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AUG 09 2005  
LAND CONSERVATION  
AND DEVELOPMENT

# Clatskanie Transportation System Plan

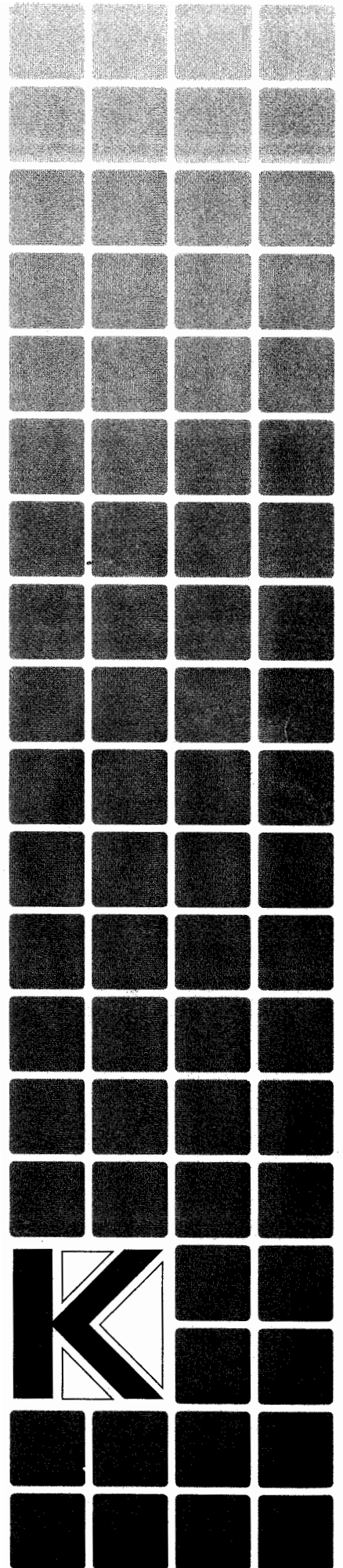
City of Clatskanie, Oregon

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**KITTELSON & ASSOCIATES, INC.**  
Transportation Planning/Traffic Engineering

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August 1997



# Clatskanie Transportation System Plan

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**City of Clatskanie**

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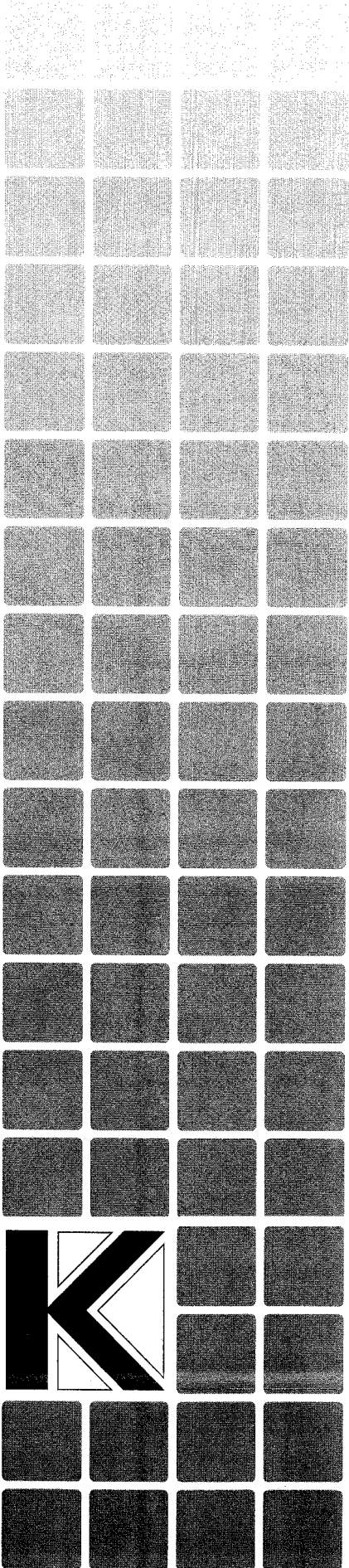
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# Executive Summary



## Executive Summary

The Clatskanie Transportation System Study is an area-wide study of the comprehensive transportation system in the Clatskanie area. The study was jointly conducted by the Oregon Department of Transportation, the City of Clatskanie, and the City's Planning Commission together with the consultant team. This plan has been prepared in accordance with the requirements of Oregon Revised Statute 197.912, OAR 660 Division 12 and the Transportation Planning Rule (TPR). As a City of fewer than 2,500 people, the City of Clatskanie may be eligible for an exemption from OAR 660, but the Council has opted to prepare a long-term transportation plan for the City which will help guide development in the future in a way that will ensure Clatskanie's best chances of success and prosperity.

### Scope

Elements of the City's transportation system examined in the Clatskanie Transportation System Study include road, rail, pedestrian, bicycle, transit, water, air and pipeline. Existing conditions for users of these various systems were analyzed to determine if and where problems exist. This included analysis of transportation safety. Conditions were examined for a typical summer weekday when the system experiences a higher degree of usage than is typical over the year.

### Existing Conditions

It was found that generally all systems are currently operating at acceptable levels of service. While there are no areas of immediate concern, some traffic accident locations were identified including the intersections of Howard Drive and Orchard Street with Highway 47, and the intersection of Van Street/U.S. 30 where there is no left-turn refuge lane. It was identified that there are insufficient safe locations for cyclists and pedestrians to safely cross U.S. 30. The need to identify land for future residential and industrial/commercial development was stressed, and it was recognized that one or more parallel alternative routes to U.S. 30 should be identified and developed to reduce the community's reliance on the highway.

### Study Process

A review was made of the potential for future growth in population and employment over the next 20 years given the land within the Urban Growth Boundary. Comprehensive Plan population and employment estimates were used to forecast the increase in the number of trips with at least one trip-end in Clatskanie. For growth in highway trips traveling through Clatskanie, ODOT permanent recorder data were used. A UFOSNET travel forecasting model developed by Portland State University was used to assign future traffic to the roadway network. Using these traffic growth forecasts, a 'no-build' alternative was examined to determine the shortcomings of the existing system under future travel demand. Based on the identified needs, various improvement alternatives were developed and tested.

### Plan

This report presents a package of improvements for each of the transportation system elements. Preliminary planning level cost estimates have been prepared as well as an implementation scheme which simply recommends which improvements should be made during the first decade and which should be scheduled for the second decade. Proposed land use ordinance modifications are presented for the review of the Planning Council.



### **Bicycle/Pedestrian**

Relatively poor system connectivity can be greatly enhanced by sidewalk infill projects and reconstruction where sidewalks have deteriorated badly on collector and arterial level streets. A new pedestrian/bicycle bridge is proposed to link Belair Drive with the Orchard neighborhood, currently separated by a steep ravine. This would greatly improve accessibility for high-school students. All new streets will be constructed to County standards with sidewalks and bikelanes provided on streets that are part of the bicycle circulation plan.

### **Transit**

Close cooperation and support is required between the City and Colco to ensure the efficient operation of this much needed facility. The City will encourage Colco to investigate a connection between Clatskanie and Longview/Kelso via Cowlitz transit.

### **Rail**

The City encourages and supports rail service on the BN branch line as a means to ensure a diverse transportation system, and to ensure the development viability of Port Westward which, in the absence of good roadway access, will rely on rail as well as river transportation.

### **Land use**

Compact development will ensure the maximum possible use of non-automobile modes for transportation in Clatskanie's future. A development pattern which allows people to walk to necessary services including shopping, schools and work and recreation opportunities will minimize the need for expenditure on new roads. To encourage this type of development, the city needs to ensure that affordable and attractive land, well served by roads and public utilities, is available for development within the urban growth boundary, and where possible, within the city limits.

### **Roadways**

The plan includes projects for both new roads and road upgrading/improvement. A number of new collector roadways will open up additional land for development and enhance the existing street circulation pattern. These include SW 7th Street and SE Thompson Street. SE 3rd Street, SE Truehaak Street and NW Pine Street are to be reclassified as collector streets and NW/NE 5th Street is to be upgraded and resurfaced. The plan includes provision for future traffic signals at U.S. 30/Belair Drive and at U.S. 30/Van Street.

The City of Clatskanie will work closely with both Columbia County (currently developing their transportation system plan) and ODOT to develop consistent plans, and implement the adopted Clatskanie Transportation System Plan to ensure a transportation system that will support a desirable, economically prosperous and environmentally sound future for the community.

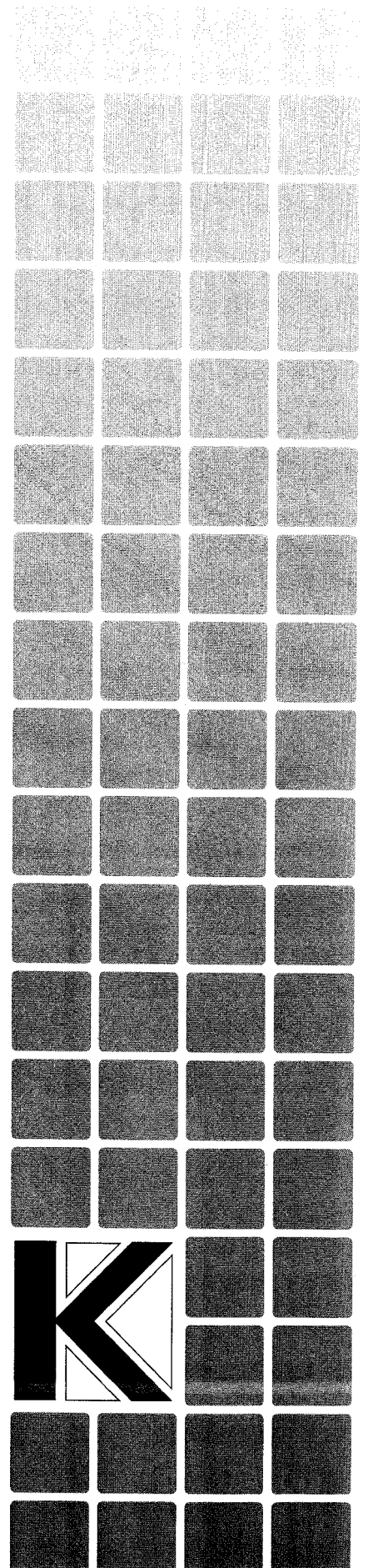
### **Access Management Plan**

The City of Clatskanie will develop a detailed access management plan for sections of U.S. 30 between the Swedetown Overpass and the Clatskanie River bridge, and the section between Bryant Street and Highway 47. All plans for redevelopment of sites along U.S. 30 should be reviewed for potential to implement access spacing standards according to the Oregon Highway Plan.

**Section 1**

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Introduction



## Introduction

With the assistance of a grant from the Oregon Department of Transportation, the City of Clatskanie embarked on the Clatskanie Transportation System Study and has prepared a twenty year transportation system plan as part of their comprehensive plan. The Transportation Planning Rule (OAR 660 Division 12) does not require cities with populations under 2,500 to prepare a transportation system plan, yet the City felt it could benefit from this pro-active approach to long-range planning. Apart from the benefit to current and future citizens and business people, Clatskanie's location on the Lower Columbia Highway which is a highway of *Statewide Importance* makes its future plans of great interest to the Department of Transportation.

This Report presents the Clatskanie Transportation System Plan which includes the review comments of the Planning Commission as well as reviewing agencies including the City of Clatskanie, Columbia County, ODOT and the Oregon Department of Land Conservation and Development (DLCD).

This plan consists of the following:

- An analysis of needs.
- A pedestrian and bicycle mobility plan.
- A transit plan.
- A rail, air, water and pipeline plan.
- A roadway plan for a network of arterial and collector streets.
- A Finance Plan
- Land use policies and ordinances for implementing the proposed transportation system plan.

Appendix E at the back of this document provides a glossary of transportation terms.

### PUBLIC INVOLVEMENT

The Oregon Transportation Plan and the federal ISTEA call for public and interagency involvement in all phases of the transportation planning process. Regulations for each the OTP and ISTEA call for information about the proposed plan, including supporting information, to be available to the public. Various methods are available for ensuring public dissemination of information. In the case of the Clatskanie Transportation System Study, Planning Commission members served as an advisory committee. In addition, at the beginning of the process, a public information *Newsletter* (see Appendix A) was circulated with the City's water bill to announce the commencement of the study, explain the study process, and to solicit public input via the Public Works director, or attendance at the public meetings at which interim findings were presented to the Advisory Committee.

Planning Commission members were interviewed as "key" members in the community who have contact with the residents and a good understanding of the planning process. These interviews provided some insight into the "stakeholder concerns" within the community. A description of these is included in the following section on *Existing Conditions*.

## STUDY GOALS/OBJECTIVES

The goals and objectives of the Clatskanie Comprehensive Plan, of which the Transportation Plan will become an adopted element, were reviewed. These goals and objectives are:

- to ensure maintenance of Clatskanie's unique livability,
- to provide wise conservation of natural resources,
- to manage land utilization in harmony with the needs of the community,
- to address the requirements and policy concern of the Oregon State Planning Goals and Guidelines, and
- to provide specific program definition and action steps for each goal element.

The goals developed for the Transportation System Plan were to develop a transportation system plan that would:

- ensure safety for all travel modes,
- protect, maintain and improve the transportation environment,
- balance the variety of demands on the transportation system to preserve and extend the useful life of all facilities,
- allow for the future provision of mobility for the community,
- improve circulation, and
- maximize the cost effectiveness of any necessary transportation improvements to the system.

The Transportation System Plan includes: an analysis of existing conditions; identification of short and long-term transportation improvements; a transportation system improvement plan; a transportation finance plan and transportation-related ordinances.

## ORGANIZATION OF THIS REPORT

**Section 1** of this report provides an **introduction** to the study process as well as a description of the study scope and the study area. **Section 2** describes the assessment of **existing conditions** which commenced with inventorying all transportation facilities within the urban growth boundary (UGB). The inventory was used to develop an understanding of the physical, operational, traffic safety and travel characteristics of all major roadways and other transportation facilities in the Clatskanie area.

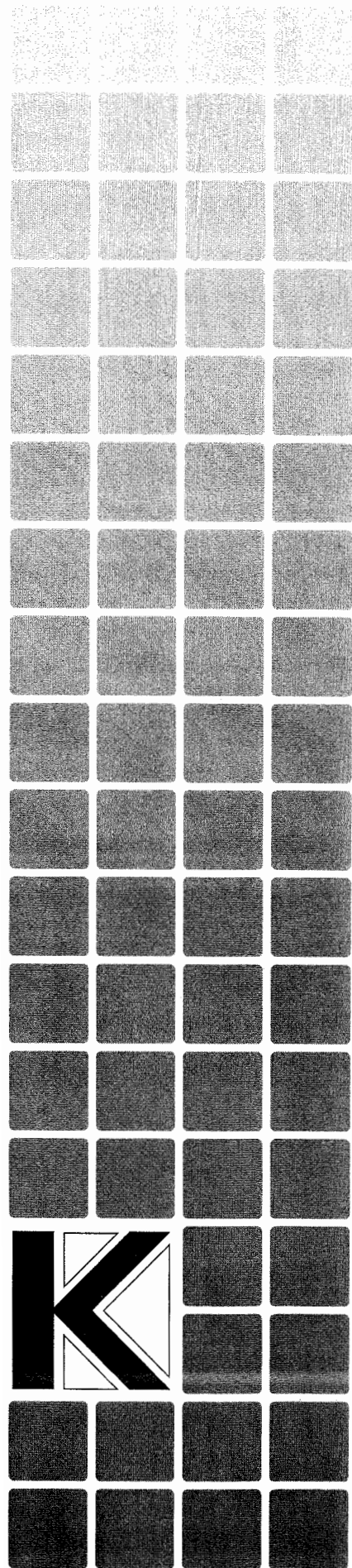
Long-term **future transportation needs** are identified in **Section 3** in the light of anticipated local and regional growth based on the latest update of the Comprehensive Plan. Included in this section is an evaluation of a number of alternative improvement scenarios for identified transportation system shortcomings. The **transportation system improvement plan** is described in **Section 4**. This section includes the elements specific to the roadway plan, bicycle and pedestrian plans, and the air, rail, water and pipeline plans. The implementation plan including timing of improvements is also included in this section.

**Section 5** contains the **transportation finance plan** and **Section 6** includes **land-use ordinance modifications** necessary to effectively implement certain elements of this transportation system plan.

**Section 2**

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**Existing Conditions**



## Existing Conditions

### INTRODUCTION

This section summarizes the state of existing transportation conditions in the City in development of the Clatskanie Transportation System Plan (TSP). The following elements of the system are discussed:

- ▶ study area
- ▶ stakeholder concerns
- ▶ review of plans and policies
- ▶ current land use, population and employment
- ▶ street system
- ▶ pedestrian system elements
- ▶ bicycle system elements
- ▶ public transportation
- ▶ truck traffic routes
- ▶ air/ rail/ water/ pipeline facilities
- ▶ traffic operations conditions
- ▶ traffic safety conditions
- ▶ roadway access conditions

### STUDY AREA

Clatskanie is located in northwest Oregon, approximately 61 miles northwest of Portland along the Lower Columbia River Highway (U.S. 30) corridor. The Columbia River lies approximately five miles to the north of the City. U.S. Highway 30 forms the major transportation link through the community from the east to the northwest. Highway 47 begins in Clatskanie and connects the town with Mist to the south. Traffic circulation in Clatskanie is limited by severe topographic constraints including the Clatskanie River and steep hillsides.

The recognized study area boundary for this study coincides with the Urban Growth Boundary (UGB) which is shown in Figure 1 together with the City limits and the street system.

A number of unique conditions exist in the City of Clatskanie which make transportation planning for the community somewhat unique. Some of these conditions include:

- the narrow Clatskanie River valley and steep hillsides to the north and south of the town,
- the historical influence of the logging industry has associated with it a large number of heavy truck trips,
- the City's location on the lower Columbia River Highway transportation corridor, which serves as a major coast access route from the Portland metropolitan area, has experiences large seasonal fluctuations of traffic including a significant amount of summertime bicycle traffic.

## STAKEHOLDER CONCERNS

At the outset of this project, a meeting was held with the City's Planning Commission who were to serve as the advisory committee for the study. At this meeting, Commissioners were asked to share some local perspectives on the local transportation system. Questions were asked to ascertain local sentiments on transportation problems in a number of areas including:

- Safety Concerns
- Highway traffic
- Liveability
- Alternative Mode Travel
- City streets

A list of the concerns raised at that meeting is included in Appendix A. The plan has been formulated with many of these comments in mind, addressing them wherever possible to ensure a plan that is accepted by the community, and one that addresses the needs and desires of the community.

## PLANS AND POLICIES REVIEW

As part of this study, an extensive number of local, regional and national plans and policies were reviewed to ensure the study would be supportive of and integrated with relevant policies, goals and standards. The documents reviewed included:

- ▶ ISTEA
- ▶ The Oregon Transportation Plan (OTP)
- ▶ LCDC Transportation Planning Rule (TPR)
- ▶ The Oregon Highway Plan (OHP)
- ▶ U.S. 30 Interim Corridor Strategy Plan
- ▶ Columbia County Comprehensive Plan
- ▶ Clatskanie Comprehensive Plan
- ▶ Clatskanie Bicycle Plan
- ▶ Columbia River Corridor Interim Strategy Plan

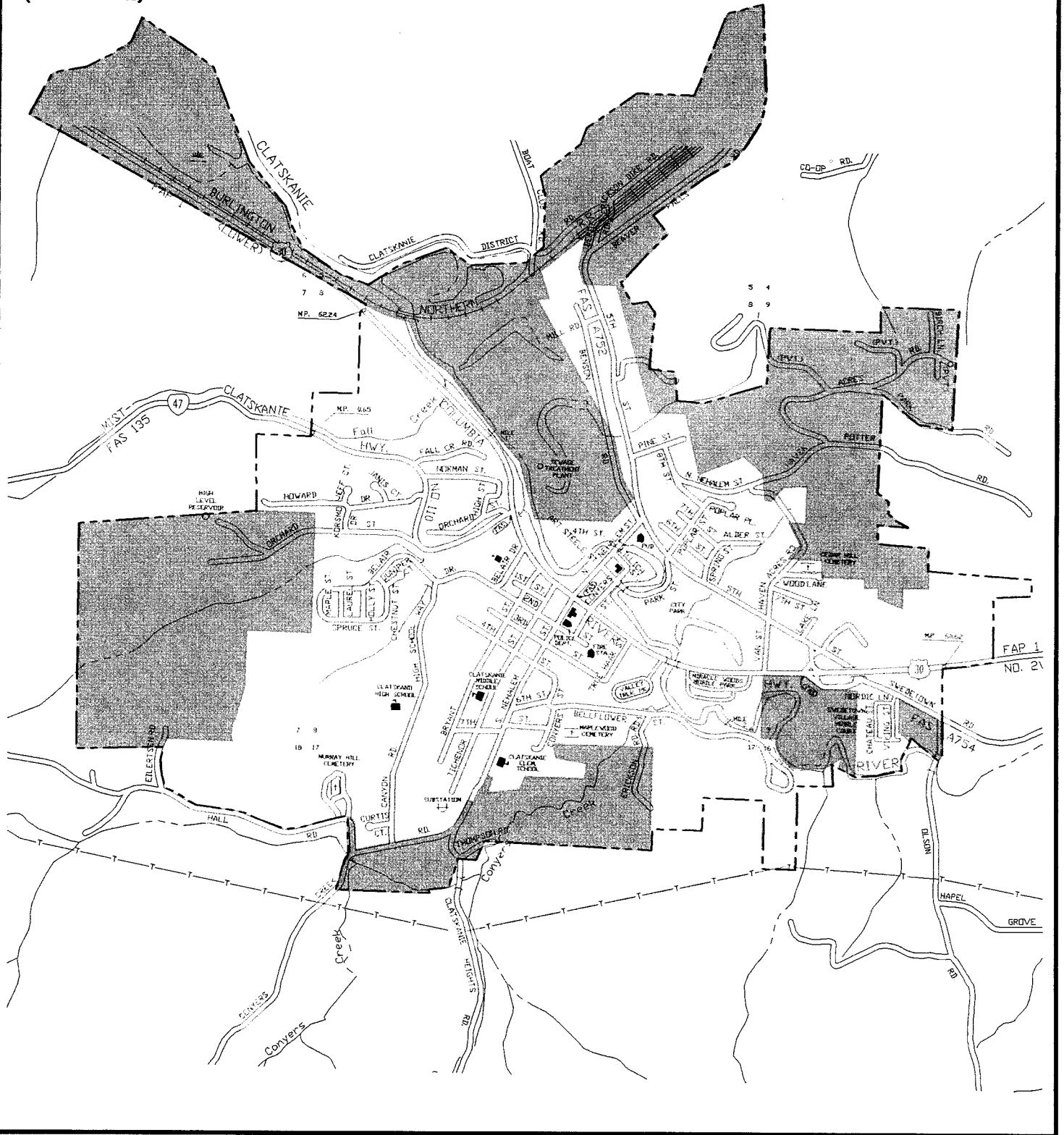
The *Oregon Transportation Plan* (OTP) defines Goals, Policies and Actions for the State over the next 40 years. It provides direction for the coordination of all travel modes and the relationship of transportation to land use, economic development, the environment and energy use. The OTP further identifies a coordinated multi-modal transportation system, a network of facilities and services for air, rail, highway, public transit, pipelines, marine transportation, bikeways and other modes of transportation.

The Oregon Land Conservation and Development Commission (LCDC) adopted the *TPR* as a means to implement the statewide planning Goal 12 (transportation). The rule requires ODOT, regional planning bodies and local governments to:

1. Provide a network of transportation facilities and improvements to meet identified state, regional and local transportation needs. This is achieved through better coordination between ODOT, the MPO's, counties and special districts providing transportation services.



NORTH  
(NOT TO SCALE)



**LEGEND**

CITY LIMITS



URBAN GROWTH BOUNDARY

**STUDY AREA**

TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE

1





2. Develop a multimodal transportation system plan that encourages alternatives to and reduced reliance on the automobile.
3. Amend land-use regulations and subdivision ordinances to all transportation facilities and improvements and mandate development patterns that are pedestrian, bicycle and transit friendly.
4. Ensure that planned land uses are compatible with the function and capacity of the planned transportation system network.

The rule describes in detail the need for and preferred approach to developing a transportation system plan, and includes the required elements of transportation system alternatives and the final plan. It requires interagency coordination and participation.

The *Intermodal Surface Transportation Efficiency Act (ISTEA)* became law in 1991, authorizing federal highway and mass transit programs through September 30, 1997. Congress is expected to consider reauthorization legislation in 1997. ISTEA introduced a new and dramatically different focus on the objectives and role of our national surface transportation system: to enhance personal and commercial mobility and improve transportation safety. ISTEA promulgated a federal surface transportation policy based on system outputs and performance, on bottom-line measures of the benefits justifying this significant federal investment.

The major programs funded under ISTEA include:

- ▶ National Highway System
- ▶ Surface Transportation Program
- ▶ Bridge Program
- ▶ Safety

There are a number of other programs funded by ISTEA including ITS (Intelligent Transportation Systems) and mass transit, but most of them will not apply to the Clatskanie area. Significantly, ISTEA places restrictions on funding that would benefit single occupant vehicles. This has an impact on the future alternatives for Clatskanie's transportation system.

The Clatskanie Transportation System Plan has been developed while taking into account the findings and recommendations of these plans and policies wherever possible. In some cases, references are made to these studies where they may not yet be completed (as with the Columbia County TSP.)

## **LAND USE/DEMOGRAPHICS**

Clatskanie's development pattern has been shaped by its topography, the State Highways and the Clatskanie River. Historic commercial and marine related uses are located on the Clatskanie River flood plain with residential uses located on the valley sides to the north and south. Although there is some street-oriented small shop retail, most of the commercial uses on the highway are auto-oriented and of relatively low intensity. Light industrial and commercial uses are located to the east of downtown along U.S. 30 and N.E. 5th Street. Logging industry uses are located to the northwest on the Clatskanie River, canals, and the railroad near Beaver Falls Road.

Most of Clatskanie consists of low density residential development. Single family homes on modest lots (5,000 - 8,000 square feet) are located on the hills north and south of the valley. In the hills

higher above downtown, development is much less dense, as the topography is even more severe.

### ***Current Population***

Clatskanie has experienced a fluctuating, but overall growing population since the 1930's. Table 1 shows the historic and current (1995) population figures for the City of Clatskanie.

**Table 1  
Historic Population Growth**

<b>Year</b>	<b>Population</b>
1930	739
1940	608
1950	901
1960	797
1970	1,286
1980	1,648
1990	1,780
1995	1,885

### ***Population Projections***

There is a wide range of estimates for Clatskanie's future population growth. Factors that are expected to contribute to Clatskanie's growth include the growing influence of the Portland Metro Area, a rise in tele-commuting and a desire for small-town living and the attraction of businesses to the lower Columbia River corridor as the available workforce in the Portland metro area becomes more and more constrained. Table 2 shows Comprehensive Plan population growth projections for Clatskanie.

**Table 2  
Clatskanie Urban Growth Area Population Projections**

<b>Source:</b>	<b>2000</b>	<b>2016</b>
Center for Population Research (PDIA)		3,113
1983 Comprehensive Plan	4,215	
1994 Comprehensive Plan (low)	3,156	
(medium)	4,215	
(high)	4,656	

The 1994 Comprehensive Plan figure of 3,156 people represents continuation of the low density

development that has characterized Clatskanie, but assumes a marked increase in the pace of development. The PSU projection of 3,113 is based on Clatskanie's proportion of the total Columbia County population for 2016, and is somewhat lower than the Comprehensive Plan projection for the year 2000.

### ***Employment***

According to 1990 Census Data, total employment in Clatskanie was 660. Jobs were concentrated in the following areas with the number of jobs in each category shown in parenthesis:

* retail trade	(96)
* communications	(19)
* manufacturing	(235)
* education	(81)
* other	(229)

Census data indicates that Clatskanie residents commonly work outside the community. The creation of a diverse, stable job base in Clatskanie is one of the City's most important objectives in terms of comprehensive planning.

## **TRANSPORTATION INVENTORY**

### ***Roadway Facilities***

All public roadways in the City of Clatskanie fall under the responsibility of one of three jurisdictions - the Oregon Department of Transportation (ODOT), Columbia County and the City.

#### ***State Facilities***

U.S. Highway 30, also known as the Lower Columbia River Highway, through Clatskanie is a highway of Statewide Importance, an Access Oregon Highway and a State Scenic Highway according to the Oregon Highway Plan (OHP). This roadway facility falls within ODOT's jurisdiction. The highway, which connects Portland and Astoria, is the most historic and most populated route between Portland and the coast. It serves as a commuter route, serves high truck volumes year round, and in the summer, sees some bicycle and recreational traffic. In addition to its function as a state route, the highway provides access to the many businesses located along the highway.

#### ***U.S. 30***

U.S. 30 enters Clatskanie from the east as a three-lane facility (with two eastbound lanes climbing out of the valley) with a posted speed of 45 mph near the City limits immediately east of the Swedetown overpass. The highway narrows to two lanes before the Swedetown Road overcrossing, and posted speed drops to 30 mph near Van Street. The two lane section continues past the Clatskanie River Bridge where it widens to four lanes. A center median divides the highway from Conyers Street westward to Bryant Street, beyond which there is a two-way center left turn lane making a five lane section which continues beyond the Highway 47 intersection. The highway has left-turn lanes at the signalized intersection at Nehalem Street. Posted speed increases to 55 mph to the west of the Highway 47 junction. Pavement condition along U.S. 30 is generally good through Clatskanie, with some sections rated fair in the east part of town.

Between the east City limits and the Clatskanie River bridge, no bike lanes are provided, although paved shoulder width varies between 2 and 6 feet which accommodates cyclists. West of the bridge, paved shoulder width varies between nothing and four feet. Sidewalks are provided west of TrueHaak Street on both sides, although there are sections missing. The sidewalk on the north side ends west of Nehalem Street. The only on-street parking on U.S. 30 in Clatskanie occurs to the west of Nehalem Street on the north side.

#### *Highway 47*

Highway 47 is a two-lane facility where it enters the City from the south. Ditch drains exist on either side of the street and no shoulders, sidewalks or bicycle lanes are provided. The speed on this facility inside the City is 30 mph. Pavement condition is generally fair.

#### *County Facilities*

Columbia County maintains the following roads in the Clatskanie District:

- Beaver Falls Road (old Highway 30)
- Hall Road
- Conyers Creek Road
- Kelty Road
- Olson Road
- Swedetown Road
- Haven Acres Road
- GP Erickson Road

Each of these is a two-lane facility. No bike lanes are provided on any of these roads and sidewalk provision is minimal. Pavement condition on these County facilities varies from fair to poor.

#### *City Facilities*

The remainder of the streets in Clatskanie are owned and maintained by the City. The City's streets are classified as Arterial, Collector and Local Streets. Arterials and Collectors as classified in the Comprehensive Plan are listed in Table 3.

**Table 3  
Existing Arterial/Collector Street System**

Street Name	Functional Classification	Number of Lanes
Highway 30	Arterial	2/4/5
Highway 47	Arterial	2
NE/NW 5th Street/ Swedetown Road	Arterial	2
S. Nehalem Street	Arterial	2
N.E. Poplar Street/N.E. 8th Street	Collector	2
N. Nehalem Street/ Haven Acres Road	Collector	2
S.W. Howard Drive	Collector	2
S.W. Orchard Street	Collector	2
S.W. Belair Drive	Collector	2
S.E. Bellflower Street	Collector	2
Hall Road	Collector (outside City)	2
Conyers Creek Road	Collector (outside City)	2
Kelty Road	Collector (outside City)	2
Olson Road	Collector (outside City)	2

Pavement conditions on the local City streets in Clatskanie vary from poor to good, although many City streets are in poor condition. The City has acquired the software to build a roadway database, and has begun the inventory process with sidewalks. An inventory of road pavement characteristics will begin in 1997, and this information will be used in preparing a repair/replacement schedule.

#### ***Pedestrian Facilities and Activity***

Clatskanie's pedestrian facilities are limited to sidewalks in the older parts of the City. Good sidewalks of at least six feet wide exist in the residential and commercial areas along Nehalem Street and in some sections along Highway 30.

In the residential neighborhood south of U.S. 30, many property frontages have sidewalks in varying states of repair. Beyond these areas, there are very few sidewalks. There are no sidewalks throughout most of the residential development to the north of U.S. 30, or in the developments accessed via Belair Drive and Howard Drive/Orchard Street. Pedestrian crossing opportunities along U.S. 30 are somewhat limited. The signal at Nehalem Street has push button-activated walk signals and crosswalks. In addition, there is a crosswalk located at Belair Drive which serves the Safeway commercial center.

Pedestrian activity in Clatskanie is affected by the steep valley sides north and south of the highway

and the State highway through town. Despite these deterrents, observations revealed there is a significant amount of pedestrian travel, and this is most prevalent during the warmer months. Activity is centered around the downtown commercial areas, the Library, and the schools. These areas coincide with where the best sidewalks are provided, yet there are missing links in the sidewalk system which would enhance this mode of travel. Outside of the area described, the narrow streets, lack of sidewalks and steep grades inhibit safe pedestrian movement. Clatskanie's elementary, middle and high schools are all located south of U.S. 30 and thereby are cut off from the neighborhoods on the north side of the town by the highway, making safe crossing opportunities of this facility of paramount importance.

Installation of sidewalks along roadways is an integral part of pedestrian circulation and safety. Sidewalks remove pedestrians from the roadway surface, separating pedestrian and vehicular activity and movements. This minimizes pedestrian/vehicular conflicts, increases driver and pedestrian comfort, and smooths the flow and operation of pedestrian and vehicular traffic. The City of Clatskanie has classified sidewalk conditions along 11.2 miles of roadway within the city limits. Approximately 4,800 linear feet of sidewalk currently exists in good/moderate condition along different portions of roadway throughout the city. The east sidewalk on Nehalem Street, between Lillich Street and NW 5th Street, is in poor condition. The remaining 10.2 miles of roadway classified do not have sidewalks.

### ***Bicycle Facilities and Activity***

A Bicycle Transportation Plan was prepared for the City and adopted by the Council in December 1994. The plan outlines goals of the community relating to bicycle transportation, and presents design guidelines and requirements for facilities including:

- ▶ on-street facilities
- ▶ parking
- ▶ signing
- operations and maintenance
- ▶ education
- ▶ funding

Currently there are no designated bikeways in the City of Clatskanie. Topographical constraints limit the attractiveness of this mode of transportation in the City; however the lack of safe and convenient bicycle facilities is an additional hindrance that can be overcome. The narrow and steep-sided valley in which the City is located does not lend itself easily to this mode, and very little activity was observed during the data gathering period (May 1996).

Primary bicycle activity centers around major trip generators include the elementary, middle and high schools south of U.S. 30, the City park on the Clatskanie River, the commercial centers, and the library on Conyers Street.

### ***Public Transportation***

Columbia County Transit (COLCO) provides public transit service to all Clatskanie residents via a dial-a-ride program. COLCO uses 14-seat minibuses and regular minivans to provide door-to-door service for residents. Three vehicles are based in Clatskanie, each of which is equipped with a wheelchair lift or ramp.

In 1995, approximately 22,000 trips were made via this mode by Clatskanie residents. Although the service is offered to all, approximately 90 percent of the annual trips made in Clatskanie serve senior citizens and disabled people. The majority of trips are made to medical facilities, and because there are no hospital facilities and limited medical facilities in Columbia County, many trips are made across the Columbia River into Washington State (Longview and Kelso). Round-trip fares range between \$0.50 for local in-town trips and \$2.00 for trips to Longview. For senior citizens, these are "suggested" fares and are not compulsory. The service is coordinated by a volunteer dispatcher from the senior center who is on duty daily between 8:00 am and 1:00 pm. After local dispatchers have left for the day, customers call the St. Helens COLCO office on a toll free number where full-time staff schedule a ride for patrons. A COLCO spokesperson said that although service calls are growing each year, the service is not used as much as they would like. In terms of capacity, COLCO indicated that there are very few calls that cannot be serviced. The only incidences of this kind are when a client calls to late to be included in the schedule for the day.

COLCO has an annual operating budget of approximately \$260,000. Federal and State subsidy grants account for between 20 and 25 percent of this budget, with the rest funded by local sources including corporate and private donations. COLCO will introduce regularly scheduled service in the U.S. 30 corridor between Clatskanie and Portland during 1996 using a newly acquired 35-seat bus. Five scheduled round-trips are planned between 6:00 a.m. and 7:00 p.m. each weekday. The cost for the round-trip will be \$4.00. Local minibus and minivan service will provide feeder-service to this route within Clatskanie.

#### *Existing Capacity*

The administration of COLCO was contacted to determine what the existing "capacity ratio" is. Currently, the vast majority of calls are serviced. The only requests for trips that cannot be fulfilled are those when passengers call within a few hours of needing a ride, and the available vans and drivers are already all scheduled. Riders are requested to call the day before they require service, and for those who do, service requests are almost never denied.

#### *Air Transportation*

Regularly scheduled national and international air transportation is provided via Portland International Airport which lies approximately 60 miles away and is accessed via U.S. 30 or I-5. Regularly scheduled air service between Astoria and Portland has recently been reintroduced by Horizon with three round trips per day. The Astoria airport is approximately 35 miles away by road, but no public transportation currently exists to enable residents to make this connection. In addition to these two airports offering scheduled service, the Kelso airport, approximately 25 miles away, offers general aviation facilities.

#### *Freight Rail*

Clatskanie is served by the Astoria Branch of the Burlington Northern railroad. Burlington Northern, along with Union Pacific and Southern Pacific is a major provider of rail freight service in Oregon accounting for 20 percent of the state's rail system. The Astoria line connects Portland to Astoria as one of a number of secondary main lines and branches that also serve central Oregon and the Willamette Valley. It is a 95-mile branch that leaves the BN main line in Portland and makes stops in Scappoose, St. Helens, Port Westward, Clatskanie and Wauna before terminating in Astoria.

Usage of railroads is measured by means of "traffic density" which is expressed in terms of million gross ton-miles per mile of track per year. The Astoria branch has a traffic density of less than one million, which is low compared to other BN branch lines. The trackage between Portland and Clatskanie can accommodate freight train speeds of 40 mph, but between Clatskanie and Astoria maximum speeds are 10 mph. Currently, there are on average four freight train round trips per week, with each containing less than 10 cars per train. The primary products carried are materials used in the James River Wauna paper mill, but additional customers may be added at any time.

The future of the Astoria branch was recently rescued from a doubtful future with its purchase by P&W Railway. Plans for its use are uncertain at this stage, but for now service continues. Even though existing traffic density is low, according to community representatives the future economic vitality of Clatskanie and the U.S. 30 corridor is dependent on continued rail service. The Port of Astoria and the Port of St. Helens are both aggressively and successfully promoting industrial uses that are rail dependent. The currently on-going Highway 30 Corridor study is addressing the issue of the need to retain rail service on this line.

### ***Passenger Rail***

The nearest passenger service provided for Clatskanie residents is in Kelso-Longview which has an Amtrak stop. Currently daily train service is provided by the Coast Starlight, the Northwest Talgo and the Mount Rainier with additional service by the Pioneer on Monday, Wednesday and Saturday. The Cascadia High Speed Rail Project is investigating improving rail service between Eugene and Vancouver B.C. with a high-speed facility. The project is a joint effort of the state governments of Oregon, Washington and British Columbia, and forecasts 15 round trips per day by 2015.

### ***Water Transportation***

There is currently no kind of public water-based transportation service serving Clatskanie. Port Westward is the closest development that relies on the Columbia River for ship transportation. This is an 800-acre industrial site located at the confluence of the Columbia River and the Bradbury Slough. The majority of the site is currently leased by PGE, but the potential for locating industries including a pulp mill and steel and oil industries has been discussed. Poor road access and lack of rail access are the main inhibitors to the development of this site.

The possible dredging of the Clatskanie River since the January 1996 flood, and the potential dredging of the Columbia River from 40 to 45 feet to allow deeper-draft ships will both have a potential impact on this mode of transportation as it affects Clatskanie.

### ***Pipeline Transportation***

Pipeline transportation in Clatskanie includes transmission for electricity, cable television, natural gas and telephone services. The OTP calls for the provision of a major natural gas pipeline between Portland and Astoria by the year 2012.

## **TRAFFIC OPERATIONS CONDITIONS**

Manual turning movement counts were conducted at a total of nine study area intersections during the weekday p.m. peak period in May 1996 to obtain the information necessary to determine the



existing level of traffic operations within the City. The study area intersections including lane configuration and traffic control measures are shown in Figure 2. There is one signalized intersection in the study area, located at the intersection of Nehalem Street and U.S. 30. The minor street intersections of Conyers Street, TrueHaak Street, Van Street, Swedetown Road, Belair Drive, and U.S. 47 on U.S. 30 are two-way stop controlled with the minor streets stopped. The TrueHaak Street/U.S. 30 intersection has a traffic signal used only to stop traffic for the adjacent fire station. NE/NW 5th Street and SE 3rd Street are stop controlled at their intersections with Nehalem Street.

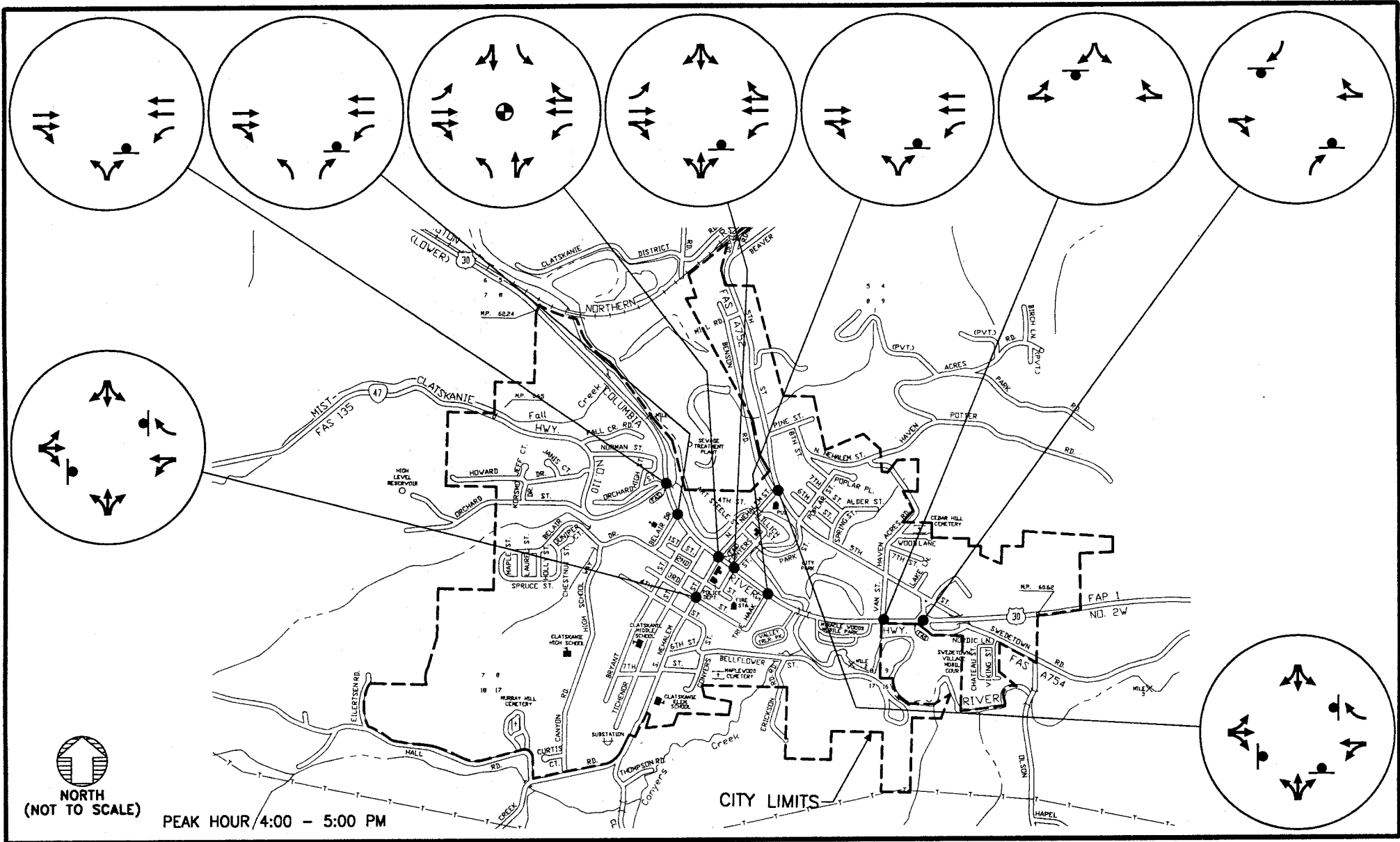
Traffic counts were conducted between the hours of 4:00 p.m. and 6:00 p.m. on a Wednesday in May. Discussions with City and State staff were held to ensure that there were no unusual conditions to interrupt typical weekday operations. The volumes counted were examined for reasonableness, and were also compared to other traffic volume data available for the area. The system peak hour for the study area was determined to occur between 4:00 and 5:00 p.m. Traffic count volumes for the study area intersections are shown in Figure 3.

For study purposes, summer conditions were considered because traffic volumes are significantly higher. To account for the difference in traffic volumes between May when the counts were conducted, and average summertime conditions in July, the count volumes were factored by a ten percent seasonal adjustment factor. This factor was determined based on records kept by the ODOT permanent recorder situated on U.S. 30 east of Clatskanie.

#### *Level of Service Analysis*

Using the peak hour traffic volumes described above, together with traffic control and lane configurations, peak hour intersection level of service analyses were performed for each of the study area intersections. Level of Service (LOS) is a concept developed by the transportation engineering profession to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. LOS is expressed as a letter grade ranging from "A" (little delay) to "F" (intolerable delay). Appendix B contains a detailed LOS description.

Table 4 summarizes the LOS analysis results for the nine study intersections. The *Oregon Highway Plan* (OHP) level of service standards stipulate minimum levels of service for design hour operating conditions through a twenty year horizon for all state facilities. The service levels depend on level of importance and general land use characteristics. For a statewide highway such as U.S. 30 through an urban area, the minimum LOS is "C".



NORTH  
(NOT TO SCALE)

PEAK HOUR 4:00 - 5:00 PM

CITY LIMITS

**EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL**

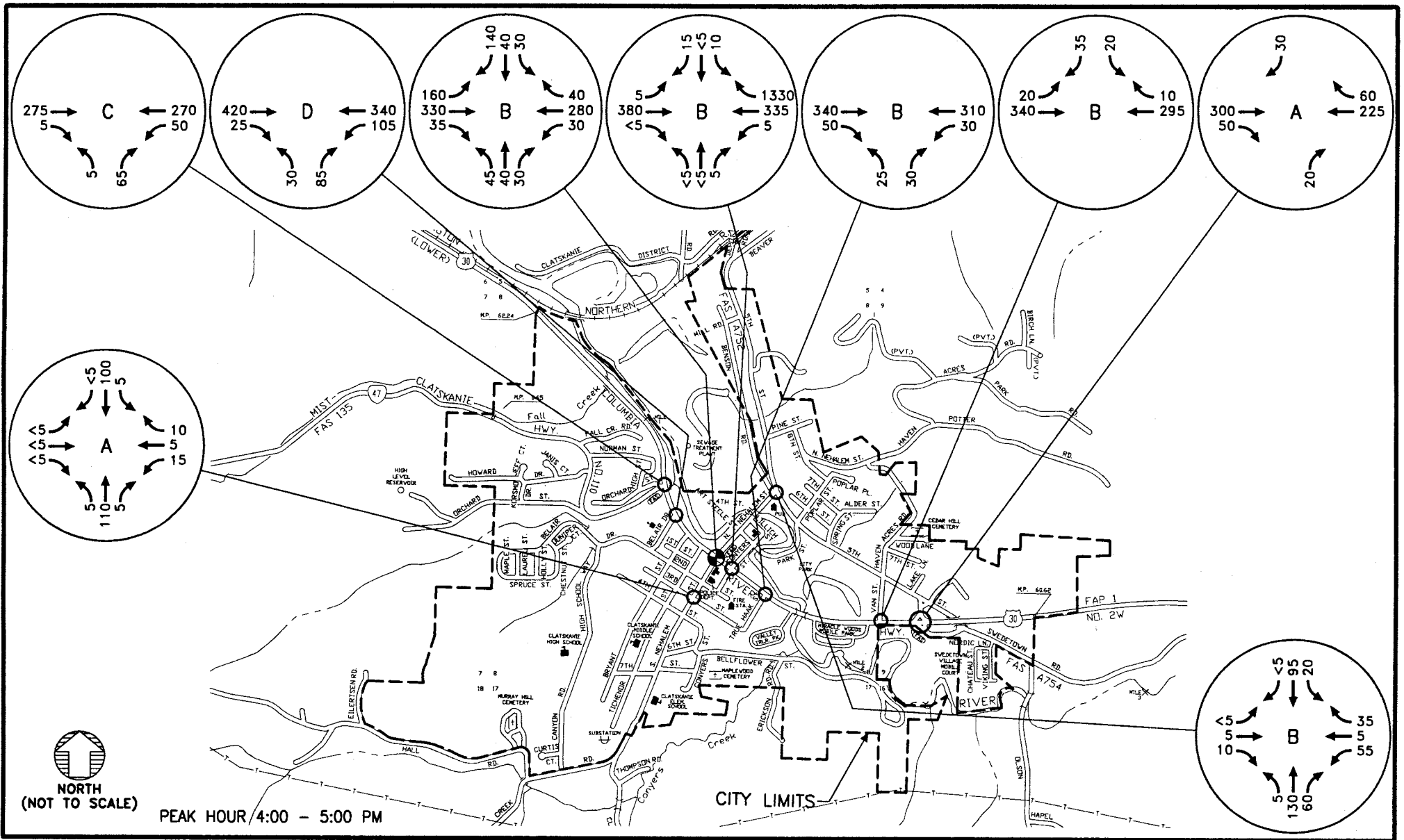
TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE

2



1794LANE



  
NORTH  
(NOT TO SCALE)

PEAK HOUR 4:00 - 5:00 PM

**PEAK HOUR TURNING MOVEMENTS  
AND INTERSECTION LEVEL OF SERVICE**

TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE

3



**Table 4  
Intersection Level-of-Service Summary**

Intersection	Unsignalized Intersection			Signalized Intersection		
	Critical Approach <sup>1</sup>	Average Delay	LOS	V/C	Average Delay	LOS
<b>Weekday P.M. Peak Hour</b>						
U.S. 47/U.S. 30	NB-L	10.5	C			
Belair Drive/U.S. 30	NB-L	26.6	D			
Nehalem Street/U.S. 30				0.33	11.5	B
Conyers Street/U.S. 30	SB	7.6	B			
Truehaak Street/U.S. 30	NB	8.7	B			
Van Street/U.S. 30	SB	6.9	B			
Swedetown Road/U.S. 30	NB-R	4.2	A			
NE/NW 5th Street/Nehalem Street	WB	5.3	B			
SE 3rd Street/Nehalem Street	WB	4.6	A			

1. L = Left, TL = Through/Left, R = Right, TR = Through/Right, T = Through.

As shown in Table 4, all intersections currently operate at acceptable levels of service during the p.m. peak hour under average summertime weekday conditions with the exception of the Belair Drive/U.S. 30 intersection. Significant delays are experienced by northbound left-turning vehicles at this location, all other movements will operate at a LOS of "A". The *Oregon Highway Plan (OHP)* has a minimum acceptable level of service "C" requirement for Statewide highways in urban parts of cities like Clatskanie, and it may be interpreted that this location does not comply with this requirement. However, as mentioned, the highway movements all operate at LOS "A" at this location, with only one side street movement subjected to the delays. The OHP requirement refers primarily to the highway; side street movements are generally regulated by City policy. The City does not currently have a level of service policy. Similar cities in Oregon typically require a minimum LOS "E" at unsignalized intersections, and Clatskanie uses this policy. Installation of a signal would improve conditions for this side-street movement, but would lead to a deterioration in conditions for the highway movements.

## TRANSPORTATION SAFETY

### *Traffic Safety*

An assessment of traffic safety conditions was conducted for U.S. 30 through Clatskanie using data obtained from ODOT covering the five-year period from January 1990 to December 1994. At intersections, the accident rate is given in terms of accidents per million entering vehicles (ACC/MEV) and is calculated by dividing the average number of accidents per year by the total entering vehicle volume for the year. An accident rate of less than 1.0 ACC/MEV generally indicates that there are no significant safety problems associated with the intersection. Along roadway segments, the total number of accidents is divided by the product of the roadway volume and segment length in miles. The result is reported as accidents per million vehicle miles traveled (ACC/MVM). Average accident rates in the State of Oregon for facilities similar to U.S. 30 through Clatskanie are approximately 3.55 ACC/MVM.

The safety analysis indicated that during the five-year study period there were 47 accidents reported along U.S. 30 between Clatskanie's east and west City limits. There were 39 intersection accidents (83%) and eight highway segment accidents (17%). This equates to an overall average rate of 1.79 ACC/MVM (including intersection accidents) which is well below the statewide average of 3.55.

Data revealed that, for the five year review period, one fatality and two pedestrian accidents were reported. The fatality resulted from a head-on collision approximately 1,000 feet within the west city limits on a straight portion of wet roadway -- approximately 300 feet west of Fall Creek. The collision occurred at 11:00 p.m. in April without any reported cause. No safety deficiency in the transportation system seems to have contributed to this accident. One of the two pedestrian accidents occurred at the Nehalem Street/U.S. 30 intersection at 4:00 p.m. in April under wet pavement conditions. The pedestrian was traveling east on the south side of U.S. 30 when he/she was struck while crossing Nehalem Street from a westbound vehicle turning left from U.S. 30 to Nehalem Street. The pedestrian experienced minor injuries. No obvious safety deficiency was identified.

The second pedestrian accident occurred at the Belair Drive/U.S. 30 intersection at 10:00 a.m. in March, also under wet pavement conditions. The pedestrian was struck while crossing U.S. 30 from the north by a vehicle traveling west. A cross-walk currently exists at this location on U.S. 30. There is some speculation that marked cross-walks can actually increase pedestrian accidents because they give the pedestrian a sense of security which might be totally unjustified. Particularly in small isolated communities like this one, motorists are unaccustomed to stopping unless there is positive signal control - i.e. a red light - and do not typically expect pedestrians to be using the crosswalks. Analysis results for individual intersections on U.S. 30 and roadway segments are presented in Table 5.

**Table 5  
Traffic Safety Analysis Summary**

Highway Intersection	No. of Accidents	ACC/MEV
U.S. 47/U.S. 30	4	0.33
Belair Drive/U.S. 30	10	0.55
Nehalem Street/U.S. 30	8	0.37
Conyers Street/U.S. 30	6	0.44
Truehaak Street/U.S. 30	3	0.21
Van Street/U.S. 30	2	0.15
Swedetown Road/U.S. 30	6	0.48
HIGHWAY SEGMENT	No. of Accidents	ACC/MVM
West City Limits to U.S. 47	4	0.61
Belair to Nehalem Street	2	1.24
Truehaak to Haven Acres	2	0.76
Swedetown Road to East City Limits	0	0.00

The lowest threshold for intersections typically indicating an accident problem is 1.0 ACC/MEV. The results in Table 5 indicate that there are no intersections with an accident rate of 1.0 ACC/MEV or greater. The highest calculated accident rate is at the Belair Drive/U.S. 30 intersection which experienced 10 accidents in the five year period, with an accident rate of 0.55 ACC/MEV. A site visit at the location indicated no identifiable traffic hazards needing attention. This is a low accident rate, especially considering the high traffic volumes at this intersection. The accident rates for the remaining intersections are well below 1.0 ACC/MEV and do not indicate any safety deficiencies.

Similarly, for roadway segments, the highest accident rate calculated was for the segment between Belair and Nehalem Street which experienced a rate of 1.24 ACC/MVM. This rate is well below the statewide average for similar facilities (3.55 ACC/MVM), and no safety deficiencies are evident. The relatively high rate experienced in this area corresponds to the short portion of roadway analyzed (approximately 400 feet between Belair Drive and Nehalem Street), high-intensity land uses in the area, and the relatively poor level of service at the Belair intersection and other minor street intersections situated along the highway in this section. Again, the rate in this section is well below thresholds which may indicate a safety deficiency.

## ROADWAY ACCESS CONDITIONS

An inventory of public roadway and access drive spacing on U.S. 30 was provided by the City and used to produce Table 6. The table shows the number of public roadways and private driveways in each section and the calculated spacing that results, as well as the required spacings under the Oregon Highway Plan (OHP). Where a driveway lines up directly opposite another driveway or a public road, only one is counted.

The analysis of driveways indicated that a significant amount of work has been done to reduce the number of accesses on the highway. However, in order to ensure compliance with the OHP, further reduction in the number of driveways would be required, and potentially even the closure of a number of public roadways. The segment of U.S. 30 between the Clatskanie River and Highway 47 is classified as a Category 4 Highway, and is subject to the spacing requirements as laid out in the OHP.

**Table 6**  
**Existing Access Spacing Summary**

Segment	Length of Section		Number of Accesses		Existing Spacing		Required Spacing	
	mi	feet	Public Roads	Private Drives	Public Roads (mi)	Private Drives (feet)	Public Roads (mi)	Private Drives (feet)
Clatskanie River to Conyers St.	0.21	1,100	2	6	0.11	160	0.25	500
Conyers Street to Bryant Street	0.14	750	1	3	0.14	375	0.25	500
Bryant Street to Highway 47	0.15	800	2	8	0.08	115	0.25	500
<b>Overall Section</b>								
Clatskanie River to Highway 47	0.50	2,650	7	17	0.07	155	0.25	500

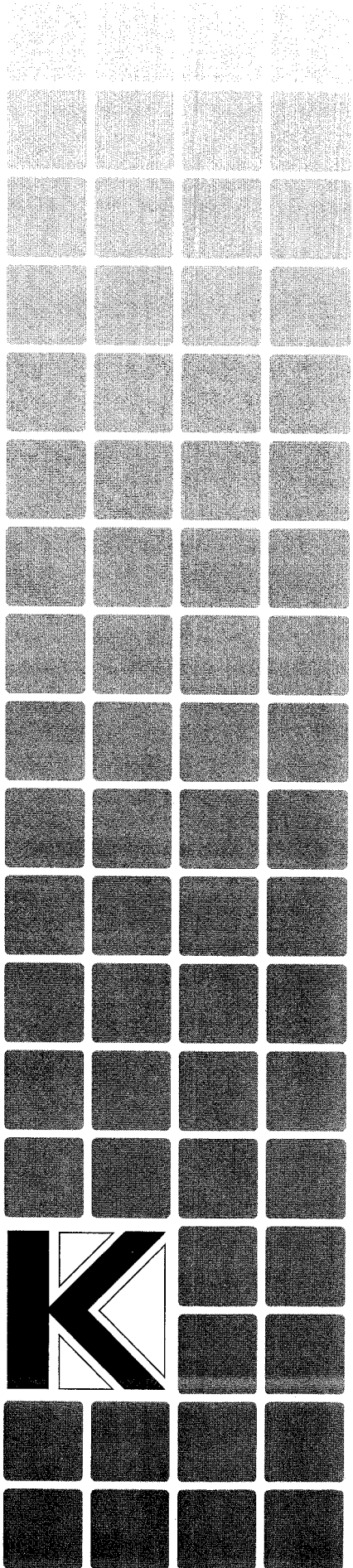




**Section 3**

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**Future Conditions and Alternatives  
Analysis**



## Future Conditions and Alternatives Analysis

### INTRODUCTION

Comprehensive Plan population and employment growth projections were used to estimate twenty year future (2016) travel demand in the City of Clatskanie. These traffic volume forecasts are used to determine future traffic conditions on the existing roadway network in a no-build scenario. This analysis enables a determination of roadway system needs/requirements and is the starting point for the development of system improvement alternatives. Forecasted volumes may then be assigned to the future transportation network alternatives to enable a comparative analysis of the alternatives which in turn leads to the recommended or preferred alternative.

Future travel demand for alternative modes is estimated based on existing conditions, known improvement plans and anticipated increases in usage based on population and employment growth and demographic changes. This includes pedestrian, bicycle and transit travel as well as rail, air, water and virtual -- electronic -- travel. The potential of these other modes for off-loading the roadway system is investigated.

The following topics are discussed in this section:

- ▶ future travel demand;
- ▶ future land use, population and employment projections;
- ▶ electronic communications as an alternative travel mode;
- ▶ future automobile traffic growth;
- ▶ future no-build alternative traffic operations conditions;
- ▶ future conditions for pedestrian, bicycle and transit modes;
- ▶ future transportation system alternatives;
- ▶ roadway system elements.

### FUTURE TRANSPORTATION DEMAND

Future travel demand for the City of Clatskanie was estimated based on expected population and employment growth, and growth in traffic traveling through the area for the year 2016. The unique trip making characteristics of residential and employment based activities were considered in the development of future travel demand estimates.

### Future Population and Employment Forecasts

Population projections for the 2016 analysis year have been based on figures obtained from Portland State University's Center for Urban Studies. PSU's growth forecasts are based on historical population growth in Clatskanie between 1960 and 1990, and indicate an annual average compound growth of 2.7 percent. Estimated population and employment for 2016 are shown in Table 7.

**Table 7  
Population and Employment Projections**

Year	Population	Employment
1995	1,780	660
2016	3,154	860

Population growth indicated in Table 7 reflects a compound annual growth rate of 3.1 percent. This compares with a growth rate of between 1.5 percent and 2.5 percent experienced by similar communities throughout Oregon. For comparison purposes, Rainier's comprehensive plan population growth over the next twenty years is 4.3 percent.

### **Electronic Communications as an Alternative Travel Mode**

It is generally understood that as smaller rural communities grow in population and employment they become more self sufficient entities, better able to serve the full needs of their population. Citizens are able to find the employment and services desired within the community, instead of having to travel to larger urban areas located nearby. The benefit to the transportation system is in the potential for some of these trips (now local, not long distance) to be made via modes other than the automobile; thus reducing overall demand on the roadway network.

Also, it may be expected that travel demand 20 years from now will consist of an increasing component of non-automobile traffic. The existing Clatskanie Comprehensive Plan includes specific provision for the pedestrian, bicycle, and transit modes as well as the automobile mode. In addition, such components as telecommuting and other "information super highway" technology will comprise an increasing part of the future transportation demand by the year 2016. Remote offices in people's homes and in commercial centers will allow employees to work via modems and other electronic links with offices any distance away; thus reducing the need to commute.

Generating quantitative future travel demand estimates for these "modes" is a challenging task. Traditional methods of "extrapolation of trends" require a basis in substantial historic data. Such data is not readily available for the Clatskanie area, or for communities of a similar size. Therefore, a qualitative approach was taken in estimating future demand and in developing alternatives which would address the expected demand. In order to remain conservative, the benefit of increased electronic communication was not assumed to have a significant effect on vehicle miles of travel (VMT) in this study.

### **Future Automobile Traffic Growth**

#### *Internally Generated Trips*

Future traffic growth was modeled by PSU's ODOT project team using the UFOSNET modeling package as part of their PDIA (potential development impact analysis) modeling for ODOT and Columbia County. Input to the model was number of dwelling units and number of employees by geographical area or "travel shed". Travel sheds are areas for which all traffic is assumed to "drain" via one point to U.S. 30. For Clatskanie, five internal travel sheds were delineated, and four external travel zones were added. Figure 4 shows the ten travel sheds developed by PSU for assigning new

trips to the street network. The four external zones are: west and east on U.S. 30; north on Beaver Falls Road; and south on Highway 47.

### *Spatial Distribution of Growth*

New dwelling units and jobs were allocated to the ten internal travel zones as shown in Table 8. This distribution of housing and employment growth was estimated by the planning staff of the City.

**Table 8  
Population and Job growth by Travelshed  
1990 to 2016**

Travel Shed	Dwelling Units			Jobs		
	Existing D.U.s (1990)	% of new D.U.	Number of new D.U.	Existing Jobs (1990)	% of new Jobs	Number of new Jobs
1	83	22	126	32	0	0
2	348	18	103	131	25	50
3	54	0	0	8	25	50
4	59	56	320	10	25	50
5	144	4	23	325	25	50
Total	688	100	572	506	100	200

### *Future Through-Trips*

Through-trips are those which neither begin nor end in Clatskanie but travel through the City without stopping, traveling on U.S. 30 and/or Highway 47. Historic trends in U.S. 30 traffic growth were used to estimate growth in through-trips over the next 20 years. These trends were obtained from data kept by the ODOT permanent recorder station located five miles west of Rainier on U.S. 30. Analysis of historical growth indicated wide ranges in annual traffic growth over the past 20 years. For this reason, analyses were conducted for two through-trip growth scenarios:

- Low Growth = 2.0 % per annum on U.S. 30.
- High Growth = 3.5 % per annum on U.S. 30.

### **Mitigation Alternatives Traffic Operations Conditions**

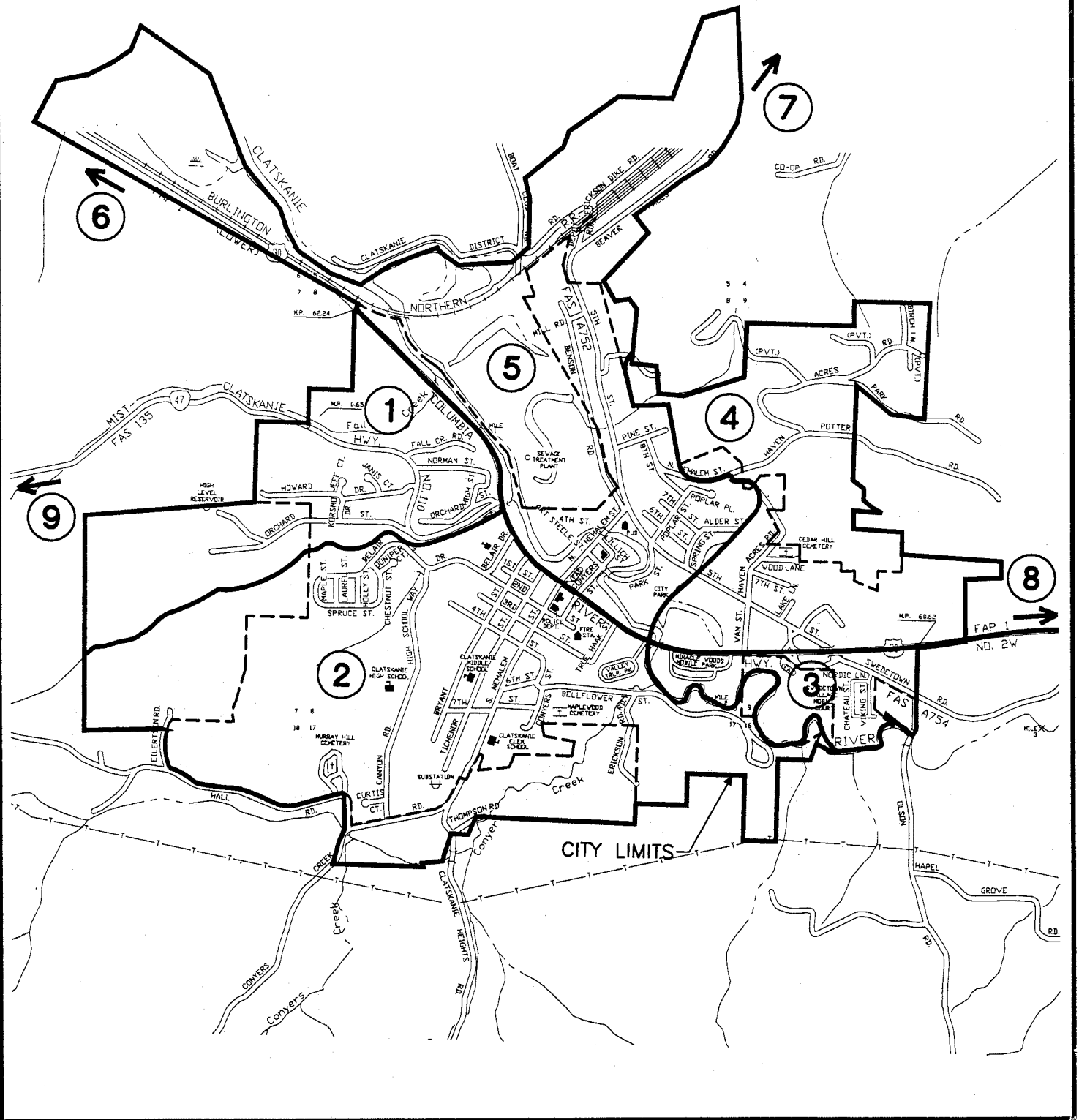
Results from the PSU travel forecasting model for both high and low growth scenarios were used to determine year 2016 p.m. peak hour traffic operations conditions for the no-build case - i.e. assuming the current roadway system were still in place in the future. Then alternative mitigations were tested for their ability to restore acceptable operations at study intersections.

### *Low Growth Scenario*

Model results indicated an increase in peak hour traffic intersection side street approach volumes



NORTH  
(NOT TO SCALE)



**LEGEND**

- (X) TRAVELSHED NUMBER
- TRAVELSHED BOUNDARY
- - - - CITY LIMITS
- - - - UGB

**TRAVELSHEDS**

TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE

4



1794TAZ

ranging between 20 percent and 640 percent depending on the location. For the highway approaches, growth rates varied between 50 and 104 percent. Figures in Appendix C (model results) indicate that no links on U.S. 30 would experience volumes exceeding capacity.

For intersection operations, the growth rates for intersection approach volumes were used to factor existing summer condition peak hour traffic volumes to 2016 volumes, and a level of service analysis was conducted to determine “no build” peak hour traffic operations for the nine study intersections. 2016 peak hour volumes used in the low growth analysis are shown in Figure 5.

The level of service results for these intersections are shown in Table 9 and have been prepared in accordance with the procedures presented in the *1994 Highway Capacity Manual Transportation Research Board*. Level of service is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Level of service D or better is generally considered an acceptable level of service for signalized intersections and level of service E or better is generally considered acceptable for unsignalized intersections.

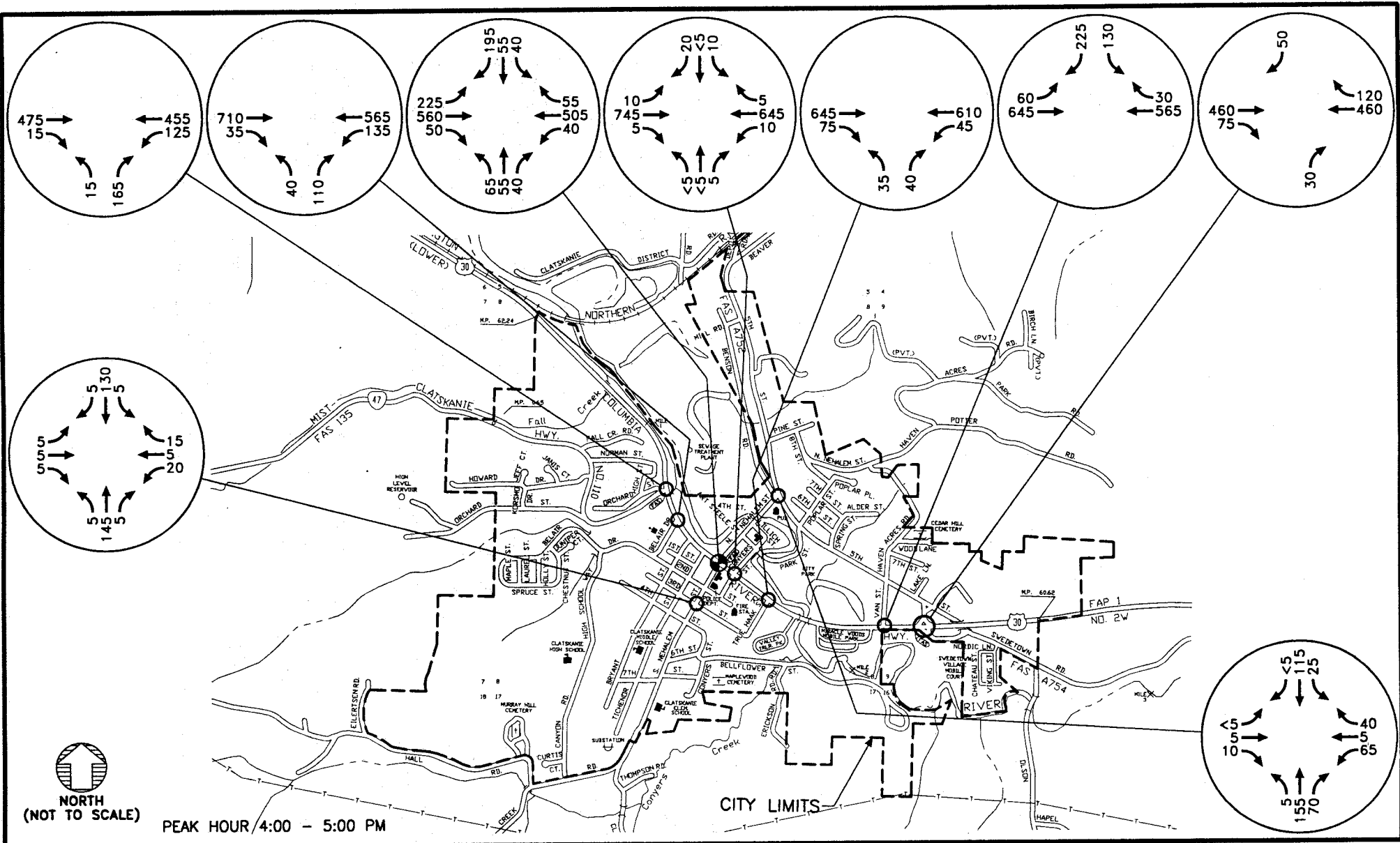
**Table 9**  
**Low Growth Scenario 2016 Level of Service Summary**

Intersection	Unmitigated			Mitigated		
	Critical Approach <sup>1</sup> or V/C	Average Delay	LOS	Critical Approach <sup>1</sup> or V/C	Average Delay	LOS
<b>Weekday P.M. Peak Hour</b>						
U.S. 47/U.S. 30	NB-L	24.2	D	NB-L	24.2	D
Belair Drive/U.S. 30	NB-L	>60	F	0.45	8.7	B
Nehalem Street/U.S. 30	0.47	11.8	B	0.47	11.8	B
Conyers Street/U.S. 30	SB	19.8	C	SB	19.8	C
Truehaak Street/U.S. 30	NB	27.5	D	NB	27.5	D
Van Street/U.S. 30	SB	>60	F	0.63	10.9	B
Swedetown Road/U.S. 30	SB-R	5.5	B	SB-R	5.5	B
NE/NW 5th Street/Nehalem Street	WB	6.1	B	WB	6.1	B
S 3rd Street/Nehalem Street	WB	4.7	A	WB	4.7	A

1. L = Left, TL = Through/Left, R = Right, TR = Through/Right, T = Through.  
Shaded cells indicate SIGNALIZED intersection.

As shown in Table 9, the existing signalized intersection will continue to operate at an acceptable level of service (B) in 2016 given the City's Comprehensive Plan population and employment growth, and low (2.0%) highway growth.



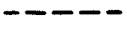
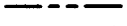
However, two other unsignalized study intersections on U.S. 30 will no longer operate at acceptable levels of service in 2016. These are U.S. 30/Belair Drive and U.S. 30/Van Street. A review of future conditions indicated that signalization would be required at some time in the next twenty years.



  
**NORTH**  
 (NOT TO SCALE)

PEAK HOUR 4:00 - 5:00 PM

**LEGEND**

	STOP SIGN
	SIGNAL
	CITY LIMITS
	UGB

**2016 LOW GROWTH SCENARIO  
 PEAK HOUR TURNING MOVEMENTS**

TRANSPORTATION SYSTEM STUDY  
 CLATSKANIE, OREGON  
 AUGUST 1997

FIGURE  
**5**



at both these locations, including a median turn lane at Van Street. The results indicate that capacity deficiencies are restricted to the U.S. 30 corridor, and that both stop-controlled intersections on Nehalem Street at NE/NW 5th Street and SE 3rd Street will continue to operate at LOS "B" in 2016 for Comprehensive Plan growth. Traffic signal warrants are shown later in this section.

**High Growth Scenario**

Model results for the high traffic growth scenario indicated an increase in peak hour intersection side-street approach volumes ranging between 20 percent and 640 percent depending on the location, as with the low growth scenario. For the highway approaches, growth rates varied between 100 and 160 percent. Figures in Appendix C indicate that capacity is exceeded on eight links within the City. It should be noted that capacity on the links was exceeded by a relatively small level of between one percent and 13 percent.

As was done for the low growth scenario, growth rates for intersection approach volumes were used to factor the existing summer condition peak hour traffic volumes to 2016 volumes, and a level of service analysis was conducted to determine high growth scenario "no build" peak hour traffic operations for the nine study intersections. Future peak hour traffic volumes used in the high growth analysis are shown in Figure 6. Results of the level of service analysis are shown in Table 10.

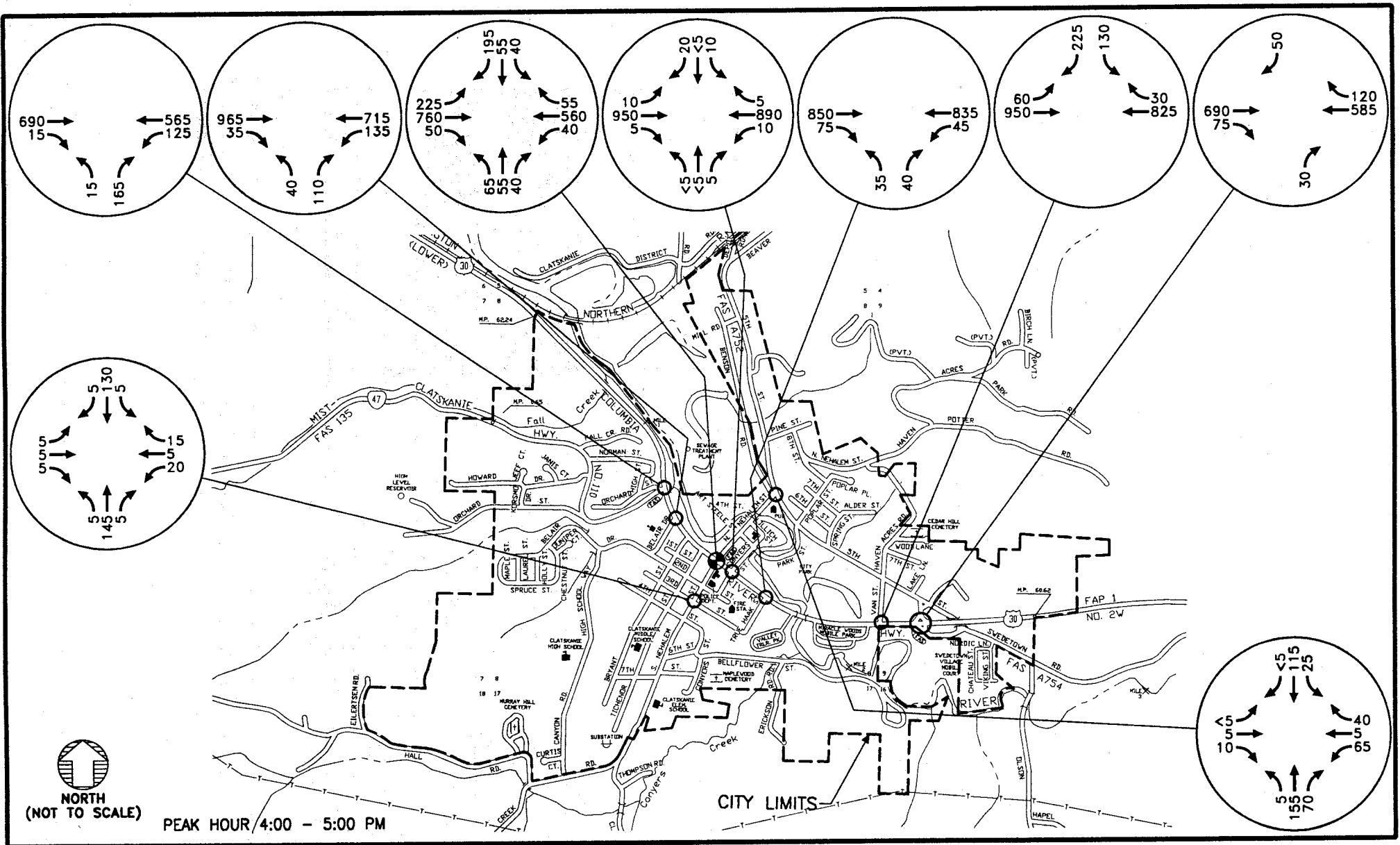
**Table 10  
High Growth Scenario 2016 Level of Service Summary**

Intersection	Unmitigated			Mitigated		
	V/C or Critical Approach <sup>1</sup>	Average Delay	LOS	V/C or Critical Approach <sup>1</sup>	Average Delay	LOS
<b>Weekday P.M. Peak Hour</b>						
U.S. 47/U.S. 30	NB-L	46.6	F	NB-L	15.9	C
Belair Drive/U.S. 30	NB-L	>60	F	0.54	7.8	B
Nehalem Street/U.S. 30	0.49	11.2	B	0.49	11.2	B
Conyers Street/U.S. 30	SB	48.3	F	SB	48.3	F
Truehaak Street/U.S. 30	NB	>60	F	0.37	3.3	A
Van Street/U.S. 30	SB	>60	F	0.82	13.2	B
Swedetown Road/U.S. 30	NB-R	7.1	B	NB-R	7.1	B
NE/NW 5th Street/Nehalem Street	WB	6.1	B	WB	6.1	B
SE 3rd Street/Nehalem Street	WB	4.7	B	WB	4.7	B

1. L = Left, TL = Through/Left, R = Right, TR = Through/Right, T = Through.  
Shaded cells indicate SIGNALIZED intersection.

Results indicate that the signal at U.S. 30/Nehalem will continue to operate at a good level of service (B), as will the unsignalized interchange at Swedetown Road. Apart from these two locations, the remainder of the study intersections on U.S. 30 will fail to operate at acceptable levels of service in 2016 under the high growth scenario.





## 2016 HIGH GROWTH SCENARIO PEAK HOUR TURNING MOVEMENTS

TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE  
**6**



Signalization at one or more of these locations may be required to ensure acceptable traffic operations. The intersections at Nehalem/NE/NW 5th Street and Nehalem Street/SE 3rd Street will continue to operate at good levels of service.

As shown in Table 10 in the columns entitled "mitigated", installation of a traffic signal will restore peak hour traffic operations at each intersection. The Conyers/U.S. 30 intersection was not considered for signalization primarily due to the insufficient spacing between this intersection of Nehalem Street which is currently signalized. It should be noted that this LOS F condition is experienced only by the northbound and southbound left-turning vehicles entering the highway. The number of vehicles making this maneuver is approximately 10 in the peak hour period which is very low. There is no delay to highway traffic which is uncontrolled. Side street traffic has the option of using the signal one block away at Nehalem Street to enter the highway with less delay. For these reasons, it should be acceptable to allow this intersection to continue to operate as is without improvements, with close scrutiny of the safety record recommended. Signalization of the intersection would be impossible, due to the close spacing with Nehalem Street amongst a number of other factors.

Level of service conditions at the remainder of the intersections on U.S. 30 reflect signal installations at the following intersections:

- ▶ Belair Drive
- ▶ Van Street
- ▶ Truehaak Street

The LOS improvement reflected at U.S. 30/Highway 47 indicates the results of an analysis which accounts for the benefits to a downstream unsignalized intersection of an upstream signal. This analysis was conducted in accordance with Chapter 11 of the Highway Capacity Manual. Installation of a signal at this location would likely be prevented by the proximity of a signal at Belair Drive (which would be warranted sooner than at Hwy 47).

The Oregon Highway Plan Access Management Policy requires ½ mile signal spacing for a Category 4 Highway of Statewide Importance. A signal at Truehaak Street would be located 850 feet from Nehalem Street and 1,650 feet from Van Street, and would therefore not be allowed in terms of the policy. However, a fire signal already exists at Truehaak Street which may improve the chances of signal installation at this location, should a signal be required and warranted by 2016. Signal warrants indicate that a signal will not be warranted at this location even under the high growth scenario. In addition, side street traffic at this location has the option of using the signal at Nehalem Street under peak period conditions.

### ***Signal Warrant Analysis***

Clatskanie currently has only one traffic signal - that at Nehalem Street/U.S. 30. It is not unusual for a community such as Clatskanie which is bisected by the highway to have more than one traffic signal on the highway in order to maintain acceptable traffic operations as well as to allow safe pedestrian crossing of the highway at grade. However, signals may only be installed when traffic signal warrants are met. So, for the locations where traffic signals have been suggested as mitigation measures, traffic signal warrants have been checked. Both *Manual of Traffic Control Devices* (MUTCD) and ODOT warrants have been checked, and the results of the analyses are shown in Table 11.

**Table 11  
Signal Warrants**

Intersection	LOS	MUTCD Warrants Met?			ODOT Warrants Met?	
		#1 Minimum Vehicular Volume	#2 Interruption of Continuous Traffic	#11 Peak Hour Volume	#1 Minimum Vehicular Volume	#2 Interruption of Continuous Traffic
<b>Low Growth Scenario</b>						
U.S. 30/Hwy 47	D	Yes	Yes	No	No	No
U.S. 30/Belair	F	No	Yes	No	No	Yes
U.S. 30/Van St.	F	Yes	Yes	Yes	Yes	Yes
<b>High Growth Scenario</b>						
U.S. 30/Hwy 47	F	Yes	Yes	No	No	Yes
U.S. 30/Belair	F	No	Yes	Yes	No	Yes
U.S. 30/True Haak	F	No	No	No	No	No
U.S. 30/Van St.	F	Yes	Yes	Yes	Yes	Yes

**Mitigation Alternatives**

The constrained nature of Clatskanie’s transportation network eliminates a wide range of alternative solutions from being tested. As shown in Tables 9 and 10, mitigation measures including signal installation were able to restore acceptable peak hour traffic operations conditions under the alternative low and high growth scenarios. Table 12 compares intersection mitigations for alternative growth rates.

**Table 12  
Mitigation Alternatives**

Location	Low Growth 2.0 %	High Growth 3.5%
Highway 47	-	(signal)
Belair Drive	signal	signal
Nehalem Street	-	-
Conyers Street	-	-
Truehaak Street	-	signal
Van Street	signal, turn lane	signal, turn lane

**Future Conditions for Pedestrian, Bicycle and Transit Modes**

Future demand for pedestrian and bicycle transportation was qualitatively estimated. Pedestrian trips are possibly the least quantifiable, and the most difficult to predict. There are numerous trips made

using this mode in Clatskanie on a daily basis, but there is also a great opportunity for increasing the number of pedestrian trips made in place of automobile trips for various activities, particularly shorter trips.

The means to promote this mode lies in providing safe and efficient facilities for the use of residents, in particular connecting the pedestrian trip generators. These include sidewalks along all collector and arterial streets that will connect the elementary and middle schools, the library, the commercial district and the waterfront area including the City Park with residential nodes.

As mentioned in the existing conditions memorandum, there was relatively little bicycle activity observed within Clatskanie during data gathering exercises. No counts were taken to quantify the level of activity and there is no historic data, so it is not possible to project current "traffic" into the future. Rather, estimates of future bicycle travel are based on the anticipated number of people, combined with assumptions on mode-split based on national data, as well as the location of bicycle trip-generators which include such uses as schools, library, City Park, commercial centers and residential areas. It is recognized, however, that the severe topography in Clatskanie restricts bicycle travel.

The objective of the preliminary bicycle plan is to put in place a continuous system that links the primary trip generators in a manner that is attractive to cyclists for use as an alternative to making an automobile trip, and is safe. These elements may consist of posted routes, on-street bike lanes, and separated bicycle trails.

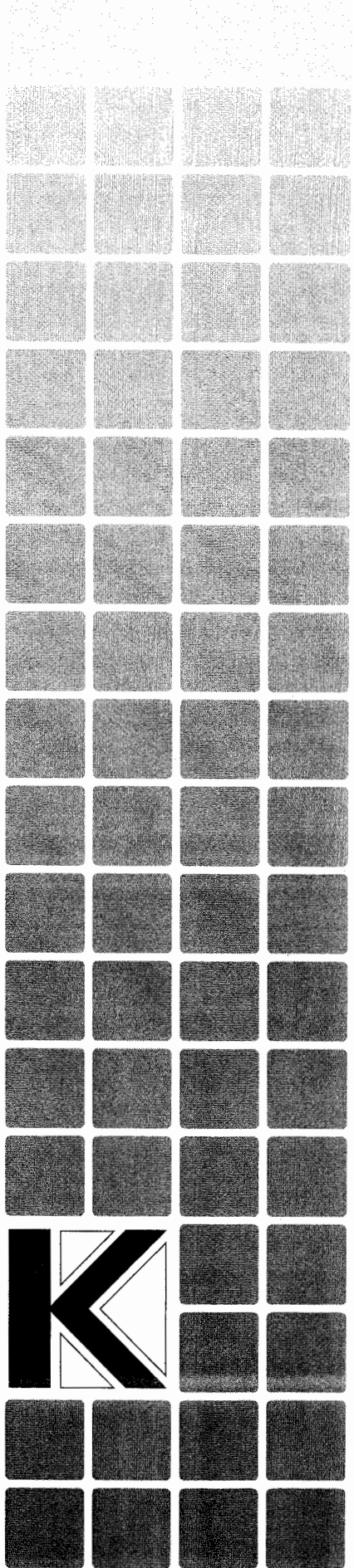
As mentioned in the section on existing conditions, it was reported that there is currently no capacity restraint on the dial-a-ride para transit system. Future growth plans for COLCO indicate vehicles will be acquired along with the projected growth in demand.



**Section 4**

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Transportation System Plan



# Transportation System Plan

## INTRODUCTION

This section describes the individual elements which comprise the Transportation System Plan for the City of Clatskanie. The plan addresses needed improvements in the following categories:

- Roadway System Improvements
- Pedestrian Plan
- Bicycle Plan
- Transit Plan
- Rail Plan
- Air/Water/Pipeline Plan

Projects associated with each plan element have been identified and costs have been estimated for their implementation. In addition, each of the improvement elements has been prioritized for implementation timing purposes. Each project has been allocated to either the 1 to 10 year or 11-20 year time frame, and project costs have been separated into the two decades for the purposes of the transportation finance plan (discussed in the following section).

## FUNCTIONAL ROADWAY CLASSIFICATIONS

In addition to the above-mentioned physical roadway system improvements, a functional classification system is proposed for adoption as part of the TSP. The purpose of classifying roads within the study area is to provide a balanced transportation system that facilitates mobility for all modes at acceptable levels of service, while also providing sufficient accesses to adjacent land uses and ensuring neighborhood livability. Currently, the City of Clatskanie does not have a roadway classification system in effect.

In order to classify roadways in the study area, existing and proposed facilities need to be examined to determine the level of land use and resulting transportation demand it will serve. The facilities must be able to accommodate various modes of travel which include primarily: passenger vehicles, heavy trucks, pedestrians, bicycles; and the facilities must provide utility corridors (electricity, gas, telephone, cable, water etc.) to serve adjacent land uses.

The functional purpose for each classification is described below:

### *Arterials:*

The primary function of arterials is to provide through-movement to traffic, distributing it to collector streets and providing limited land access in order to minimize interruption to the arterial traffic. These streets are characterized by four or five-lane roadway sections. Pedestrian and bicycle pathways should be provided on all arterial facilities. Signalization should be provided at intersections with other arterials and with collector streets, as warranted.

### *Collectors:*

The primary function of collector streets is to move traffic between arterial facilities and local streets, and to provide access to adjacent land uses. Collector streets are characterized by two or three lane roadway sections. Bike lanes should be provided where average daily traffic volumes exceed 3,000 vehicles per day (vpd) or where the collector street directly connects to a land use which generates significant bicycle traffic (e.g. a school or park), and any other street where separately striped bicycle lanes may be necessary to accommodate safe bike travel along the facility. Continuous sidewalks should be provided on both sides of all collector streets. Intersections with other collectors and arterials may be signalized if warranted.

*Local Streets:*

The function of local streets is to provide local access to private dwellings and businesses. The local street is characterized by two travel lanes, with on-street parking typically provided on one or both sides. Local streets should serve primarily passenger cars, pedestrians and cyclists, and forms part of the residential community space. Heavy truck traffic should be discouraged.

Figure 7 shows the proposed future roadway functional classification system and Table 13 lists the streets comprising the arterial/collector network.

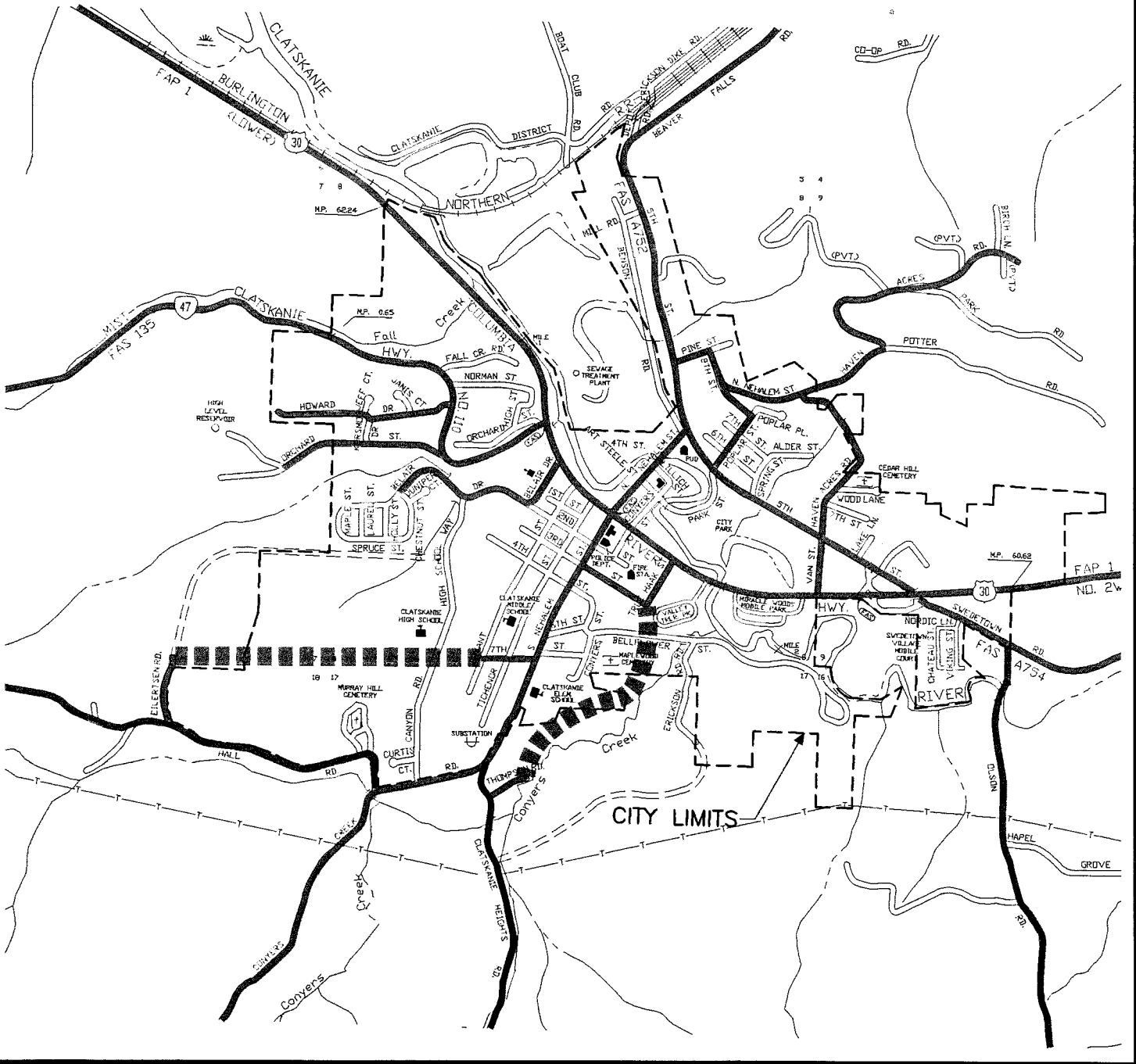
**Table 13**  
**Arterial/Collector Street System**

Functional Classification	Road Name
Arterial Streets	U.S. Highway 30
	Highway 47
	NE/NW 5th Street
	Nehalem Street
Collector Streets	Haven Acres Road
	NE Poplar Street
	NE 8th Street
	SW Howard Drive
	SW Orchard Street
	SW Belair Drive
	SE Olson Road
	SE Hall Road
	Conyers Creek Road
	SE Truehaak Street
SE 3rd Street	
Local Streets	All others in Clatskanie





NORTH  
(NOT TO SCALE)



LEGEND	
	ARTERIAL STREETS
	COLLECTORS (IN CITY)
	COLLECTORS (OUTSIDE CITY)
	PROPOSED NEW COLLECTOR CORRIDOR
	CITY LIMITS
	UGB

**ARTERIAL/COLLECTOR STREET SYSTEM**  
 TRANSPORTATION SYSTEM STUDY  
 CLATSKANIE, OREGON  
 AUGUST 1997

FIGURE

7



1704DENIC

## ROADWAY DESIGN STANDARDS

Roadway design standards are based upon the functional and operational characteristics of streets such as travel volume, capacity, operating speed and safety. They are necessary to ensure that the system of streets, as it develops, will be able to safely and efficiently serve the traveling public, and allow for the orderly development of adjacent lands, and the transportation infrastructure serving that land.

The roadway design standards should consist of the following parameters in order to conform with generally accepted practice:

- ▶ Typical Roadway Section
- ▶ Alignment and Operational Characteristics
- ▶ Access Management

The specific design standards for each of these parameters is discussed below:

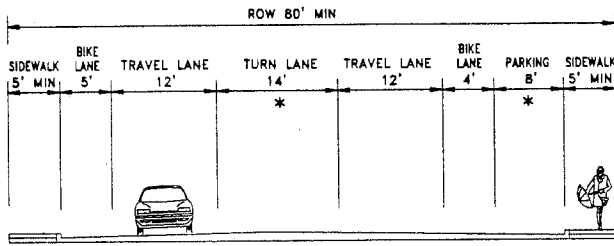
### *Typical Roadway Sections*

The typical roadway sections comprise the following components: right-of-way, number of vehicle travel lanes, bicycle and pedestrian facilities, drainage and other public amenities. Specific parameters suggested for typical roadway facilities for each functional classification are detailed in Figure 8. These cross-sections are in compliance with the latest Columbia County roadway standards.

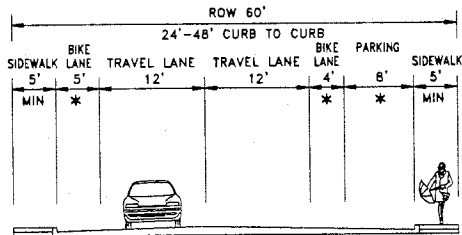
### *Alignment and Operational Characteristics*

The safety and efficiency of travel on the city's roadways will be influenced by the following alignment and operational characteristics: the design and operating speed, horizontal and vertical curvature, lane usage and parking provision.

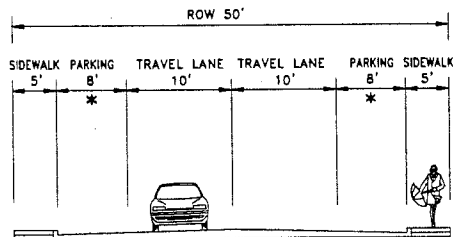
Columbia County is in the process of finalizing the development of a new set of roadway design standards which will shortly be adopted by the County Board of Commissioners. Clatskanie will adopt the Columbia County road standards.



2/3-LANE ARTERIAL  
(\* OPTIONAL)



COLLECTOR  
(\* OPTIONAL)



LOCAL (RESIDENTIAL)  
(\* OPTIONAL)

## PROPOSED ROADWAY STANDARDS

TRANSPORTATION SYSTEM PLAN  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE  
8



## ROADWAY PLAN ELEMENTS

Street improvement projects which make up the roadway plan element of the Transportation System Plan are shown in Figure 9. New roadway alignments shown are CORRIDORS rather than final alignments.

### *New Roadway Projects*

#### *1. Southwest 7th Street Extension*

West 7th Street is to be extended from its current terminus at Bryant Street westwards towards the terminus of Eilertsen Road to the north of Murray Hill Cemetery and south of the high school. This alignment would open up significant new area for residential development. The "straight-line" shown in Figure 9 is shown as a preliminary alignment only and indicates the general *corridor* that should be followed, and also refers to one of the three alternatives discussed below. The road will be a two-lane collector street with parking on one side and bike lanes. Width will be 40 feet in a 60 foot right-of-way. This will be a first decade project.

This project has a number of uncertainties associated with it and is presented as three options which should be refined and decided upon as development pressure necessitates. The alternatives are as follows:

Alternative 1a. This alternative includes the entire portion between SW Bryant Street and the north terminus of Eilertsen Road. This includes an extremely steep portion of roadway between SW Bryant Street and Canyon Road (Highschool Way) with a grade of approximately 30 percent. Significant engineering would be required.

Alternative 1b. This alternative includes the completion of the roadway in the section between Highschool Way and Eilertsen Road only, avoiding the steep section. The system would then require the upgrading of Highschool Way to allow the flow of traffic between this area and Belair Road. Additional traffic through the high school grounds would be a significant impact of this alternative.

Alternative 1c. This includes the construction of the SW 7th Street extension between Highschool Way and Eilertsen Road, but in place of the upgrading of Highschool Way, the system would rely on the construction of a new roadway extending Eilertsen Road to the northeast to connect with Highschool Way north of the school and give access to Belair Drive.

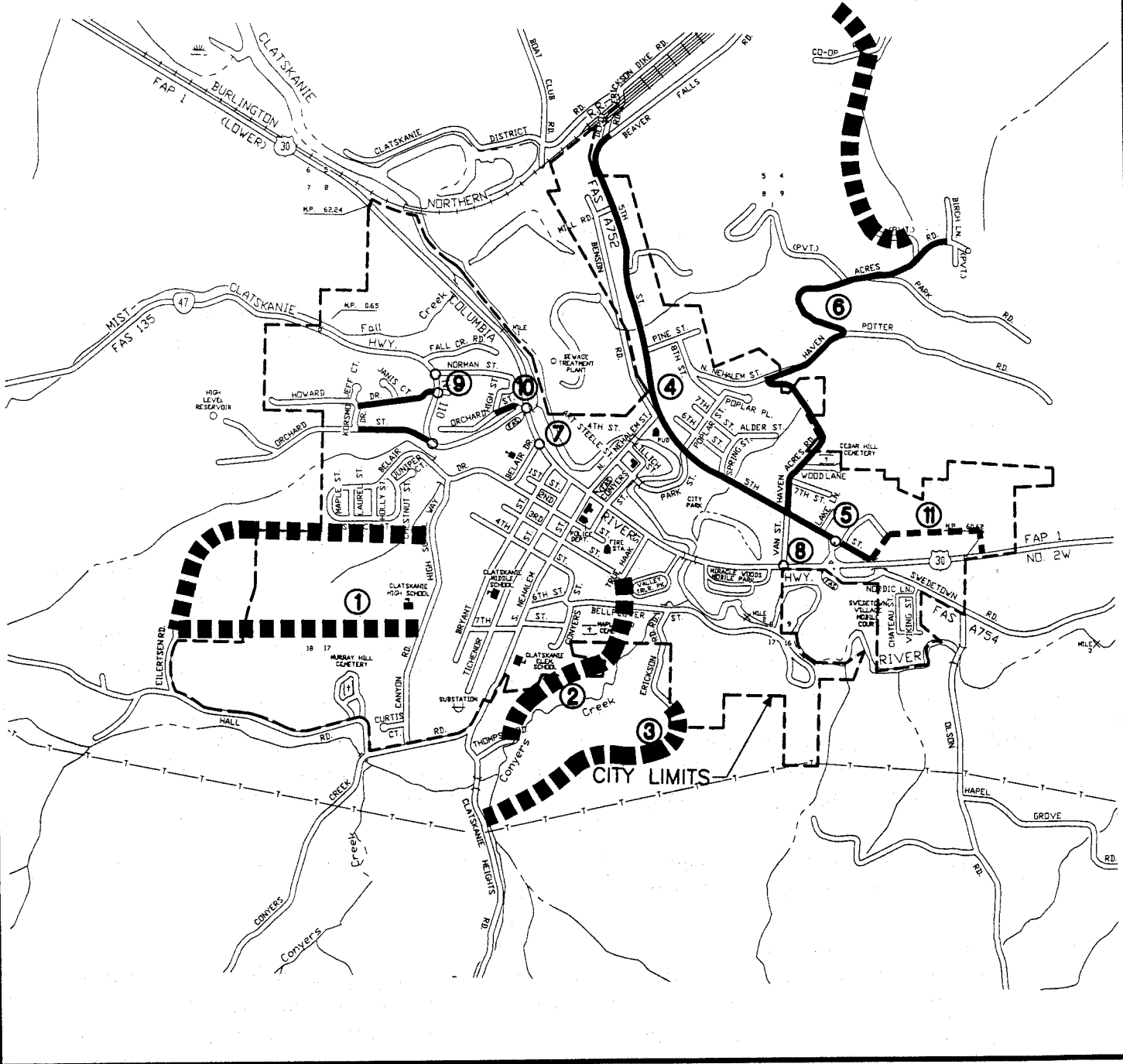
Survey information and further investigation is required before a more detailed alignment study can be completed, and the preferred alternative selected.

#### *2. Thompson Road Extension*

Thompson Road will be extended north from its current terminus off Clatskanie Heights Road, to the west of Conyers Creek, across Bellflower Road to the corner of Truehaak Street/S 3rd Street along the general corridor indicated in Figure 9. This street would open further land for residential development to the south of town. This will be a collector facility with on-street bicycle lanes, but with no on-street parking. This is a proposed second decade project.



NORTH  
(NOT TO SCALE)



**LEGEND**

- ROADWAY - UPGRADE
- ROADWAY CORRIDOR - EXTENSION
- INTERSECTION IMPROVEMENTS
- CITY LIMITS
- UGB

# ROADWAY IMPROVEMENT PROJECTS

TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE  
9



### *3. G.P. Erickson Road Extension*

Erickson Road will be extended south from its current terminus south of Bellflower Street to connect with Clatskanie Heights Road to the north of the power line easement. This would involve a bridge crossing Conyers Creek. This road would be a local street with a 36 foot width, with on-street parking along both sides. No bicycle lanes would be provided. This is a proposed second decade project.

### *Roadway Upgrade Projects*

#### *4. Reconstruction of N.E. and NW 5th Street*

NE/NW 5th Street between Beaver Falls Road and Olson Road requires reconstruction. The length of reconstruction is estimated at 7,000 feet. This roadway is a collector street and will be provided with two 12-foot travel lanes, and two 4-foot bicycle lanes for a road section of 32 feet. This facility is currently a heavily trafficked truck route serving the railroad station, two lumber mills and the Port Westward area north of Clatskanie. This is a proposed first decade project, although the schedule may be dictated by potential development at Port Westward.

#### *5. Westbound Swedetown ramps/N.E. 5th Street intersection*

This intersection will be rebuilt so that there is a single four-leg intersection with stop control on the northbound and southbound approaches. Sufficient turning radius should be provided to allow truck maneuvers at this location. This is a proposed second decade project.

#### *6. Haven Acres Road Improvements*

The Planning Commission has identified the Seaton Acres area north of the City as a prime area for future growth. It is estimated that between 50 and 75 lots may develop in this area although significant investment will be required in both water supply and sewer to allow this development to take place. Roadway improvements will be required on Haven Acres Road to support this development. This is a proposed first decade project. Further investigation will be given to providing an additional connection from Haven Acres Road to Beaver Falls Road. This would provide a redundant connection for emergency vehicle access as well as general accessibility. The construction of this roadway would be dependent upon inclusion of this area into the City's UGB.

#### *7. Belair Drive Signal*

A traffic signal will be installed at the intersection of U.S. 30/Belair Drive when warranted. The project will include a pedestrian crossing of the highway to allow access to the park/launching ramp on the Clatskanie River, an access management plan and a project to improve the geometric alignment of the intersection of Belair and U.S. 30 which is currently an acute-angled intersection. The turn sweep, particularly for trucks, would be reduced by intersecting Belair into the Highway at a right angle. This is a proposed second decade project.

Installation of this signal would likely preclude the future signalization of Highway 47/U.S. 30 due to proximity of intersections. The installation of a signal at Belair Drive will require simultaneous implementation of an access management plan on U.S. 30 in this section. The easterly of the two existing Safeway driveways on U.S. 30 will be closed with the remaining driveway having right-turn movements only permitted.

#### *8. Van Street Signal*

A traffic signal will be installed together with a pedestrian crossing and a median left-turn lane at

the U.S. 30/Van Street intersection to allow access to the commercial/industrial land in that area as well as to serve truck access, and access to anticipated residential developments north of the highway in this area. The signal and turn lane should be installed when warranted by traffic volumes. Based on current traffic growth projections, this is anticipated to be a first decade project.

Installation of this signal when warranted will be acceptable to the Oregon Department of Transportation (ODOT) only if implemented in conjunction with an access management plan for the section of U.S. 30 between the Swedetown overpass and the Clatskanie River. The City will embark on a project to develop a detailed access management plan upon completion of the Transportation System Study.

#### *9. Howard Drive and Orchard Street Intersection Sight Distance*

The intersections of Howard Drive and Orchard Street with Highway 47 currently suffer from insufficient sight distance for safe operations. The shoulders of Highway 47 shall be excavated at both locations to improve on the available sight distance. Significant excavation is required on the east side of Highway 47 north of Howard Drive, and on the west side of Highway 47 south of Orchard Street. Achieving sufficient sight distance may necessitate acquiring additional right-of-way. As part of this project, the intersection of Norman Street/Highway 47 will be upgraded to create a level roadway for entering Highway 47.

#### *10. Lower Orchard Street/U.S. 30 Intersection*

Due to the complex and unsafe operation that results from the intersection of Lower Orchard Street with Highway 47 and U.S. 30, Orchard Street will be signed one-way eastbound (uphill) from Highway 47/U.S. 30 to High Street. Vehicles would have to exit this neighborhood via Norman Street and Highway 47. If experience indicates this traffic management measure is not effective due to frequent violations, or unsafe operations result, the section of Orchard Street may be closed to vehicular traffic as no direct property access is provided. In this case, pedestrian and bicycle access should be retained. This is a proposed first decade project.

#### *11. Farmer's Lane/Potter Road*

As part of the development of the Whispering Woods subdivision, Farmer's Lane and Potter Road will be upgraded and extended to improve circulation and reduce reliance on U.S. 30 for this subdivision. The scheduling of this project will be determined by the developer, and the costs are all assumed to be developer-paid.

#### ***Projects not Included:***

##### *Bellflower Extension*

Alternatives analysis indicated that a parallel route to U.S. 30 south of the highway would greatly benefit the community and the transportation system, including U.S. 30. Investigations have shown that the existing section of Bellflower Street is built on an unstable geological base. This fact, together with the lack of sufficient right-of-way to allow widening to a collector standard road, led the project team to drop the proposed Bellflower Extension from the transportation system plan. It is, however, recommended that the desire for a parallel route south of U.S. 30 be retained as a long-term goal and that a suitable alternative be investigated.

##### *Highway 47 Bypass*

There was some community support expressed via the Planning Commission for a study of a

possible Highway 47 bypass that would route Highway 47 down the east side of the Fall Creek valley to intersect with U.S. 30 at a point near the existing little-league field. Preliminary site investigations indicated that the engineering, cost and environmental challenges would make this connection highly unlikely. Traffic volumes on Highway 47 similarly would not support such a project, and estimates for growth of traffic on Highway 47 do not indicate that this would become a likelihood within the next twenty to fifty years. This project will not be pursued any further at this time.

### **Costs and Implementation Plan**

Appendix D contains cost estimates and an implementation scheduling information for the roadway improvement plan. Costs included are for new construction, roadway upgrading and reconstruction and new signal installation. Total costs of implementation (excluding any right-of-way acquisition) are \$ 5.0 million with \$ 3.0 million to be spent during the first decade and \$ 2.0 million during the second decade.



## PEDESTRIAN PLAN

Pedestrian trips are possibly the least quantifiable, and the most difficult to predict. There are numerous trips made using this mode in Clatskanie on a daily basis, but there is also a great opportunity for increasing the number of pedestrian trips made in place of automobile trips for various activities, particularly shorter trips.

The means to promote use of this mode lies in providing safe and efficient facilities for the use of residents, in particular connecting the pedestrian trip generators. These include sidewalks along all collector and arterial streets. In this way the elementary, middle and high schools, the library, the commercial district and the downtown area (including the City Park) will be connected with residential nodes either side of the highway.

The proposed pedestrian plan elements are shown in Figure 10 and listed in Table 14. Broadly, the proposed network encompasses upgrading/infill of sidewalks to include continuous sidewalks along existing sections of U.S. 30, NE/NW 5th Street, Belair Drive, Nehalem Street, SW 2nd Street, Orchard Street, Bryant Street, Tichenor Street, Conyers Street, Park Street, Van Street, Poplar Street, NE 8th Street, Pine Street and Truehaak Street.

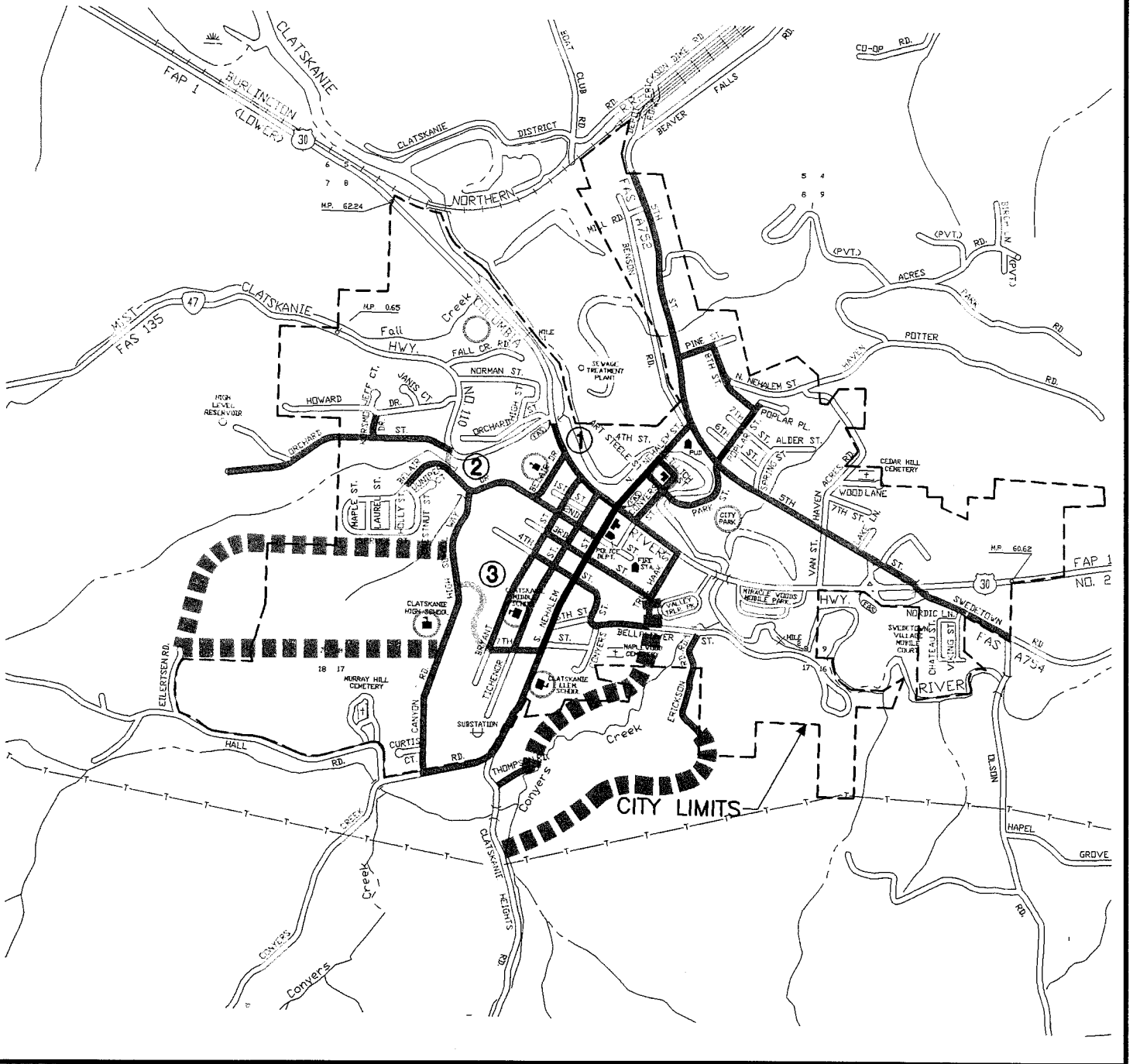
1. A new pedestrian crossing will be installed as part of a signal installation at Belair Drive and U.S. 30. As part of this project, the two Safeway driveways be consolidated into one which will be located between Belair Drive and Highway 47. The pedestrian crossing will provide pedestrian access to the land uses on the north side of U.S. 30 including the boat launching ramp/park area.

2. A new pedestrian/bicycle bridge will connect Highway 47 near the Orchard Street intersection with Belair Drive. The bridge will connect these two roads at the narrowest point (approximately 140 feet) across the creek below and provide a safe and logical connection for these modes without necessitating traveling to the U.S. 30 intersection. The bridge will provide a good connection between the Howard/Orchard residential neighborhood and the High School (as well as the other schools) and the commercial center at Belair Drive which includes the post office. This solution is likely to be more cost effective than providing sidewalks and bike lanes on Highway 47 between U.S. 30 and Orchard Street where the topographic cross-section is such that provision of these facilities would be prohibitively expensive, if possible.

3. The existing pedestrian trail which connects the high school with Bryant Street will be upgraded to be more accessible in winter months. In addition, a pedestrian trail is required to connect the Whispering Woods development with NE 5th Street to avoid people having to walk along U.S. 30 to get into town. This project will be part of the private development, and not funded in the plan.



NORTH  
(NOT TO SCALE)



**LEGEND**

- PEDESTRIAN TRIP GENERATOR
- EXISTING SIDEWALK NETWORK
- FUTURE SIDEWALK NETWORK
- TRAILS
- PROPOSED CITY LIMITS
- UGB

**PEDESTRIAN PLAN**

TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE

10



**Table 14  
Pedestrian Plan Elements**

Street	From	To	(Note)	Decade
SIDEWALKS				
U.S. 30	NW UGB	E UGB	ODOT plan	1
NW/NE 5th Street	NW City limit	E City Limit		1
Belair Drive	U.S. 30	Chestnut Street	upgrade existing W side	2
Nehalem Street	NW 5th Street	SW 7th Street	requires some infill	1
Orchard Street	Highway 47	end	limited ROW, unstable	1
Korsmo Dr	Orchard St	Howard Drive		2
Pine Street	NW 5th Street	NE 8th Street		2
NE 8th Street	Pine Street	Poplar Street		2
Bryant Street	U.S. 30	SW 7th Street	school access	1
Tichenor Street	U.S. 30	SW 7th Street	school access	2
BRIDGES/ TRAILS				
Pedestrian Bridge	Highway 47	Belair Road	access to high-school and Belair Road path	1
Trail	High School	Bryant Street	upgrade existing	1
Trail	City Street	Whispering Woods	to avoid peds on U.S. 30	1
PEDESTRIAN CROSSING				
U.S. 30/Belair Dr			Included in signal plan	2
U.S. 30/Van Street			Included in signal plan	1

Sidewalks will be provided with a minimum width of 5 feet (clear of obstacles) in accordance with A.D.A. regulations.

### **Pedestrian Plan Costs and Implementation**

Tables in Appendix D contain details of the costs and implementation schedules for the Clatskanie Pedestrian Plan element. Costs are included for upgrading sidewalks, new sidewalks trails and a new bridge. Total costs are \$835,000 with \$630,000 occurring in the first decade and \$205,000 during the second.

## BICYCLE PLAN

Bicycle Plan elements suggested here are intended to supplement rather than replace the elements developed in Clatskanie's Bicycle Transportation Plan (March 1995).

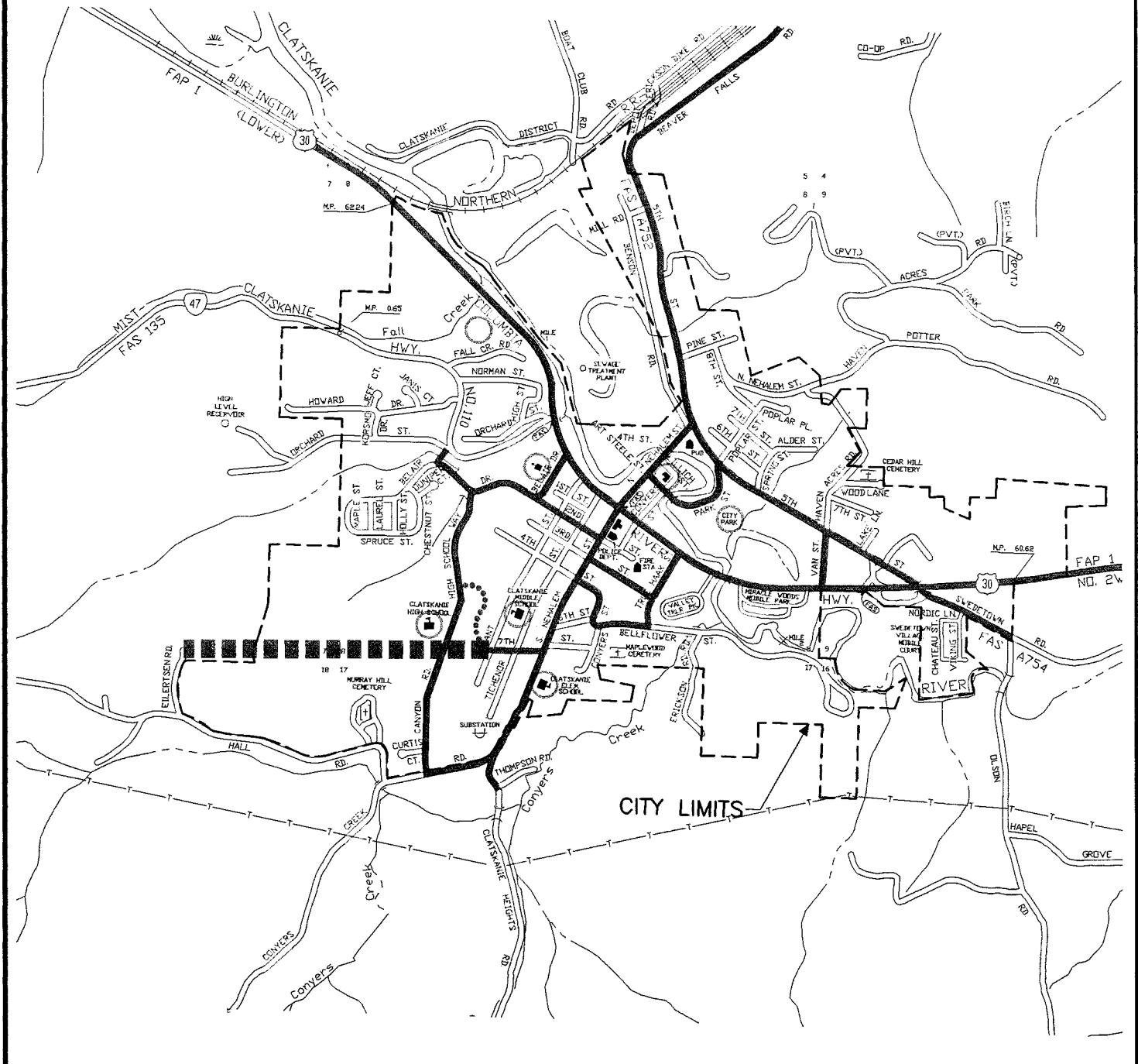
As mentioned in the memorandum on existing conditions, there was relatively little bicycle activity observed within Clatskanie during data gathering exercises. No counts were taken to quantify the level of activity and there is no historic data, so it is not possible to project current "traffic" into the future. Rather, estimates of future bicycle travel are based on the anticipated number of people, combined with assumptions on mode-split based on national data, as well as the location of bicycle trip-generators which include such uses as schools, library, City Park, commercial centers and residential areas.

The objective of the preliminary bicycle plan is to put in place a continuous system that links the primary trip generators in a manner that is attractive to cyclists for use as an alternative to making an automobile trip, and is safe. These elements may consist of posted routes, on-street bike lanes, and separated bicycle trails.

The proposed bicycle plan elements are shown in Figure 11 and in Table 15. Generally, it is advisable to provide bicycle facilities on all arterial and collector streets. Topography in Clatskanie, particularly in the north/south direction, does not lend itself to bicycle travel, and will likely never attract much bicycle traffic. On the other hand, routes which follow the Columbia River Highway, and Beaver Falls Road lend themselves well to bicycle circulation. This has dictated the focus of the bicycle plan which includes facilities on U.S. 30 as part of the Columbia River Highway bikeway. NE/NW 5th Street and Nehalem Street offer an alternative to U.S. 30 bicycle traffic. Park Street, Belair Drive, SW 2nd Street and High School Way/Canyon Road complete the bicycle circulation system by linking residential neighborhoods with the schools, library, park and shopping areas.



NORTH  
(NOT TO SCALE)



LEGEND	
○	TRIP GENERATOR
—	BIKE LANES
— · — · —	PROPOSED ROUTE
.....	PEDESTRIAN/BICYCLE TRAIL
- - - - -	CITY LIMITS
— · — · —	UGB

# BICYCLE PLAN

TRANSPORTATION SYSTEM STUDY  
CLATSKANIE, OREGON  
AUGUST 1997

FIGURE

11



**Table 15**  
**Bicycle Facilities**

Street	From	To	(Note)	Decade
On-Street Bike Lanes				
U.S. 30	NW UGB	E UGB	ODOT plan	1
NE/NW 5th Street	Beaver Falls Rd	E UGB	ROW constraints	1
Nehalem Street	NW 5th St	Conyers Creek Rd		1
Belair Drive	U.S. 30	Chestnut St.	shared with sidewalk	1
Highschool Way	Conyers Creek Rd	Belair Drive		2
SW 2nd Street	Belair Dr	Nehalem St	steep!!	1
SE 3rd Street	Nehalem St	Truehaak St		1
Truehaak Street	SE 3rd St	U.S. 30		1
Park Street	Nehalem St	N 5th St		1
Bike Trails				
Belair/Orchard Bridge	Highway 47	Belair	Ped/bike facility	1
Clatskanie River Dike?			Obtain RR ROW ?	2

### Bicycle Plan Costs and Implementation

Tables in Appendix D contain details of the costs and implementation schedules for the Clatskanie Bicycle Plan element. Costs are included for upgrading sidewalks, new sidewalks trails and a new bridge. Total costs are \$1.0 million with \$710,000 occurring in the first decade and \$290,000 during the second.

### TRANSIT PLAN

Communities the size of Clatskanie cannot support a fixed-route transit system - communities with a population of 15,000 are typically considered marginal in this regard. However, demand-responsive or para-transit can and does play an important and necessary part of the transportation system of smaller cities.

Columbia County Transit (COLCO) currently provides public transit service to all Clatskanie residents via a dial-a-ride program using 14-seat minibuses and regular minivans to provide door-to-door service for residents. Three vehicles are based in Clatskanie, each of which will be equipped with a wheelchair lift or ramp by the end of 1996. In June 1996, COLCO introduced service connecting Clatskanie to Tri-Met's route #17 (Sauvie Island), and thereby to downtown Portland.

During 1995, COLCO made approximately 22,000 trips serving Clatskanie residents.

Comprehensive plan growth suggests a 77 percent growth over the next 20 years, which would indicate an increase to 39,000 trips by 2016, based on extrapolation of current rates. In reality, as the population ages as is the trend in the USA, the number of old people, and therefore the number of para-transit trips may be expected to increase faster than the overall population. In either case, the number of vehicles will have to be increased by two to three, in addition to replacement of old vehicles. The City will participate with COLCO in funding decisions to ensure a service in the future that will support Clatskanie's older population.

The City will support COLCO in investigating coordination of service between Clatskanie and Rainier/Sauvie Island with a possible Cowlitz Transit Authority connection between Rainier and Longview/Kelso, should the ridership warrant such service. Scheduling of these services will be arranged to ensure minimal delay in connecting in Rainier. A market assessment will be conducted to assess the viability of this route, and service will be connected with the existing COLCO para-transit service where possible.

The terminal for transit service in Clatskanie will be located on North Nehalem Street in the section between U.S. 30 and the Clatskanie River bridge. Any new transit stops developed as part of the transit plan shall be provided with secure bicycle parking racks.

## **AIR, RAIL, WATER AND PIPELINE PLAN ELEMENTS**

### *Air Service*

Regularly scheduled national and international air transportation is provided via Portland International Airport which lies approximately 60 miles away and is accessed via U.S. 30 or I-5. In addition, regularly scheduled air service is provided via Astoria Airport located 35 miles to the west. A local general aviation airport is located between Scappoose and St. Helens. In addition, there is an general aviation airport located in Kelso, Washington.

The City supports commercial efforts to develop air facilities and ground connections (via transit service) to air facilities in recognition of the increasingly important role expected to be played by air transportation in the future.

### *Rail Plan*

The City of Clatskanie strongly supports efforts to maintain existing operation of rail service between Astoria and Portland. With increasing restrictions on truck traffic in the U.S. 30 corridor in the future, the existence of rail service in Clatskanie will be a significant attraction to potential future industrial developments within the City and at nearby Port Westward. If the Railroad decides to sell or otherwise dispose of this right-of-way, the City should take action to acquire it to preserve the right-of-way for the future. It could be used for a bikeway or a Rails-to-Trails project in the interim.

### *Water Transportation*

The plan supports efforts underway to further dredge the Columbia River from a 40 foot to a 43 foot channel. The added attractiveness to large ocean-going vessels could have a direct benefit to the City via potential development of Port Westward. Primary road access to Port Westward would be routed

largely through Clatskanie via NE/NW 5th Street and Beaver Falls Road. In addition, the Plan recommends the investigation of a ferry service between Astoria and Portland which might also serve Clatskanie. Dredging the Clatskanie River will be vigorously pursued to enhance the historic access to downtown Clatskanie via the Clatskanie River by boats, sternwheelers and/or ferries. While this mode of travel is expected to serve primarily tourist and recreational trips as opposed to commuter and peak period trips, it is nevertheless regarded as a potentially important addition to the existing transportation infrastructure, and a mode that would add to the alternatives available to the public.

### *Pipeline Plan*

Current pipeline services include water, natural gas and sewer and transmission lines for electricity, cable television and telephone service. The Clatskanie TSP recognizes the importance of these services and encourages their continued use and improvement for movement of these commodities through the City. In addition, new data transmission pipeline services such as fiber optic cable should be recognized as a potential for the future. The plan is supportive of the provisions in the Oregon Transportation Plan which calls for the provision of a major natural gas pipeline between Portland and Astoria by the year 2012.

The Plan also recognizes the increasing likelihood of telecommuting and other information superhighway technologies becoming viable alternatives to physical commuting; thus reducing and possibly even eliminating some automobile and transit trips during peak times. These commuting alternatives have the potential to reduce the need for expansion of the conventional transportation system infrastructure. As such, the use of telecommuting and other similar technologies should be encouraged through land use policy and plans.

### **ACCESS MANAGEMENT PLAN**

The Oregon Highway Plan (OHP) outlines spacing requirements for public roads, private driveways and traffic signals for six categories of state highways. According to the OHP, U.S. 30 is a *highway of statewide importance*. In the U.S. Highway 30 Interim Corridor Strategy Plan, the section of U.S. 30 through Clatskanie is a *category three* facility east of Nehalem Street and a *category four* facility to the west of Nehalem Street. Both these sections are urban. As a result, the highway is subject to the access requirements shown in Table 16.

**Table 16**  
**OHP Access Management Spacing Standards**

Category	Urban/Rural	Public Road Spacing	Private Drive Spacing	Signal Spacing	Median Control
3	U	2,640' - 5,280'	800'	2,640 - 5,280'	Partial
4	U	1,320'	500'	2,640'	Partial/None (7)

(7) Use of physical median barrier can be interspersed with segments of continuous left-turn lane or, if demand is light, no median at all.

The spacing requirements outlined in Table 16 indicate that Clatskanie is currently in non-compliance with the OHP access spacing standards (see Table 6). The City blocks are spaced at 280 feet, with a public street on each side of a block. This indicates that current spacing of public streets



does not meet even the requirements for public driveways for category 4 facilities. Implementation of the OHP would indicate that only every fourth city street should retain access to the highway in the category 4 section, with driveways spaced greater than a block-length apart (i.e. less than one driveway entrance per block face), and with driveways located opposite each other on each side of the highway. In category 3 sections, even fewer public roadways would retain access.

Site reconnaissance indicated that there are instances within the city where parking lots have more than one driveway and one may be sufficient, and where adjacent parcels could share a driveway. Also, there are instances where driveway curb cuts are wider than needed and should be more clearly defined.

The local ODOT district office is enforcing the current access management policy to the extent possible when one of the following conditions apply:

- ▶ redevelopment of properties on the highway frontage takes place,
- ▶ a major transportation improvement is implemented on U.S. 30, or
- ▶ a safety problem associated with private access to the highway is identified at a specific location.

Wherever possible, the District is closing non-permitted driveways and reducing the number of driveway accesses to one per block face at maximum. In all cases, ODOT will ensure that each property has access to a public roadway.

The Clatskanie TSP does not include rigorous implementation of the OHP access spacing standards. Closing public streets would create the need for more traffic signals by concentrating traffic at a few locations, and would create a potentially dangerous situation for accessibility by emergency vehicles including fire trucks. However driveway consolidation will be pursued wherever possible.

### ***Access Management Implementation***

The proposed signals at Belair Drive and Van Street will be implemented in conjunction with detailed access management plans for the sections of U.S. 30 between the Swedetown overpass and the Clatskanie River Bridge, and from Nehalem Street to Highway 47. Consolidation of access points to the highway will limit the number of traffic conflicts and allow free movement of cars along this segment. The installation of a center median between Van Street and the Clatskanie River Bridge will be investigated. Widening of the highway in these segments will result in environmental conflicts such as wetlands and issues associated with the Clatskanie River.

The City will work with the ODOT District office to continue to reduce the number of private driveways gaining access directly to the highway. The number of drives should be reduced, where possible, to one per block face with driveways on either side of the highway located opposite each other.

Where possible, access to blocks adjacent to the highway shall be restricted to driveways on a side street. To this end, the City of Clatskanie shall implement a process for working towards providing primary access via City streets for properties located on U.S. 30. Driveway connections between adjacent lots (cross-over easements) shall be used where possible to reduce the number of driveways.

Those instances indicated where head-in parking is allowed directly off the highway, and where lots have wide, ill-defined access drives rather than defined curb cuts shall be eliminated when possible. These examples both present safety hazards due to following drivers being unable to anticipate when a vehicle ahead of them will turn off the highway to access the adjacent land use.

*Summary*

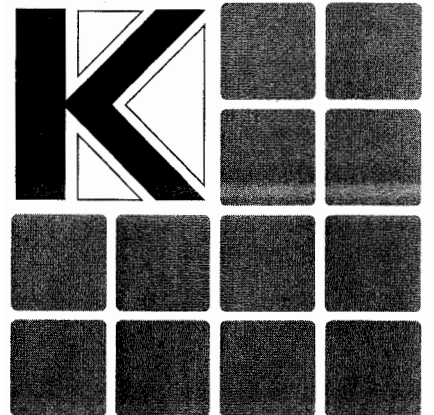
The City of Clatskanie will implement access management strategies as a highly effective means of optimizing traffic capacity and safety on U.S. 30 within the Clatskanie urban area. Effective access management could mean the difference between the need to widen U.S. 30 to four lanes over the twenty year planning period, or leave it in its current configuration. The historical nature of the City layout with small blocks and closely spaced City streets indicates that it unlikely that the City will meet the requirements of the OHP access spacing requirements, however some degree of improvement can be achieved, and the City will support ODOT's access policies for U.S. 30 by coordinating its planning efforts with ODOT and continuing to communicate information on adjacent land use activities to ODOT.



**Section 5**

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**Transportation Finance Plan**



## Clatskanie Transportation Finance Plan

In this section, the estimated costs and potential revenue sources for the transportation system improvements called for in the plan are discussed.

### ESTIMATED COSTS

The estimated cost of the projects in 1996 dollars is presented in Table 13. The plans to undertake a given project in the first or second decade are discussed in the previous section. These costs are construction costs and include contingencies, but do not include land acquisition, design or administration costs. Details of the cost estimates are provided in Exhibit E. The grand total of the cost of all improvements is \$ 6,865,711 being comprised of \$4,318,431 in first decade and \$2,546,780 in the second decade.

### POTENTIAL REVENUE SOURCES

Revenues for the above improvements can come from a variety of sources including Federal, State, and local (i.e., from Columbia County and the City of Clatskanie). This section provides an overview of a broad range of available possible funding mechanisms. The decision on how to fund individual projects using these mechanisms is ultimately a political one as it will impact local residents and needs to be acceptable to the majority of them. For each funding source, some guidelines are given as to where the method is currently used and the potential for use in Clatskanie.

#### *Federal Revenue Sources*

##### 1. Intermodal Surface Transportation Efficiency Act (ISTEA)

In 1991 Congress passed and the President signed the Intermodal Surface Transportation Efficiency Act. The act emphasizes flexibility in funding transportation solutions and establishes a series of funding categories for implementation. Funding through ISTEA is targeted at improvements which demonstrate beneficial impacts towards implementing a regions transportation systems plan, enhance multi-modal aspects of the transportation system and meet local land-use, economic and environmental goals. Funding categories used within ISTEA are intended to allow flexibility for areas to allocate funds for non-vehicular modes including pedestrian, bicycle and transit modes. The categories under which Clatskanie improvements might be eligible for funding include:

National Highway System: Highway 30 is identified on the National Highway System

Surface Transportation Program: Funding through this category may be used on any roads that are not functionally classified as local or rural minor collectors. These roads are referred to as Federal-aid routes. Transit capital improvement projects are also eligible for funding through this category.

National Scenic Byways Program: A National Scenic Byways Program was established in ISTEA to provide assistance to states in preserving and enhancing the scenic, cultural, historic, archaeological and recreational resources of selected corridors. Priority funding goes to projects that protect the corridor as well as increase tourism, demonstrate strong local commitment to

implementing plans, serve as models to other states and which are in multi-state corridors where states submit joint applications.

ISTEA is to be replaced by ISTEA2/NEXTEA for the six year funding period beginning in 1998. While numerous changes are expected, the overall format is expected to be retained.

## 2. Community Development Block Grants (CDBG)

This program is administered by the Federal Department of Housing and Urban Development. Cities receive funds through the program based upon a formula which includes their size, and other demographics including income levels and housing standards. Small cities of Clatskanie's size are often too small to qualify for any significant funding through this mechanism.

## *State Revenue Sources*

### 3. State Motor Vehicle Fund

The State of Oregon collects the following fuel and registration fees for the State Motor Vehicle Fund:

State Gas Tax:	\$0.24/gallon
Vehicle Registration Fee	\$15.00 per year

In addition, a weight-mile tax is assessed on freight carriers to reflect their use of state highways. The revenue from the fund is used by ODOT and distributed to cities and counties throughout the state based on share of statewide population and vehicle registration. ODOT and most counties and cities throughout the state use these funds primarily for maintenance purposes.

The continued usefulness of these funds relies on increased income from increased gas sales and registrations, and also on increases in registration and taxes in line with inflation. These rates are changed by state legislature.

### 4. State Transportation Improvement Program (STIP)

The Statewide 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. The current STIP covers the period from 1996-98. Projects funded in the STIP are those that are judged to have significance for the ODOT Region.

### 5. Special Public Works Fund and Other Economic Development Funds (Lottery Program)

The Special Public Works Fund and other economic development funds are administered by the Oregon Department of Economic Development (OEDD). OEDD makes such funds available on a grant or loan basis for projects that specifically serve development projects that generate jobs or other tangible economic benefits.

This mechanism is limited in that qualifying projects must prove their contribution to the economic

development of the community and the creation of family wage jobs.

**Table 17**  
**Costs of Planned Transportation Improvements**  
**(1997 Dollars)**

	COSTS 1997-2006	COSTS 2007-2016
<b>STREET IMPROVEMENTS</b>		
<b>Road Construction</b>		
SW 7th St: Eilertsen to Bryant	1,305,600	(595,200)
Thompson Ext: Truehaak to Thompson		647,680
G.P. Erickson Ext: Erickson to Clatskanie Hts		1,123,200
<b>Road Upgrade</b>		
NE/NW 5th: Beaver Falls to Olson	1,478,400	
NE5th/Hwy 30 ramp		44,000
Haven Acres: NE8th to UGB		88,000
Sight Distance improvements Orchard Hts	6,600	
<b>Signals</b>		
US 30/Belair Drive		150,000
US 30/Van Street	180,000	
<b>Signing Projects</b>		
Lower Orchard	500	
<b>TOTAL</b>	<b>2,971,100</b>	<b>2,052,880</b>
<b>SIDEWALKS</b>		
<b>New Sidewalks</b>		
NE/NW 5th: E. UGB to W. UGB	220,000	
Belair Dr: U.S. 30 to Chestnut		99,000
Orchard St: Hwy 47 to end	105,600	
Korsmo Dr: Orchard to Howard		11,000
Pine St: N 5th to N 8th		14,300
N 8th: Pine to Poplar		35,200
<b>Upgrade/Replace</b>		
US 30: UGB to W. UGB	143,000	
Nehalem St: NE 5th to Conyers	55,000	

Bryant St: US 30 to SW 7th	44,000	
Tichenor St: US 30 to SW 7th		44,000
<b>Trails</b>		
Pedestrian/Bike Bridge: Hwy 47 to Belair	56,320	
Highschool to Bryant	8,800	
Whispering Woods connection	developer paid	
<b>TOTAL</b>	<b>632,720</b>	<b>203,500</b>
<b>BICYCLE PLAN IMPROVEMENTS</b>		
<b>On Street Bike Lanes</b>		
US 30: W. UGB to E. UGB	state	
NE 5th St: Beaver Falls to E. UGB	660,000	
Highschool Way: Conyers Creek to Belair		290,400
Van Street: US 30 to NE 5th St	52,800	
<b>Bicycle Parking</b>		
Library, schools, park etc.	2,311	
<b>TOTAL</b>	<b>715,111</b>	<b>290,400</b>
<b>TOTAL</b>	<b>4,318,931</b>	<b>2,546,780</b>

### *Local (City/County) Revenue Sources*

Potential local sources of revenue include County funds as well as the proceeds from transportation systems development charges, which are to be spent for facilities that serve growth within the UGB, the proceeds of general obligation bonds supported by property taxes, the proceeds of Bancroft Bonds for Local Improvement Districts and transportation improvement requirements placed on applicants for land use and building permit approvals.

#### 6. Columbia County Road Fund

Columbia County maintains a road fund to construct, repair and maintain roads within its jurisdiction. Funding is commonly difficult to obtain as needs for improvements vastly exceed the funds available. In addition, the County has been seeking to transfer jurisdiction of County roads in Clatskanie to the City.

#### 7. Systems Development Charges (SDC's)

Systems development charges are fees that are imposed on the applicant for a building permit (or in some cases, a subdivision or partition approval) that are limited to use for development or reimbursement for previous development of transportation facilities designed to serve the increase in demand on the transportation system. To date, the City has only actually imposed an SDC for



water service. In order to impose a transportation SDC, the City would have to complete additional studies that specific the improvements required by growth and their costs. This TSP provides a solid basis for such studies.

SDC's are perceived as fair because they require development "to pay its own way." However, if SDC's are higher than in surrounding jurisdictions, they may cause development to bypass the locality in favor of less expensive alternative locations. Most of the cities in the Portland metro area have transportation SDC's and the City of Portland itself is in the process of adopting one.

Due to the relatively limited anticipated development within Clatskanie, this mechanism is not likely to raise a significant amount of revenue. A system development charge analysis and resulting proposal indicates that a total of approximately \$800,000 to \$1 million might be collected via this means over the life of this plan.

#### 8. General Obligation Bonds

General Obligation (GO) Bonds are bonds (long term debt) that require voter approval and that are supported by a levy of property taxes. Taxes for GO Bonds are exempt from the Ballot Measure 5 limits, and, if approved properly, are exempt from the "cut and cap" impacts of Ballot Measure 47.

The proceeds of GO Bonds can be used for capital improvements for both existing residents and future growth. The rationale for use of GO Bonds is that they are a way of financing improvements that are of benefit to the entire city. There is a limit to the amount of GO bonds that can be issued by a municipality, but Clatskanie is not close to that limit.

#### 9. Bancroft Bonds/Local Improvement Districts

Bancroft Bonds are used to finance the cost of public improvements that specifically benefit a defined set of properties that then comprise a Local Improvement District (LID). Property owners may petition the City to establish an LID and to issue tax exempt bonds to pay for the improvements. The property owners are then assessed for the payment of the bonds. Payments for LID assessments are not subject to the Measure 5 property tax limits and would be unaffected by Measure 47 unless there was a default on the bond. Defaults are uncommon because the property itself is pledged as security for the assessments and can be foreclosed upon and sold if the property owner becomes delinquent in his or her payments.

The rationale for Bancroft Bonds and LID's is that the costs of transportation improvements that provide benefits for specific properties are normally paid by those properties.

#### 10. Transportation Improvements as Conditions of Permit Approvals

It is common for a City to impose transportation improvements as a condition of approving a subdivision or building permit. For instance, a subdivision applicant is required to build and dedicate to the city the local streets and utility easements that serve the subdivision. If the City has a transportation SDC, the requirements for improvements as conditions of permit approval must be coordinated with the SDC so that a developer does not pay twice for the same improvements. Commonly, a developer will be required to construct the equivalent of half a local street along the frontage of the parcel. If the street is a collector or arterial, the developer is commonly entitled to

a refund for the costs of the project that exceed the local half-street improvement.

This mechanism is well suited to use in small cities like Clatskanie. Developers are usually not averse to this kind of "taxation" as the money remains within their control and improvements can be scheduled to coincide with work on the property such that the developer benefits from the new street(s).

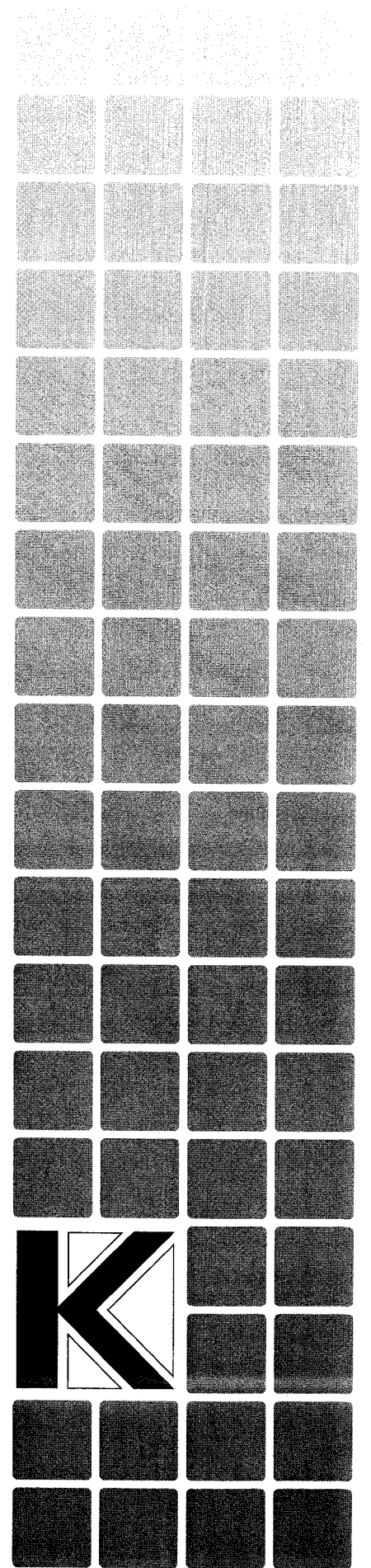
11. Other Local Sources

The City could use any other revenue available to it for transportation improvements, unless the use of such funds are otherwise restricted.

**PROJECT FUNDING PLAN**

This element is to be provided by the City of Clatskanie.

**Section 6**  
**Land Use Ordinance Modifications**



## Land Use Ordinance Modifications

The final adopted TSP will become an element of the Clatskanie Comprehensive Plan. Implementing the TSP will require amendments to the Comprehensive Plan policies and to the implementing ordinances of the Comprehensive Plan. These currently consist of the Zoning Ordinance and the Land Division Ordinance.

This section contains the recommended amendments. It contains the recommended language for amendment to the Goal 12 - Transportation policies of the Comprehensive Plan and the recommended language for several sections of the Zoning Ordinance. No amendments were determined to be necessary to the Land Division Ordinance. New language is marked in **bold** and deleted language is ~~crossed-out~~.

### GOAL 12: TRANSPORTATION

#### POLICIES:

1. The City shall utilize American Public Works Association (APWA) standards for road construction. These standards may be interpreted or modified only by the city engineer.
2. A sidewalk improvement plan ~~will be~~ **has been** developed and will be utilized to insure the timely repair of existing sidewalks and the construction of a **connected system of new sidewalks according to the pedestrian plan** ~~when needed~~.
3. The City will require the construction of adequate pedestrian facilities in all new subdivisions and planned developments.
4. The city engineer shall approve the **adopted Columbia County** standard to be met by all private roads built as part of a major partition, prior to the issuance of any permits for structures to be served by the road.
5. When a street or road is proposed in an area of steep slope, slide hazard or flood hazard, the Planning Commission shall require the developer to submit a plan prepared and stamped by a registered engineer that documents how the road can be safely constructed.
6. The construction of any road with a grade in excess of 12% must be approved by the City Council.
7. **The city may require that any all** subdivision ~~and~~ **or** planned development applications shall include a traffic impact statement indicating the potential on-site and off-site impacts of the proposed development, and the need for off-site road improvements and traffic signals.
8. The City will consider the probable development pattern of future growth into the UGB

when considering whether a proposed street has an appropriate design capacity.

9. The City ~~shall~~ **has planned** an integrated system of local collector and arterial streets and roads properly related to land use and other elements of the Comprehensive Plan.
10. The City supports the effects of COLCO to meet the needs of citizens who are transportation disadvantaged.
11. **The City will implement the TSP to achieve a multi-modal transportation system including highway, rail, water, public transportation and pedestrian and bicycle facilities.**

The following is recommended language that should be added into the Comprehensive Plan to ensure the implementation of the Transportation Planning Rule:

### **Approval Processes for Transportation Improvements**

The Transportation System Plan (the "Plan") is an element of the City of Clatskanie Comprehensive Plan. It identifies the general location of transportation improvements. Changes in the specific alignment of proposed transportation projects shall be permitted without amendment of the Plan if the new alignment falls within a transportation corridor identified in Plan.

The following actions, when taken in accordance with the Plan, shall be permitted without the need for approval by the Planning Commission or City Council:

Operation, maintenance, repair, and preservation of existing transportation facilities (except where specifically regulated).

Dedication of right-of-way, authorization of construction and the construction of facilities and improvements in accordance with the roadway standards stated in the Plan.

Changes in the frequency of transit, rail and airport services.

Construction of climbing and passing lanes within the right of way existing as of July 1, 1987.

Reconstruction or modification of public roads and highways, including the placement of utility facilities overhead and in the subsurface of public roads and highways along the public right of way, but not including the addition of travel lanes, where no removal or displacement of buildings would occur, or no new land parcels result.

Temporary public road and highway detours that will be abandoned and restored to original condition or use at such time as no longer needed.

Minor betterment of existing public road and highway related facilities, such as rest areas, within right of way existing as of July 1, 1987, and contiguous public-owned property utilized to

support the operation and maintenance of public roads and highways.

### **Policies for Protection of Transportation Facilities**

The City of Clatskanie wishes to protect future operation of the Highway 30 corridor, including the highway, pedestrian and bikeways and the rail line. The City also seeks to protect existing and planned transportation systems by continuing coordination with other relevant agencies, adhering to the road standards and following the access management policies and other measures contained in the Plan.

Recommended policies of the City of Clatskanie related to protection of transportation facilities are:

To protect the function of existing and planned roadways as identified in the Transportation System Plan.

In particular, the City will seek to reduce the number of direct access points to Highway 30. The number of driveways with direct access to Highway 30 shall be reduced, where possible, to one per block face, with driveways located opposite each other on either side of the highway.

Where possible, access to blocks adjacent to the highway should be restricted to a driveway on a side street. Driveway connections between adjacent lots (cross easements) should be used where possible to reduce the number of driveways. The City shall develop more specific access management plans that provide for continuous access systems between properties on blocks adjacent to Highway 30.

To consider of the impact on existing or planned transportation facilities in all land use decisions.

To protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.

To consider the potential to establish or maintain accessways, paths, or trails prior to the vacation of any public easement or right-of-way.

To preserve right-of-way for planned transportation facilities through exactions, voluntary dedication, or setbacks.

### **Policies for Pedestrian and Bicycle Circulation**

The City of Clatskanie wishes to plan and develop a network of streets, accessways, and other improvements, including bikeways, sidewalks, and safe street crossings to promote safe and convenient bicycle and pedestrian circulation within the community. It is the policy of the City to:

Require streets and accessways where appropriate to provide direct and convenient access to major activity centers, including downtown, schools, shopping areas, and community centers.

Consider the existing and future opportunities for bicycle and pedestrian ways. Many existing ways such as user trails established by school children distinguish areas of need and should be incorporated into the transportation system.

Include bikeways in the roadway standards for all new arterials and collectors within the Urban Growth Boundary.

Retrofit existing arterials and collectors with bike lanes shall proceed on a prioritized schedule as appropriate and practical.

Include sidewalks in the roadway standards for all new streets within the Urban Growth Boundary.

Retrofit existing streets with sidewalks on a prioritized schedule.

Give priority to developing pedestrian and bicycle access to major activity centers within the Urban Growth Boundary, such as the downtown, schools, and community centers.

Design and construct bikeways and pedestrian accessways to minimize potential conflicts between transportation modes.

### **Policies for Coordinated Review of Land Use Decisions**

The City of Clatskanie shall coordinate with the Oregon Department of Transportation (ODOT) to implement the highway improvements listed in the Statewide Transportation Improvement Program (STIP) that are consistent with the Transportation System Plan and comprehensive plan.

The City shall consider the findings of ODOT's draft Environmental Impact Statements and Environmental Assessments as integral parts of the land use decision-making procedures. Other actions required, such as a goal exception or plan amendment, will be combined with review of the draft EA or EIS and land use approval process.

### **Recommended Amendments to Zoning Ordinances**

#### **ACCESS**

- A. Every lot shall abut a street other than an alley for at least 20 feet.
- B. Direct access from a lot to a roadway classified as an arterial or collector in the Transportation System Plan shall be subject to approval by the Public Works Director. The number and location of access points shall be governed by the need to provide reasonable access to the lot while minimizing the number of individual access points. Where a lot may take access from either of two different streets, access to the lot shall be from the street with the lower functional classification, unless access from such street precludes reasonable development of the lot according to the development standards of the applicable zone.

- C. Adjacent commercial or office uses containing over 10,000 square feet in floor area located on Highway 30 shall provide a cross access drive and pedestrian access to allow circulation between the sites.
- D. Internal pedestrian circulation shall be provided in new commercial, office, and multi-family residential developments through the clustering of buildings, construction of hard surface walkways, landscaping, accessways, or similar techniques.
- E. On-site facilities shall be provided that accommodate safe and convenient pedestrian and bicycle access within new subdivisions, multi-family developments, planned development, shopping centers, and commercial districts, and connecting to adjacent residential areas and neighborhood activity centers within one-half mile of the development. Residential developments shall include streets with sidewalks and accessways. Pedestrian circulation through parking lots shall be provided in the form of accessways.

#### **OFF-STREET PARKING AND LOADING.**

**General Provisions.** This section contains parking standards which are applicable to uses in all zones. At the time of construction of a new building, or an addition to an existing building or land which results in intensified use by customers, occupants, employees or other persons, off-street parking and loading shall be provided according to the requirements of this section.

**Continuing Obligation.** The provision for and maintenance of off-street parking and loading facilities shall be a continuing obligation of the property owner.

#### **Use of Space.**

- A. Required parking spaces shall be available for the parking of vehicles of customers, occupants and employees.
- B. Required loading spaces shall be available for the loading and unloading of vehicles associated with the transportation of goods or service.

**Joint Use of Facilities.** The minimum parking requirements for two or more adjacent uses, structures or parcels of land that share access may be reduced by the Planning Commission from those stated in this section, where the peak parking demands do not occur at the same time periods. Satisfactory legal evidence must be presented to the Planning Commission in the form of deeds, leases, or contracts to document shared use and full access to such parking and loading areas.

**Location.** Spaces required by this Section shall be provided on the site of the primary use. However, the Planning Commission may permit parking to be located within three hundred (300) feet from site or may permit the use of on street parking to meet a portion of the parking needs when a hardship can be shown.



**Change of Use.** In case of enlargement or change of use, the number of parking or loading spaces required shall be based on the total area involved in the enlargement or change in use.

**Design Standards.** The design standards shall apply to all parking, loading and maneuvering areas, except those for single and two-family residential dwellings on individual lots.

**Loading Spaces.**

- A. Commercial: each required space shall be at least twelve (12) feet in width and thirty-five (35) feet in length.
- B. Industrial: each required space shall be at least twelve (12) feet in width and sixty (60) feet in length.
- C. Clearance: the height of each required loading space shall provide a minimum vertical clearance of thirteen (13) feet.

**Parking Space Dimensions.**

- A. The standard size of a parking space shall be nine (9) feet in width by eighteen (18) feet in length.
- B. Up to 20% of required parking spaces may be designed for compact car dimensions of seven and one-half (7.5) feet in width by fifteen (15) feet in length.
- C. Handicapped parking spaces shall be twelve (12) feet in width by eighteen (18) feet in length.
- D. For parallel parking the length of the parking space shall be increased to twenty-two (22) feet.

**Aisles.** Aisles shall not be less than:

- A. 25 feet in width for 90 degree parking
- B. 20 feet in width for 60 degree parking
- C. 20 feet in width for 45 degree parking
- D. 12 feet in width for parallel parking

**Access.** There shall be no more than one (1) forty-five (45) foot wide curb cut driveway per one hundred and fifty (150) feet of frontage, or fraction thereof, permitted per site. However, where the property abuts an arterial or collector street, the number of access points permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage.

If the driveway is a one way in or one way out drive, then the driveway shall be a minimum

width of 10 feet and shall have appropriate signage designating the driveway as a one way connection.

For two-way access, each lane shall have a minimum width of 10 feet.

Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view. Construction of driveways along acceleration or deceleration lanes and tapers shall be avoided due to the potential for vehicular weaving conflicts.

The length of driveways shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation.

**Surfacing and Marking.** The surface of each parking area shall be concrete or asphalt and meet minimum City standards to handle the weight of the vehicles which will use the parking areas. All areas used for parking shall be marked and continuously maintained. Handicapped parking spaces shall be marked with a wheelchair symbol.

**Drainage and Lighting.** Adequate drainage shall be provided to dispose of the runoff generated by the impervious surface areas of the parking lot. The drainage system shall function so it will not adversely affect adjoining property. Lighting shall be provided in such a manner as to insure the safety of the parking area without interfering with adjoining properties or creating traffic hazards on adjoining streets.

#### **Design of Parking Areas.**

- A. **Handicapped Parking.** All parking areas of less than twenty (20) spaces shall have one (1) handicapped parking space. Parking areas with more than twenty (20) spaces shall provide one (1) handicapped parking space for every fifty (50) standard parking spaces.
- B. **Parking Bays.** All parking areas shall be divided into bays of not more than twenty (20) parking spaces. Between and at the end of each parking bay there shall be planters with minimum dimensions of five (5) feet by seventeen (17) feet. Each planter shall contain one major tree and ground cover. Truck loading areas are not subject to the requirement for parking bays.
- C. **Landscape Strip.** Parking areas shall be separated from the exterior wall of a structure, exclusive of paved pedestrian ways, by a five (5) foot wide landscaping strip.
- D. **Setback and Screening from Residential Districts.** Parking areas which abut a residential district shall meet the building setback of the most restrictive adjoining district. A parking area abutting a residential district shall be screened by a sight obscuring planting.
- E. **Setback from Street.** Parking areas shall be setback from a lot line adjoining a street. The setback area shall be landscaped.
- F. **Landscaping.** A minimum of ten (10) percent of the parking areas shall be landscaped and the maintenance of the landscaping shall be the owner's responsibility.

**MINIMUM PARKING REQUIREMENTS**

<b>Residential Uses</b>	<b>Spaces Required</b>
Single Family Dwelling	2 spaces per dwelling unit
Two Family Dwelling	2 spaces per dwelling unit
Multi Family Dwelling	2 spaces per dwelling unit, plus 1 visitor space per each five (5) units
Motel or Hotel	1 space for each guest room
Mobile Home Park	2 spaces per each mobile home space
Nursing/Convalescent Home	1 space for each four (4) beds, plus 1 space for each two (2) employees
<b>Public and Semi-Public Buildings and Uses</b>	<b>Spaces Required</b>
Auditorium/Meeting Room	1 space for each 60 feet of floor area
Churches	1 space for each 80 feet of floor area
Hospital	1 space for each two (2) beds
High School	1 space for each ten (10) classroom seats
Elementary/Junior High Schools	1 space for each twelve (12) classroom seats
Kindergarten, Day Care	1 space for each two (2) employees
<b>Retail Uses</b>	<b>Spaces Required</b>
Grocery, Department Store	1 space per 400 square feet Gross Leasable Area (GLA)
Service & Repair Shop	1 space per 600 square feet GLA
Bulk Merchandise Retail	1 space per 600 square feet GLA
Bank or Office (includes medical/dental)	1 space per 300 square feet GLA
Restaurant, Tavern or Bar	1 space per 100 square feet GLA
Loading Space for Commercial Uses	1 space per 25,000 square feet. GLA
<b>Industrial Uses</b>	<b>Spaces Required</b>

Manufacturing	1 space for each two (2) employees on largest shift
Wholesale/Storage	1 space for each 5,000 square feet GLA
Loading Space for Industrial Uses	1 space per 40,000 sq. ft. GLA

### Unspecified Uses

Any use not specifically listed shall provide the requirements deemed equivalent or appropriate by the Planning Commission.

### Bicycle Parking Spaces

Bicycle parking spaces shall be provided in accordance with the following:

A. Multi-Family Residences. Every residential use of four (4) or more dwelling units shall provide at least one sheltered bicycle parking space for every 2 units. Sheltered bicycle parking spaces may be located within a garage, storage shed, basement, utility room or similar area. In those instances in which the residential complex has no garage or other easily accessible storage unit, the required bicycle parking spaces shall be sheltered under an eave, overhang, an independent structure, or similar cover.

B. Parking Lots. All public and commercial parking lots and parking structures shall provide a minimum of one bicycle parking space for every 10 motor vehicle parking spaces.

C. Schools. Elementary and middle schools, both private and public, shall provide one bicycle parking space for every 10 students and employees. High schools shall provide one bicycle parking space for every 5 students and employees. All spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.

D. Downtown Areas. In downtown areas with on-street parking, bicycle parking for customers shall be provided along the street at a rate of at least one space per use. Spaces may be clustered to serve up to six (6) bicycles; at least one cluster per block shall be provided. Bicycle parking spaces shall be located in front of the stores along the street, either on the sidewalks in specially constructed areas such as pedestrian curb extensions. Bicycle parking shall not interfere with pedestrian passage, leaving a clear area of at least 5 feet. Customer spaces are not required to be sheltered.

### APPROVAL REQUIREMENTS FOR TRANSPORTATION IMPROVEMENTS

**Uses Permitted Outright.** Except where otherwise specifically regulated by this ordinance, the following transportation improvements are permitted outright in all zones:

- A. Normal operation, maintenance, repair, and preservation activities of existing transportation facilities.

- B. Installation of culverts, pathways, medians, fencing, guardrails, lighting, and similar types of improvements within the existing right-of-way.
- C. Projects specifically identified in the Transportation System Plan as not requiring further land use regulation.
- D. Landscaping as part of a transportation facility.
- E. Emergency measures necessary for the safety and protection of property
- F. Acquisition of right-of-way for public roads, highways, and other transportation improvements designated in the Transportation System Plan except for those that are located in exclusive farm use or forest zones.
- G. Construction of a street or road as part of an approved subdivision or land partition approved consistent with the applicable land division ordinance.

### **Conditional Uses**

The following transportation improvements are permitted when approved as Conditional Uses according to the criteria contained in this section.

- A. Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are: (1) not improvements designated in the Transportation System Plan or (2) not designed and constructed as part of a subdivision or planned development subject to site plan and/or conditional use review, shall comply with the Transportation System Plan and applicable standards, and shall address the following criteria. For State projects that require an Environmental Impact Statement (EIS) or EA (Environmental Assessment), the draft EIS or EA shall be reviewed and used as the basis for findings to comply with the following criteria:
  - 1. The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning.
  - 2. The project is designed to minimize avoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.
  - 3. The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.
  - 4. Project includes provision for bicycle and pedestrian circulation as consistent with the comprehensive plan and other requirements of this ordinance.
- B. If review under this Section indicates that the use or activity is inconsistent with the Transportation System Plan, the procedure for a plan amendment shall be undertaken prior to or in conjunction with the conditional permit review.

- C. Authorization of a conditional use shall be void after a period specified by the City as reasonable and necessary based on season, right-of-way acquisition, and other pertinent factors. This period shall not exceed three years.

### QUASI-JUDICIAL AMENDMENTS TO THE COMPREHENSIVE PLAN OR ZONING MAP.

Quasi-judicial amendments to the Comprehensive Plan or Zoning Map (generally small in size, single ownership or single interest in changing the zoning map) may be initiated by the City Council, the Planning Commission, or by application of an owner of property or the owner's authorized agent within the area for which the amendment is proposed.

The applicant shall demonstrate that the comprehensive plan map or zoning map change request meets the following **criteria**:

- A. The proposal conforms with applicable provisions of the City's Comprehensive Plan. As such conformance pertains to the Transportation System Plan, the following provisions apply:

A plan or land use regulation amendment significantly affects a transportation facility if it:

Changes the functional classification of an existing or planned transportation facility;

Changes standards implementing a functional classification system;

Allows types or levels of land use that would result in levels of travel or access what are inconsistent with the functional classification of a transportation facility; or

- Would reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.

Proposals which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:

Revising the proposal to be consistent with the planned function of the transportation facility, or Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or,

- B. The proposal complies with all applicable statutory and ordinance requirements and regulations.
- C. There is a public need for the proposal and that this need will be served by changing the zoning of the property in question as compared with other available property.
- D. The public interest is best carried out by approving the proposal at this time.

Quasi-judicial amendments to the Comprehensive Plan Map or Zoning Map shall be considered at a public hearing before the Planning Commission. Notice and appeal procedures set forth in Article 7 shall apply. Quasi-judicial amendments shall be approved by the City Council by ordinance

following a public hearing.

## DESIGN REVIEW.

The Planning Commission shall conduct design review hearings for new multifamily construction and new commercial, institutional and industrial construction. Single family dwellings and duplexes are not subject to design review.

**Purpose.** The purposes and objectives of the design review process are to:

- A. Encourage originality, flexibility and innovation in site planning and development;
- B. Encourage orderly development of a site in a manner compatible with surrounding property;
- C. Provide for the orderly development of property in concert with timely construction of necessary public facilities and services;
- D. Prevent undue traffic congestion and pedestrian hazards; and
- E. Stabilize and improve property values.

**Application.** The applicant shall a completed application form and required fee, together with the following information, to initiate the design review process.

- A. A site plan, drawn to scale, indicating the location of all existing and proposed structures, public and private streets, driveways, natural features, landscaping, parking and loading spaces, fencing/screening, and proposed plans for lighting and signs.
- B. Architectural drawings or sketches, drawn to scale, showing all elevations and exterior materials of the proposed structures.
- C. For developments that are likely to generate more than 400 average daily motor vehicle trips (ADTs), the applicant shall provide adequate information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding street system.

**Planning Commission Authority.** The Planning Commission may approve, approve with conditions, or deny the application for design review. In approving a design review application, the Planning Commission may impose condition found necessary to protect the best interests of the surrounding property or neighborhood, or the City as a whole.

**Notice and Hearing.** A public hearing shall be scheduled before the Planning Commission for the design review. The hearing shall be conducted in accordance with the notice, hearing and appeal procedures of Article 7.

**Criteria.** In order to grant Design Review Approval, the Planning Commission shall make findings of fact to support the following conclusions:

- A. That the public and private facilities and services provided by the development are adequate to serve the residents or establishments and meet City standards.
- B. That adequate right-of-way and improvements to streets and pedestrian ways are provided by the development in order to promote safety and reduce congestion. (This determination of impact or effect should be coordinated with the provider of the affected transportation facility, such provider is not the City of Clatskanie.)
- C. That there is a safe and efficient circulation pattern within the boundaries of the site and adequate off-street parking and loading facilities provided in a safe, well designed and efficient manner.
- D. That adequate means are provided to ensure continued maintenance of private common areas.
- E. That there is a desirable, efficient and workable interrelationship among buildings, parking, loading areas, circulation, open spaces, landscaping and related activities and uses on the site.
- F. That grading and contouring of the site will minimize the possible adverse effect of grading and contouring on the natural vegetation and physical appearance of the site.
- G. That the proposed location and design of walls, fences, berms, signs, and lighting does not adversely impact surrounding properties.

**Termination of Approval.** Design review approval shall become void two years after the date of final approval unless prior to that time a building permit has been issued for the project and substantial construction has taken place.

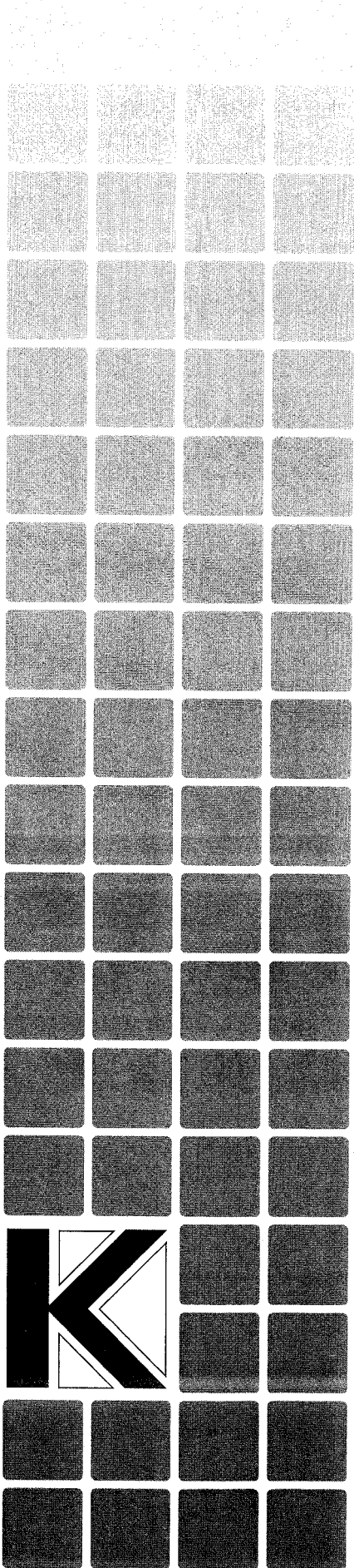
**Concurrent Hearings.** An application for Design Review may be made at the same time as another land use application. In such a case the Planning Commission may hold one public hearing and consider the applications concurrently.







Appendices



## APPENDIX A

### PUBLIC INVOLVEMENT

#### STAKEHOLDER CONCERNS

At a meeting at the outset of this planning study, members of the Clatskanie Planning Council and City officials were informally interviewed in order to obtain a local perspective on traffic-related concerns of Clatskanie residents. The responses have been grouped into five categories and are listed below.

##### Safety Concerns:

- A dangerous pedestrian crossing near the Belair Drive intersection on U.S. 30 needs to be addressed or relocated.
- Auto access to the Little League field west of town should be made safer - this is on the section of highway where the posted speed is 55 m.p.h. Perhaps the entrance should be moved to the west.
- There is insufficient sight distance at intersections located along Highway 47.

##### Highway Traffic:

- The City should rebuild the Belair/U.S. 30 intersection to make the westbound-to-southbound turn an easier movement.
- A left-turn lane and/or a signal is needed at the Van Street/U.S. 30 intersection where traffic currently backs up during peak traffic periods.
- The City should consider traffic calming for U.S. 30 - particularly in the area around Nehalem Street which is heavily used by pedestrians including schoolchildren.
- Access drives to Safeway are located too close to one another and too close to the intersections of Highway 47 and Belair Drive.

##### Liveability:

- The possibility of widening U.S. 30 through the City is unacceptable to residents who feel it is already too much of a barrier within the community.
- Alternative access to Port Westward will be needed should major development occur there to minimize the traffic impact on downtown.
- The transportation plan needs to promote industrial development and employment opportunities.

##### Alternative Mode Travel:

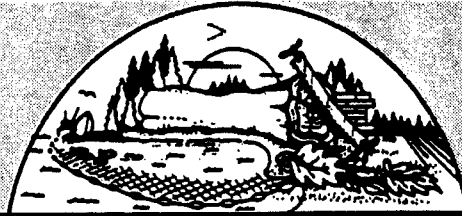
- Planners should consider alternative mode (pedestrian & bike) path parallel to railroad to the northwest of town.
- The plan needs to provide for safe pedestrian access across U.S. 30.
- A pedestrian bridge should be provided between Belair Drive and Crown View across the existing creek to allow pedestrian and bicycle travel between the Orchards

neighborhood and the high-school as well as downtown without having to use Highway 47.

- Sidewalks are needed on N.W. 5th Street.
- An second bicycle route should be provided along Van Street, N 5th Street and through the City Park back to U.S. 30 as an alternative to U.S. 30.
- Safe pedestrian and bicycle access to schools must be provided.
- New residential developments which may have vehicular access to U.S. 30 should have pedestrian and bicycle connections in to the City that avoid the need to travel on the Highway shoulders.

#### City Streets:

- City street standards need to be developed and enforced with all new subdivisions and reconstruction projects.
- The U.S. Mail drive-up drop box is located so that a driver would have to illegally use the wrong lane to get up to the box and should be relocated.
- There is a lack of developable residential land that is currently accessible. The City should identify areas suitable for development, and provide utilities to these areas.
- The intersection of N 5th Street/Nehalem Street needs improvements which may include channelization and/or signing to minimize confusion and improve safety.



## CITY OF CLATSKANIE

# TRANSPORTATION SYSTEM PLAN

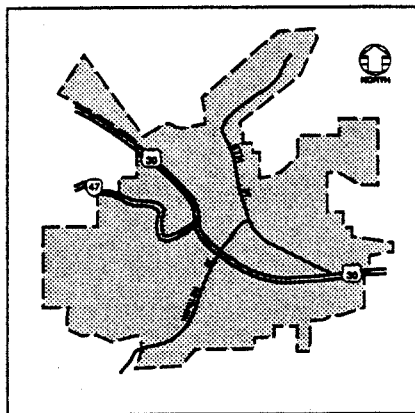
### Transportation Study Begins:

The City of Clatskanie and the Oregon Department of Transportation are pleased to announce the commencement of the Clatskanie Transportation System Planning Study. The resulting Transportation System Plan (TSP) will guide the development of the transportation system for the City over the next twenty years. The study is being undertaken to ensure the transportation infrastructure will adequately serve the future mobility needs of the community into the next century and to ensure compliance with the State's Transportation Planning Rule. Kittelson & Associates, Inc. will lead the study team made up of City staff and the citizens. Work began on the project in January 1996, and will continue through the end of 1996.

The study will consider an area bounded by the City's Urban Growth Boundary (UGB) which includes approximately 3 miles of US 30 as well as just over one half-mile of Highway 47. The plan will facilitate the implementation of a balanced multi-modal (auto, pedestrian, bike, train etc.) transportation system with particular emphasis placed on improving accessibility for the young and the elderly, as well as for pedestrians, bicyclists and transit riders.

This public information bulletin was produced by the City of Clatskanie and Kittelson & Associates, Inc.

Project Study Area

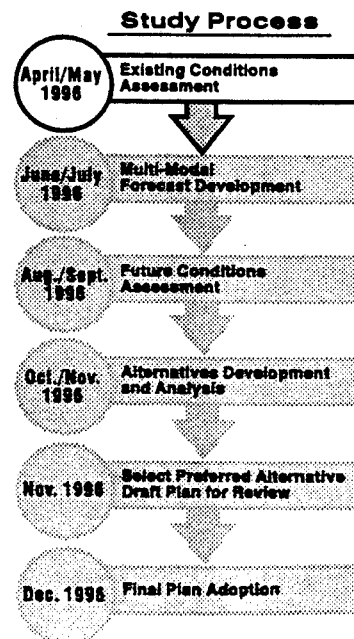


### Public Involvement Sought:

Citizen involvement is critical to the success of this study and depends on YOU. A number of meetings will be held throughout the process to keep the community apprised of the progress of the study. You are encouraged to voice your ideas on transportation issues to Dave True, the City's public works director.

### The Study Process:

The study process and timeline is outlined in six stages. Currently the team is involved in inventorying the existing transportation system and collecting data on existing operating conditions including peak time traffic operations at intersections, accident and safety conditions and the physical condition of roads etc. During the next few months we will be identifying existing and projected future deficiencies and defining improvement alternatives.





## APPENDIX B

### LEVEL OF SERVICE CONCEPT

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various LOS from A to F.<sup>1</sup>

Table A-1

Level of Service Definitions (Signalized Intersections)

Level of Service	Traffic Flow Characteristics
A	Very low average stopped delay, less than five seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average stop delay is in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Average stopped delay is in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average stopped delays are in the range of 25.1 to 40.0 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average stopped delays are in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average stop delay is in excess of 60 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay levels.

<sup>1</sup>Most of the material in this appendix is adapted from the Transportation Research Board, *Highway Capacity Manual*, Special Report 209 (1985).

## Signalized Intersections

The six LOS grades are described qualitatively for signalized intersections in Table A-1. Additionally, Table A-2 identifies the relationship between level of service and average stopped delay per vehicle. Using this definition, LOS D is generally considered to represent the minimum acceptable design standard.

Table A-2  
Level of Service Criteria for Signalized Intersections

Level of Service	Stopped Delay per Vehicle (sec)
A	$\leq 5.0$
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.0 to 60.0
F	$> 60.0$

## Unsignalized Intersections

The calculation of LOS at an unsignalized intersection requires a different approach. The *1985 Highway Capacity Manual* includes a methodology for calculating the LOS at two-way, stop-controlled intersections. For these unsignalized intersections, LOS is defined using the concept of "reserve capacity" (i.e., that portion of available hourly capacity that is not used). A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table A-3. A quantitative definition of LOS for an unsignalized intersection is presented in Table A-4.



Table A-3  
Level of Service Definitions (Unsignalized Intersections)

LOS	General Description
A	<ul style="list-style-type: none"> <li>• Average delay per vehicle ranges between 0 and 10 seconds</li> <li>• Nearly all drivers find freedom of operation</li> <li>• Very seldom is there more than one vehicle in the queue</li> </ul>
B	<ul style="list-style-type: none"> <li>• Average delay per vehicle ranges between 10 and 20 seconds</li> <li>• Some drivers begin to consider the delay an inconvenience</li> <li>• Occasionally there is more than one vehicle in the queue</li> </ul>
C	<ul style="list-style-type: none"> <li>• Average delay per vehicle ranges between 20 and 30 seconds</li> <li>• Many times there is more than one vehicle in the queue</li> <li>• Most drivers feel restricted, but not objectionably so</li> </ul>
D	<ul style="list-style-type: none"> <li>• Average delay per vehicle ranges between 30 and 40 seconds</li> <li>• Often there is more than one vehicle in the queue</li> <li>• Drivers feel quite restricted</li> </ul>
E	<ul style="list-style-type: none"> <li>• Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement</li> <li>• Average delay per vehicle ranges between 40 and 60 seconds</li> <li>• There is almost always more than one vehicle in the queue</li> <li>• Drivers find the delays approaching intolerable levels</li> </ul>
F	<ul style="list-style-type: none"> <li>• Forced flow</li> <li>• Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection</li> </ul>

**Table A-4**  
**Level-of-Service Criteria for Unsignalized Intersections**

Reserve Capacity (pcph)	Level of Service	Expected Delay to Minor Street Traffic
≥ 400	A	Little or no delay
300-399	B	Short traffic delays
200-299	C	Average traffic delays
100-199	D	Long traffic delays
0-99	E	Very long traffic delays
*	F	*

pcph: passenger cars per hour

\*When demand volume exceeds the capacity of the lane, extreme delays will be encountered, with queuing that may cause severe congestion and affect other traffic movements in the intersection. This condition usually warrants intersection improvement.

The reserve capacity concept applies only to an individual traffic movement or to shared lane movements. Once the LOS, capacity, and expected delay of all the individual movements have been calculated, an overall evaluation of the intersection can be made. Normally, the movement having the worst LOS defines the overall evaluation, but this may be tempered by engineering judgment. An "E" LOS is generally considered to represent the minimum acceptable design standard.

Experience with the unsignalized analysis procedure indicates this methodology is conservative in that it tends to overestimate the magnitude of any potential problems. This is especially true for minor-street, left-turn movements. For example, the *Highway Capacity Manual* methodology does not take into account the effects of vehicle flow platoons that result from upstream signalization. Vehicles traveling in platoons tend to create greater gaps in the traffic flow, which sometimes provide additional capacity for the side closest to the signal. Therefore, the results of any unsignalized intersection analysis should be reviewed with this thought in mind. Generally, LOS E for the minor-street, left-turn movement is considered to be acceptable for an unsignalized intersection, although it also indicates that the need for signalization should be investigated.

All-Way Stop-Controlled Intersections<sup>2</sup>

There is no accepted procedure for a level-of-service analysis of an all-way, stop-controlled intersection. The procedure used for determining LOS for a four-way or three-way stop-controlled intersection differs from that described for unsignalized intersections. This methodology, which is being reviewed by the Unsignalized Intersection Committee of the Transportation Research Board, uses a capacity estimation method based on headways observed at all-way, stop-controlled intersections in the western United States. The procedure incorporates several important variables, including volume distribution, number of lanes on each approach, and the percentage of right and left turns at the intersection. Intersection performance is measured in parameters similar to signalized intersections: delay, volume-to-capacity ratio, and Level of Service using a scale of "A" through "F." Approach delay on any given leg of the intersection is calculated using the following equation:

$$D = \exp\left(3.8 \cdot \frac{SV}{C}\right)$$

Where D = vehicle delay on a given approach (sec/veh),  
 SV = subject approach volume (vehicles per hour),  
 C = calculated approach capacity (vph), and  
 exp = base of natural logarithms

In this equation, the quantity SV/C is simply the volume-to-capacity ratio on the approach under consideration. Table A-5 presents the LOS criteria for all-way stop-controlled intersections.

Table A-5  
 Level of Service Definitions (All-Way Stop-Controlled Intersections)

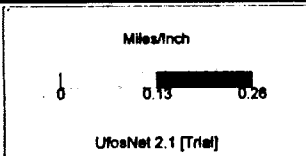
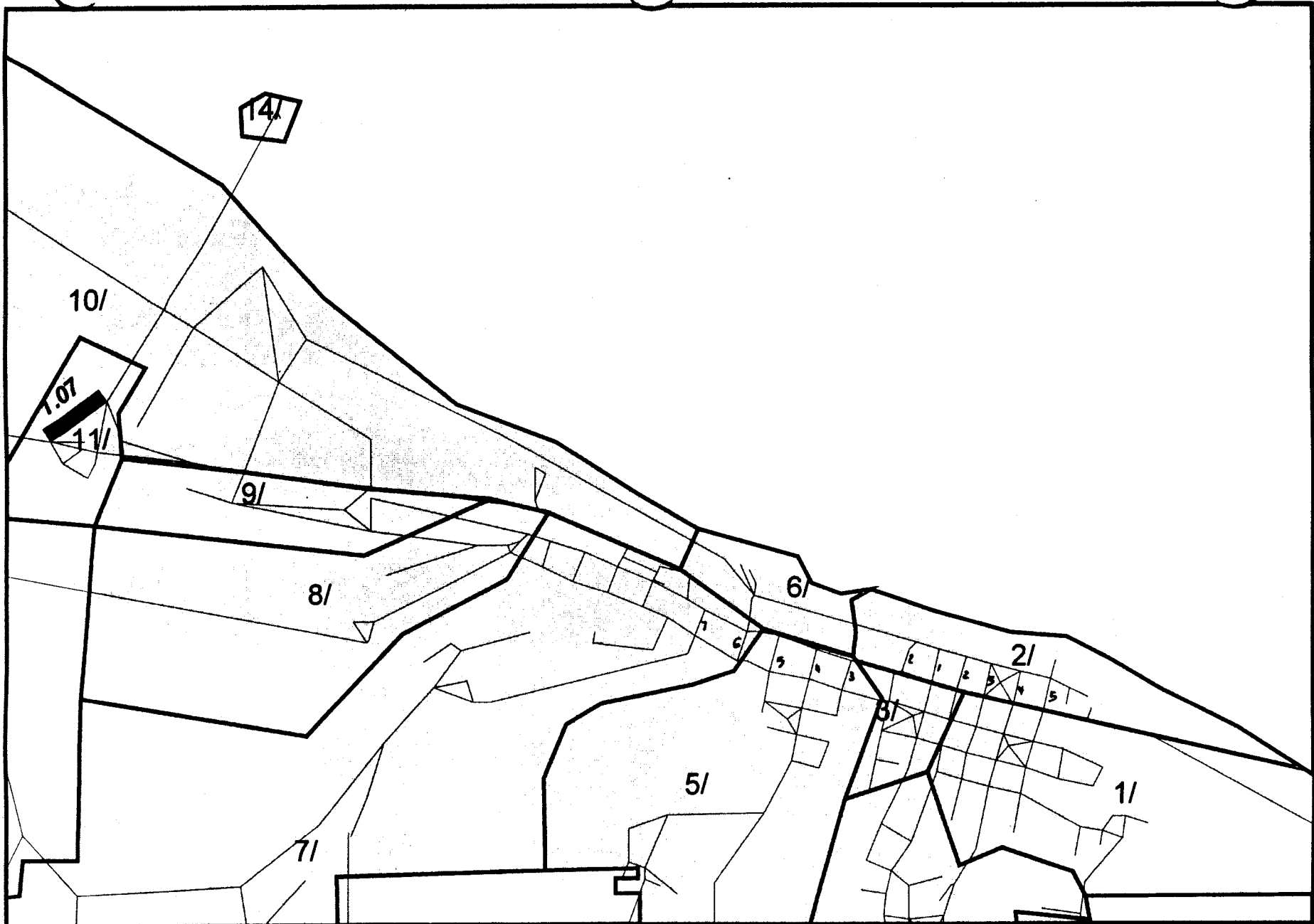
Level of Service	Average Delay to Minor Street Vehicle
A	<5 seconds
B	5 to 10 seconds
C	10 to 20 seconds
D	20 to 30 seconds
E	30 to 45 seconds
F	>45 seconds

<sup>2</sup>Kyte, Michael, *Estimating Capacity and Delay at an All-Way Stop-Controlled Intersection*. University of Idaho, Department of Civil Engineering Research Report, September 1989.



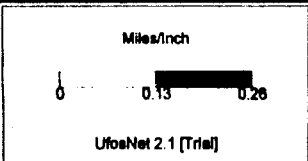
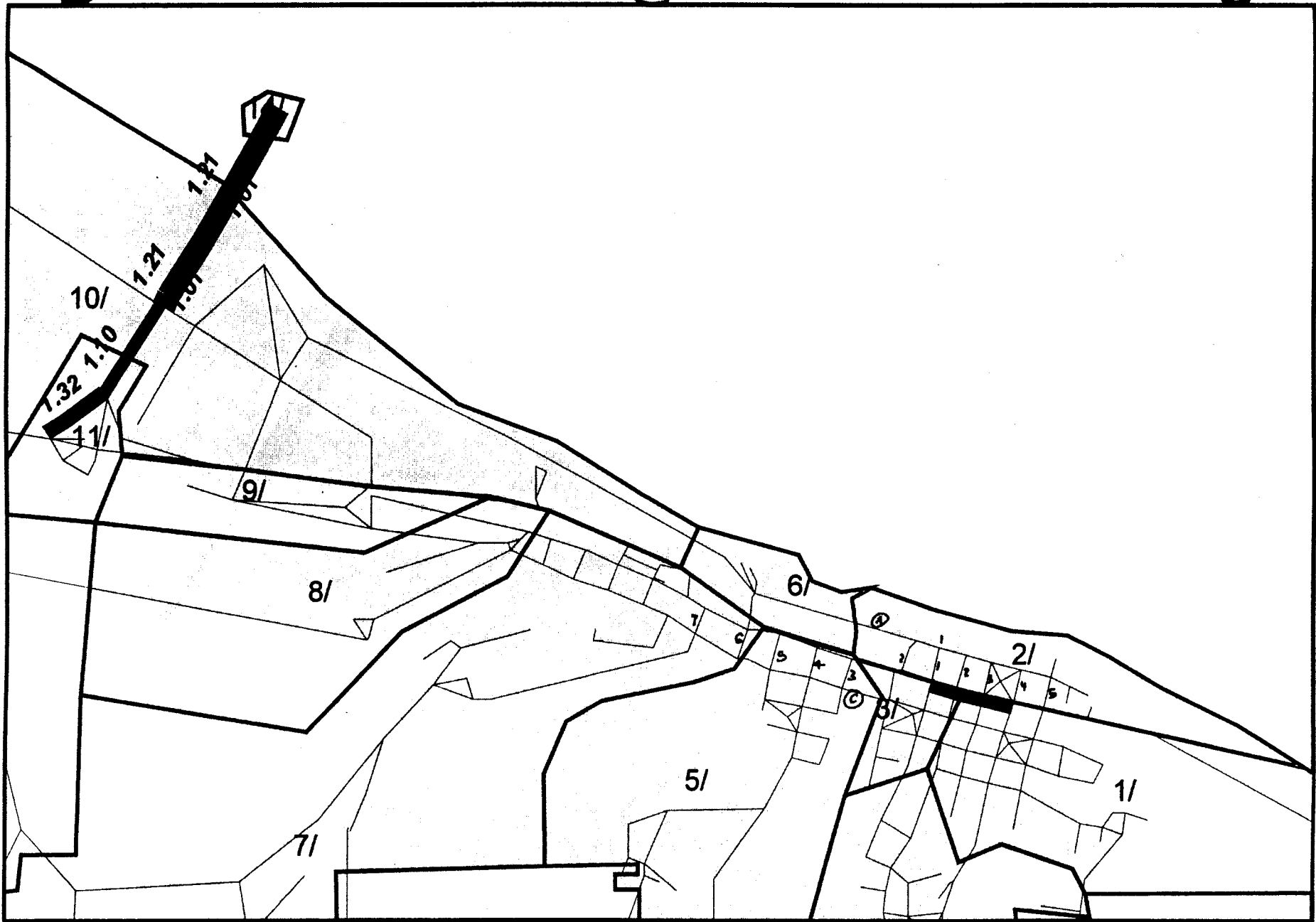
## APPENDIX C

### UFOSNET MODELING RESULTS



**Rainier 2016 Scenario**  
**Volume/Capacity >1**  
 2% through trip growth  
 Copyright 1994-1996 by RST International Inc., Seattle, WA, USA.

RAINEW.NET  
 RAINIER.ZBY  
 8:15:02 PM Thu 8/08/96  
 UL: -122971488/46107592  
 LR: -122919128/46062716



Rainier 2016 Scenario  
**Volume/Capacity >1**  
 3.5% through trip growth

RAINEW.NET  
 RAINIER.ZBY

8:13:48 PM Thu 8/06/96  
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## APPENDIX D

### COST ESTIMATES

City of Clatskanie TSP Cost Estimates  
 Proj No. 1794

A Street Improvement Plan

ROAD CONSTRUCTION PROJECTS

#	Facility	Begin	End	Note	Sched	Length	X-Sectio W	A	Cost/sf	Conting	COST	Period 1	Period 2
1	W 7th ST Ex	Eilertsen R	Bryant St	New	1	3,400	2 In, bik	40.0	136,000	8.00	1,305,600	1,305,600	0
1a	Eilertsen Ext	Eilertsen R	Highschool	New	?	3,100	2In	20.0	62,000	8.00	595,200		
2	Thompson E	True Haak	Thompson	New	2	2,300	2In, bike	32.0	73,600	8.00	647,680	0	647,680
3	Erickson Ext	Erickson	Clats. Hts.	New	2	3,000	2In, park	36.0	108,000	8.00	1,123,200	0	1,123,200

ROAD UPGRADE PROJECTS

#	Facility	Begin	End	Note	Sched	Length	X-Sectio W	A	Cost/sf	Conting	COST	Period 1	Period 2
4	NE/NW 5th	Beaver Fall	Olson	Truck Rte	1	7,000	2 In	24.0	168,000	8.00	1,478,400	1,478,400	0
5	NE5th/Ramp			"T" intersec.	2	100		50.0	5,000	8.00	44,000	0	44,000
6	Haven Acres	8th	UGB	Seaton Acr	2	2,000	2-In	5.0	10,000	8.00	88,000	0	88,000

SIGNAL/SIGN PROJECTS

#	Facility	Begin	End	Note	Sched	Unit Cost	Conting	COST	Period 1	Period 2
7	Belair Drive				2	150,000	1.00	150,000	0	150,000
8	Van Street			+ Turn Lane	1	180,000	1.00	180,000	180,000	0
9	"One Way"	Lower Orchard			1		1.00	500	500	0

SIGHT DISTANCE IMPROVEMENTS

#	Facility	Begin	End	Note	Sched	Unit Cost	Conting	COST	Period 1	Period 2
**	Howard Driv	Hwy 47			1	2,000.00	1.10	2,200	2,200	0
**	Orchard St	Hwy 47			1	2,000.00	1.10	2,200	2,200	0
**	Norman Stre	Hwy 47			1	2,000.00	1.10	2,200	2,200	0

Grand Total 5,023,980 2,971,100 2,052,880

City of Clatskanie TSP Cost Estimates  
 Proj No. 1794

B Pedestrian Plan Improvements

NEW SIDEWALKS

#	Facility	Begin	End	# Sides	Schedule	Linear Fe	W	A Cost/sf	Conting	COST	Period 1	Period 2	
1	NE/NW 5th	NW City L	Viking St	2	1	10,000	5.00	50,000	4.00	1.10	220,000	220,000	0
2	Belair Drive	U.S. 30	Chestnut	1	2	4,500	5.00	22,500	4.00	1.10	99,000	0	99,000
3	Orchard St	Hwy 47	end	2	1	4,800	5.00	24,000	4.00	1.10	105,600	105,600	0
4	Korsmo Dr	Orchard	Howard D	2	2	500	5.00	2,500	4.00	1.10	11,000	0	11,000
5	Pine St	N 5th	N 8th	2	2	650	5.00	3,250	4.00	1.10	14,300	0	14,300
6	N 8th St	Pine St	Poplar St	2	2	1,600	5.00	8,000	4.00	1.10	35,200	0	35,200

UPGRADE/REPLACE EXISTING SIDEWALKS

#	Facility	Begin	End	# Sides	Schedule	Linear Fe	W	A Cost/sf	Conting	COST	Period 1	Period 2	
7	US 30	E UGB	W UGB	2	1	6,500	5.00	32,500	4.00	1.10	143,000	143,000	0
8	Nehalem St	N 5th St	Conyers	2	1	2,500	5.00	12,500	4.00	1.10	55,000	55,000	0
9	Bryant St	U.S. 30	SW 7th	2	1	2,000	5.00	10,000	4.00	1.10	44,000	44,000	0
10	Tichenor St	U.S. 30	SW 7th	2	2	2,000	5.00	10,000	4.00	1.10	44,000	0	44,000

TRAILS

#	Facility	Begin	End	# Sides	Schedule	Linear Fe	W	A Cost/sf	Conting	COST	Period 1	Period 2	
11	Bridge	Hwy 47	Belair Dr		1	160	8.00	1,280	40.00	1.10	56,320	56,320	0
12	Trail	High-scho	Bryant		1	400	5.00	2,000	4.00	1.10	8,800	8,800	0
13	Trail	Wispering Woods:	developer p		1	800	10.00	8,000		1.10	0	0	0

PEDESTRIAN CROSSING

#	Facility	Begin	End	# Sides	Schedule	Linear Fe	W	A Cost/sf	Conting	COST	Period 1	Period 2	
14	US 30	Belair								Incl in Signa	0	0	
											0	0	
<b>TOTALS</b>											836,220	632,720	203,500

City of Clatskanie TSP Cost Estimates  
 Proj No. 1794

C Bicycle Plan Improvements

ON-STREET BIKE LANES

#	Facility	Begin	End	Schedule	Linear Fee	Const W	A	Cost/sf	Conting	COST	Period 1	Period 2	NOTE
1	US 30	UGB	UGB	1	0	0.00	0	8.00	1.10	0	0	0	ODOT Project
2	N 5th Street	Bvr Falls	UGB	1	7,500	10.00	75,000	8.00	1.10	660,000	660,000	0	
3	Highschool Wa	Conyers	Belair	2	3,300	10.00	33,000	8.00	1.10	290,400	0	290,400	
4	Van Street	US 30	NE 5th St	1	600	10.00	6,000	8.00	1.10	52,800	52,800	0	

#	Location	Est #	Spa	Schedule	Cost/sp	Conting	COST	Period 1	Period 2
12	Library/City Hall	5		1	35.00	1.1	193	193	0
13	Middle School	10		1	35.00	1.1	385	385	0
14	Elementary School	10		1	35.00	1.1	385	385	0
15	High School	20		1	35.00	1.1	770	770	0
16	Riverfront Park	15		1	35.00	1.1	578	578	0
<b>TOTALS</b>							<b>1,005,510</b>	<b>715,110</b>	<b>290,400</b>

## APPENDIX E

### GLOSSARY OF TRANSPORTATION/LAND USE TERMS

#### Access

A means of approach to provide vehicular or pedestrian entrance or exit to a property. This may not necessarily include all movements.

#### Access Classification

A ranking system for roadways used to determine the appropriate degree of access management. Factors considered include functional classification, the appropriate local government's adopted plan for the roadway, subdivision of abutting properties, and existing level of access control.

#### Access Management

The process of providing and managing access to land development while preserving the regional flow of traffic in terms of safety, capacity, and speed.

#### Access Spacing

The distance between access locations, measured from the closest edge of pavement of the first access to the closest edge of pavement of the second access along the edge (either side) of the traveled way.

#### Arterial

This classification of roadway provides for through traffic movement between areas and across the city with direct access to abutting property. It is subject to required control of entrances, exits, and curb use.

#### Bus

A heavy vehicle involved in the transportation of groups of people on a for-hire, charter, or franchised transit basis. Buses are further categorized as intercity or local transit buses. Intercity buses operate in a traffic stream without making stops to pick up or discharge passengers on a subject roadway facility. Local transit buses make such stops within the confines of the subject roadway facility.

#### Capacity

The maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions.

### Collector

This classification of roadway provides for traffic movement between major arterials and local streets, with direct access to abutting property.

### Conditional Access

An access granted to a parcel that will be relocated or eliminated at the time alternative access is provided.

### Control Conditions

The types and specific design of control devices and traffic regulations present on a given facility. The location, type, and timing of traffic signals are critical control conditions affecting capacity. Other important controls include STOP and YIELD signs, lane use restrictions, turn restrictions, and similar measures.

### Crossover Easement (Access)

A legal agreement that allows for access to one parcel through the access of another.

### Deed

A legal document conveying ownership of real property.

### Delay

The time lost while traffic is impeded by some element over which the driver has no control.

### Directional Distribution

The directional split of traffic during the peak or design hour, commonly expressed as percent in the peak and off-peak flow directions.

### Diverging

The dividing of a single stream of traffic into two or more separate streams.

### Easement

A grant of one or more property rights by a property owner to or for use by the public or another person or entity.

### External Station

The representation of a major port of entry or exit to the study area in the travel model simulation network.

### Facility Type

Roadway facilities are generally classified into one of two categories: 1) *Uninterrupted flow facilities* have no fixed elements, such as traffic signals, external to the traffic stream that cause interruptions to traffic flow. Traffic flow conditions are the result of interactions among vehicles in the traffic stream, and between vehicles and the geometric and environmental characteristics of the roadway. 2) *Interrupted flow facilities* have fixed elements causing periodic interruptions to traffic flow. Such elements include traffic signals, stop signs, and other types of controls. These devices cause traffic to periodically stop (or significantly slow) irrespective of how much traffic exists.

### Fixed-Route Transit

Fixed route transit is the technical term used to describe what typically is thought of a "bus route". Fixed route transit operates on a defined, published route with a described schedule. In comparison, *demand-responsive transit* operates within a defined area responding to the call of the transit rider; "dial-a-ride" is an example of demand-responsive transit service and taxis are a private-sector example of demand-responsive transit.

### Flow Rate

The equivalent hourly rate at which vehicles pass over a given point or section of a lane or roadway during a given time interval less than one hour, usually 15 minutes.

### Functional Classification

A system used to group public roadways into classes according to their purpose in moving vehicles and providing access.

### Grade Separation

A crossing of two highways, or a highway and a railroad, at different vertical levels. This may include an *overpass*, in which the subject facility passes over an intersecting highway or railroad; and an *underpass*, in which the subject facility passes under an intersecting highway or railroad.

### Interchange

A system of interconnecting roadways in conjunction with one or more grade separations, providing for the movement of traffic between two or more roadways on different levels.

### Intersection

The general area where two or more highways join or cross, within which are included the roadway and roadside facilities for traffic movements in that area.

### Joint Access (or Shared Access)

A driveway connecting two or more contiguous sites to the public street system.

### Lot

A parcel, tract, or area of land with boundaries that have been established by some legal instrument. A lot is recognized as a separate legal entity for purposes of transfer of title, has frontage on a public or private street, and complies with the dimensional requirements of property codes.

### Land Use

The type of activity associated with a specific geographic area. Land use categories can be broad (e.g., residential, retail, office, industrial, and recreational) or they can be very specific (e.g., single family residential, convenience market, or elementary school). In order to estimate trip generation characteristics for a specific geographic area, it is necessary to know both the type and intensity of land use (e.g., single family residential land use at a development intensity of eight units per acre).

### Level of Service

A qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are defined with letter designations, from A to F. Level of service A represents the best operation conditions and level of service F the worst. Level of Service D represents the level that is normally considered, for signalized intersections, near the minimum acceptable for an urban area, level of service E represents operating conditions at or near the capacity level, and level of service F is used to define forced or breakdown flow conditions. See appendix for full definitions of level of service.

### Local Street

This classification of roadway provides for direct access to abutting land and for local traffic movement.

### Mode

The means by which travel is accomplished. Alternative modes of travel include walking, bicycling, auto, bus, and light rail.

### Right-of-Way

A publicly-owned strip of land within which the entire road facility (including travel lanes, medians, shoulders, sidewalks, planting areas, bicycle lanes, and utility easements) must reside. The right-of-way is usually defined in feet, and it is not necessary that the paved roadway be centered within this strip of lane.

### Roadway Conditions

The geometric characteristics of the street or highway, including: the type of facility and its development environment, the number of lanes (by direction), lane and shoulder widths, lateral clearances, design speed, and horizontal and vertical alignments.



### Speed

A rate of motion expressed as distance per unit time, generally as miles per hour or kilometers per hour. In characterizing the speed of a traffic stream, some representative value must be used, as there is generally a broad distribution of individual speeds that may be observed in the traffic stream. The speed measure that is normally used in this regard is *average speed*. Average travel speed is computed by dividing the length of the highway or street segment under consideration by the average travel time of vehicles traversing the segment.

### Travelshed

A geographic area that is relatively homogeneous with respect to the type of land use activities that exist or are allowed. Taken together, travelsheds define all land area within the study area. The boundaries of travelsheds can be defined somewhat arbitrarily. However, they are usually similar in size to one another, and they are typically not bisected by significant roadways or transportation barriers (e.g., rivers or lakes). In a travelshed, an area of aggregate land uses is identified for the purpose of determining trip generation in a travel forecasting model. Travelsheds group together a number of housing units or employees (by type) in an area instead of single trip generators (one dwelling unit, an office building, shopping center, etc.).

### Traffic Conditions

The characteristics of the traffic stream using the facility. This is defined by the distribution of vehicle types in the traffic stream, the amount and distribution of traffic in available lanes of a facility, and the directional distribution of traffic.

### Traffic Control Device

A sign, signal, marking or other device placed on or adjacent to a street or highway by authority of a public body or official having jurisdiction to regulate, warn, or guide traffic.

### Travel Demand Forecasting

The practice of predicting the future demand for travel on a particular physical transportation system. To be useful, these forecasts must incorporate estimates of the *amount* of travel that will occur (i.e., the trip generation potential), the *distribution* of that travel (i.e., the ultimate destination of each generated trip), and the *mode* by which the travel occurs (i.e., auto, bus, light rail, or walking/bicycling).

### Trip Assignment

The allocation of all travel between a particular origin and a particular destination to the alternative available travel routes. Usually, trip assignment procedures attempt to assign traffic to the most direct route between a specific origin and destination pair that minimizes total travel time and avoids significant congestion.

### Trip Distribution

The allocation of generated trips among all possible destinations.

### Trip Assignment

The allocation of all travel between a particular origin and a particular destination to the alternative available travel routes. Usually, trip assignment procedures attempt to assign traffic to the most direct route between a specific origin and destination pair that minimizes total travel time and avoids significant congestion.

### Trip End

A one-way vehicular movement between a single origin and a single destination. Thus, for example, a round trip between home and a shopping center would consist of two trip ends: one trip end is defined by the vehicular travel from home to the shopping center, and the other trip end is defined by the vehicular travel from the shopping center to home.

### Trip Generation

The number of vehicle trip ends produced by a specific type and intensity of land use. Normally, trip generation characteristics are estimated on a daily and/or a peak hour basis.

### Trucks (Heavy Vehicles)

Any vehicle with more than four tires on the roadway that is not otherwise classified as a recreational vehicle or a bus.

### Urban Growth Boundary (UGB)

The politically-defined boundary around a metropolitan area outside of which no urban activities may occur. It is intended that the UGB be defined so as to accommodate all projected population and employment growth within a twenty-year planning horizon. A formal process has been established for periodically reviewing and updating the UGB so that it accurately reflects projected population and employment growth.

### Volume

The total number of vehicles that pass over a given point or section of a lane or roadway during a given time interval; volumes may be expressed in terms of annual, daily, hourly, or sub-hourly periods.