,000
NCL5	Wa-Na-Pa St. at Forest Ln. and at School Access Road Intersections	Install striped crosswalks	NA	\$600
NCL8	Highway 30 to Visitors Center	Pedestrian trail	NA	\$200,000
Intermediate-Range				
NCL1	Wa-Na-Pa St., East of Oneonta St. to Forest Ln. (south side)	Install sidewalks	2,105	\$63,150
Long-Range				
NCL2	Forest Ln., Wa-Na-Pa St. to Wheeler Ave. (north side)	Install sidewalks	3,080	\$92,400
Total Cost				\$385,150

Note: Pedestrian projects include sidewalks on both sides unless otherwise noted.

Project NCL1

Sidewalks along Wa-Na-Pa Street (collector) from east of Oneonta Street to Forest Lane, south side, 2,105 feet.

Cost: \$63,150

Project NCL2

Sidewalks along Forest Lane (collector) from Wa-Na-Pa Street to Wheeler Avenue, north side, 3,080 feet.

Cost: \$92,400

Project NCL3 - Completed

Sidewalks along School access street south from Wa-Na-Pa Street, west side, 650 feet.

Cost: \$20,000

Project NCL4

Curb ramps are recommended at about 20 locations on arterial and collector streets.

Cost: \$9,000 (\$450 per ramp)

Project NCL5

Striped crosswalks are recommended at Wa-Na-Pa Street and Forest Lane and at the school access street.

Cost: \$600

Project NCL8

Construct pedestrian trail from Highway 30 to the visitor center.

Cost: \$200,000

6.4.2 Bicycle System

A list of recommended bikeway improvements for Cascade Locks is displayed in Table 6-4. In addition to the projects proposed in Table 6-4, the new collectors and arterial streets recommended as part of the Street System Plan will include bike lanes (Figure 6-76).

Bike lanes should be one-way, five or six feet wide and located adjacent to the curb, except where there is curb parking or a right-turn lane. Where these conditions occur, the bike lane is located between the through travel lane and the parking or right-turn lane. The bike lane is marked in the same direction as the adjacent travel lane. Striping and signing should conform with the State Bicycle and Pedestrian Plan.

Shared roadway facilities are appropriate for local residential streets where speeds and volumes of motor vehicles are relatively low. A shared roadway facility is one where motorists and cyclists occupy the same roadway. A shoulder bikeway accommodates bicyclists on the hard shoulder of the road.

Establishing a complete bike systems through Cascade Locks would be difficult due to a lack of connecting streets and steep topography. Some of the streets are too narrow to include bike lanes adequately serve cyclists. The city will focus on developing a continuous east-west route between the Historic Columbia River Highway Trail Head at the Bridge of the Gods to the east city limit. Projects NCL6 and NCL7 in Table 6-4 are intended to provide this route. In the future, bike lanes should be considered for the entire length of Forest Lane. Bicycle trips in a north-south direction will generally be accommodated using the local street system.

To further improve the bicycle network, the city will work with ODOT to evaluate the desirability and feasibility of a bicycle facility along the frontage road on the south side of I-84, between the port of entry and Forest Lane. This could include a separate pedestrian/bicycle path between the frontage road and I-84. Improved accommodation of bicyclists will become increasingly important as more development occurs on the south side of the freeway and if the frontage road becomes a truck route.

Shoulders are sufficient for bicyclists, particularly in rural areas where traffic volumes are lighter. Shoulders improve the road function for all users. However, as land use densities and traffic increases over the long-term, the best solution for all users is to reconstruct the street to full standards with sidewalks and bike lanes.

Where there is significant traffic (more than 6,000 to 10,000 ADT in all directions) or turn lanes at intersections, through and turning bike lanes should be considered.

Bicycle parking is generally lacking in the city. 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 \$500 should be established so that Cascade Locks can place racks where needs are identified and to respond to requests for racks at specific locations.

**TABLE 6-4
RECOMMENDED BIKEWAY PROJECTS**

Project No.	Location	Description	Length (ft)	Cost (K)
Short-Range				
NCL6	Wa-Na-Pa St., Bridge of the Gods to Forest Ln.	Stripe Bike Lanes (8P-5B-12-12-5B-8P)	4,500.	\$4,500
Long-Range				
NCL7	Forest Ln., I-84 to Wheeler Ave.	Install 4 ft paved shoulders	12,000	\$290,000
Total Short-Range Projects				\$4,500
Total Long-Range Project				\$290,000
Total Projects				\$294,500

Project NCL6

Bike lanes are recommended on Wa-Na-Pa Street (collector) from the Bridge of the Gods to Forest Lane, 4,500 feet. Two 12-foot travel lanes, five-foot bike lanes, and two eight-foot parking lanes; east of Lakeside Drive there could be a center turn lane instead of the parking lanes.

Cost: \$4,500 for striping, signing and stencils

Project NCL7

Paved shoulders are recommended on Forest Lane (collector) from I-84 to Wheeler Avenue, 12,000 feet.

Cost: \$290,000

6.4.3 Street System Plan

The street system plan outlines a series of improvement options that are recommended for construction within the planning area during the next 20 years. The street system plan was developed by applying recommended street classification standards to the year 2015 traffic forecasts for the recommended street system. The proposed street system plan is summarized in Table 6-5 and Figure 6-87.

**TABLE 6-5
RECOMMENDED ROADWAY IMPROVEMENT PROJECTS**

Project No.	Description/Location	Cost (\$K)
<i>City of Cascade Locks</i>		
Intermediate-Range		
RCL4	Improve street connection to area south of City Hall	\$150,000
Long-Range		
RCL1	New Road Connecting Frontage Road and Wa-Na-Pa Street	\$1,000,000
RCL2	New Interchange at Forest Lane	\$2,000,000
RCL3	New Signal at Wa-Na-Pa Street and Bridge of the Gods access road.	\$100,000
Total - City of Cascade Locks		\$3,250,000
<i>Port of Cascade Locks</i>		
Short-Range		
RPCL1	Bridge Approaches Improvements	\$200,000
Long-Range		
RPCL2	Bridge Deck Improvements	\$5,000,000
Total - Port of Cascade Locks		\$5,200,000
Subtotal Short-Range Projects		\$200,000
Subtotal Intermediate-Range Projects		\$3,250,000
Subtotal Long-Range Projects		\$5,000,000
Total		\$8,450,000

Notes: These projects include sidewalks and bike lanes with construction or reconstruction of roadway segments. RCL1 is a top priority for the City due to the Interstate 84 access conditions described in Chapter 4. This project will also require refinement as part of the Interstate 84 rest area environmental impact statement project work.

This improvement is presently not a high priority for ODOT, however it may be financed along with development near this proposed interchange.

6.5 TRANSPORTATION DEMAND MANAGEMENT PLAN

Through transportation demand management, peak travel demands could be reduced or spread to more efficiently use the 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.

6.5.1 Alternative Work Schedules

Alternative work schedules (such as flex-time or staggered work hours), especially with large employers, can help spread the peak period traffic volumes over a longer time period, thus providing greater service out of a fixed capacity roadway. Staggered work schedules shall be encouraged with new industries and be coordinated to eliminate high surges of traffic.

6.5.2 Carpooling and Vanpooling

Ridesharing programs can be established to encourage carpooling. The service allows interested drivers to call a toll-free number, provide information about their trip, and receive a list of others in their general area. The park-and-ride lots in the project list can be used for carpools as well as for transit.

Cities in Hood River County should jointly work with large employers to establish a carpool and vanpool program. These programs, especially oriented to workers living in other neighboring communities, will help to

reduce the travel and parking requirements, and to reduce air pollution. Employers can encourage ridesharing by providing matching services subsidizing vanpools, establishing preferential car and vanpool parking and convenient drop-off sites, and through other promotional incentives.

6.5.3 Bicycle/Pedestrian Facilities

Bicycling and walking can be encouraged by implementing strategies discussed earlier in this plan. Providing ~~secure and convenient~~ bicycle parking, showers, and locker facilities helps to encourage bicycle commuting and walking to work.

6.5.4 Telecommuting

Telecommuting is identified by the OTP as a TDM technique that reduces auto usage. The ability for people to work at home with the telecommuting technology is likely to continue to grow during the next two decades. During the past ten years, the percent of people working at home has more than doubled. If this trend continues, an additional three percent of the work force could stay home and work, thus reducing trips during the peak hour. This could reduce work trips during the peak hour by approximately one percent.

No costs have been estimated for this modal plan. Grants may be available to set up programs; other aspects of Transportation Demand Management can be encouraged through ordinance and policy.

6.6 PUBLIC TRANSPORTATION PLAN

Public transit service within the county is coordinated by the Hood River County Transit District (CAT). The district provides demand-responsive services countywide and regular trips to Portland.

The district intends to expand its countywide transit services.

The existing public transportation services already meet the requirements of the Oregon Transportation Plan. Connections are possible and convenient between all the services provided, and the service frequency meets the required daily trip to a larger city specified for communities the size of Cascade Locks. Cities the size of Cascade Locks do not require a detailed public transportation plan. However, growth should be guided so that it does not prevent transit development in the future.

CAT has identified one capital project in Cascade Locks, which is the construction of a park-and-ride lot, with an estimated cost of \$50,000. The proposed location is somewhere near the Bridge of the Gods.

6.7 RAIL SERVICE PLAN

The Union Pacific freight service runs through the county parallel to I-84, with stops in Hood River and Cascade Locks. The Union Pacific carries cargo to Portland where it links with both north and south lines. Eastbound, it links with lines serving the Rocky Mountain states, Midwest, and eastern portions of the country.

No plans are known to alter these services to the City of Cascade Locks. Efforts should be made by the city to retain or expand their rail service.

6.8 AIR SERVICE PLAN

~~Cascade Locks State Airport is located within the city limits and is administered by the State Aeronautics Division. With one 1,800 foot paved runway, it is classified as a Level 4 facility, because it plays a supportive role to the state transportation systems in terms of agricultural, recreational, and emergency uses.~~

~~There are no commercial flights to the Cascade Locks State airport at this time. The accessibility of Portland Airport and the wide range of services it offers limit the likelihood of significant expansions of the Cascade Locks State airport.~~

The Cascade Locks Airport, located near the Columbia River, provides transportation for business industries and tourists commuting to and from Portland. The airstrip consists of a 1,800 by 30-foot black top runway with one telephone located on-site. The state of Oregon owns the airport and the majority of the surrounding parcels. These parcels are subject to height and development restrictions.

The Cascade Locks Airport is a local area service that supports approximately 1,100 flights per year (one-way travel is counted as one flight). It is strategically located for emergency or safety stops in the event of hazardous weather conditions. The airport is used to support emergency rescue and emergency medical evacuations and to fight local forest fires. Aircraft operate visually when traveling in the Gorge. Single or light twin propeller engines are the common aircraft used at the Cascade Locks Airport. The growth of aircraft travel in Cascade Locks is modest with a significant portion of air traffic dedicated to business viability. The state is not considering any airport improvements at this time.

6.9 PIPELINE SERVICE PLAN

There are no natural gas or major pipeline services to Cascade Locks.

6.10 TRUCK FREIGHT SERVICE PLAN

As a primary east-west corridor through the state, I-84 carries high volumes of truck traffic and freight movement. Annual freight volumes through Hood River County on I-84 are estimated at between 23 and 32 million tons. Additional modernization projects are not expected to be required on I-84.

~~Through truck traffic on Wa Na Pa Street and Forest has long been recognized as a safety and noise problem by city residents. The city shall work with Hood River County and ODOT to establish an appropriate truck route alternative to Forest Lane. The frontage road on the south side of I-84 between the port of entry and Forest Lane appears to be a suitable route. However, this route may need to be improved to accommodate turning movements for large trucks. A reduction of the speed limit for trucks on Forest Lane shall also be considered by the city.~~

6.11 WATER TRANSPORT/PORTS SERVICE PLAN

Port of Cascade Locks properties include a marine facility in the western portion of the city adjacent to the Union Pacific mainline and near US 30 and I-84. This shallow draft ~~port~~ **marina**, which is heavily used by recreational watercraft, sits just east of the locks. From the port facilities, recreational trips on the Port's two sternwheeler boats and private boats make up the majority of the river traffic, as no commercial shipping or freight movement occurs.

6.12 TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM

Implementation of the Cascade Locks Transportation System Plan will require changes to the comprehensive plan and zoning code. These actions will enable the City of Cascade Locks to address both existing and emerging transportation issues throughout the planning area in a timely and cost effective manner. The "Model Transportation Planning Rule Ordinances and Policies for Small Jurisdictions," dated August 1996 and prepared by David Evans and Associates, Inc., can serve as a guide for the ordinances and policies adoption. This implementation program is geared towards providing these communities with the tools to fund and schedule transportation system improvements. ~~Many of these Transportation Planning Rule TPR requirements are incorporated in the recently adopted Community Development Code. In addition, the city shall adopt a street standards resolution that will further support the TPR.~~

Table 6-6 lists the projects by type, shows justification, lists project phasing, and provides cost information. The cost estimates for all the projects listed were prepared on the basis of 1996 dollars. These costs include design, construction, right-of-way acquisition, and contingencies where appropriate. The highway and street cost estimates are preliminary by road segment and do not include the cost of adding or relocating public utilities or detailed design of existing street intersections.

The 20-year Improvement Program for the city is estimated to cost approximately \$4 million and for the Port of Cascade Locks it is estimated to cost approximately \$5 million.

This is a list of potential future transportation projects for the City of Cascade Locks. This list provides possible solutions to transportation needs forecasted over the next 20 years. These lists and the plan are intended to be periodically revised. This list may be added to or projects may be deleted as a result of these discussions. Projects are presented for several transportation modes.

7. FUNDING

This chapter evaluates potential funding for projects included in this Transportation System Plan. The evaluation begins with a description of existing funding for transportation improvements in the county from local and non-local sources. This is followed by a description of project costs in this plan and potential funding sources that are outside of the county's budget.

7.1 PROJECT FUNDING IN THE CITY OF CASCADE LOCKS

7.1.1 City of Cascade Locks

Funding in the City of Cascade Locks is primarily from State Highway Fund revenue; the city does not have another source of funding dedicated for transportation expenditures. Transportation-related revenue has been entirely spent on maintenance and preservation of the existing infrastructure--the city has not recently funded any capital improvements such as those included in this plan.

7.1.2 Port of Cascade Locks

The Port of Cascade Locks owns and operates a toll bridge over the Columbia River. Tolls are the primary funding sources for maintenance and improvements to the bridges. The toll on each bridge is currently \$0.75 for passenger vehicles. This toll currently generates about \$900,000/year for the Port of Cascade Locks.

As owner of the bridge, the Port is entirely responsible for its operation, maintenance, and improvement. Port districts have the authority to issue revenue bonds backed by future toll revenue to fund bridge improvements.

7.2 STATE FUNDING FOR PROJECTS IN HOOD RIVER COUNTY

ODOT allocates state funding for improvement projects through the Statewide Transportation Improvement Program (STIP). The STIP generally allocates funding over a four-year period, and is updated every two years. The current Draft STIP for 1998-2001 2000-2003 includes seven several projects in Hood River County that will enhance traffic circulation and safety. These projects, with the total cost and year of completion, are:

- ~~A rail bridge retrofit and structural overlay on I-84 near the City of Hood River (\$420,000 in 1998).~~
- ~~Reconstruction of Mt. Hood Meadows Access Road (\$4 million in 1998).~~
- ~~Inlay/overlay of I-84 Bridges (\$6 million in 1998).~~
- ~~Inlay and overlay of 5.8 miles of I-84 west of Hood River (\$7.8 million in 1999).~~
- ~~Mitigation of a rockfall on US-26 at milepost 49 (\$1.1 million in 2000).~~
- ~~A vehicle purchase for Hood River Community Transit (\$72,000 in 2000).~~
- ~~A structural overlay of 13 miles of I-84 east of Cascade Locks (\$10.6 million in 2002).~~

Overall, the draft STIP includes projects in Hood River County totaling almost \$30 million over five years, or about \$6 million/year. The total funding allocated in the draft STIP will be reduced by 20 percent when the Final STIP is adopted, so the level of project funding in Hood River County may be less than the \$30 million included in the draft STIP. All of the roadway projects in Hood River County included in the draft STIP will occur on state-maintained roadways.

7.3 PROJECT COSTS AND FUNDING IN THE CITY OF CASCADE LOCKS

Table 7-1 summarizes project costs in the City of Cascade Locks by type of project.

Number	Project Location	Project Description	Year	Cost
Roadway Projects				
RPCL1	Bridge of the Gods Road Approaches	Bridge Improvements	1-5	\$200,000
RCL4	Connections to Hwy 30	Street Improvements	6-10	\$150,000
RCL1	Frontage Rd. to Wa-Na-Pa St.	New Roadway	11-20	\$1,000,000
RCL2	New Interchange at Forest Ln.	New Interchange	11-20	\$2,000,000
RCL3	Wa-Na-Pa St. and Bridge of the Gods	New Signalization	11-20	\$100,000
RPCL2	Bridge of the Gods Redecking	Bridge Improvements	11-20	\$5,000,000
Non-Motorized Projects				
NCL3	School Access St. from Wa-Na-Pa St.	Pedestrian Railing	1-5	\$20,000
NCL4	20 Selected Locations	Curb Ramps	1-5	\$9,000
NCL5	Wa-Na-Pa St., Forest Ln., and School Access	Striped Crosswalks	1-5	\$600
NCL6	Wa-Na-Pa St. from Bridge of the Gods to Forest Ln.	Bike Lanes	1-5	\$4,500
NCL8	Hwy 30 to Visitor Center	Pedestrian Trail	1-5	\$200,000
NCL1	Wa-Na-Pa St. from Oneonta to Forest Ln.	Sidewalks	6-10	\$63,150
NCL2	Forest Ln. from Wa-Na-Pa St. to Wheeler Ave.	Sidewalks	11-20	\$92,400
NCL7	Forest Ln. from I-84 to Wheeler Ave.	Shoulder Paving	11-20	\$290,000
NCL3	Wa-Na-Pa St. from Bridge of the Gods to Forest Ln.	Antique street lighting	15	\$250,000
Transit				
TCL1	Park-and-Ride Lot	Park-and-Ride Lot	6-10	\$50,000

Source: David Evans and Associates, Inc., summarized by ECONorthwest.

Roadway costs in the City of Cascade Locks include \$2 million for a new interchange at 1-84 and Forest Road in years 11-20. Since this project is on an interstate highway, it should primarily be funded by ODOT through the STIP. In addition, \$250,000 is for new signals along Wa-Na-Pa Street, which is Hwy 30. ODOT has a policy of sharing 50 percent of the cost of traffic signals on state highways **when signal warrants indicate a need**. Additional grant funding for this project may be available through ODOT safety programs.

A new road connecting Wa-Na-Pa Street and Frontage Road would cost \$1 million in years 11-20. While this road would not be a state highway, funding through ODOT may be available because this road would improve traffic flow on Hwy 30 through Cascade Locks, improve access to the Cascade Locks Port of Entry, and resolve safety concerns in the city. In addition, this new road would serve an area that is planned for new residential development; this development may contribute funding for this new roadway.

The Port of Cascade Locks is responsible for funding improvements to the Bridge of the Gods. Toll revenue should be available to fund improvements to the bridge approaches and deck. The Port has the authority to issue bonds backed by toll revenue to fund bridge improvements.

Since ~~Because~~ Wa-Na-Pa is a state highway Hwy 30, projects that would provide sidewalks and bike lanes on Wa-Na-Pa ~~should~~ could be funded by ODOT through the STIP. Remaining costs would be eligible for funding through several federal and state funding programs that grant funding for pedestrian and bicycle improvements, including the Federal Transportation Enhancement Program and the Oregon Bicycle and Pedestrian Program, which provides up to \$100,000 for projects selected for funding by the Oregon Bicycle and Pedestrian Advisory Committee. Federal and state grants for bicycle and pedestrian projects on local streets would require a local 20 percent match.

The transit project would construct a park and ride lot in Cascade Locks. This project may be eligible for funding from a wide variety of transit funding programs, including the Community Transportation Program, and the NonUrbanized Area Formula Program. These funding programs are administered by the Public Transit Section of ODOT, which recommends projects for funding to the Oregon Transportation Commission. Most of these funding sources would require a 20 percent local funding match.

The Antique Street Light project for the downtown could be through various federal and state funding programs. The project would ideally be in conjunction with sidewalk projects in the downtown to keep costs to a minimum. The antique streetlights would be placed on the north side of Wa-Na-Pa Street to serve both as street lighting and decorative purposes. If funding sources require a match, the City could provide up to 30 percent match for this project.

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Oregon

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October 8, 2001

Kathy Woosley
City of Cascade Locks
P.O. Box 308
City of Cascade Locks, Oregon 97014



Dear Kathy,

Re: Cascade Locks Transportation System Plan, DLCD File No.: 001-01.

Thank you for the opportunity to review and comment on the Cascade Locks Transportation System Plan (TSP). We have several concerns regarding the proposed plan compliance with the Transportation Planning Rule (TPR).

The following Comments are of an advisory nature and are offered to strengthen the TSP's usefulness as a planning document. Compliance Recommendations identify major deficiencies and recommend appropriate actions to meet outstanding TPR requirements.

Future Streets / Local Street Connections

Compliance Recommendations: OAR 660-012-045(3) / Section 0020 (2)(d).

The TPR requires that Cities plan for future street connections and extensions and to provide for convenient local access and circulation by a variety of modes. The proposed TSP does not do this as well as it could although it is clear that the city is physically constrained. The TPR also requires land use and subdivision regulations be amended to provide convenient connections for pedestrian, bicycle and vehicular circulation. These regulations insure that new development provide on-site streets and accessways and avoid cul-de-sacs or dead-end streets.

The TSP should insure that future block sizes are the same (roughly 300 feet in length) or similar to those in the existing grid and that cul-de-sacs, where appropriate, are no longer than 200 feet (include in the subdivision code). As mentioned above, to respect the historical character of the city's grid and comply with the TSP, the city needs to include a clearer map that shows approximately where future street connections will be and add a subdivision code to insure that new development will complement the existing.

Street Standards

Compliance Recommendation: TPR 660-12-045 (7)

Most existing local streets have a pavement width of 12 to 24 feet (table on page 1-8) but do not allow parking. While this is good, new development needs to be designed similarly and with narrow streets. The TPR requires that cities and counties review and, as appropriate, reduce their standards for local streets and accessways to minimize pavement width and total right-of-way consistent with the operational needs of the



facility. The intent of this requirement is that jurisdictions consider and reduce excessive standards for local streets and accessways decreasing the cost of construction and maintenance, providing more efficient urban land use yet still allowing for emergency vehicle access. Narrower streets encourage walking and biking by reducing traffic speed and increase safety by shortening the distance a pedestrian must cross. The more intimate feeling created by a narrower street serves as a notice to drivers that they are in a residential area and should drive more cautiously.

We recommend that the city modify the figure 6-2 and table 6-1 to include a 28-foot curb to curb width that allows parking on both sides. We also recommend that the TSP modify the detail of all local street sections (figures 6-2, 6-3 and 6-4 and the text on page 6-2, section 6.2.1) to allow and to show sidewalks separated from pavement by planter strips or swales.

Implementation

Compliance Recommendations: TPR 660-12-045 (1), (3)

The Transportation Planning Rule states: "Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth below. The purposes of this section are to provide for safe and convenient pedestrian, bicycle and vehicular circulation consistent with access management standards and the function of affected streets, to insure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel."

A TSP is required to include implementing ordinances. The city should include them in this document or if it is the city's intention to include them at a later date either the plan or findings adopting the plan should clearly indicate that this issue is outstanding and estimate when they will be adopted.

Bicycle and Pedestrian Plan

Compliance Recommendation: OAR 660-012 0020(2)(d), 660-012-0045(3).

The TSP includes a map of existing sidewalks, proposed bicycle and pedestrian facilities but it does not show major bike and pedestrian attractors. The TPR requires a bicycle and pedestrian plan (0020(2)(d) to provide a network of routes throughout the planning area and subdivision or land use ordinances providing for convenient bike and pedestrian access to major activity centers, including schools, parks and shopping areas. We suggest that the TSP include a combined map showing proposed bicycle and pedestrian facilities and their connections to activity centers.

Please enter this letter onto the record of proceedings. We request that if additional information is provided, the record be held open at least 7 days but preferably 15 days pursuant to ORS 197.763 (4) (b), to allow us time to review and respond to any new information. Finally, please provide us with a copy of your final decision in this matter. If you have any questions contact me at 503-373-0050, extension 278.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Ksionzyk", written over the printed name.

Larry Ksionzyk
Transportation and Land Use Planner

cc: Bob Cortright
Michael Ray
Rob Hallyburton

DLCD Transportation Growth Management
ODOT Region 1
DLCD Regional Representative



Oregon

John A. Kitzhaber, M.D., Governor

Department of Transportation

Region 1

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(503) 731-8200

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22 October 2001

FILE CODE:

Kathy Woosley
City of Cascade Locks
PO Box 308
Cascade Locks, Oregon 97014

RE: Comments concerning Cascade Locks Transportation System Plan

Dear Kathy,

Thank you for the opportunity to review and comment on the Cascade Locks Transportation System plan (TSP). Following are ODOT's concerns regarding the Cascade Locks TSP.

ODOT agrees with the comments of Larry Ksionzyk, DLCD, 08 October 2001, and will not repeat them here.

The section concerning access management, Chapter 6.3.3 is out of date. ODOT has adopted new access management standards as part of the 1999 Oregon Highway Plan. The Cascade Locks TSP does not adequately address the new standards.

I recommend that the City review the new standards and update this section and Table 6-2 accordingly. For your convenience, I have enclosed a copy of ODOT's new Access Management Standards. In addition, I have enclosed a copy of my comments concerning this section.

Bulb outs on WaNaPa are specifically prohibited in the draft Memorandum of Agreement for the HCRH and they should not be in the TSP (Page 6-5).

The City of Cascade Locks has asked for approval of an "antique style" street light for WaNaPa. This should be added to the project list.

ADDITIONAL COMMENTS

Page ix – Need a section concerning implementation of the TSP.



Page 1-6 – Section 1.3.3 - "Resource Team Report" includes center left turn lane on WaNaPa. This would be in conflict with the draft Memorandum of Agreement also, but I do not see this idea carried forward in the document.

Page 1-8 – Section 1.3.6 (and elsewhere) - There is continued expectation for a new interchange at Forest Lane and a rest area. These are not in the near-term outlook from ODOT perspective. The assumption that they could be built 10-20 years from now may be optimistic.

Page 2-4 – Section 2.5.1, A2 – What does: "Continue the HCRH pedestrian and bikeway system through the city." Mean. If it means sidewalks and bike lanes on WaNaPa and Forest Lane, then there is no problem. If it is suggesting a separated path, then there may be problem.

Page 2-7 – Section 2.5.2 – Difficult to coordinated signals when there are none in Cascade Locks. Need at least two to be able to coordinate. There is a proposal for a signal at the intersection with the Bridge of the Gods access, across from Charburger.

Page 2-7 – Section 2.5.3 - How does the city propose to "address conflicts between pedestrians, commercial uses and through traffic" on US 30?

Page 2-10 – Section 2.5.7 - Noise barriers do not usually work on residential streets. Driveways create breaks in the wall, making it ineffective.

Page 2-10 – Section 2.5.7 - ODOT would ask that a discussion of a Forest Lane overpass and/or interchange include "no adverse affect" on the HCRH historic district.

Page 3-1 – Section 3.1 - There is a third partial interchange at Herman Creek Road (across from Government Rock). There is not any discussion of the Warm Springs proposal to make this into a full interchange in the TSP. Where is this proposal?

Page 3-1 – Section 3.1 - There are existing sidewalks on much of WaNaPa - this section seems to imply that there are no sidewalks.

Page 3-2 - Section 3.3 - ODOT has 2000 ADT volumes. HCRH 2000 ADT ranges from 3800 to 4300, as it traverses Cascade Locks. I-84 has 2000 volumes of 17,000 – 20,900, as it traverses Cascade Locks.

Page 3-3 – Section 3.3.2.1 – 1999 accident rate per million vehicle miles is .40.

There are areas of the TSP that need updating to reflect new information, such as information from the 2000 census:

Page 3-6 – Section 3.7.1 – What type of service does CAT provide now? The information in the TSP is from 1996 and is probably outdated.

Page 5-1 – Section 5.1.1 – What are the current growth rates in population, employment and vacancy rate? Census 2000 will have this information.

Page 5-3 – Section 5.1.3 – Census data from 2000 is available and should be used.

Page 6-6 – Section 6.2.8 - Inclusion of signal timing and curb extensions and center medians does not seem applicable for Cascade Locks.

Other comments concerning the TSP are more grammatical and are as follows:

Page viii – Community Involvement/Goals and Objectives – first paragraph, last sentence should read: ...and aid the city in making...

Page 3-1 – Introduction – second paragraph should read: ...Portland and 19 miles west of Hood River...

Page 3.1 – Introduction - fifth paragraph should read: ...some facilities for transportation other than the automobile.

Page 6-6 – Section 6.2.7 – Third paragraph should read: ...traffic volumes exceed or are expected to exceed...

Thank you for the opportunity to review and comment on the Cascade Locks TSP. If you have any questions regarding the above comments, please call me at 503.731.8283.

Sincerely,



Michael Ray, Sr. Planner
ODOT Region 1

C: Jeanette Kloos, ODOT Region 1 HCRC Coordinator
Larry Ksionzyk, DLCD Transportation and Land Use Planner
Rob Hallyburton, DLCD Region Representative
Bob Cortright, DLCD Transportation Growth Management

Enclosures: 2

C:/share/cascade locks/22 October 2001 TSP Comments.doc

No mention of interchange spacing on I-84
 No discussion of deviation process

1999 OHP APPEND. C

6.3.3 Special-Access Management Guidelines Areas Standards

Need to update to current standards

Access management is important for promoting safe and efficient travel for both local and long distance users within the planning area. The 1994 1999 Oregon Highway Plan (OHP) classifies I-84 as an interstate facility and the Historic Columbia River Highway as a district highway. These highways are to be managed to ensure that each will continue to serve its intended function by maintaining the capacity and condition of each facility. The OHP establishes six access management categories for state routes ranging from full control for freeways to partial control for regional or district highways. Generally, the highest potential access category is assigned, corresponding to existing or planned adjacent land uses.

Access Management Category 1 applies to I-84, which is fully access-controlled (access only at interchanges). Access management Category 6 applies to US 30 which is a district highway. This means that in urban areas, intersection spacing for future improvements is limited to 325-400-500 feet, with a distance between driveways of at least 275-175-250 feet. Some of these spacings are not practical to meet in the next 20 years particularly in the highly developed areas. The recommended spacings are shown in Table 6-2. The driveway spacing shown for collectors would be applicable for commercial development, but would have to be considerably less (100 ft) for single-family residential development.

The City or Hood River County have jurisdiction regarding access management for the collector and local streets within the Cascade Locks Urban Growth Boundary. The access management guidelines for these streets are also shown in Table 6-2.

Refer to ODOT Traffic Signal Policy and Guidelines No longer classified like this - an approach is an approach

TABLE 6-2
 RECOMMENDED ACCESS MANAGEMENT GUIDELINES STANDARDS

Highway Section Description	Class	Urban	Rural	Signal Spacing* (feet)	Access Category	Min. Street Spacing (feet)	Min. Access** Spacing (feet)
State Jurisdiction							
US 30 through Cascade Locks	Minor Arterial	Y		1,500	5	325 400 300 400	275 175 300 400
Forest Lane and Frontage Road in Cascade Locks	Collector	Y		1,500		325 250	275 175 250 (see text)
City/County Jurisdiction							
Forest Lane	Collector			1,500		250	100
New Collector Streets	Collector			1,500		250	100
New Local Streets - Residential and Industrial	Local Street			-		100	-

Note: *spacing for signals may vary based on traffic engineering analysis, including signal coordination.
 **exceptions reviewed on a case-by-case basis.

It is acknowledged by ODOT, Hood River County, and the City that it is not always possible to satisfy the access management guidelines. Therefore, procedures have been established to review requests for street access which do not meet the guidelines. For roads under state jurisdiction, Section OAR 734.051.0329 Requests for Deviations to Access Management Standards, of the Oregon Administrative Rules is used to

Appendix C: Access Management Standards

Access Management Spacing Standards

The following tables show the access spacing standards for the access management classifications listed in Goal 3, Policy 3A: Classification and Spacing Criteria, Action 3A.1.

Table 12: Interchange Spacing

①

Access Management Classification	Area	Interchange Spacing ②③
Interstate* and Non-Interstate Freeways (NHS)	Urban	3 miles (5 kilometers)
	Rural	6 miles (10 kilometers)
All Expressways on Statewide (NHS), Regional and District Highways	Urban	1.9 miles (3 kilometers)
	Rural	3 miles (5 kilometers)

* Interstate interchange spacing must be in conformance with federal policy.

① The spacing standards in Table 12 are for planning and design of new interchanges on freeways or expressways. A major deviation study is required to change these standards, but the deviation should consider the spacing requirements in the Interchange Access Management Area Tables 16-19.

② Crossroad to crossroad centerline distance.

③ A major deviations study is required to change these planning spacing standards.

Table 13: Access Management Spacing Standards for Statewide Highways
①②

(Measurement is in Feet)*

Posted Speed③	Rural		Urban			
	Expressway	Other	Expressway	Other	UBA	STA
≥55	5280	1320	2640	1320		
50	5280	1100	2640	1100		
40 & 45	5280	990	2640	990		
30 & 35		770		770	720	④
≤25		550		550	520	④

NOTE: The numbers in circles (②) refer to explanatory notes that follow tables.

*Measurement of the approach road spacing is from center to center on the same side of the roadway.

**Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

Table 14: Access Management Spacing Standards for Regional Highways
①②

(Measurement is in Feet)*

Posted Speed③	Rural		Urban			
	Expressway	Other	Expressway	Other	UBA	STA
≥55	5280	990	2640	990		
50	5280	830	2640	830		
40 & 45	5280	750	2640	750		
30 & 35		600		600	425	④
≤25		450		450	350	④

NOTE: The numbers in circles (②) refer to explanatory notes that follow tables.

* Measurement of the approach road spacing is from center to center on the same side of the roadway.

**Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

Table 15: Access Management Spacing Standards for District Highways
①②

(Measurement is in Feet)*

Posted Speed③	Rural		Urban			
	Expressway	Other	Expressway	Other	UBA	STA
≥55	5280	700	2640	700		
50	5280	550	2640	550		
40 & 45	5280	500	2640	500		
30 & 35		400		400	350	④
≤25		400		400	350	④

NOTE: The numbers in circles (②) refer to explanatory notes that follow tables.

* Measurement of the approach road spacing is from center to center on the same side of the roadway.

**Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

Notes on Tables 13, 14 and 15:

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

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

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

If a property becomes landlocked (no reasonable access exists) because an approach road cannot be safely constructed and operated, and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. (Note: If a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT does not have responsibility for purchasing the property.)

(Note ① has precedence over notes ②, ③ and ④.)

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

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

④ Minimum spacing for public road approaches is either the existing city block spacing or the city block spacing as identified in the local comprehensive plan. Public road connections are preferred over private driveways, and in STAs driveways are discouraged. However, where driveways are allowed and where land use patterns permit, the minimum spacing for driveways is 175 feet (55 meters) or mid-block if the current city block spacing is less than 350 feet (110 meters).

Access Management Spacing Standards for Interchanges

The following tables show the access spacing standards for interchanges as discussed in Goal 3, Policy 3C: Interchange Access Management Areas.

Table 16: Minimum Spacing Standards Applicable to Freeway Interchanges with Two-Lane Crossroads

Category of Mainline	Type of Area	Spacing Dimension			
		A	X	Y	Z
FREEWAY	Fully Developed Urban	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	750 ft. (230 m)
	Urban	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	990 ft. (300 m)
	Rural	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

Notes: 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.

2) No four-legged intersections may be placed between ramp terminals and the first major intersection.

A = Distance between the start and end of tapers of adjacent interchanges

X = Distance to the first approach on the right; right in/right out only

Y = Distance to first major intersection; no left turns allowed in this roadway section

Z = Distance between the last right in/right out approach road and the start of the taper for the on-ramp

Figure 18: Measurement of Spacing Standards for Table 16

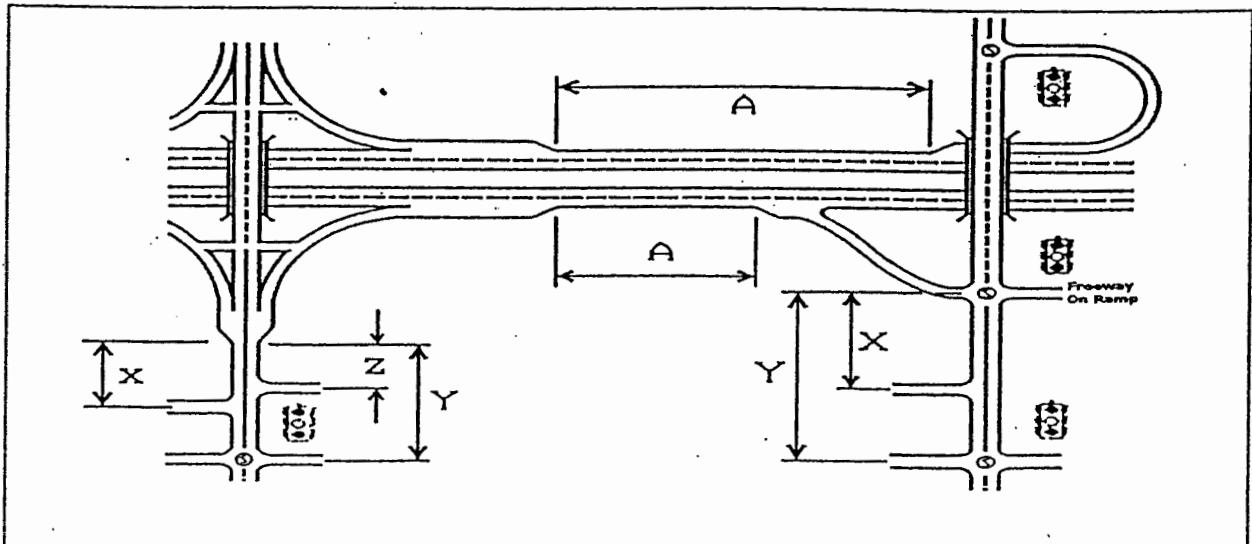


Table 17: Minimum Spacing Standards Applicable to Freeway Interchanges with Multi-Lane Crossroads

Category of Mainline	Type of Area	Spacing Dimension				
		A	X	Y	Z	M
FREEWAY	Fully Developed Urban	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	990 ft. (300 m)	1320 ft. (400 m)
	Urban	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)
	Rural	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

Notes: 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.

2) No four-legged intersections may be placed between ramp terminals and the first major intersection.

A = Distance between the start and end of tapers of adjacent interchanges

X = Distance to first approach on the right; right in/right out only

Y = Distance to first major intersection

Z = Distance between the last approach road and the start of the taper for the on-ramp

M = Distance to first directional median opening. No full median openings are allowed in nontraversable medians to the first major intersection

Figure 19: Measurement of Spacing Standards for Table 17

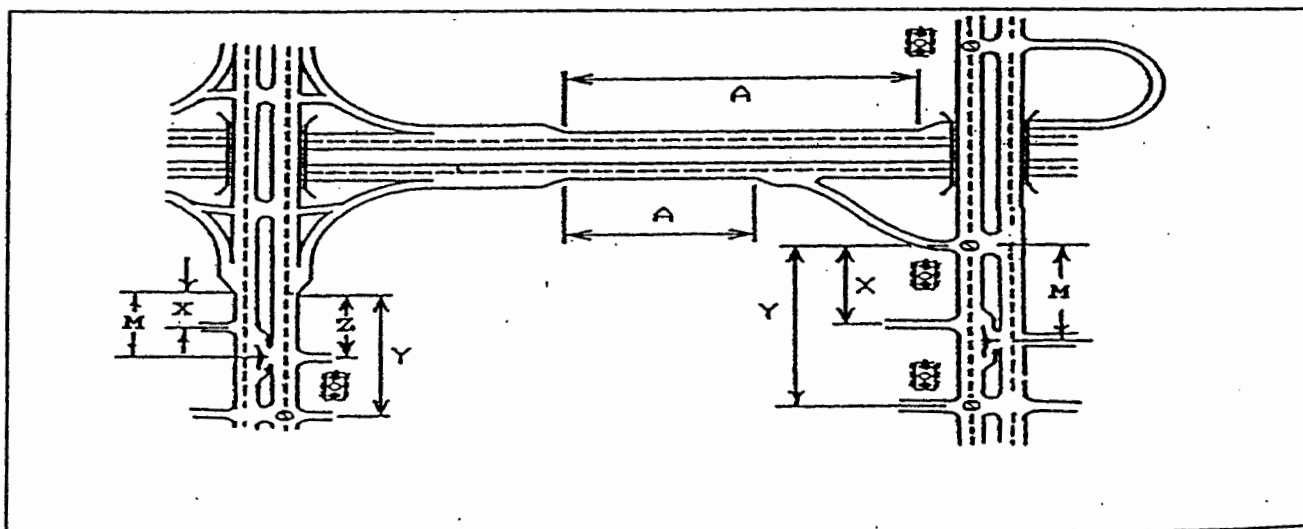


Table 18: Minimum Spacing Standards Applicable to Non-Freeway Interchanges with Two-Lane Crossroads

Category of Mainline	Type of Area	Speed of Mainline	Spacing Dimension				
			B	C	X	Y	Z
EXPRESSWAY	Fully Developed Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	750 ft. (230 m)
	Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	990 ft. (300 m)
	Rural	55 mph (90 kph)	1 mi. (1.6 km)	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

- Notes: 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
- 2) No four-legged intersection may be placed between ramp terminals and the first major intersection.
- 3) Use four-lane crossroad standards for urban and suburban locations that are likely to be widened.
- 4) No at-grade intersections are permitted between interchanges less than 5 miles apart.

B = Distance between the start and end of tapers

C = Distance between nearest at-grade and ramp terminal intersections or the end/start of the taper section

X = Distance to first approach on the right; right in/right out only

Y = Distance to first major intersection

Z = Distance between the last right in/right out approach road and the start of the taper for the on-ramp

Figure 20: Measurement of Spacing Standards for Table 18

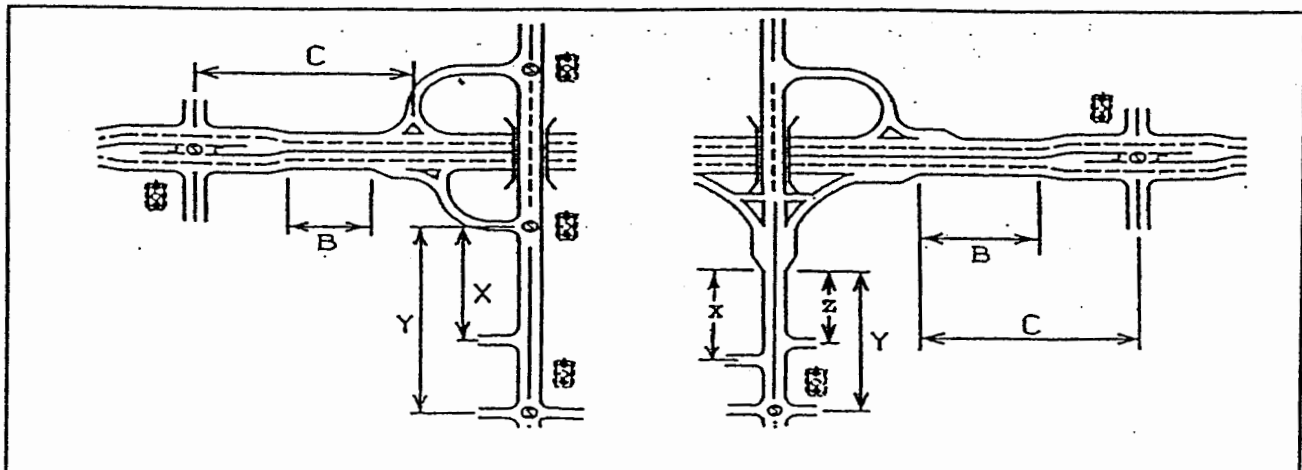


Table 19: Minimum Spacing Standards Applicable to Non-Freeway Interchanges with Multi-Lane Crossroads

Category of Mainline	Type of Area	Speed of Mainline	Spacing Dimension					
			B	C	X	Y	Z	M
EXPRESSWAY	Fully Developed Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	750 ft. (230 m)	1320 ft. (400 m)	990 ft. (300 m)	1320 ft. (400 m)
	Urban	45 mph (70 kph)	2640 ft. (800 m)	1 mi. (1.6 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)
	Rural	55 mph (90 kph)	1 mi. (1.6 km)	2 mi. (3.2 km)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)	1320 ft. (400 m)

- Notes: 1) If the crossroad is a state highway, these distances may be superseded by the Access Management Spacing Standards, providing the distances are greater than the distances listed in the above table.
- 2) No four-legged intersections may be placed between ramp terminals and the first major intersection.
- 3) No at-grade intersections are permitted between interchanges less than 5 miles apart.

B = Distance between the start and end of tapers

C = Distance between nearest at-grade and ramp terminal intersections or the end/start of the taper section

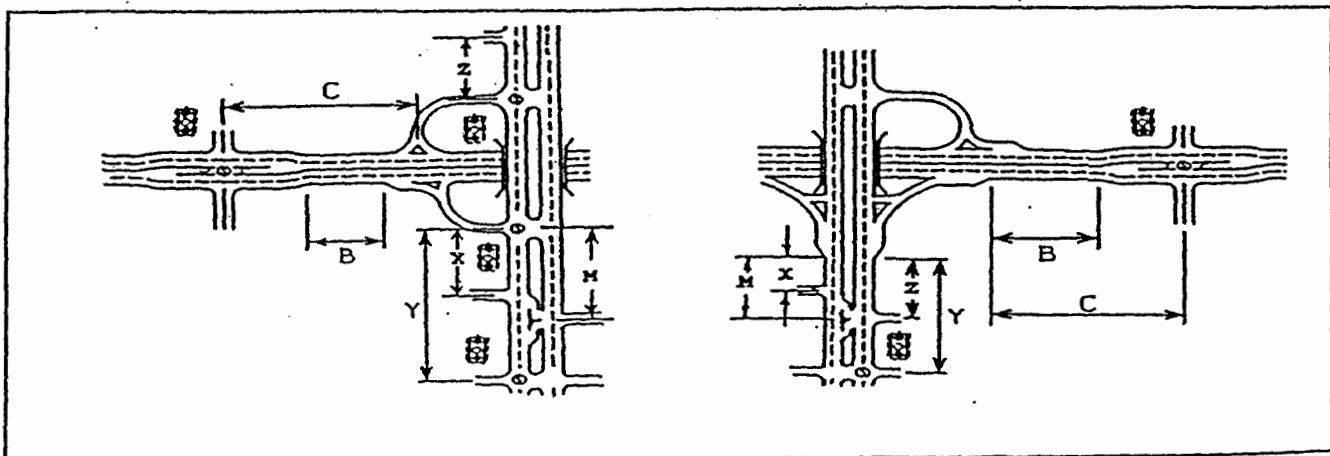
X = Distance to first approach on the right; right in/right out only

Y = Distance to first major intersection

Z = Distance between the last approach road and the start of the taper for the on-ramp

M = Distance to first directional median opening. No full median openings are allowed in nontraversable medians to the first major intersection

Figure 21: Measurement of Spacing Standards for Table 19



Access Management Spacing Standard Minor Deviation Limits

The following tables show the access management spacing standard minor deviation limits for the access management classifications listed in Goal 3, Policy 3A: Classification Spacing Criteria, Action 3A.1. The Access Management Spacing Standards are shown in Tables 13, 14 and 15 of this Appendix. Minor deviations may be considered down to the deviation limits shown in Tables 20, 21 and 22. Any request to deviate beyond these limits is considered a major deviation.

Table 20: Access Management Spacing Standard Minor Deviation Limits for Statewide Highways

①②

(Measurement is in Feet)*

Posted Speed③	Rural		Urban			
	Expressways	Other	Expressways	Other	UBA	STA
≥55	(none)	(950)	(none)	(870)		
	[none]	[1150]	[none]	[1000]		
50	(none)	(700)	(none)	(640)		
	[none]	[900]	[none]	[810]		
40 & 45	(none)	(560)	(none)	(530)		
	[none]	[810]	[none]	[740]		
30 & 35		(400)		(350)	(350)	④
		[675]		[600]	[600]	
≤25		(280)		(250)	(250)	④
		[525]		[400]	[400]	

NOTE: The numbers in circles (②) refer to explanatory notes that follow the tables.

*Measurement of the approach road spacing is from center to center on the same side of the roadway.

**Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

() = Driveway Spacing Minor Deviation Limit.

[] = Public Street Spacing Minor Deviation Limit.

Table 21: Access Management Spacing Standard Minor Deviation Limits for Regional Highways

①②
(Measurement is in Feet)*

Posted Speed③	Rural		Urban			
	Expressways	Other	Expressways	Other	UBA	STA
≥55	(none)	(700)	(none)	(700)		
	[none]	[870]	[none]	[870]		
50	(none)	(540)	(none)	(540)		
	[none]	[640]	[none]	[640]		
40 & 45	(none)	(460)	(none)	(460)		
	[none]	[550]	[none]	[550]		
30 & 35		(300)		(300)	(300)	④
		[375]		[375]	[375]	
≤25		(220)		(220)	(220)	④
		[350]		[350]	[350]	

NOTE: The numbers in circles (②) refer to explanatory notes that follow the tables.

*Measurement of the approach road spacing is from center to center on the same side of the roadway.

**Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

() = Driveway Spacing Minor Deviation Limit.

[] = Public Street Spacing Minor Deviation Limit.

Table 22: Access Management Spacing Standard Minor Deviation Limits for District Highways

①②
(Measurement is in Feet)*

Posted Speed③	Rural		Urban			
	Expressways	Other	Expressways	Other	UBA	STA
≥55	(none)	(650)	(none)	(650)		
	[none]	[660]	[none]	[660]		
50	(none)	(475)	(none)	(475)		
	[none]	[525]	[none]	[525]		
40 & 45	(none)	(400)	(none)	(400)		
	[none]	[475]	[none]	[475]		
30 & 35		(275)		(275)	(250)	④
		[325]		[325]	[300]	
≤25		(200)		(200)	(175)	④
		[245]		[245]	[200]	

NOTE: The numbers in circles (②) refer to explanatory notes that follow the tables.

*Measurement of the approach road spacing is from center to center on the same side of the roadway.

**Spacing for Expressway at-grade intersections only. See Table 12 for interchange spacing.

() = Driveway Spacing Minor Deviation Limit.

[] = Public Street Spacing Minor Deviation Limit.

Notes on Tables 20, 21 and 22:

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

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

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

If a property becomes landlocked (no reasonable access exists) because an approach road cannot be safely constructed and operated, and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. (Note: If a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT does not have responsibility for purchasing the property.)

(Note ① has precedence over notes ②, ③ and ④.)

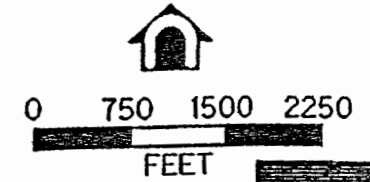
② These standards are for unsignalized access points only. Signal spacing standards supersede spacing standards for approaches.

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

④ Minimum spacing for public road approaches is either the existing city block spacing or the city block spacing as identified in the local comprehensive plan. Public road connections are preferred over private driveways, and in STAs driveways are discouraged. However, where driveways are allowed and where land use patterns permit, the minimum spacing for driveways is 55 meters (175 feet), or mid-block if the current city block spacing is less than 110 meters (350 feet).

LEGEND

- CITY LIMITS
- - - URBAN GROWTH BOUNDARY



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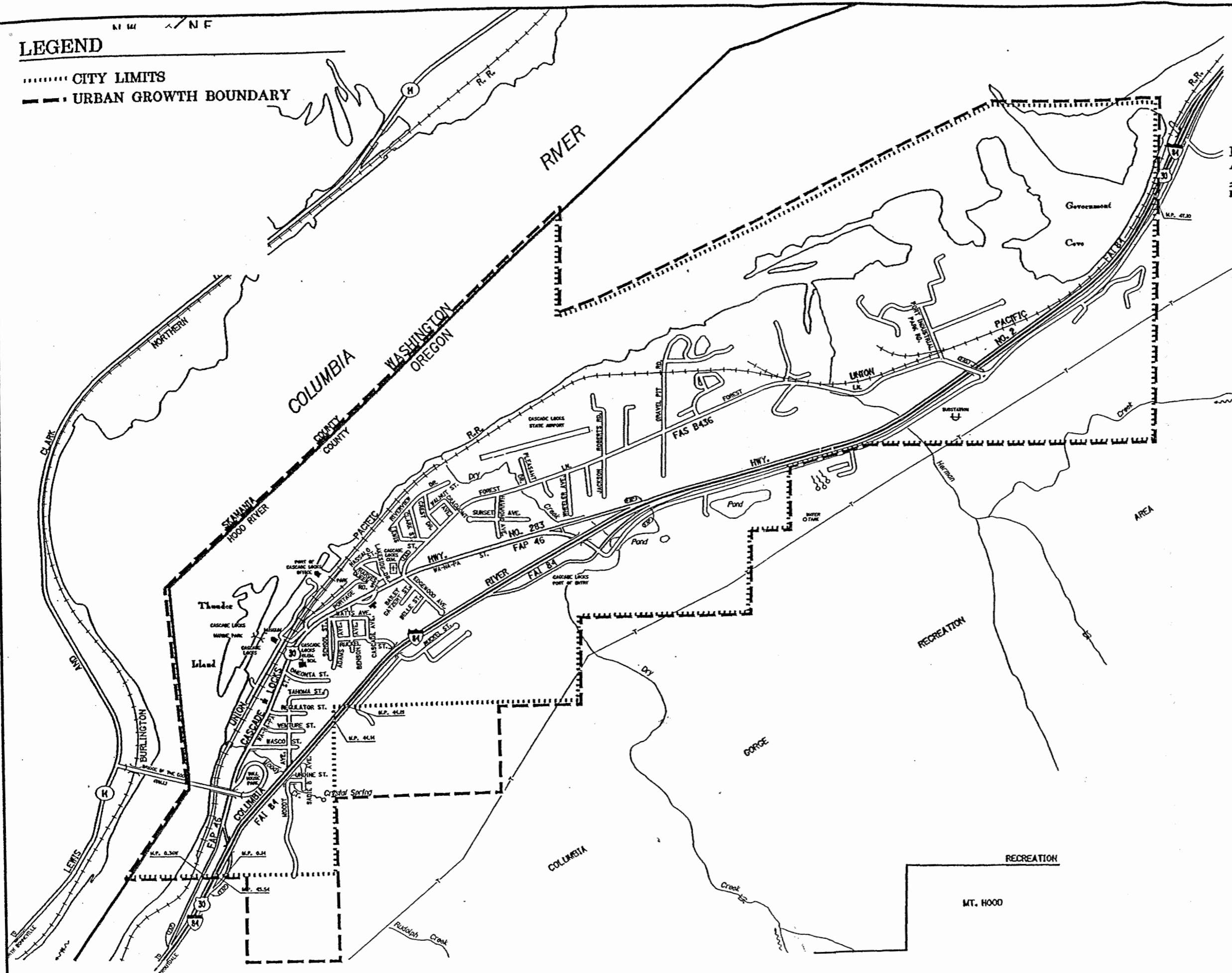


FIGURE 1-1
PLANNING AREA
CASCADE LOCKS

LEGEND:

- MINOR ARTERIAL STREET
- - - COLLECTOR STREET
- == LOCAL STREET
- CITY LIMITS
- - - URBAN GROWTH BOUNDARY



NOT TO SCALE

0 750 1500 3000



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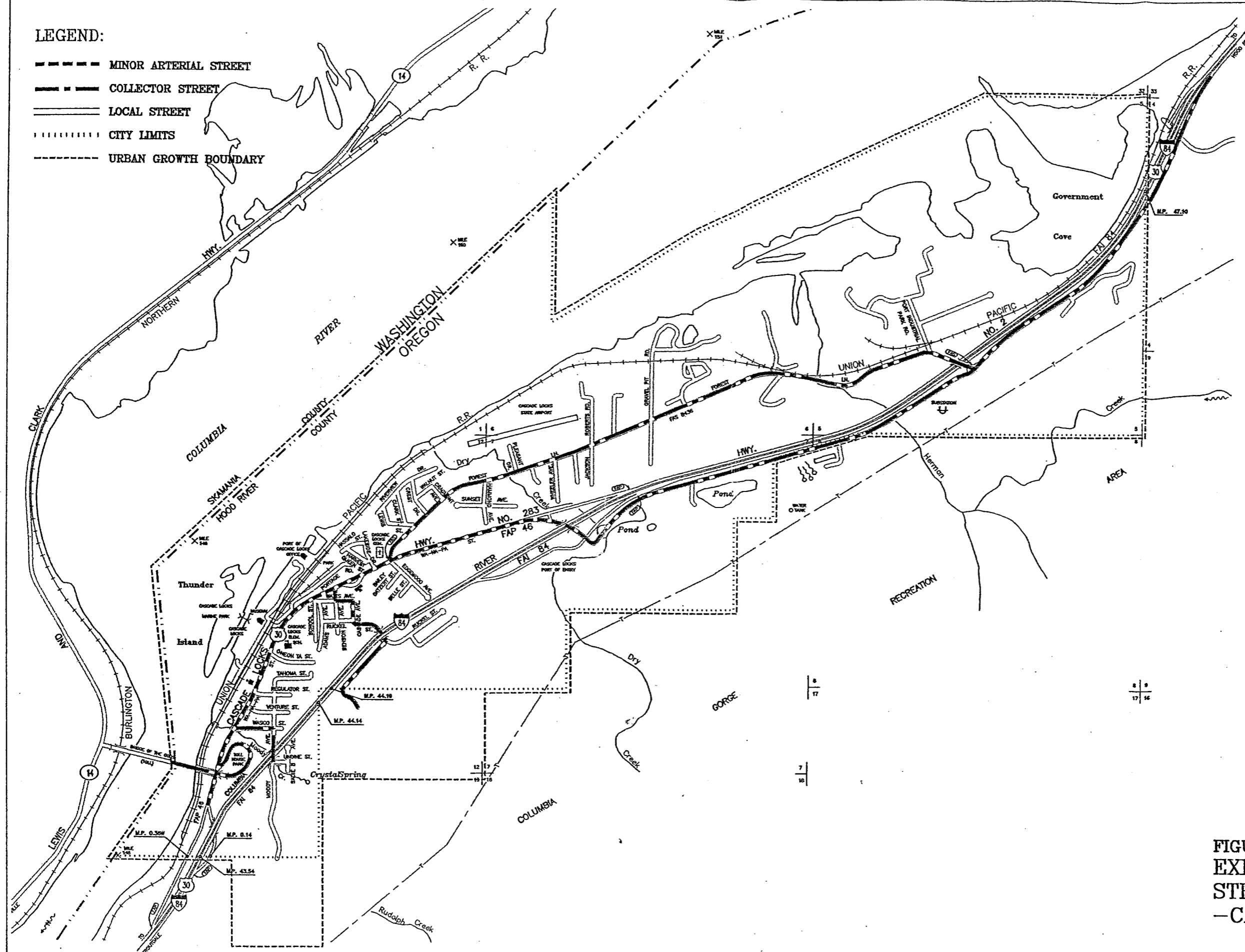
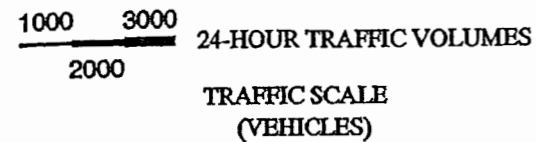
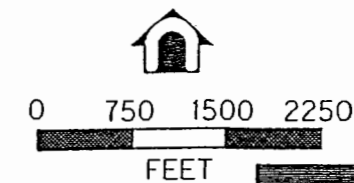


FIGURE 3-1
EXISTING
STREET CLASSIFICATION
-CASCADE LOCKS

LEGEND



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



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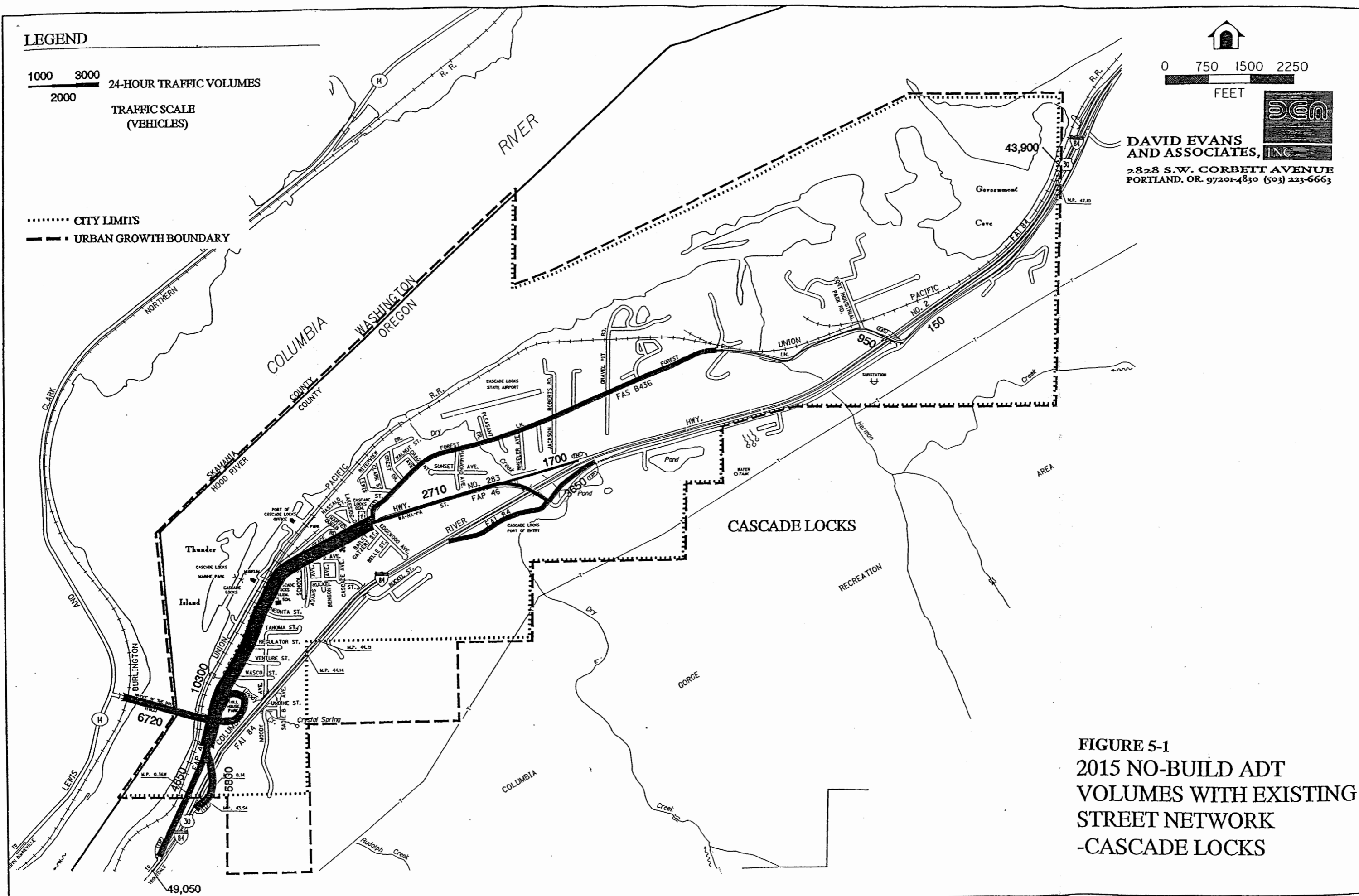


FIGURE 5-1
2015 NO-BUILD ADT
VOLUMES WITH EXISTING
STREET NETWORK
-CASCADE LOCKS

LEGEND

1000 3000
2000 24-HOUR TRAFFIC VOLUMES
TRAFFIC SCALE
(VEHICLES)

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

0 750 1500 2250
FEET



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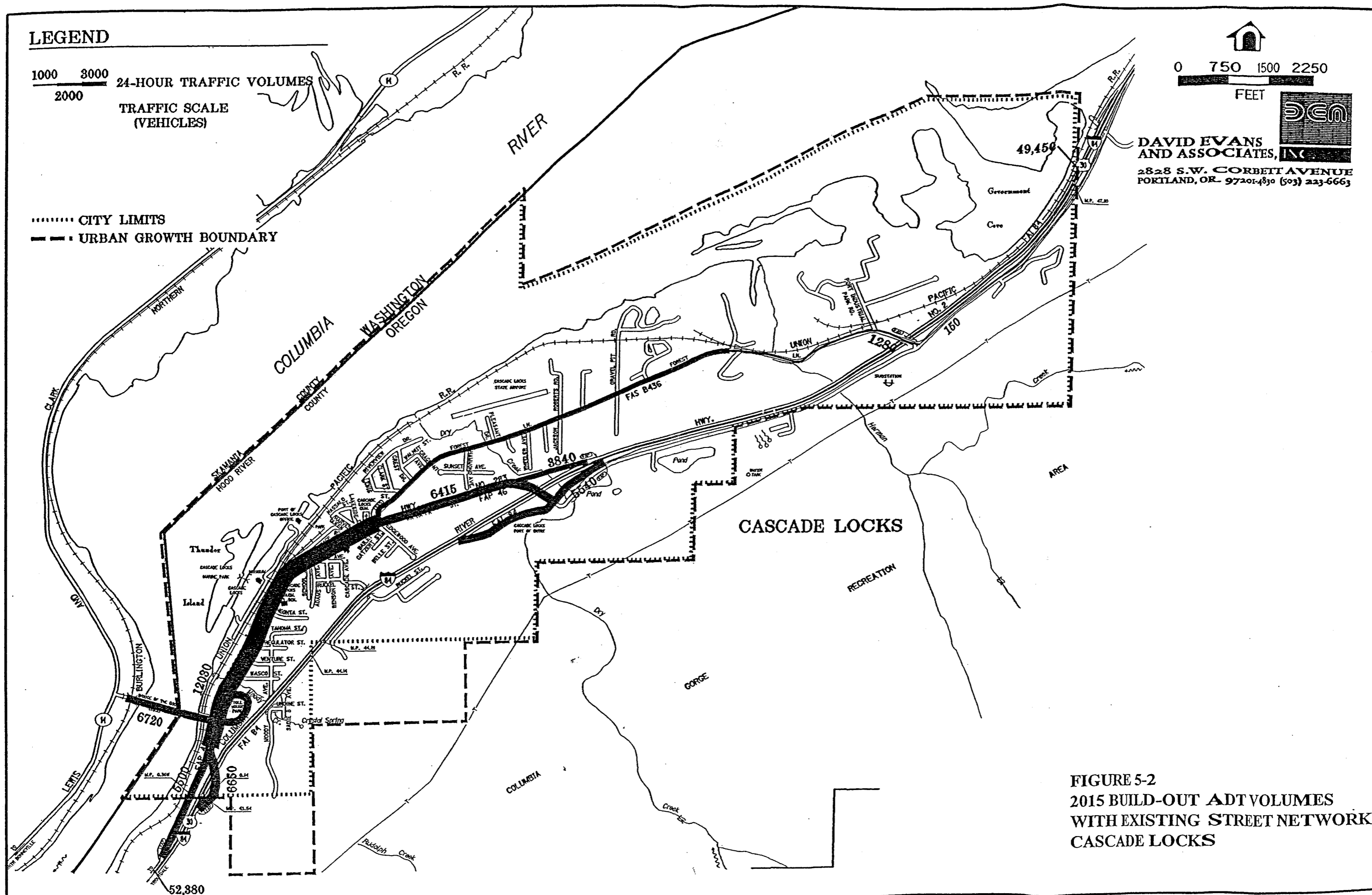
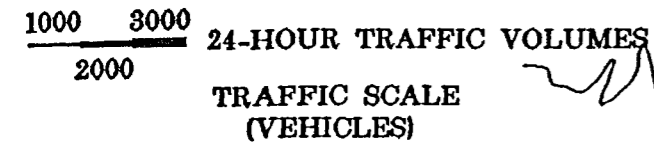


FIGURE 5-2
2015 BUILD-OUT ADT VOLUMES
WITH EXISTING STREET NETWORK
CASCADE LOCKS

LEGEND



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

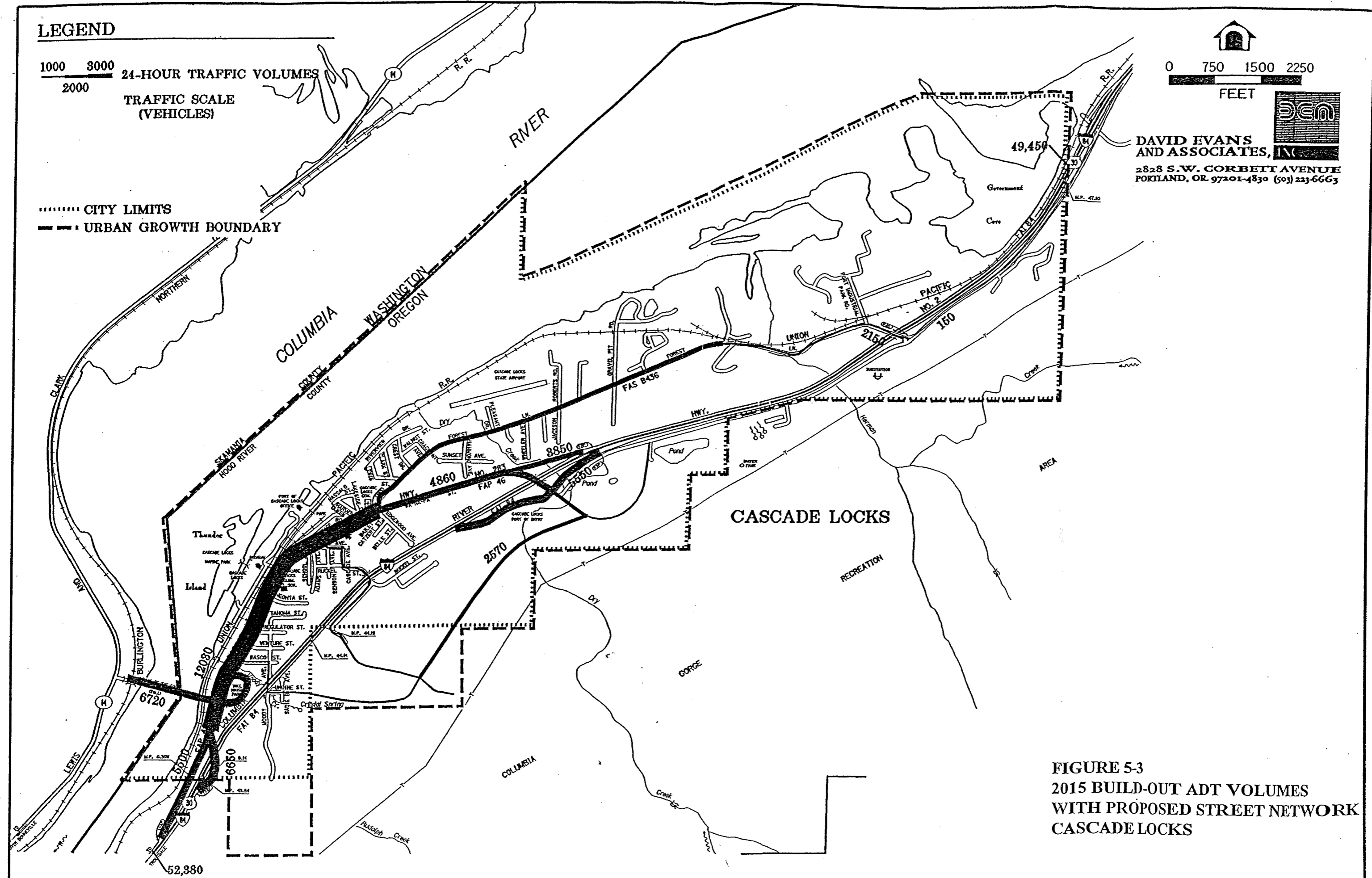
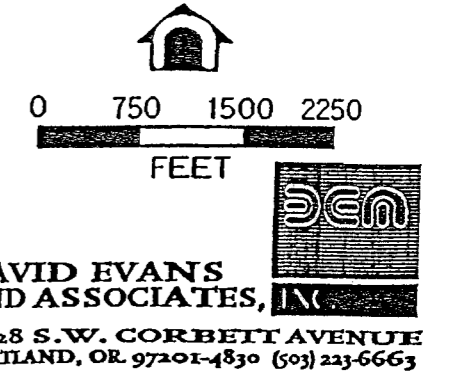


FIGURE 5-3
2015 BUILD-OUT ADT VOLUMES
WITH PROPOSED STREET NETWORK
CASCADE LOCKS

1000 3000
2000 24-HOUR TRAFFIC VOLUMES
TRAFFIC SCALE
(VEHICLES)

0 750 1500 2250

FEET

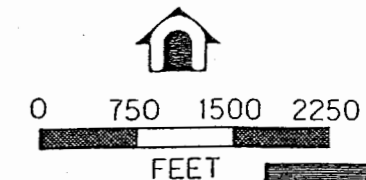
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FIGURE 5-4
2015 BUILD-OUT ADT
VOLUMES WITH PROPOSED
STREET NETWORK AND
FOREST LN. INTERCHANGE
CASCADE LOCKS

LEGEND

- MINOR ARTERIAL STREET
- - - URBAN COLLECTOR STREET
- . - PROPOSED URBAN COLLECTOR STREET
- █ HISTORIC COLUMBIA RIVER HIGHWAY

- CITY LIMITS
- . - URBAN GROWTH BOUNDARY



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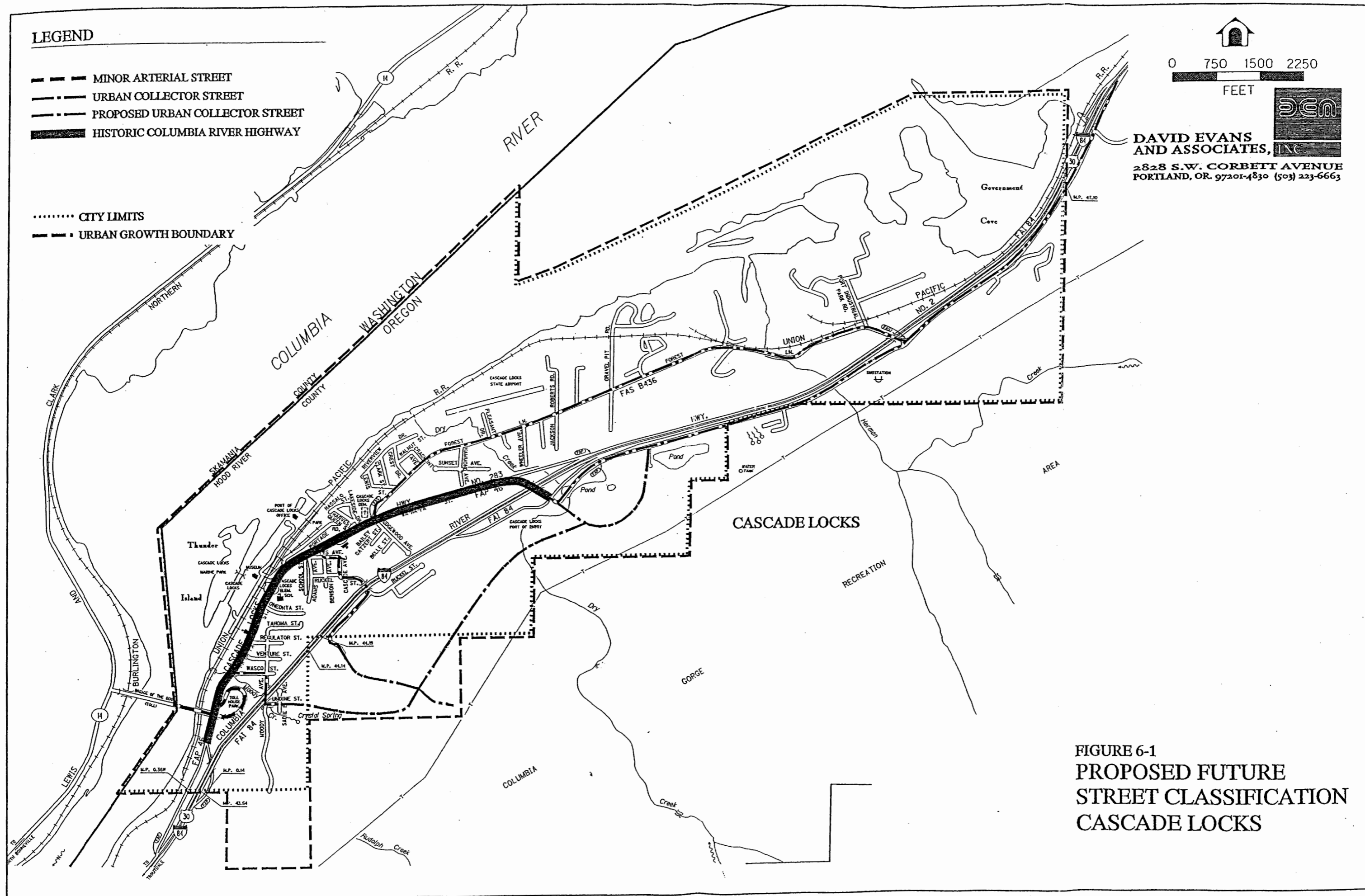


FIGURE 6-1
PROPOSED FUTURE
STREET CLASSIFICATION
CASCADE LOCKS

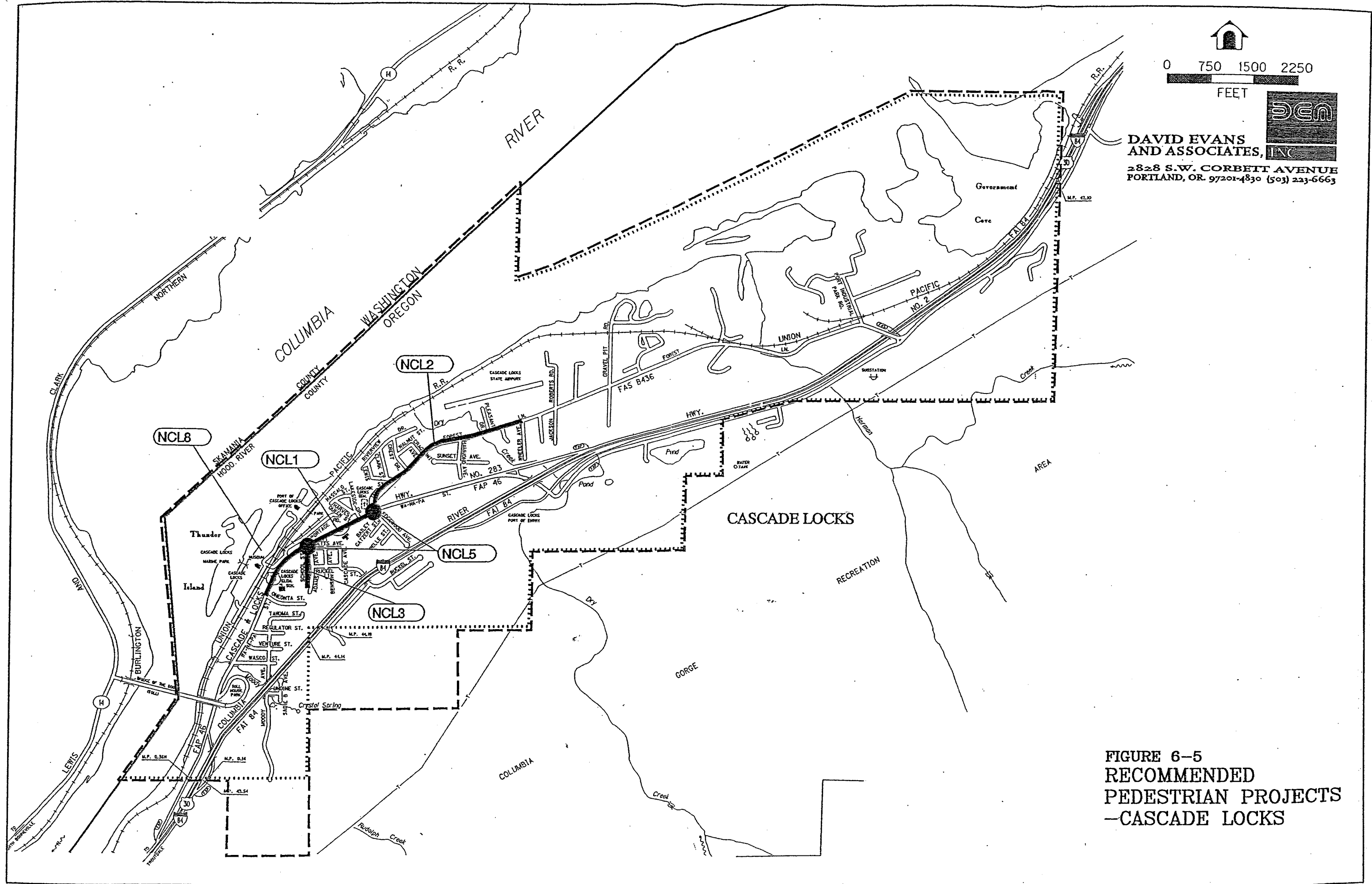


FIGURE 6-5
RECOMMENDED
PEDESTRIAN PROJECTS
-CASCADE LOCKS

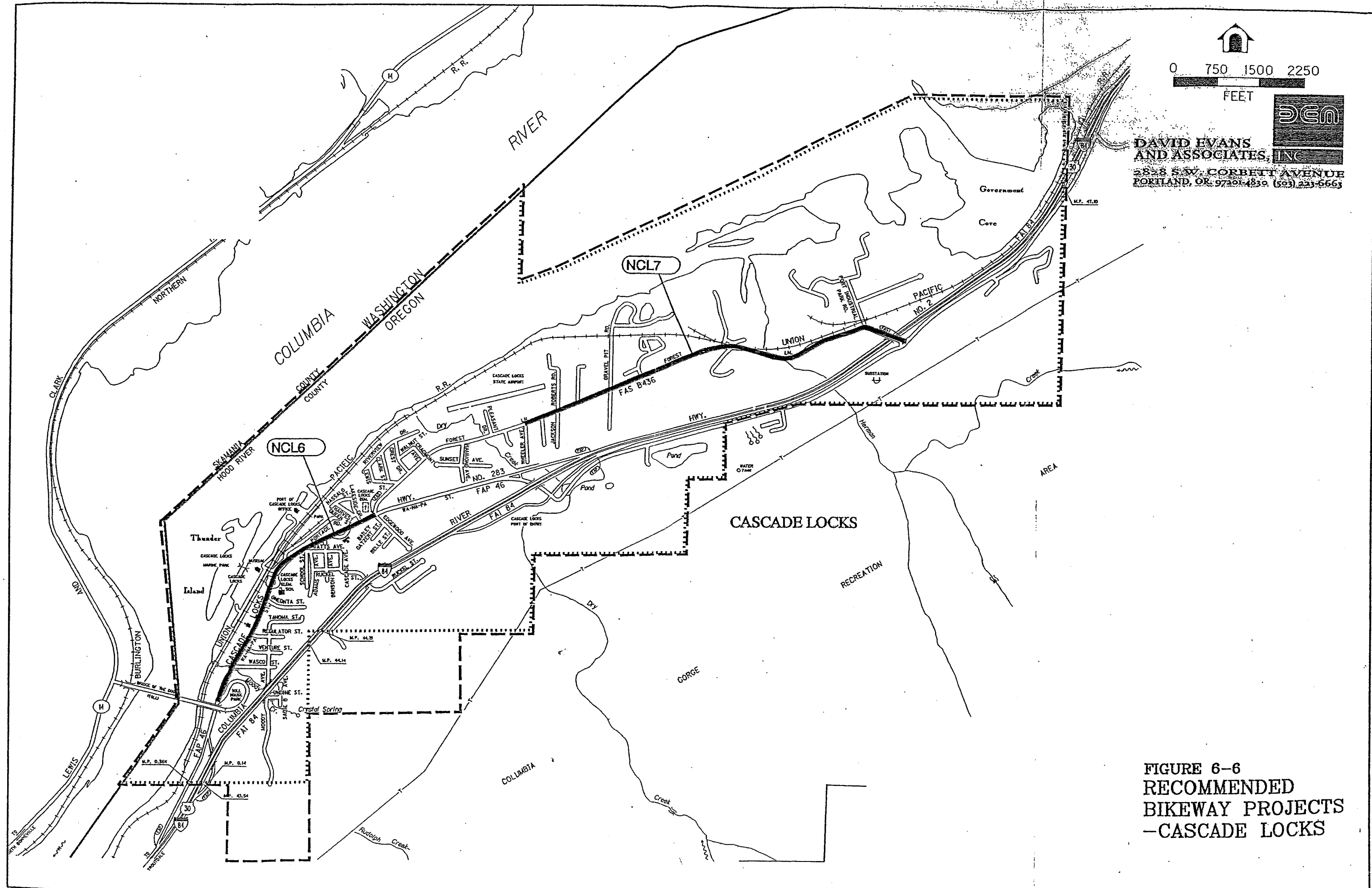
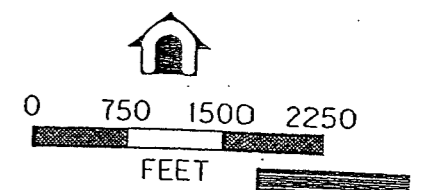
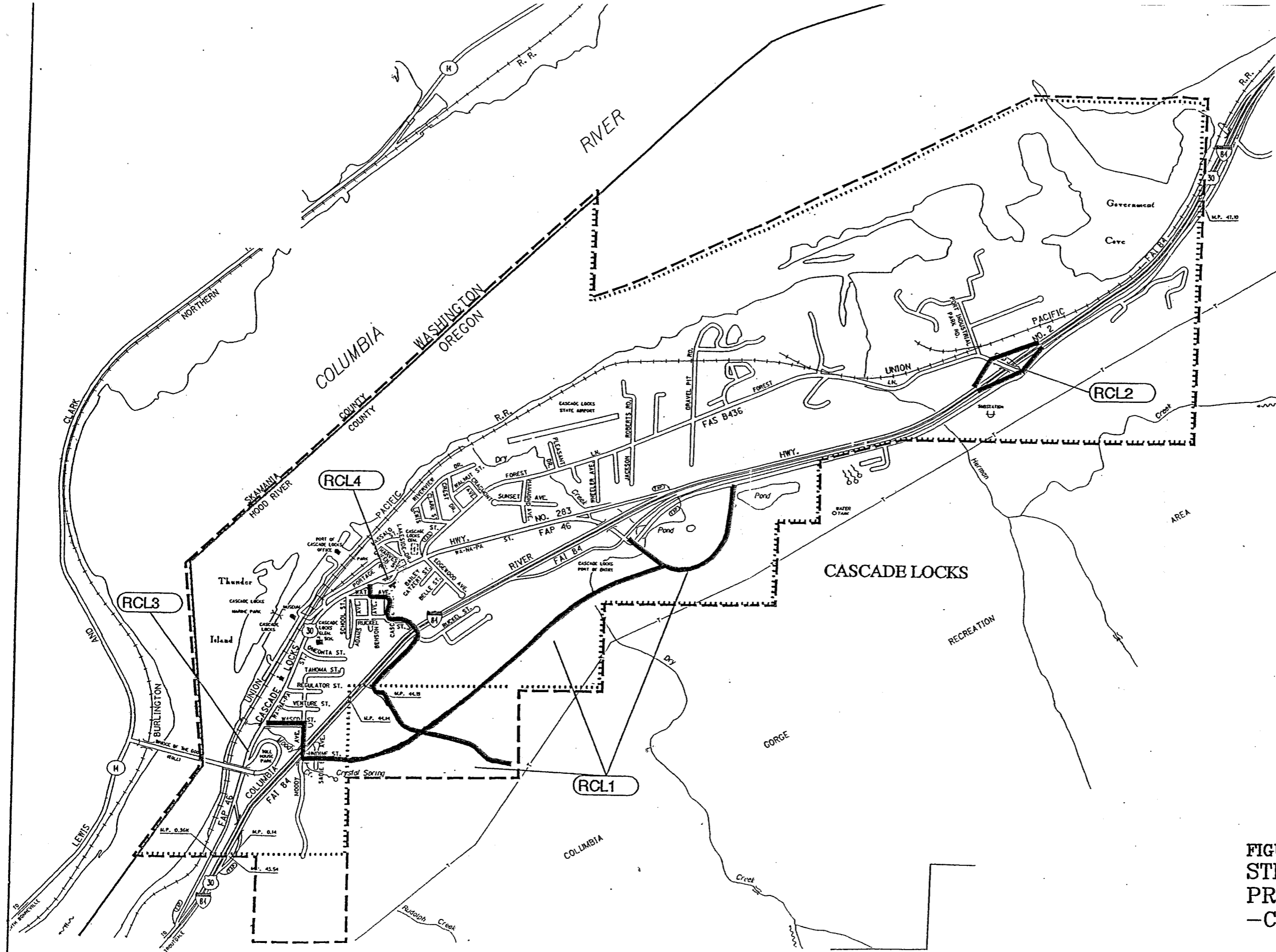


FIGURE 6-6
RECOMMENDED
BIKEWAY PROJECTS
-CASCADE LOCKS



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FIGURE 6-7
STREET IMPROVEMENT
PROJECTS
-CASCADE LOCKS