City of Seaside Draft Transportation System Plan

Seaside, Oregon

Prepared for:
The City of Seaside, Oregon
and the
Oregon Department of Transportation

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Introduction

The City of Seaside, in conjunction with the Oregon Department of Transportation (ODOT) initiated a study of the area transportation system in Fall 1996. This study has been conducted in compliance with State of Oregon legislation requiring local jurisdictions to prepare a Transportation System Plan (TSP) as part of their overall Comprehensive Plan. Accordingly, this document is organized to provide the necessary elements for the City of Seaside to assemble its TSP. In addition, it provides Clatsop County and ODOT with those necessary recommendations for incorporation into their respective TSPs.

The TSP must be based on the current comprehensive plan land use map and provide a transportation system that accommodates the expected 20-year growth in population and employment that will result from implementation of the land use plan.

Oregon Revised Statute 197.712 and the Land Conservation and Development Commission (LCDC) administrative rule known as the Transportation Planning Rule (TPR), requires all public jurisdictions to develop the following:

- A road plan for a network of arterial and collector streets
- A public transit plan
- A bicycle and pedestrian plan
- An air, rail, water, and pipeline plan
- A transportation finance plan
- Policies and ordinances for implementing the transportation system plan

The TPR requires that alternative transportation modes be given equal consideration and that reasonable effort be applied to the development and enhancement of these alternative modes in the development of the future transportation system. In addition, the TPR requires local jurisdictions to adopt land use and subdivision ordinance amendments to protect transportation facilities and to provide bicycle facilities between residential, commercial, and employment/institutional areas. The new State rule also requires that local communities coordinate their plans with county and state transportation plans.

STUDY AREA

The City of Seaside is located on the northern Oregon coast of the Pacific Ocean approximately 16 miles south of the Clatsop County Seat in Astoria. Seaside is situated along U.S. Highway 101 (U.S. 101), approximately 3 miles north of the U.S. 101/U.S. Highway 26 (U.S. 26) junction, and approximately 75 miles west of Portland, Oregon via U.S. 26.

The study area encompasses all of the area within the city limits and the urban growth boundary (UGB). The study area is generally bounded by the following physical features:

- U.S. 101/U.S. 26 junction to the south
- Foothills of the Coastal Mountain range to the east
- City of Gearhart to the north
- Pacific Ocean to the west

Seaside is a coastal resort community with a 1990 census population of approximately 5,360. It is the second largest city in Clatsop County, which is a rural county with a total population of approximately 33,300. Astoria, the County Seat, is the largest city, with a population of 10,069.

PUBLIC INVOLVEMENT AND STUDY GOALS

This planning process provides the community of Seaside with the opportunity to identify what is important to them as they look to the future and prepare for their growth and development. Expressing this vision for the future in the form of goals and objectives for the TSP will be a central element of the public involvement process. These goals and objectives provide guidance for the development and evaluation of alternatives, selection of the preferred plan, and prioritization of the improvements.

In order to assist the City, County and State jurisdictions in meeting the requirements of the TPR, the partnering jurisdictions initiated this study in Fall 1996. Two committees were formed to guide the study process: the Technical Advisory Committee and the Citizens Advisory Committee. In addition, the Bicycle Advisory Group (BAG) and the Pedestrian Advisory Group (PAG) also played significant roles in the development of the alternative mode elements of this plan. The committees established a series of transportation system goals to provide direction and evaluation criteria for the study process. The goals developed by this committee included:

Mobility/Circulation/Safety Goals

- Develop transportation system to facilitate all travel modes
- Ensure sufficient capacity to accommodate future travel demand (vehicular, bicycle, pedestrian, etc.) to, within, and through the City of Seaside
- Improve pedestrian and bicycle connectivity and circulation throughout the City of Seaside
- Identify the potential for improving the local circulation system in an effort to reduce reliance on Roosevelt Drive for local traffic
- Improve the safety of interactive multi-modal facilities
- Provide mobility to the transportation disadvantaged
- Coordinate with agencies and local providers to develop and expand transit services
- Ensure adequate truck route network to reduce commercial/neighborhood conflicts
- Develop a functional classification system that adequately matches travel patterns and characteristics

Capital Improvement Goal

- Maximize the useful life of existing facilities
- Maximize cost effectiveness of transportation improvements
- Ensure adequate, equitable, and long-term funding mechanisms

Community Goals

- Protect the water quality and scenic resources of the Neawanna and Necanicum Rivers
- Preserve and protect the Promenade as a vital feature to the character and function of the community
- Improve the livability of the community by developing and promoting the pedestrian and bicycle system as viable travel modes.
- Minimize conflicting uses on the transportation system that degrade neighborhoods
- Provide an adequate regional highway system that reduces/eliminates the need to use lower order roadways for regional trips
- Coordinate the planning effort of the Pacific Way-Dooley Bridge Project and the Urban Renewal Project with the TSP

Economic Development Goals

- Balance local accessibility with economic viability on Roosevelt Drive
- Develop a transportation system that supports balanced growth of population and employment
- Develop a safe, efficient, and attractive transportation system to enhance the economic vitality of the community

Given these goals, the partnering jurisdictions are proceeding with developing their TSPs through a process that identifies the transportation needs in Seaside and the transportation system improvements required to serve those needs. The process also develops a comprehensive set of transportation policies to guide future transportation system improvements necessary to address growth within the City of Seaside.

These TSPs will be developed to balance the needs of local citizens with the needs of the county and the state. To ensure a balanced approach, the partners in this process undertook a planning process that promoted active participation by local, regional, and state agencies and guaranteed a balanced future transportation system that will serve the needs of all concerned. The partnering jurisdiction's approach was pro-active in the process of developing a Preferred System Alternative that may be adopted as a TSP.

Through a process that included numerous meetings with the Advisory Committees, the City of Seaside's transportation planning process was designed to facilitate general consensus by involving all interested and affected parties. The City Planning Board served as the membership for the Citizen Advisory Committee to ensure that plan, policy, and ordinance issues would be adequately addressed, and the final study recommendations would be supported through the adoption process.

TRANSPORTATION SYSTEMS STUDY ORGANIZATION

The development of the City of Seaside Transportation System Plan began with an assessment of the existing transportation system conditions, as outlined in **Section 2** of this report. Transportation issues were identified by the City staff and our study team, with verification by the Advisory Committees. An inventory of the existing transportation system was conducted to develop an understanding of the physical, operational, traffic safety, and travel characteristics of all major roadways within the Seaside urban area.

In **Section 3**, the study area's long-term future transportation system needs are identified in light of expected growth in the area based on the City of Seaside's Comprehensive Land Use Plan through the year 2016.

The next step, as summarized in **Section 4**, involved the assessment of alternatives to mitigate identified safety and capacity deficiencies, as well as strengthen and enhance the multi-modal transportation system. Alternatives were presented to both committees for review, decision, and direction. The impact of each alternative on the plans and policies of the responsible jurisdiction was examined for potential conflicts to integration and implementation. These alternatives included proposed changes to the Land Use Plan that could feasibly reduce transportation demand in constrained areas.

A preferred alternative satisfying the established goals of the study was advanced. Mitigation measures for this alternative were based on a transportation system designed to support the City's Comprehensive Plan and every effort was made to extend the useful life of the existing transportation system.

Section 5 is a summary of the decisions and recommendations developed through this process by presenting the individual elements of the recommended City of Seaside Draft Transportation System Plan. Included are the Street Plan, Bicycle Plan, Pedestrian Plan, Transit Plan, and Air/Rail/Water/Pipeline Plan. In addition, this section details the anticipated implementation plan, including the timing of street improvements.

The Funding Alternatives Analysis is presented in **Section 6** and identifies the alternatives available to fund transportation system improvement needs.

Section 7 includes comprehensive plan and zoning ordinance modifications that could be adopted by the City of Seaside to ensure that the Transportation System Plan can be effectively implemented. The major land use/transportation issues raised by City staff and the Citizen Advisory Committee (Planning Board) are addressed with these recommended modifications. Proposed land use ordinance concepts are presented, with the particular aim of supporting alternative modes of transportation.

The study is concluded in **Section 8** by listing the requirements and recommendations of the Oregon Transportation Planning Rule (OAR 660 Division 12) and outlining how the City of Seaside Transportation System Plan provides the analysis and findings needed by each jurisdiction to comply with the TPR.

Existing Conditions

INTRODUCTION

This section describes existing conditions for all transportation modes that the transportation system plan will address including roads, bicycles, pedestrians, transit, rail, air, water transmission, and pipeline modes.

Transportation Facilities

Jurisdictions

Three jurisdictions are responsible for the bicycle, sidewalk and roadway facilities that are located within the study area. In many instances, a roadway or other facility is identified as an essential facility and included as a part of the transportation plan for more than one jurisdiction. Such duplicity is normally supplemented with intergovernmental agreements that identify the responsibilities each jurisdiction accepts regarding a particular facility. The jurisdictions responsible for facilities within the UGB of Seaside are:

- The Oregon Department of Transportation (ODOT)
- Clatsop County
- City of Seaside

Figure 1 shows the transportation system for Seaside that has been inventoried to document the conditions of the existing system. This system is made up of roads, bikeways, pedestrianways, transit, air, rail, water, pipeline, and transmission lines that are currently available to serve existing travel demand. The following sections provide a description of the system and how well the system functioning today.

Roadways

The roadway system within the City of Seaside is owned and maintained by one of three jurisdictions: the City of Seaside, Clatsop County, and ODOT. In addition to these public roads, private roads exist in many locations within the city limits. The following are brief descriptions of the existing roadway facilities available in Seaside, categorized by jurisdiction.

State Highways

Oregon Coast Highway (U.S. 101) is the only state highway within the UGB of the City of Seaside and is maintained and controlled by ODOT. The highway provides the main north-south route through the city, accommodating a wide range of transportation needs for the community and serving as a statewide transportation route. The section of U.S. 101 within the City limits is designated as Roosevelt Drive, and is so referenced throughout this TSP.

U.S. 101 is classified as a facility of Statewide Importance in the 1991 Oregon Highway Plan—the highest level of importance given to any facility within the state. This facility provides the only highway access to the study area and connects Seaside with Astoria to the north and several coastal communities and the remaining interstate system to the south. In addition, U.S. 101 acts as an essential intra- and interstate commerce route, with approximately 5.5% of its traffic mix in Seaside being commercial trucks traveling to or through the study area on a daily basis. Finally, this facility is designated as a State Bike Route in the 1995 Oregon Bicycle Plan. This State Bike Route is to be located along the shoulder of the highway within the study area boundaries and signing is to be provided. Finally, the State of Oregon has designated Highway 101 as a Scenic Highway/Scenic Byway. The Oregon Coast Highway is a well used recreational and tourist travel route and the Scenic Highway program is established to protect this route and enhance access to recreation.

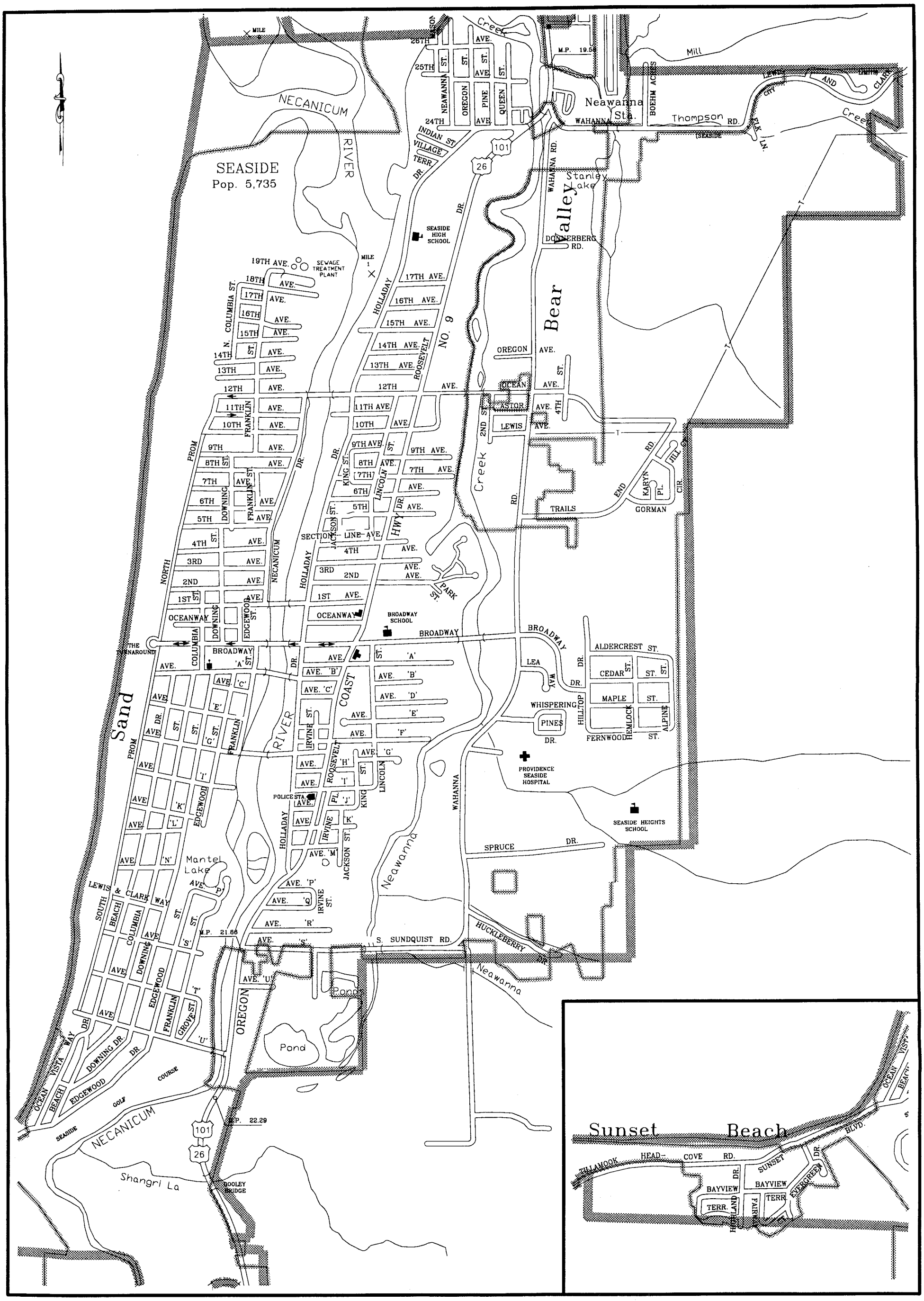
U.S. 101 enters the study area from the north at approximately mile post 19.58 as a two-lane roadway with several at-grade intersections (signalized and unsignalized) and private driveway approaches. The roadway widens to provide a three-lane cross section throughout central Seaside, with two signalized intersections at the cross streets of Broadway, Avenue U, and several unsignalized intersections as well. U.S. 101 leaves the southern city limits of Seaside at approximately milepost 22.25, again as a two-lane roadway. *Highway 101 is named Roosevelt Drive by the City of Seaside and will be referred to as Roosevelt Drive for the remainder of the document.*

City of Seaside Facilities

The City of Seaside currently does not have a street classification system in place to identify the hierarchy of existing roadways. A street classification system establishes a hierarchy for the streets and provides standards for roadway width, private access spacing, and signal spacing. Notable city roads are listed below and are shown in Figure 1.

- *Broadway*

  Broadway is one of only two east-west roadways that extends fully across Seaside, including bridge crossings of the Necanicum River and Neawana Creek, without interruption. The western half, from Roosevelt Drive to the Pacific Ocean, serves the downtown business district including significant pedestrian traffic and provides a prominent turnaround where the roadway reaches the beach. East of Roosevelt Drive, Broadway provides access to civic uses, business activities, and residential areas. Broadway has three signailized intersections: Roosevelt Drive, Holladay Drive, and Columbia Street. It also has one all-way stop-controlled intersection at Wahanna Road.



LEGEND

UGB

CITY LIMITS

STUDY AREA

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 1	K

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Broadway is a two-way street for most of its length, with a typical two-lane cross section, and parking along one or both sides for its length. A one-way westbound section has been established from Holladay Drive west to Columbia Street. This section is located in the retail/commercial core of Seaside, the area with the greatest pedestrian activity. Along this one-way section of Broadway, there is one travel lane and parking and sidewalks on both side of the street.

- *12th Avenue*

12th Avenue is the only other east-west route that spans the full width of Seaside. It serves the northern end of town with crossings of both the Necanicum River and the Neawana Rivers. The typical cross section includes one travel lane in each direction and parking on one or both sides of the street. A traffic signal to serve future development is proposed for the 12 Avenue/Roosevelt Drive intersection.

- *Avenue U*

This street extends from its signalized intersection with Roosevelt Drive west to the beach, providing access to the southerly area of town, with a typical two-lane cross section and on-street parking. Avenue U provides the third of six roadway bridge crossings of the Necanicum River in Seaside..

- *Sunset Boulevard*

Sunset Boulevard connects the southwest portion of Seaside, including the Sunset Beach State Park, with Avenue U and Roosevelt Drive via Edgewood Drive.

- *Avenue S*

Avenue S extends east from its unsignalized intersection with Roosevelt Drive to Wahanna Road on the southerly end of town. This is the third roadway bridge crossing of Neawana Creek in Seaside.

- *Holladay Drive*

This road is one of two continuous north-south routes that run parallel to Roosevelt Drive through a significant portion of Seaside. Holladay Drive has a two-lane cross section of varying width, with parking on one or both sides of the street along the wider sections in the downtown area. Holladay Drive is located west of Roosevelt Drive and east of the Necanicum River.

- *Wahanna Road*

  This is the only other continuous north-south road that parallels Roosevelt Drive. This roadway serves the area east of Roosevelt Drive and the Neawana Creek, including Providence Seaside Hospital, Seaside Heights School, and several residential areas. The section north of Broadway has a rural character and is generally built to a two-lane county road standard. The southern section is more urban in treatment with curbing and sidewalks along limited sections.

- *Beach Drive*

  Beach Drive provides north-south access to commercial uses, beachfront rentals, and residential areas in southwest Seaside.

- *Columbia Street*

  This street provides the only direct north-south connection between southwest and northwest Seaside and extends south to Avenue U.

- *1st Avenue*

  1st Avenue is an east-west connector that serves as an alternative to Broadway over the Necanicum River (the fourth of six crossings) in the downtown area, and tees into Roosevelt Drive at a sto-controlled intersection.

- *Avenue G*

  Avenue G is an east-west route that crosses the Necanicum River and connects the south part of downtown with Roosevelt Drive at an unsignalized intersection.

- *Avenue A*

  Avenue A provides the final Necanicum River crossing and is a crucial east-west link south of Broadway in downtown Seaside.

These roadways have been identified by field reconnaissance as serving one or more critical elements of the overall function of the roadway network within Seaside. These roadways provide connectivity, parallel systems, and key access to all areas of the city. All city facilities described above are two-lane roadways serving two-way traffic except the noted one-way section of Broadway.

County Roads

The only Clatsop County road within the City of Seaside's UGB is *Wahanna Road* (County Road #187) north of 12th Avenue. As described earlier, this two-lane road is the only continuous north-south corridor east of the Neawana Creek and Roosevelt Drive.

Street Conditions

An inventory of the existing street system within the UGB of Seaside was conducted with assistance from City staff during Fall 1996. Included in the inventory was on-street parking, paved/gravel, traffic control, street width, and posted speed.

Figure 2 shows the location of on-street parking and paved/gravel roads within the city limits. As shown in Figure 2, the majority of the streets have on-street parking on at least one side of the street. Few gravel streets exist and are scattered throughout the city, primarily in residential districts.

Figure 3 shows the posted speeds within the City of Seaside on the local, county, and ODOT facilities. As illustrated in the figure, the preponderance of local facilities have a posted speed of 25 miles per hour (mph). Segments of four different roadways are signed as school zones, (denoted in Figure 3) one for each school, two for the high school.

Figure 4 identifies the traffic control used at intersections of major streets within the City and whether exclusive left- or right-turn lanes are provided on the main roadway. The following intersections are currently signalized, as shown in Figure 4:

- Broadway/Roosevelt Drive
- Broadway/Holladay Drive
- Broadway/Columbia Street
- Avenue U/Roosevelt Drive

A traffic signal is proposed for the 12th Avenue/Roosevelt Drive intersectio, associated with the development of a commercial/retail factory-direct outlet mall.

Only the traffic signals on Roosevelt Drive (under the control of ODOT) are operated as regular, full phase signals. The other two signals on Broadway are controlled by the City and are normally operated as all-way flashing red lights.

Accident History

ODOT accident histories for roadways within the city limits of Seaside were analyzed for the period from January 1992 to May 1996, the most recent years for which accident data were available. Accident rates for Roosevelt Drive were calculated for the length of the roadway

throughout Seaside. The accident rate per million vehicle miles (MVM) travelled was calculated by assuming an average daily traffic for the corridor of 12,000 vehicles per day (as reported in ODOT's 1995 Traffic Volume Tables, May 1996). The 141 accidents over the 54 months result in a rate of 2.90 MVM. This rate is higher than the 1995 state average for urban highways, but lower than 1994's accident rates for urban highways.

Accident data was also examined to determine intersections with accident rates higher than normal. Accident rates at intersections are reported as the number of accidents per million entering vehicles (ACC/MEV) at the intersection. In urban and urbanizing areas, it is generally accepted that accident rates less than 1.0 are indicative of intersections that are likely to be functioning safely. Figure 5 shows the locations where accidents have occurred and been reported within the City of Seaside. Table 1 is a summary of the accident rates determined for critical intersections throughout Seaside. It should be noted that such analysis is provided on *reported* accidents, and is only as accurate as the information provided. No assumptions have been made regarding the number, location, or severity of unreported accidents in the Seaside area.

Caution should be used when performing accident analysis on low-volume roadways and intersections. Higher-than-expected accident rates can result for such roadways and intersections with a minimal number of accidents. This is the case for Columbia and Franklin Street and their associated intersections.

When individual intersections are analyzed in an urban setting, an accident rate of greater than 1.0 ACC/MEV generally indicates a need for further study to identify potential accident causes. During the period from 1992 to 1996, no city street intersection within the city limits had an accident rate greater than 1.0 ACC/MEV.

Due to the generally low volume of traffic at most of these critical intersections, it is inappropriate to assume that the low accident rates are a definitive indication that all intersections are safe. Often, geometric or other deficiencies do not compromise the safety of an intersection until traffic volumes reach a higher level and exacerbate the problem. Therefore, field reconnaissance is required to identify any safety deficiencies on the transportation system. Such field reconnaissance was performed for this plan, and resulted in the identification of limited safety deficiencies associated with the intersections analyzed.

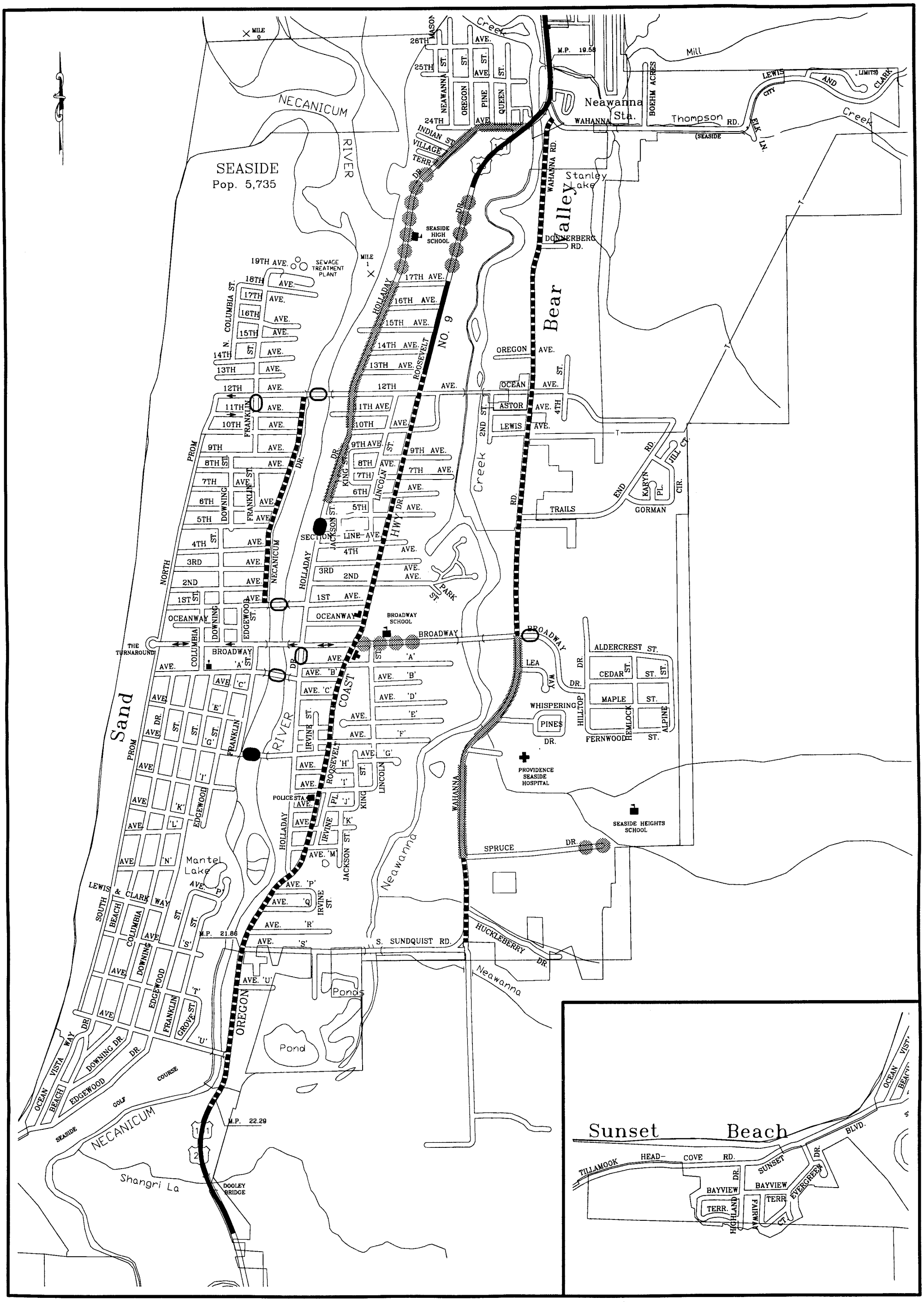
LEGEND

- ON-STREET PARKING
- GRAVEL

STREET INVENTORY

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON	FIGURE 2
JUNE 1997	

1962PARK



LEGEND

- SPEED STUDY
- 85TH PERCENTILE SPEED ABOVE POSTED
- 45 MPH
- 35 MPH
- 30 MPH
- SCHOOL ZONE

POSTED SPEEDS AND SPEED STUDY

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 3

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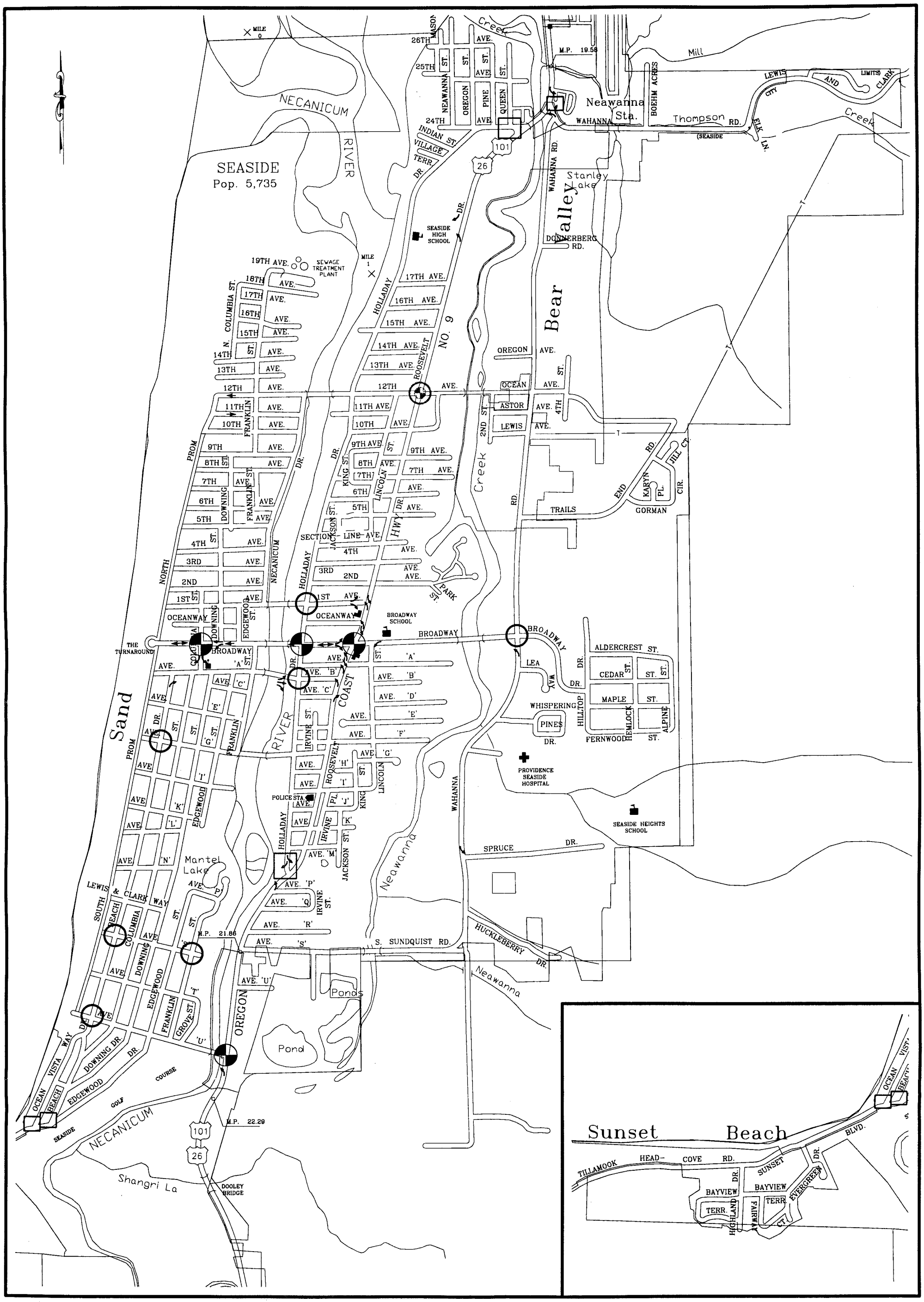


LEGEND

- ALL WAY STOP
- SIGNAL
- FUTURE SIGNAL
- GEOMETRICALLY CONSTRAINED LOCATION
- TURN LANE

EXISTING TRAFFIC CONTROL AND LANE STRIPING

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON	FIGURE 4
JUNE 1997	

1962LANE

Table 1
State Highway Accident Rates

Roadway	Cross Street	1992-1996 Accidents	1992-1996 Accidents/MEV
Roosevelt Drive	12th Street	15	0.73
	Broadway	14	0.48
Columbia Street	Avenue E	3	0.81*
	Avenue G	3	0.77*
	Avenue A	7	0.70
	Oceanway	5	0.60*
Franklin Street	10th	3	0.91*
	12th	3	0.91*
Holladay Drive	Broadway	9	0.52
	1st Street	8	0.50
Avenue G	Downing	3	0.67*

* Intersection ADT Volumes were estimated for purposes of this analysis.

Intersection Safety Reconnaissance

Franklin Street/12th Avenue Intersection

The northbound approach of Franklin Street is stop-sign controlled. Residential landscaping vegetation at the southeast corner of the intersection limits the sight distance for the approace of Franklin Steet, requiring drivers to nose out into the intersection before making their movement. This sight obstruction could be contributing to the accident frequency at this intersection. Pruning or removal of the vegetation would mitigate this situation.

Other Intersections Considered

Field reconnaissance of other study area intersections with no reported accidents was conducted to determine if latent safety deficiencies existed that may be exacerbated by increased travel demand. Several local street system intersections were evaluated. Because of the relatively flat terrain in Seaside, and the presence of a grid network, few intersections were found to have physical constraints that might affect operational safety. The local street intersections listed below have been identified as having one or more such constraints.

- *Edgewood Drive/Beach Drive*

  Beach Drive intersects Edgewood Drive at a significant skew from the north. Beach Drive is stop-sign controlled at this intersection. In addition to the skew, sight distance

for the southbound Beach Drive traveller is limited by vegetation and a large tree at the northeast corner of the intersection. The skew exacerbates this sight distance problem.

- *Edgewood Drive/Ocean Vista Way*

  This intersection is similarly configured and, consequently, similarly limited. However, sight distance at this intersection, located one block west of Beach Drive, is less affected by adjacent vegetation.

- *Downing Drive/Beach Drive*

  This is another skewed intersection located in the same residential area of southwest Seaside as the two intersections previously described. This intersection is also limited by vegetation that affects sight distance.

These three intersections should be monitored by the City of Seaside to determine accident frequency. If an accident problem develops at any of the intersections, the City will then be prepared to identify the problem and mitigate any physical deficiencies.

- *Avenue S/Wahanna Road*

  Avenue S tees into Wahanna Road from the west. The predominant movements at the intersections are the eastbound left turn and the southbound right turn. For this reason, these movements have been made the free, uncontrolled movements at this intersection. The eastbound right and the northbound throughmovements have been favored with channelization that works effectively.

  Although this intersection is unusually configured, it works well for the local drivers that use it. The only potential constraint is for unfamiliar or inattentive drivers. To minimize any accident potential, advanced signing should be enhanced and maintained for this intersection.

- *Wahanna Road/Lewis and Clark Road*

  This stop-sign-controlled, tee intersection is located near the Wahanna Road/Roosevelt Drive intersection. This intersection is treated and performs more like a standard Y intersection, with northbound lefts and eastbound rights as the primary uncontrolled movements.

  The proximity of this intersection to the Roosevelt Drive intersection creates the potential for a safety problem. Traffic turning from Roosevelt Drive to Wahanna Road may not be prepared for the movements occurring at the Wahanna Road/Lewis and Clark Road intersection.

Advanced signing can be used to advise drivers of the closely spaced intersections and minimize the potential for an accident problem to be realized with increased traffic volumes.

Both of the Wahanna Road intersections described above should be monitored by the City for accidents. If accident rates increase, an analysis should be performed to determine if any physical feature of the intersection may be contributing. If a deficiency is identiied that is contributing to accident frequency, then the City should determine an appropriate mitigation approach and implement it as soon as practicable.

Traffic Volumes

An extensive data were collected to establish the existing travel demand experienced on local, county, and state facilities in Seaside. Road tube count equipment was placed at more than 35 locations to collect hourly traffic volumes 24 hours a day during the week that included Labor Day weekend 1996. Additional road tube counts were collected during succeeding weeks in September and October to provide complete coverage of the Seaside roadway network. The road tube counts were supplemented on the state highway with 14-hour turn movement counts that were collected at the following five intersections in June 1996:

- Avenue U/Roosevelt Drive
- Holladay Drive/Roosevelt Drive
- Broadway/Roosevelt Drive
- 12th Avenue/Roosevelt Drive
- 24th Avenue/Roosevelt Drive

In total, more than 50 separate locations were surveyed (by road tube count or intersection turn movement count) to identify the existing peak season traffic demand on facilities in Seaside.

The counts were used to determine the peak traffic conditions and evaluate the operational characteristics of the existing transportation network. Daily and seasonal adjustment factors were developed to convert these counts to peak-season, weekday, peak hour traffic volumes at the critical intersections in the study area. These adjustment factors were developed using data from ODOT's permanent traffic recorder station number 04-001, Seaside, located 2.4 miles north of Gearhart on U.S. 101.

Adjustment Factors

Travel demand in Seaside has significant seasonal fluctuations. Traffic is relatively light on a Wednesday in January; but, on a Saturday or Sunday in August it can be congested and difficult to freely move in certain parts of the City. It would be inappropriate to evaluate how the transportation system is performing by studying that mid-weekday condition in January and it also would not be prudent to try and provide a system that could accommodate the peak

demand experienced (probably the weekend of the Hood-to-Coast run that ends in Seaside) in August. The generally accepted procedure is to identify a design hour or design day that adequately represents the travel demand that must be accommodated. The typical design hour is the 30th highest hour of traffic measured over the course of a 1-year period.

ODOT collects hourly volumes year-round at permanent recorder locations on state highways throughout Oregon. The nearest permanent recorder (PR #04-001) to Seaside is located on U.S. 101, approximately 2.4 miles north of the City of Gearhart. A review of recent data collected at this permanent recorder station revealed that for the past few years the 30th highest hour has occurred on a summertime weekend day. Further, it was noted that several hours during the Labor Day weekend of each year were among the 50 highest hours of traffic volumes measured at the permanent recorder. This substantiated the traffic counts collected during Labor Day weekend 1996 as representative of the design hour volumes for Seaside.

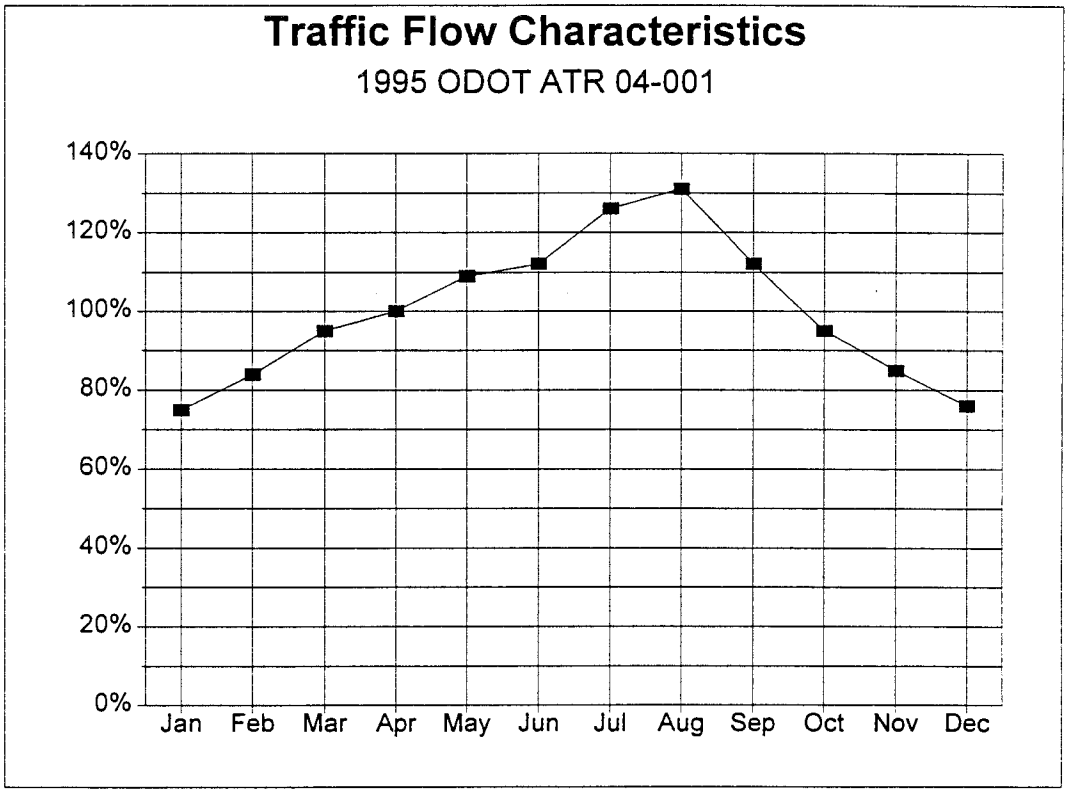
After consultation with ODOT and City staff it was determined that the Sunday of Labor Day weekend 1996 adequately represented the design hour for evaluation in this study. Therefore, all other turn movement and road tube counts collected during time periods separate from this day must be normalized. Adjustment factors for month-of-year and day-of-week, obtained from the permanent recorder station, were used on the counts collected in June and later in September 1996 to approximate the Labor Day weekend condition.

Figure 6 illustrates the month-of-year and Figure 7 shows the day-of-week adjustment factors obtained from Permanent Recorder Station 04-001 for 1995 (the most recent year these factors have been calculated). As can be seen by these figures, a Saturday in August 1995 is likely the day the highest volume of traffic was measured at this station.

Collating all of the traffic volume data and applying daily and seasonal adjustment factors enabled the data to be normalized across the different count dates to develop a summary of estimated average daily traffic (ADT) volumes to come up with design volumes (30th highest day) by link. Figure 8 shows the adjusted daily link traffic volumes on Seaside's local streets.

Traffic Operations Analysis

Traffic operations are evaluated for roadways and intersections in terms of level-of-service criteria, based on the relationship of travel demand to capacity (referred to as the volume-to-capacity ratio or v/c) and the delay per vehicle experienced at intersections. *Appendix A defines level of service and how it is used.* Volume-to-capacity ratios that approach or exceed 1.0 are indicative of roadways and intersections that may require capacity improvements. Excessive delays experienced at intersections (signalized and unsignalized) are an indication that capacity or traffic control improvements may be required. Signal warrants provide a further confirmation that traffic control improvements may be required at intersections with high demand and excessive delay. The following sections discuss the operations of streets and intersections in Seaside.



MONTHLY TRAFFIC VOLUMES

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 6	

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Level-of-Service Analysis

Level of service (LOS) is a traffic engineering term that refers to the operational characteristics of a roadway or intersection. The concept has been 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 (ample capacity and minimal delay) to F (severe congestion and excessive delays).

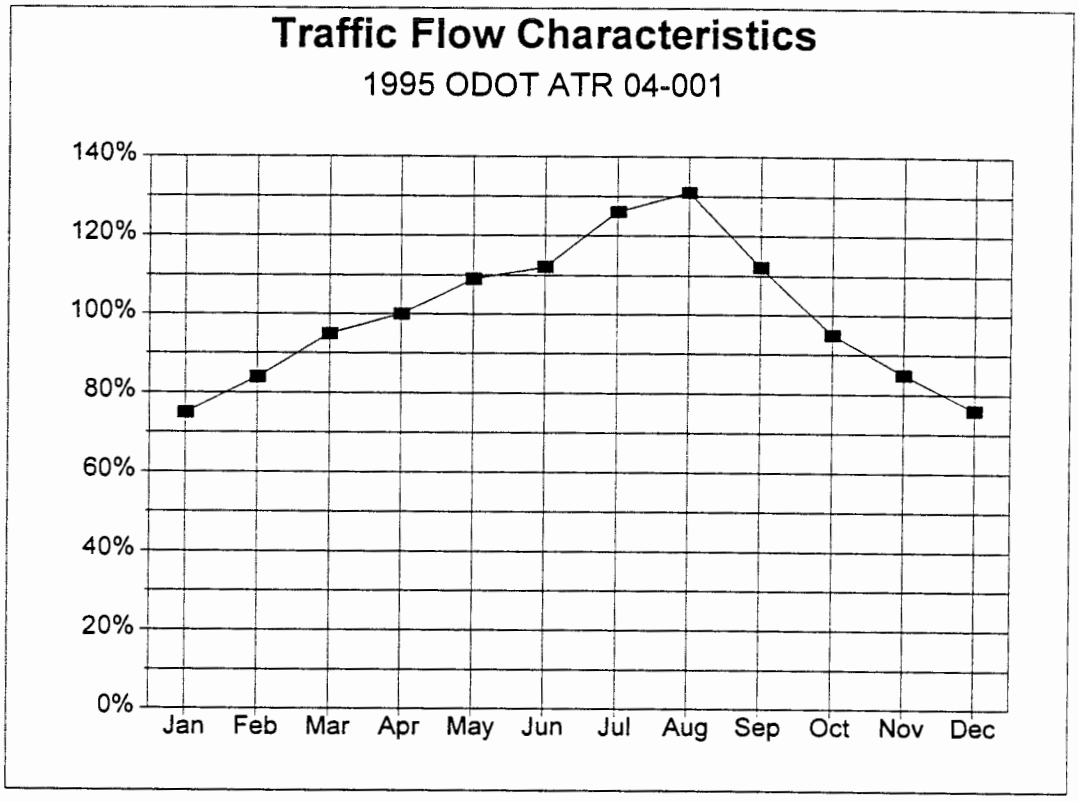
The LOS calculations are based on either measured or estimated traffic flow conditions in the city, during the 1996 Labor Day weekend peak hour. Peak hour turning movement counts were estimated at several key intersections to more accurately determine existing intersection operation. These estimates were based on peak hour factors obtained from ADT volumes and either measured or conservatively estimated directional splits. The LOS at each intersection was then analyzed using the procedures set forth in the 1994 Highway Capacity Manual. Table 2 lists the results of this analysis.

The results of the LOS analysis indicate that only three intersections (all unsignalized) currently operate at an LOS F during peak traffic flows. Each of these three intersections (shown in bold in Table 2) occur on Roosevelt Drive, at Wahanna Road, 24th Street, and Holladay Drive. In all cases, the side street left-turn movement likely experiences a stopped delay of more than 45 seconds before being able to perform the turn.

All other signalized and unsignalized intersections operate at acceptabel LOS standards under the peak conditions evaluated. These findings suggest that the local Seaside street system is more than adeqaute to accommodate existing travel demand and has latent capacity to accommodate increased travel demand resulting from future growth in tourism, population, or employment.

Signal Warrant Analysis

Nineteen higher-volume intersections were analyzed to determine the possible need for signalization. This analysis is based on the national-standard Signal Warrants given in the Manual on Uniform Traffic Control Devices (MUTCD). The Manual provides 11 Signal Warrants, including ones based on accident experience, pedestrian volumes, and traffic volumes. This analysis used two of the volume-based warrants, commonly used by ODOT and other jurisdictions for evaluation purposes. Signal Warrants are an indication of need for improved or increased traffic control at an intersection. The satisfaction of one or more warrants does not justify the installation of a traffic signal. The satisfaction of warrants must be supplemented with further engineering evaluation and the application of sound engineering judgment to determine the appropriateness of such treatments.



DAILY TRAFFIC VOLUMES

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 7	

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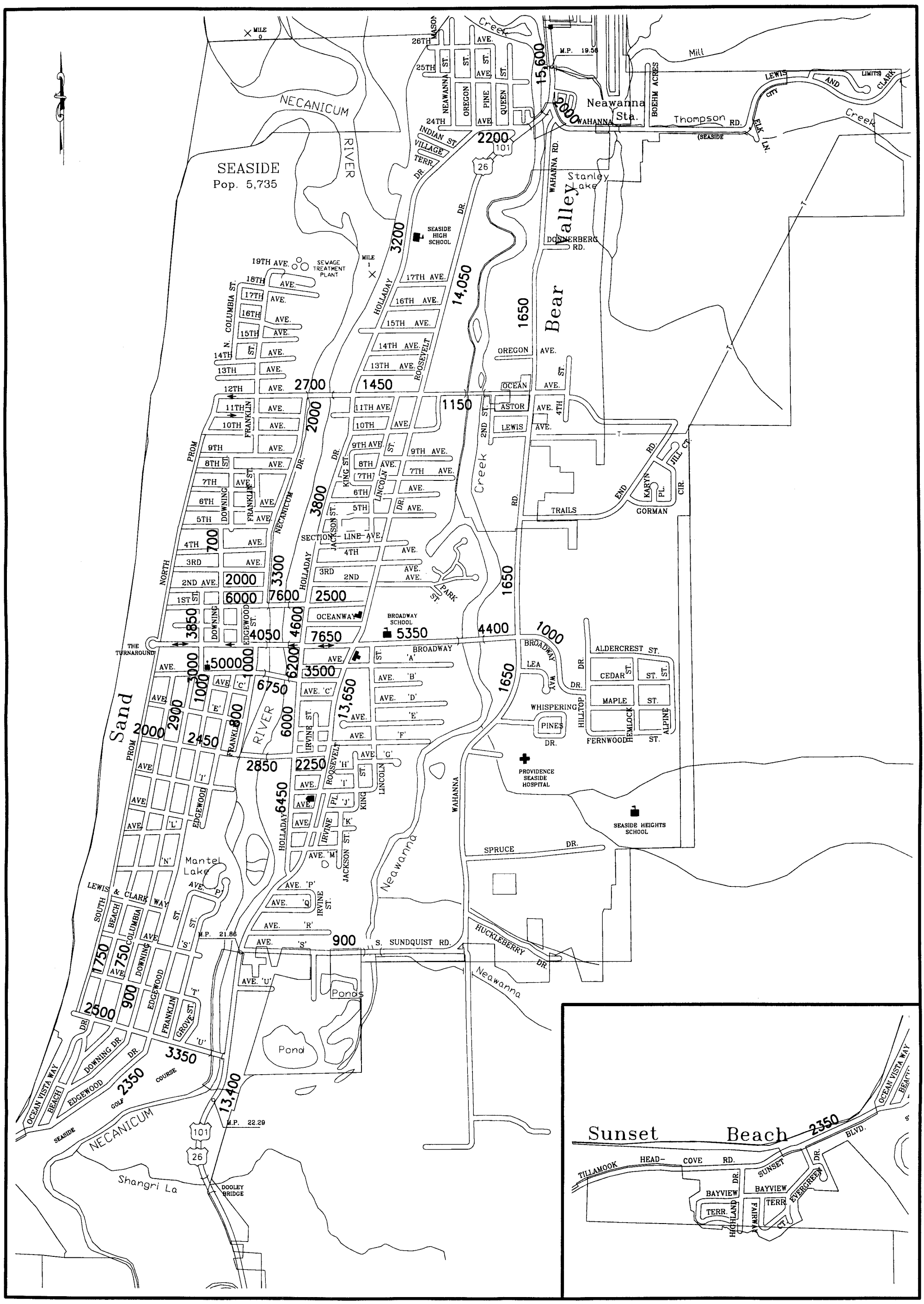


LEGEND	
XXXX	1996 SUMMERTIME ADT VOLUMES

1996 SUMMERTIME DAILY TRAFFIC VOLUMES

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 8	

1962ADTS

Table 2
1996 Peak-Season Weekday P.M. Peak Hour
Intersection Levels of Service "Planning Level of Analysis"

Intersection	Signalized/All-Way Stop		Unsignalized		LOS
	v/c	Intersection Delay (sec)	Critical Approach	Estimated Delay* (sec)	
Avenue G/Downing Street			SB	5.6	B
Avenue B/Franklin Street			SB	11.4	C
Avenue G/Franklin Street			SB	5.9	B
Broadway/Wahanna Road	0.67	9.3			B
Beach Drive/Avenue G	0.51	4.4			A
Necanicum Drive/12th Street			WB	9.3	B
Holladay Drive/12th Street			EB	9.5	B
Wahanna Road/12th Street			WB	5.0	B
Holladay Drive/Avenue G			WB	18.7	C
1st Avenue/Holladay Drive			WB	17.8	C
Avenue U/Edgewood Street			NB	8.3	B
Avenue U/Beach Drive			NB	5.7	B
Avenue A/Holladay Drive			SB	17.7	C
Avenue B/Columbia Street			NB	7.8	B
Wahanna Road/Roosevelt Drive			**WB**	**>45** [1]	**F**
24th Street/Roosevelt Drive			**EB**	**>45** [1]	**F**
12th Street/Roosevelt Drive			EB	34.3 [1]	E
Holladay Drive/Roosevelt Drive			**EB**	**>45** [1]	**F**
Avenue S/Roosevelt Drive			WB	42.3 [1]	E
Holladay Drive/Broadway	0.94	24.6 [1]			C
Avenue U/Roosevelt Drive	0.56	8.5 [1]			B
Roosevelt Drive/Broadway	0.93	30.3 [1]			D
Broadway/Columbia Street	0.49	11.6 [1]			B

v/c: volume-to-capacity ratio LOS: Level of Service
*This level-of-service analysis was based on ADT volumes and assumptions for daily and peak hour conditions was estimated based on these measured ADT volumes
[1]These delays have been calculated using turn movement counts conducted by ODOT in June 1996.

Based on the type of traffic volume data available, the signal warrants were performed in accordance with the ODOT ADT-based warrant analysis, which is a simplified application of the MUTCD. The warrants evaluated were Warrant 1 (Minimum Vehicular Volume) and Warrant 2 (Interruption of Continuous Traffic). Both of these warrants are based on daily traffic volumes. To satisfy these warrants, traffic volumes on the major and minor intersection approaches must be greater than the warrant volumes. The warrant volumes vary by the importance of the approach (major street vs. minor street), the number of through lanes on the approach, the posted or 85th-percentile speed on the major street, and the area population. Table 3 lists the intersections that meet at least one signal warrant using this method.

As Table 3 indicates, no local street intersections meet both signal warrants. Only one of the 29 intersections analyzed meets both warrants: the Holladay Drive/Roosevelt Drive intersection. Satisfaction of these warrants and an LOS F during peak periods suggests that this intersection should be monitored closely and that a traffic signal may be needed in the near future.

The LOS and Signal Warrant analysis findings indicate that Seaside's local street system is operating acceptably, even under peak conditions. Further, the safety analysis found no exisiting deficiencies that are the cause of accidents in the study area. For these reasons, it can be concluded that the local street system in Seaside is operating safely and acceptably.

Bicycles

The Oregon Coast Bike Route follows the shoulder of U.S. 101 (Roosevelt Drive) through Seaside. Continuous bicycle lanes are not provided along this route and there is little separation or protection from vehicular traffic in certain sections. This is complicated by the fact that cyclists must share the shoulders with pedestrians along roadway segments with no sidewalks. Ridership along the Coast Bike Route is expected to increase in the future, both with the increasing tourist traffic and with the increasing popularity of long-distance bicycle touring.

There are no striped, on-street bike lanes on local or county roads within the Seaside UGB. Cyclists must share the travel lane of roadways with vehicular traffic for movement throughout Seaside. This creates certain conflicts that are exacerbated during the peak summertime tourist season. Two- three- and four-wheeled bicycles are a popular means for tourists to move about Seaside to take in the sights. This is an attractive alternative to driving, but lacks the perceived and inherent safety of a dedicated travelway. Fortunately, most of the heavily travelled bicycle routes within Seaside are either low-volume roadways or have low posted speeds. Therefore, accidents involving autos and bicycles are relatively infrequent and less severe.

The use of two, three, and four-wheel bicycles (surreys) is widespread throughout the city. Rental bicycles, especially surreys, are prevalent in the central business district during peak tourist season and on weekends. They are used primarily south of 1st Avenue and west of Holladay and, to a lesser extent, south of downtown on Beach Drive towards Tillamook Head. Because there are no striped lanes for these vehicles, they must share the road with automobiles.

Table 3
Planning Level Existing Conditions Signal Warrants

Intersection	ADT Major	ADT Minor	Warrant 1	Warrant 2
Avenue G/Downing Street	2,450	950	NO	NO
Avenue B/Franklin Street	6,750	1,000	NO	NO
Avenue G/Franklin Street	2,850	800	NO	NO
Broadway/Wahanna Road	3,300	2,700	NO	NO
Beach Drive/Avenue G	3,800	2,700	NO	NO
Necanicum Drive/12th Street	2,700	2,000	NO	NO
Holladay Drive/12th Street	3,800	2,700	NO	NO
Wahanna Road/12th Street	1,650	1,150	NO	NO
Holladay Drive/Avenue G	6,450	2,850	YES	NO
1st Street/Holladay Drive	7,600	4,600	YES	NO
Avenue U/Edgewood Street	3,360	2,350	NO	NO
Avenue U/Beach Drive	2,500	1,750	NO	NO
Avenue A/Holladay Drive	6,750	6,200	NO	NO
Avenue B/Columbia Street	4,500	1,800	NO	NO
Avenue S/Roosevelt Drive	13,650	900	NO	NO
Holladay Drive/Roosevelt Drive	13,650	3,250	YES	YES
12th Street/Roosevelt Drive	14,050	1,440	NO	NO
24th Street/Roosevelt Drive	15,600	2,180	NO	YES
Wahanna Road/Roosevelt Drive	15,600	800	NO	NO

Pedestrians

Figure 9 shows the existing pedestrian facilities available within the UGB of the City of Seaside. The figure shows the popular pedestrian promenade that extends along the beach frontage of Seaside from Avenue U north to 12th Street; a prominent and well-known feature of Seaside that is a tourist attraction in its own right. Also shown are streets that have intermittent sidewalks and complete sidewalks on one or both sides of the street. The condition of the sidewalks associated with public streets within Seaside were generally found to be good and in compliance with the Americans with Disabilities Act for width and access.

Pedestrian activity in the downtown area along 1st Street, Ocean Way, Broadway, Avenue A/Avenue B, the cross streets between the Promenade and Holladay Drive, and of course the Promenade itself are heavily used during the peak summertime tourist season. The pedestrian activity is so heavy on Broadway that it frequently spills into the vehicular travel lanes and on-street parking bays for access. In addition, street intersections are often-times overcome by the pedestrian activity to the detriment of vehicular movements. Fortunately, traffic speeds are relatively low and vehicular traffic can easily recognize the pedestrian environment that it is traversing.

The pedestrian environment along Roosevelt Drive is very poor with only sporadic and ill-conceived pedestrianways providing little or no connectivity. Along many sections of this roadway the pedestrian must actually use the shoulder and share it with cyclists. In addition, only two signalized crossing opportunities exist in Seaside and only one of those (at the Broadway/Roosevelt Drive intersection) is located in the downtown area. This poor pedestrian environment and its lack of connectivity to an otherwise good local system minimizes the potential for this travel mode and exacerbates the vehicular demand on Roosevelt Drive.

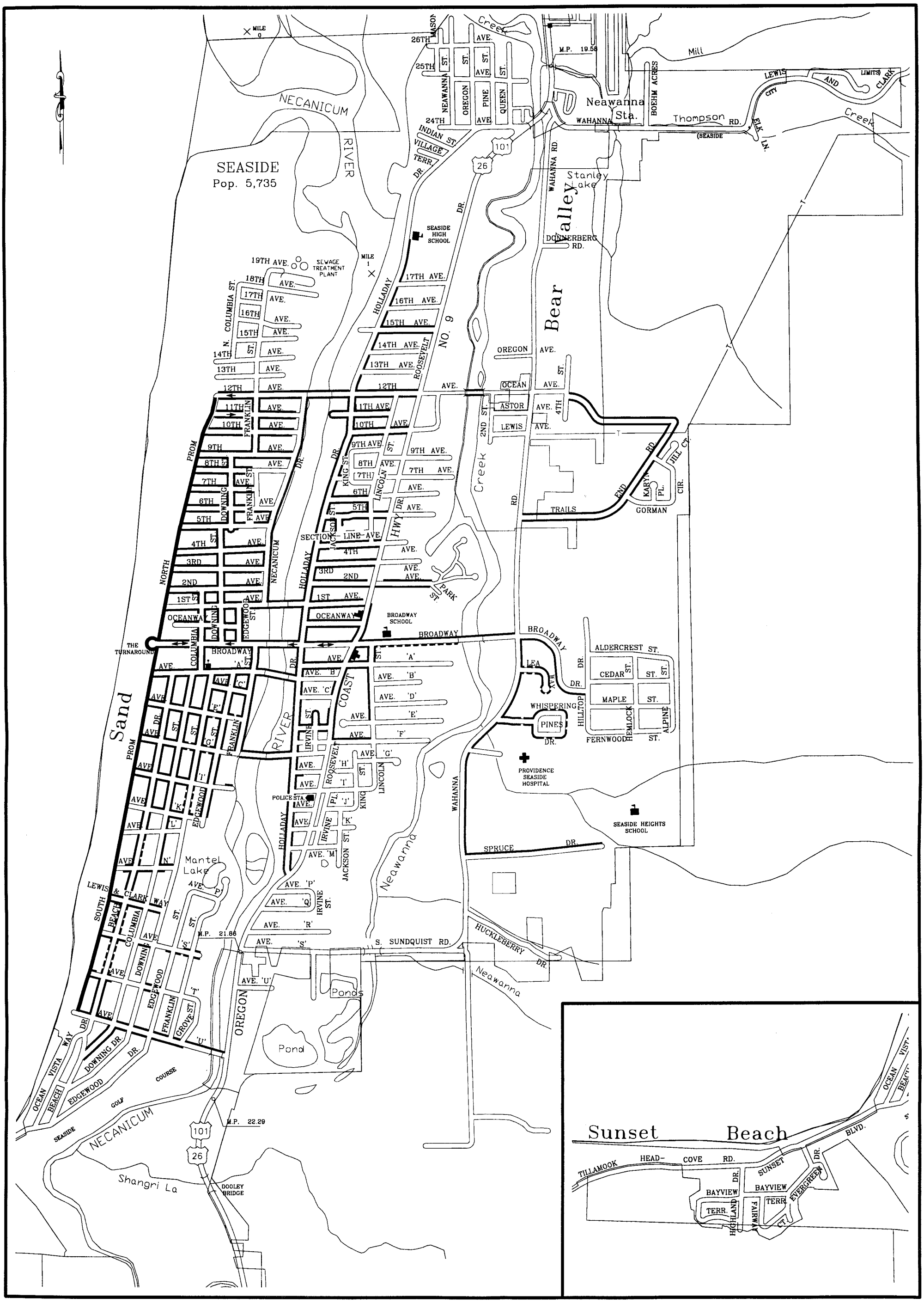
Transit

Public transit services that operate within the City of Seaside and connect Seaside with the surrounding coastal communities are provided by Seaside Mobility Services, which operates on U.S. 101 from Cannon Beach to Astoria. This route provides fixed-route service on weekdays, with five trips in each direction. Pierce Pacific Travel provides one round trip daily from Portland through Longview and Astoria to the north.

Seaside Mobility Services also provides dial-a-ride service through Sunset Empire Transit. This service operates weekdays from 8 a.m. to 5 p.m. and must be requested 24 hours in advance. Sunset Empire Transit serves elderly, disabled, and transportation disadvantaged people throughout all of Clatsop County except the City of Gearhart, so demand is high and rides cannot be guaranteed.

The Area Agency on Aging provides mini-van services for the elderly and handicapped in Clatsop County. This is supplemented by volunteers who provide rides on an on-call basis. In addition, a fixed-route van service transports developmentally disabled adults from Seaside, Gearhart, Clatsop Plains, Hammond, Warrenton, and Astoria to the Clatsop County Developmental Training Center. This route serves approximately 14 people approximately 22 rides per person each month.

Greyhound Bus Lines offers service for the public connecting Seaside to Portland. The route operates on a round trip basis every day to Portland offering connections from Portland to regional locations throughout the northwest and beyond.



PEDESTRIAN FACILITIES

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 9

1962SIDE

There is no fixed-route transit system provided in Seaside nor any other community along the northern Oregon coast. Anecdotal information regarding transit services in Seaside revealed that although services are limited by time-of-day and day-of-week, adequate mobility is provided for all area residents. The combination of transit services available in Seaside has been assessed as being adequated to address existing conditions capable of accommodating additional demand.

Rail

There is no direct rail service to Seaside. Burlington Northern provides freight rail service to Astoria, approximately 16 miles to the north. Existing industries in Seaside are not dependent on freight rail service and do not generate sufficient demand to warrant improved access.

The nearest passenger rail terminal is located in Portland, approximately 80 miles to the east. Connection to the passenger rail terminal in Portland is provided by Greyhound Bus, with daily service between the two cities. Passenger rail demand in Seaside is extremely low and access to this mode is considered adequate.

Air

Seaside Municipal Airport, owned by the City of Seaside, provides general aviation services to surrounding communities north and south along U.S. 101. The nearest passenger/air freight airport is located near Astoria, approximately 9 miles north. Seaside Municipal Airport is occasionally used as a weather alternative for that airport.

As part of the Airport Layout Plan Report prepared in November 1995, it was recommended that Clatsop County create an Airport Overlay Zone in the airport vicinity to protect the airport's viability by restricting or prohibiting uses that could interfere with aircraft operation or could be affected by airport noise. It is unclear at this time whether the County has accomplished this overlay zone.

The airport has no scheduled passenger service at this time, and primarily serves residents and visitors with small private planes. In past years, Horizon Air served Astoria with direct flights to Portland; however, service on this route was discontinued in 1996. The nearest airport with scheduled passenger service is the Portland International Airport.

The airport's runway, 16-34, is 50 feet wide and has a total length of approximately 2,337 feet, which is not adequate to fully accommodate all aircraft that operate at the airport. The critical aircraft for airport operations is currently a Beechcraft Baron 58, which is included in Airplane Design Group I and Approach Category B. For this reason, the Airport Reference Code for the Seaside Municipal Airport is B-I.

There are no electronic navigational aids or visual guidance indicators at the airport. The runway is equipped with low-intensity runway edge lighting.

Five aircraft were based at the airport in Fall 1996, and there are approximately 3,200 total operations annually, most of which occur during the summer tourist season. These amounts are expected to more than double over the next 15 to 20 years. There are no hangar facilities, but 40 tie-downs are provided.

Water, Pipeline, & Transmission

Both the Necanicum River and Neawana Creek are considered navigable waterways, as defined by the Army Corps of Engineers. The Corps maintains these waterways primarily for recreational use as both of these rivers are not major streams for commercial activity. Neither of these waterways provides direct access to the ocean. Paddle boats are rented for use on the Necanicum River near the bridge crossing at Broadway.

No major pipeline transportation services lie within the Seaside's UGB. Natural gas is available to residential and commercial sites throughout the community on a regular service-line basis.

One set of high-voltage power transmission lines exists in Seaside. This Bonneville Power Administration line enters the community near the northeast corner of the UGB and travels southwesterly to just south of Ocean Avenue, then turns west to a sub-station located near Wahanna Road. Easements protect this transmission line and sufficient power is provide via this line to adequately serve the Seaside area.

CONCLUSION

The existing transportation system serving the City of Seaside is made up of facilities and services provided by governments, agencies, and private providers. All usual modes of transportation are provided to varying degrees and generally operate in a safe and adequate manner. The vehicular system is generally safe and has adequate capacity during most times of the year, with congestion occurring in spot locations and along Roosevelt Drive during the peak tourist season and special events held by the City. The Holladay Drive/Roosevelt Drive intersection experiences an LOS F and meets two signal warrants under existing conditions and should be monitored closely for the need to signalize.

The pedestrian system is heavily used in certain areas of the City during the peak season, with only minor gaps occurring in the local system and significant short-comings being associated with state facilities. The bicycle system is virtually non-existent, with no designations on local streets and only sporadic treatment along the state highway. Transit service is available on a limited basis, primarily for the transportation disadvantaged and is considered adequate for the existing demand. Both air and rail service is provided outside the Seaside UGB and is deemed adequate due to minimal demand. Water and pipeline transportation service is non-existent with no known demand in the area. Power transmission lines extend to the community and provide an adequate power supply for existing needs.

Future Conditions

INTRODUCTION

This section presents estimates of future demographics such as population and employment, as well as the analysis of future conditions, identification of deficiencies, and development of alternative mitigation for all transportation modes considered in Seaside.

Long-term future transportation needs for the City of Seaside were examined based on employment and population forecasts, extensive discussion with citizens and City staff, review of the proposed roadway network, results from the operational analyses of the existing street system, and future travel demand forecasts. Future alternative mode plans were developed to ensure safe and appropriate provision for pedestrians, bicyclists, and transit users. These alternative mode plans were assessed for their effectiveness in adequately serving demand and satisfying the study goals and objectives.

TRANSPORTATION DEMAND

Future Transportation demand for the City of Seaside was estimated based on the expected growth in study area population and employment and traffic traveling through the study area for the horizon year 2016. The unique trip making characteristics of residential as well as employment based activities were considered in the development of the future travel demand estimates. The land use mix proposed in the City's Comprehensive Plan was taken into consideration during the development of these trip-making characteristics.

Land Use/Demographics

Year 2016 traffic volumes on Seaside's transportation system, based on information provided by City staff, were forecast based on population and employment estimates developed from US Census statistics and forecast growth rates provided by Spencer & Kupper. The 20-year forecast planning horizon was chosen to ensure compliance with Oregon's TPR.

Population

The population of Clatsop County increased from 27,380 in 1960 to 33,301 in 1990, an increase of 21.6 percent over 30 years. This growth represents an annual rate of 0.65 percent. From 1990 to 1995, the population of Clatsop County grew from 33,301 to 34,300, an increase of 2.1 percent, representing an annual growth rate of 0.42 percent. Because of its growing popularity as a retirement and resort destination, the Seaside is experiencing a higher rate of growth than the surrounding county. From 1990 to 1995, the population grew from 5,359 to 5,750, an increase of approximately 7.3 percent, representing a growth rate of 1.4 percent.

The average household size in Seaside is expected to change somewhat over the 20-year planning horizon. There were approximately 2.14 persons per dwelling unit in 1990 in the Seaside area. This is expected to decrease to 2.0 persons per dwelling unit by the year 2016. Therefore, this lower household density would likely result in fewer total daily trips being generated per household in the future. However, standard trip generation rates for single- and multi-family dwelling units were used, in an effort to be conservative.

Employment

The employment base in Seaside is estimated to grow by approximately 400 jobs by 2016. It is expected that this level of employment may result in an improved internalization of trips and a slightly increased non-auto mode split due to more job opportunities being available closer to home. The result would likely be a lower average number of work-related auto trips generated per household. Further, it can be expected that average trip-lengths would be reduced due to residents working closer to home.

Changing Demand for Transportation Options

Travel demand 20 years from now is likely to consist of an increasing component of non-automobile traffic, including pedestrian, bicycle, and transit modes. In addition, such components as telecommuting and other "super highway" technology will make up an increasing part of the future transportation demand by the year 2016. Increasing use of this technology will allow employees to work via modems and other electronic links with offices any distance away, thereby reducing the need to commute.

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, reducing overall demand on the roadway network. This benefit can be offset if large regional attractors that draw trips from beyond the local area locate in the City.

Generating quantitative future travel demand estimates for these "modes" is a challenging task. Traditional methods of "extrapolation of trends" require a basis in substantial historical data. Such data are not readily available for the Seaside area. Therefore, a qualitative approach was taken in estimating future demand.

In an attempt to reflect the features and benefits of this compact destination community and other transportation options listed above, it was determined that mode splits found to occur in larger urban areas would be used. The resulting mode split for Seaside was approximately 25 to 35 percent of all daily person-trips generated by the home would be via some non-auto

oriented mode. This mode split is comparable to those found in cities of 50,000 population, as indicated in *National Cooperative Highway Research Program Report #187.* This suggests that a single-family dwelling until that produces 14 person trips per day results in approximately 9 or 10 auto trips per day. This is a widely accepted auto trip generation rate used for future travel demand forecasting for single-family dwelling units.

TRAVEL DEMAND FORECASTING METHODOLOGY

To enable a quantitative comparison of a number of future roadway system alternatives, future summertime daily traffic volumes estimated to occur on the City's streets for the year 2016 were required. The method used to estimate future traffic volumes involved a manual assignment of daily trips based on the population and employment estimates cited earlier.

Forecasts of future traffic volumes can be provided at varying levels of detail. Estimates of future trips in the Seaside area were forecast on a *daily* basis. Such daily estimates may be used to identify the required size of future roadway facilities or the need for additional facilities to be included in the future transportation network over time.

Future *peak hour* volume estimates would be required to reflect the impact of a variety of alternatives generally considered for transportation systems at or approaching capacity, including:

- Increases/decreases in mode splits between auto and non-auto modes
- The implementation of Access Management, Transportation System Management, and Transportation Demand Management alternatives
- The advantages and disadvantages of signalization or signal coordination on the overall operation of the transportation system
- The effect of peak hour spreading (longer commute periods) on the overall demand and congestion experienced
- Intersection-level improvements that would forestall or eliminate the need for signalization

It would not be prudent to attempt to identify more refined needs or deficiencies (such as those listed above) based on daily estimates alone. Further, it would be beyond the ability of the daily estimates to reflect refinements in assumptions for improved mode splits or the effects of study area trip internalization resulting from changed land uses.

Twenty-year planning level manual traffic assignments are typically insufficient to produce accurate estimates of *peak hour* traffic volumes for use in the identification of deficiencies and evaluation of alternatives. Therefore, *summertime daily* traffic volumes were developed from the manual assignments for the year 2016 to assist the upcoming task of determining the size of future roadway facilities necessary to accommodate demand.

The forecast methodology employed for the City of Seaside was developed in recognition of the ongoing planning activities occurring between the City and ODOT regarding proposed improvements to Highway 101. Vehicular travel demand forecasts have been developed for the year 2015 for Highway 101 and critical east-west cross streets in the Seaside area for the *Pacific Way - Dooley Bridge Draft Environmental Impact Statement* (Dooley Bridge DEIS). At the outset of this TSP planning process it was agreed by the City, ODOT, and the Consultant that the Dooley Bridge DEIS forecasts for Highway 101 would be incorporated into the forecast prepared for the TSP.

Specifically, the forecast highway and cross street volumes from the DEIS would be factored by one years growth (extrapolated from the Dooley Bridge DEIS) to produce a year 2016 forecast for the TSP. The resulting year 2016 highway volumes would be held constant, without modification. The potential need for refinements and/or modifications to cross street volume forecasts was acknowledged, based on more accurate land use information being available during the TSP planning process.

Development of Travel Basins

To facilitate the development of forecast automobile travel demand estimates for the City of Seaside, Kittelson & Associates, Inc. identified a total of nine unique "travel basins" or catchment areas of residential and commercial development within the existing UGB for the City. Each basin would be served by an existing street giving access to Roosevelt Drive in Seaside. City staff provided estimates of land use development potential in each of the travel basins by the year 2016.

Trip Generation

Future travel was determined to be generated by one of three sources in the City of Seaside, they are:

- New Development
- In-fill Development
- Increased Tourism

Each of these sources is discussed in more detail below.

New Development:

The population and employment forecasts indicate the addition of approximately 2,300 new residents and 1,150 new dwelling units. This represents a population increase of approximately 40 percent (2.0 percent annual increase) and a dwelling unit increase of approximately 46 percent. These increases would be described as moderate in comparison with 20-year growth rates for communities of similar size and character in Oregon.

An inventory of vacant, buildable lands within the UGB of Seaside was prepared by City staff. Based on current zoning and lot size requirements, it is estimated that approximately 1,000 of the 1,150 new dwelling units can be accommodated in these vacant, buildable areas. Siting of the 1,000 new dwelling units was, in turn, based on information provided by City staff, regarding planned and proposed developments within the area. Figure 10 illustrates the location of these residential developments. As can be seen, all new development will be located either to the east of the Neawanna Creek or south of Sunset Boulevard.

In-Fill Development:

Assuming the City continues to develop in accordance with the Comprehensive Plan and at the current densities, there appears to be insufficient vacant, buildable lands to accommodate the 20-year growth in population. The Comprehensive Plan and Zoning Codes do allow for in-fill development by a variety of means including the "grandfathering" of substandard lots due to size. The result is that the City has a significant potential for in-fill development to occur. Information prepared by City staff suggests that approximately 1,360 new dwelling units could be accommodated through in-fill development, while maintaining compliance with all plans and codes. Therefore, it is reasonable to assume that approximately 150 new dwelling units could be accommodated within the City's UGB as in-fill development, over the next 20 years. Further, such in-fill development would represent approximately 13 percent (150 out of 1,150 new units) of all new residential development over the 20-year future; similar to what is currently being experienced in several communities throughout Oregon.

Increased Tourism:

A significant portion of the local economy of Seaside depends on tourism and it is expected to remain an important aspect in the City's long-term development. The continued population increases forecast for the Portland metropolitan area, well into the next century, will likely translate into increased tourism in Seaside. This can be expected to occur without significant development of additional tourism attractions (including improvements to the aquarium) due to the inherent popularity of the Oregon coast. Therefore, it is prudent to include an increase in future travel demand based on increased tourism.

Quantifying the increased travel demand that may result from increased tourism is difficult and has a large potential for error. A conservative approach would be to estimate a fairly significant travel demand increase due to tourism and size the transportation system accordingly. The complement would be to assume no growth in travel demand and have a transportation system that may be insufficient to accommodate the increase if it occurs. This could potentially discourage tourism, negatively impacting the local economy.

A conservative approach has been taken in estimating future travel demand due to increased tourism. An increase of approximately 1 percent per year in summertime daily traffic on the critical roadways within Seaside was assumed as a part of the 2016 travel demand forecast. A sensitivity analysis will be performed wherever future transportation deficiencies are identified to determine the impact associated with this element of the travel demand forecast. Input from the Committees will be obtained for such circumstances to determine the appropriate course of action.

Automobile Trip Generation

Auto trips on the transportation system can be divided into two categories: internally generated trips and through trips. Internally generated trips are created by activities within Seaside, while through trips occur without regard to the City and its population. Therefore, the City has no control over or responsibility for the through trips (primarily on the highway) that occur. The following sections provide a brief description of each type of trip.

Internally Generated Trips

Trip generation rates were obtained from equations found in the *1990 ITE Trip Generation Manual* (5th Edition) to estimate the total number of automobile trips generated by land uses within Seaside (referred to as "local trips"). These trip generation rates result in estimates for trips made within and between the travel basins as well as trips made between the basins and external zones. Based on a sample of approximately 110 households, the average single-family household in Seaside generates approximately 9.1 daily auto trips, slightly less than the national average of 9.55 daily auto trips. This is likely as a result of the lower than average number of persons per household found for Seaside (2.14 persons per household), which is likely to produce fewer trips. As stated earlier, the national average was used for estimating future trips to ensure that estimates used in this report are conservative.

A local trip is defined as one that starts or ends in Seaside. An example would be a Seaside resident who travels from home to the Seaside City Hall. Another example would be an Astoria resident who travels from home to Cannon Beach and stops in Seaside for gas on the way (this motorist would have generated two local trips, one from Astoria to the gas station, the second from the gas station to Cannon Beach).

Through-Trips

Through-trips are described as trips that neither begin nor end in Seaside. An example would be a commercial truck traveling from Cannon Beach to Astoria via U.S. 101 through Seaside. As long as the driver does not stop in Seaside (for services including food, gas, delivery or pick up), the trip would be considered a through trip.

LEGEND

- INDUSTRIAL
- COMMERCIAL
- RESIDENTIAL

AREAS OF FUTURE DEVELOPMENT

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 10

TM2\1962DVEL

Trip Distribution

Trips produced by the population and employment located within Seaside were distributed to areas within and outside of Seaside, based on the "attractiveness" of an area for the type of trip being made. Examination of census journey-to-work data revealed that trips by Seaside residents for work are attracted to employment areas outside of Seaside more often than within Seaside. Trips for local services such as groceries, banking, and retail were assumed to be attracted to areas within Seaside as often as outside of Seaside. Finally, many trips were assumed to be attracted to Seaside from outlying areas due to the services (tourism, employment, commercial, retail, etc.) that are provided within Seaside.

Mode Split

The mode split assumptions for the future travel demand estimates were developed using the *National Cooperative Highway Research Program Report #187.* This resulted in an assumed mode split of approximately 25 to 35 percent non-auto trips in 2016 in Seaside.

The measured auto trip generation rate for Seaside (9.1 trips per day) is slightly lower than the national average for single-family dwelling units (9.55 trips per day). The assumption was made that the national average of 14 person trips per day applied in Seaside. Therefore, approximately five trips per day per household were assumed to be made using a non-auto mode.

Traffic Assignment

Total future daily traffic volumes were assigned to the local street system and Roosevelt Drive in Seaside, using the shortest path method. Simply stated, the shortest path method assigns the trip to the route with the shortest length between beginning and end. This is an appropriate method for a daily traffic assignment, given the relatively small geographic size of the community, its compact nature, and the relative ease of travel.

COMPARISON OF FUTURE FORECASTS

The following section is a comparison of the travel demand estimates derived for the Seaside area in the *Pacific Way - Dooley Bridge DEIS* study and the *Seaside Transportation System Plan* study.

Both forecasting methodologies are similar in that they are based on a review of historical travel trends along U.S. 101 as recorded by ODOT. In addition, both forecasts are for the peak summertime conditions. Finally, both forecasts employed standard travel demand estimating techniques that do not require the use of a computer model or sophisticated algorithms.

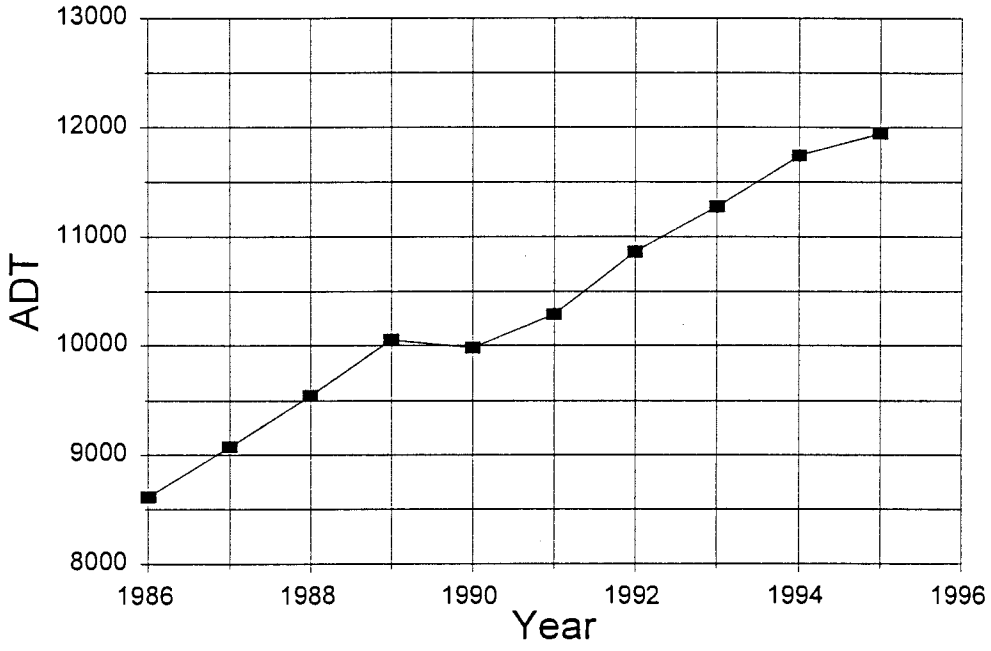
Some differences between the forecasting methodologies are worth noting. The DEIS has a forecast year of 2015, while the forecast year for the TSP is 2016. The historical travel demand data, available for U.S. 101 at the time the DEIS was prepared, was current through 1990. Historical travel demand data through 1996 were available at the time the TSP forecast was prepared. Specific land use data and assumptions regarding the Seaside area were developed or available for the TSP and not for the DEIS. The DEIS relied on historical population data and county-wide growth trends to estimate future travel demand in Seaside.

The significance of the differences is that, during the years from 1990 to 1996, ODOT records and estimates for travel demand on the U.S. 101 corridor through Seaside revealed a downturn from what was recorded in the late 1980s. [*However, as shown in Figure 11, the ODOT permanent recorder located on U.S. 101 north of Gearhart indicates a steady increase in traffic volumes over the same period.*] In addition, the more specific land use data and assumptions available for the TSP allowed for a more accurate estimate of travel demand on the local street system and at the highway/local street connections in Seaside.

Two significant impacts result from the differences described above. First, the more recent historical travel demand data for U.S. 101 (showing a downturn between 1990 and 1996) results in a total forecast for the U.S. 101 corridor that must be lower in the TSP than in the DEIS. Second, the more specific land use data available for the TSP results in more accurate loadings of future travel demand on the local system and at key connections/crossings of U.S. 101. Therefore, the probability that these two processes would result in similar forecasts is very low.

Figure 12 illustrates information regarding the resulting 2016 travel demand forecast, based on the TSP forecasting methodology. Screen lines have been super-imposed over the study area roadway network and summertime daily traffic volumes on critical roadways are shown. These preliminary forecast volumes are displayed for the purposes of providing a comparison to the existing 1996 summertime daily traffic volumes shown in Figure 8, Section 2. In addition, this figure can be compared with Figure 3-9 on page 3-24 of the Pacific Way-Dooley Bridge DEIS study, which shows 2015 summertime ADT volumes.

Table 4 is a comparison of travel demand forecasts between the Dooley Bridge DEIS and the TSP. The comparison is made of the total east-west travel demand on each side of the highway, estimated for each of the major local streets, including 24th Avenue, Wahanna Road, 12th Avenue, 1st Avenue, Broadway, Avenue A/B, Avenue G, Avenue S, and Avenue U.



US 101 PERMANENT
RECORDER # 04-001:
AVERAGE DAILY TRAFFIC VOLUMES

CITY OF SEASIDE TRANSPORTATION SYSTEM PLAN JUNE 1997	FIGURE 11

1962F003

Table 4
East-West Travel Demand Forecast Comparison

Forecast	West of Highway 101	East of Highway 101
Dooley Bridge DEIS	28,650	12,600
TSP	25,500	11,600
Difference	3,150	1,000

The DEIS estimated a total east-west travel demand of 41,250 ADT (on key local streets) and the TSP study estimated approximately 37,100 ADT. The net difference of approximately 4,150 trips represents a 10 percent difference between the forecasts. This is well within the statistical accuracy of the forecasting methodology employed for both studies.

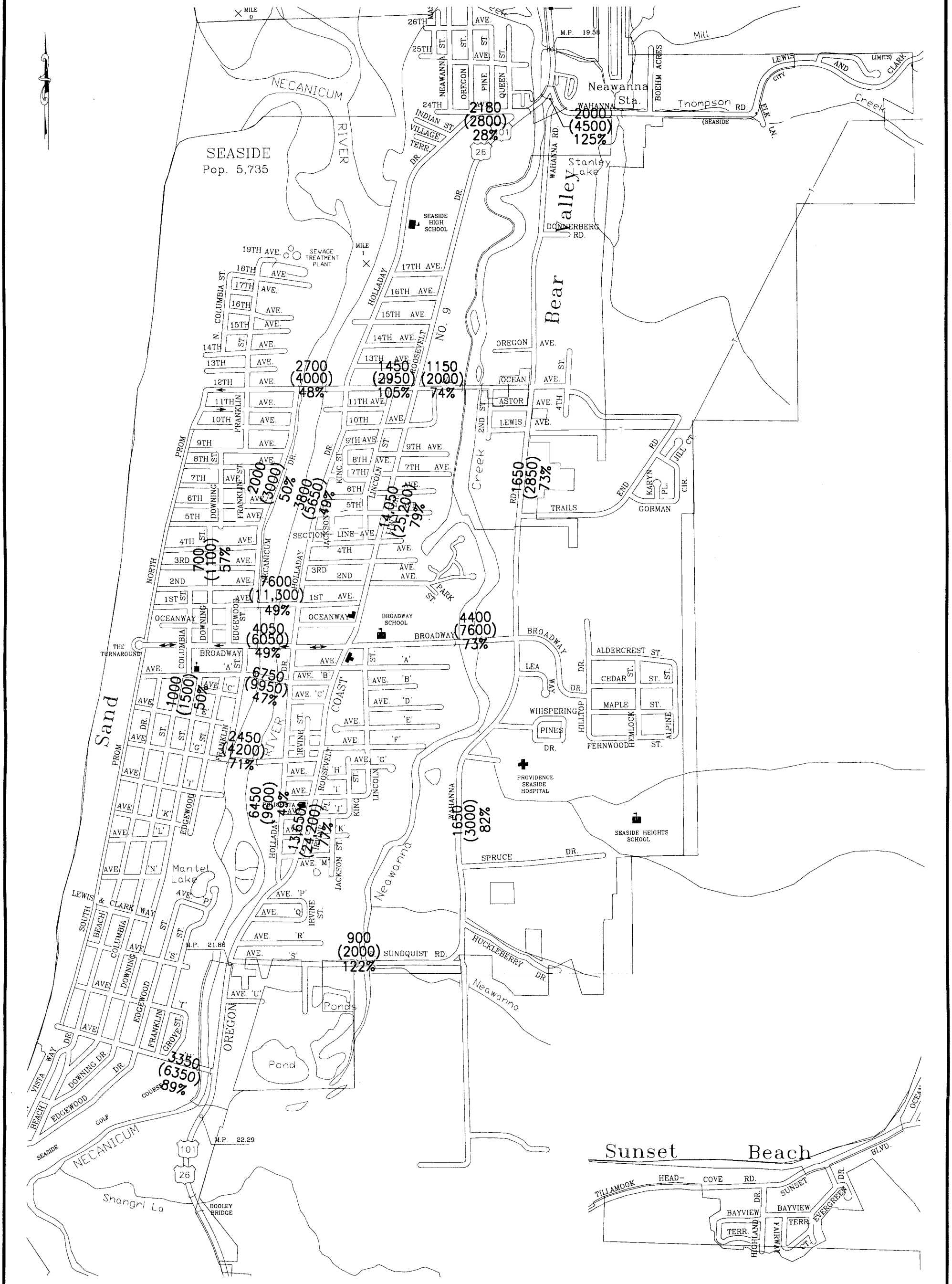
The conclusion drawn from this comparison is that the forecasts are supportive of one another and that the difference in estimated traffic volumes is within the statistical accuracy of the methodology employed. Either forecast can be reasonably used for 20-year transportation planning activities, including the Seaside TSP.

FUTURE TRAFFIC CONDITIONS

Future travel demand for the City of Seaside was estimated based on the expected growth in study area population and employment, tourism attracted to Seaside, and highway through traffic described previously. The traffic projections and assignments are based on an unconstrained transportation system. In other words, future traffic was assigned assuming the roadways in Seaside were uncongested and drivers could choose their preferred routes. This is an appropriate assignment procedure due to the available capacity on the preponderance of the system, moderate growth in future traffic, size of the study area, variety of travel routes, and the methodology employed to estimate the future travel demand.

Assignment of Future Traffic Demand

The City was divided into nine travel basins for the purposes of estimating future traffic conditions. Figure 13 shows the boundary lines assumed for these travel basins. Vacant, developable lands identified by City staff (discussed in the previous subsection) were used to estimate future travel demand based on the current zoning of the land and the likelihood of development. The trips associated with the new residential, commercial, or industrial developments were assigned to the transportation system, based on the attractiveness of one travel basin over all travel basins for that type of trip.



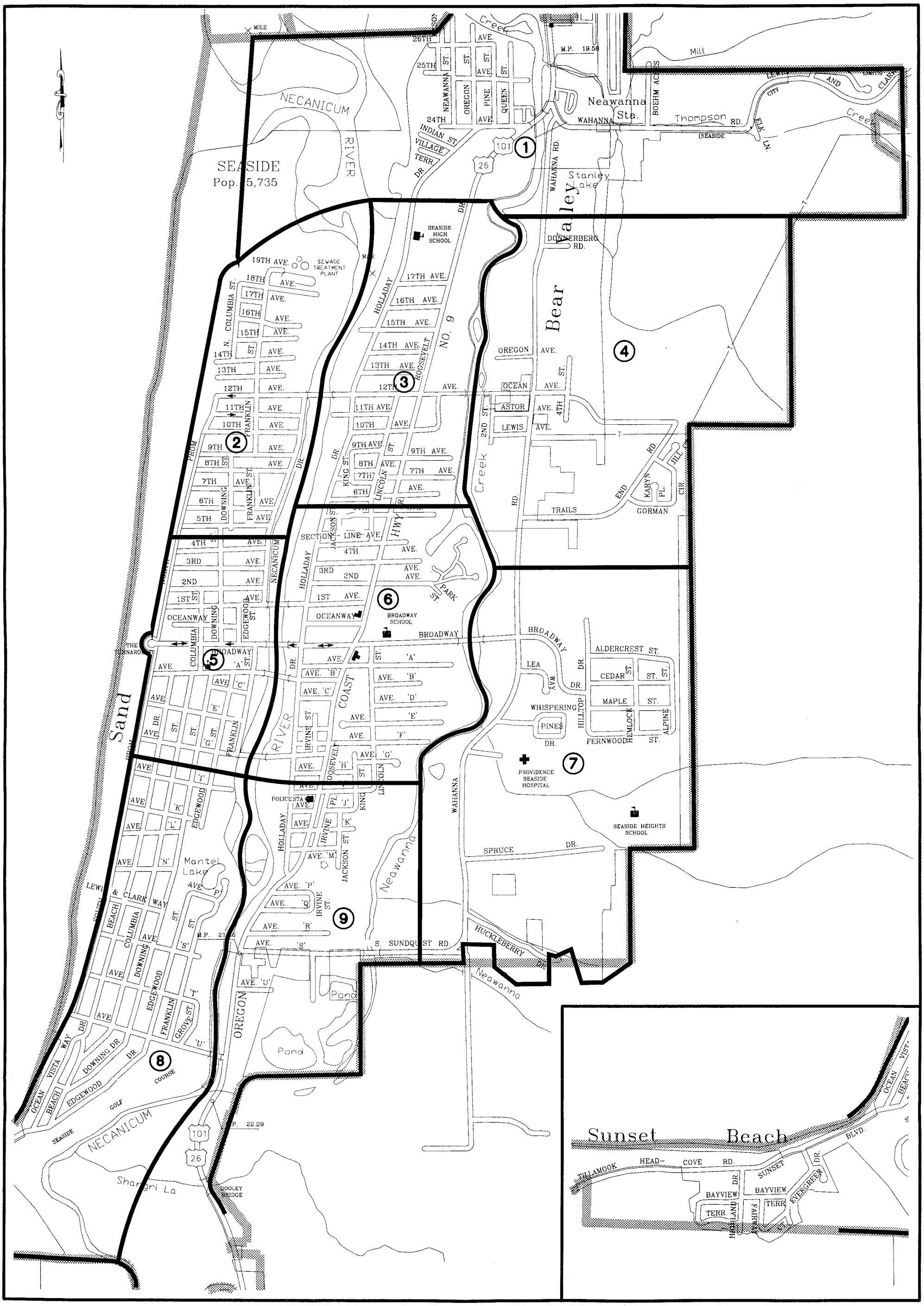
LEGEND	
XXXX	1996 TRAFFIC VOLUMES
(XXXX)	2016 TRAFFIC VOLUMES
XX%	20 YEAR GROWTH

YEAR 2016 SCREEN LINE TRAFFIC VOLUME ESTIMATES

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 12

TM2\1962ADT2



LEGEND

- UGB
- TRAVEL BASIN BOUNDARY LINE
- (X) TRAVEL BASIN ZONE NUMBERS

TRAVEL BASINS

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 13

1962TAZ

In addition to new development, infill development and increased tourism were other sources expected to generate additional traffic. Infill developments were identified in six of the nine travel basins, based on discussion with City staff and an understanding of land uses in the City. Although infill development is a small portion of the overall new trips generated in the city (less than 15 percent), it was appropriate to assign and account for the impacts of those trips.

The City of Seaside has the ability to generate and absorb additional tourism and will continue to do so as Portland and the surrounding metropolitan area population increases. This is expected, whether or not Seaside develops any new or additional tourist attractions. Those travel basins with features associated with tourism were assigned additional trips due to expected increases in tourism travel demand. Much of this additional traffic was, therefore, assigned to the downtown areas and along the Roosevelt Drive corridor.

Figure 14 shows the year 2016 summertime daily traffic volumes on Seaside's transportation system, based on the above described estimates developed from U.S. Census statistics and forecast growth rates. The 20-year planning horizon was chosen to ensure compliance with Oregon's TPR.

No-Build Alternative Traffic Conditions

As discussed previously, future traffic growth estimates for the City of Seaside were based on population and employment estimates, forecast increased tourism, and economic development potential. The projected population increase of approximately 2,300 new residents and the projected employment increase of approximately 400 new jobs over the next 20 years will generate additional travel demands above what exists in Seaside today.

The analysis of no-build future conditions is based on the assumption that no additional transportation facilities other than those with already committed funding will be built. Currently, no future transportation projects are funded for local street improvements in the City of Seaside.

On May 20, 1997, voters in the City of Seaside approved ODOT moving forward with development and implementation of a set of improvements for U.S. 101, based on the Pacific Way-Dooley Bridge DEIS. It is assumed that the appropriate improvements will be identified and implemented on the U.S. 101 corridor to maintain adequate operational safety and capacity through the 20-year planning horizon of the TSP. Further, it is assumed that these improvements will be coordinated with and supportive of all relevant improvements identified in the TSP. Finally, it is assumed that any adverse effects on the local street system resulting from the U.S. 101 improvements will be identified and appropriately mitigated as part of the overall project.

Seaside Traffic Volumes

Forecasts of future traffic volumes can be provided at varying levels of detail. Estimates of future trips in the Seaside area were forecast on a daily basis. Such daily estimates may be used to identify the required size of future roadway facilities or the need for additional facilities to be included in the future transportation network over time. Factors are used to convert daily traffic volume to peak hour traffic volume estimates, for analysis of critical intersection operations. Although the intersection volumes are factored estimates, it is reasonable to use this methodology if care is given and a sensitivity analysis is provided for those intersections that are at the threshold of operational capacity.

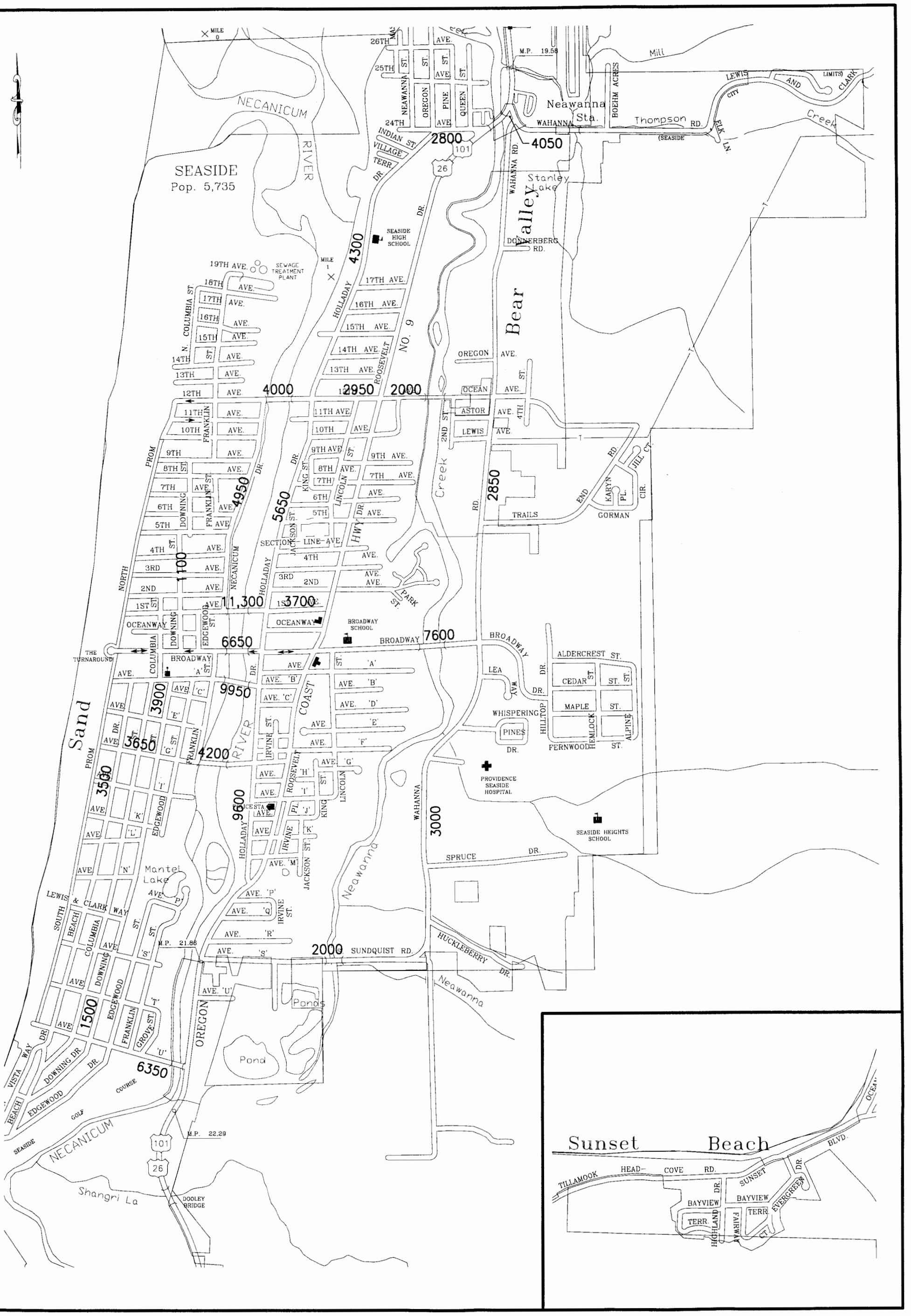
The level of service calculations presented in the next section are based on these projected year 2016 traffic volumes and assume no change or improvement in mode split due to improved usage of non-auto modes.

Level-of-Service Analysis

The level-of-service (LOS) analysis for the study intersections have been prepared in accordance with the procedures presented in the *1994 Highway Capacity Manual*, Transportation Research Board. The concept of levels of service is defined as a measure of quality on a roadway, based on individual perception by the public. A level-of-service definition generally describes these conditions in terms of such factors as speed, safety, travel time, and freedom to maneuver.

Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Level of service D or better is generally considered an acceptable LOS for signalized intersections and LOS E or better is generally considered marginally acceptable for unsignalized intersections (LOS E represents operating conditions at or near the capacity level of an intersection. All speeds are reduced to a lower uniform level, and freedom to maneuver within the traffic stream is extremely difficult). Table 5 shows the 2016 peak-season planning level of service analyses performed for the city streets of Seaside.

As shown in Table 5, the existing signalized intersections on the city street system will operate at acceptable levels of service in 2016, given the projected growth assumed for the 20-year planning horizon. The intersections of Avenue G, Avenue A, and 1st Avenue with Holladay Drive will operate near capacity during the horizon year summertime weekday p.m. peak hour. These results indicate that signalization or other mitigation measures may be required at one or more of these locations. Additional analysis, including conducting a Signal Warrants analysis of these intersections, was prepared and is reported in the following section.



LEGEND

XXXX 2016 TRAFFIC VOLUMES

2016 DAILY TRAFFIC VOLUMES

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 14

TM3\1962ADT3

The reader is reminded that the assignment of future travel demand was done assuming an unconstrained transportation system. As congestion develops on the system, drivers choose other available alternate routes to perform trips, thus avoiding the congestion and achieving equilibrium. Therefore, this assignment will likely result in artificially higher demand at intersections approaching capacity and the associated poorer LOS results.

Signal Warrant Analysis

Fourteen critical study area intersections were analyzed to determine the possible need for future signalization. This analysis is based on the national standard signal warrants given in the *Manual on Uniform Traffic Control Devices* (MUTCD). The Manual provides 11 signal warrants, including ones based on accident experience, pedestrian volumes, and traffic volumes. Signal Warrants are an indication of the need for improved or increased traffic control at an intersection. The satisfaction of one or more warrants does not justify the installation of a traffic signal. The satisfaction of warrants must be supplemented with further engineering evaluation and the application of sound engineering judgment to determine the appropriateness of such treatments.

Based on the type of traffic volume data available, signal warrants were performed in accordance with the ODOT ADT-based warrant analysis, which is a simplified application of the MUTCD. The warrants evaluated were Warrant 1 (Minimum Vehicular Volume) and Warrant 2 (Interruption of Continuous Traffic). Both of these warrants are based on daily traffic volumes. To satisfy these warrants, traffic volumes on the major and minor intersection approaches must be greater than the warrant volumes. The warrant volumes vary by the importance of the approach (major street vs. minor street), the number of through lanes on the approach, the posted or 85th-percentile speed on the major street, and the population of the area. Table 5 lists the fourteen intersections analyzed using the signal warrant methodology.

As shown in Table 6, no critical study area intersections meet both Signal Warrants 1 and 2 under year 2016 summertime p.m. peak hour traffic volumes. Only four intersections satisfy Signal Warrant 1(all on Holladay Drive) and no intersection studied satisfies Signal Warrant 2. These results indicate that at certain times during the summertime peak tourist season congestion will occur on Holladay Drive. This congestion is significant enough to cause long delays to the side-street movements. However, there remain sufficient opportunities in the long-range future for side street access to Holladay Drive, such that traffic signals are not likely to be warranted.

Table 5
2016 Peak-Season Weekday P.M. Peak Hour
Intersection Levels of Service "Planning Level of Analysis"

Intersection	Signalized/All-Way Stop		Unsignalized		LOS
	v/c	Intersection Delay (sec)	Critical Approach	Estimated Delay* (sec)	
Avenue G/Downing Street			SB	6.6	B
Avenue B/Franklin Street			SB	17.7	C
Avenue G/Franklin Street			SB	8.0	B
Broadway/Wahanna Road					
Beach Drive/Avenue G			WB	6.7	B
Necanicum Drive/12th Street			WB	9.3	B
Holladay Drive/12th Street			EB	18.1	C
Wahanna Road/12th Street			EB	6.5	B
Holladay Drive/Avenue G			EB	29.8	D
1st Avenue/Holladay Drive	1.06	32.1			E
Avenue U/Edgewood Street			NB	12.9	C
Avenue U/Beach Drive			SB	7.0	B
Avenue A/Holladay Drive	1.11	34.0			E
Avenue B/Columbia Street			SB	11.8	C
Holladay Drive/Broadway (Assumes all-way stopped)	1.07	32.5			E
Broadway/Columbia Street (Assumes permitted phasing)	0.43	11.6			B

v/c: volume-to-capacity ratio LOS: Level of Service
*This level-of-service analysis was based on ADT volumes and assumptions for daily and peak hour conditions were developed based on measured ADT volumes.

Table 6
Signal Warrant Analysis

Intersection	ADT Major	ADT Minor	Warrant 1	Warrant 2
Avenue G/Downing Street	3,900	2,000	NO	NO
Avenue B/Franklin Street	8,700	3,000	NO	NO
Avenue G/Franklin Street	4,200	1,700	NO	NO
Broadway/Wahanna Road	7,600	3,300	NO	NO
Beach Drive/Avenue G	4,000	3,000	NO	NO
Necanicum Drive/12th Street	4,000	3,500	NO	NO
Holladay Drive/12th Street	5,650	4,000	YES	NO
Wahanna Road/12th Street	3,600	2,000	NO	NO
Holladay Drive/Avenue G	9,600	4,200	YES	NO
1st Street/Holladay Drive	11,300	6,800	YES	NO
Avenue U/Edgewood Street	6,000	4,700	NO	NO
Avenue U/Beach Drive	3,200	2,400	NO	NO
Avenue A/Holladay Drive	9,200	7,400	YES	NO
Avenue B/Columbia Street	7,400	3,900	NO	NO

The LOS and Signal Warrant analysis results suggest that the local roadway network in Seaside has sufficient capacity to adequately accommodate the future travel demand. Drivers accessing Holladay Drive during peak summertime conditions will experience congestion and long delays; but not sufficient to likely warrant additional traffic control, including traffic signals. There are local alternate parallel routes to Holladay Drive that are available and would likely be used by Seaside residents under such conditions. Therefore, a balancing or equilibrium is likely to be achieved on the local transportation system, with some trips being diverted to other less congested routes, some trips being postponed until a later time, and some trips possibly being converted to a non-auto mode.

It is recommended that the City of Seaside monitor the traffic volumes on Holladay Drive during summertime peak conditions. Data collected during this monitoring will assist in identifying travel patterns, critical turn movements, and the need for additional turning capacity to be added at certain intersections over time. The addition of turn lanes at critical

approaches to these intersections will reduce the delay experienced by many drivers and increase the overall capacity of the intersection.

PEDESTRIANS AND BICYCLISTS

The existing pedestrian system was inventoried as part of the data collection effort for the TSP. This inventory was presented in Section 2: Existing Conditions. As discussed previously, the City of Seaside has a good and well-established pedestrian system throughout most of the western half of the city. However, pedestrian facilities diminish as one leaves the core downtown areas, becoming more intermittent to the north and the south and virtually non-existent east of Roosevelt Drive. Most pedestrian generators (such as schools, stores, libraries, convention center, public facilities) have sidewalks in proximity; however, not all areas of the community are connected to these generators by sidewalks.

There are no delineated bike lanes on city streets, and Roosevelt Drive has only intermittent and poorly maintained shoulders provided for cyclists. Significant bicycle activity does occur on local Seaside streets during the summertime peak tourist season. Three- and four-wheeled surries frequently can be found touring the area with people of all ages on board. These and all other bicyclists must share the roadway with motorized vehicles to travel about town and gain access to the local bicycle generators.

For purposes of analysis, future demand for pedestrian and bicycle transportation was qualitatively estimated. Pedestrian and bicycle trip-making in Seaside is prevalent during summertime conditions when the roadways are most congested, yet difficult to predict. The nature of Seaside's existing sidewalks and lower speed streets (in the downtown core) encourage citizens, tourists, and visitors to walk and cycle the streets. Beyond the downtown core, there needs to be a constant reinforcement of these modes to provide a more complete transportation system and minimize vehicular demand.

The availability of safe and convenient facilities are important factors in the decision people make regarding their mode choice. Often trip lengths are not the deciding factor in these choices, rather it is the obstacles and indirect route that discourage potential pedestrians and cyclists and result in more vehicular traffic on the roads.

There is a strong opportunity to increase the number of pedestrian trips made in place of automobile trips for various people and activities, throughout all of Seaside. The means to promote these modes lie in providing safe, convenient, and efficient facilities for the users. These facilities must be programmed in a fashion that makes them attractive to the potential user and easy to choose. They should connect all of the major activity generators including the high school, grade schools, beach, and major residential developments, via all of the main City streets, to provide safe and efficient routes.

Future traffic conditions indicate that increased levels of traffic will create congestion, which creates higher potential for safety problems on the roadways and increased interaction between motorized vehicles, pedestrians, bicycles, and surreys. The objective of these facilities plans are to provide safe, convenient, and attractive facilities for these alternative modes that will encourage the choice of non-auto modes in trip-making decisions.

CONCLUSION

The City of Seaside is expected to grow in population at a rate of approximately 2.0 percent per year for the next 20 years to a total of approximately 8,050 population. In addition, employment within the City is expected to increase by approximately 5.75 percent per year for the next 20 years to a total of approximately 3,400 jobs. An additional 1,150 new dwelling units will be constructed to a total of approximately 3,650 households by the year 2016. This equates to approximately a 0.93 jobs-to-housing ratio for the City in the horizon year.

Travel demand is expected to increase due to the rise in population, employment, and increased tourism in Seaside. The mode split for Seaside to non-auto travel modes is likely to be greater than for similarly sized cities in other areas. This is due to the compact nature of the city and status as a scenic tourism destination. Most tourists arriving in Seaside during the summertime peak quickly dispense with their automobiles to walk the promenade, stroll down Broadway, or ride a surrey to discover the city. The physical amenities provided for these non-auto modes encourage their use and the scenic nature of the area makes them appropriate, particularly during nice weather.

The estimated future travel demand within Seaside will be adequately accommodated on the existing local street system. During peak summertime conditions in 2016 it is expected that isolated intersections will experience some congestion; but, the likely mitigation required at these intersections does not include signalization. No significant capacity constraints have been identified on the local street system and, therefore, no mitigation is required.

Future Transportation System Alternatives

INTRODUCTION

This section is a summary of the land use and transportation alternatives considered and analyzed for the City of Seaside's Transportation System Plan. The analysis was based on the future conditions developed and reported in Section 3. This set of alternatives includes consideration of modified land uses, multi-modal system enhancements, transportation system management provisions, and planning level cost estimates for each provision or project.

Long-term transportation needs for the City of Seaside were determined based on extensive discussion with citizens and City staff, review of the existing street system operational analyses (see Section 2: Existing Conditions), and identified existing and future system connectivity and capacity deficiencies. Alternatives were developed to address the identified needs for each viable travel mode. These alternatives were then analyzed for their ability to ensure safe and efficient operations for all users (pedestrians, bicyclists, surreys, autos, trucks, and transit). Finally, plans for each mode were assessed for their effectiveness in adequately serving demand and satisfying the study goals and objectives.

The only other ongoing transportation planning project that will have a direct effect on the near-term and long-range transportation system in the Seaside area is described below.

Pacific Way—Dooley Bridge Project

The Transportation System Plan for the City of Seaside has acknowledged the ongoing transportation planning work that is being done in the study area. The Oregon Department of Transportation (ODOT) has completed the Pacific Way-Dooley Bridge DEIS for the Roosevelt Drive (U.S. 101) corridor. The DEIS is intended to identify the phased improvements for Roosevelt Drive necessary to ensure adequate capacity and functional operations through the horizon year 2015.

The DEIS indicates that Roosevelt Drive carries the highest level of daily traffic of all streets in the study area and identifies the need to improve Roosevelt Drive throughout the city. These improvements include providing sidewalks and bicycle lanes along Roosevelt Drive that will significantly enhance the viability of these modes. The Pacific Way-Dooley Bridge study also addresses the intersection deficiencies on Roosevelt Drive at Lewis and Clark Road (North Wahanna Road)/24th Avenue, Avenue F/G, and Holladay Drive and recommends alignment improvements.

The need for improvements and the appropriate mitigations for identified deficiencies on the U.S. 101 corridor are not included in this Transportation System Plan. Our analysis of the

DEIS document and the Roosevelt Drive corridor has been limited. However, for the purposes of this study, our analysis of the non-auto system has assumed that bicycle and pedestrian system improvements will be made to the Roosevelt Drive corridor.

The DEIS identifies the need for improved pedestrian crossings at several locations and in association with identified intersection improvements. A continuous pedestrian and bicycle system are planned for the corridor including striped, on-street bike lanes and sidewalks meeting Americans with Disabilities Act requirements.

Intersections with Roosevelt Drive identified for improvements in the EIS include Lewis and Clark Road/24th Avenue, 12th Avenue, Avenue F/G, and Holladay Drive. ODOT will be responsible for the funding, design, and construction of these intersection improvements and all other improvements associated with Roosevelt Drive during the Pacific Way-Dooley Bridge Project. The total cost for the project, depending on the alternatives selected, ranges from $23.3 to $28.5 million dollars.

ANALYSIS OF ALTERNATIVE LAND USES

Isolated and limited capacity deficiencies were identified on the existing transportation system, under the horizon year no-build condition. One method of potentially minimizing or mitigating future transportation capacity deficiencies is to modify how and/or where future development occurs within the UGB. An analysis of the planned future land uses was performed to identify the potential for reducing future transportation needs through land use modifications.

Section 3: Future Conditions described the reasonable potential for growth within the Seaside UGB and the expected population and employment in the study area to the year 2016. Population was forecast to increase by 2,300 and employment by 400. The population growth was expected to result in approximately 1,150 new dwelling units and approximately 20 acres of retail, commercial, and industrial development. Appropriately zoned vacant, developable, and redevelopable lands were identified to accommodate the projected growth, within the UGB.

An evaluation of the proximity of future development to the existing transportation system determined that retail/commercial redevelopment is expected to occur primarily along the Roosevelt Drive, Holladay Drive, and Broadway corridors.

The land use alternatives analysis revealed that there is little likelihood that a significant amount of new residential development could be artificially focused as in-fill or redevelopment. Land values in the Seaside area are not substantially high enough to neutralize the cost efficiencies of larger developments (i.e., subdivisions) over the more costly development forms. Further, the 12 to 15 percent in-fill development rate assumed in the forecast is above average for communities in Oregon and promoted, in part, by the City's land development codes.

Vacant, developable lands for employment-based development are limited in both quantity and location. The potential for rezoning (up-zoning or down-zoning) is severely limited and would likely compromise the fabric and character of existing land uses. Redevelopment and in-fill provide good opportunities for increased employment densities and strengthening of the downtown core's vitality. Due to the limited size of in-fill lots, certain development forms (industrial, warehousing, large commercial) are likely to be forced to the few large, vacant lots that remain available.

The results of the land use alternatives analysis indicate that the potential for significant modification of development forms and patterns in Seaside is unlikely. Further, the net benefit of such modifications would likely be marginal at best. The reason for this is that the only constrained local transportation facility (existing or future) in Seaside is the section of Holladay Drive between 1st Avenue and Avenue A. No new development and only limited in-fill and redevelopment is expected along the Holladay Drive corridor in the 20-year future. Therefore, the capacity constraints on this corridor are due to this facility providing a critical link to the overall transportation system for population, employment, and tourism traffic, not any particular development or set of developments on the corridor.

The only land use modification that could potentially relieve the future capacity constraints on Holladay Drive would be to de-emphasize the downtown core by down-zoning the area and limiting the future development and redevelopment potential. This would reduce the focus of traffic on the downtown core area, likely re-orienting development and traffic to the Roosevelt Drive corridor. The adverse impacts of such a modification far outweigh the likely benefits.

Transportation facilities available to serve the 20-year future development potential for Seaside provides sufficient capacity and connectivity such that land use modifications are not warranted and would not benefit either the transportation system, in whole or in part, or the land use fabric of the community. The downtown core acts as a hub for the City and is well served and connected by the existing transportation system. Existing and future land uses are provided optional routes and modal facilities to access not only this core area but all areas of Seaside. Reliance on the downtown core for employment, retail, services, recreation, social, and community activities is vital to the health and well-being of the City. Any land use action or modification that jeopardizes the vitality of the downtown core should be thoroughly examined.

ANALYSIS OF TRANSPORTATION SYSTEM ALTERNATIVES

Facilities serving all travel modes within the City of Seaside were examined for potential transportation deficiencies in design, function, and/or capacity during the future conditions analysis. The following sections describe the needs, alternatives, and recommendations for Seaside street, bicycle, and pedestrian facilities.

Roadway Alternatives

All but one street under the jurisdiction of Seaside will operate acceptably in the future. As cited above, the Holladay Drive corridor from 1st Avenue to Avenue A was the only street identified to have future capacity deficiencies. Mitigation options to reduce future congestion in this corridor were examined as a part of the alternatives analysis. The traffic forecasts used were summertime conditions and, because of the location, a significant amount of the traffic projected on the Holladay corridor is tourism related.

The installation of turn lanes on the Holladay Drive corridor was evaluated to determine potential traffic operational improvements. A capacity analysis incorporating these improvements showed moderate improvements to capacity on the corridor, as indicated in Table 7. Increased intersection capacity and clarity of movement would be realized by these improvements. However, the need for these improvements is not realized in the near-term and likely only during the peak hour of weekday summertime conditions. Such improvements would require the taking of on-street parking or widening, affecting businesses adjacent to the street. Therefore, it is recommended that a monitoring program be implemented to determine the future need that is realized and the appropriate improvements and their timing.

Table 7
Capacity Analysis Comparison of Holladay Drive Turn-Lane Improvements

Intersection	All-Way Stop-Controlled/Signalized		LOS
	v/c	Delay (sec/veh)	
Holladay Drive/1st Avenue	1.06	32.1	E
(added eastbound left turn)	0.93	21.0	D
Holladay Drive/Broadway (AWSC)	1.07	32.5	E
(permitted phasing)	0.98	31.9	E
(permitted, added westbound left turn)	0.77	13.7	B
Holladay Drive/Avenue B	1.11	34.0	E
(added eastbound turn lane)	*	*	*

* Highway Capacity Methodology does not have the empirical basis to analyze this configuration

Non-capacity deficiencies also exist on the street system; on the Broadway corridor in the downtown core in particular. During peak summertime conditions, significant pedestrian/ vehicle conflicts occur on Broadway west of Holladay, resulting in a high level of congestion, delay to the vehicle, and inconvenience to the pedestrian. Mitigation for these conditions were examined and a proposed alternative was developed and is described in the next section.

Transportation System Management

Incorporating transportation system management techniques in the downtown area to improve guide signing, way finding, and other tourist information will likely reduce confusion and re-circulation. The existing downtown parking supply sometimes becomes constrained during the peak tourist season, which can result in unnecessary traffic in the downtown as drivers circle to find parking. Increased communication to visitors will effectively manage the demand and improve operations.

Alternative traffic routing was analyzed by assessing the operational effects of changing two-way streets into one-way streets. Such conversions can improve capacity by reducing conflicting turning maneuvers and street widths. One-way streets also increase safety for bicyclists and pedestrians due to simplicity of operations and reduced conflict points. Circulation and access become key issues when changing street direction, especially where a street system's grid network becomes less rigid. In this case, concise signing and striping should inform the driver of pertinent information such as parking, recreational opportunities, and facilities.

One-Way Street Circulation

An alternatives was developed and evaluated using street circulation as a way to increase capacity and improve through-movements in the City. A one-way street system has several traffic operational benefits, including reduced conflicts between turn movements and pedestrians, simplied signal timing, reduced queues (stacking of cars at intersections), and improved control of vehicles through established circulation patterns. Moving to one-way circulation will require significant changes to the transportation system and driver behavior.

Figure 15 shows the alternative, incorporating one-way streets to introduce a counter-clockwise circulation pattern to the downtown core. However, the one-way system has significant constraints when vehicles access the Roosevelt Drive corridor. The lack of north-south connections between Roosevelt Drive and the Necanicum River adversely affecting the Holladay corridor. The one-way alternatives result in deficient connections to Roosevelt Drive because of the intersection spacing and the lack of additional east-west connectivity across Roosevelt Drive. In all, the one-way alternative would require significant changes to Roosevelt Drive and the east approach of the Broadway/Roosevelt Drive intersection to facilitate improved downtown circulation.

Having found no significant benefit to the one-way circulation alternative, the concept was dropped from further consideration.

Two-Way Alternatives Addition of Turn Lanes

The addition of turn lanes on the Holladay corridor was examined to determine their effect on the operations of the intersections north and south of the Broadway intersection, as cited earlier. Striping of this left-turn lane will require removal of the existing on-street parking and removal of the existing curb extensions at the intersections on Holladay.

On-street parking is used by businesses on the Holladay corridor and also serves as a buffer for pedestrians from the traffic stream. All of these issues are important to consider when addressing the capacity issues. A certain level of congestion during these peak holidays may be tolerable on this corridor, provided alternative routes are available and sufficient capacity existing during off-peak times.

It was concluded that the City should monitor traffic conditions on Holladay Drive to identify if and when a capacity deficiency is realized and to determine what set of solutions can feasibly be implemented.

Compliance with Proposed Design Standards

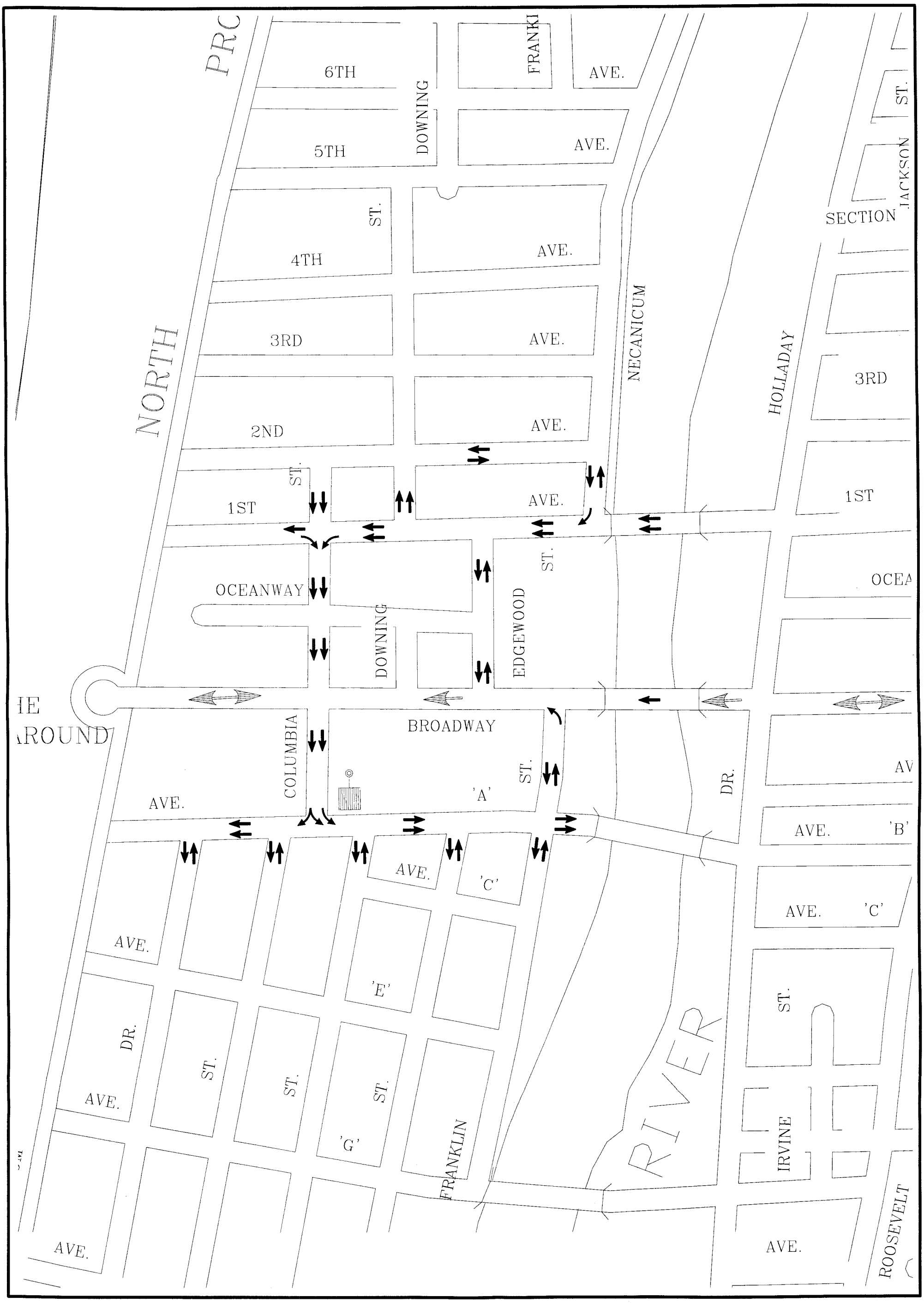
In addition to the capacity issues in the downtown core, an analysis was completed examining the compliance of city streets with the functional classification standards being developed. Figure 16 is the proposed street classification map. The following streets have widths that are deficient according to their newly assigned functional classifications that will require widening:

- Lincoln Street (Avenue F to Avenue E)
- Avenue F (Roosevelt Drive to Lincoln Street)
- Avenue G (east of Necanicum River Bridge to Roosevelt Drive)

These improvements are necessary to accommodate increased vehicle and bicycle demands and improve connectivity.

There are other streets within the City that are substandard in width according to the classification that were not included in this list. These streets were not included because the cost of the improvement including right-of-way acquisition would be prohibitive when considering the benefit of the improvement. Thus, the improvements listed above are recommended because of identified street capacity or connectivity deficiencies.

The gravel roads that have been identified within the Seaside area are not maintained as city streets. Once the road is paved and brought up to standard, the City accepts control and



CENTRAL CITY
CIRCULATION ALTERNATIVE #1
ONE-WAY STREETS

SEASIDE, OR SEASIDE TRANSPORTATION SYSTEM PLAN JUNE 1997	FIGURE 15	K

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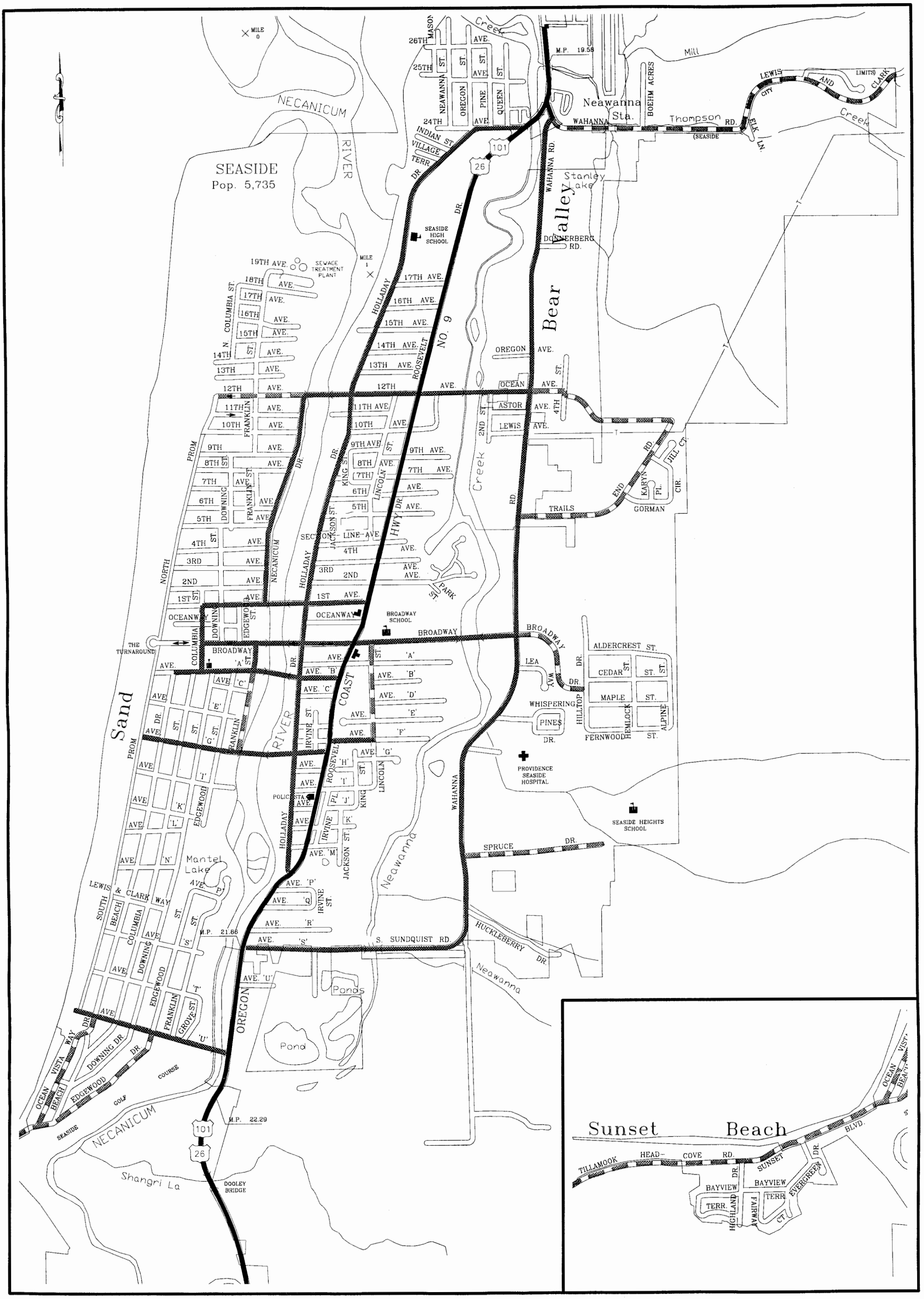


LEGEND

- ARTERIAL
- MAJOR COLLECTOR
- NEIGHBORHOOD COLLECTOR

PROPOSED STREET CLASSIFICATION MAP

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 16

TM3\1962FNC2

maintenance of the facility. The City has no plans to improve the existing facilities that are unpaved due to the low traffic volumes on these streets; however, as land use intensifies and in-fill occurs near these roads, improvements should be revisited and likely made a condition of approval for new development. These improvements will allow the streets to handle future traffic resulting from the increased development.

Bikeways

The City of Seaside met with the Bicycle Advisory Team (BAT) at a public meeting to brainstorm future improvements to the bicycle network. Four alternatives identified for the bicycle plan were evaluated and discussed in Section 3: Future Conditions. Additional recommendations to improve the existing system were discussed and are listed below.

In addition to the alternatives proposed by the project team, the BAT also discussed the potential for a bicycle loop surrounding the City, with bicycle lanes northbound on Wahanna Road and southbound on Holladay Drive (see Figure 17). This loop would be striped and signed and bicycle lanes would be provided on just one side of the street.

A qualitative analysis of the proposed one-way loop determined a fatal flaw exists. A one-way bicycle system on a two-way street system has been proven unsafe and ineffective. Significant abuse and misuse can potentially occur, which put the rider or auto driver in danger. For this reason, this concept was dropped from further consideration.

Other alternatives considered, as indicated in Figure 17, included the following:

- Dedicate an 8-foot "surrey" lane on Beach Drive, Avenue U, Downing Street, Avenue K, and Columbia Street to promote and facilitate the safe use of these vehicles. The adverse impact of lost on-street parking associated with this alternative resulted in it being dropped from further consideration. Vehicular demand is sufficiently low on these streets for the surreys to share the travel lane.

- Provide on-street striped bike lanes on Holladay Drive through the congested section from Avenue G to 1st Avenue. This would result in the taking of on-street parking, which was considered to be to significant an impact to justify. The relatively low speeds on this section resulting from traffic controls and congestion will allow cyclists to mingle with vehicles in the travel lane.

- Sign and stripe both Necanicum Drive and Holladay Drive where they are parallel. This alternative was forwarded for inclusion in the bicycle plan in recognition of the unique areas that these two routes serve.

- Extend a bicycle/pedestrian way across Neawanna Creek via a new bridge connecting Avenue G to Wahanna Road **or** sign and stripe both sides of Avenue S from Roosevelt Drive to Wahanna Road. Signing and striping Avenue S was forwarded as the preferred alternative because of the expense related to construction of a new bridge.

Safety, continuity, clarity of the route, and adequate transitions between facilities are essential features in a bikeway system. Care should be taken to provide and maintain clear markings on all facilities. High-volume roadways should provide signing and on-street striping. On low-volume streets, signing provides adequate route marking to the cyclist and, to a lesser extent, the other users of the transportation system.

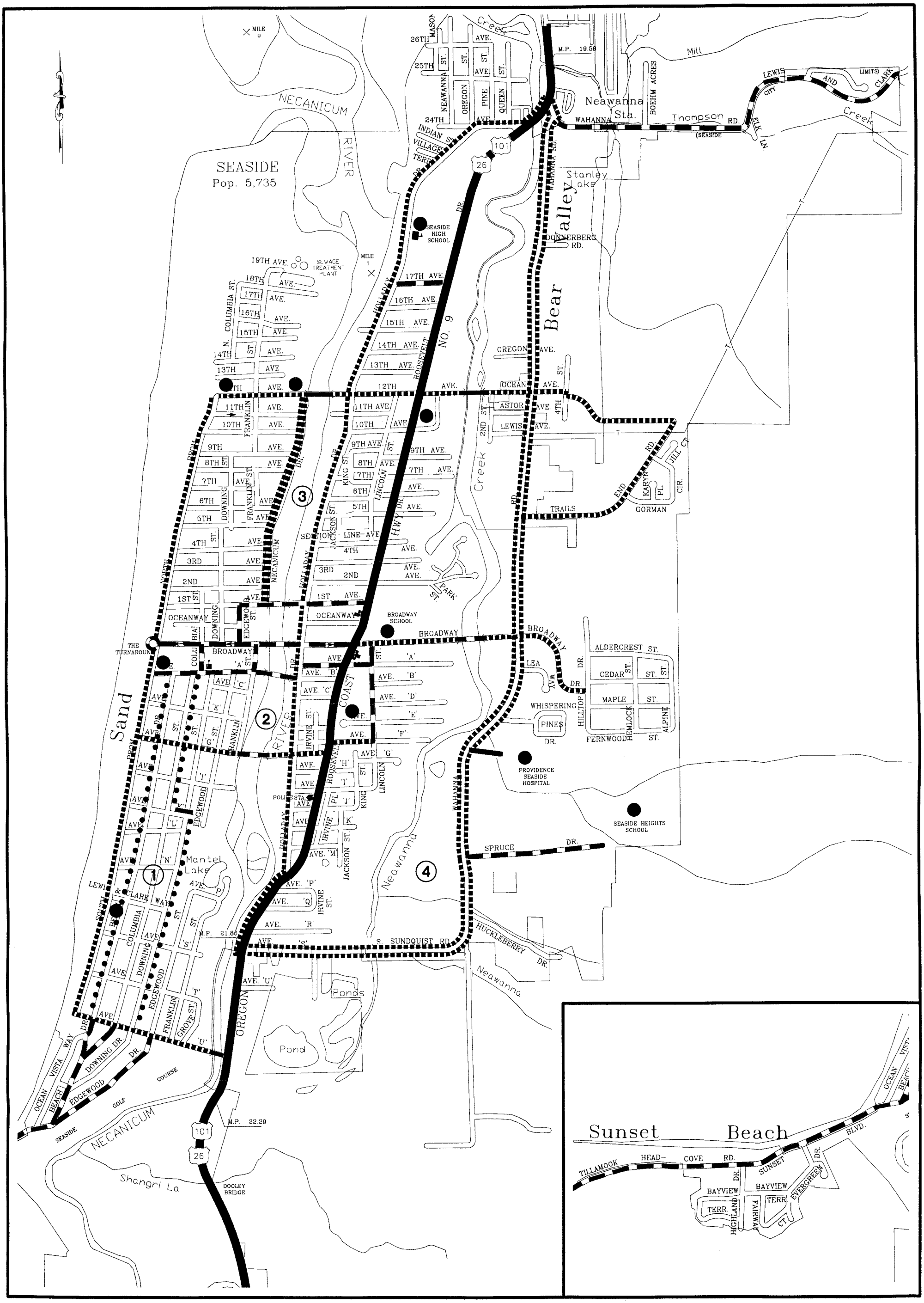
The links added to the system to reduce the out of direction travel east of Roosevelt Drive include street improvements to Avenue S, Avenue F, Broadway (remove on-street parking), and 12th Avenue. The proposed bikeway improvements west of Roosevelt Drive will require fewer widening and improvement projects. No widening on the bridges has been proposed because of the cost involved with such bridge improvements. Should reconstruction of the existing bridges be necessary, these improved cross sections should provide for bicycle lanes in both directions, per the street standards.

The final list of recommended bicycle improvements follows:

- Avenue S (Roosevelt Drive to west of Neawanna River Bridge)
- Avenue S (east of Neawanna River Bridge to Wahanna Road)
- Holladay Drive (12th Avenue to Seaside High School)
- Broadway (east of Neawanna River Bridge to Wahanna Road)
- Wahanna Road (Broadway to Roosevelt Drive)
- Wahanna Road (Avenue S to Providence Seaside Hospital)
- Holladay Drive (Seaside High School to 24th Avenue-Roosevelt Drive)
- Wahanna Road (Broadway to Roosevelt Drive)
- 12th Avenue (east of Necanicum River Bridge to west of Neawanna River Bridge)
- 12th Avenue (east of Neawanna River Bridge to 4th Street)
- Broadway (east of Neawanna River Bridge to Wahanna Road)

Pedestrian Facilities

After discussions among citizens, the CAC, and the consultant team, there was strong support for the viewpoint that the opportunity exists to increase the number of pedestrian trips throughout Seaside. This could replace many of the trips currently made by automobile. This viewpoint was repeated in the public meeting with the Pedestrian Advisory Group (PAG). The Pedestrian Advisory Group also indicated that it was important to maintain the existing facilities and improve their continuity. Additional information regarding the preferred alternative for the pedestrian plan is included in Section 5.



LEGEND

- ODOT BICYCLE FACILITY
- CITY BIKEWAY (SIGNED)
- STRIPED LANES
- SURREY LANE
- BICYCLE ACTION GROUP DECISIONS
- BICYCLE GENERATORS

BICYCLE ALTERNATIVES

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 17

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A meeting was held with the public to solicit ideas for improving the downtown by establishing Broadway as a pedestrian plaza, thereby reducing vehicle congestion in the downtown core. A qualitative analysis was performed to determine the relative feasibility of this idea. The redirection of traffic from Broadway would be significant depending on where the Plaza was established.

For the purposes of the analysis, two alternatives were evaluated. One was the redirection of traffic on the Holladay Drive corridor, which would have significant impacts because of the vehicle restrictions west of Holladay. Vehicle circulation would require a north-south route through the Plaza at Columbia, introducing some impacts to the Plaza environment. Truck loading and vehicular access to the properties fronting Broadway would need to be addressed under any scenario considered for the Plaza. The loss of on-street parking is another issue that should be discussed with property owners on this street. Additionally, surrey control would be necessary to define their routes, thereby minimizing conflicts.

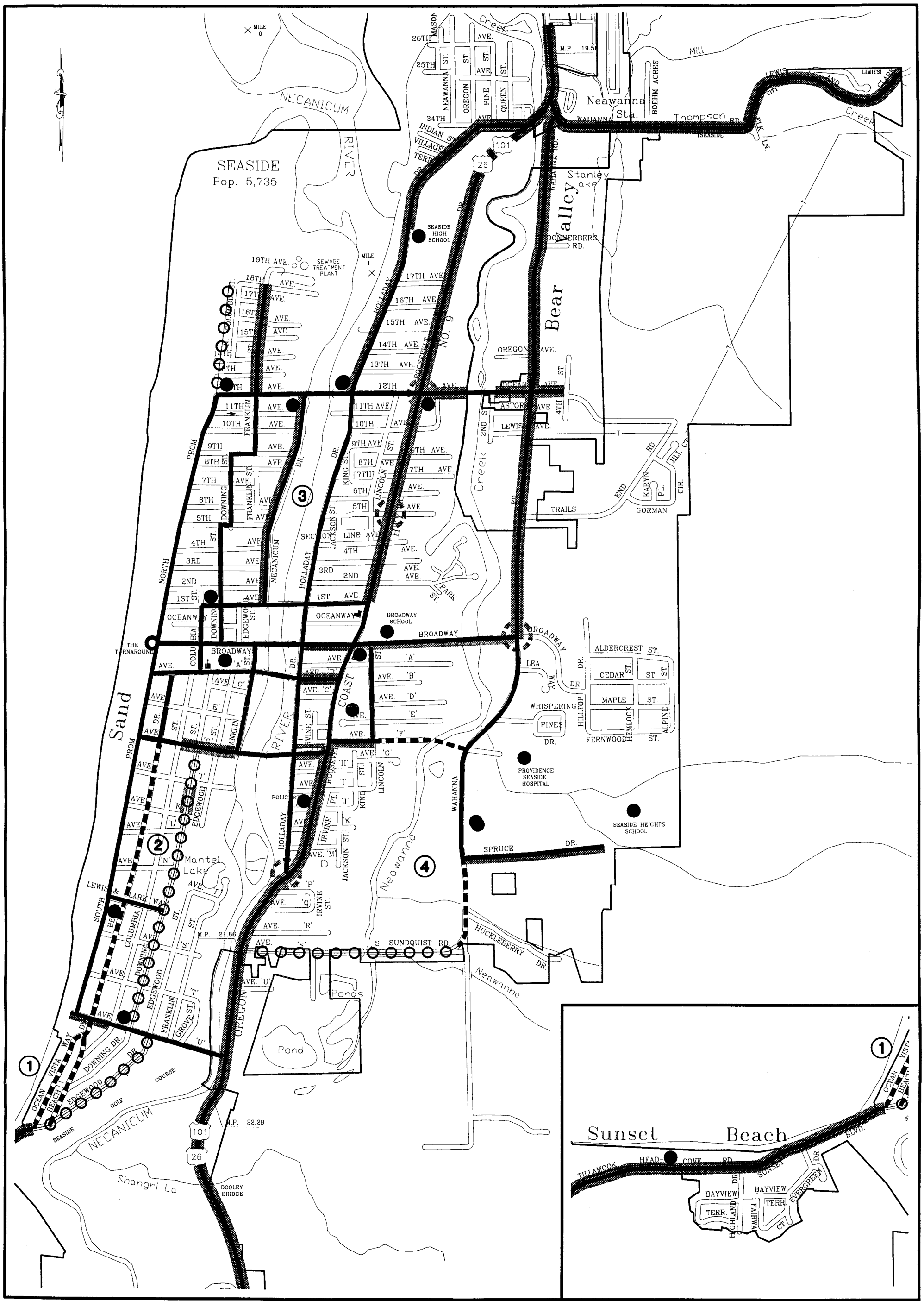
The second alternative considered was the smaller Plaza west of Columbia Street. This smaller Plaza would not disrupt the traffic circulation west of Holladay like the first; however, significant parking, circulation, loading zone, and other accessibility impacts would occur with either of these alternatives.

No consensus could be reached among the members of the CAC regarding either pedestrian plaza alternative; therefore, both alternatives were dropped from further consideration.

Pedestrian crossings and other improvements were discussed for several locations in the City, as shown in Figure 18. The high pedestrian volumes opposing high traffic volumes are not conducive to a pleasant walking environment. The PAG also recommended improvements to the Promenade including connections to Tillamook Head south of the existing endpoint of the Promenade and to 20th north of the existing end at 12th Avenue.

It is important to maintain facilities that encourage walking in areas with high traffic congestion. Pedestrian amenities such as curb extensions, street planters, street lights, and wide sidewalks will act as buffers and improve the safety of pedestrians throughout the City. Crosswalks include striped lanes on the street or surface treatments that make other users aware of pedestrians. Crosswalks or supplemental treatments, or both, were requested by the PAG at the intersections of Broadway/Wahanna, Roosevelt Drive/5th Avenue, and Roosevelt Drive/12th Avenue.

Options 1B (sidewalk on Edgewood Drive), 2B (complete sidewalks on Beach Drive **and** Downing Street), 3B (complete sidewalk/boardwalk on Necanicum Drive), and 4B (sidewalks on both sides of Avenue S), shown in Figure 18, were all forwarded for inclusion in the Pedestrian Plan.



PEDESTRIAN ALTERNATIVES

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 18

TM3\1962PED

Draft Transportation System Plan

INTRODUCTION

The following TSP elements provide the City of Seaside with a set of plans for development of its future transportation network, including:

- Streets
- Bikeways
- Pedestrian Facilities
- Transit
- Air/Rail/Water/Transmission Facilities

These elements were developed specifically to address the requirements of Oregon's Transportation Planning Rule.

STREET PLAN

This subsection includes recommended functional street classifications and a street improvement plan for the City of Seaside. Prior to development of this Transportation System Plan, the City of Seaside did not have any existing road classification standards. The standards discussed below were developed as the first element of the City's TSP. The street improvements discussed later in this subsection are based on these street classifications.

Functional Street Classifications

The purpose of classifying streets is to provide a balanced transportation system that facilitates mobility for all modes at acceptable levels of service, while also providing sufficient access to adjacent land uses and ensuring neighborhood livability.

A street's functional classification determines its intended purpose, the amount and kind of traffic (local or through) it is expected to carry, and its design standards. To accommodate transportation needs throughout the system, it is important to protect the functional integrity of various types of streets throughout the system. This will ensure that the required capabilities and capacity are available using a variety of street types. The importance of specific streets and the role they will serve in the transportation system, and the functional classification defined for specific roads is an important element of this TSP.

The classification of streets should also be considered in accordance with adjacent land uses and the resulting transportation demands they serve. The street facilities must be able to accommodate various modes of travel that include passenger vehicles, heavy trucks,

pedestrians, and bicycles. The street right-of-way must also provide sufficient space for associated utility corridors (electricity, gas, telephone, cable, water) to serve adjacent land uses.

A typical cross section for each functional street classification is shown in Figure 19 and described below.

Arterials

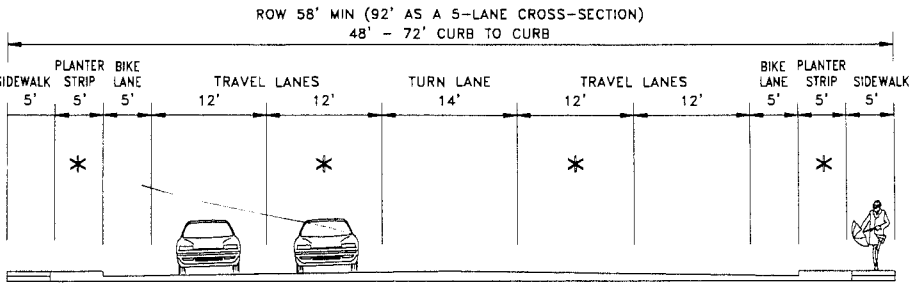
The primary function of an arterial is to provide through-movement for traffic, distributing it to collector streets and providing limited land access in order to minimize interruption to the arterial traffic. These streets are characterized by three to five-lane street sections. Sidewalks should be provided on all arterial facilities. Signalization should be provided at intersections with other arterials and with collector streets, where warranted. On-street parking should be discouraged wherever possible. Bicycle amenities should be provided unless a reasonable parallel route is available on a lower order street with lower traffic volumes.

Collectors

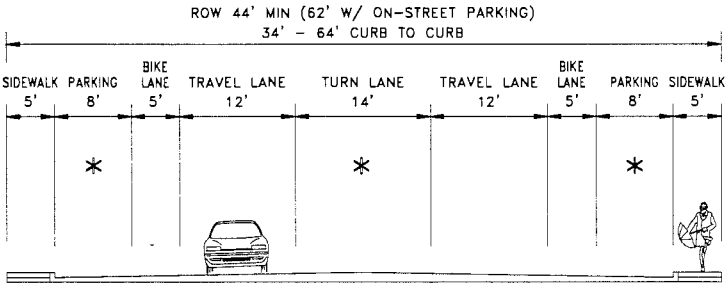
The primary function of a collector street is to move traffic between arterial facilities and local streets, and to provide access to adjacent land uses. Collector streets are characterized by two or three lane street sections. Bike lanes should be provided where average daily traffic volumes exceed 3,000 vehicles per day (vpd) or where the collector street directly connects to a land use that generates significant bicycle traffic (e.g. a school or park). In addition, bike lanes should be provided on any collector street where separately striped bicycle lanes may be necessary to accommodate safe bike travel. Continuous sidewalks should be provided on both sides of all collector streets. Intersections with other collectors and arterials may be signalized if warranted. On-street parking is allowed on one or both sides of the street; however, parking may be restricted at certain intersections to provide turn lanes for additional turning capacity, if needed.

Neighborhood Collectors

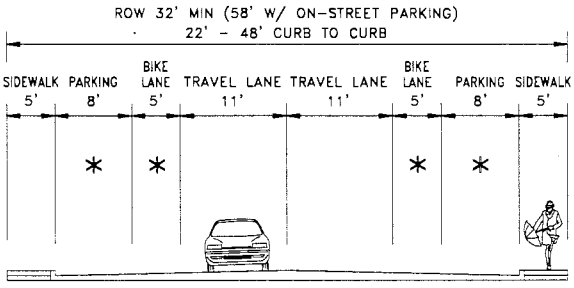
Neighborhood Collectors possess many of the same features as Collectors; however, they are expected to carry lower traffic volumes. Their purpose is to connect neighborhoods and carry traffic from higher order streets to local streets. The unique difference between Collectors and Neighborhood Collectors is that turn lanes at intersections will not be provided on Neighborhood Collectors. In addition, residential zoning is the primary land use served by and having frontage on the Neighborhood Collector. Sidewalks should be provided on both sides and parking is allowed on one or both sides. The highest order traffic control devise used on a Neighborhood Collector should be a stop sign. Bike routes can be striped or simply signed on Neighborhood Collectors.



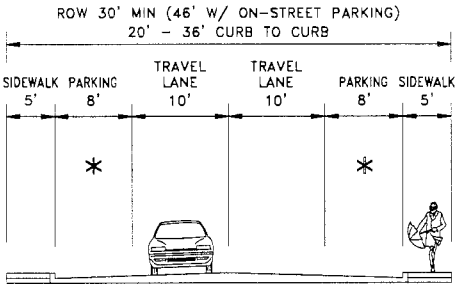
ARTERIAL



MAJOR COLLECTOR



NEIGHBORHOOD COLLECTOR



LOCAL STREET

LEGEND

* - OPTIONAL

PROPOSED STREET STANDARDS

CITY OF SEASIDE TRANSPORTATION SYSTEM PLAN JUNE 1997	FIGURE 19

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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 sidewalks and on-street parking typically provided on one or both sides. Local streets should serve primarily passenger cars, pedestrians, and cyclists and form part of the residential community space. Truck traffic should be discouraged.

Table 8 is a summary of the standards for the different street classifications and Table 9 lists the streets comprising the arterial/collector network. Figure 20 shows the Street Plan for the City of Seaside, including the recommended functional classifications.

Table 8
Street Classifications and Standards

Classification	Lanes	Minimum ROW	Turn Lanes	Travel Lanes	Bike Lane	On-street Parking	Planter Strip*	Side-walks
Arterial	3-5	68-92	Yes	12'	5'	No	Yes	Yes
Major Collector	2-3	44-62	Yes	12'	5'	Option	Option	Yes
Neighborhood Collector	2	32-58	No	11'	5'	Option	Option	Yes
Local Street	2	30-46	No	10'	5'	Option	Option	Yes

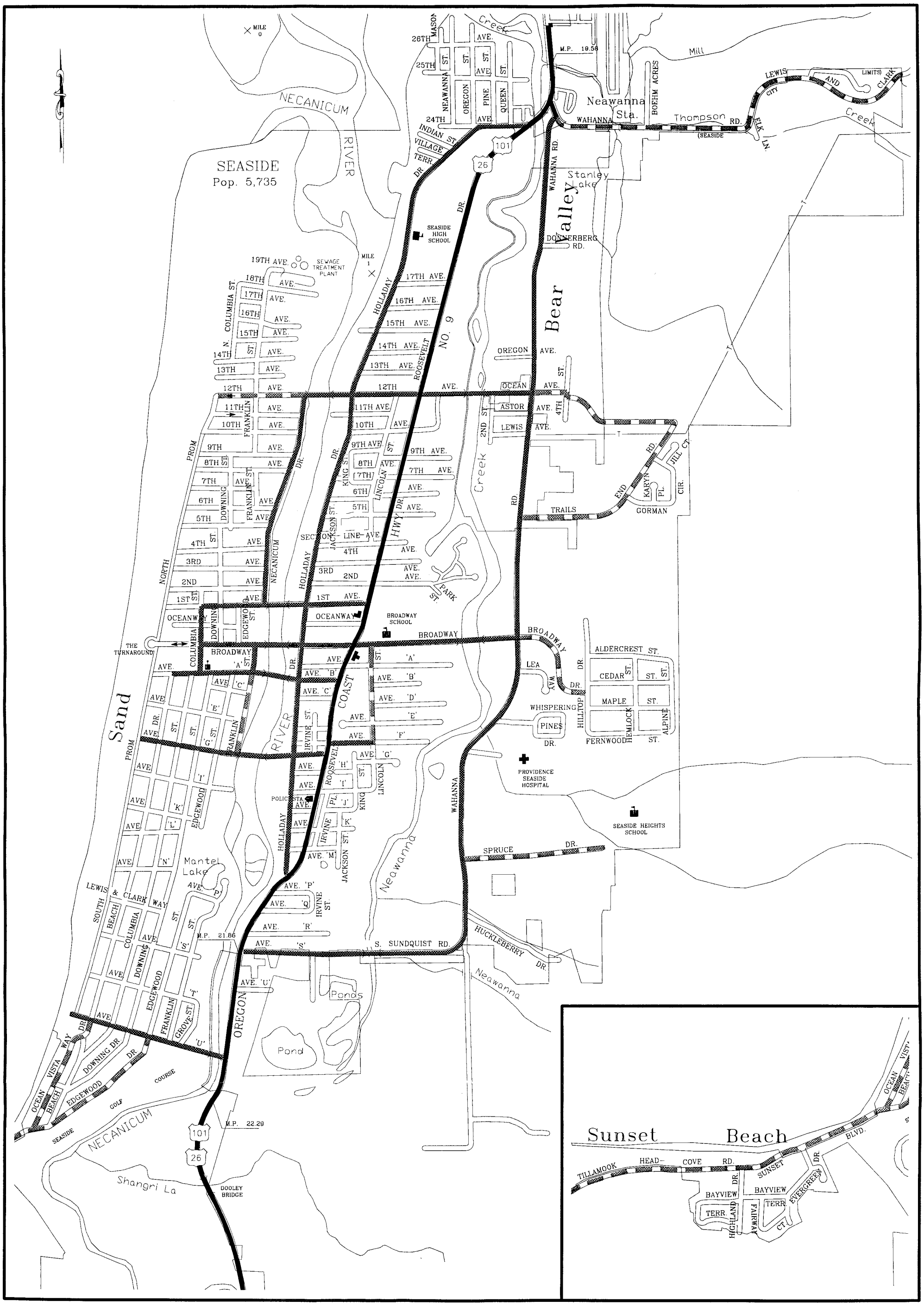
*Included in all minimum ROW dimensions for arteria only.

Street Design Standards

A set of street design standards has been developed for each of the functional classifications presented above. These design standards are based on the functional and operational characteristics of streets such as travel volume, capacity, operating speed, and safety.

To comply with generally accepted practice and the Oregon Transportation Planning Rule, street design standards generally consist of the following elements:

- Typical Street Section
- Alignment and Operational Characteristics
- Access Management
- Non-Auto Amenities
- Facility Management (traffic calming)



LEGEND

- ARTERIAL
- MAJOR COLLECTOR
- NEIGHBORHOOD COLLECTOR

STREET PLAN

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 20

TM3\1962FNC2

Table 9
Street Classification Plan

Functional Classification	Road Name
Arterial	Roosevelt Drive
Major Collector	12th Avenue (east of Necanicum Drive) Wahanna Road Holladay Drive Necanicum Drive Avenue U Avenue S (east of Roosevelt) Avenue A/ Avenue B Broadway (west of Wahanna) 1st Avenue Avenue F/ Avenue G
Neighborhood Collector	Beach Drive Downing Street Spruce Drive Broadway Drive (east of Wahanna) Trails End Road 10th Avenue Ocean Vista Way Edgewood Drive (south of Avenue U) Lincoln Street (south of Broadway) Columbia 12th Avenue (west of Necanicum Drive)
Local Streets	All others in Seaside

Typical street 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 street facilities for each functional classification are detailed in Figure 19 and described below. The following design standards support the functional street classifications and should be used in the design of new streets that will be critical to the transportation network.

Travel Lanes

Minimum travel lane widths vary from 12 feet on arterials and major collectors, to 11 feet on neighborhood collectors, and 10 feet on local streets. There are no striped lanes on local streets, with the designated travel way varying from 10 to 16 feet. Minimum center left-turn lane widths should be 14 feet on arterials and 12 feet on major collectors.

Parking Lanes

Where on-street parking is provided, a minimum 8-foot wide parking lane should be provided (seven feet can be provided in certain circumstances where only small vehicles are parked along a street, and a bike lane provides a buffer from the travel lane).

Bike Lanes

On-street bike lanes vary in width from 6 feet on arterials to 5 feet on arterials and collectors. The width of the bike lane is measured to the face of curb or the inside edge of the parking lane.

Sidewalks

As a basic treatment, sidewalks should be attached to the curb on all street cross sections. As an option, sidewalks may be detached from the curb with a planter strip between the sidewalk and curb, if there is available right-of-way. Detached sidewalks shall be designed to allow the sidewalk transitions at driveway locations to meet ADA maximum grade requirements. Minimum sidewalk width varies from 6 feet on arterials to 5 feet on collectors and local streets.

Recommended Street Improvements

Although no street improvements were identified as necessary to maintain operational capacity for the long-term future, street projects have been identified for several other reasons. Certain streets are recommended for improvement to better facilitate the travel expected to occur, given the street's classification. Other projects are recommended to provide improve connectivity between critical areas of the City.

Figure 21 shows the recommended street improvements for the City of Seaside. These improvements do not included street improvements associated with bikeway facilities. Those improvements are discussed under the Bikeway element of this TSP.

SEASIDE
Pop. 5,735

NECANICUM RIVER

MILE 0

MILE 1

M.P. 19.58

M.P. 21.86

M.P. 22.29

Neawanna Sta.

Stanley Lake

Bear Valley

Mantel Lake

Ponds

Pond

Shangri La

Neawanna Creek

Mill Creek

SEASIDE HIGH SCHOOL

BROADWAY SCHOOL

SEASIDE HEIGHTS SCHOOL

SEWAGE TREATMENT PLANT

PROVIDENCE SEASIDE HOSPITAL

POLICE STA.

DOOLEY BRIDGE

THE TURNAROUND

SECTION LINE AVE.

S. SUNDQUIST RD.

THOMPSON RD.

DONNERBERG RD.

GORMAN TRAILS

SUNSET BEACH

TILLAMOOK HEAD—COVE RD.

BOEHM ACRES

LEWIS AND CLARK CITY LIMITS

ELK LN.

HUCKLEBERRY DR.

SPRUCE DR.

ALDERCREST ST.

WHISPERING PINES DR.

FERNWOOD ST.

HEMLOCK ST.

ALPINE ST.

HILLTOP DR.

LEA WAY

MAPLE ST.

CEDAR ST.

BAYVIEW TERR.

BAYVIEW DR.

SUNSET BLVD.

EVERGREEN DR.

HIGHLAND DR.

FAIRWAY CT.

OCEAN VISTA DR.

BEACH DR.

LEGEND

WIDENING

RESTRIPING

RECOMMENDED STREET IMPROVEMENTS

SEASIDE TRANSPORTATION SYSTEM PLAN SEASIDE, OREGON JUNE 1997	FIGURE 21

TM4\1962IMP2

The following streets have been identified for improvement for the reasons stated above:

- Lincoln Street (Avenue F to Avenue E)
- Avenue F (Roosevelt Drive to Lincoln Street)
- Avenue G (east of Necanicum River Bridge to Roosevelt Drive)

Lincoln Street

The section of Lincoln Street from Avenue F to Avenue E is identified for widening to better facilitat the travel this collector is intended to serve. This improvement will also provide a more consistent cross section for Lincoln Street from Avenue F to Broadway.

Avenues F and G

These two street sections offer an opportunity for an improved east-west connection across Roosevelt Drive. Avenue G provides a bridge crossing of the Necanicum River and connection to all of the western Seaside area. Avenue F provides access to a major shopping center, public and commercial uses, and residential areas east of Roosevelt Drive. Widening these two streets and considering an improved connection at Roosevelt Drive is recommended. This improve connection should be recommended for consideration with the improvements associated with the Pacific Way-Dooley Bridge project. Table 10 is a list of the street improvements described above for the City of Seaside TSP, and their related cost estimates.

Table 10
System Street Improvements

Street	From	To	Length	Improvement	Cost ($)
Lincoln Street	Avenue E	Avenue F	225'	8' pavement widening with curb and gutter	20,000
Avenue G	Holladay Drive	Roosevelt Drive	445'	5' pavement widening with curb and gutter	25,000
Avenue F	Lincoln	Roosevelt Drive	450'	6' pavement widening with curb and gutter	30,000
Total					**75,000**

No right-of-way costs are included in these estimates. These and all estimates in this analysis are planning level figures that do not account for extraordinary costs due to wetland mitigation, design/engineering, or significant retaining walls necessary for widening.

Although other classified streets do not provide all of the cross section features, none have bee identified as requiring near-term improvements. As development and redevelopment occur, these streets can be considered for improvements to bring them into compliance with the established standards.

The city has no plans to improve the existing facilities that are unpaved due to the low traffic volumes on these streets; however, as land use intensifies and in-fill occurs near these roads, improvements should be revisited and made a condition of approval for new development. These improvements will allow the streets to handle future traffic resulting from the increased development.

ACCESS MANAGEMENT STANDARDS

Access management is needed to ensure both the safety and efficiency of traffic flow for vehicles traveling on the street system. Managing the access to streets benefits the overall street system by increasing safety, increasing capacity, and reducing travel times. Controlling access must not become so restrictive, however, as to significantly inhibit local businesses and home owners access to the street system. Overall, access management must balance the needs of through traffic and localized traffic on a particular street. By the nature of the street functional classification system, arterials require the highest access management standards, while collectors and local streets require less restrictive access management standards.

Traffic Signal Spacing

The desirable signal spacing standards on City of Seaside streets will depend upon the facility and several other factors. Issues to consider when evaluating the effects of a signal on the transportation system include the following:

- Level of service for the higher order facility movements
- Attainability of progressioni with adjacent traffic signals
- Pedestrian connectivity and safety
- Impact of queues at the signal to adjacent signalized and unsignalized intersections

To justify a signal installation in the City, an engineering examination of the intersection in question should be undertaken to determine whether a traffic signal is necessary. In some instances, other traffic control devices can be utilized to mitigate transportation deficiencies. The analysis should use the standards established by the current MUTCD and engineering judgment.

The City may not need another signal during the next 20 years, and if one is proposed, it is more appropriate to evaluate signals on a case-by-case basis. The following guidelines should be considered when evaluatin a potential signal location:

- A professional traffic engineering study should be conducted to establish that:
    - At least one MUCTD signal warrants has been satisfied.
    - The signal is justified from a traffic operations or safety perspective.

- The impact of the signal on operations at adjacent intersections has been calculated.

- If a traffic signal is proposed at a location where the spacing to the next adjacent signal location is less than 1/4 mile, more detailed traffic analyses should be conducted to evaluate the impact of the signal on coordinated signal progression along a collector or arterial, if applicable. Further, the effect of queues at the signal upon operations at adjacent signalized and unsignalized intersections should be evaluated

Public Intersection Spacing

The public intersection spacing standards on City of Seaside streets are shown in Table 11. As shown in Table 11, any two streets, regardless of the classification, intersecting a major collector in an urban area should be spaced at least 200 feet apart. Likewise, any two streets intersecting a local street should be spaced at least 100 feet apart. These standards are established for new streets and should be reviewed on a case-by-case basis.

Table 11
Public Intersection Spacing Standards

Functional Classification	Area [1]	Desirable Public Intersection Spacing
Arterial	Urban	0.5 - 1 mile [2]
Major Collector	Urban	250 feet
	Fully Developed	200 feet
Neighborhood Collector	All	150 feet
Local Residential Street	All	100 feet
Local Commercial/Industrial Street	All	100 feet

[1] Urban refers to intersections inside the city limits. Fully developed refers to urban intersections located within the central business district. All refers to all intersections within City.
[2] Minimum intersection spacing as established by ODOT in the *1991 Oregon Highway Plan*.

Private Access Driveway Requirements

Reducing the number of existing and proposed access points on arterials and major collectors should be a primary consideration when reviewing access proposals for new developments. A strong emphasis should be placed on combining and sharing site access driveways with adjacent property owners, sharing parking, and providing access from side streets where possible. At the time of development or redevelopment of properties, cross over access easements should be granted to adjacent properties and site plans should accommodate internal

circulation between adjacent properties. An additional consideration during the review process should be an evaluation of the impact the access has on traffic flow and safety. Access should be reviewed for infill developments and redevelopment of property and access spacing should be improved only where this will not unduly impact the property owner. Existing lots of record, too small to meet the requirements, and minor modifications to existing active uses, may be given some flexibility when evaluating a variance request.

Single-Family Residential Uses

Direct access onto arterials or major collectors will not be allowed if an approved alternate access is available. If no alternate is available, then direct access will only be allowed through the variance process. For access onto neighborhood collectors or local streets, the standard will be one driveway per frontage.

Multi-Family Residential, Commercial, Office, and Industrial Uses

All requests for access must include a site plan and a review of the traffic operations adjacent to the site. The scope of the development will determine the information required, and could include, but not be limited to, any or all of the information listed in the variance requirements. The evaluation of the access request will consider the impacts that traffic generated by the proposed development will have on through traffic, traffic patterns, and safety in the area. Approval will be based on the access requirements of this section. Shared driveways should be provided where feasible. Easements to accomplish shared access, either current or future, may be required as a condition of site design review or permit approval. Access may be denied if minimum requirements cannot be met and there is an approved alternate such as a shared access or access to an equal or lower classification street.

One driveway access per frontage will be the standard for approval. Double frontage lots will be limited to access from a single street, usually the lower classification street. Driveways, in excess of to one, must be requested through the variance process.

In general, the minimum widths listed in Table 12 should be used in designing the appropriate driveway width. However, larger widths may be used, beyond the maximum widths listed in Table 12, if there are high turning movements that require an additional traffic lane entering and/or exiting the driveway. Also, larger widths may be needed to accommodate a safe turning movement for buses or large trucks.

Table 12
Private Access Driveway Width Standards

Land Use	Minimum	Maximum
Single Family Residential	12 feet	25 feet
Multi-Family Residential	20 feet	35 feet
Commercial	20 feet	40 feet
Industrial	20 feet	40 feet

Private Access Driveway Spacing

Table 13 shows the private access driveway, or access point, spacing standards on City of Seaside streets.

Table 13
Desirable Private Access Driveway Spacing Standards

Functional Classification	Desirable Access Driveway Spacing	Desirable Setback from Intersecting Street
Arterial	800 feet	800 feet[2]
Major Collector	150 feet	100 feet
Neighborhood Collector	100 feet	100 feet
Local Residential Street	50 feet[1]	50 feet
Local Commercial/Industrial Street	50 feet[1]	50 feet

[1]50-foot spacing applies to all land uses except single family residential. There is no minimum spacing standard for single family residential driveways on local streets.
[2]Minimum setback as established by ODOT in the *1991 Oregon Highway Plan*.

The standards apply both to driveways on the same side of the street as well as to driveways on opposite sides of the street. Access driveways on opposite sides of the street should be located directly opposite each other whenever possible to improve operations. If not possible, the minimum access driveway spacing should conform to that shown in Table 13. If these access driveway spacing standards preclude a frontage development from having an access driveway within their property, a driveway closer than the spacing standards with restricted turning movements can be considered.

The intersection setback distance is defined as the distance between the intersection end of curb radius and the top of the driveway ramp. Access driveways near an intersection with a major collector or arterial shall be located beyond the average standing queue length at the intersection approach. If these intersection setback requirements prohibit access to the site, a driveway with restricted turning movements can be considered.

BICYCLE PLAN

The Bicycle Plan for the City of Seaside is intended to establish a network of bicycle routes that interconnect the City's bicycle generators and provide a safe and effective system of bicycle facilities. A hierarchy of bicycle amenities is proposed as a part of the overall Bicycle Plan to identify those critical facilities within Seaside that will provide dedicated space for bicycle travel.

Seaside currently has only on-street shared bicycle facilities throughout the community. U.S. 101 through Seaside is identified by ODOT as a state bicycle route; however, the facilities are currently not provided as a continuous separate bike lane. Therefore, cyclists in Seaside must share the street with all other vehicles on all streets.

The relative safety of shared facilities are dependent on a number of factors, including vehicular volumes, mix of traffic, travel speeds, topography, geometrics, lighting, and street width. The two most common factors that jeopardize the safety of bicycle travel in shared environments is vehicular volume and street width. Fortunately in Seaside, vehicular volumes are relatively low on most streets (even in the summertime) and bicycling generally remains safe. However, that sense of safety is compromised when riding on Roosevelt Drive, particularly when heavy vehicular volumes are occurring on the highway.

Safety, continuity, clarity of the route, and adequate transitions between facilities are essential features in a bikeway system. Care should be taken to provide and maintain clear markings on all facilities. Heavily used bicycle routes and high-volume roadways may require striped bike lanes and signing, while on low-volume streets signing alone will likely provide adequate route marking for the cyclist and, to a lesser extent, the other users of the transportation system.

The City of Seaside has achieved a comparably high bicycle mode share for a city of its size. This has been accomplished in part as a result of the relatively flat terrain, the grid network of streets, the low volume of traffic on most local streets, the compact nature of the community, the attractiveness of the area to tourists, and the availability of rental bikes for tourists and others to use. Tourists in particular tak please in viewing and discovering the city by bicycle.

The Bicycle Plan has been developed with the understanding that, as traffic increases on the local street system, the provision of striped on-street bike lanes may be required to maintain the perceived safety for bicyclists within the system and to promote increased ridership.

Figure 21 shows the proposed Bicycle Plan for the City of Seaside. The major bicycle generators within the City were located on the map and connections were made, assigning facilities in as direct a path as possible. Table 14 is a list of the specific improvements and the respective costs identified for street widening for the bicycle lanes. These improvements are shown in Figure 22.

PEDESTRIAN PLAN

The opportunity to increase the number of pedestrian trips throughout Seaside, as well as a desire to maintain the existing facilities and improve their continuity were the driving forces for the City of Seaside's Pedestrian Plan. Sidewalk improvements were identified as part of the future transportation network to ensure a balanced transportation system that offers as many alternatives for trip making as possible. Providing safe and convenient foot travel is an essential part of creating a vibrant community, commercial area, and downtown district—particularly for children and the elderly.

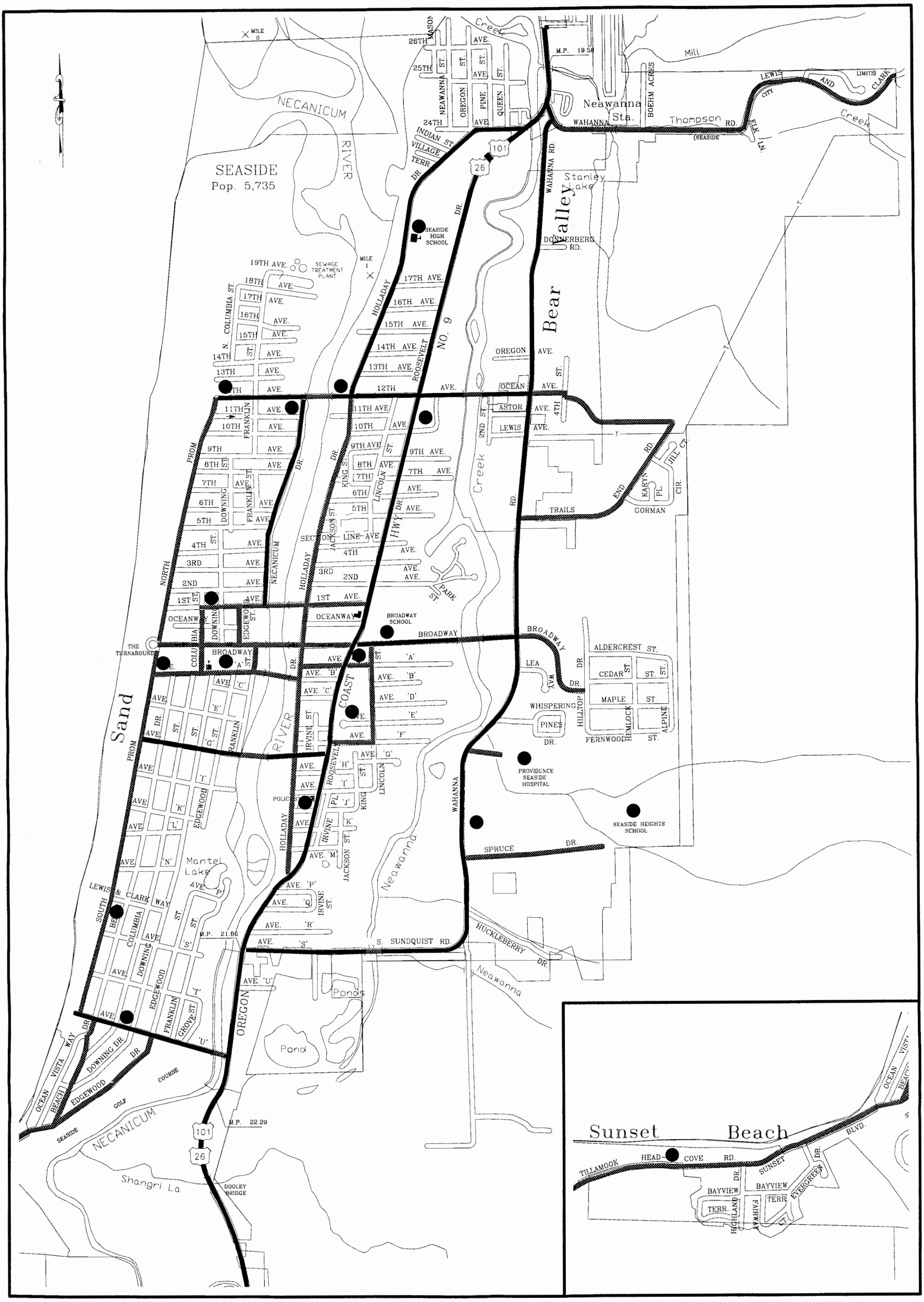
The existing sidewalk system in the City is generally robust and a dense grid system of streets provides good access for pedestrians. However, there are several street sections without sidewalks along their full length and improvements are needed to provide continuity in the existing system. In addition, some new new facilities should be developed to provide critical pedestrian links to pedestrian generators within the transportation network. The following streets have been identified as needing sidewalks along one or both sides:

- Ocean Vista Way (south of Avenue U)
- Edgewood Drive southeast side (south of Avenue U)
- Beach Drive (complete intermittent sidewalks south of Avenue K to Avenue U)
- Downing Street (complete intermittent sidewalks)
- Avenue G (complete intermittent sidewalks west of Franklin Street)
- Wahanna Road (east side)
- Broadway (south side east of Neawanna to Wahanna Road)
- Holladay Drive (improve and complete existing sidewalks north of 12th Avenue)
- 12th Avenue (improve existing sidewalks)

Table 14
Bikeway Improvements

Street	From	To	Length	Improvement	Cost ($)
Wahanna Road	Roosevelt Drive	Broadway	6550'	10'(two way) & 1' vehicle	$360,000
Wahanna Road	Hospital	Spruce Drive	1390'	2 - 5' bike lanes	69,500
Wahanna Road	Spruce Drive	Avenue S	1165'	2 - 5' bike lanes	58,250
Avenue S	Wahanna Road	East end of Bridge	1100'	2 - 5' bike lanes	55,500
Avenue S	West end of Bridge	Roosevelt Drive	1500'	2 - 5' bike lanes	75,000
Avenue G	Holladay Drive	Roosevelt Drive	390'	5' bike lane and restriping	12,000
Avenue G	Roosevelt Drive	Necanicum Bridge	335'	stripe 2 bike lanes	3,000
Holladay Drive	Roosevelt Drive	12th Avenue	4330'	2 - 5' bike lanes	216,000
12th Avenue	Necanicum Bridge	Holladay Drive	250'	2 - 5' bike lanes and 3' addition to the vehicle lane	15,000
12th Avenue	Holladay Drive	Roosevelt Drive	835'	1 - 5' bike lane	20,000
12th Avenue	Roosevelt Drive	Neawanna Bridge	950'	1 - 5' bike lane	23,000
12th Avenue	Neawanna Bridge	Wahanna Road	575'	Widen 8' to accommodate 2 - 5' bike lanes	26,000
Broadway	Neawanna Bridge	Wahanna Road	400'	2 - 5' bike lanes	14,500
Total					**$947,750**

No right-of-way costs are included in these estimates.



BICYCLE PLAN

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 22

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The Pedestrian Plan illustrated in Figure 23 was developed for the City of Seaside to provide adequate pedestrian facilities interconnecting the pedestrian generators throughout the community. Table 15 lists the sidewalk improvements illustrated in Figure 23. The proposed network encompasses streets with and without existing sidewalks in order to provide a continuous system that will improve connectivity of the pedestrian system. Such a system of pedestrian facilities will ensure adequate opportunities for the traveling public to select this travel mode to perform certain trips, thus minimizing the reliance on the automobile for travel. In addition, appropriate and well-maintained pedestrian amenities increase the attractiveness of an area and provide a strong sense of place and community.

The City of Seaside's street standards require sidewalks in both directions on both sides of the street. The goal in this requirement is to provide a safe and continuous system and minimize unnecessary street crossings for pedestrians. In addition, current zoning and subdivision ordinances should require newly constructed public streets to provide sidewalk in both directions. Pedestrian access should be considered in the future development review process and to encourage pedestrian activity, buildings entrances are recommended to consider pedestrian connections. In addition, all sidewalks will be have a minimum width of 5 feet (clear distance) to comply with Americans with Disabilities Act (A.D.A.) regulations.

It is important to maintain facilities that encourage walking in areas with high traffic congestion. Pedestrian amenities such as curb extensions, street planters, street lights, and wide sidewalks will act as buffers and improve the safety of pedestrians throughout the City. Crosswalks include striped lanes on the street or surface treatments that make other users aware of pedestrians. Striped or surface treated sidewalks, or both, help to delineate the pedestrian route and draw motorists' attention to pedestrians.

TRANSIT PLAN

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

The para-transit services offered in Seaside are coordinated by Sunset Empire Transit. It is recommended that the City should emphasize to Clatsop County that, as supporters of the County's transit service, residents of Seaside should share in the benefits of bus service in the County. The City of Seaside will remain dependent on the County for transit service and will continue to support the service provided as long as future service is expanded in Seaside.

Table 15
Sidewalk Improvements

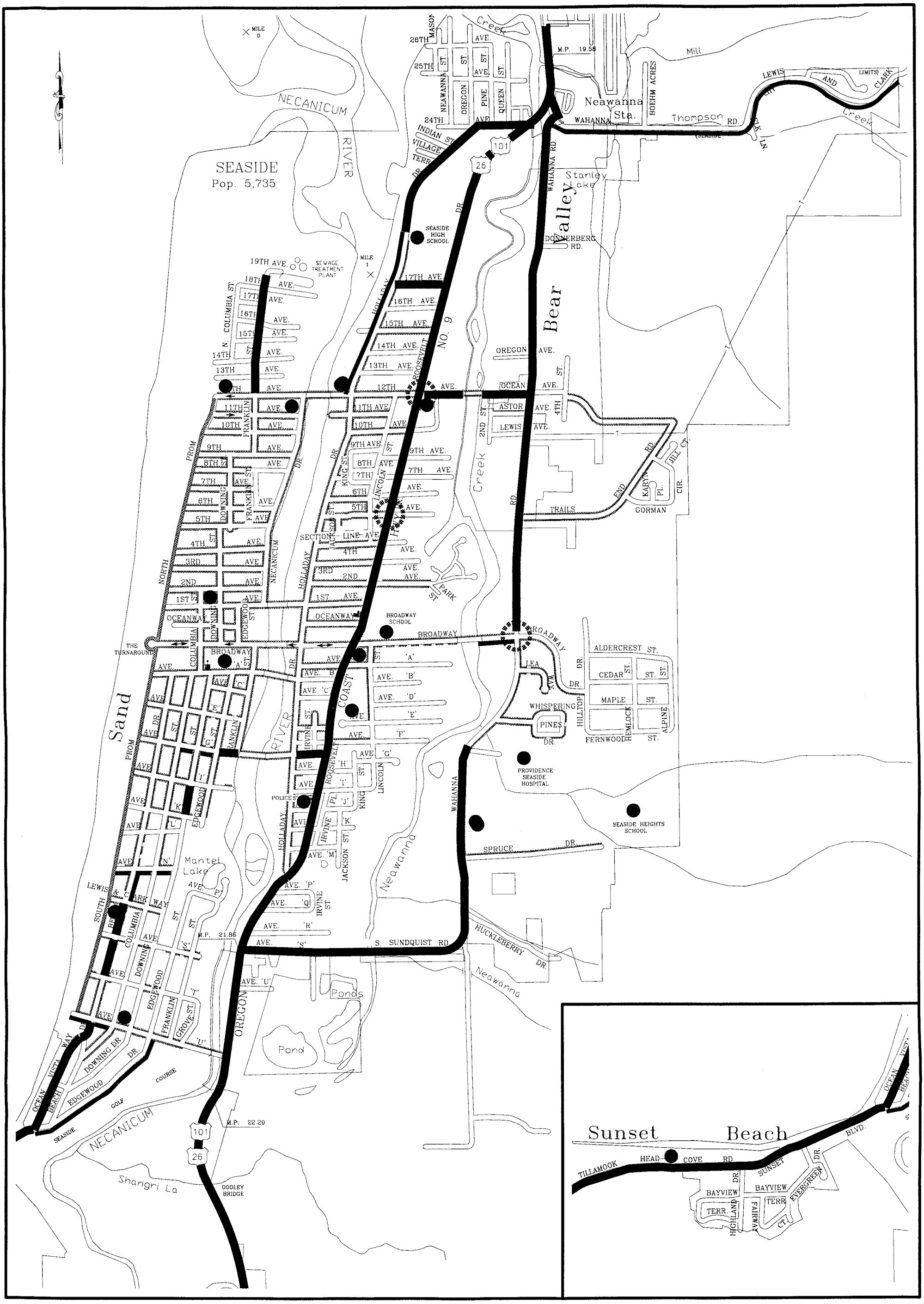
Street	From	To	Length	Improvement	Cost ($)
Wahanna Road	Wahanna-Lewis & Clark	Broadway	6550'	One side	$318,000
Avenue N	Prom	Downing	775'	South side	37,750
Edgewood Drive	Beach	Avenue U	1775'	East side	86,250
Avenue S	Wahanna	Roosevelt	2775'	One side	134,500
Ocean Vista Way	Tillamook Head	Avenue U	1550'	Both sides	150,750
Avenue G	Columbia	Franklin	650'	South side	32,500
Avenue G	Holladay	Roosevelt	325'	Both sides	32,500
Holladay Drive	12th Avenue	24th Avenue	4450'	One side	216,000
12th Avenue	Necanicum Bridge	Roosevelt	1100'	One side	53,250
Beach Drive	Avenue T	Avenue N	1450'	Improve existing	103,500
Franklin Street	12th Avenue	18th Avenue	1500'	Both sides	145,500
Downing Street	Avenue K	Avenue I	400'	Improve existing	33,500
17th Avenue	Holladay	Roosevelt	550'	Both sides	54,000
Total					**$1,398,000**

No right of way acquisition costs are included in these estimates.

AIR, RAIL, WATER AND PIPELINE PLAN

Air Service

Regularly scheduled national and international air transportation is provided via Portland International Airport which lies approximately 100 miles away and is accessed via U.S. 26 or U.S. 30. In addition, regularly scheduled air service is provided via Astoria Airport located 15 miles to the north. A local general aviation airport is located in the City of Seaside; however, the intensity of its use has steadily decreased over the past several years.



LEGEND

- SIDEWALK IMPROVEMENTS
- EXISTING INTERMITTENT SIDEWALKS
- EXISTING SIDEWALKS
- EXISTING BEACH-FRONT SIDEWALK
- CROSSWALK
- PEDESTRIAN GENERATORS

PEDESTRIAN PLAN

SEASIDE TRANSPORTATION SYSTEM PLAN
SEASIDE, OREGON
JUNE 1997

FIGURE 23

TM4\1962FOP1

The City should support all efforts to develop ground connections to air facilities (via transit service), in recognition of the increasingly important role played by air transportation for business and personal travel in the future.

Rail Plan

There is no direct rail service to Seaside. Burlington Northern provides freight rail service to Astoria, approximately 15 miles to the north. Existing industries in Seaside are not dependent on freight rail service and do not generate sufficient demand to warrant improved access.

Water Transportation

The Necanicum River and Neawanna Creek are navigable waterways, as defined by the Army Corps of Engineers. The Plan supports maintaining these waterways for their ecological integrity, while allowing for recreational use and enjoyment of their scenic beauty.

Pipeline Transportation

The Plan should recognize 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 and the development of a Transportation Demand Management (TDM) program for the City.

Funding Alternatives Analysis

INTRODUCTION

The Seaside Transportation System Plan has identified a series of improvements needed to correct deficiencies in system street, bikeway, and pedestrian facilities. The improvements and their estimated cost are presented in Tables 16 through 18. Improvements needed to remedy deficiencies in the Roosevelt Drive (U.S. 101) corridor are not included in this Transportation System Plan, or in the Funding Alternatives Analysis.

Table 16
Street Improvements

Roadway	From	To	Length	Improvement	Cost ($)
Lincoln	Avenue E	Avenue F	225'	8' upgrade	12,500
Avenue G	Holladay	Roosevelt	445'	5' travel/bikes	16,500
Avenue F	Lincoln	Roosevelt	450'	6' upgrade	21,500
Total					**$50,500**

No right-of-way costs are included in these estimates.

The purpose of the Funding Alternatives Analysis is to identify sources of Federal, State, and local funds which might be employed to make the listed improvements, and correct the deficiencies. The format used here will identify funding sources as "traditional", or non-traditional, and discuss their applicability to Seaside's Transportation System needs. Traditional sources of funding usually are the easiest to employ, for they are well understood, and accepted. They are not necessarily the most politically feasible sources, however, nor are they necessarily capable of providing all the funding required. For that reason, this section includes a matrix matching funding sources and programs according to what appears to be the best fit for the required improvement.

Table 17
Bikeway Improvements

Street	From	To	Length	Improvement	Cost ($)
Wahanna Road	Roosevelt Drive	Broadway	6550'	10'(two way) & 1' vehicle	$360,000
Wahanna Road	Hospital	Spruce Drive	1390'	2 - 5' bike lanes	69,500
Wahanna Road	Spruce Drive	Avenue S	1165'	2 - 5' bike lanes	58,250
Avenue S	Wahanna Road	East end of Bridge	1100'	2 - 5' bike lanes	55,500
Avenue S	West end of Bridge	Roosevelt Drive	1500'	2 - 5' bike lanes	75,000
Avenue G	Holladay Drive	Roosevelt Drive	390'	5' bike lane and restriping	12,000
Avenue G	Roosevelt Drive	Necanicum Bridge	335'	stripe 2 bike lanes	3,000
Holladay Drive	Roosevelt Drive	12th Avenue	4330'	2 - 5' bike lanes	216,000
12th Avenue	Necanicum Bridge	Holladay Drive	250'	2 - 5' bike lanes and 3' addition to the vehicle lane	15,000
12th Avenue	Holladay Drive	Roosevelt Drive	835'	1 - 5' bike lane	20,000
12th Avenue	Roosevelt Drive	Neawanna Bridge	950'	1 - 5' bike lane	23,000
12th Avenue	Neawanna Bridge	Wahanna Road	575'	Widen 8' to accommodate 2 - 5' bike lanes	26,000
Broadway	Neawanna Bridge	Wahanna Road	400'	2 - 5' bike lanes	14,500
Total					**$947,750**

No right-of-way costs are included in these estimates.
*These estimates include costs associated with roadway improvements that would not be necessary without the bikeway improvements.

Table 18
Sidewalk Improvements

Roadway	From	To	Length	Improvement	Cost ($)
Wahanna	Wahanna-Lewis&Clark	Broadway	6550'	One side	318,000
Avenue N	Prom	Downing	775'	South side	37,750
Edgewood	Beach	Avenue U	1775'	East side	86,250
Avenue S	Wahanna	Roosevelt	2775'	One side	134,500
Ocean Vista	Tillamook Head	Avenue U	1550'	Both sides	150,750
Avenue G	Columbia	Franklin	650'	South side	32,500
Avenue G	Holladay	Roosevelt	325'	Both sides	32,500
Holladay	12th Avenue	24th Avenue	4450'	One side	216,000
12th Avenue	Nec. Bridge	Roosevelt	1100'	One side	53,250
Beach Drive	Avenue T	Avenue N	1450'	Improve existing	103,500
Franklin	12th Avenue	18th Avenue	1500'	Both sides	145,500
Downing	Avenue K	Avenue I	400'	Improve existing	33,500
17th Avenue	Holladay	Roosevelt	550'	Both sides	54,000
Total					**1,398,000**

No right-of-way acquisition is included in these estimates

CURRENT SOURCES OF FUNDING FOR SYSTEM IMPROVEMENTS

To put the funding alternatives analysis into perspective, here are the methods Seaside commonly employs to pay for system improvements:

District Street Levy - This is the latest in a series of three year serial levies raising $150,000 annually. Levy proceeds are used for basic street repairs and maintenance.

City Street Fund - The primary resource for this fund is Seaside's share of the State Motor Vehicle Fund. The fund budget for 1996-97 is approximately $256,000. The fund is used primarily for street maintenance, and street lighting activities.

Trails End Urban Renewal Program - The City has funded various curb, street, sidewalk and lighting improvements with tax increment funds from its Trails End urban renewal district. These improvements are limited, by law, to the boundary of the Trails End renewal area. This resource will be closed out in 1997-98. A new renewal area centered around Roosevelt Drive has been approved, but will not go into effect until 1998-99. That renewal plan provides for funding for various street, curb, sidewalk, and bikeway improvements. The financing potential of this new renewal plan likely will be limited by the provisions of Ballot Measure 47, or Ballot Measure 50.

Using existing sources to fund system improvements:

- Developers are required to bear the cost of providing streets, curbs, and sidewalks in new developments.
- LIDs are commonly used to fund upgrading of unpaved and substandard streets to City standards
- The City imposes no Transportation Systems Development Charge.

Traditional Funding Mechanisms

These sources are ones currently in use in Seaside, or in widespread use throughout the State of Oregon. They are listed in a general order of familiarity, and feasibility for Seaside's purposes.

State Motor Vehicle Fund

Source: State of Oregon
Accessibility: Automatic annual allocation, according to formula

The state distributes the State Motor Vehicle Fund local share to cities and counties based on a per capita rate (cities) and share of vehicle registration (counties). The State of Oregon collects the following fuel and vehicle fees for the State Motor Vehicle Fund:

State Gas Tax - $0.24 per 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 with each city's distribution based on a city's share of statewide

population, and the county distribution based on a county's share of statewide vehicle registration. ODOT uses their allocation from the State Motor Vehicle Fund for maintenance and capital purpose. The State Transportation Improvement Program (STIP) describes the capital projects to be funded by ODOT.

As noted previously, Seaside currently uses its share of State Motor Vehicle Fund for street maintenance and street lighting programs. The Street Fund budget for 1996-97 is approximately $256,000.

Serial Levies

Source: Local
Accessibility: Requires voter approval. M47 and M50 require an election with 50% voter turnout.

Oregon Law provides for serial levies, which allow collection of property tax revenues outside the voter approved tax base for the governing body. Serial levies require voter approval. may be either rate based, or set to raise a fixed amount of revenue. They are used for a multiplicity of purposes, often for operation of a specific service with high public approval. Seaside has had success with voter approval of serial levies for street maintenance.

Local Improvement District (LID)

Source: Local
Accessibility: Requires the approval of benefitted property owners

Through a local improvement district (LID), a street or other transportation improvement is built and the adjacent benefitted (i.e., local) properties are assessed a fee to pay for the improvement.

LID programs are used for a wide variety of purposes. The LID method is used primarily for local or collector roads, although arterial have been built using LID funds in certain jurisdictions. LIDs continue to be a good mechanism for funding projects, whether related to new development or for improvements that benefit already-developed areas.

General Obligation Bonds (G.O. Bonds)

Source: Local
Accessibility: Requires voter approval. M47 and M50 require an election with 50% voter turnout.

General obligation (G.O.) bonds are the most commonly used method of financing capital improvements, including major transportation system improvements. Backed by the full faith

and credit of the issuing jurisdiction, they usually can be sold at very low interest rates, and the debt service can be spread over an extended term of twenty years, and more. Voters must approve G.O. Bond sales. There are many legal and underwriting expenses involved in issuing G.O. bonds, so they are not practical to use for smaller projects. A single G.O. bond would be practical for funding most, or all, of the total improvements costs in this Transportation System Plan. Some jurisdictions, notably Salem, have had great success in obtaining voter approval for an ongoing series of General Obligation bonds devoted exclusively to transportation system improvements.

Urban Renewal - Tax Increment Financing

Source: Local
Accessibility: Can be used to fund transportation improvements, but only within plan boundary.

Oregon law allows the use of tax increment financing within approved urban renewal areas. Seaside has two renewal areas - Trails End Renewal Area, approved in 1979, and the Greater Seaside Renewal Area, approved in 1996. Tax increment financing produces revenues based on the growth of property values within the urban renewal area. These revenues are given directly to Seaside's Improvement Commission, and can be spent only for activities contained in the urban renewal plan, and only within the boundary of the renewal area. Transportation system improvements are common activities funded with tax increment financing. Tax increment funds can be used to pay for projects on an annual "pay as you go" basis, or can be used to support debt service on long-term borrowings. No voter approval is required for tax increment financing. Ballot Measure 47 or 50 may reduce the effectiveness of tax increment financing in the Greater Seaside Urban Renewal Area.

Intermodal Surface Transportation Efficiency Act (ISTEA)

Source: Federal, administered by ODOT
Accessibility: Projects are ranked and funded through various methods

Funding through the ISTEA Act is targeted to improvements which demonstrate beneficial impacts towards implementing a region' s transportation systems plan, enhance the multi-modal nature of the transportation system, and meet local land use, economic, and environmental goals. Funding categories created by ISTEA are intended to provide an area with more discretion in allocating federal transportation funds to projects from highway improvements to transit improvements, management systems, and non-vehicular modes such as bicycle and pedestrian improvements.

Transportation improvement projects within Seaside are potentially eligible for funding through a number of categories under the ISTEA Act. These categories include:

National Highway System (NHS): Highways in this category include all Interstate routes and major urban and rural principal arterial. U.S. 101 is identified on the National Highway System.

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

ISTEA also provides the funding for several special purpose loan and grant programs administered by ODOT. Several of these programs are discussed in the following sections of this report.

The following programs are traditional programs widely used throughout Oregon, but which have not been used, or used only sparingly, in Seaside.

Community Development Block Grants (CDBG)

Source: Federal, administered by County
Accessibility: By annual application to County. Must benefit lower income areas or population.

The Federal Department of Housing and Urban Development administers and funds the Community Development Block Grant Program (CDBG). Grant funds are allocated to cities or counties based upon a formula which includes their size and other demographics including income levels, housing characteristics, etc. CDBG funds can be, and are used, for street, curb, and sidewalk improvements. By definition, CDBG funds must be used to benefit lower income areas, and lower income populations, so the application of CDBG funds to overall transportation system improvements is limited. Federal allocations to the CDBG program are declining, and the competition for the grants is extremely high. It may be of limited spot help in meeting Seaside's transportation system needs.

Special Public Works Program

Source: State, administered by Oregon Economic Development Department (OEDD)
Accessibility: By application to OEDD. Program is project-specific, and is directed toward job production in the industrial, manufacturing, distribution and warehousing sector.

The Special Public Works Fund (SPWF) provides grants and loans to local government to construct, improve and repair public infrastructure in order to support local economic development and create new family wage jobs. A key criterion is that the SPWF grant and/or loan must lead to, or support the siting of certain qualified uses. The programs' emphasis is on job production, and diversifying the local and state economy. Retail and office developments do not qualify, but destination resort projects may qualify. SPWF funds have

been used in a number of cities for the construction of water, sewer, and limited street improvements. The bulk of the SPWF funding comes in the form of a loan, so the community must identify a secure repayment source for the SPWF loan. This program does not readily lend itself to the projects in this Transportation System Plan.

Transportation System Development Charges (SDC)

Source: Local, but must conform to requirements of State law
Accessibility: Can be imposed with adoption of an ordinance by City Council

Transportation SDC's are becoming widely used in high growth cities and counties throughout Oregon. For example, most cities and counties within the Portland metropolitan area now use transportation system development charges. A transportation system development charge (SDC) is a sliding scale fee which is charged all new development to pay for transportation improvements which will be needed as a result of the development. The fee is normally based upon the number of vehicle trips generated by the development. Credits are often given for "qualified" improvements made by a developer to an adjacent arterial or collector street which would reduce the SDC charge.

ORS 223.297 to 223.314 prescribes specific requirements which a SDC must meet to be considered legal. It specifies that a SDC may be used only for capital improvements and defines the range of eligible capital facility improvements (i.e., water, sewer, drainage, transportation, or parks). ORS also defines the method of determining the amount which may be charged by a SDC, the types of eligible projects for funding, and annual review provisions. The use of the transportation SDC is a major source of funding for growth-related transportation improvements. It helps match the availability with funds with the need for funding as new development places additional burdens on street capacity.

Bikeway and Walkway Grants

Source: State, administered by ODOT
Accessibility: Competitive annual application process

This program funds project costs up to $100,000 for the following types of pedestrian and walkway improvement projects:

- Construction on Local Streets
- Improvements on Urban State Highways
- Bikeway Maps ($10,000 maximum)

Projects that include bikeways and walkways as part of road construction or reconstruction are not eligible.

Transportation Growth Management Grants

Source: State, administered jointly by ODOT and LCDC
Accessibility: Competitive annual application process

This program currently is in its third funding cycle. The program funds planning and technical studies aimed at improving local transportation systems, and providing new tools for growth management. This Transportation System Plan in fact was funded through a TGM grant. The TGM program might be useful in paying for additional design or technical analysis of some of the improvements listed in this Transportation System Plan.

ODOT Regional Office Discretionary Funds

Source: State, administered by ODOT regional office
Accessibility: By application

ODOT Regional Offices have small discretionary funds which can be used to pay for technical studies, or very small construction or maintenance projects. The project must be ready to go, and it must help implement an ODOT goal or agenda. This program seems best suited to small one-of-a-kind projects.

Less Traditional Funding Mechanisms

The following programs are less widely used than those described in the previous section.

Oregon Transportation Infrastructure Bank (OTIB)

Source: Oregon Dept. of Transportation
Accessibility: Competitive, by application

This program is grouped in the "less traditional" category because it is brand new. The first funding cycle was in the 1996-97 fiscal year. A total of $10 million was made available. Another $10 million cycle of funding is expected to begin July 1, 1997 The OTIB program itself is straightforward, but it attempts to bring non-traditional funding sources into play to repay OTIB borrowing. The OTIB will make loan funds available for the construction of federal-aid highways, bridges, roads, streets, bikeways, pedestrian access and right-of way costs. In addition, ODOT may expend moneys from the OTIB to support the sale of Bonds. Such expenditures may include the payment of all costs associated an Infrastructure Bond. OTIB Agreements will generally not include grants. Borrowers may assume a 6% interest rate, and a maximum term of 30 years. Repayment of the loan must commence no later than 5 years after the project is completed and/or put into service.

Preference for OTIB funds will be given to projects that bring money from non-traditional sources into transportation finance. OTIB selection criteria says a project will be given preference if the project brings new funding into transportation and encourages the use of innovative approaches to funding transportation projects in Oregon. Examples might include repayment of OTIB borrowings from traffic impact fees, transportation improvement district assessments, system development charges, local improvement district assessments, urban renewal assessments, private funds, and toll revenues.

OTIB also makes available up to $20,000 in loan funds per project for Technical Assistance (TA) loans to eligible applicants under 25,000 in population. TA loans may finance preliminary planning, legal, fiscal, engineering and economic investigations to determine the feasibility of an infrastructure project.

Local Gas Tax

Source: Local
Accessibility: Ordinance by local governing body

The City of Seaside could implement a local gas tax that would be in addition to the state gas tax it currently receives. Five jurisdictions within Oregon have a local gas tax - the City of Woodburn ($0.01/gallon), Washington Co. ($0.01/gallon), Tillamook ($0.015/gallon), The Dalles ($0.01/gallon), and Multnomah Co. ($0.03/gallon). The local gas taxes have raised the following amounts:

Woodburn	$0.01/gallon	$ 112,490	(1993)
Tillamook	$0.015/gallon	$ 98,000	(1991)
The Dalles	$0.01/gallon	$ 291,000	(1991)
Multnomah County	$0.03/gallon	$7,466,643	(1993)
Washington County	$0.01/gallon	$1,602,209	(1993)

The Washington County gas tax is shared with cities within the County on a per capita basis. The cities of Tillamook and The Dalles are responsible for collection of their local gas tax. The remaining jurisdictions rely upon the State Department of Motor Vehicles for collection and distribution. The State charges an administrative fee for collection.

Street Utility Fee

Source: Local
Accessibility: Ordinance by local governing body

The principal behind a street utility fee is that a street is a utility used by the citizens and businesses of a city just like a water pipe or a sewer that supplies a connection to a home or

business. A fee would be assessed to all businesses and households by the city for use of city streets based upon the amount of use typically generated by that particular use. As an example, a single family home typically generates 10 trips per day so the fee is based upon that amount of use. A small retail/commercial use typically generates 130 trips per day per 1,000 sq. ft. of size, so the fee for the retail/commercial use is significantly greater than the single family residence.

This fee is being used in Medford, where it is raising approximately $1.3 million dollars a year. The amount of the fee is based upon the land use classification which relates to trip generation. A single family residence (generating 10 trips per day) pays $2.00 per month. The street utility fee was implemented in 1991 in Medford and has been challenged in court and sustained on two occasions. The revenue generated by the fee is used for operations and maintenance of the street system. A statewide version of the Utility Fee concept was discussed in 1997 as a part of a new transportation funding program. The concept did not make it into the legislation under consideration at the time of this report.

Hotel/Motel Tax Dedication

Source: Local
Accessibility: Ordinance by local governing body

An important, and growing, part of Seaside's economy is its tourism industry. Seaside naturally levies a hotel/motel tax. A portion of hotel/motel tax proceeds could be dedicated to transportation system improvements. The City of Lincoln City in fact employs a formula which allocates a portion of its hotel/motel tax receipts to citywide streets and parks improvements. The formula results in about 35% of total hotel/motel receipts being directed to streets and parks improvements.

Dedication of Business License Fee

Source: Local
Accessibility: Action by local governing body

Seaside currently charges a Business License Fee to all businesses. The fee, imposed on a sliding scale by type of business, generates approximately $120,000 per year. Adjustments could be made in the existing fee to increase the amount of revenue collected, and target the increase to transportation system improvements. Dedicating a portion of the license fee would be most logical for street improvements that benefitted the city's commercial areas. We know of no communities currently using this method.

Local Vehicle Registration Fee

Source: Local
Accessibility: Ordinance by local governing body

A local vehicle registration fee would operate similar to the existing statewide vehicle registration fee. Statewide, the ratio of vehicles registered to population is 0.86 per person. If this ratio is applied to Seaside's population of approximately 6,000, the estimated number of vehicles in the City would be 5,160. There are presently no cities or counties in Oregon that charge a local registration fee. This option has been discussed by Marion County in the past with the decision made not to pursue it.

PENDING LEGISLATION

At the writing of this report, the 1997 Legislature was considering HB3163, a bill that would substantially increase revenues available for funding transportation system projects. At the time of this report, the general outline of the bill is becoming clear, but there are many areas to be worked out. A gas tax increase is under discussion. Discussion has shifted from a $0.10 increase over 2 years to $0.09 increase implemented over 3 years. In addition, an increase in the registration fee from $30.00 every two years to $40.00 is also contemplated. With an equivalent increase in the weight-mile tax, the package would raise approximately $280 million a year when fully implemented. That equates to a $27.00 per capita increase in funding for cities. (The expected per capita share for 1997-98 is $47.32)

Flexible funding for elderly and disabled transportation, rail transit and other transportation uses is gaining support and is likely to be included in the bill that the Committee passes out. Different mechanisms for the collection of the as yet unnamed (previously called "transportation access fee") fund are an approximately $2.00 fee per month per residence. Additional discussion about a monthly per employee fee on business ($1.65) has also been discussed.

EFFECTS OF BALLOT MEASURE 47 or 50

In 1996, Oregon voters passed Ballot Measure 47, a tax limitation measure. The provisions of Ballot Measure 47 were clarified in Ballot Measure 50, which was passed in May 1997. Elaborating on the provisions and impacts of the Ballot Measures 47 and 50 is beyond the scope of this report. However, these measures are likely to have the following major impacts on programs discussed in this Funding Alternatives Analysis:

- Property tax increases will need to be passed in an election with a turnout of at least 50% of the registered voters. This will effect G.O. bonds, and serial levies.

- Either measure likely will result in reducing the amount of tax increment revenue generated by an urban renewal project.
- Ability to impose, or increase fees by Council action may be made more difficult, and the Council action may become more open to legal challenge.

It is impossible to fully predict the impacts of these tax limitation measures on the financing of transportation improvements.

MATCHING FUNDING ALTERNATIVES TO PROJECTS

The matrix below lists the funding mechanisms discussed in the Funding Alternatives Analysis, and matches the mechanisms to the projects to be undertaken. Each funding mechanism is given a high, medium, or low rating regarding its applicability to the particular improvement.

KEY

★ Very appropriate or applicable
☆ Inappropriate, or inapplicable
✪ Moderately appropriate, or appropriate with conditions (see footnotes)

	Roadway Improvements	Bikeway Improvements	Pedestrian Facilities
TRADITIONAL SOURCES			
State Motor Vehicle Fund	✪	✪	✪
Serial Levies	✪	✪	✪
Local Improvement Districts	✪	✪	✪
General Obligation Bonds	★	★	★
Urban Renewal - Tax Increment Financing[1]	★	★	★
Federal Community Development Block Grant Funds	☆	✪	✪
OEDD Special Public Works Funds	☆	☆	☆
Transportation System Development Charges	★	★	★
ODOT-administered ISTEA funds	★	☆	☆
ODOT Bikeway and Pedestrian Grant Program	☆	★	★
ODOT/LCDC TGM grants	☆	☆	☆
ODOT Regional office discretionary funds	☆	✪	✪
LESS TRADITIONAL SOURCES			
ODOT Infrastructure Bank	★	✪	✪
Local Gas Tax	★	✪	✪
Street Utility Fee	★	★	★
Dedication of Hotel/Motel taxes	✪	✪	✪
Business License Fee	✪	✪	✪
Local Vehicle Registration Fee	✪	✪	✪

[1] For project activities within the boundary of the Greater Seaside Urban Renewal Area.

Land Use Ordinance Modifications

INTRODUCTION

The Transportation Planning Rule (OAR Chapter 660, Division 12) stipulates that each local jurisdiction in the State of Oregon adopt an approved transportation plan and make amendments to its land use regulations in order that transportation plans be properly implemented. The primary goal of the required ordinance amendments is to make future developments more pedestrian and transit friendly and to reduce reliance on the automobile. The Rule was originally adopted by the Land Conservation and Development Commission (LCDC) in April 1991. In 1993, an amendment to the rule extended the implementing measures compliance deadline for local jurisdictions to May 1994. In May 1995, the urban portions of the Transportation Planning Rule were updated to update and clarify the rule's provisions for local streets, connectivity, and building orientation. This section introduces proposed land use ordinance concepts designed to bring the City of Seaside into compliance with the rule.

REQUIREMENTS OF THE TRANSPORTATION PLANNING RULE

Section 660-12-045 of the Transportation Planning Rule sets forth several land use regulation issues that must be addressed to implement a Transportation Systems Plan. Key issues are discussed below.

Protection of Transportation Facilities and Corridors

Ordinance regulations are required to protect transportation facilities and corridors including:

- Access control measures
- Standards to protect future operations
- A process for coordinated review
- A process for providing notice to public agencies
- Regulations assuring that development standards are consistent with transportation system capacity

Land Use And Subdivision Regulations

Land use and subdivision regulations are required for the following:

- Bicycle parking for multifamily, commercial, and institutional development sidewalks and bikeways that provide safe and convenient access within new development and from it to nearby residential areas, transit stops, and activity centers
- Internal pedestrian connections provided in new office parks and commercial development

Transit Facilities

Land use and subdivision regulations are required for transit facilities. Ordinances must provide:

- Bus stops and other facilities where appropriate;
- Preferential access to transit through building orientation and clustering for new retail, office, and institutional buildings near planned transit stops;
- Preferential parking for carpools and vanpools;
- Opportunities to redevelop parking areas for transit-oriented use;
- Road systems that include pedestrian and bicycle access to identified transit routes; and
- Designation of types and densities of land use adequate to support transit.

Reduced Reliance on the Automobile

There are no requirements to reduce reliance on the automobile placed on Metropolitan Planning Organizations (MPO) agencies and jurisdictions in this area.

Improvements for Bicycle and Pedestrian Travel

Identification of improvements to facilitate bicycle and pedestrian travel in developed areas are required, including:

- Improvements providing direct, convenient, and safe bicycle and pedestrian travel within and between residential areas and activity centers

Suitability of Existing Ordinances

The Transportation Planning Rule requires that cities and counties reduce reliance on the automobile and promote alternative modes of travel, such as walking, cycling, and transit. The rule also stipulates that local development ordinances be consistent with the objectives of the rule. Generally, this requirement has required that new standards and policies be added to local ordinances to assure that new development and new facilities are pedestrian and transit friendly.

As in other communities, new standards have been developed in Seaside to address street widths, sidewalks, connections between buildings and developments and other related design concepts. These concepts are implemented through the review of land use and development permit applications governed by various section of the Seaside Zoning Ordinance and Subdivision Ordinance, as well as through the provisions of the Seaside Comprehensive Plan.

RECOMMENDATIONS

Draft recommendations for the City of Seaside Zoning Ordinance, Subdivision Ordinance, and Comprehensive Plan amendments follow. These amendments are necessary to implement the Recommended Seaside TSP. These draft amendments will be undergoing additional public review and comment over the next several months. Final ordinance amendments may change as a result of that input.

CITY OF SEASIDE ZONING ORDINANCE

Create a new subsection: 4.3 Transportation Facilities which establishes standards for roadway, bicycle and pedestrian Improvements. All use zones listed in Section 3 should refer to this standard as being applicable for all development and redevelopment. Following is a draft of the Transportation Facilities section.

Section 4.300 Transportation Facilities

Section 4.301 Purpose

It is the purpose and intent of this section to establish design standards and performance requirements for all streets and other transportation facilities constructed or reconstructed within the City of Seaside, as well as establish a process for variation from the streets standards.

Section 4.302 Street Standards.

Street standards are shown in Figure 19.

The streets standards shall be considered as minimum design requirements under ideal circumstances. All streets in the City shall be designed as one of the standard streets, except as provided in sub-sections 2 and 3. Approval of the appropriate street shall be by the Planning Director as part of the subdivision review and building permit review processes as provided in this ordinance and shall be based on the following considerations:

a. Street function needed within the existing, proposed and future neighborhood and City circulation networks;

b. Anticipated daily traffic volume;

c. Individual property access requirements;

d. Topographic variations and other field conditions.

Alignment Adjustments

In development that is proposed for approval following the effective date of this ordinance, street alignments may be adjusted where one or more of the following conditions exist:

a. Physical or topographic conditions make a street impracticable. Such conditions include but are not limited to freeways, railroads, slopes in excess of City standards for maximum slopes, wetlands or other bodies of water where a connection could not reasonably be provided;
b. Existing buildings or other development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or
c. Where streets would violate provisions of leases, easements, covenants, or restrictions written and recorded as of (date).

Alternative Designs

Alternative design variations from the standards may be considered for approval by the Planning Director if one of the following conditions is found to be present:

a. Existing local conditions create unusual circumstances where standards must be exceeded, such as excessive or unstable slopes, mixed land uses are to utilize the same street, or a bicycle pathway link is needed, etc.;
b. Existing local conditions create unusual circumstances where standards must be reduced, such as reconstruction of a street in an existing neighborhood, for reduction of excessive cuts and fills, etc.;
c. Variation is necessary to the overall design objectives of a particular proposed development.

The criteria for approval of design variations by the shall be all of the following:

a. All the service provided by the appropriate prototype can be achieved by the street design variation;
b. The street design variation does not create additional maintenance costs or other burdens to the City without substantial additional benefit;
c. The street design variation conforms to the Statement of Purpose and the Performance Requirements for streets as articulated in the Comprehensive Plan.

Review and Approval

The process for review and approval of designs for streets in new subdivisions shall be in accordance with the subdivision procedures in this ordinance.

The process for review and approval of designs for streets being reconstructed or otherwise being constructed not as part of a subdivision, shall be as follows:

a. Final approval shall be the responsibility of the Planning Director, if the street is not part of a Local Improvement District. Appeal of the Planning Director's decision shall be to the City Planning Commission.

b. If the street is part of a Local Improvement District, the Planning Director shall make a recommendation as to the appropriate design to the City Council for final approval.

Section 4.303 Accessways

Accessways are public or private routes providing pedestrian access between local streets and existing and future transit stops to major pedestrian destinations such as schools, shopping centers and parks. Accessways may also include public or private vehicular routes. The minimum width of an accessway is 8 feet.

a. Accessways in development that is proposed for approval following the effective date of this ordinance shall be provided in accordance with City standards in the following situations:

b. In residential and industrial districts where a street connection is not feasible and the addition of an accessway would reduce walking or bicycling distance by 400 feet or more, and by at least 50 percent over other available pedestrian routes to a school, shopping center, or neighborhood park, or to an existing or planned transit stop or transit route, as identified in the adopted Transportation System Plan.

c. For schools and commercial districts where addition of an accessway would reduce walking or bicycling distance by 200 feet, and by at least 50 percent over other available pedestrian routes to a school, shopping center, or neighborhood park or to an existing or planned transit stop or transit route, as identified in the adopted Transportation System Plan.

d. For purposes of a and b of this section, other available pedestrian routes include public sidewalks and walkways within shopping centers, planned developments and industrial districts. Routes may cross parking lots on adjoining properties if the route is open to the public for pedestrian use, is a paved surface and is unobstructed.

e. For retail, office and institution development at or near a major transit stop, walkways shall be provided to connect building entrances with streets adjoining the site. Pedestrian connections to adjoining properties shall be provided except where such a connection is impracticable as provided for in this code. Pedestrian connections shall connect the on-,site circulation system to existing or proposed streets, walkways, and driveways that abut the property. Where abutting properties are undeveloped or have potential for redevelopment, streets and/or accessways on site, shall be stubbed to the property line to allow a future extension on to the adjoining property.

f. Accessways shall be located to provide a reasonably direct connection between likely pedestrian destinations. Accessways shall meet all City design and construction

standards. Accessways through parking lots shall be physically separated from adjacent vehicle parking and parallel vehicle traffic by curbs or similar devices, including landscaping, trees and lighting, if not otherwise provided in the parking lot design.

g. Accessways shall be provided consistent with the requirements of this Section unless infeasible for any of the following reasons:

1. Physical or topographic conditions make an accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, slopes in excess of City standards for maximum slopes, wetlands or other bodies of water where a connection could not reasonably be provided;
2. Existing buildings or other development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or
3. Where accessways would violate provisions of leases, easements, covenants, or restrictions written and recorded as of (date).
4. An accessway will be not be required where the impacts from development, redevelopment or both are low and do not provide reasonable justification for the estimated costs of such accessway.

h. Exemptions: Exceptions to accessway requirements may be approved by the Planning Director subject to Article 7, Variances of this Ordinance.

Section 4.304 Access Standards

a. All lots shall abut a public street for a distance of at least 25 feet.
b. The number of access points on arterial streets from any development shall be minimized whenever possible through the use of driveways common to more than one development and interior circulation design which furthers this requirement.
c. Other access standards specific to the site development requirements of various land use districts as contained in Article 3 shall also apply.
d. The Planning Director may require a traffic impact report when a development proposal exceeds an average daily trip generation of 400. The report shall evaluate impacts on access, safety and street capacity.

Section 4.305 Transit Facilities (Reserved)

Section 4.306 Dedication

a. Except as provided in sub-section 2, all streets and necessary accompanying right-of-way, including those internal to any development, shall be dedicated to the public for street purposes, and such dedication amount shall meet the requirements of this ordinance and the Comprehensive Plan.

b. Exemptions. The requirements of sub-section 1 may be waived by the Planning Commission if the Commission finds the traffic generated by the development does not significantly affect off-site traffic flow.

c. All streets that are dedicated to the public shall be designed in accordance with Section 4.302 of this ordinance.

DRAFT COMPREHENSIVE PLAN AMENDMENTS

Transportation and roadway policies are currently found in two sections of the Comprehensive plan. We recommend that a single Transportation section be established incorporating appropriate policies from the existing Section 7.3 into Section 8: Transportation, and including the goals developed as part of the Recommended TSP. Following is a proposed draft of Section 8 Transportation. Additions are shown in underline, deletions in ~~strikeout~~.

8.0 Transportation

In July, 1997 the City of Seaside completed a Transportation System Plan (TSP) for areas within the Seaside urban growth boundary. The TSP considered future growth prospects for the community, evaluated alternatives for access and circulation, and included specific recommendations for a balanced transportation system and system improvements. This section incorporates the primary goals, policies and plans developed as part of the TSP.

The major part of the transportation plan is the street and highway system. The City's street system is illustrated on the Transportation Element Map and includes the following classifications:

1. Arterials ~~carry most of the traffic through or into the city, provide access to the most intensive portion of the city, such as downtown, and have the largest right-of-ways~~.connect communities, provide through movement, and are primarily state highways.

2. Collectors - ~~distribute traffic from arterial streets onto residential or local streets and have a lesser right-of-way width than arterial streets~~. Carry local traffic between neighborhoods, or between neighborhoods and arterials, serve internal traffic within areas having a single land use pattern, and serve minor traffic generators such as schools or neighborhood shopping or community centers.

3. Local Streets - ~~give direct access to abutting properties. They are not intended to provide through traffic movement as do collector or arterial streets. They should be designed to serve low traffic volumes~~. Provide direct access to abutting land uses. Their design discourages through traffic.

In addition to establishing a classification of the street system based on their primary functions, the Public Facilities Plan recommends proposed street improvements that would facilitate circulation around and throughout the city.

The streets shown on the plan as "~~Major~~ Arterials" should have ~~the right-of-way~~ precedence for placement of traffic control devices such as traffic signals and stop signs over devices on other streets. ~~so the Public Facilities Plan becomes a guide for placement of traffic control devices such as stop signs.~~

Pedestrian and bicycle improvements are also a part of the city's transportation system. Pedestrian and Bicycle Improvement Plans are illustrated in this section, and are included in the city's Public Facilities Plan. ~~bike trails should be developed if they are feasible.~~

The City of Seaside owns and operates the Seaside State Airport. ~~Additional property adjoining the airport has been obtained by the city to provide for expansion.~~ The primary aviation service to the city is provided by airports in Astoria and Portland.

A mass transit system is not feasible in Seaside at the present time; however, there is a mini-van service for the elderly and handicapped. The city supports existing transit service and service expansion.

If any effort is made to develop a county-wide or regional mass transit system, the City of Seaside will work with the Clatsop County on the development of such a system.

8.1 Transportation Goals

Mobility/ Circulation/ Safety Goals

- Develop a transportation system to facilitate all reasonable travel modes.
- Ensure sufficient capacity to accommodate future travel demand (vehicular, bicycle, pedestrian, etc.) to, within, and through the City of Seaside.
- Improve pedestrian and bicycle connectivity and circulation throughout the City of Seaside.
- Identify the potential for improving the local circulation system, in an effort to reduce reliance on Roosevelt Drive for local traffic.
- Improve safety of interactive multi -modal facilities.
- Provide mobility to transportation disadvantaged.
- Coordinate with local agencies to develop and expand transit services.
- Ensure adequate truck route network to reduce commercial/neighborhood conflicts.
- Develop a functional classification system that adequately matches travel patterns and characteristics.

Capital Improvement Goals

- Maximize the useful life of existing facilities.
- Maximize the cost effectiveness of transportation improvements.
- Ensure adequate, equitable, and long-term funding mechanisms.

Community Goals

- Protect the water quality, ecological integrity, and scenic resources of the Neawanna and Necanicum watersheds.
- Preserve and protect the promenade as a vital feature to the character and function of the community.Improve the livability of the community by developing and promoting the pedestrian and bicycle system as viable travel modes.
- Minimize conflicting uses on the transportation system that degrade neighborhoods.
- Ensure an adequate regional highway system that reduces/eliminates the need to use lower order roadways for regional trips.
- Coordinate the planning efforts of the Visioning Process and the Pacific Way Dooley Bridge Project with the TSP.
- Develop a safe, efficient, and attractive transportation system to enhance the economic vitality of the community.

Economic Development Goals

- Balance accessibility with economic viability on Roosevelt Drive.
- Develop a transportation system that supports balanced growth of population and employment.

8.2 Transportation Policies, General

Roadways

1. ~~The improvement of traffic flow on U. S. 101 would be best accomplished by diverting as many vehicles as possible on a new by-pass route east of the city. Because of the lag time in construction, attention must be given to the near-term improvement of existing U. S. 101.~~

1. All roadways within the City shall be designated as an Arterial, Major Collector, Neighborhood Collector or Local Street. Standards for each of these roadway classifications are as shown in Figure 19. Figure 20 is the Street Plan for the City of Seaside, which also lists street classifications.

2. The Planning Commission will review all proposed development on or adjacent to U.S. 101 to consider impacts of the development on the traffic carrying capacity and safety of U.S. 101. The city will notify the State Highway Division of all proposed

development and consider Division comments in making development decisions.

3. The City of Seaside and the State Highway Division shall cooperate to reduce traffic congestion along U.S. 101, through:

   a. Limitation of approach permits;

   b. The requirement that new uses access onto side streets wherever possible; and

   c. Widening or relocation of street right-of-ways, particularly in the south part of the city.

4. The city will participate in the Six-Year Highway Improvement Plan process and will cooperate with the CEDC subcommittee on transportation.

5. Seaside will discourage direct access from adjacent properties onto those highways designated as arterials wherever alternative access can practicably be made. Whenever practicable, the city shall utilize ODOT's access management guidelines as defined in the Oregon Highway Plan.

6. The city will include in its Public Facilities Plan the roadway, pedestrian and bicycle improvements identified in the Transportation Systems Plan (TSP).

7. The city shall require that traffic impact reports be prepared when a development or redevelopment proposal exceeds an average daily trip generation of 400.

Pedestrian and Bicycle Mobility

1. The Bicycle Improvement Plan (Figure 22) and Pedestrian Plan (Figure 23) shall be incorporated as an element of this plan.

2. The City of Seaside encourages the cooperation of private property owners in the development of a bike and trail system throughout Seaside for the use and enjoyment of the citizens of Seaside and visitors to the community.

3. The City of Seaside encourages the improvement and maintenance of the Coastal Bike Route along U.S. 101 by the State Highway Department, and the Oregon Coast Trail, Bicentennial Trail, and Oregon Loop Trail by the State Parks and Recreation Department.

4. Future bike trails in the Seaside area shall be physically separated from vehicle lanes or on separate right-of-ways, if possible.

Energy Conservation

1. Energy conservation shall be achieved in Seaside by keeping future development within the Urban Growth Boundary in order to keep travel distance reasonable.

2. The city shall support the Area Agency on Aging's mini-van program which provides transportation for the elderly and physically handicapped.

Aviation

1. The cities of Seaside and Gearhart, Clatsop County, the Port of Astoria, and the State Aeronautics Division should work together in retaining the Seaside Airport as a needed transportation facility.

2. The Seaside Airport clear-zone shall be protected from development that could conflict with aircraft approach safety or threaten surrounding development.

3. Land use compatibility with the airport clear zones shall be rated as follows:

Most Compatible:	Open Space, Agriculture and Forest Recreation (parks), Industry, Commercial
Least Compatible:	Residential and Tourist Accommodations

8.3 Street System Policies

Roads and Streets

1. The city will cooperate with Clatsop County to bring all county roads, surrounded by the city, to an acceptable standard and then accept those roads into the city system.

2. The city will cooperate with Clatsop County to bring all county roads in future annexed areas to an acceptable standard and then accept those roads into the city system.

Bridges

1. The city has accepted all county bridges within the city limits of Seaside into the city system.

2. The city shall accept all county bridges of future annexed areas into the city system for all proposed, including but not limited to repair, maintenance, and improvement upon the adoption of the subject annexation.

General

1. The city shall coordinate the installation of utilities such as electrical, telephone, water, and sewer lines with road building operations.

2. In new subdivisions and large scale developments, utility lines shall be required to be placed underground unless soils, topography, or other conditions make underground installation unreasonable or impractical. Appurtenances and associated equipment such as surface mounted transformers, pedestal mounted terminal boxes, and meter cabinets may be placed above ground.

3. The city shall require new subdivisions and large developments to consider:

   a. The slope of the street in relation to the storm water capacity of gutters or ditches;

   b. The effect streets will have on storm water drainage;

   c. The location and sizing of the street culverts, which may be designed to create temporary water storage areas;

   d. The location of streets in relation to natural streams, ponds, or drainage channels.
   e. <u>The impacts of traffic associated with the development.</u>

4. Adequate storm drainage shall be provided in all street improvement projects, both public and private. The City Public Works Director or a Registered Engineer shall specify the appropriate placement and sizing of all drainage facilities on both public and private projects.

5. A capital improvement program for upgrading streets, sidewalks, drainages, and bike paths shall be kept current by the city.

6. Alternative uses of city right-of-ways should be considered where they are not needed for streets. These may include bike paths or walking trails, greenbelts, natural areas, or small parks.

7. Construction of bike ~~paths~~ <u>lanes</u> or sidewalks shall take place on all arterial or collector street improvement projects~~, particularly in commercial areas~~.

8. Where street right-of-ways are poorly platted or not feasible for improvement, the City Council may vacate the street and allow equal exchange by dedication of streets which are better suited to the terrain or special circumstances.

9. The City Council may consider blocking of streets which constitute public safety hazards because of poor visibility, steepness, or other reason.

10. Excavation and grading of streets shall be carried out in conformance with the Comprehensive Plan and Chapter 70 of the Uniform Building Code.

11. The Wahanna Road right-of-way shall be 40-feet in areas where there is a 30 foot right-of-way at present. Dedication of additional right-of-ways shall be required for all land use actions, (including building permits) except for nonstructural uses, accessory uses and additions not requiring a variance.

12. The city and county shall develop a method to assess developments (i.e., systems development charge) that will not be adjacent to Wahanna Road but which will impact Wahanna Road. This policy applies as long as the impacted area of Wahanna Road remains a county road.

13. When the city annexes property abutting a county road, the city shall annex the entire (not part of) road frontage also.

14. All new development or redevelopment shall be required to meet the street standards as set forth in this plan.

15. All new development or redevelopment, when located adjacent to a designated bicycle and/or pedestrian improvement as identified on the Pedestrian Improvement Plan and the Bicycle Improvement Plan, shall be responsible for constructing that improvement, or contributing to the construction of that improvement.

16. All new development or redevelopment shall have sidewalks and adequate street patterns to facilitate easy movement of cars, bicycles and pedestrians.

17. The city shall identify a process to allow modifications to street standards when a hardship exists and when the other goals and policies of this section are met.

18. The city shall develop a balanced funding strategy for needed roadway, pedestrian and bicycle improvements including a systems development charge.

Transportation Planning Rule Compliance

In April 1991, the Land Conservation and Development Commission (LCDC), with the concurrence of the Oregon Department of Transportation (ODOT), adopted the Transportation Planning Rule (TPR), OAR 660 Division 12. The TPR requires local jurisdictions to prepare and adopt a Transportation System Plan (TSP) by May 1996. Outlined below is a list of recommendations (designated by italics) and requirements for a TSP for an Urban Area with a population between 2,500 and 25,000, and how each of those were addressed in the Seaside TSP.

Development of a Transportation System Plan

TPR Recommendations/Requirements	Seaside TSP Compliance
Public and Interagency Involvement	
Establish Advisory Committees.	A Technical and Citizen Advisory Committee were established at the outset of the project. Membership on the TAC included members of the City, County, and ODOT staff. Membership on the Citizen Advisory Committee included representatives from the City's Planning Commission.
Develop informational material.	Current status reports of work undertaken and completed by each advisory committee were published and made available to the public throughout the project. Press releases and local newspaper articles concerning the project and opportunities for participation at public workshops were published regularly.

Schedule informational meetings, review meetings and public hearings throughout the planning process. Involve the community.	A total of three public informational meetings were held throughout the planning process. The meetings were advertised by direct mail to interested parties, distribution of the newsletter, and through the local weekly newspaper.
Coordinate Plan with other agencies.	Coordination with local government agencies was accomplished by adding them to the project mailing list, individual project briefings/meetings, and participation on the technical advisory committee.

Review Existing Plans, Policies, Standards, and Laws

Review and evaluate existing comprehensive plan.	The following plans were reviewed as part of the development of the TSP: *1991 Oregon Highway Plan,* (June, 1991); 1992 *Oregon Bicycle Plan*; *City of Seaside Comprehensive Plan,* (August, 1993); *Statewide Transportation Improvement Program* (1993 - 1996); *County Capital Improvement Program,* (); *City of Seaside Capital Improvement Plan* (1990 - 1995).
Land use analysis - existing land use/vacant lands inventory.	In developing the forecast of transportation needs, an analysis was conducted of the current land use designations and land status within the project area to determine the capacity for growth which would increase demand for transportation services. Population and employment forecasts were prepared for the year 2016 which reflect regional growth prospects and Seaside's economic role in the region. Estimates of needed housing, commercial and employment lands were derived from these forecasts. City staff completed an inventory of vacant buildable lands within Seaside's UGB.

	All estimated land needs by the year 2016 can be accommodated on vacant land withing the UGB and infill within already developed areas. Section 1: Existing Conditions summarizes this analysis.
Review existing ordinances - zoning, subdivision, engineering standards.	Existing City Subdivision Ordinances, Zoning Ordinances (513-U), and Comprehensive Plan engineering standards were reviewed for adequacy in the development of the Seaside TSP.
Review existing significant transportation studies.	Significant transportation studies reviewed as part of the Seaside TSP include the above mentioned comprehensive plans and their associated transportation elements, the *Oregon Transportation Plan,* (September, 1992), *Oregon Bicycle Plan,* (April, 1992), Pacific Way-Dooley Bridge DEIS, (December 22, 1995), *Oregon Rail Passenger Policy and Plan,* (1993) as well as those documents previously listed.
Review existing capital improvements programs/public facilities plans.	The Seaside, Clatsop County, and the State CIPs were reviewed as part of Seaside TSP development.
Americans with Disabilities Act requirements.	The ADA requirements were reviewed and acknowledged as part of the Seaside TSP development.

Inventory Existing Transportation System

Street system (number of lanes, lane widths, traffic volumes, level of service, traffic signal location and jurisdiction, pavement conditions, structure locations and conditions, functional classification and jurisdiction, *truck routes, number and location of accesses, safety, substandard geometry).*	An inventory of the existing street network, traffic volumes, traffic control devices, accident history, and levels of service is provided in Section 2: Exisiting Conditions.

Bicycle ways (type, location, width, condition, *ownership/jurisdiction).*	A summary of the existing bicycle route system is given in Section 2: Existing Conditions.
Pedestrian ways (location, width, condition, *ownership/jurisdiction).*	An inventory of pedestrian facilities along streets in Seaside is listed in Section 2 and shown in Figure 9.
Public Transportation Services (transit ridership, volumes, route, frequency, stops, fleet, intercity bus, passenger rail, special transit services).	A summary of the existing public transportation services is presented in Section 2: Existing Conditions.
Intermodal and private connections.	No significant intermodal and private carrier transportation services and/or connections are found within the Seaside UGB.
Air transportation.	A summary of existing air transportation facilities, primarily Seaside municipal airport is provided in in Section 2: Existing Conditions.
Freight rail transportation.	A summary of freight rail transportation services is provided in Section 2, Existing Conditions. There are no direct rail services to Seaside.
Water transportation.	A summary of water transportation services is provided in Section 2: Existing Conditions.
Pipeline transportation.	A summary of pipeline transportation services is provided in in Section 2: Existing Conditions. There are no major pipelines through Seaside.

Environmental constraints	The Pacific Ocean, Necanicum River and Neawanna Creek present significant environmental constraints for transportation facilities, particularly to east-west movements within Seaside. These features have been addressed in the preparation of the Seaside TSP.
Existing population and employment.	As outlined Section 3: Future Conditions the 1995 population in the City of Seaside is approximately 5,750 while the employment is approximately 1,580. This information is included in Future Conditions as the basis for the forecasts that were performed for this TSP.

Determine Transportation Needs

Forecast population and employment	Population and employment forecasts were prepared for the year 2016 which reflect regional growth prospects and Seaside's economic role. Population is expected to increase from 5,750 in 1995 to 8,052 in 2019. Employment is forecast to increase from 1,580 to 3,400 during the same period. This information is summarized in Section 3: Future Conditions.
Determination of transportation capacity needs (cumulative analysis, *transportation gravity model).*	Travel demand forecasts were undertaken as part of this project. The methodology for travel forecasting and assumptions used in the transportation model are contained in Section 3: Future Conditions, which presents an analysis of future transportation conditions, identifies capacity needs, and develops alternatives to mitigate future transportation deficiencies.
Other roadway needs (safety, bridges, reconstruction, operation/maintenance).	Non-capacity related transportation needs are identified and recommended for implementation in Section 5: Draft Transportation System Plan.

Freight transportation needs.	Freight transportation needs are adequately met via motor carrier freight.
Public transportation needs (special transportation needs, general public transit needs).	Public transit is marginally adequate. Service is provided by Clatsop County.
Bikeway needs.	Future bicycle and pedestrian improvements are to be made in conjunction with roadway improvements to provide cyclists and pedestrians with full accessibility to Seaside's street system. Plans for these facilities are shown in Figures 22 and 23 of Section 5: Draft Transportation System Plan.

Develop and Evaluate Alternatives

Update community goals and objectives.	Goals were established as part of the TSP development (see Section 1: Introduction).
Establish evaluation criteria.	Evaluation criteria was established from the study goals and objectives and used to develop the Preferred Alternative presented in Section 5: Draft Transportation System Plan.
Develop and evaluate alternatives (no-build system, all build alternatives, transportation system management, transit alternative/feasibility, improvements/additions to roadway system, land use alternatives, combination alternatives).	Section 4: Funding Alternatives Analysis includes a summary of the land use and transportation alternatives considered and analyzed for Seaside's TSP. Roadway alternatives, transportation system management options, bike and pedestrian options were analyzed.
Select recommended alternative.	A recommended alternative for roadways, bikeways, and pedestrian facilities is contained in Section 5: Draft Transportation System Plan.

Produce a Transportation System Plan

Transportation goals, objectives and policies.	Specific recommendations regarding transportation goals and policies are outlined in Section 5: Draft Transportation System Plan
Streets plan element (functional street classification and design standards, proposed facility improvements, access management plan, truck plan, safety improvements).	The streets plan element is outlined in Section 5: Draft Transportation System Plan.
Public transportation element (transit route service, transit facilities, special transit services, intercity bus and passenger rail).	The public transportation element is outlined in Section 5: Draft Transportation System Plan.
Bikeway system element.	The bicycle plan is outlined in Section 5: Draft Transportation System Plan, and shown in Figure 22. Table 14 lists recommended bikeway improvements.
Pedestrian system element.	The pedestrian plan is outlined in Section 5: Draft Transportation System Plan, and shown in Figure 23. Table 15 lists recommended pedestrian improvements.
Airport element (land use compatibility, future improvements, accessibility/ connections/conflicts with other modes).	The airport element is outlined in Section 5: Draft Transportation System Plan.
Freight rail element (terminals, safety).	The rail element is outlined in Section 5: Draft Transportation System Plan
Water transportation element (terminals).	The water transportation element is outlined in Section 5: Draft Transportation System Plan
Transportation System Management element (TSM).	TSM element not applicable per OAR 660-12-020(2)(f) and (g).
Transportation Demand Management element (TDM).	TDM element not applicable per OAR 660-12-020(2)(f) and (g).

Implementation of a Transportation System Plan

Plan Review and Coordination

Consistent with ODOT and other applicable plans.	*To follow.*

Adoption

Is it adopted?	*To follow.*

Implementation

Ordinances (facilities, services and improvements; land use or subdivision regulations).	See Section 7: Land Use Ordinance Modifications.
Transportation financing/capital improvements program).	*To follow.*