CITY OF HOOD RIVER
TRANSPORTATION SYSTEM PLAN

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TABLE OF CONTENTS

LIST OF TABLES

1. TRANSPORTATION BACKGROUND

INTRODUCTION

Like many communities across the nation, Hood River's development pattern has evolved as a result of several economic and geographic circumstances that establish the transportation framework of the City. The advent of the railroad, and the community's early history as the commercial center of orchards and logging activities all influenced its early settlement. The City's location within the Hood River Valley and its proximity to the Columbia River destined Hood River to become a transportation hub.

With a 1998 population of 5,1301 Hood River is the major urban center and county seat of Hood River County. The city is renowned for its recreational opportunities especially sailboarding on the Columbia River. Other recreational opportunities exist due to the City's proximity to national forests, Mount Hood, and numerous trails and rivers. The City of Hood River's settlement pattern and transportation system have been defined largely by the geography of the area.

As the City grew, so did the demand for roads. The road system reflects the transportation philosophies and attitudes during the times they were built. The central downtown area was the first to be officially platted and is characterized by the traditional grid street system. West Hood River was developed when residents wanted to be protected from through traffic. The result has been a maze of short, circuitous and dead-end streets that fulfilled this goal. However, this has left the area with inadequate collector streets. Many of the road systems were designed initially to serve farming needs, which may prove inadequate to accommodate residential development.

Hood River is required by Oregon's Transportation Planning Rule (Oregon Administrative Rules Section 660 Division 12) to develop and adopt a Transportation System Plan (TSP) for the City. This plan is intended to fulfill Oregon's Statewide Planning Goal 12 (Oregon Administrative Rules Section 660 Division 15) requirement.

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 economical transportation system."

The City of Hood River has updated the transportation element of its comprehensive plan 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;

[1] 1998 Oregon Population Report by the Center for Population Research and Census

3. consider the social consequences that would result from using various combinations of transportation modes;

4. avoid principal reliance upon any one mode of transportation;

5. minimize adverse social, economic, and environmental impacts and costs;

6. conserve energy;

7. meet the needs of the transportation disadvantaged by improving transportation services;

8. facilitate the flow of goods and services so as to strengthen the local and regional economy; and

9. conform to local and regional comprehensive land use plans.

This Transportation Systems Plan (TSP) 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 City of Hood River planning area is six square miles and encompasses the area within the urban growth boundary. This includes land east of MilePost (MP) 62.9 on I-84, west of MP 64.6 on I-84, south to Brookside Drive, and north to the Columbia River (including half of Wells Island).

PLAN ORGANIZATION

The TSP was developed through technical analysis combined with input and review by the city, a technical advisory committee, and the public. David Evans and Associates prepared several drafts of the TSP with the support of Oregon Department of Transportation for the City. The City of Hood River rewrote the David Evans Transportation Plan Draft to incorporate more pertinent information about the City with the editorial help from consultant Bruce Howard.

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 TAC included representatives from the City of Hood River, the City of Cascade Locks, Hood River County, the Oregon Department of Transportation (ODOT), and transportation stakeholder groups.

Open houses were held jointly in Cascade Locks and Hood River. Two open houses were held one in each community, and included discussion and inquiry about the community efforts. This

enabled residents throughout the county to learn about and provide input on both rural and urban transportation issues. Through this process the city became better positioned to coordinate future transportation system projects.

Project goals, objectives, and implementation actions were developed for the city 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.

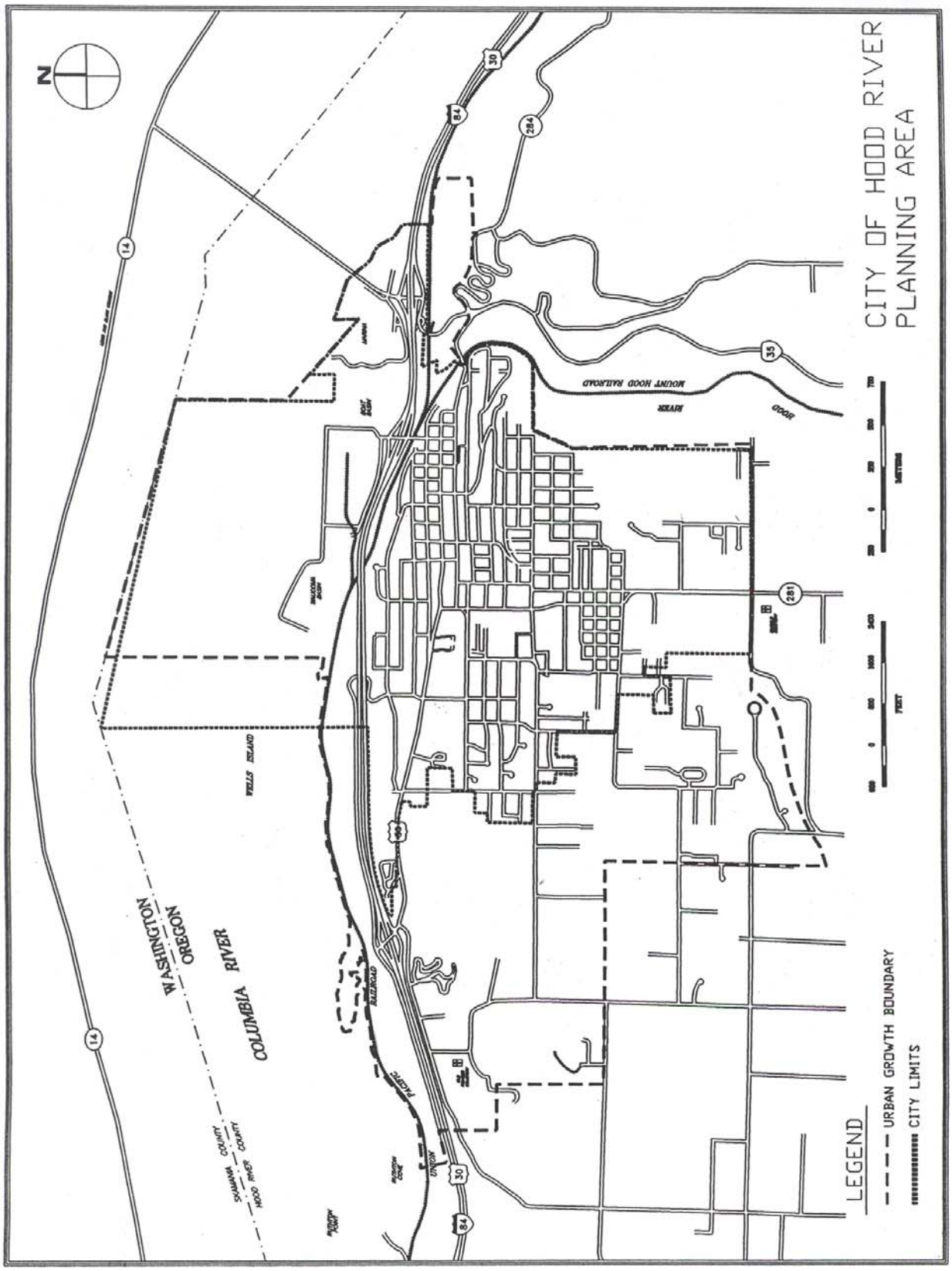
CULTURAL FEATURES

The Historic Columbia River Highway is a state highway (Highway 100). It is listed on the National Register of Historic Places as a historic district. Within the City of Hood River, it includes sections of Cascade Avenue, Oak Avenue, Front Street and State Avenue. ORS 366.550 states that it is public policy of the State of Oregon to preserve and restore the continuity and historic integrity of the remaining segments of the Historic Columbia River Highway for public use and enjoyment.

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.

City of Hood River Planning Area Map



2. TRANSPORTATION GOALS AND POLICIES

There are seven transportation goals with related policies organized under each goal.

GOAL 1: A balanced transportation system.

POLICIES:

1. Develop and implement public street standards that recognize the multi-purpose and shared nature of the street right-of-way for utility, pedestrian, bicycle, transit, truck, and auto use and recognize these streets as important to community identity as well as providing a needed service.

   Action: *Develop and maintain design standards for motor vehicles, bicycles, pedestrian, and transit and truck facilities in Hood River.*

2. Provide connectivity to each area of the City for convenient multi-modal access.

   Action: *Require the provision of an adequate local street system for both residential and non-residential development.*

3. Develop a safe, complete, attractive and efficient system of pedestrian and bicycle ways, including bike lanes, shared roadways, off-street pathways and sidewalks according to the pedestrian and bicycle system maps. Road standards shall address bicycle and pedestrian paths.

   Action: *Conform to the design guidelines set forth in the "Guide to Development of New Bicycle Facilities" (latest edition) as published by the American Association of State Highways and Transportation Officials (AASHTO) and the Oregon Bicycle and Pedestrian Plan adopted by the Oregon Transportation Commission. Coordinate with the County of Hood River, Oregon Department of Transportation (ODOT) and the various Park Departments to develop pedestrian and bike paths. Bicycle and pedestrian facilities should be provided and designed to accommodate the unique requirements of various user groups and trip types (including school trips, commuter trips, neighborhood circulation trips, and recreation trips). Pathways should be located to provide the "shortest path" between origins and destinations. Accommodate non-automobile movements specifically by bicyclists and pedestrians within neighborhoods. Sidewalks will continue to be the responsibility of fronting property owners. Continue to recognize the importance of walking and bicycling as forms of transportation and recreation.*

4. When development or redevelopment of land occurs, provide bike and pedestrian facilities that are consistent with standards and policies of this plan.

GOAL 2: Transportation facilities designed and constructed in a manner that enhances Hood River's livability.

POLICIES:

1. Maintain the livability of Hood River through proper location and design of transportation facilities.

   Action: *Design streets and highways to respect the characteristics of the surrounding land uses, natural features, and other community amenities. Recognizing that the magnitude and scale of capital facilities also effect aesthetics and environmental quality, the City will require design plans and impact analyses for all streets within the City.*

2. Locate and design recreational and bicycle pathways so as to balance the needs of human use and enjoyment with resource preservation in identified Natural Resource areas.

   Action: *Locate pathways to have the lowest level of impact on a stream or sensitive riparian vegetation.*

3. Meet the applicable requirements of state and federal resource agencies for wetlands or stream corridors in development of City transportation facilities.

4. Protect neighborhoods from excessive through traffic and travel speeds while providing reasonable access to and from residential areas. Build local and neighborhood streets to minimize speeding.

   Action: *Develop and maintain street design standards and criteria for neighborhood traffic management for use in new development and existing neighborhoods. Measures to be developed may include narrower streets, speed humps, traffic circles, curb and sidewalk extensions, curving streets, diverters and other traffic calming measures.*

5. Require new commercial and industrial development to identify traffic plans for residential streets where increased cut-through traffic may occur due to the proposed development.

   Action: *Where development adds 20 or more through trips in the evening peak hour on a neighborhood route and local street, traffic management plans should be developed to reduce the occurrence of cut-through traffic in residential areas.*

GOAL 3: A safe transportation system.

POLICIES:

1. Improve traffic safety through a comprehensive program of engineering, education and enforcement.

2. Design streets to serve the anticipated function and intended uses as determined by the comprehensive plan.

Action: *Develop a functional classification system for Hood River, which meets the City's needs and respects needs of other agencies including Hood River County and ODOT.*

3. Enhance safety by prioritizing and mitigating high accident locations within the City.

   Action: *Engineering and construction of facilities will follow standards presented and adopted by the City. City facilities will conform to the Manual of Uniform Traffic Control Devices (MUTCD), as supplemented and adopted by the Oregon Transportation Commission. Identify roadwork sections, bridges and intersections with traffic safety problems and develop a list of projects necessary to eliminate deficiencies. The City should develop an accident record evaluation program working cooperatively with Hood River County and ODOT.*

4. Establish rights-of-way at the time of site development and where appropriate officially secure them by dedication of property.

   Action: *The* City shall adopt street right-of-way standards and design standards.

5. Designate routes to schools for each school and to and from any new residential project.

   Action: *The City should work with the school district and community in developing safe bus, pedestrian, and bicycle routes to schools.*

6. Construct pathways only where they can be developed with satisfactory design components that address safety, security, maintainability and acceptable pathway use.

   Action: *New construction of pathways along residential rear lot lines will not be encouraged unless no comparable substitute alignment is possible in the effort to connect common attractors or existing segment links.*

7. Provide satisfactory levels of maintenance to the transportation system in order to preserve user safety, facility aesthetics and the integrity of the system as a whole.

8. Maintain access management standards for arterial and collector roadways consistent with City, County and State requirements to reduce conflicts between vehicles and trucks, as well as conflicts between vehicles, bicycles, and pedestrians.

   Actions: *Preserve the functional integrity of the motor vehicle system by limiting access per the TSP. Require each parcel of property to provide and maintain safe access to the public street system. In residential areas, discourage driveway access onto collector streets; provide access primarily by neighborhood or local streets. Where access spacing standards cannot be met, consider alternatives such as combining multiple points of access or developing frontage drives and roadways. Use ODOT Access Management standards as a guide to establish the following access spacing.*

9. Ensure adequate access for emergency service vehicles is provided throughout the City.

GOAL 4: An efficient transportation system that reduces the number of trips and limits congestion.

POLICIES:

1. Support trip reduction strategies developed regionally, including employment, tourist and recreational trip programs.

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

3. A minimum level of service (LOS) C on transportation systems serving new developments is desired on streets and signalized and unsignalized intersections. Level of service shall be based on the most recent edition of the Highway Capacity Manual. Where a facility is maintained by the County or ODOT, the more restrictive of the standards should apply.

4. Improve local transit services to increase transit ridership potential.

   ***Action*:** Bus service improvements are needed to meet this policy and other policies recommended in this plan.

GOAL 5: Transportation facilities, which are accessible to all member of the community and reduce trip length.

POLICIES:

1. Construct transportation facilities to meet the requirements of the American with Disabilities Act.

2. Develop neighborhoods and local connections to provide adequate circulation in and out of the neighborhoods.

   Action: *Work toward the eventual connection of streets identified in the TSP as funds are available and opportunities arise. As a planning guideline, the City should require streets to have connections every 400 to 600 feet for local and neighborhood streets.*

GOAL 6: Transportation facilities, which provide efficient movement of goods.

POLICIES:

1. Designated arterial routes and freeway access areas in Hood River are essential for efficient movement of goods; design these facilities and adjacent land uses to reflect this need.

2. Consider existing water, railroad and air transportation facilities to be City resources and reflect the needs of these facilities in land use decisions.

GOAL 7: Implement the transportation plan by working cooperatively with federal, state, regional and local governments, private sector and residents, and by creating a stable, flexible financial system.

POLICIES:

1. Coordinate transportation projects, policy issues, and development actions with all affected governmental units in the area; Hood River County, CAT, Port of Hood River and ODOT.

2. Participate in regional transportation and growth management policies and work with regional agencies to assure adequate funding of transportation facilities to support those policies.

3. Monitor and update the transportation element of the Comprehensive Plan so that issues and opportunities related to change are resolved in a timely manner.

4. Develop and utilize the System Development Charge and Traffic Impact Fee as an element of an overall funding program to pay for adding capacity to the collector and arterial street system and make safety improvements required by increased land use development.

   Action: *Base the roadway system taxes and fees on the total expected cost of making extra capacity and safety improvements over a twenty-year period, allocated back to development on a pro rata formula taking account relative expected future traffic impact of the development in question.*

5. Develop a long-range financial strategy to make needed improvements in the transportation system and support operational and maintenance requirements.

   Action: *Work with other units of government in the region. This financial strategy should consider the appropriate share of motor vehicle fees, impact fees, property tax levies and development contributions to balance needs costs and revenues. View the process of improving the transportation system as that of a partnership between the public (through fees and taxes) and private sectors (through exactions and conditions of development approval), each of which has appropriate roles in the financing of these improvements to meet present and projected needs.*

3. THE PEDESTRIAN SYSTEM

Cities with safe, attractive, direct, and well-maintained pedestrian systems will have citizens walking as an alternative to driving cars or riding public transit, and so, reducing traffic congestion. The Oregon Transportation Plan projects that bicycling and walking trips will double over the next 20 years. This Transportation System Plan provides for filling in gaps and extending the network of sidewalks, stairs, and trails. Improvements are required as development and redevelopment occurs, and will happen as the city implements long range plans.

The Oregon Transportation Plan projects that bicycling and walking trips will double over the next 20 years. Hood River's pedestrian and bicycle planned systems will help accommodate that projection, as well as increase the city's versatility and livability.

PEDESTRIAN FACILITIES

Pedestrian facilities can generally be categorized as sidewalks, curb cuts, crosswalks, roadway shoulders, multi-use paths, and trails.

- Sidewalks are required as part of new construction. Curb cuts are a sidewalk design to eliminate steps, facilitating both pedestrian and wheelchair access.
- Crosswalks are placed at designated corners, connecting pedestrian facilities divided by roadways such as schools or shopping areas.
- Roadway shoulders are used by pedestrians on streets without sidewalks. These facilities generally function well on streets with lower speeds (25 mph) and low traffic volume.
- Multi-use paths are generally off-street routes that can be used by several transportation modes, including pedestrians, bicycles and other non-motorized modes (e.g., roller blades, and skateboards). Multi-use paths accommodate two-way travel.
- Trails are off-street, unimproved routes created through use, often crossing over private lands and existing without legal status.

CURRENT PEDESTRIAN SYSTEM

Downtown Hood River has a pedestrian-friendly environment with sidewalks and short blocks. North of downtown, a multi-use path exists from Second Street east to the Hood River and north to the Columbia River. The Hood River Pedestrian Bridge provides access for pedestrians and bicyclists to the Port of Hood River facilities, east to the marina and west to the hook. South of downtown, concrete stairs (on the city's Inventory of Historic Resources) rise from State Street to Montello Avenue on the Heights. Indian Creek Trail, an unimproved trail, permits point-to-point travel from Hazel Avenue and East 3rd Street southwesterly to Union Avenue and 11th Street; legal status is not known. There are certain areas in the City where pedestrian access is inadequate. Within the city limits, many sidewalks lack curb cuts for wheelchair access and many streets still lack sidewalks or have gaps to be filled.

PEDESTRIAN SYSTEM PLAN

A pedestrian system plan will be implemented in the city. Where possible, every paved street will have sidewalks on both sides of the roadway meeting the requirements set forth in the street standards. The pedestrian system projects include only sidewalk projects. Although shoulder additions can serve pedestrians, they are not ideal because they are not separated from the roadway; however, in undeveloped urban 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. Missing sidewalk segments should be installed whenever an opportunity presents itself (such as development, special grants, etc.), concentrating on arterial streets, collectors, and school routes. Pedestrian safety should be improved at crossings through additional/improved signing and lighting, curbs extensions, access management, and speed control measures.

PEDESTRIAN SYSTEM PROJECTS

The following table contains a list of specific pedestrian system projects.
The following city map shows the proposed projects.

The recommended pedestrian system projects use the following estimates to calculate costs:

- 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.
- A ten-foot-wide sidewalk with a curb would cost about $55 per linear foot.

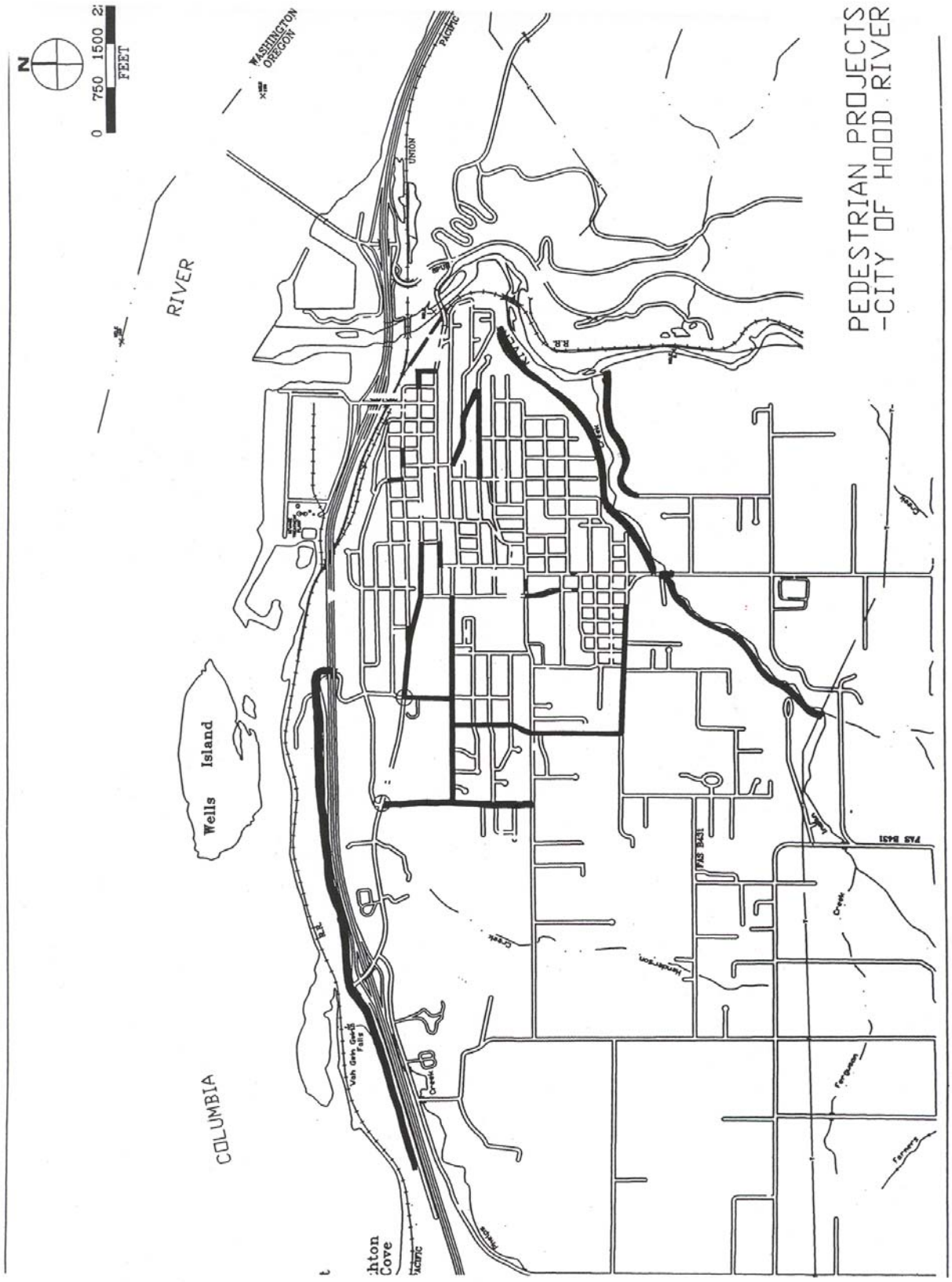
Recommended Pedestrian System Projects

No.	Location	Description	Length (feet)	Cost (1997$)
	City of Hood River			
	Short-Range			
P1	Eliot Park	Public access and trail system, this will provide pedestrian and bicycle access to Eliot Park. Potentially linking to Indian Creek Trail.	NA	1,500
P2	State Ave., 12th St. to 10th St. (north side)	Sidewalks along State Avenue (collector) from 12th Street to 10th Street, north side, 485 feet.	485	14,500
P3	Cascade Ave. at Rand Rd	Striped crosswalks at Cascade Avenue and Rand Road.	NA	500
P4	Cascade Ave. at 20th St	Striped crosswalks at Cascade Avenue and 20th Street (where one exists).	NA	500
P5	Indian Creek	This will provide non-motorized access for pedestrians and bicycles along Indian Creek. Extension of the trail west along Indian Creek as funding becomes available.	NA	15,000
P6	Downtown Hood River	Urban Renewal District	NA	541,840
	Intermediate-Range			
P 7	West Cliff	Multi-use path along West Cliff from Jaymar Road to Ruthton Park.	NA	NA
P8	13th St., May Ave. to Taylor Ave. (east side)	Sidewalks along 13th Street (arterial) from May Avenue to Taylor Avenue, east side, 640 feet.	640	19,200
P9	20th St., Cascade Ave. to Sherman Ave.	Sidewalks along 20th Street (collector) from Cascade Avenue to Sherman Avenue, both sides (partial sidewalks exist on about 50 percent of two-way length), 800 feet.	800	24,000

P10	22nd St., Sherman Ave. to Belmont Ave.	Sidewalks along 22nd Street (collector) from Sherman Avenue to Belmont Avenue, both sides (partial sidewalks exist on about 30 percent of two-way length), 4,000 feet.	4,000	120,000
P11	Belmont Ave., 22nd St. to 14th St.	Sidewalks along Belmont Avenue (collector) from 22nd Street to 14th Street, both sides (partial sidewalks exist on about 50 percent of two-way length), 2,200 feet.	2,200	66,000
P12	Cascade Ave., 20th St. to 15th St. (north side)	Sidewalks along Cascade Avenue (arterial) from 18th Street to 15th Street, north side, 1,115 feet.	1,115	33,500
P13	Cascade Ave., 6th St. to 5th St. (north side)	Sidewalks along Cascade Avenue (collector) from 6th Street to 5th Street, north side, 255 feet.	255	7,500
P14	Eugene Ave., 7th St. to Serpentine Dr.	Sidewalks along Eugene Avenue (collector) from 7th Street to Serpentine Drive, both sides, 1,460 feet.	1,460	43,800
P15	Serpentine Dr., Sherman Ave. to Eugene Ave. (one side)	Sidewalks along Serpentine Drive (collector) from Sherman Avenue to Eugene Avenue, one side (hilly), 1,235 feet.	1,235	37,000
P16	Oak Ave./Front St., 1st St. to State Ave (north side)	Sidewalks along Oak Avenue and Front Street (arterial) from 1st Street to State Avenue, north side (reconstruction), 500 feet.	500	15,000
P17	Oak Ave., Cascade Ave. to 10th St. (north side)	Sidewalks along Oak Avenue (arterial) from Cascade Avenue to 10th Street, north side (two segments), 900 feet.	900	27,000
P18	Various	Curb ramps are recommended at about 200 locations on arterial and collector streets.	NA	90,000
P19	Rand Road	Sidewalks along Rand Road.	NA	84,000
P20	12th Street	Create a safer and more protected sidewalk on the east side of 12th Street crossing from Nix Drive across the bridge heading south.	NA	10,000

P21	Downtown	Curb extensions/bump-outs at corners are recommended at downtown corners east of 6th Street where there is on-street parking (there is already a curb extension on the southeast corner of 3rd Street and Cascade Avenue). At least 50 potential curb extensions on Columbia, Cascade, Oak, and State Avenues would be warranted. Impacts on the Historic District will be mitigated with the HCRH Advisory Committee.	NA	125,000
	Long-Range			
P22	Sherman Ave., Rand Rd. to 13th St.	Sidewalks along Sherman Avenue (collector) from Rand Road to 13th Street, both sides (about 25 percent has sidewalk on one side), 6,160 feet.	6,160	185,000
P23	Wasco Ave., Cascade Ave. to Columbia Ave.	Sidewalks along Wasco Avenue (collector) from Cascade Avenue to Columbia Avenue, both sides (about 40 percent has sidewalk on one side), 8,975 feet.	8,975	270,000
	Total Cost - City of Hood River			**$1,730,840**
P24		Additional sidewalks	NA	1,890,000
Total Cost				**$3,620,840**

Pedestrian Projects Map



4. THE BICYCLE SYSTEM

Cities with safe, attractive, direct, and well-maintained bicycle systems will have citizens bicycling as an alternative to driving cars, which reduces traffic congestion. This Transportation System Plan provides for filling in gaps and extending the network of bike lanes, road shoulders, and trails. Improvements are required as development and redevelopment occurs, and will happen as the city implements long range plans.

The bicycle system is an integral part of a safe, convenient, and attractive transportation system. As with the pedestrian system, the bicycle system serves shorter trips relative to the vehicle; mostly trips within five to six miles. Good design and maintenance is important to bicycle use. Riders who believe that the system is relatively safe, direct, well marked, and free from obstacles and debris are more likely to use it. Bicyclists share the roadway with motor vehicles moving in the same direction. Thus, enforcement and education of riders and drivers are key to system safety and use. Bikeways should be maintained on a routine basis, including sweeping and repainting the lines and markings.

The Oregon Transportation Plan projects that bicycling and walking trips will double over the next 20 years. Hood River's pedestrian and bicycle planned systems will help accommodate that projection, as well as increase the city's versatility and livability.

BICYCLE FACILITIES

Bicycle facilities can generally be categorized as bike lanes, shared roadways, multi-use paths, and trails.

- Bike lanes are areas within the street right-of-way designated specifically for preferential use by bicyclists. Bike lanes are required as part of new construction on arterials and collectors and should be well marked to call attention to their preferential use by bicyclists.
- Shared roadways or bike routes are streets, which are recommended for bicycle use, but do not have specific area designated within the right-of-way. These facilities generally share the travel lane with vehicular traffic. Shared roadway function well on streets with lower speeds (25 mph) and low traffic volume.
- Multi-use paths are generally off-street routes that can be used by several transportation modes, including bicycles, pedestrians and other non-motorized modes (e.g., roller blades, and skateboards). Multi-use paths accommodate two-way travel.
- Trails are off-street, unimproved routes created through use, often crossing over private lands and existing without legal status.

CURRENT BICYCLE SYSTEM

Hood River's bicycle system is a component of arterials and collector streets. I-84 and OR 35 are State highway bicycle facilities. OR35 and the Historic Columbia River Highway has been designated a Statewide Bicycle Route, because they are one of the most significant highways for

bicycling. North of downtown, a multi-use path exists from Second Street east to the Hood River and north to the Columbia River. The Hood River Pedestrian Bridge provides access for pedestrians and bicyclists to the Port of Hood River facilities, east to the marina and west to the hook. Indian Creek Trail, an unimproved trail, permits point-to-point travel from Hazel Avenue and East 3rd Street southwesterly to Union Avenue and 11th Street; legal status is not known. Due to a lack of connecting streets and steep topography, many gaps exist in the bicycle system network. New bicycle facilities are planned for Hood River County as part of the Historic Columbia River Highway State Trail construction.

BICYCLE SYSTEM PLAN

This Transportation System Plan identifies the bicycle system projects that fill the gaps in the bicycle system network. The plan builds from the State requirement that all arterial and major collector roads have bikeways. Additional linkages are also included to complete the network.

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

Bike lanes will 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 parking or right-turn-lane. The bike lanes shall be marked in the same direction as the adjacent travel lane. Striping and signing should conform to the State Bicycle and Pedestrian Plan.

Establishing a complete bike system through the City of Hood River may be difficult due to a lack of connecting streets and steep topography. Some of the more rural streets are too narrow to adequately serve cyclists. These rural streets are usually lacking sidewalks, so pedestrians must share the roadway shoulder with cyclists.

BICYCLE SYSTEM PROJECTS

The following table contains a list of specific bicycle system projects.
The following city map shows existing facilities and the proposed projects.

A number of the projects presented are shoulder additions that will serve bicyclists as well as pedestrians. 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 increase over the long-term, the best solution for all users is to reconstruct the street to full standards with sidewalks and bike lanes.

Recommended Bicycle System Projects

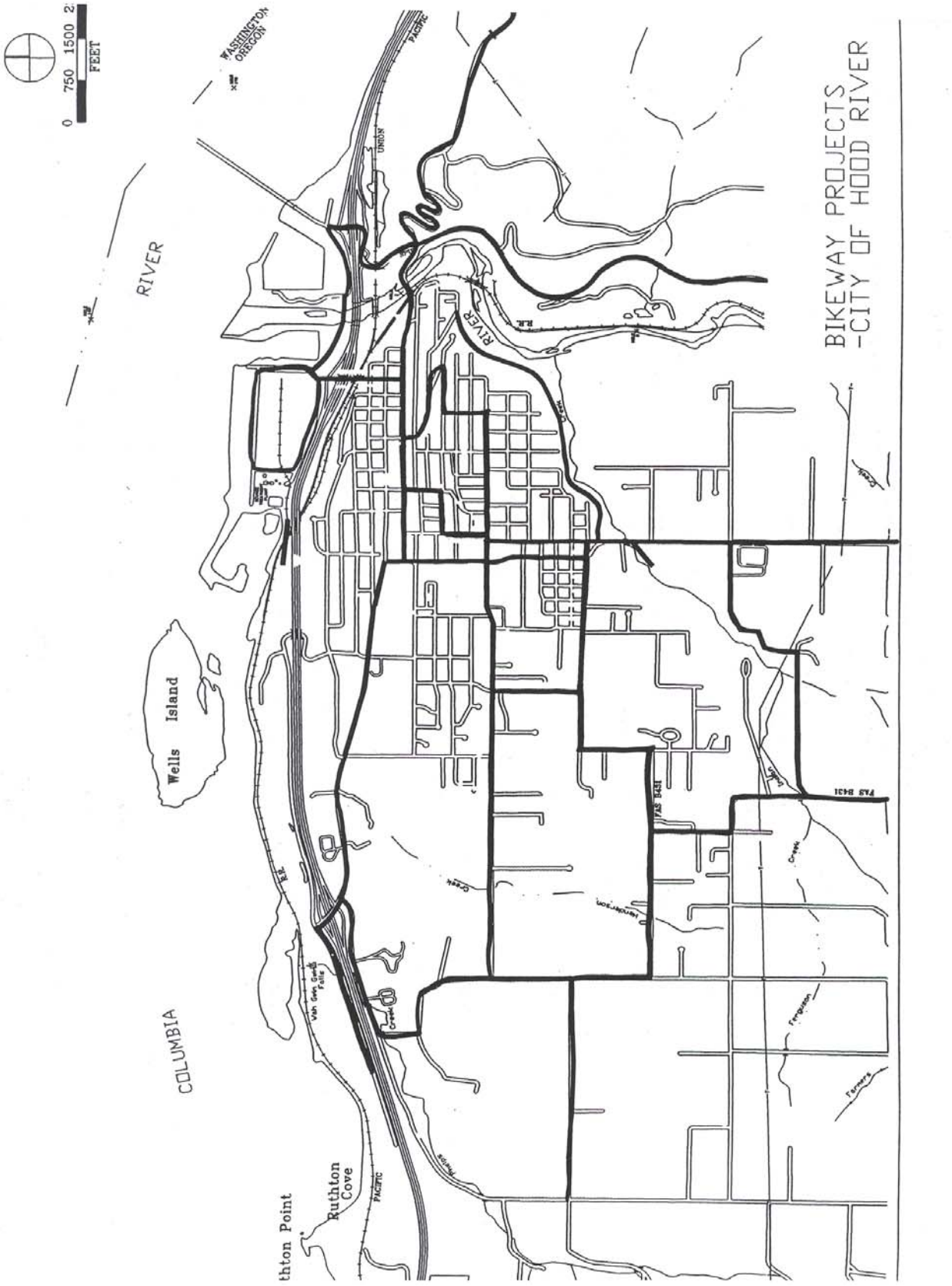
No.	Location	Description	Length (feet)	Cost (1997$)
	City of Hood River			
	SHORT-RANGE			
B1	Eliot Park	Public access and trail system to provide pedestrian and bicycle access to Eliot Park. Potentially connecting to Indian Creek Trail.	NA	15,000
B2	CASCADE AVENUE/HISTORIC COLUMBIA RIVER HIGHWAY	Two (one on either side of the road) five-foot striped bike lanes from 13th Street to the I-84 on ramp – where width allows.	NA	NA
B3	2ND ST., RIVERSIDE DR. TO STATE AVE.	Stripe bike lanes. Bike lanes along 2nd Street (arterial and local) from Riverside Drive to State Avenue, 1,450 feet. Two 12-foot travel lanes, two, six-foot bike lanes and two seven-foot parking lanes (no parking over bridge). (7P-6B-12-12-6B-7P)	1,450	1,500
B4	9TH ST., STATE AVE. TO EUGENE AVE.	Stripe bike lanes. Bike lanes along 9th Street (collector) from State Avenue to Eugene Avenue, 630 feet. Two 11-foot travel lanes, two, five-foot bike lanes and one, seven-foot parking lane. (Note: if bike lanes are not installed then the west travel lane should be widened to accommodate bicyclists going uphill.) (5B-11-11-5B-7P)	630	600
B5	BELMONT AVE., 22ND ST. TO 12TH ST.	Stripe bike lanes. Bike lanes along Belmont Avenue (collector) from 22nd Street to 12th Street, 2,750 feet. Two 11.5-foot travel lanes, two five-foot bike lanes and one seven-foot parking lane. (5B-11.5-11.5-5B-7P)	2,750	3,000

B6	STATE AVE., 9TH ST. TO FRONT ST.	Stripe bike lanes. Bike lanes along State Avenue (collector) from 9th Street to Front Street, 2,550 feet. Ninth Street to 6th Street and from 2nd Street to Front Street: two 11.5-ft travel lanes, two five-foot bike lanes and one seven-foot parking lane; 6th to 2nd: two 12-foot travel lanes, two six-foot bike lanes and two nine-foot parking lanes (adjusted for diagonal parking in one segment and left-turn lane in another). (5B-11.5-11.5-5B-7P from 9th to 6th and 2nd to Front; 9P-6B-12-12-6B-9P from 6th to 2nd)	2,550	2,500
INTERMEDIATE-RANGE				
B7	Indian Creek	This will provide non-motorized access for pedestrians and bicycles along Indian Creek.	NA	15,000
B8	WEST CLIFF	Multi-use path along West Cliff from Jaymar Road to Ruthron Park.	NA	NA
B9	22ND STREET, SHERMAN AVENUE TO BELMONT AVENUE	Stripe bike lanes. Bike lanes along 22nd Street (collector) from Sherman Avenue to Belmont Avenue, both sides (partial sidewalks exist on about 30 percent of two-way length), 4,000 feet. (5B-11.5-11.5-5B)	4,000	4,000
B10	12TH ST., BELMONT AVE. TO BROOKSIDE DR.	Stripe bike lanes. Bike lanes along 12th Street (arterial) from Belmont Avenue to Brookside Drive, 2,380 feet. Four 12-foot travel lanes and two six-foot bike lanes (one-way for 265 feet south of Belmont Drive). (6B-12-12-12-12-6B)	2,380	2,500
B11	13TH ST., OAK AVE. TO MAY DR.	Stripe bike lanes. Bike lanes along 13th Street (arterial) from Oak Avenue to May Drive, 1,730 feet. Two 11.5-foot travel lanes, two five-foot bike lanes and one seven-foot parking lane. (Note: if bike lanes are not installed then the west travel lane should be widened to accommodate bicyclists going uphill.) (5B-11.5-11.5-5B-7P)	1,730	2,000

B12	13TH ST., MAY AVE. TO BELMONT AVE.	Stripe bike lane. A Bike lane along the west side of 13th St. from May Avenue to Belmont Avenue. (7P-11.5-11.5-5B)	CHECK MAP	50 cents per foot
B13	12TH ST., BELMONT AVE. TO MAY AVE.	Stripe bike lane. A Bike lane along the east side of 12th St. from May Avenue to Belmont Avenue. (7P-11.5-11.5-5B)	CHECK MAP	50 cents per foot
B14	12TH ST. MAY AVE. TO EUGENE AVE.	Stripe bike lanes. Bike lanes along 12th Street from May Avenue to Eugene Avenue. (5B-11.5-11.5-5B)	800	850
B15	EUGENE AVE., 12TH TO 9TH.	Stripe bike lanes. Bike lanes Eugene Avenue from 12th Street to 9th Street. (5B-11.5-11.5-5B)	800	850
B16	MAY AVE., RAND RD. TO 12TH ST.	Stripe bike lanes. Bike lanes along May Avenue (collector) from Rand Road to 12th Street, 4,085 feet. Two 11.5-foot travel lanes, two five-foot bike lanes and one seven-foot parking lane. (5B-11.5-11.5-5B-7P)	4,085	4,000
B17	OAK AVE., CASCADE AVE. TO 13TH ST.	Stripe bike lanes. Bike lanes along Oak Avenue (arterial) from Cascade Avenue to 13th Street, 830 feet. Two 11.5-foot travel lanes, two five-foot bike lanes and one seven-foot parking lane. (5B-11.5-11.5-5B-7P)	830	800
	LONG-RANGE			
B18	CROSSING UPRR TRACKS	This project will provide a crossing for non-motorized traffic over the current railroad tracks just north of the I-84 overpass. Pedestrian and Bicycle traffic will have a direct connection from Riverside to Westcliff and Jaymar Avenues.	NA	500,000
B19	RAND RD., CASCADE AVE. TO MAY AVE.	Stripe bike lanes. Bike lanes can be striped at the north and south ends of Rand Rd. Approximately 1200 feet of the road between will require 4-ft. paved shoulder bikeways. (5B-11.5-11.5-5B)	2,400	32,400

B20	BROOKSIDE DR.	INSTALL 4 FT PAVED SHOULDERS. A shoulder bikeway is recommended on Brookside Drive. ($24 per linear foot for four-foot shoulders)	5,250	125,000
Total Cost				**710,000**

Bikeway Projects Map



5. THE LANDSCAPE AND LIGHTING SYSTEM

LANDSCAPE

Landscape strips should be required along most streets. Ideally a landscape strip separates pedestrians from the roadway, which buffers the negative impacts of vehicle traffic such as noises and cars splashing accumulated water. Landscape strips provide a more pleasant environment for users including those in wheelchairs. They also provide an area for street trees, signs, utility and signal poles, mailboxes, parking meters, fire hydrants, transit shelters, and other necessary streetscape elements.

Landscape strips in street designs allow sidewalks to be kept at a constant grade to avoid dipping at each driveway. They also provide an opportunity for aligning intersections, sidewalks, crosswalks and curb cuts. When wide enough, they provide a place for vehicles exiting a drive to wait within the width of the strip outside the pedestrian and traffic ways. Landscape strips can serve to decrease overall drainage requirements for the street, as there could be less runoff water from adjacent land uses.

Where landscape strips are not possible due to restrictive right-of-ways such as Cascade Avenue street trees shall be planted every 30 feet in tree wells.

STREET TREES

The Oregon Department of Forestry's urban forestry staff has developed a list of the top 10 trees recommended for street trees.

Eastern Redbud
Redspire Pear
Lacebark Elm
Patmore Ash
Paperback Maple
Japanese Katsura
Mountain Silver Bell
Persian Parrotia
Cucumber Tree
Sourwood
Columnar Oaks

The following is a list of Street Trees planted in the Downtown area:
Pyramidal European Hornbeam
Chanticlear Pear
Norway Maple/Red Maple
Zelkova
Redbud, Dogwood, Amur Maple

Below is a list of street trees that are not recommended:

Silver Maple
Tree of Heaven
Black Walnut
Lombardy Poplar
Bradford Pear
Black Locust
Siberian Elm

STREET LIGHTING

Street lighting is an important element in street design. Lighting adds a visual connection to streets and provides for the safe movement of pedestrians, bicycles and vehicles. The lighting standard for the classic light poles is five lighting posts per block; a block is 200 feet and the light fixtures should be staggered across the street. The downtown/urban renewal lighting fixtures/standards will be continued out along the Historic Columbia River Highway/Cascade Avenue.

6. THE TRANSIT SYSTEM

Development of transit facilities and services is essential to the livability and economy of a city. An efficient transit system reduces the demand for roadway capacity and parking. Transit provides safe, accessible, and direct service to activity centers such as shopping and employment areas. Transit also provides mobility for people who do not have a vehicle.

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."

CURRENT TRANSIT SYSTEM

Local Service

Public transit service within Hood River County is provided by the countywide transportation district Columbia Area Transit (CAT). CAT provides demand responsive service throughout the county as well as some fixed route service within the City of Hood River. CAT operates a snow shuttle, along OR 35, traveling from Hood River to the Mount Hood Ski area. This service is operated during the ski season (November through March) on weekends.

CAT's demand responsive, door-to-door service operates daily between Hood River and Odell and weekly between Hood River and Cascade Locks and Hood River and Parkdale. During the school year, CAT provides daily transportation to The Dalles. "As needed" trips to the Portland area are made primarily for people needing access to medical services. Other purposes are also provided upon request.

As of June 1999, CAT has eight twenty passenger wheelchair buses, several smaller vans and one thirty-passenger bus. CAT has plans to augment commuter and airport service to Portland connecting with the MAX light rail line and Tri-Met bus system as well as coordinate transit services with Mt. Adams Transportation in Klickitat County, Washington.

Intercity Transit

Intercity bus service is provided by Greyhound bus lines. CAT is the local Greyhound agent. Four buses stop daily in Hood River en route to Portland on Interstate 84 west and four buses stop en route to The Dalles, Boise, Idaho and other points east on Interstate 84. Greyhound provides intercity bus service on behalf of Amtrak for Portland connections.

The existing public transportation services meet the minimal connection and frequency requirement to a larger city as specified in the Oregon Transportation Plan. Coordination of local transit and elderly and disadvantaged services to intercity is limited or nonexistent for Parkdale and Cascade Locks. Currently, intercity service is not wheelchair accessible. Local public transit within the City of Hood River is adequate for mobility needs and needs to be a part

of the downtown's growth and traffic congestion management. More frequent transit to and from Parkdale and Cascade Locks is needed.

TRANSIT SYSTEM PROJECTS

CAT and the City of Hood River will jointly remodel and expand the Public Works Maintenance Facility. Remodeling will provide covered bus parking and enable CAT to use the facility for maintenance purposes.

A multimodal transportation center is planned for Hood River on the waterfront. The goal of the center is to provide a place where switching modes of transportation is efficient and convenient. The key feature of the center will be a park and ride area where people wishing to go to Portland or into the downtown area will be able to park their cars and take transit. People wanting to access local recreation sites can park their cars and use transit, bicycles, or other modes to reach their destinations.

In addition to these capital projects CAT is focused on reducing vehicle miles and dependency on the automobile. CAT is requesting assistance from ODOT to fund a Transportation Demand Management program. This program is designed to promote ridesharing, vanpooling and other alternative transportation modes. It will also serve as a resource and communication center for connections.

Projects and cost have been estimated for this modal plan as shown in the following project list.

Transit Improvements

Improvements	Approx. cost 1999 dollars
Construct Multi-Modal Transportation Center	$450,000
City fixed route bus system	$200,000
Park and Ride facility at the corner of Highway 35 and the Historic Columbia River Highway.	$60,000
Four Passenger shelters	$3,000
Transit kiosks and marketing program	$40,000
Transit phone system upgrade	$10,000
Maintenance and parking shelter for 10 buses	$300,000
Annual Vehicle Replacement	$90,000
TOTAL	**$1,233,000**

7. THE MOTOR VEHICLE SYSTEM

Hood River's Motor Vehicle System is comprised of street networks, which are part of the public right-of-way. Streets are shared facilities used by transit, commercial, and private vehicles as well as bicyclists and pedestrians. This transportation plan updates the motor vehicle system to long-range system needs. The plan provides for filling gaps in the current facilities, ensuring safe and efficient access, and creating direct routes with some new roads. Implementation of the plan can occur through development and redevelopment, construction, overlays reconstruction and restriping. Transit, bicycle, and pedestrian needs will be addressed during these improvements.

CURRENT MOTOR VEHICLE SYSTEM

Hood River's motor vehicle system is complicated by multiple factors: the steep slope running east and west through the city; mismatching north and south streets, especially along May Street; and limitations on expanding the system to the north (the Columbia River) or to the east (the Hood River). Commercial and industrial development of the city, including the Central Business District (CBD) is concentrated in the northeastern section near the Hood River. Residential and some commercial development is concentrated west of the CBD and in the heights to the south. The City's roadways are laid out in a well-connected grid system in the downtown. A more circuitous system interrupted by cul-de-sacs, dead ends, and mismatching roadways exists in other parts of the city. Traffic between the CBD and the heights is concentrated on two key north-south routes, the 9th-Eugene-12th Street route and the 13th-12th Street route. These routes are often congested, especially during peak driving hours.

The road system in the city is comprised of residential streets, collectors, arterials, and an interstate bridge and freeway.

MOTOR VEHICLE EXISTING CLASSIFICATION

The City of Hood River currently has a functional classification system for roads. The hierarchical functional classification system requires different design standards for each roadway classification. For instance, major thoroughfare routes require different access control standards, paving requirements, right-of-way widths, traffic safety devices, etc. Hood River currently uses four roadway classifications:

> ***Local streets*** – These streets provide land access to residential and other properties within neighborhoods and generally do not intersect any arterial routes.
>
> ***Collector streets*** – These streets provide both land access and movement within residential, commercial and industrial uses. These streets gather traffic from local streets and serve as connectors to arterial.
>
> ***Arterial*** – These facilities interconnect and augment the highway system and accommodate trips of somewhat shorter length. Such facilities interconnect residential,

shopping, employment and recreational activities with the community. The following roads are considered existing arterial:

- Historic Columbia River Highway /West Cascade Avenue, Oak Street, State and Front Street (US 30/OR 35)
- Highway 35 heads south from the East Hood River interchange connecting the city with the upper valley residences, lumber mills, fruit warehouses, and winter recreation areas
- Frankton Road
- Country Club Road
- 2nd Street
- Cascade Avenue (15th west to I-84)
- Oak Street
- East State Street (US 30/OR35)
- 12th Street (Highway 281)
- Oak Street
- East State Street (US 30/OR 35)
- 12th Street (Highway 281)
- 13th Street

Interstate Highways - are major routes that continue across state lines, and are not under the city's jurisdiction.

The Hood River Bridge spans the Columbia River connecting Hood River to White Salmon/Bingen, Washington. I-84 runs east-west through the northern portion of the city. There are three interchanges with the highway located at Westcliff Drive; the city center (2nd Street), which carries traffic to the Central Business District (CBD); and a third exit east of Hood River that carries traffic south to Highway 35 and north to the Hood River Bridge and Hood River Village commercial area.

Highway interchanges are the on and off ramps connecting interstate highways to major arterial, and are not within a city's jurisdiction.

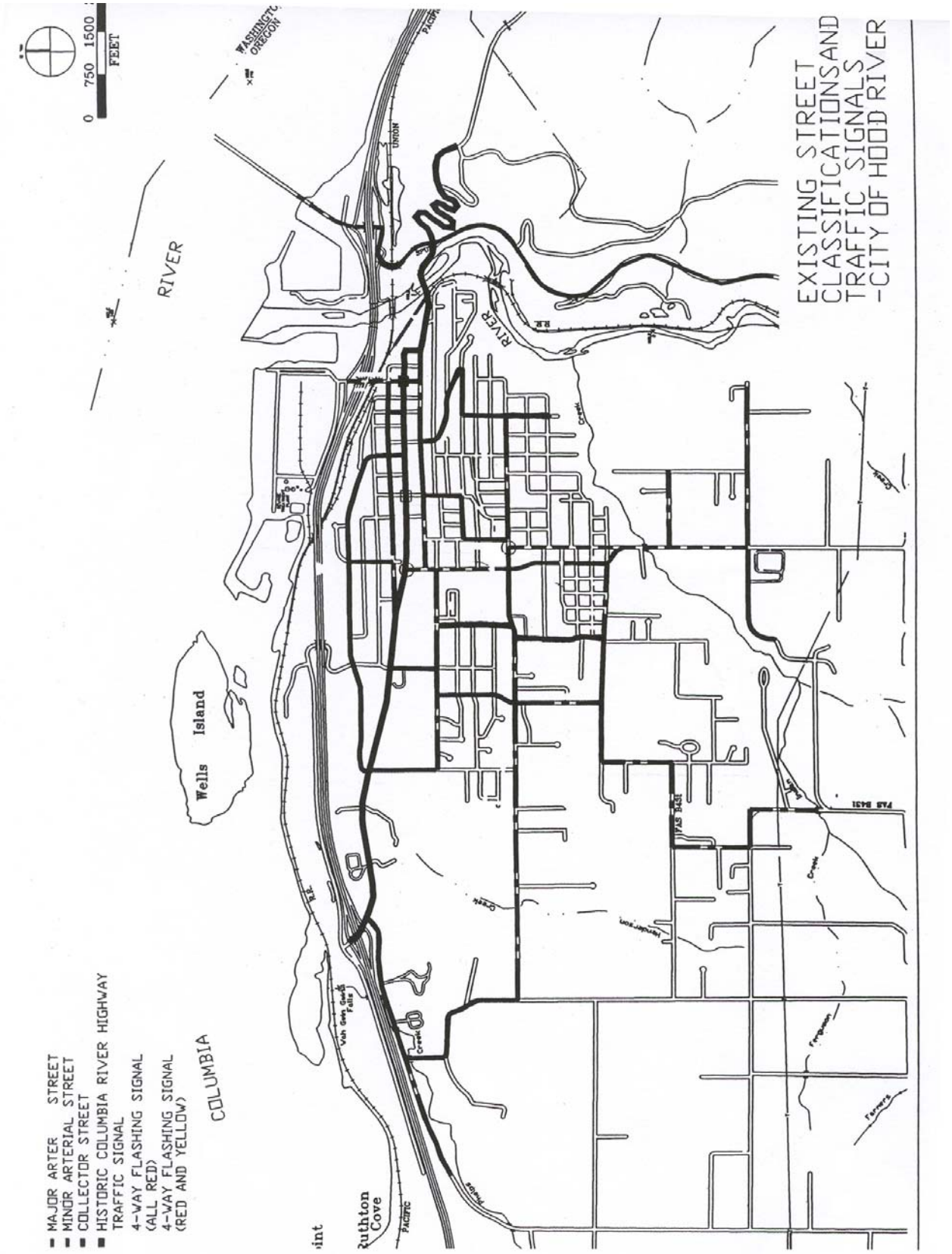
MOTOR VEHICLE SYSTEM PLAN

This Transportation System Plan identifies 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.

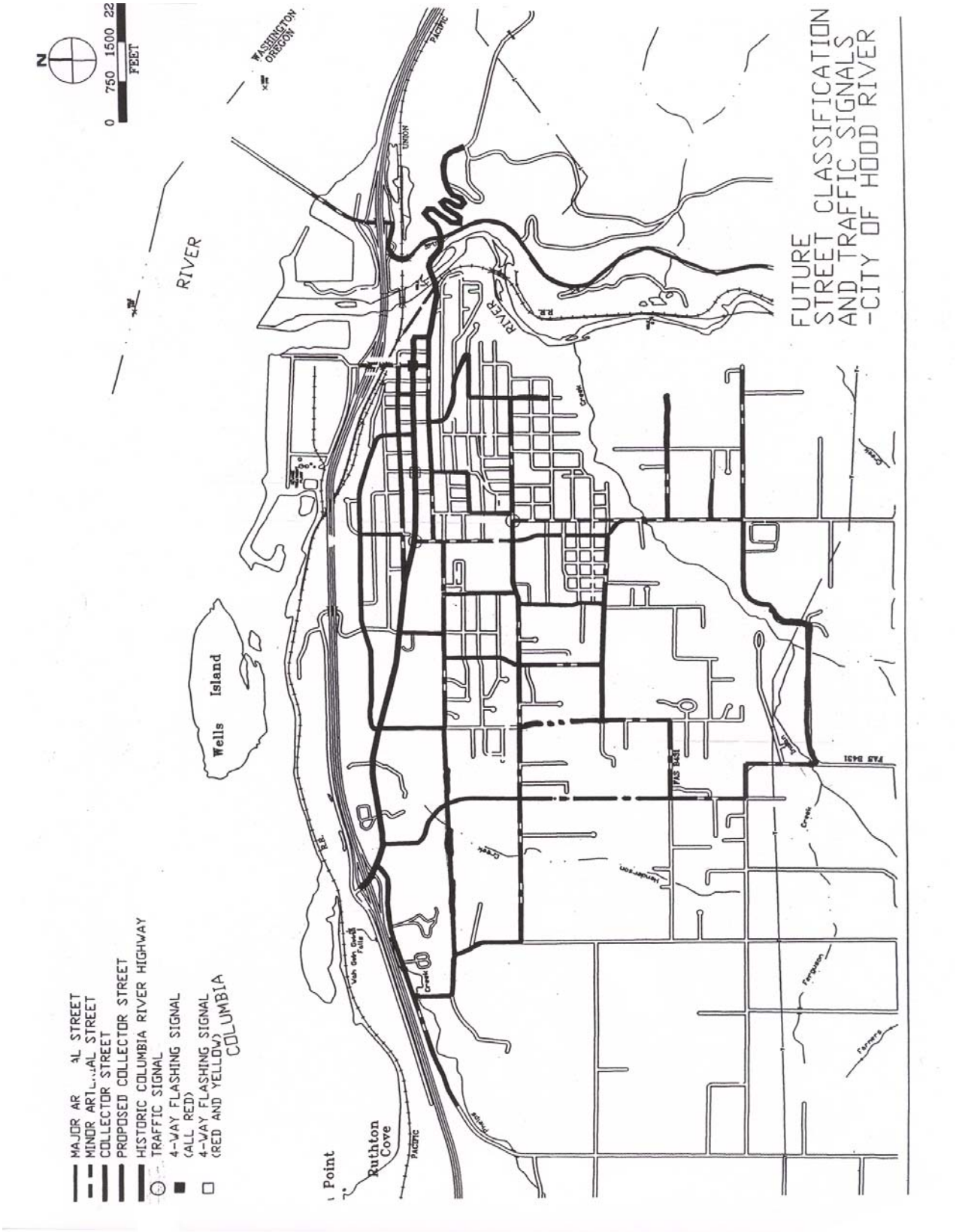
MOTOR VEHICLE SYSTEM PROJECTS

The first city map shows existing street classifications and street jurisdictions.
The second city map shows street improvement projects.
The third city map shows proposed future street classification
The following Table contains a list of specific motor vehicle system projects.

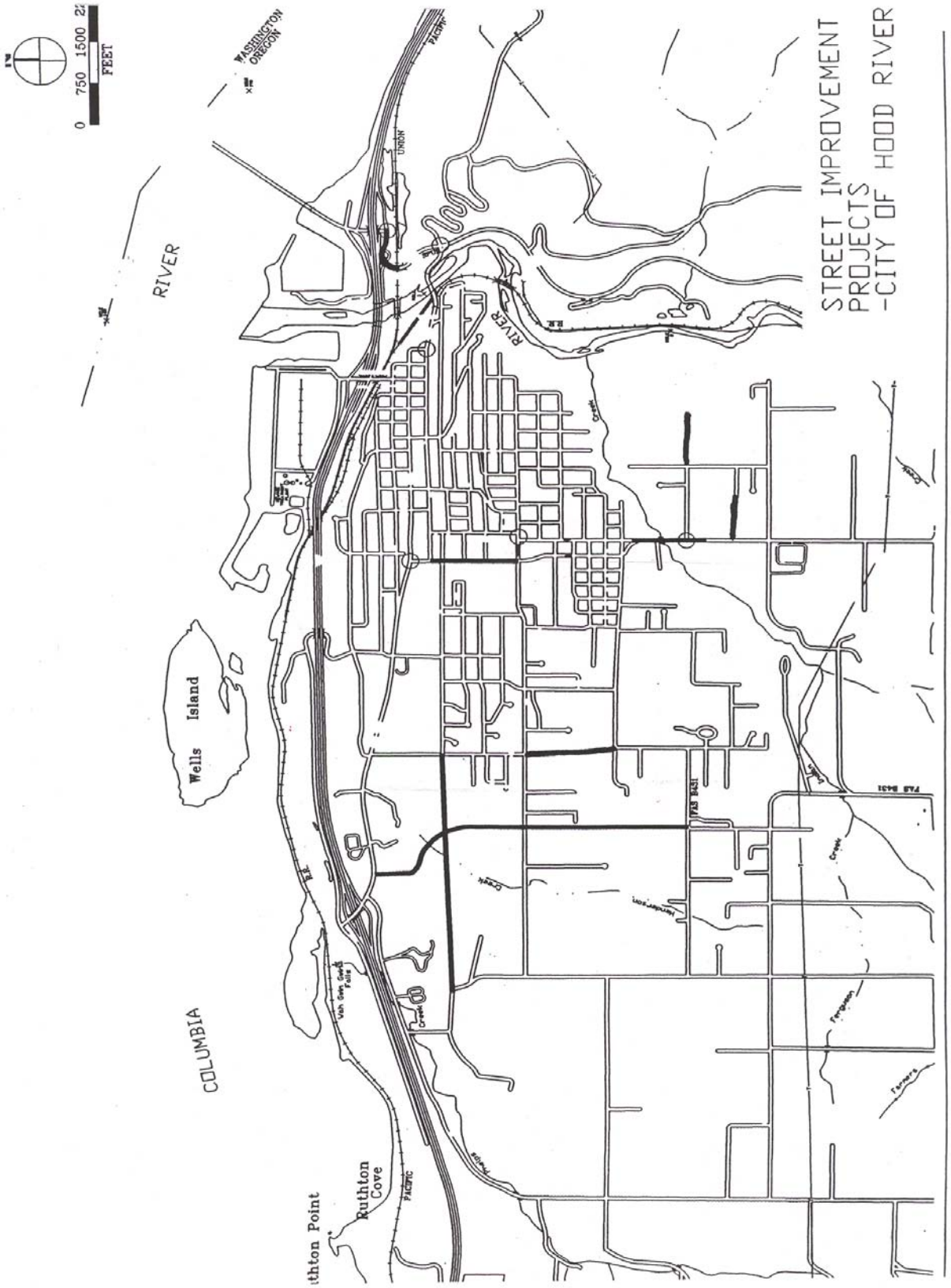
Existing Street Classification and Traffic Signals Map



Proposed Future Street Classification Map



Street Improvement Projects Map



Recommended Motor Vehicle system Projects

NO.	LOCATION	DESCRIPTION	COST ($)
	City of Hood River		
	Short-Range		
V1	Cascade Avenue and Rand Road	New Signal at Cascade and Rand. This signal will provide for safer traffic movement through this intersection.	N/A
V2	13th Street	Additional Southbound Lane on 13th Street. This project will increase the capacity of 13th Street in the Southbound between State and May direction by converting existing curbside parking into a general purpose travel lane.	$25,000
V3	Front Street at State	Install traffic light. Flashing yellow light for Front Street; flashing red light for State Street traffic.	$1,000
V4	OR 35 South of I-84 & OR 35 at US 30	A comprehensive traffic study to determine problems.	$50,000
V5	Eugene Street	Install Retaining Wall on Eugene Street from 12th to 13th Street	$100,000
	Intermediate-Range		
V6	Historic Columbia River Highway	Develop a streetscape plan for the HCRH from Country Club Road to 13th Street that complies with the HCRH street plan. This should entail traffic studies (evaluate need for traffic light at Cascade and 20th), designs of critical intersections and an access management plan.	$50,000
V7	Mt Adams and West Cascade	New signal at intersection and intersection improvements; this may include providing turn lanes. This will provide for safer traffic movement through this intersection.	$600,000

V8	12th and 13th	Turning Lanes at South End of one-way Couplet. This project will provide center-turning lanes on 12th Street at the south end of the one-way couplet to facilitate turns onto Nix Drive and Pacific Avenue. This will involve widening the roadway and installing a 12-foot turning lane in the center.	$500,000
V9	13th and Oak	Right-Turn Lane on Eastbound Oak at 13th Street. A right turn lane at 13th Street and Oak will take slow moving turning traffic out of the intersection, providing a better level of service. It will also increase safety. This will involve a slight expansion of the intersection and the addition of a 12-foot right-turn lane.	$100,000
V10	12th, 13th and May Streets	Redesign Intersection at 12th and 13th Street and May. Currently, the intersection of 12th Street and May is offset. At May, 12th Street traffic jogs to the east slightly. This intersection currently has a stop sign, which is often ignored. Redesigning the intersection to remove this offset will increase the safety of the intersection.	$200,000
V11	I-84 and OR 35	New Traffic Signals at I-84 ramps and OR 35. The intersection of I-84 and OR 35 will be signalized when warranted to control turning movements between these two highways. This project may require some rechannelization or intersection revision.	$300,000
V12	Substandard Streets	Improve Substandard Streets (see appendix for list) Upgrade substandard streets in Hood River.	$6,471,610
V13	13th Street and Oak Street	Chain-up Areas at 13th and Oak Street Intersection. Reconfigure intersection, re-channel, re-stripe and add signage for chain up areas at base of hill.	$25,000
V14	Street Classification	Change the street classification for Brookside Drive and extension of Pacific Avenue to collector.	N/A
V15	Improve Rand Road	Widening of Rand Road to meet the collector standards and extend Rand to Belmont.	$2,500,000

	Long-Range		
V16	20th and Cascade Avenue	Implement findings from traffic study.	$400,000
V17	OR 35 South of I-84	Implement findings from traffic study.	$500,000
V18	OR 35 at US 30	Implement finds from traffic study.	$75,000
V19	Fairview Drive and US 30	New Road Connecting Fairview Drive and US 30. Construct new 5,400-foot roadway connecting these two streets.	$2,400,000
V20	Extension of Sherman Avenue	New Road Connecting Rand Road to Frankton Road. Construct new 4,500-foot roadway connecting these two streets. The new section of road shall be classified as a local residential street.	$2,000,000
V21	18th and May	Redesign the intersection at 18th and May to provide greater safety.	$20,000
V22	Safety study of the free right turn stop signs	Safety and feasibility of adding required stops to the free right turn stop signs.	$4,000
V23	Historic Columbia River Highway (HCRH) Interpretive Sites	Construct two interpretive sites and sign project for the Historic Columbia River Highway. Potentially located at HCRH and HWY 35 and another at HCRH and Country Club Road.	$130,000
	Total - City of Hood River		$16,451,610
	Short-Range		
V24	HR Bridge	Lift span renovation	$5,000,000
V25	HR Bridge	Automated toll collection	$650,000
	Intermediate-range		
V26	HR Bridge	Redecking	$4,000,000
	TOTAL - PORT OF HOOD RIVER		$9,650,000
TOTAL COST			$26,101,610

NOTE: THESE PROJECTS INCLUDE SIDEWALKS AND BIKE LANES WITH CONSTRUCTION OR RECONSTRUCTION OF ROADWAY SEGMENTS.

8. DEVELOPMENT STANDARDS

A. PEDESTRIAN FACILITIES STANDARDS

Urban Sidewalks

A complete pedestrian system will be implemented in the City of Hood River planning area. 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 six-foot-wide planting strip separating it from the street. Collector streets should have a six-foot-wide sidewalk with planting strips. Arterial streets should have six-foot sidewalks with a planting strip, and commercial downtown streets are to have 12-foot wide curb sidewalks. In addition, pedestrian and bicycle connections will be provided between any cul-de-sac and 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.

B. BICYCLE FACILITIES STANDARDS

Urban Bike Lanes

In cases where a bikeway is proposed within the street right-of-way, 12 feet of roadway pavement (between curbs) should be provided for a six-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.
On arterial and collector streets that are not scheduled to be improved as part of the street system plan, bike lanes may be added to the existing roadway at any time to encourage cycling or when traffic volumes exceed 2,500 to 3,000 vehicles per day. The striping of bike lanes on streets, which lead directly to schools, is a high priority.

C. HOOD RIVER 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, policies and publications of the profession.

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 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 they are expected to be urban in the future.

There was considerable discussion about the need for additional streets to provide for better connectivity. The rivers, I-84, two railroads, and the topography all are factors limiting street connections. As a result, one area with new street connections was identified west of Hood River but in the urban growth boundary. These proposed streets are the extensions of Sherman Avenue to Frankton Road, Belmont Road north to the Historic Columbia River Highway, Rand Road south to Belmont Drive/Road, and Sieverkropp Drive west to 12th Street. Street connectivity is a high priority, as development occurs the city will take steps to insure street connectivity, as appropriate.

Street Design Standards

Classification	Pavement Width	Right-of-Way Width	Minimum Posted Speed
Local Residential	20-34 ft	50-60 ft	none
Collector	34 ft	60 ft	25 mph
Arterial	36-50 ft	62-74 ft	30 mph
Commercial/Industrial Downtown	27-42 ft	40-70 ft	20 mph

D. STREET DESIGN STANDARDS

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 20-34-foot roadway, curb face-to-curb face within a 44-58-foot right-of-way. 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-foot utility easement is also recommended on both sides of the road, as needed.

The 34-foot cross section will accommodate passage of two lanes of moving traffic in each direction with curb parking on both sides. The 28-foot cross section allows parking on both sides of the street and queuing traffic. On low volume residential streets where curb parking may occur on both sides of the 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 unnecessary vegetation. Narrower "skinny" street standards may be appropriate in some cases where adequate off-street parking is provided. The "skinny" streets have to be wide enough for fire emergency vehicles and sanitary service trucks. Minimum street widths should be 28 feet, with parking on both sides of the street, or 20 feet without parking on either side.

Sidewalks are 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.

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 cul-de-sac is 20 feet, curb face-to-curb face within a 42-foot right-of-way. A five to six-foot-wide sidewalk should be located 1/2 foot from the right-of-way line on each side of the roadway, providing a 4.5 to 6.5-foot planting strip depending on the sidewalk width.

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 are included.

Urban Collector Streets (Replaces Primary Residential Streets)

Urban 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 collectors focus on connecting arterial, typically in higher volume commercial areas.

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

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

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.

Urban Major Arterial

Arterial streets form the primary roadway network within and through a region. They provide a continuous roadway system that distributes traffic between different neighborhoods and districts. Generally, arterial streets are high capacity roadways that carry high traffic volumes with minimal localized activity. A minimum posted speed should be 30 mph.

Two-way major arterial streets consist of a 74 foot ROW width and provides two 12-foot travel lanes, two 6-foot bike lanes, and a 14-foot center refuge lane, if needed. It should be noted that with proposed access management standards the inclusion of a center turn lane should be unnecessary in most situations except at major intersections, if proposed access management standards for arterial streets applies.

The 12-foot-wide center refuge lane could also be developed with a raised median between left-turn lanes. This is more important for roads with high traffic volumes (>24,000 vpd). A wider center refuge lane, such as a 14-foot land, may be needed on Highway 281 where there is a lot of truck traffic.

Sidewalks along arterial streets should be at least six feet wide and located 5-7 feet from the curb face to provide a planting strip.

Urban Minor Arterial

Minor arterial provides service between collectors and major arterial. 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 5-6 feet bike lanes. These streets will include six-foot sidewalks on both sides of the roadway with 6 to 7 1/2-foot planter strips. Urban minor arterial should have a 60-70-foot right-of-way.

One way minor arterial streets have a similar cross section to two-way minor arterial, but with only one bike lane and added parking.

Urban Downtown Commercial and Industrial Streets

Streets that serve the downtown core of Hood River must meet special demands for on-street parking and pedestrian comfort and accessibility. If possible, sidewalks are to be at least ten feet wide for commercial streets (six feet wide for industrial streets), and such details as clearly marked crossings, curb extensions, street furniture and landscaping will be considered. Diagonal parking is to be avoided. A utility easement, ranging from zero to ten feet on each side of the road maybe required. Urban industrial streets shall be 40 feet of ROW with 27 feet paved and a 5 foot sidewalk.

The Historic Columbia River Highway

The Historic Columbia River Highway (HCRH) is a major arterial in The City of Hood River, it provides for the main east-west movement through the City. This route is the main access to on of the main commercial areas on Cascade Avenue. The current development on Cascade can be described as strip mall/fast food corridor. The City would like to encourage development in that area that has more character and promotes different modes of transportation. A bike lane, pedestrian friendly sidewalks and landscaping are a major step in achieving this goal. This highway has many curb cuts and merging traffic, traffic calming measures such as greater access management that could include landscaped medians in the roadway where turn lanes are not needed and reduced lane widths will promote safety for all modes of transportation.

The City would like to see the Historic Columbia River Highway from 13th west to the I-84 interchange developed as an arterial with specific Cascade arterial street standards (see Cascade Avenue street standard). As agreed upon with the HCRH Advisory Committee the HCRH, in general, will retain the existing road standards from 13th east through Hood River. In areas where there are no curbs or sidewalks the sidewalks will be located behind the curb and additional ROW may need to be acquired.

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 are off of the main streets. Alleys are encouraged when appropriate in the urban areas of Hood River. Alleys are to be 15 to 20 feet wide, with a 20-foot right-of-way. Alleys also provide a place for utilities.

Neighborhood Infill

Neighborhood infill streets are intended to provide a street standard for areas that a standard street section is impractical due to physical or topographical constraints such as steep slopes, wetlands, or other bodies of water, freeways or railroad. This street is somewhat like a wide alley, but with residential structures fronting on it. It is intended for limited application where there are small houses on small lots or townhouses. Within the overall street grid, this type of street would be an occasional exception to the pattern and not be more than one or two blocks in

length in any given location. It could be configured in a loop or a U shape form, where it returns to the principal through street.

Urban Curb Parking Restrictions

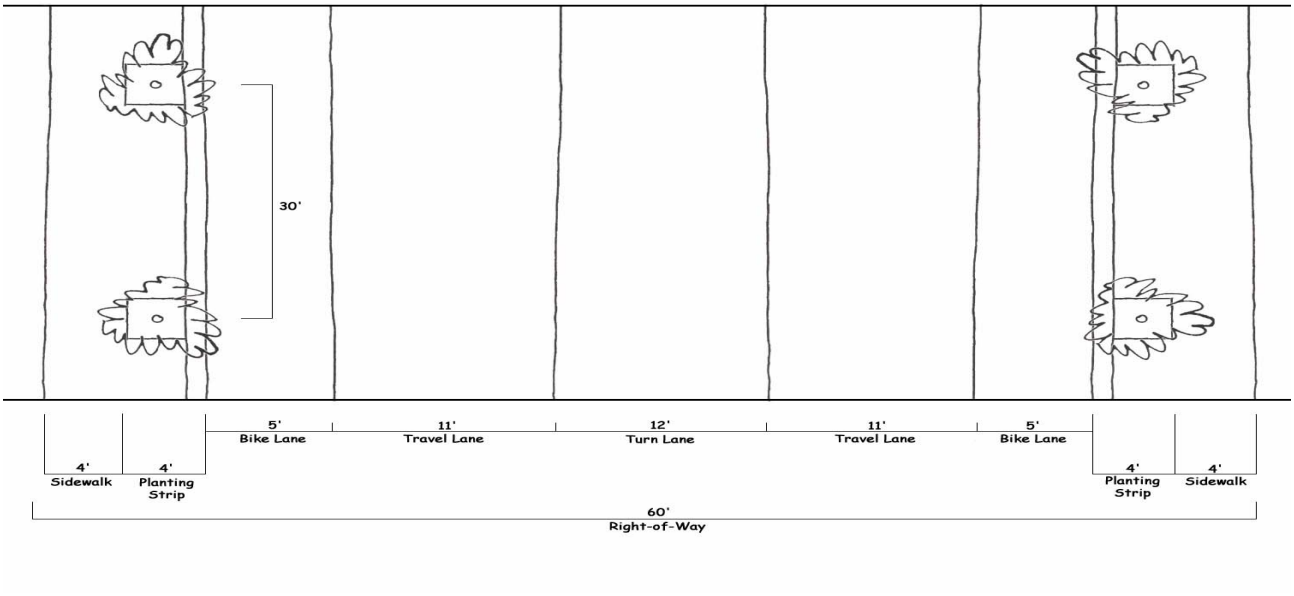
Curb parking should be prohibited at least 25 feet from the end of an intersection curb return to provide sight distance at street crossings.

Street Connectivity

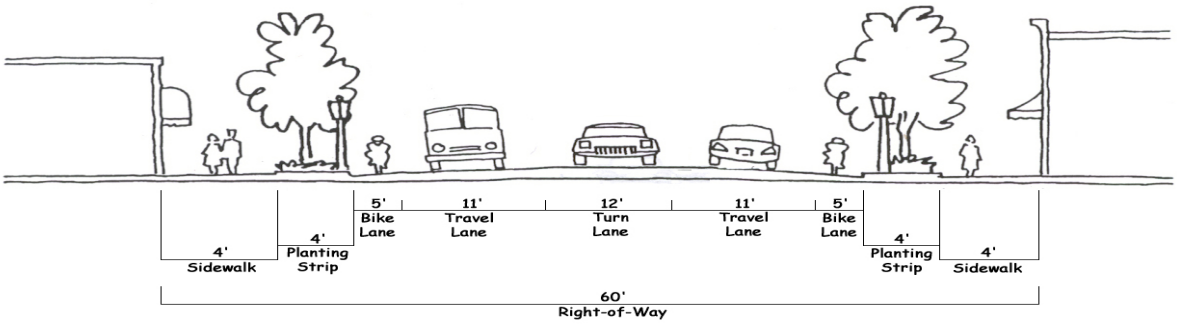
Street connectivity is important, a well-connected street system provides more capacity than a disconnected one, provides alternate routes for local traffic, and is more pedestrian and bicycle-friendly. Projects are included in this plan to improve street, pedestrian, and bicycle connectivity. It is critical that the street grid system be extended as development occurs in the City of Hood River. To this end, a maximum block perimeter of 1,600 feet is recommended.

Historical Highway Road Standard Diagram
(for Cascade from 13th Street west to I-84)

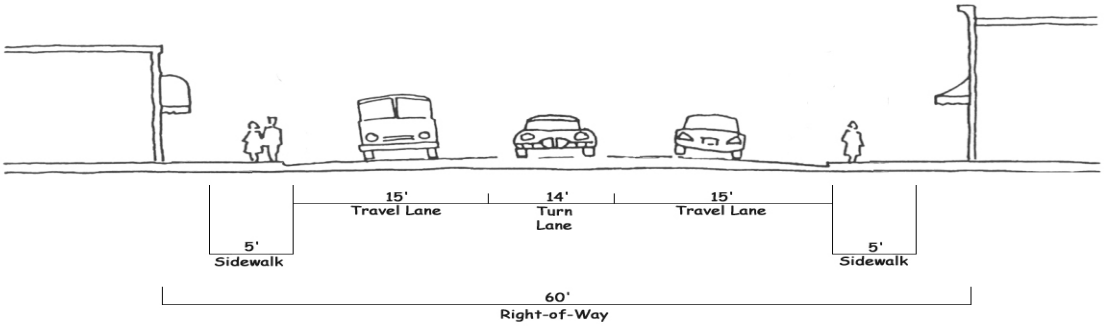
1. Street trees are required every 30 feet.
2. Width of curb is included in the planter strip width.
3. Classic light post is required.



PLAN VIEW



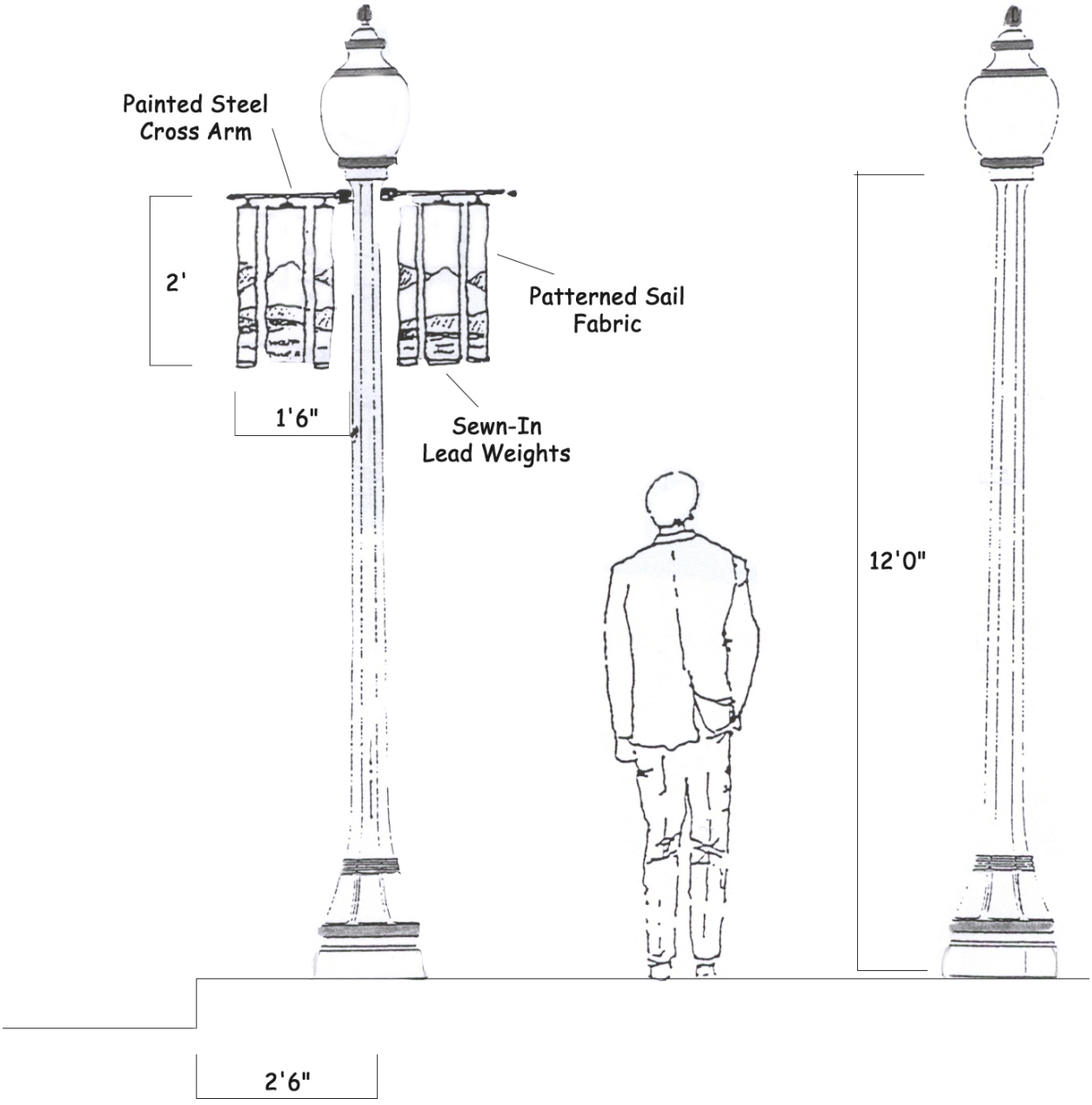
PROPOSED



EXISTING CONDITION Not to Scale

Classic Street Light Standard Diagram

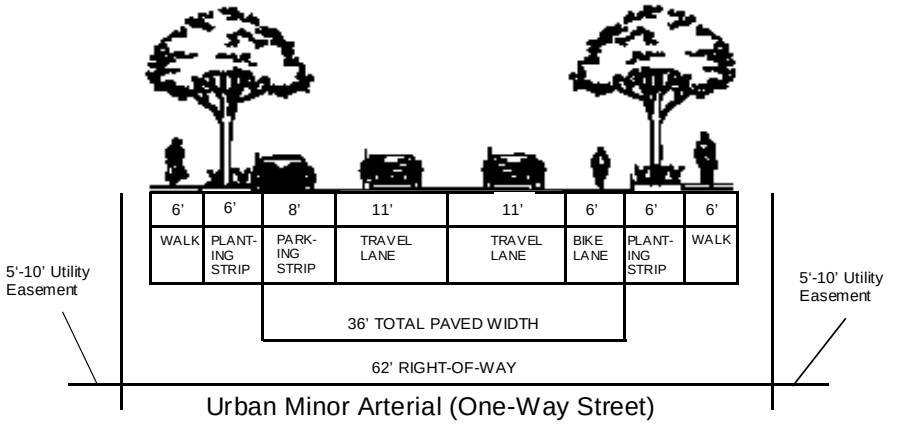
Application: Classic lights on Oak Street and Second Street
Description: Cast iron cross bar
*Manufacturer: Northwave Sails
1020C Wasco Street
Hood River, OR



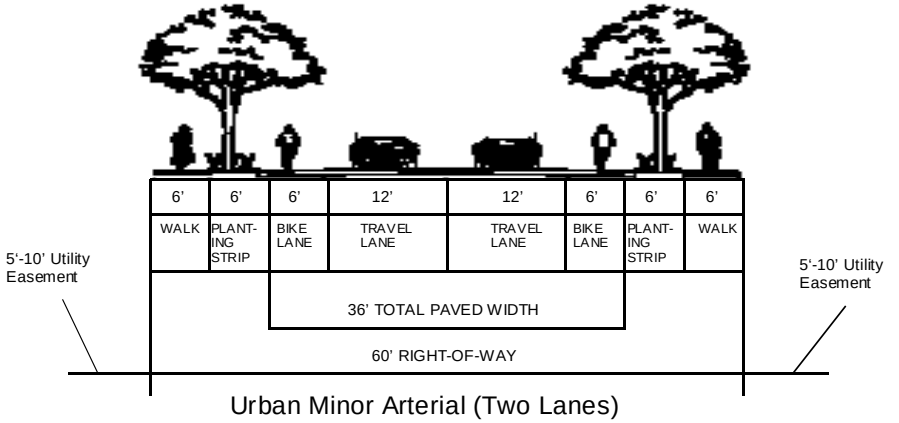
Not to Scale

Urban Arterial Streets Diagram

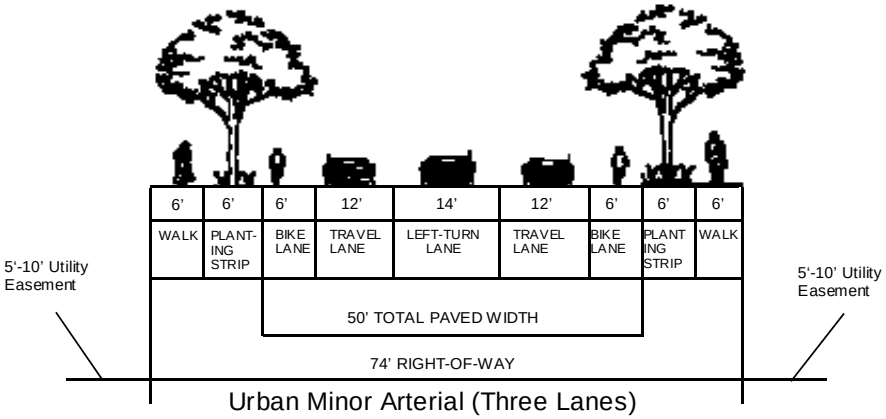
URBAN ARTERIAL STREETS



Urban Minor Arterial (One-Way Street)



Urban Minor Arterial (Two Lanes)

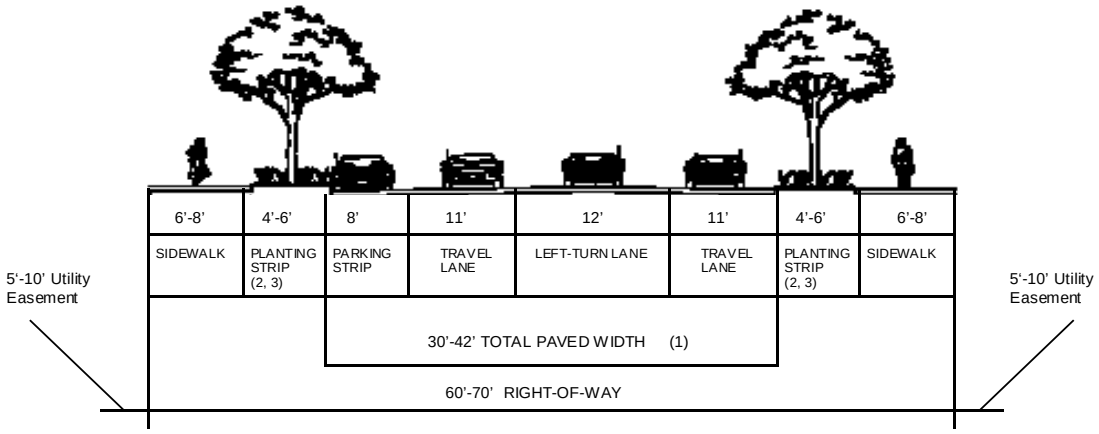


Urban Minor Arterial (Three Lanes)

1. A planter strip is required on all new streets.
2. Width of curb is included in planter strip width.
3. Street trees and streetlights shall be located within the planter strip.

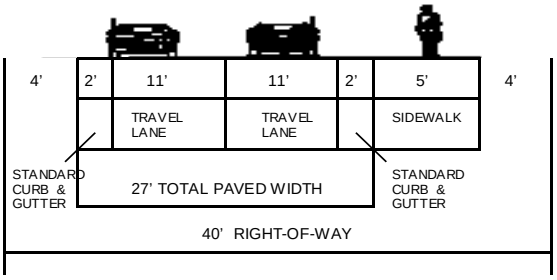
Commercial/Industrial Streets and Urban Collector Diagram

COMMERCIAL / INDUSTRIAL STREETS AND URBAN COLLECTOR

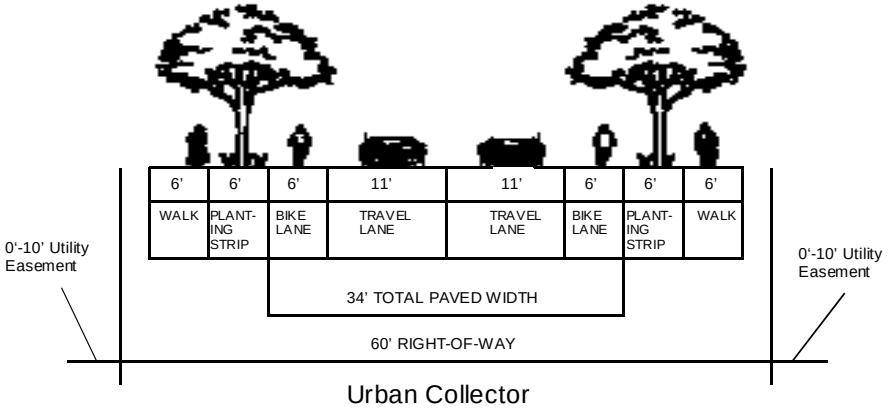


1. 42' Total Paved Width with center turn lane.
2. 4'-6' wide planting strips with 6' sidewalk.
3. 4'-6' wide tree wells with 8' sidewalk.

Urban Commercial / Industrial Streets



Urban Industrial Streets

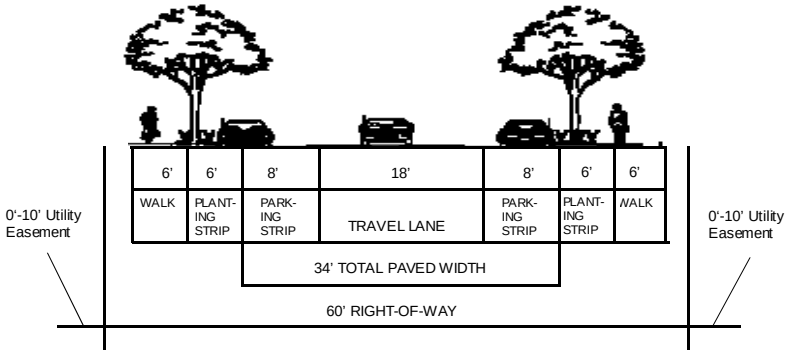


Urban Collector

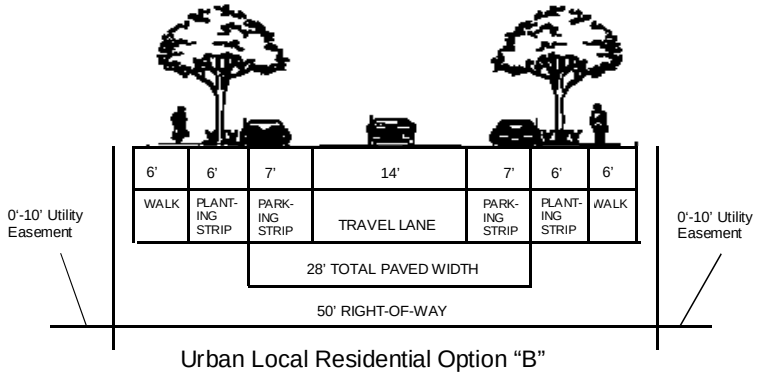
1. A planter strip is required on all new streets.
2. Width of curb is included in planter strip width.
3. Street trees and streetlights shall be located within the planter strip.

Local Streets Diagram

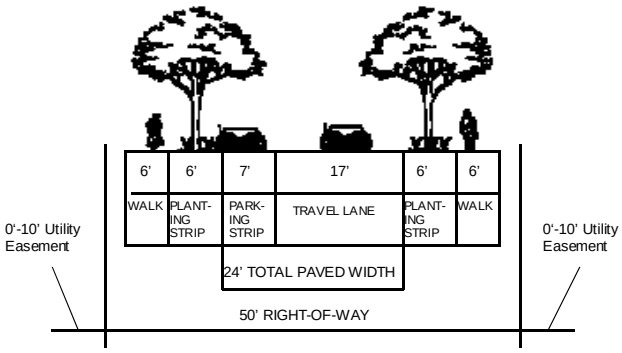
LOCAL STREETS



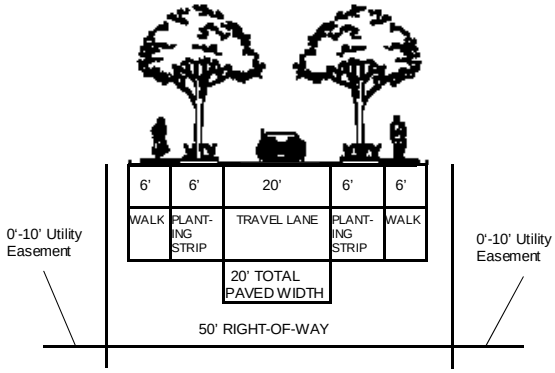
Urban Local Residential Option "A"



Urban Local Residential Option "B"



Urban Local Residential Option "C"

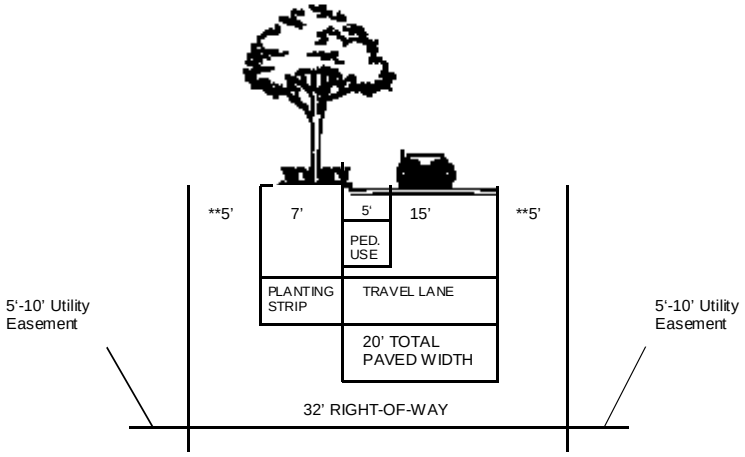


Urban Local Residential Option "D"

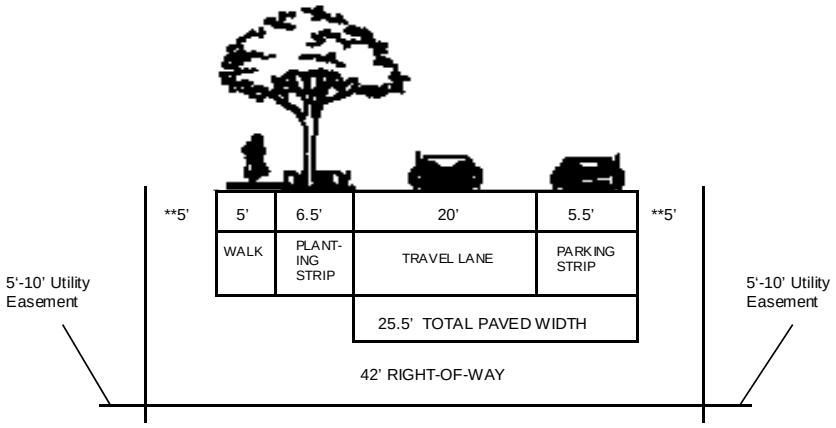
1. A planter strip is required on all new streets.
2. Width of curb is included in planter strip width.
3. Street trees and streetlights shall be located within the planter strip.

Local Streets-Infill Standards Diagram

LOCAL STREETS INFILL STANDARDS



Neighborhood Infill Street Option "A"
(Less than 100 vehicles per day)

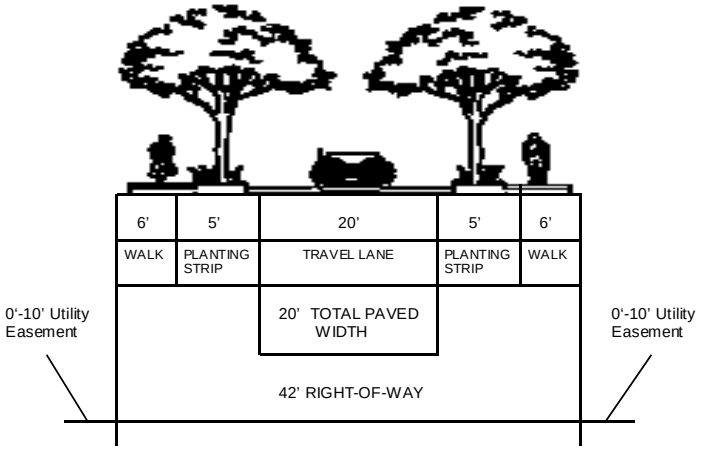


Neighborhood Infill Street Option "B"
(Less than 200 vehicles per day)

1. A planter strip is required on all new streets.
2. Width of curb is included in planter strip width.
3. For use when no vehicle connectivity is possible due to development or topography constraint.
4. Street trees and streetlights shall be located within the planter strip.
5. ** Five (5) feet minimum distance from developed neighboring abutting property

Cul-De-Sac Streets Diagram

CUL-DE-SAC STREETS



Cul-de-sac Streets

1. A planter strip is required on all cul-de-sacs.
2. Width of curb is included in planter strip width.
3. The length of cul-de-sac shall be no longer than 200 feet and have not more than 20 dwelling units on a closed end street system. Infill cul-de-sac length shall not exceed 150 feet.
4. Parking is allowed in the bulb and is prohibited in the neck.
5. Street trees and streetlights shall be located within the planter strip.

E. LOCAL STREET CONNECTIVITY

Purpose

Providing local street connectivity as required by the state Transportation Planning Rule (OAR 660-012) is an important objective for the City of Hood River. The general local street connectivity policies provided herein will help assure that streets and bicycle/pedestrian facilities created as part of new subdivisions and partitions integrate with the City's existing and planned transportation system throughout the Urban Growth Area. In addition, a Local Street Connectivity Plan for the Urbanizing Area, which focuses on the area outside of the City Limits and within the Urban Growth Boundary, has been developed. This area, which includes a portion of Indian Creek and the westside of the Urban Growth Area, has the greatest potential for new development and local street connections in Hood River. The Local Street Connectivity Plan for the Urbanizing Area is intended to foster a safe and efficient transportation system while maintaining a smooth and effective process of development review. The Local Street Connectivity Plan for the Urbanizing Area considers physical and environmental constraints, minimizes the need for out-of-direction travel, prohibits right-of-way obstruction, and ensures a means of access to all lots, including those not adjacent to public streets.

Applicability

The "General Local Street Connectivity policies", below, apply to new development within the City of Hood River and its Urban Growth Area. In addition, the Local Street Connectivity Plan for the Urbanizing Area, which focuses on the area outside of the City Limits and within the Urban Growth Boundary, applies to those areas shown on Figure A-1.

Methodology - Local Street Connectivity Plan for the Urbanizing Area

The local street connectivity options shown in Figure A-2 were identified based on a review of the transportation facilities, existing travel patterns, a review of tax lots and tentative plats, and physical constraints within the study area. The primary objectives in developing the connectivity options are to:

- provide access to all parcels;
- serve multiple parcels with a single connection;
- comply with the street spacing standards identified in Chapter 9 of the TSP;
- comply with the minimum block length and block perimeter standards of Title 16, Land Divisions; and
- comply with roadway hierarchy.

The arrowheads shown in the figure represent the general location of each access point and the dashed lines represent the general alignment of each local road. The location of the local access points and roadway alignments is approximate, unless noted by a star. Roadway connections highlighted by a star should be constructed to align directly opposite an existing access driveway or roadway to reduce the number of off-set intersections. The intent of the arrowheads is to indicate the number of access locations required to serve a developable area and their

approximate location on the collector/arterial roadway system. The intent of the dashed lines is to show where connections between access points should be made. The ultimate determination of specific locations for future connection points and roadway alignments will be a function of owners' development plans, physical/environmental constraints not identified in this memorandum, future developments on adjacent parcels, and the City's intention for local connections and access points.

General Local Street Connectivity Policies

The following policy objectives apply within the City of Hood River and its Urban Growth Area and should be followed when creating a local street system:

- A well-connected system of local streets should be created to improve neighborhoods more conducive to walking and biking, and by improving the efficiency of public services like police and fire protection.

- Local streets should be designed to serve local traffic and, by their design, to limit non-neighborhood cut-through traffic using local streets to travel from one collector/arterial to another.

- An efficient and connected local street system should be created as development and land divisions occur.

- Dedication of right-of-way and construction of new local streets should be the responsibility of the developer.

- Full-street improvements are required when the proposed roadway is within the developable area.

- In order to promote efficient vehicular and pedestrian circulation throughout the city, land divisions and large site developments should produce complete blocks bounded by a connecting network of public and/or private streets.
    - In the central business district, a compact block pattern has been already established and should be retained; therefore, the maximum block length and perimeter should not exceed 400 feet length and 1,200 feet perimeter, respectively.

    - In residential zones, a block pattern that supports good pedestrian connectivity should be maintained; therefore, the maximum block length and perimeter should not exceed 600 feet length and 1,600 feet perimeter, respectively.

    - In industrial zones, large blocks may be necessary to support industrial development; therefore, no maximum block length or perimeter should be established.
    - In all other zones, the maximum block length and perimeter should not exceed 800 feet length and 2,600 feet perimeter, respectively.

- Pathways (for pedestrians and bicycles) should be provided at or near mid-block where the block length exceeds 600' in length. Pathways should also be provided where cul-de-sacs or dead-end streets are planned, to connect the ends of the streets together, to other streets, and/or to other developments, as applicable.

- Dead-end streets or cul-de-sacs should be no more than 200 feet long and should only be used when environmental or topographical constraints, existing development patterns, or compliance with other standards in this code preclude street extension and through circulation.

Local Street Connectivity Plan Policies for the Urbanizing Area

The following policy objectives apply exclusively within the area shown in the Connectivity Study Area Map (A-1) and should be followed in addition to the general policies above when creating a local street system in this area:

- The Local Street Concept Plan Map (A-2) shows the general orientation and spacing of potential new local streets within the Urbanized Area. Where not constrained by topography, new local streets should be located so as to conform to this plan in terms of:
    - General orientation – New local streets should generally be oriented (e.g., east-west or north-south) as shown on the Local Street Concept Plan Map (A-2);

    - Spacing – The spacing of new local streets on the Local Street Concept Plan Map (A-2) is approximate; however, proposed new local streets should generally meet the minimum frequency and spacing shown and continue the existing grid system established in the city core; and

    - Alignment -- New local streets should align with existing driveways and streets, wherever possible. Locations where specific alignment with an existing street or driveway is required are identified on the Local Street Concept Plan Map (A-2).

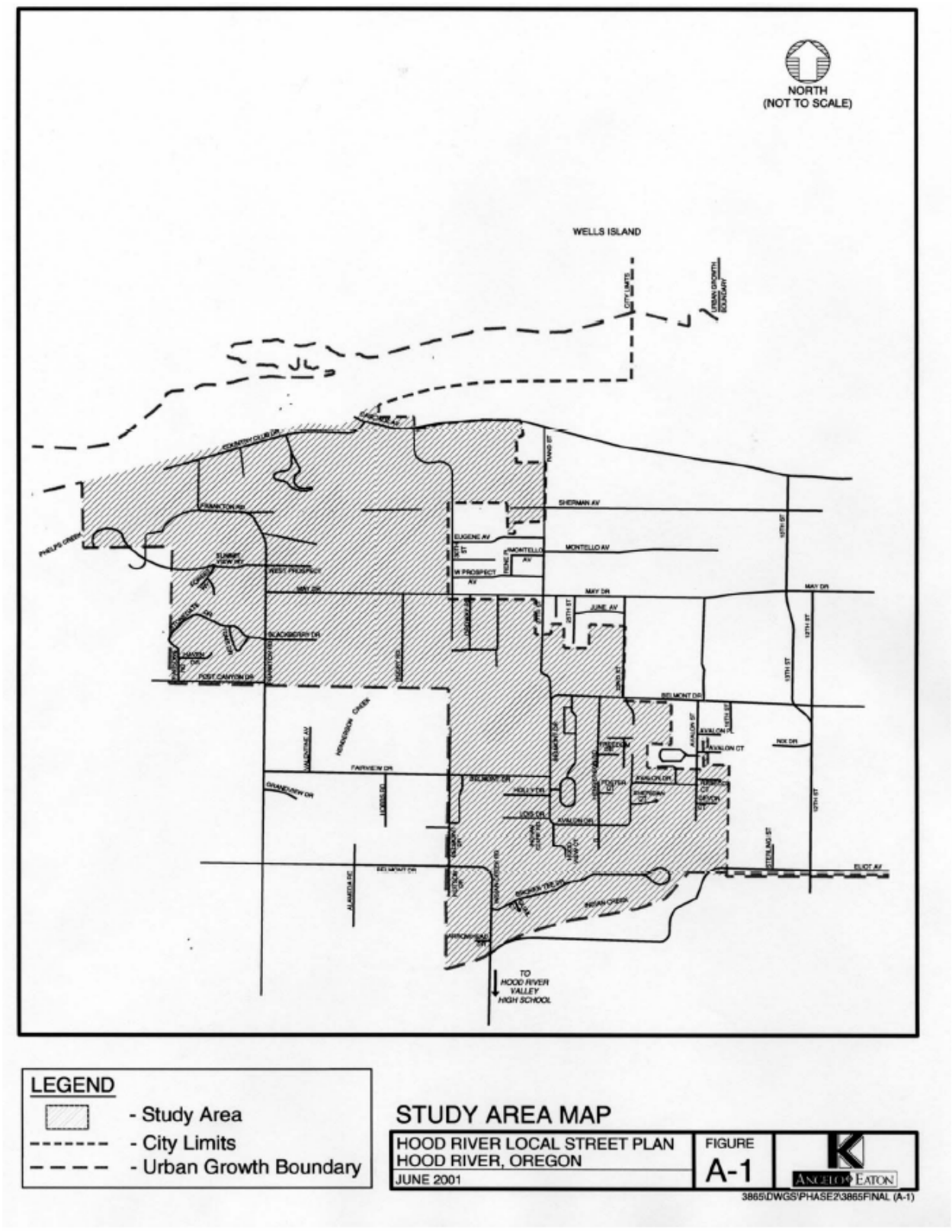
    - Additional connections may be required to provide access to specific development areas and/or meet minimum block spacing standards.

- Successful implementation of an efficient local street system will require the participation by neighborhoods. Neighbors should be provided notice of a pending future street plan through the land division process.

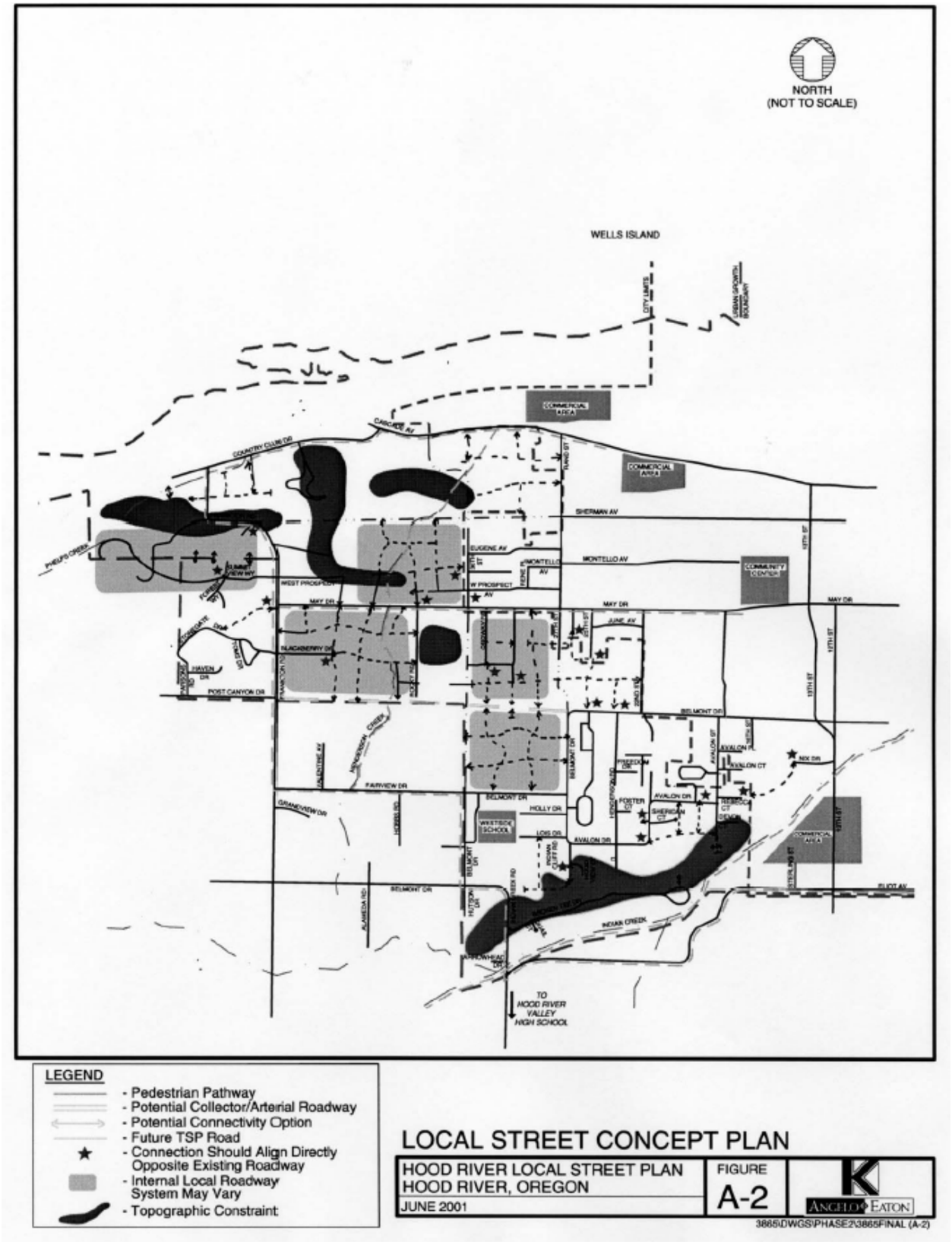
- A future street plan, showing the pattern of existing and future streets, should be submitted by the applicant in conjunction with an application for a subdivision or partition in order to facilitate orderly development of the street system. The developer should consider the surrounding area and should demonstrate that their plan is consistent with the local street connectivity plan (Local Street Concept Plan Map (A-2)) and the existing street pattern.

- Gated communities should be prohibited when they block street connections that are identified in the Local Street Concept Plan Map (A-2).

Connectivity Study Area Map (A-1)



Local Street Concept Plan Map (A-2)



9. TRANSPORTATION SYSTEM MANAGEMENT

Transportation System Management (TSM) focuses on low cost strategies to enhance operational performance of the transportation system. Measures that optimize performance of the transportation system include signal improvements; intersection channelization, access management, and programs that increase transit operation efficiency. Access Management being the primary TSM.

ACCESS MANAGEMENT

Access management is the process of managing vehicular access to adjacent land use while simultaneously preserving the flow of traffic on the surrounding road system. 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 those vehicles entering and exiting a driveway and those vehicles traveling through on 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, as part of roadway retrofit plans, or as a condition of land development and/or redevelopment.

CURRENT ACCESS CONDITIONS

Four state highways were evaluated for access conditions: Interstate 84, Historic Columbia River Highway, OR 35/Mt. Hood Highway, and Hood River Highway.

> ***Interstate 84*** runs east west through the City of Hood River. It consists of three full interchanges. The average spacing is about 2.8 miles between interchanges. The following table summarizes the spacing between the midpoints of each interchange in the City of Hood River.

The Historic Columbia River Highway from MP 48 to MP 57.5 runs through the City of Hood River with a total of 124 access points. The average spacing is about 12 access points per mile.

OR 35 runs north south in Hood River with low-density access (less than 10 access points per mile).

Hood River Highway from MP 0.00 to MP 20.00, starts in the City of Hood River and ends in Ziba Dimmick Wayside Park. A total of 434 access points were recorded. The average spacing is about 20 access points per mile.

None of the highways exceed the rule of thumb for high-density access of over 60 access points per mile. The access locations summary figure shows the access densities.

Interstate 84 Interchange Spacing in Hood River

Interchange Location	MP	Spacing From Previous Interchange (mile)
West Hood River Interchange	62.06	6.02
Hood River 2nd Street Interchange	63.92	1.86
East Hood River Interchange	64.44	0.52
Average Spacing		2.80

ACCESS MANAGEMENT STRATEGIES

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.

Optimize Traffic Signal Installation, Spacing, and Coordination

Traffic signals should be appropriately placed and coordinated to enhance the progressive movement of traffic along the highway. If properly designed, installed, and maintained, traffic signals tend to reduce right-angle collisions, vehicular-pedestrian collisions, and opposing left-turn collisions. However, rear-end collisions commonly increase. Delay to the driveway traffic will be decreased; however, total delay at the intersection will be increased if the signal interferes with progression. Moreover, if the signal system has poor progression, the resulting traffic backups can block upstream access from driveways. Also, improperly located signals will increase total traffic delays throughout the system, cause a deterioration in the speed and efficiency of progression and seriously increase fuel consumption and vehicular emissions.

The higher the efficiency of traffic progression (progression band width divided by cycle length), the higher is the capacity of the major arterial highway. Moreover, at high efficiencies, fewer vehicles are required to come to a stop, deceleration noise is reduced, and vehicle emissions, fuel consumption, and delay are minimized. Since highway capacity is always an issue along major urban arterials, the signal spacing should be selected such that it leads to very high progression efficiencies.

Application

A driveway should be considered for signalization only if installation of the signal does not interfere with traffic progression on the major arterial or will not interfere when the major street system reaches capacity conditions when the area becomes fully urbanized. This normally means that signalization should be limited to driveways meeting the uniform signalized intersection spacing (described in the next strategy). This will provide maximum progression efficiency at the desired speed and at the longest cycle length, which is expected to be utilized during the peak periods when the area becomes fully urbanized. When the high volume access drive does not conform to the selected uniform spacing criteria, consideration of signalization should be based upon a traffic engineering study, which demonstrates that the signal will not interfere with efficient traffic progression during peak and off-peak conditions.

Progression at reasonable speeds can be achieved at a short signal spacing such as 1/4 mile only if the traffic volumes are very low and short cycles can be used. For example, a progression speed of 30 mph can be achieved with a 60-second cycle length at a signal spacing of 1/4 mile. However, as major arterial and cross-street volumes increase, longer cycle lengths must be used in order to increase capacity by minimizing lost time. With a longer 90-second cycle length, signal spacing of 1/4 mile will result in a progression speed of 20 mph along the major arterial.

The following table illustrates the optimum signalized intersection spacing in feet needed to achieve efficient traffic progression at various speeds and cycle lengths. For example, a major arterial spacing of 2,050 feet (0.39 miles) will enable traffic flow at 35 mph with the use of an 80-second cycle length.

Optimum Signalized Intersection Spacing for Efficient Traffic Progression

Cycle Length (seconds)	Speed (miles per hour)						
	25	30	35	40	45	50	55
60	1,100’	1,320’	1,540’	1,760’	1,980’	2,200’	2,430’
70	1,280’	1,540’	1,800’	2,050’	2,310’	2,500’	2,820’
80	1,470’	1,760’	2,050’	2,350’	2,640’	2,930’	3.220’
90	1,630’	1,980’	2,310’	2,640’	2,970’	3,300’	3,630’
120	2,200’	2,640’	3,080’	3,520’	3,960’	4,400’	4,840’
150	2,750’	3,300’	3,850’	4,400’	4,950’	5,500’	6,050’

Source: *Technical Guidelines for the Control of Direct Access to Arterial Highways* - Volumes I and II, Federal Highway Administration (FHWA-RD-76-86).

Regulate Minimum Spacing of Driveways

The minimum spacing of driveways is a regulatory method used by many agencies to regulate the frequency of access points along highways. This technique can be implemented at existing locations or during the driveway permit authorization stage. Strategies for achieving this objective at existing driveways include closing driveways or relocating driveways.

This technique reduces the frequency of conflict by separating adjacent, basic conflict areas and limiting the number of basic conflict points per length of highway. The technique is expected to reduce the severity of rear-end collisions as it allows more deceleration distance and perception time for motorists. Some tradeoffs may be realized by increasing average delay and the potential for rear-end collisions at driveways as a result of increasing the average volume per access point.

Application

This access control technique is generally applicable for all types of arterials where conflict area overlap and delays are excessive. Highways with volumes greater that 5,000 vpd and speed greater than 25 mph are candidates for consideration.
The minimum allowable spacing of non-signalized intersections for various speeds is shown in the following table.

Minimum Allowable Driveway Spacing

Posted Speed Limit	Minimum Allowable Driveway Spacing
30 mph	100 feet
35 mph	150 feet
40 mph	200 feet
45 mph	300 feet

Source: *Technical Guidelines for the Control of Direct Access to Arterial Highways* - Volumes I and II, Federal Highway Administration (FHWA-RD-76-86).

The optimization of driveway spacing in the permit authorization stage would indirectly reduce the frequency of conflicts by separating adjacent conflict areas and limiting the number of basic conflict points per length of highway. The implementation of this technique is also expected to reduce the severity of conflicts as it allows more deceleration distance and perception time between driveways.

Consolidate Access for Adjacent Properties

This general operating practice encourages adjacent property owners to construct joint-use driveways in lieu of separate driveways. Strategies for implementing this technique include closing existing driveways or encouraging joint-use driveways.

The feasibility of this technique is viewed primarily at the permit-authorization stage. The joint driveway will cause a reduction in the concentration of driveways along an arterial. The reduction in driveway concentrations is expected to be accompanied by a reduction in the frequency and severity of conflicts.

Application

This technique is applicable on all major roadways. Driveway pairs with more than 50 vehicles using each driveway per hour will be good candidates for this technique.

The physical means by which access can be consolidated between two adjacent properties involves construction of joint use driveway between the two properties. It is recommended that both owners have property rights in a joint-use driveway. That is, the driveway should be located straddling the property line with each having a permanent easement on the other. This practice will not enable either owner the opportunity to deny or restrict access to the neighboring property. The resulting parking area should have an efficient internal circulation plan.

Consolidate Existing Access Whenever Separate Parcels Are Assembled under One Purpose, Plan Entity or Usage

This is a general operating practice that requires specific changes on commercial sites when they are assembled for development or redevelopment. The consolidation is accomplished by voiding existing driveway permits upon alteration of the property functions. The new permit authorization depends on the developer's plans to use some existing driveways and close or relocate other driveways.

The objective of this technique is to increase average spacing of access points along the highway. The consolidation of driveways reduces the number of access points, thereby increasing the driveway spacing. The increase in driveway spacing provides motorists of turning vehicles more time and distance to properly execute their maneuvers. The severity of conflicts should decrease because deceleration requirements are reduced.

Designate the Number of Driveways to Each Existing Property and Deny Additional Driveways Regardless of Future Subdivision of That Property

This is a general regulatory policy, which designates the maximum number of driveways permitted to each existing property before development. The implementation of this technique requires an advance planning policy with a formal planning document made readily available to abutting property owners. Such policy denies additional driveways regardless of future subdivision of that property.

The objective of this technique is to maintain average spacing of access points along the highway. This objective is achieved by regulating the maximum number of driveways per property frontage. The increase in average driveway spacing provides motorists turning into driveways with more time and distance to properly execute their maneuvers.

This access control measure increases the minimum spacing of access points. This results in a reduction in the frequency of conflicts. The severity of conflicts should also decrease because deceleration requirements are reduced.

Restrict Parking on Roadway Adjacent to Driveways to Increase Driveway Turning Speeds

This technique increases turning speeds by removing parked vehicles, from areas adjacent to driveways. Parked vehicles may indirectly contribute to driveway accidents by limiting the sight distance or influencing the turning paths of driveway vehicles. This technique is intended as a point measure, although route applications are also feasible.

This technique will reduce the severity and frequency of conflicts. Severity is reduced because the speed differential between turning and though vehicles is reduced. Conflict frequency also benefits from the increase in turning velocity. One trade-off is a reduction in parking capacity.

Application

This technique is applicable at any driveway location where parking is permitted. Drivers in the outside through traffic lane must have adequate stopping sight distance. Driveway traffic must have adequate intersection sight distance to safely select a gap and to accelerate to the speed of through traffic.

Provide Direct Access on Lower Functional Class Street when available

This driveway location technique is aimed at removing turning vehicles or queues from sections of the through lanes. The strategy for achieving this objective is to provide supplementary access to a single property at a collector street location. The technique provides an additional access point for vehicles to use when entering or exiting a property.

The average volume of all driveways to a property will decrease after the supplementary driveway absorbs some of the total volume. Conflict frequency will be reduced on the highway, and total conflict severity should be reduced by moving some of the conflicts to the lower speed collector. Delay to arterial and driveway vehicles will be reduced because the individual driveway volumes are smaller.

Application

This technique is applicable at all corner parcels having frontage on a major roadway and a collector.

Encourage Connections Between Adjacent Properties

This driveway operation technique is aimed at removing turning vehicles or queues from the through lanes by encouraging adjacent property owners to permit property-to-property movements away from the highway.

A prime example of this access control measure is the neighborhood shopping center where several adjacent properties are served by one open parking lot area. The patrons frequenting nearby establishments do not need to exit onto highway and then enter the neighboring driveway.
Highway conflicts will be reduced because the highway will no longer be used in traversing from one property to the next.

Application

This technique is applicable on all highway types. It is intended to serve adjacent properties with small frontage widths through use of common access points. Thought must be given to internal circulation and storage space for driveway vehicles as well as geometric layout and existing highway operation.

Require Adequate Internal Design and Circulation Plan

This is a general access control policy that may be applied on existing facilities or during the driveway permit stage. An adequate internal design and circulation plan is intended to ensure harmony between highway, driveway and internal operations. Driveway and internal operations will be improved by providing adequate internal property design and controls. Through traffic will experience a decrease in interference because the internal design will minimize queuing on the highway and vehicles searching for parking places are able to circulate internally. Conflict frequency and severity are expected to decrease because deceleration requirements are reduced.

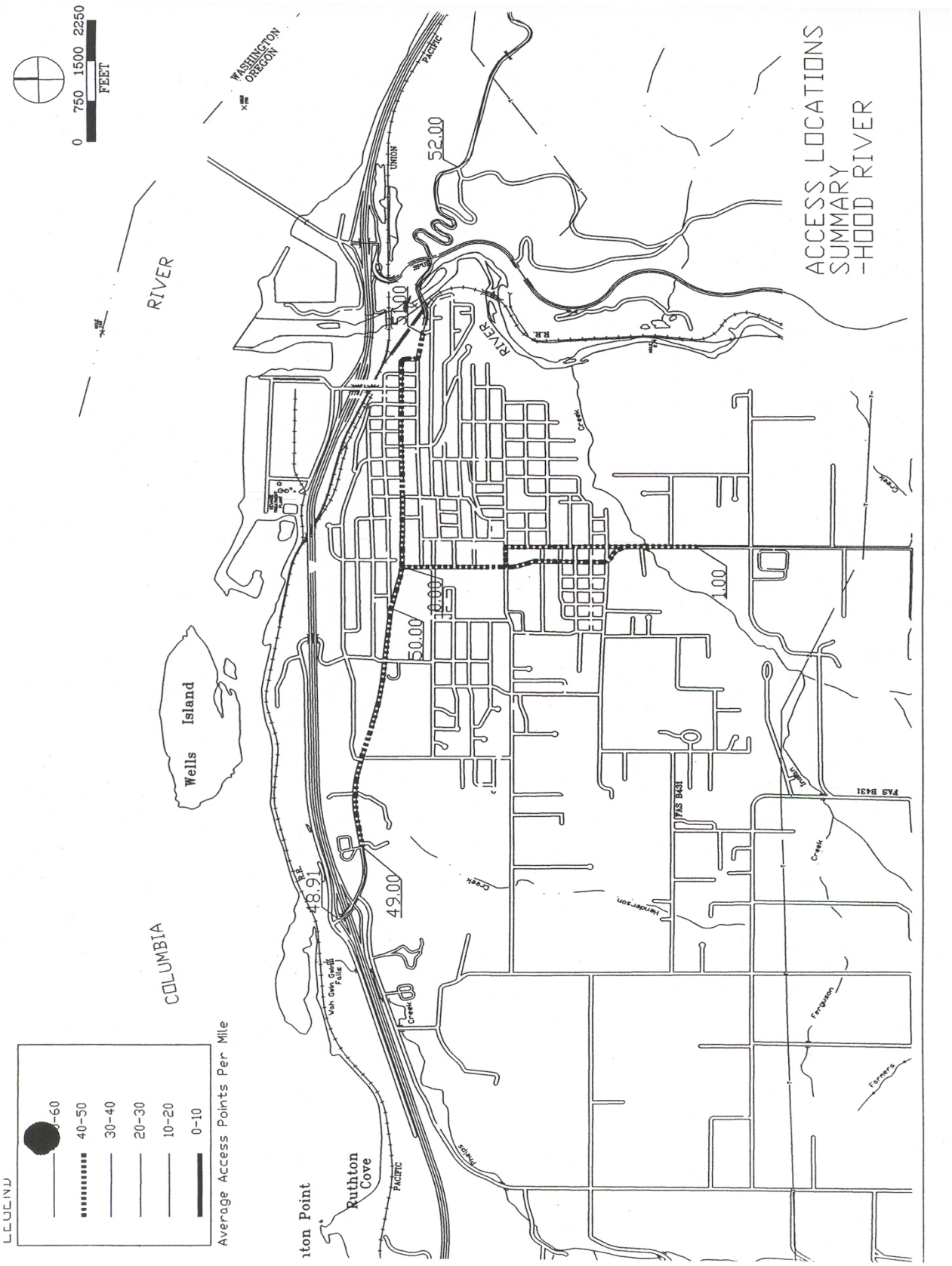
Application

This technique is applicable to all types of highways. Implementation is feasible on existing facilities, but primary consideration should be given to this policy during site plan approval.

Internal circulation designs should provide adequate handling of limited parking and maneuvering areas, minimize internal interference by supplying storage areas to egress movements, and distribute ingress vehicles into the main circulation patterns with minimal hesitation and confusion. The following list reflects recommendations by which this technique can be properly applied.

- General location of driveway entrances should be approved by code authorities.
- Wherever possible, the long sides of parking areas should be parallel.
- Curved, triangular and other irregularly shaped parking areas should be avoided.
- Driveway throats should be designed long enough to allow free movement on and off of the highway.

Access Location Summary Map



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 streets and minor collector level. The following table describes general access management guidelines by roadway functional classification and appropriate adjacent land use type for collector and local streets.

These 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 and redevelopment occur.

The challenge is greater in applying access management guidelines to a developed major arterial 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.

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

General Access Management Guidelines

Street Classification	Minimum Posted Speed	Minimum Spacing Between Driveways and/or Streets[2]	Minimum Spacing Between Intersections (Min-Max)	Appropriate Adjacent Land Use Type
Arterial	35-45	300 feet	660-1000	light industry/office and buffered medium or low density residential
Collector Street	25-35 mph	100 feet	220-440 feet	neighborhood commercial near some major intersections
Local Street	25 mph	Access to each lot permitted	200 feet	primary residential
OR 35 from 1-84 to Historic Columbia	25 mph	1,320 feet	500 feet	Commercial

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.

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.

[2] Desirable design spacing (existing spacing will vary).

- Providing service drives to prevent spillover 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.

These access management restrictions are generally not intended to eliminate existing intersections or driveways. Rather, they should be applied as new development, redevelopment, 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.

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 will be applied, as appropriate, to meet access management goals. These techniques will 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.

Special Access Management Areas

Access management is important to promoting safe and efficient travel for both local and long distance users within the planning area. The 1999 Oregon Highway Plan (OHP) classifies i-84 as an interstate facility, or 35 as a highway of statewide importance, and the Historic Columbia River Highway and Highways 281 and 282 as district highways. 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 access management categories 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). Highway 35 is a category 4 facility. This means that for the urban portions of the highway, the roadway improvements will provide for a minimum distance of _ mile between public roadway intersections, and a minimum distance of 500 feet between private driveways. Traffic signals are permitted at a minimum of one-half mile spacing. These requirements are similar to the general access management guidelines specified for major arterial roadways. Access management category 6 applies to us 30 and Highway 281, which are district highways. This means that in urban areas, intersection spacing for future improvements is limited to 500 feet, with a distance between driveways of at least 250 feet. Some of these spacings are not practical to meet in the next 20 years, particularly in the highly developed areas.

10. OTHER MODES: RAIL, AIR, WATER, AND MAJOR PIPELINE

There are four other modes: rail, pipeline, air and water.

RAIL SERVICE

Rail service to the city is provided on the Union Pacific main line, which runs through the gorge near I-84; the Mount Hood Railroad branch line, which runs from Hood River to the upper Hood River valley; and one spur line within the city.

Passenger service is not provided. 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 is located in Bingen, Washington, then north to Spokane. In Spokane, the train meets the Empire Builder Line. The two merged lines then run east to Chicago. Direct Portland to Denver rail service no longer exists. This Burlington Northern passenger line runs four times a week.

Although Hood River does not have passenger rail service, it does have passenger facilities adjacent to the Union Pacific line. Therefore, if federal funding is reinstated it would be easy to supply service to the city.

The Mount Hood Railway is a light density rail line, which runs north-south between Hood River and Parkdale. OR 35 crosses this branch line in several places of Hood River. The line starts at a depot in Hood River and travels through Pine Grove, Odell, Dee and Parkdale. This line is used for tourism and the transportation of fruit and lumber. The line operates seasonally from April through October and in December. It is also available year round for charter service.

The Mount Hood Railroad does not currently have plans to alter its service. However, if tourist demand grows, the frequency of service will be increased.

Plan

The Union Pacific freight service runs through the county parallel to I-84, with a stop in Hood River. The Mount Hood Railroad branch line runs south from Hood River alongside the OR 35 corridor. 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. Efforts should be made by the City of Hood River to retain or expand its rail service, particularly a passenger connection to Portland.

AIR SERVICE

There are four airports in the region; Cascade Locks State Airport, Hood River County Airport, Hanel Airport, and a private airport near Odell. Hood River Airport is a general aviation airport located south of Hood River adjacent to Highway 281. It is owned and operated by the Port of Hood River and provides no regular air service, being used primarily by small planes for

agricultural, business, and personal uses. Hood River Airport has one 3,040 foot paved runway, and is classified as a Level 3 facility, meaning that is provides local support and access and second-tier economic development.

The closest commercial air service is approximately 56 miles west of the City of Hood River 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 expansion of the Hood River Airport.

Although the Hood River Airport does not have plans to provide commercial air service any time in the near future, it could handle much more traffic than it currently gets (potentially ten times the amount). On top of this, the Port of Hood River is improving the airport's capacity. In 1995, the port spent one million dollars on a new access road and a dozen new T-hangers holding around forty planes.

Air Service Projects

	Projects	Costs (1997 $)
1	Runway Extension and Land Acquisition	$1,500,000
2	Relocate Operation Terminal and Add Public Rest Area	$300,000
3	Add Fifty-six New T-hangers	$1,000,000
4	Install Fencing	$100,000
Total Costs		**$2,900,000**

PIPELINE

Hood River is provided with natural gas service from a Northwest Pipeline Corporation transmission pipeline that extends south from Washington and crosses the Columbia River near the I-5 Interstate Bridge.

WATERBORNE TRANSPORTATION

The Port of Hood River has extensive property holdings along the waterfront, in downtown Hood River, and west of Odell. The waterfront property consists of 75 acres along the Columbia River in the northeastern portion of the City of Hood River. This property is used for recreational, industrial and commercial activities, including serving of barges and other large commercial vessels. It includes a shallow draft port, an extensive marina park; and an industrial park. The shallow port (less than 28 feet deep) is not used for cargo handling, rather, serving as a private boat dock containing 140 boat slips. It is also used by cruise ships. The Marina Park is the regional center for sailing, boating, and swimming. The industrial park is largely

underdeveloped, but plans call for building mixed-use development with a motel/convention center, a public park, and high-density housing. Other Port of Hood River holdings includes a 21-acre site in downtown Hood River and a 29-acre industrial park immediately west of Odell. The Port has improved both of these sites and its Hood River property is included in the city's urban renewal district. The Port also owns and operates the Hood River/White Salmon Bridge and the Hood River Airport.

The Port's capacity to handle commercial shipping may increase depending on the source of development decided upon in the waterfront planning process currently being done. An increase in passenger travel could be accommodated by the marina. Any new passenger travel is likely to serve tourism since the City of Hood River's tourism economy has increased dramatically and the trend should continue.

11. TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is the general term used to describe any action that removes vehicle trips from the roadway network during peak travel demand periods. The Transportation Planning Rule outlines a goal of reducing vehicle miles traveled (VMT) per capita. Through TDM 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.

IMPROVEMENTS:

1. Encourage development that effectively mix land uses to reduce vehicle trip generation.

2. Alternative work schedules such as flextime work hours, especially with large employers. Staggered work schedules shall be encouraged with new industries.

3. Carpooling and vanpooling programs shall be encouraged. The City can work with large employers, to establish a carpool or vanpool program oriented to workers living in other neighboring communities. These programs help reduce the travel and parking requirements and reduce air pollution. A rideshare program in to Portland should be established.

4. Bicycle and pedestrian facilities can be encouraged be implementing strategies discussed earlier in this plan. Providing bicycle parking, showers and locker facilities help to encourage bicycle commuting and walking to work.

5. Telecommuting is identified by the Oregon Transportation Plan as a TDM technique that reduces auto usage.

12. FUNDING

MAINTENANCE PROGRAM

An annual program of minimum street maintenance including minor asphalt concrete overlay, repairing and filling roadway cracks, general repairs, street cleaning and pavement striping and marking is required to provide a safe and enduring transportation infrastructure for the City.

FUNDING OPTIONS AND FINANCIAL PLAN

The funding of street and road system costs is a difficult challenge shared by most all communities throughout Oregon and the United States. Cutbacks in federal transportation programs for new construction have served to heighten this problem, forcing cities to look for new ways to fund necessary transportation services. In Oregon, increases in the state gas tax over the past several years have helped local governments meet the growing cost of street system improvements. Nonetheless, many communities, including Hood River, face a funding gap, whereby street systems needs exceed available revenues. This report presents and reviews potential financing options that may be available to assist the City in meeting its transportation needs, specific grants and programs will very from year to year.

Much of the transportation system within Hood Rivers Urban Growth Boundary falls under several governmental jurisdictions. For instance, ODOT is responsible for maintaining state highways, and so ODOT could potentially participate in funding improvements recommended for the Historic Columbia River Highway. Also, Hood River County is responsible for roads and streets outside of the city limits and still inside the urban growth boundary. The County should assist in funding the projects that fall within this category.

There are several Federal and State programs administered by ODOT that fund specific types of improvements that could contribute funds for projects in Hood River. These programs include:

State Transportation Improvement Program – The State Transportation Improvement Program (STIP) is administered by ODOT and finances transportation improvements statewide. The program is funded with a variety of Federal and state revenue sources. Projects funded through the STIP are selected and prioritized according to well established criteria and those that are selected are placed in two year plans. Projects funded in the STIP are those that are judged to have significance for the ODOT Region.

Immediate Opportunity Fund – This program is administered by ODOT but is used primarily in conjunction with projects funded by the Oregon Economic Development Department. This program is intended to fund infrastructure improvements where an immediate commitment of funds is required to attract or retain industrial and some commercial firms that will provide jobs.

Highway Enhancement Program – This program is designed for safety improvement projects where it can be shown that the project will reduce the frequency and/or severity of accidents and the cost/benefit ratios of the project is greater than one. This program requires a 10 percent local match.

Oregon Bicycle and Pedestrian Program – This program provides grants up to $50,000 for projects that would improve bicycle or pedestrian facilities, including construction or striping of bike lanes on roadways, and provision of sidewalks. This program distributes a total of $450,000 annually to Oregon cities and counties. Many projects included in the TSP would be eligible for partial funding through this program.

Community Development Block Grants (CDBG) – The Federal Department of Housing and Urban Development (HUD) has a program know as the Community Development Block Grant (CDBG). Cities receive funds based on a formula that includes their size and other demographics, including income level and housing standards.

Special Public Works Fund – This program is administered by the Oregon Economic Development Department and provides loans and grants to fund infrastructure in commercial/industrial areas to support local economic development. The project must help create or retain a minimum of 50 jobs to receive funding through this program.

System Development Charges (SDC) – A transportation system development charge (SDC) is a sliding scale fee, which all new development must pay for transportation improvements that result from construction of and trips generated by the development. The fee is normally based on the number of vehicle trips generated by the development. Developers are often given credits that reduce the SDC charge for making improvements to an adjacent arterial or collector street. Many cities and counties within Oregon now use transportation system development charges.

ORS 223.297 to 223.314 prescribe specific requirements that a SDC must meet to be considered legal. The statutes specify that a SDC may be used only for capital improvements and define the range of eligible capital facility improvements (i.e., water, sewer, drainage, transportation, or parks). The ORS also defines the method of determining the amount that may be charged for a SDC, the types of projects eligible for funding, and annual review provisions.

Local Gas Taxes – The City of Hood River or the County of Hood River could implement a local gas tax in addition to the state gas tax it currently receives. Five jurisdictions within Oregon currently have a local gas tax - the City of Woodburn ($0.01/gallon), Washington County (0.01/gallon), Tillamook ($0.015/gallon), The Dalles ($0.01/gallon), and Multnomah County (0.03/gallon).

Local Vehicle Registration Fees – A local vehicle registration fee can be implemented by counties and collected in addition to the State registration fee.

Local improvement districts (LIDs) – LIDs shall be formed under Oregon Statutes to construct public improvements such as streets, sidewalks and other improvements. Formation of an LID can be initiated by property owners or by the City, subject to remonstrance. Local improvement districts are appropriate for those kinds of improvements that provide primarily local benefits.

When improvements are made within the district, the cost of the improvement is generally distributed according to benefit among the properties within the district. The cost becomes an

assessment against the property which is a lien equivalent to a tax lien. The property owners may pay the assessment in cash or apply for assessment financing according to terms offered by the City.

RECOMMENDED TRANSPORTATION FUNDING STRATEGY

Develop a SDC program to help meet the costs of transportation. A combination of system development charge revenues, grants and partnerships with ODOT or other jurisdiction, as well as general obligation bond financing represents the most feasible funding strategy available to the City to meet expected capital and maintenance funding needs. Depending on the nature of individual transportation improvement projects, it may be possible to further diversify the funding base through access to the other revenue sources such as local improvements districts, the State Special Public Works Fund, ODOT's Immediate Opportunity Grants, developer contributions or other alternative resources.

APPENDICES

A. TRAFFIC FORECAST AND ANALYSIS

Travel demand forecasting predicts future traffic in an area, city, or region. This is done to help identify future traffic demand along streets and at intersections. A travel forecast was performed for the City of Hood River.

Forecast future traffic volumes were projected based on existing and future land use projections and historical growth trends in traffic on the highway system. Each forecast 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.

CITY OF HOOD RIVER

The City of Hood River forecast focused on the PM peak hour for an average weekday. The future forecast was determined by adding projected future additional traffic to existing traffic volumes. Existing (1995) traffic volumes were obtained from PM peak hour turning movement counts, hourly road tube counts, and traffic volume information from ODOT's Traffic Volume Tables. Determining future additional traffic volumes for the City of Hood River involved a five-step process:

1. study area definition;
2. land use projection;
3. trip generation;
4. trip distribution; and
5. trip assignment. Each process is described as follows.

Study Area Definition

The first step in the forecasting process requires the definition of the study area. This step includes developing a roadway system network and traffic analysis zone scheme, which accurately represent the road system and density and type of land use activity in the study area. The study area is composed of the city's urban growth boundary.

Roadway System Network

The limits of the roadway system network are defined by the boundary of the study area. Within this boundary, a network composed of arterial and collector roads are selected. This network

includes portions of Interstate-84, Highway 35, the Historic Columbia River Highway, and the Hood River Bridge, as well as collector and local city streets which are vital to the circulation of traffic.

Traffic Analysis Zones

In addition to defining the roadway system network, a traffic analysis zone (TAZ) scheme was also developed. The TAZ scheme divides the study area into smaller analysis units, or zones, which are used to tie land, use activity and trips generated by the land use to physical locations within the network. Physical barriers, roadway locations, and land use characteristics are factors used to determine the zone structure. Definition of the TAZs was performed with the assistance of Portland State University.

Outside of the study area, external zones add traffic from external locations, generally traffic from other cities such as Portland and Cascade Locks to the west, and The Dalles to the east. These zones produce three types of trips. The first type is a through trip which begins in one external zone and ends in another external zone but will pass through the city. The second type is a trip, which begins in the city and ends at and external zone. The last type is a trip, which begins at an external zone and ends in the city. In the modeling process, the trips traveling to and from these external zones are generally associated with the actual roads leading in and out of the study area. A total of six external zones were identified where traffic enters and exits the study area.

Land Use

Once the TAZ scheme is defined, both existing and future land use forecasts are developed. Land use is divided into two categories in the travel-forecasting model: those uses, which produce trips, and those uses, which attract trips. Population, represented by the number of single-family, multi-family, and manufactured home dwelling units in each TAZ, is the source of trip productions. Total employment is the basis for estimating trip attractions. When developing the TAZ scheme, boundaries were chosen separating these land uses as much as possible to create boundaries with homogeneous land use.

Trip Generation

Vehicle trip generation, the next step in the modeling process, is a method of estimating the number and type of trips a specific land use will produce or attract based on historic data and surveys of similar developments. The trip generation estimates are made for each TAZ in the planning area on the basis of the type and quantity of households and total employees at businesses.

Each trip is defined by the land use from which it is produced or originated and the land use to which it is attracted or destined. Trips are estimated by applying trip generation rates to the quantified land use in each zone. The following table summarizes the trip rates according to each land use category.

City of Hood River Trip Generation Rates

Trip Productions		
Trips/Single-Family House	Origin	0.36
	Destination	0.74
Trips/Multi-Family House	Origin	0.25
	Destination	0.52
Trip Attractions		
Trips/Employee	Origin	0.86
	Destination	0.57

The trip production rates chosen for the City of Hood River forecast are based on the rates used in other forecasts DEA has performed for cities like The Dalles and Madras in Oregon. The rates used in these forecasts are based on the trip generation rates found in the ITE Trip Generation Manual, 5th Edition, with minor changes to more closely match local driver behavior.

The trip attraction rates for the City of Hood River were developed based on the rates used in the forecasts for the two cities mentioned previously. However, the average origin and destination trip attraction rates determined apply only to the overall total employment in Hood River, instead of using separate trip attraction rates that apply to different types of employment as used in The Dalles and Madras forecasts. This was done because the land use inventory performed by Portland State University quantified only the total number of employees by TAZ.

For external TAZs, additional traffic volumes for the year 2015 were estimated based on historic growth on the roadways they represent as well as anticipated growth in employment and population both inside and outside the study area.

Trip Distribution

Vehicle trip distribution, the fourth step in the modeling process, is a method of estimating the origin and destination of trips within the study area. For each TAZ, trip origins were distributed to all of the trip destinations within the planning area and to the roads leading out of the study area.

The basic premise of trip distribution is that the number of trips between two areas is directly related to the size of the attractions or destinations in each zone. For example, more trips would be distributed to a larger attraction zone than a smaller attraction zone. For cities of Hood River's size, the driving times between zones are not expected to influence the driver's decision to travel to one destination zone or another. For example, if two destination zones of equal size are located at different distances away, the trips would be distributed evenly to both destination zones. This procedure was followed for trips originating in all 35 internal zones and the roads leading into and out of the study area.

Trip Assignment

This is the final step in the City of Hood River 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.

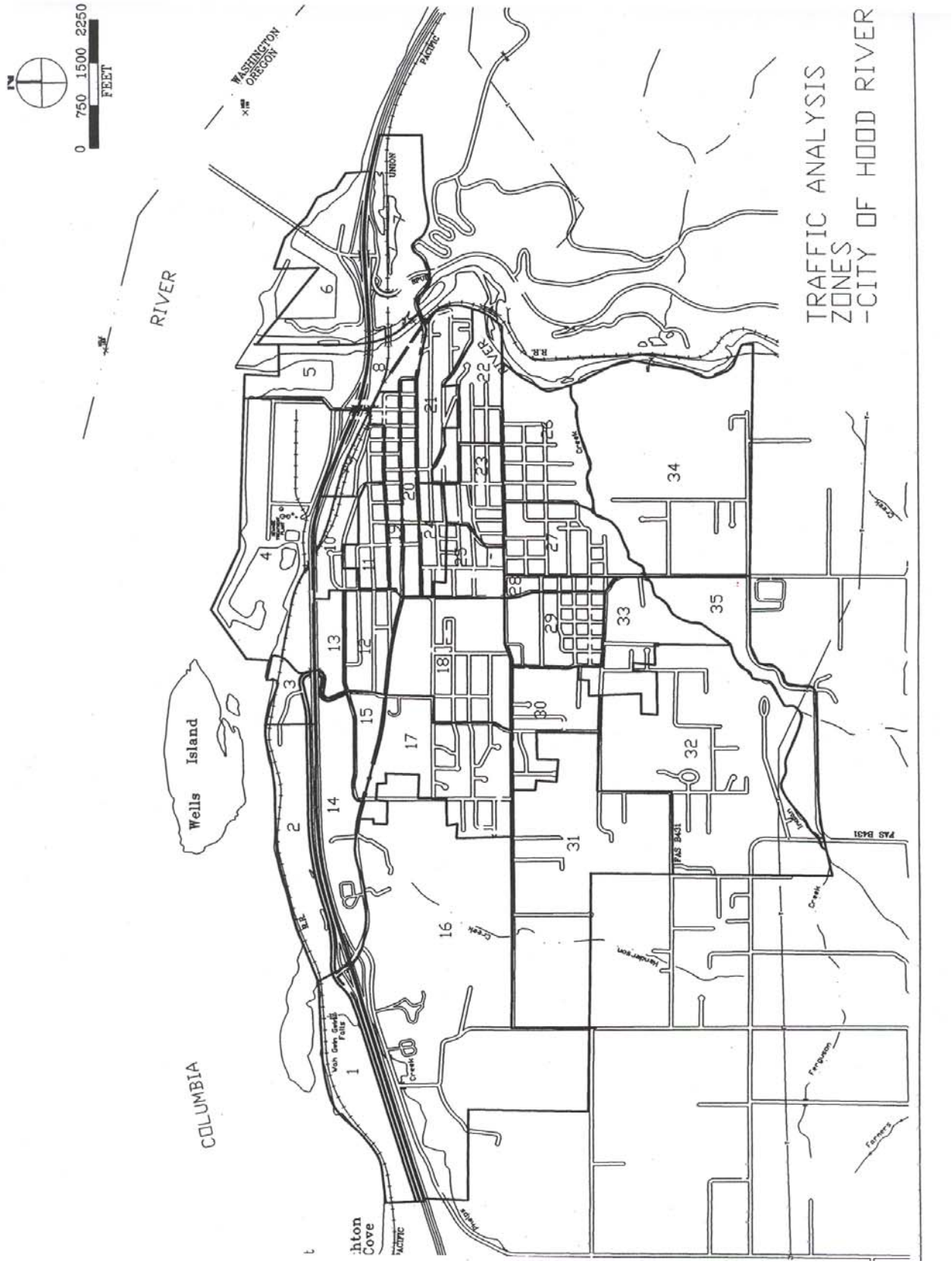
Future Analyses

Once the future additional traffic is assigned it is then added to existing traffic on the street network. The following map illustrates the year 2015 No-Build PM peak hour traffic volumes. This forecast predicts traffic conditions without any street improvements over the next 20 years. An additional forecast was also performed which included the development of two new street extensions; Hutson Road, from Fairview Drive to Cascade Avenue, and Sherman Avenue, from Rand Road to Frankton Road. The resultant PM peak hour traffic volumes from this forecast are illustrated in the following maps.

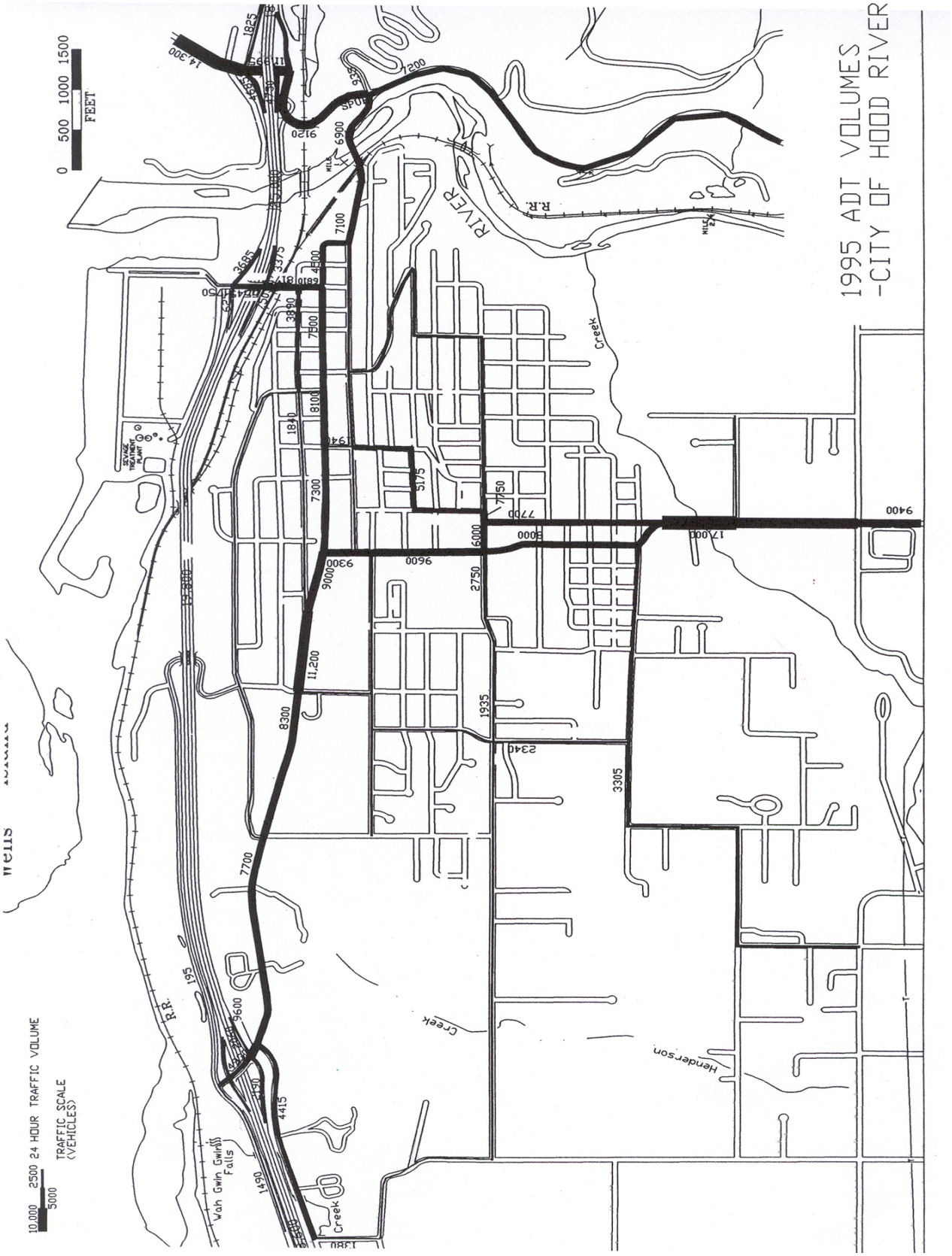
Problem Areas

Differences between traffic volumes in the two future scenarios is minor except in the western quadrant of the city (TAZ 16). Extensive development including residential and commercial/retail is planned to and will most likely occur in this area in the next 20 years. Inspection of the No Build scenario shows that around 690 trips will be generated by and 660 trips attracted to the developments in this area during the PM peak hour. Only a few collector and local streets such as Frankton Road, May Avenue, Sherman Avenue, and Rand Road provide access which is limited by discontinuous or “scenic route” streets. The construction of the new street extensions will increase circulation of traffic and distribute traffic more evenly along collector and local streets. These road extensions will also build upon the city’s current grid pattern development which helps to promote the usage of alternative modes of travel.

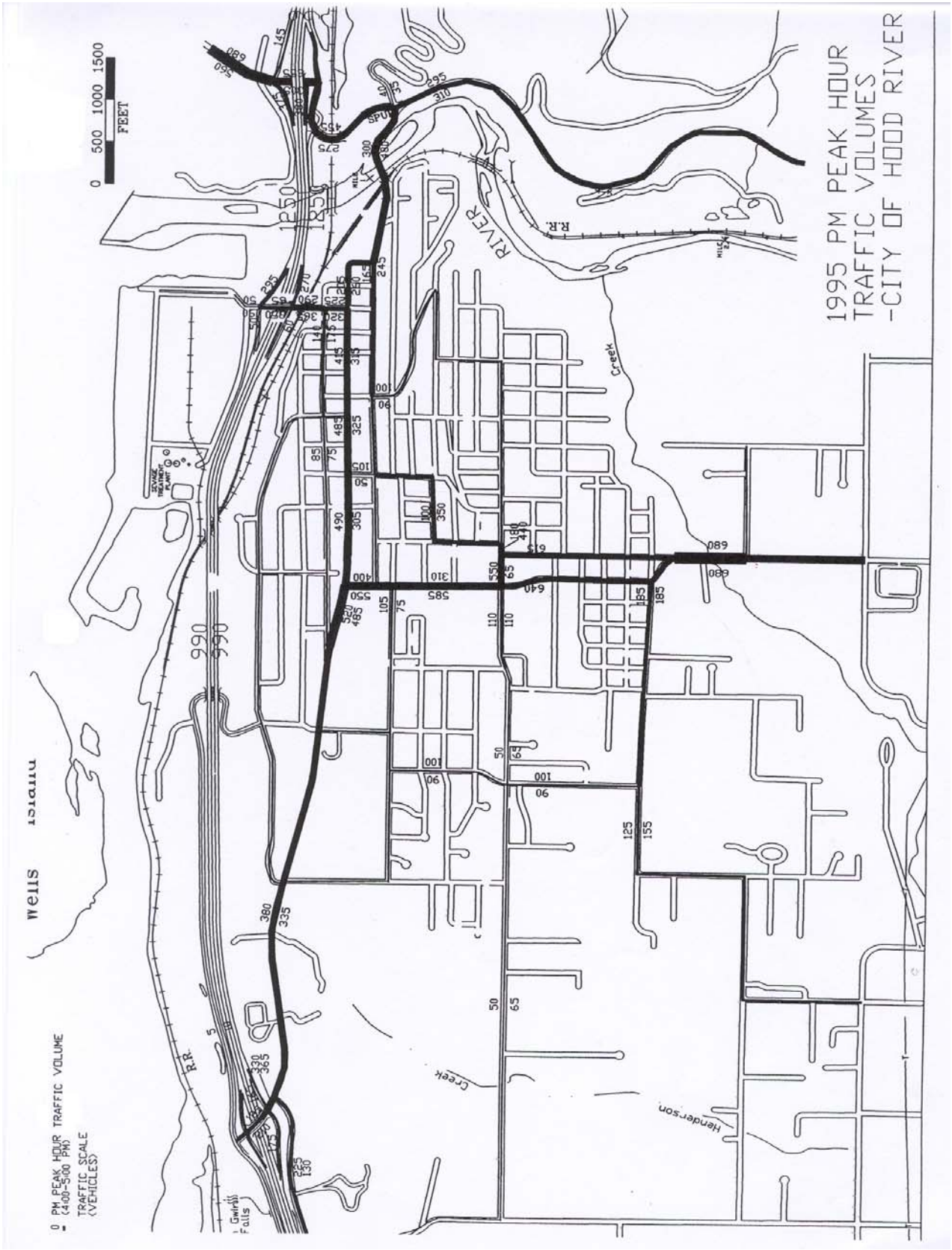
Traffic Analysis Zones Map



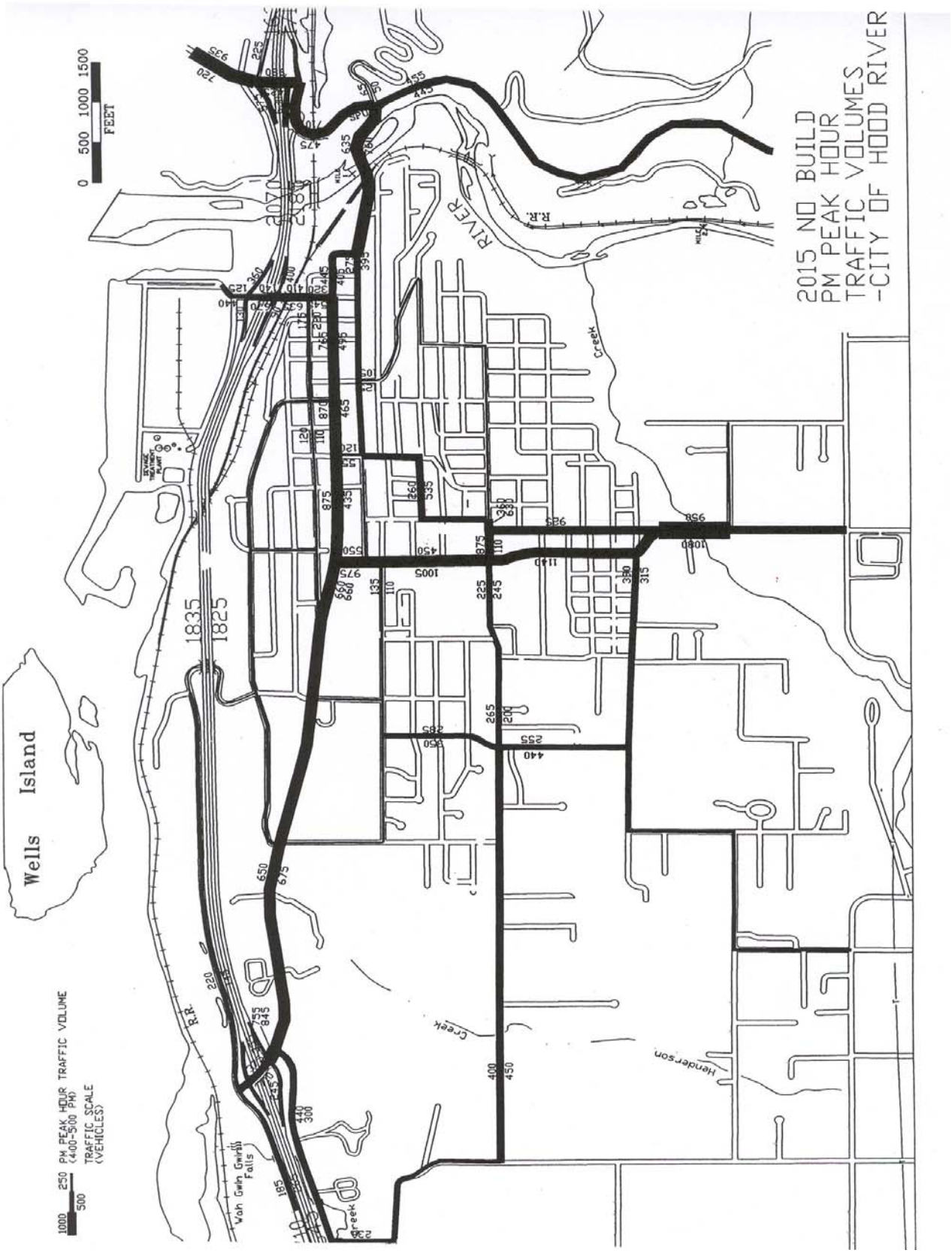
1995 ADT Volumes Map



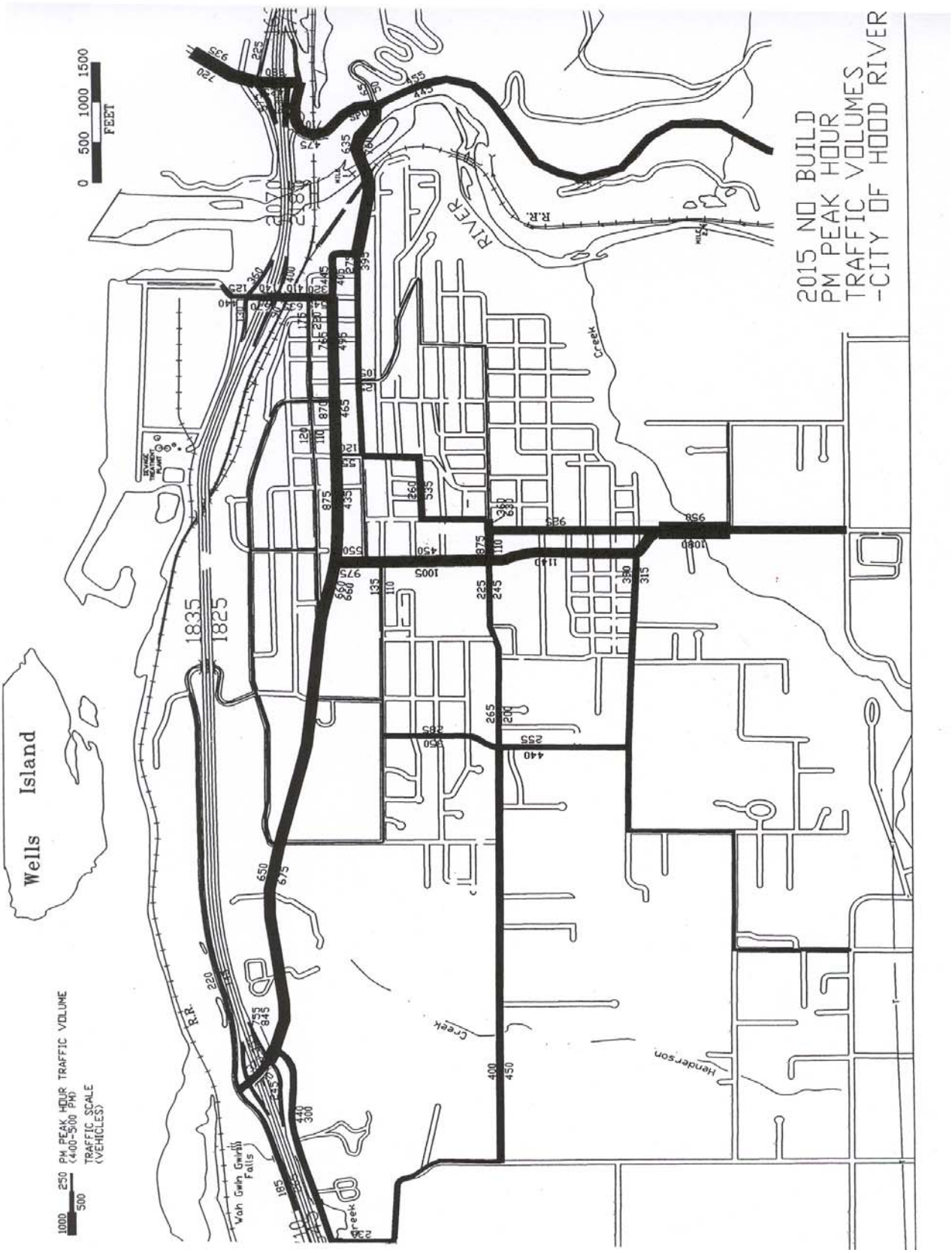
1995 PM Peak Hours Map



2015 No Build PM Peak Hour Traffic Volumes Map



2015 PM Peak Hour Traffic Volumes Map



Substandard Street Improvement List

SUBSTANDARD STREETS IMPROVEMENT LIST

CITY OF HOOD RIVER

STREET SECTION	FROM	TO	LENGTH/FT	WIDTH/FT	SURFACE TYPE	SURFACE RATING	CURB	SIDEWALK RATING	STORM SEWER	COST/FOOT	TOTAL COST
FIRST	CASCADE	OAK	260	40	A/C	POOR	YES	POOR	INADEQUATE	$130.00	$33,800.00
FIRST	OAK	STATE	260	40	A/C	FAIR	YES	POOR	INADEQUATE	$70.00	$18,200.00
SECOND	MAY	PROSPECT	225	25	C/S	FAIR	NONE	NONE	15"	$96.00	$21,600.00
SECOND	PROSPECT	MONTELLO	260	25	C/S	FAIR	NONE	NONE	15"	$96.00	$24,960.00
E. THIRD	HAZEL	E. EUGENE	150	30	C/S	FAIR	NONE	NONE	NONE	$146.00	$21,900.00
E. THIRD	E. SHERMAN	MID BLOCK	170	30	C/S	FAIR	NONE	NONE	NONE	$146.00	$24,820.00
E. FOURTH	HAZEL	E. EUGENE	350	18	C/S	FAIR	NONE	NONE	NONE	$146.00	$51,100.00
FOURTH	S PINE	PINE	180	18	C/S	POOR	NONE	NONE	NONE	$146.00	$26,280.00
SIXTH	CASCADE	OAK	260	40	A/C	POOR	YES	POOR	NONE	$130.00	$33,800.00
SIXTH	OAK	STATE	270	35	A	POOR	YES	FAIR	NONE	$110.00	$29,700.00
SEVENTH	S. PINE	PINE	480	30	A	POOR	YES	POOR	NONE	$130.00	$62,400.00
SEVENTH	MAY	MONTELLO	510	30	A	POOR	YES	FAIR	NONE	$110.00	$56,100.00
SEVENTH	MONTELLO	EUGENE	220	20	A	POOR	NONE	NONE	12"	$96.00	$21,120.00
EIGHTH	CASCADE	OAK	280	44	A	POOR	YES	NONE	NONE	$130.00	$36,400.00
EIGHTH	MONTELLO	MAY	510	20	A	POOR	NONE	NONE	15"	$96.00	$48,960.00
EIGHTH	MAY	JUNE	275	30	A	POOR	YES	NONE	NONE	$130.00	$35,750.00
EIGHTH	JUNE	PINE	50	30	A	POOR	YES	NONE	NONE	$130.00	$6,500.00
NINTH	MARIAN	HULL	180	25	A	POOR	NONE	NONE	NONE	$146.00	$23,360.00
NINTH	HULL	PINE	380	19	A	POOR	NONE	NONE	NONE	$146.00	$52,580.00
NINTH	PINE	JUNE	360	25	C/S	FAIR	NONE	NONE	NONE	$146.00	$52,560.00
NINTH	STATE	OAK	270	28	A	POOR	YES	POOR	NONE	$130.00	$35,100.00
TENTH	LINCOLN	COLUMBIA	220	25	C/S	FAIR	NONE	NONE	10"	$96.00	$21,120.00
TENTH	OAK	STATE	280	28	A	POOR	YES	NONE	NONE	$130.00	$36,400.00
TENTH	SHERMAN	EUGENE	330	34	A	POOR	YES	POOR	NONE	$130.00	$42,900.00
TENTH	WILSON	UNION	240	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$35,040.00
THIRTEENTH	WASCO	CASCADE	670	20	A	POOR	NONE	NONE	18"	$96.00	$64,320.00
THIRTEENTH	CASCADE	OAK	210	25	NONE	POOR	NONE	NONE	18"	$96.00	$20,160.00
FOURTEENTH	A	B	245	30	C/S	GOOD	NONE	NONE	12"	$96.00	$23,520.00
FOURTEENTH	B	C	250	30	C/S	FAIR	NONE	NONE	12"	$96.00	$24,000.00
FIFTEENTH	C	A	510	25	C/S	GOOD	NONE	NONE	NONE	$146.00	$74,460.00
FIFTEENTH	A	BELMONT	240	25	C/S	GOOD	NONE	NONE	NONE	$146.00	$35,040.00
SIXTEENTH	SHERMAN	EUGENE	340	30	C/S	FAIR	NONE	NONE	NONE	$146.00	$49,640.00
SIXTEENTH	C	B	240	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$35,040.00
SIXTEENTH	B	A	250	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$36,500.00
SIXTEENTH	A	BELMONT	230	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$33,580.00
SIXTEENTH	BELMONT	END	680	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$99,280.00
SEVENTEENTH	BELMONT	A	230	3	C/S	GOOD	NONE	NONE	NONE	$146.00	$33,580.00

Substandard Street Improvement List Page 2

SUBSTANDARD STREETS IMPROVEMENT LIST

CITY OF HOOD RIVER

STREET SECTION	FROM	TO	LENGTH/FT	WIDTH/FT	SURFACE TYPE	SURFACE RATING	CURB	SIDEWALK RATING	STORM SEWER	COST/FOOT	TOTAL COST
SEVENTEENTH	A	B	250	30	C/S	FAIR	YES	NONE	NONE	$130.00	$32,500.00
SEVENTEENTH	B	C	230	30	C/S	FAIR	NONE	NONE	NONE	$146.00	$33,580.00
TWENTIETH	SHERMAN	EUGENE	330	20	U	POOR	NONE	NONE	15"	$96.00	$31,680.00
TWENTIETH	EUGENE	PROSPECT	650	20	U	POOR	NONE	NONE	15"	$96.00	$62,400.00
TWENTY FIRST	C	MAY	1000	34	C/S	FAIR	NONE	NONE	NONE	$146.00	$146,000.00
AVALON CT	AVALON WAY	END	350	35	A	POOR	PARTIAL	NONE	INADEQUATE	$138.00	$48,300.00
B	18TH	17TH	280	32	C/S	FAIR	NONE	NONE	NONE	$146.00	$37,960.00
B	17TH	14TH	780	32	C/S	FAIR	NONE	NONE	NONE	$146.00	$77,380.00
B	14TH	13TH	270	30	C/S	FAIR	NONE	NONE	NONE	$146.00	$113,880.00
BELMONT	13TH	22ND	2640	40	A	POOR	YES	PARTIAL	YES	$88.00	$39,420.00
C	22ND	21ST	260	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$227,040.00
C	17TH	15TH	530	25	C/S	FAIR	NONE	NONE	NONE	$146.00	$37,960.00
C	15TH	13TH	540	36	A	POOR	YES	NONE	INADEQUATE	$130.00	$70,200.00
CASCADE	8TH	7TH	380	36	A	POOR	YES	FAIR	YES	$60.00	$21,600.00
COLUMBIA	20TH	18TH	520	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$75,920.00
COLUMBIA	18TH	15TH	650	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$94,900.00
COLUMBIA	15TH	13TH	650	30	A	FAIR	YES	POOR	NONE	$70.00	$45,500.00
COLUMBIA	13TH	8TH	1700	30	C	POOR	YES	GOOD	NONE	$110.00	$187,000.00
E EUGENE	BLUFF RD.	E HAZEL	1170	12	C/S	FAIR	NONE	NONE	NONE	$146.00	$170,820.00
HAZEL	16TH	END	460	12	NONE	POOR	NONE	NONE	NONE	$146.00	$67,160.00
HAZEL	9TH	7TH	720	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$105,120.00
E. HAZEL	SERPENTINE	E. 4TH	1900	26	C/S	FAIR	NONE	NONE	NONE	$146.00	$277,400.00
HULL	12TH	9TH	990	30	A	POOR	YES	NONE	INADEQUATE	$130.00	$128,700.00
JUNE	12TH	W. END	250	30	A	POOR	NONE	NONE	NONE	$146.00	$36,500.00
JUNE	22ND	25TH	740	34	C/S	FAIR	NONE	NONE	NONE	$146.00	$108,040.00
LINCOLN	13TH	10TH	780	32	C/S	FAIR	NONE	NONE	NONE	$146.00	$113,880.00
MARIAN	8TH	WILSON	640	34	C/S	FAIR	NONE	NONE	NONE	$146.00	$93,440.00
MONTELLO	12TH	PARK	640	31	A	POOR	YES	NONE	INADEQUATE	$130.00	$83,200.00
MONTELLO	PARK	10TH	240	30	A	POOR	NONE	NONE	INADEQUATE	$146.00	$35,040.00
MONTELLO	10TH	8TH	450	25	A	POOR	NONE	NONE	INADEQUATE	$146.00	$65,700.00
MONTELLO	8TH	7TH	415	30	A	POOR	NONE	NONE	INADEQUATE	$146.00	$60,640.00
MONTELLO	7TH	2ND	1320	30	A	POOR	YES	NONE	18"	$96.00	$39,840.00
MONTELLO	2ND	END	450	22	C/S	POOR	NONE	NONE	24"	$80.00	$105,600.00
MOLLIE	MONTELLO	7TH	570	20	C/S	POOR	NONE	NONE	NONE	$146.00	$83,220.00
PROSPECT	E. END	2ND	250	20	C/S	FAIR	NONE	NONE	NONE	$146.00	$36,500.00
PROSPECT	2ND	4TH	660	30	A	POOR	YES	POOR	NONE	$130.00	$85,800.00
PROSPECT	4TH	8TH	1110	30	A	POOR	YES	POOR	NONE	$130.00	$144,300.00
STREET SECTION	FROM	TO	LENGTH/FT	WIDTH/FT	SURFACE TYPE	SURFACE RATING	CURB	SIDEWALK RATING	STORM SEWER	COST/FOOT	TOTAL COST
SHERMAN	BLUFF RD.	E. 3RD	635	22	C/S	FAIR	NONE	NONE	NONE	$146.00	$92,710.00
SHERMAN	E. 3RD	E. 2ND	230	22	A	POOR	NONE	NONE	NONE	$146.00	$33,580.00
SHERMAN	E. 2ND	FRONT	550	24	C/S	FAIR	NONE	NONE	NONE	$146.00	$80,300.00
STATE	13TH	9TH	1280	20	C	POOR	NONE	POOR	INADEQUATE	$146.00	$163,960.00
UNION	10TH	9TH	235	15	C/S	FAIR	NONE	NONE	NONE	$146.00	$34,310.00
											$5,013,090.00

Transportation System and Improvement Project List

TRANSPORTATION SYSTEM IMPROVEMENTS PROJECT LIST

CITY OF HOOD RIVER

New Proj No.	Project Location	Project Description	Project Impacts			Project Justification					Project Phasing	Project Cost
			Vehicle	Bicycle	Pedestrian	Access	Economic	Safety	Operations	Upgrade		
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	City of Hood River											
R1IR1	Turning Lanes at South End of One-Way Couplet (12th and 13th)	New Channelization, Signalization, Widening	■		■	✓	✓	✓	✓	✓	Intermediate-Range	$500,000
R1IR2	New Signal at 12th and Pacific	New Signalization	■	■	■	✓	✓	✓	✓	✓	Intermediate-Range	$100,000
R1IR3	Right Turn Lane on Eastbound Oak and 13th	Widening, Channelization	■			✓	✓	✓	✓	✓	Intermediate-Range	$100,000
R1IR4	Additional Southbound Lane on 13th Street	Channelization	■			✓	✓	✓	✓	✓	Short-Range	$25,000
R1IR5	Redesign Intersection at 12th and May	New Intersection, Signalization	■	■	■	✓	✓	✓	✓	✓	Intermediate-Range	$200,000
R1IR6	New Signals at I-84 and OR 35	New Signalization	■	■	■	✓	✓	✓	✓	✓	Intermediate-Range	$300,000
R1IR7	Additional Lanes on OR 35 South of I-84	Widening, Channelization	■	■		✓	✓	✓	✓	✓	Long-Range	$500,000
R1IR8	Northbound Left Turn Lane on OR 35 at US 30	Widening, Channelization	■	■		✓	✓	✓	✓	✓	Long-Range	$75,000
R1IR9	Stop Signs on Front Street at State	New Stop Signs and Restriping	■	■	■	✓	✓	✓	✓	✓	Short-Range	$1,000
R1IR10	New Road Connecting Fairview Drive and US 30	New Roadway	■	■	■	✓	✓	✓	✓	✓	Long-Range	See RC18
R1IR11	New Road Connecting Rand Road and Frankton Road	New Roadway	■	■	■	✓	✓	✓	✓	✓	Long-Range	See RC19
R1IR12	Improve Substandard Streets (See appendix for attached list)	Roadway Improvements	■	■	■	✓	✓	✓	✓	✓	Intermediate-Range	$3,013,094
R1IR13	13th and Button Intersection Chain Up Areas	Widening, Channelization, Signage	■			✓	✓	✓	✓		Intermediate-Range	$200,000
R1IR14	Eugene Street from 12th to 13th	Install Retaining Wall	■			✓					Short-Range	$100,000
	Port of Hood River											
RPIR1	Lift Span Renovation	Hood River Bridge Improvements	■	■	■	✓	✓	✓			Short-Range	$5,000,000
RPIR2	Redecking	Hood River Bridge Improvements	■			✓	✓	✓	✓		Intermediate-Range	$4,000,000
RPIR3	Automated Toll Collection	Hood River Bridge Improvements	■			✓	✓	✓	✓		Short-Range	$650,000
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	City of Hood River											
N1IR1	Connection between Riverside Dr. and Industrial Loop (across I-84)	Ped and Bike Improvements / Overpass	■	■	■	✓	✓	✓	✓	✓	Long-Range	$500,000
N1IR2	Pedestrian Connections at 12th and Front	Ped Improvements		■	■	✓	✓	✓	✓	✓	Short-Range	$5,000
N1IR3	Access to Elliot Park	Bicycle and Pedestrian Accessway		■	■	✓	✓	✓	✓	✓	Short-Range	$15,000
N1IR4	Access along Indian Creek Road	Bicycle and Pedestrian Accessway (Non-motorized)		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$15,000
N1IR5	13th from May to Taylor	Sidewalks		■	■	✓					Intermediate-Range	$19,200
N1IR6	20th from Cascade to Sherman	Sidewalks		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$24,000
N1IR7	22nd from Sherman to Belmont	Sidewalks		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$120,000
N1IR8	Belmont from 22nd to 14th	Sidewalks		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$66,000
N1IR9	Cascade from 20th to 15th	Sidewalks		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$33,500
N1IR10	Cascade from 6th to 5th	Sidewalks		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$7,500
N1IR11	Eugene from 7th to Serpentine Drive	Sidewalks		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$43,800
N1IR12	Oak and Front from 1st to State	Sidewalks		■	■	✓	✓	✓	✓	✓	Intermediate-Range	$15,000

NHR13	Oak from Cascade to 10th	Sidewalks			■	✓		✓	✓	✓	Intermediate-Range	$27,000
NHR14	Serpentine from Sherman to Eugene	Sidewalks			■	✓		✓	✓	✓	Intermediate-Range	$37,000
NHR15	Sherman from Rand to 13th	Sidewalks			■	✓		✓	✓	✓	Long-Range	$185,000
NHR16	State from 12th to 10th	Sidewalks			■	✓		✓	✓	✓	Short-Range	$14,500
NHR17	Wasco from Cascade to Columbia	Sidewalks			■	✓		✓	✓	✓	Long-Range	$270,000
NHR18	Curb Ramps at 200 Selected Locations	Curb Ramps			■	✓		✓	✓	✓	Intermediate-Range	$90,000
NHR19	Curb Extensions in downtown east of 6th.	Curb Extensions			■			✓			Intermediate-Range	$125,000
NHR20	Striping on Cascade at Rand & Cascade at 20th	Striping			■			✓			Short-Range	$1,050
NHR21	12th from Belmont to Brookside	Bike Lanes		■		✓		✓	✓	✓	Intermediate-Range	$2,500
NHR22	13th from Oak to May	Bike Lanes		■		✓		✓	✓	✓	Intermediate-Range	$2,000
NHR23	2nd from Riverside to State	Bike Lanes		■		✓		✓	✓	✓	Short-Range	$1,500
NHR24	9th from State to Eugene	Bike Lanes		■		✓		✓	✓	✓	Short-Range	$600
NHR25	Belmont from 22nd to 12th	Bike Lanes		■		✓		✓	✓	✓	Short-Range	$3,000
NHR26	Cascade from Rand to Oak	Bike Lanes		■		✓		✓	✓	✓	Intermediate-Range	$3,000
NHR27	May from Rand to 12th	Bike Lanes		■		✓		✓	✓	✓	Intermediate-Range	$4,000
NHR28	Oak from Cascade to 13th	Bike Lanes		■		✓		✓	✓	✓	Intermediate-Range	$800
NHR29	State from 9th to Front	Bike Lanes		■		✓		✓	✓	✓	Short-Range	$2,500
NHR30	Brookside Drive	Bike Lanes		■		✓		✓	✓	✓	Long-Range	$125,000
NHR31	May Street from 13th to 14th	Sidewalk(half bridge)			■	✓		✓	✓	✓	Intermediate-Range	$200,000
NHR32	Urban Renewal District in Downtown Hood River	Urban Renewal Plan		■	■		✓			✓	Short-Range	$541,840
	Port of Hood River											
NPHR1	Addition of Sidewalks	Hood River Bridge Improvements		■	■			✓	✓	✓	Short-Range	$1,890,000
	Category 4 — Transit, Rail, Water and Air Improvements											
	City of Hood River											
THR1	Multi-Modal Transportation Center	Multi-Modal Transportation Center	■	■	■	✓	✓	✓	✓	✓	Short-Range	$600,000
THR2	Fixed Route Bus System	Fixed Route Bus System	■	■	■	✓	✓	✓	✓	✓	Short-Range	$200,000
THR3	Passenger Shelter	Passenger Shelter			■	✓	✓	✓	✓	✓	Short-Range	$2,000
THR4	Transit Kiosks and Marketing Program	Transit Kiosks and Marketing Program			■	✓	✓	✓	✓	✓	Short-Range	$40,000
THR5	Transit Phone System Upgrade	Transit Phone System Upgrade		■	■	✓		✓	✓	✓	Short-Range	$10,000
THR6	Park and Ride Lots	Park and Ride Lots	■			✓	✓	✓	✓	✓	Short-Range	$50,000
THR7	Transit/City of Hood River	Joint Vehicle Maintenance and Storage Facility	■				✓	✓	✓	✓	Short-Range	$300,000
	Port of Hood River											
TPHR1	Runway Extension and Land Acquisition	Hood River Airport Improvements	■			✓	✓		✓	✓	Short-Range	$1,500,000
TPHR2	Relocate Operation Terminal and Add Public Rest Area	Hood River Airport Improvements	■		■	✓	✓	✓	✓	✓	Long-Range	$300,000
TPHR3	Add 56 New T-Hangars	Hood River Airport Improvements	■							✓	Long-Range	$1,000,000
TPHR4	Install Fencing	Hood River Airport Improvements	■					✓	✓	✓	Long-Range	$100,000
											Total Cost of City of Hood River Projects	$10,816,380
											Total Cost of Port of Hood River Projects	$14,440,000
											TOTAL COST OF ALL PROJECTS	$25,256,380