

INTRODUCTION

Portland's urban transportation system serves an area of approximately 147 square miles and a population of 530,000 people. To better manage a city's transportation infrastructure, the State Transportation Planning Rule (TPR) requires local and regional transportation system plans (TSP) to include an inventory and general assessment of existing transportation facilities and services by function, type, capacity, and condition. The Portland Office of Transportation (PDOT) completed an extensive Transportation System Plan Inventory in 1996. The scope of the inventory exceeds the TPR's baseline requirements; it also includes air, freight, mainline, and pipeline facilities and a description and maps of environmental constraints.

This chapter summarizes the TPR requirements and the 1996 Inventory. Unless otherwise indicated, the results cited below are taken from that inventory. Supporting information, maps, and figures are available in the 1996 Inventory, under separate cover.

REQUIREMENTS

Transportation Planning Rule

The TPR requires an inventory and general assessment of existing transportation facilities and services by function, type, capacity, and condition for:

1. Road system of arterials, collectors, local streets, and other important non-collector street connections
2. Public transportation services
3. Network of bicycle and pedestrian routes

The transportation capacity analysis for each element of the inventory must include:

- The capacities of existing and committed facilities.
- The degree to which those capacities have been reached or surpassed on existing facilities.
- The assumption upon which these capacities are based.
- For State and regional facilities, the transportation capacity analysis shall be consistent with standards of facility performance considered acceptable by the affected State or regional transportation agency.
- The transportation facility condition analysis shall describe the general physical and operational condition of each transportation facility (for example: very good, good, fair, poor, very poor).

INVENTORY

Table 9.1 shows the condition of each transportation facility. Based on 1995 ratings, most facilities are in good or very good condition; however, condition ratings have fallen in recent years. Two facilities (bridges and traffic signal hardware) are mostly in fair, poor, or very poor condition. Two additional facilities (pavement and traffic safety) are deteriorating as a result of inadequate funding. Even street lighting, the facility in the best condition, will be in poor condition within 15 years if capital replacement funding is not found.

Street System

Portland's street system of arterials, collectors, local streets, and other important non-collector street connections is summarized below. In accordance with TPR requirements, streets are separated into arterial/collector and local streets for inventory reporting purposes. Chapter 2: Transportation Element of the Comprehensive Plan, of the TSP contains a detailed explanation of the functional classification of streets in Portland. The modal plans in Chapter 5: Modal Plans and Management Plans, contain equivalency tables that compare the street classification schemes used in Portland's TSP with those used in Metro's Regional Transportation Plan (RTP).

Jurisdiction

The Oregon Department of Transportation (ODOT), Multnomah County, and the City of Portland are the primary jurisdictions within the City. The Port of Portland, railroads, and private owners are also involved in transportation infrastructure.

There are two primary considerations with respect to roadway jurisdiction: right-of-way (ROW) jurisdiction and route jurisdiction. In Portland, most roadways are either City streets on City ROW, ODOT routes on City ROW, or ODOT routes on ODOT ROW. (Figure 1 in the 1996 Inventory shows which government entity controlled the right-of-way and which controlled the route on all roadways in Portland in 1996.)

Table 9.1
Portland Transportation System:
Status, Condition, and Value (July 1995)

Facility	Status	Replacement Value	Condition (Percent)						Unmet Need
			VG	G	F	P	VP	TBD	
Pavement									
Improved Streets	3,805 Lane Miles	\$2,825,935,274	27	29	26	15	3		\$34,850,000
Unimproved (A)	160 Lane Miles	N/A					100		N/A
Total Streets	3,965 Lane Miles	\$2,825,935,274					100		\$34,850,000
Pedestrian System									
Sidewalks	1,900 Miles	\$406,296,000						X	N/A
Curbs	2,924 Miles	\$370,529,280						X	TBD
Corners	54,680	\$60,000,000		80	15	5			\$4,297,000
Total		\$836,825,280							\$4,297,000

Facility	Status	Replacement Value	Condition (Percent)						Unmet Need
			VG	G	F	P	VP	TBD	
Bicycle Network									
Bicycle Lanes (C)	64 Miles							X	TBD
Structures									
Bridges (D)	163	\$128,269,168	36	13	14	15	22		\$56,137,000
Retaining Walls	202	\$14,034,275	89	10	1	0	0		TBD
Stairways	169	\$2,633,700						X	TBD
Guardrails	15 Miles	\$4,275,637						X	TDB
Harbor Wall	5,400 Feet	\$55,211,750	100						0
Total		\$204,424,530							\$56,137,000
Traffic Signals									
Hardware	931	\$77,273,000		46	33	21			\$16,227,000
Controllers	931	\$6,517,000		77	15	8			\$521,000
Other Equipment	170	\$1,105,000							TBD
Total		\$84,895,000							\$16,748,000
Traffic Safety									
Maj. Intrsect. (E)	1,255			81	17	2			\$4,125,000
Traffic Calming									
Calming Devices	378	\$5,303,000						X	TBD
Street Lights									
Street Lights	49,000	\$33,000,000		94	4	2			\$1,865,000
Street Signs									
Street Name	68,750	\$2,320,175						X	TBD
Parking	43,368	\$1,677,474						X	TBD
Traffic Control	33,131	\$2,570,435						X	TBD
Total		\$6,568,084							
Parking Meters									
Meters	5,376	\$2,144,520	90	10					\$0
Facilities Subtotal		\$3,999,095,688							\$118,022,000
Right-Of-Way (G)	1,927 Miles	\$3,660,863,502							\$0
TOTAL		\$7,659,959,190							\$118,022,000

Source: Portland Transportation System: Status and Conditions Report, Executive Summary, July 1995.

Notes:

- N/A Not applicable. This is not currently the City's financial responsibility.
- TBD To be determined as part of the Infrastructure Management Project or other programs.
- A City investment has not been made on unimproved streets. The cost to improve these streets in 1996, including drainage improvements, was \$110.8 million.
- B The unmet need for corners does not include the \$41.5 million cost estimated in 1996 for installing curb ramps to meet ADA standards.
- C The replacement value for bicycle lanes is included in pavement replacement value. In addition, at the time of the inventory, there were 11 miles of bicycle boulevards and 53 miles of off-street paths.
- D The unmet need for bridges includes \$38.9 million for seismic retrofitting.
- E The replacement value for major intersections is included in the figures for pavement, traffic signals, and street signs.
- F The unmet need for traffic calming has not been calculated. At inventory time, there were 1,059 unfunded projects requested that met the minimum program requirements.
- G The replacement value for right-of-way represents the value of the land in the right-of-way.

Maintenance jurisdiction is somewhat more complex than ROW or route jurisdiction, and depends on particular agreements between the City, ODOT, Multnomah County, and adjacent property owners. The City's Pavement Management System (PMS) maintains information about maintenance responsibility for City routes.

In 1984, the City of Portland and Multnomah County agreed to transfer all designated county roads within Portland to the City. As shown in Table 9.2, annexation of county roads has increased Portland's street inventory, and will continue to increase it as more roads within Portland's urban services boundary are annexed.

Table 9.2
Historical Comparison of Street Inventory (in Lane Miles)

Type	April 1, 1984*		July 1, 1994		Difference	
	Number	Percent	Number	Percent	Number	Percent
Arterials/Collectors	676	26	1,179	32	503	45
Local Streets	1,890	74	2,499	68	609	55
TOTAL	2,566	100	3,678	100	1,112	43

Source: Portland Transportation System: Status and Condition Report, July 1994

*Pre-City/County Agreement and Pre-Annexation

Between 1984 and 1994, the number of lane miles in Portland's street system increased by 43 percent to a total of 3,678, including 1,179 arterial and 2,499 local street lane miles. Of this total of improved streets for which PDOT is responsible, 93 percent are hard-surfaced asphalt or concrete and 7 percent are oil or gravel. In addition, ODOT maintains 12 state highways within the City boundaries.

Pavement Conditions

PDOT put its PMS into full operation in 1983 to identify the current condition of all streets within the City. Based on field evaluations, street segments are assigned a coded rating for each of five distress characteristics. Scores are calculated, a maintenance strategy is selected, and work is performed. Street treatments include street resurfacing, overlay, sealing, patching, base repair, and reconstruction.

Five categories, ranging from very good to very poor, are used to represent the street condition, with lower scores representing a better condition. After the pavement is treated, the coded rating automatically reverts back to zero, or "very good." Table 9.3 shows the percentage of lane miles by condition for fiscal years 1988-89 to 1993-94.

Table 9.3
Pavement Condition (in Percent)

	FY 88-89	FY 89-90	FY 90-91	FY 91-92	FY 92-93	FY 93-94
Total Lane Miles in City	3,426	3,453	3,508	3,540	3,576	3,678
Very Good	13%	16%	18%	21%	25%	27%
Good	48%	49%	44%	41%	38%	35%
Fair	24%	22%	24%	23%	23%	23%
Fair or Better	85%	87%	86%	85%	86%	85%
Poor	12%	10%	11%	12%	11%	12%
Very Poor	3%	3%	3%	3%	3%	3%
Poor or Worse	15%	13%	14%	15%	14%	15%

Source: Portland Transportation System: Status and Condition Report, July 1994

Number of Lanes and Lane Widths

The PMS inventory identifies the number of lanes on any given roadway segment and the curb-to-curb width. The PMS covers only roadways under City jurisdiction; it does not include other roadways that are within the City limits but maintained by other jurisdictions. (Figure 2 in the 1996 Inventory depicts the number of travel lanes on Portland's arterial streets.)

Traffic Signals

The City maintains all signals within Portland, except for a few signals on State highways in recently annexed areas, which the State still maintains. For traffic signals at intersections or interchanges between State highways and City streets, the State reimburses the City 50 percent of maintenance and power costs for signals installed or remodeled after 1971.

As a result of annexation and new signal installations, Portland's signalized intersections have increased from 872 in 1986 to 923 in 1994. (Figure 3 in the 1996 Inventory shows the government entity responsible for maintenance at each traffic signal location. Figure 4 in the 1996 Inventory shows the signal type at each location.)

Each signal has two major components: intersection hardware and signal controller. The condition of the hardware has deteriorated since 1986; the percentage in good condition decreased from 69 to 48 percent between 1986 and 1994, while the percentage in poor condition increased from 11 to 20 percent. Because of decreased agency revenue, the level of expenditures for replacements has not kept up with the need.

The condition of intersection controllers has improved between 1986 and 1994; the percentage in good condition increased from 66 to 75 percent, while the percentage in poor condition dropped from 23 to 12 percent. The current level of investment has raised the condition of the controller inventory to an acceptable level.

Table 9.4 summarizes the condition of traffic signal hardware and signal controllers.

Table 9.4
Traffic Signal Condition

Hardware	1986		1994	
	Number	Percent	Number	Percent
Good	602	69	443	48
Fair	174	20	295	32
Poor	96	11	185	20
<i>Total</i>	<i>872</i>	<i>100</i>	<i>923</i>	<i>100</i>
Controllers	1986		1994	
	Number	Percent	Number	Percent
Good	575	66	692	75
Fair	96	11	120	13
Poor	201	23	111	12
<i>Total</i>	<i>872</i>	<i>100</i>	<i>923</i>	<i>100</i>

Source: Portland Transportation System: Status and Condition Report, July 1994

Traffic Signs

There were approximately 144,300 traffic signs within the City of Portland in 1996. Since that time, a complete inventory, including location, condition, and maintenance history, has been developed. The GIS-based sign inventory is part of the Infrastructure Management System (IMS) project and is maintained by the PDOT Bureau of Maintenance (BOM). (Figure 5 in the 1996 Inventory shows the 1991 arterial sign inventory by sign type.)

Structures

The structures inventoried in 1996 comprise 158 bridges, 202 retaining walls, 15 miles of guardrails, 169 stairways, and the harbor wall along the Willamette River.

Between 1986 and 1996, Portland's bridge inventory grew from 109 to 158 as a result of annexation, ODOT construction projects, and new local construction. To analyze bridge condition, bridge components built at different times or of different materials are counted separately, bringing the total bridge inventory to 158.

Several jurisdictions maintain bridges within the City boundaries. At the time of the 1996 inventory, in addition to the City's 158 bridges, the State of Oregon was responsible for 250 bridges, Burlington Northern Railroad for 3 bridges, and Multnomah County for 5 of the Willamette River bridges. County bridges are composed of various structural approaches and spans, which constitute 21 separate bridges for inventory purposes.

In December 1986, PDOT completed a Structural Capital Evaluation Project that assessed the current condition and use of the City inventory of bridges and retaining walls. A 10-year structural capital improvement program was developed through that project.

Table 9.5 describes the condition categories for structures. Table 9.6 shows the condition of bridges based on that rating system. In 1994, 48 percent of the City's bridges were in very good or good condition, 29 percent were in fair or poor condition, and 23 percent were in very poor condition. The changes in bridge condition from 1986 to 1994 result from the increased number of bridges and the policy change that separates bridges at the same location if they were built at different times or of different materials. (Figure 6 in the 1996 Inventory maps bridge condition by location.)

Table 9.5
Structures Inventory Rating System (Overall)

Condition	Description	Rating Number
Very Good	No defects; minimal maintenance required; normal traffic	Over 75
Good	Minor defects; potential for minor repairs; normal traffic	66-75
Fair	Moderate defects; satisfactory with normal maintenance; potential major repair required; minor effect on traffic	56-65
Poor	Major defects; major repairs required; reduced traffic	46-55
Very Poor	Major defects; major rehabilitation or replacement required; inadequate for traffic	Below 46

Source: Portland Transportation System: Status and Condition Report, July 1994

Table 9.6
Bridge Condition

	1986		1994	
Condition	Number	Percent	Number	Percent
Very Good	44	40	54	34
Good	29	27	22	14
Fair	21	19	25	16
Poor	10	9	21	13
Very Poor	5	5	36	23
Total	109	100	158	100

Source: Portland Transportation System: Status and Condition Report, July 1994

Overall, the condition of the retaining walls in 1994 was good or very good, with only two percent in fair or worse condition. The increase from 167 to 202 retaining walls between 1986 and 1994 results from annexation and new construction. Table 9.7 summarizes the condition of retaining walls.

Table 9.7
Retaining Wall Condition

	1986		1994	
Condition	Number	Percent	Number	Percent
Very Good	147	88	180	89
Good	16	10	20	10
Fair	4	2	2	2
Poor	0	0	0	0
Very Poor	0	0	0	0
Total	167	100	202	101

Source: Portland Transportation System: Status and Condition Report, July 1994

The harbor wall located on the west bank of the Willamette River in downtown Portland is not included in the analysis of structures. Built in 1929, the harbor wall is inspected every other year, and after the departure of the Rose Festival fleet if funds are available. Its condition is rated as very good, based on a minimal rate of settlement and movement since its construction.

Traffic Volume and Level of Service

The City of Portland collects ongoing traffic data. The Bureau of Traffic Management combines this actual count data with the City's EMME2 model to produce an average daily traffic flow map that shows generalized traffic volumes for all of Portland's arterial streets. (See Figure 7 of the 1996 Inventory.)

Level of service (LOS), defined either as the ratio of volume to capacity or as average vehicle delay, has historically been used as the sole measure of a transportation system's performance. The City is broadening this traditional congestion-based measure to incorporate the following factors:

1. District Accessibility: Measures the ability of people in motorized vehicles to gain access to defined geographic areas called access districts. It provides a picture of the level of service for a district as a whole, rather than for specific intersections within it.

2. **Street Use Characteristics:** Looks at the origin and destination of trips using a specific facility and the consistency of those trip types with the street's classification as defined in the TE.
3. **Travel Time:** Measures the time it takes for a motor vehicle to go from point A to point B.
4. **Traffic Flow:** Defined as the movement of traffic along a street. Its performance is based on vehicle speed profiles and the number of stops made.
5. **Multimodal Service Level:** The above four measures apply only to motor vehicle traffic. This measure incorporates non-motorized modes (bicycling and walking). Its emphasis is on the person-carrying capacity of the corridor, rather than the vehicle-carrying capacity, to arrive at an averaged service level for all modes.

Right-of-Way Access

ODOT recommends an inventory of the number and location of accesses. The City currently has no readily accessible data on curb cuts or other access management devices. However, PDOT's IMS mapping group is in the process of documenting the location of curb cuts, medians, etc.

High-Crash Locations

PDOT instituted a system in 1985 to identify high-crash intersections within the City. PDOT annually updates State of Oregon crash information and analyzes the number of crashes per entering vehicle and the costs of crashes by arterial intersection. This system identifies the need for arterial intersection modifications to reduce crashes.

Intersections with more than six crashes over a four-year period are termed 'major intersections.' Major intersections typically carry through-moving traffic on non-local streets. At the time of the 1996 inventory, Portland had 1,327 major intersections.

The inventory of major intersections comprises three groups:

- **Level A:** Intersections with 20 or more crashes occurring within the four years preceding the inventory and a crash cost greater than or equal to \$48,000 per million vehicles entering, or a crash rate greater than or equal to 1.60 crashes per million entering vehicles.
- **Level B:** Intersections with 20 or more crashes within the last four years and a crash cost less than \$48,000 per million entering vehicles, or a crash rate less than 1.60 crashes per million entering vehicles.
- **Level C:** Intersections with between 6 and 19 crashes (inclusive) within the last four years.

Table 9.8 shows that 31 (2 percent) of the major intersections are rated in poor condition and require special attention. There are 230 major intersections (17 percent) in fair

condition. The remaining 81 percent of major intersections are in good condition, with a relatively low accident frequency. (Figure 8 in the 1996 inventory shows accident locations for 1991 through 1994.)

Table 9.8
Major Intersections*

Group	Condition	Number	Percent
A	Poor	31	2
B	Fair	230	17
C	Good	1,066	81
Total		1,327	100

Source: Portland Transportation System: Status and Condition Report, July 1994.

*Major intersections are based on the number and severity of accidents over a four-year period from 1989 to 1992.

Bicycle Network

Classification

The three bikeway classifications in the 1996 Inventory are:

- Bicycle routes, which are designed to establish adequate and convenient routes for bicycling and to provide access to public transit
- Local service streets, which are intended to provide local circulation and access for bicycle and pedestrian movements
- Bicycle paths, which are off-street facilities designed to establish adequate and convenient routes for bicycling, and which may be shared with pedestrians

The 1996 inventory identifies 127.68 miles of bikeways and 24.68 miles of planned bikeways. (Figure 9 in the 1996 Inventory shows the existing and planned bicycle facilities.)

Width

The City standard for bikeways is five feet wide preferred, four feet wide at a minimum in some situations, and up to six feet wide in some situations. All bikeways within the City of Portland met this standard at the time of the 1996 inventory, except for SE 26th Street between Clinton and Gladstone. The sidewalks on the Hawthorne, Steel, Sellwood, St. Johns, and Ross Island bridges did not meet the preferred 10-foot standard for off-street paths.

Jurisdiction

All designated bikeways fall within the City of Portland's jurisdiction, except the Willamette River bridges and State-owned streets within City limits. Multnomah County owns the Hawthorne, Morrison, Burnside, Broadway, and Sellwood Bridges, and the State of Oregon owns the Ross Island and St. Johns Bridges. The Union Pacific Railroad owns the Steel Bridge. State-owned streets are St. Helens Road, SE McLoughlin

Boulevard, Macadam, Martin Luther King Jr. Boulevard, Sandy Boulevard, 82nd Avenue, Lombard Street, SW Barbur Boulevard, SE Powell Boulevard, and Grand Avenue.

Condition/Surface

At the time of the 1996 inventory, all bikeways in the City of Portland had an asphalt surface, except for the Willamette River bridges and Waterfront Park, which have a concrete surface. Most are in fair to good condition.

Pedestrian Network

Jurisdiction

The City of Portland has regulatory responsibility of all designated pedestrianways, except for State-owned streets within City limits and the Willamette River bridges. (See Figure 1 of the 1996 Inventory.) Adjacent property owners are responsible for maintaining sidewalks on pedestrianways, as well as sidewalks on other streets. The two exceptions are street corners and public stairways, which the City of Portland maintains.

Sidewalk and Curb Inventory

PDOT developed a complete inventory of sidewalks and curb ramps on all Portland streets in fall 1994. The inventory identifies a total of 31,027 street segments. (Appendix B of the 1996 Inventory describes the inventory methodology.)

Sidewalk Inventory Results

The 1996 Inventory analyzed sidewalk inventory data for arterial streets and local streets in each of the eight Transportation Districts defined in the Transportation Element of the Comprehensive Plan (Chapter 2 of the TSP). Sidewalk data were analyzed in three categories:

- Street segments with 100 percent sidewalk on both sides
- Street segments with 100 percent sidewalk on one side, but not the other
- Street segments with less than 100 percent sidewalk on both sides

This methodology does not take into account the discontinuity of the sidewalk between blocks. In the category of street segments with 100 percent sidewalk on one side, for example, a sidewalk that jumps from one side of the street to the other is counted no differently than a sidewalk that continues on the same side.

Tables 9.9 through 9.11 summarize the inventory results, organized by Transportation District. The data are grouped by total sidewalk miles, total miles on arterial streets, and total miles on local service streets. (Figure 10 in the 1996 Inventory depicts these results in bar chart form. Figure 11 in the 1996 Inventory shows the geographic distribution of the blocks with full sidewalks on at least one side.)

As might be expected, the inventory results show that older, inner neighborhoods (such as Southeast and Northeast) are much more likely to have completed sidewalk systems on at least one side of the street than the more recently annexed areas of the City (such as Southwest or outer east neighborhoods).

Table 9.9
Sidewalk Inventory by District for All Streets

District	Total Miles	Total Miles w/ Sidewalk on Both Sides	% of Total Miles w/ Sidewalk on Both Sides	Total Miles w/ Sidewalk on at Least One Side	% of Total Miles w/ Sidewalk on One Side	Total Miles w/ Incomplete or No Sidewalks	% of Total Miles with Incomplete or No Sidewalk
North	255	134	53	28	11	93	36
Northeast	426	295	69	20	5	110	26
Far Northeast	153	46	30	15	10	92	60
Far Southeast	200	42	21	20	10	138	69
Southeast	524	385	74	35	7	104	20
Southwest	322	36	11	23	7	263	82
Northwest	116	39	34	15	13	62	54
Central City	107	76	71	11	10	21	20
<i>Whole City</i>	<i>2,102</i>	<i>1,054</i>	<i>50%</i>	<i>166</i>	<i>8%</i>	<i>883</i>	<i>42%</i>

Source: Pedestrian Program Inventory, March 1996

Table 9.10
Sidewalk Inventory by District for Arterial Streets

District	Total Miles on Arterial Streets	Arterial Miles w/ Sidewalk on Both Sides	% of Arterial Miles w/ Sidewalk on Both Sides	Arterial Miles w/ Sidewalk on at Least One Side	% of Arterial Miles w/ Sidewalk on One Side	Arterial Miles w/ Incomplete or No Sidewalks	% of Arterial Miles w/ Incomplete or No Sidewalk
North	47	21	46	8	18	17	37
Northeast	87	50	57	6	6	32	37
Far Northeast	53	15	29	10	20	27	52
Far Southeast	46	12	26	6	14	28	61
Southeast	90	73	81	5	6	12	13
Southwest	78	8	11	9	12	60	78
Northwest	31	12	39	7	23	12	38
Central City	34	18	53	10	29	6	19
<i>Whole City</i>	<i>465</i>	<i>210</i>	<i>45%</i>	<i>62</i>	<i>13%</i>	<i>194</i>	<i>42%</i>

Source: Pedestrian Program Inventory, March 1996

Table 9.11
Sidewalk Inventory by District for Local Streets

District	Total Miles on Local Service Streets	Local Miles w/ Sidewalk on Both Sides	% of Local Miles w/ Sidewalk on Both Sides	Local Miles w/ Sidewalk on at Least One Side	% of Local Miles w/ Sidewalk on One Side	Local Miles w/ Incomplete or No Sidewalks	% of Local Miles w/ Incomplete or No Sidewalk
North	208	113	54	19	9	76	36
Northeast	338	245	73	15	4	78	23
Far Northeast	101	31	31	5	5	65	64
Far Southeast	154	30	20	14	9	110	72
Southeast	434	312	72	29	7	92	21
Southwest	244	28	11	14	6	203	83
Northwest	85	27	32	8	9	50	59
Central City	73	58	79	1	1	15	20
Citywide	1,637	844	52%	104	6%	689	42%

Source: Pedestrian Program Inventory, March 1996

Curb Ramp Inventory Results

The 1996 Inventory analyzed curb ramp data for regular corners and for 'T' intersections. Corners were classified by the existence or lack of curb ramps. For corners with a single ramp, the data do not identify whether it is a diagonal ramp serving both travel paths or a straight ramp serving only one path. A T intersection generally has two legal crosswalks that extend between corners on one side of the intersection to a straight curb on the other side. Ramps on the straight curb were designated as a single entry.

Table 9.12 shows the 1996 Inventory distribution of corners and T intersections across the eight districts. The Portland BOM has an ongoing program to install curb ramps throughout the City, with priority given to business districts and transit streets. The number of curb ramps installed each year varies, and can be as many as 400 to 600. (Figure 12 in the 1996 Inventory illustrates the distribution of corners and T intersections across the City, and Figure 13 shows all the existing curb ramps in the City at the time of the inventory.)

Table 9.12
Curb Ramp Inventory by Transportation District

District	Total Corners	Corners with at Least One Ramp	% of Corners with at Least One Ramp
North	5,812	1,900	33
Northeast	11,430	2,967	26
Far Northeast	3,324	569	17
Far Southeast	4,478	722	16
South east	16,186	5,010	31
Southwest	7,384	775	10
Northwest	2,248	920	41
Central City	3,712	2,086	56
<i>Citywide</i>	<i>54,574</i>	<i>14,949</i>	<i>27%</i>

Source: Pedestrian Program Inventory, March 1996

Sidewalk Condition

The 1996 Inventory did not collect sidewalk condition data. However, the general condition of Portland's existing sidewalk infrastructure is very good, owing to an excellent ongoing sidewalk inspection program. Inspectors regularly check the condition of sidewalks throughout Portland. In the Central Business District, sidewalks are inspected every two years. Neighborhood sidewalks are inspected at least every 10 years. Trips, gaps, breaks, and other possible hazards to pedestrians are noted, and the adjacent property owners are notified to repair the hazard. In addition to their regular inspection routine, sidewalk investigators also investigate citizen complaints.

Public Transportation Services

Transit Network

Tri-Met is the transit provider for Multnomah, Clackamas, and Washington Counties. As of the 1996 inventory, Tri-Met operated 90 bus routes (six of which provide crosstown service) and Eastside MAX, a light rail line extending from downtown Portland to downtown Gresham. Since the inventory, Westside MAX and Airport MAX have been built, and the Interstate MAX line is currently under construction.

Routes

As of the 1996 Inventory, Tri-Met operated the following 90 bus routes and Eastside light rail: 5 trunk routes, including Eastside MAX; 22 city radial lines; 6 crosstown lines; 38 radial/feeder lines; and 20 peak radial/feeder lines. (This information is viewable on the Tri-Met route map.)

Transit Centers, Stops, and Park-and-Rides

There were five transit centers within the City of Portland at the time of the 1996 Inventory.

In general, bus stops are located at two-block intervals along each route. (See Tri-Met's May 5, 1995, Master Stops List.)

At the time of the inventory, Tri-Met operated 58 park-and-ride lots in the tri-county region, 18 of which are located within Portland's City limits. These City lots provide approximately 2,380 parking spaces. (See Tri-Met Park and Ride map.) The Transportation Element of the Comprehensive Plan (Policy 6.9, Transit-Oriented Development, Objective D) states that regional transit access should be provided with the highest priority given to the development of effective feeder bus or van pool service, and the lowest priority to park-and-ride lots. Consistent with this policy, the City resists the development of additional park-and-ride lots within City limits.

Fleet

At the time of the 1996 Inventory, Tri-Met had a total fleet of 644 vehicles, including 25 mini-buses. (the 1996 Inventory, Appendix C: District's Fleet Status as dated September 3, 1995, provides additional information about the fleet vehicles.)

Frequency, Ridership, and Loading

Route frequency is based on the average load factor and time of day. Figure 14 in the 1996 Inventory shows inventory-year Tri-Met routes with 20-minute or more frequent peak-hour service. These routes have an average load factor of 0.47. (The following appendices of the 1996 Inventory provide additional information: Appendix D: Transit Frequency Table; Appendix E: Average Weekday Boarding Rides [Fiscal Year 1987 to 1995] and Average Daily Boarding Rides; Appendix F: Average Load Factor for All Routes [Weekdays] and Average Load Factors – September 3 to December 2, 1995 [Weekdays].)

Special Transit Services

The LIFT Program provides service to registered customers certified as unable to use Tri-Met's regular service because of a physical or mental disability. In 1996, the program provided more than 1,800 door-to-door rides per day in the tri-county area. The LIFT service area is three-quarters of a mile from a regular Tri-Met route; both the origin and destination of a trip must be within this boundary. The service operates a fleet of over 100 small, lift-equipped buses from 4:30 a.m. to 2:30 a.m., seven days a week. (See Tri-Met's LIFT Rider's Guide, 1996 ADA Paratransit Plan Update.)

Tri-Met's Special Events Transit Service (SETS) augments regular Tri-Met service to accommodate special events. In most cases, the event sponsor requests the service. Examples of the special event destinations are Portland Meadows, the Coliseum and the Oregon Arena, and the Interstate Pavilion. (See Appendix G: Tri-Met Special Events Transit Service (SETS) '95, of the 1996 Inventory.)

Transit Underserved Population

The tables in Appendix H: Transit-Underserved Population, of the 1996 Inventory identify Tri-Met lines that do not operate at levels specified by Tri-Met's service standards. The tables are organized by route type, and policy headways are indicated.

Seventeen major locations are not being served. All would qualify for radial/feeder service. These areas include one or more of Metro's regional traffic zones in which less than 25 percent of the population is served by transit (i.e., is not within one-quarter mile of existing transit service).

Intercity Bus and Rail

Policy 6.19 of the Transportation Element of the Comprehensive Plan states:

Union Station is the hub of the multimodal Transportation Center located in the North Downtown area and should serve as the primary passenger rail and intercity bus terminal in the Portland metropolitan area, providing direct connections between passenger rail, light rail, vintage trolleys, intracity buses, taxis and airport bus shuttles.

Portland's Greyhound terminal is located next to Union Station and provides bus service to cities and towns throughout the United States. (See Greyhound System Timetable [effective 1/10/96].)

Five Amtrak trains serve Portland along the Pacific Northwest Corridor: four provide daily service between Vancouver, British Columbia, and Eugene, Oregon, and one provides Sunday, Tuesday, and Thursday service between Seattle and Eugene. Two of those trains also provide service from Portland to Chicago.

Air

Portland International Airport (PDX), owned and operated by the Port of Portland, is the primary commercial air transportation facility in the region. The airport is located on approximately 3,200 acres of land about 5 miles northeast of downtown Portland and primarily serves the surrounding Washington, Yamhill, Clackamas, Multnomah, and Clark Counties. PDX also serves the counties beyond this primary area, depending on the range and character of airline service provided in nearby cities such as Boise, Seattle, and Spokane.

The Federal Aviation Administration (FAA) classifies Portland as a medium air traffic hub. The FAA defines a medium hub as a metropolitan region enplaning 0.5 percent or more of the total passengers enplaned on certified route air carriers in scheduled service in the 50 states and the District of Columbia; Portland accounted for 0.74 percent in 1991.

As of August 1992, PDX was served by 10 scheduled passenger airlines, including 6 major airlines. As of that date, 5 charter airlines and 14 all-cargo airlines also provided service at the airport. Table 9.13 lists the airlines serving the airport. In addition, 66 general aviation aircraft are based at the airport.

Table 9.13
Airlines Serving Portland International Airport

Major Airlines	National Airlines	Regional & Commuter Airlines	All-Cargo Airlines	Charter Airlines
American Continental Delta * Northwest Trans World United	Alaska America West Southwest	Horizon United Express Reno Air Air BC	Air Pac Airborne Express Ameriflight Burlington Air Express DHL Emery Worldwide Empire Airways Federal Express Premier Jets Regional Express Salair Sports Air Travel United Parcel Service Viking	Morris Air Great America Fiesta West Casino Express Sun Country

Source: Portland International Airport: Master Plan Update, Summary Report, April 1993

* Provides domestic and international airline service.

The PDX airfield consists of three active runways and supporting taxiways. A recent renovation and expansion of the passenger terminal complex has resulted in a terminal of approximately 940,000 square feet, with 37 air carrier aircraft gates and 6 commuter aircraft gates. This terminal complex has a capacity of more than 10 million passengers per year.

Mainline Facilities

There are three chief categories of mainline facilities in the region: navigable waterways, railroad main lines, and main roadway routes. Table 9.14 describes these facilities. In addition, there are road connector and rail connector facilities (i.e., branch lines and industrial leads). (Figure 16 in the 1996 Inventory shows rail lines by company.)

Table 9.14
Mainline Facilities in the Region

Mainline Categories	Facilities
Navigable Waterways	Willamette and Columbia Rivers
Railroad Main Lines	Union Pacific, Southern Pacific, and Burlington Northern Main Routes
Main Roadway Routes	I-84, I-5, I-205, I-405, US 26, US 30, Hwy 99E, Hwy 99W, Hwy 212/224

Source: Port of Portland

Freight

As of the 1996 Inventory, there are 273 freight facilities within the City of Portland. Table 9.15 summarizes freight facilities in the Portland metropolitan region by freight type. (Appendix I of the 1996 Inventory has a complete list of freight facilities. Figure 15 in the 1996 Inventory shows the location of freight facilities by category.)

**Table 9.15
Freight Facilities in the Region**

Facility	Number of Facilities
Marine Facility	
General Cargo Terminal	8
Bulk Terminal	22
Forest Products Terminal	2
Grain Elevator Terminal	9
Auto Terminal	3
Container Terminal	1
Rail Facility	
Rail Passenger Station	1
Intermodal Yard	5
Switching Yard	3
Airport	
Air Passenger Terminal	1
Air Cargo Facility	14
Reload Facility	
General Rail/Truck Reload	39
Petroleum Rail/Truck Reload	1
Truck/Truck Reload	102
Grain rail/Truck Reload	0
Truck Terminal	30
Distribution Facility	35
Carrier (no on site freight handling capabilities)	31
Freight Forwarder & Customs Broker (no on site freight handling capabilities)	7

Source: RTP Freight Element: Freight Facilities, Port of Portland

Pipelines

Portland has 20 pipeline distribution centers located along the Willamette River: 17 in Northwest Portland and 3 in North Portland. (Figure 17 in the 1996 Inventory shows the locations of these centers.)

Environmental Constraints

Natural

The environmental zoning shown on the Portland Comprehensive Plan maps identifies many of the natural features to consider when making transportation planning decisions.

As defined in the Portland zoning code, environmental zones are intended to protect resources and functional values the City identifies as providing benefits to the public. The environmental protection zone provides the highest level of protection to the most important resources and functional values. The environmental conservation zone conserves important resources and functional values in areas that can withstand environmentally sensitive urban development. In addition to environmentally zoned land, parks, golf courses, and open spaces are also constrained by their zoning. (Figures 18 and 19 in the 1996 Inventory identify these features.)

Cultural

Transportation planning decisions need to consider cultural as well as natural features. The City's Historic Resource Inventory (1984) lists approximately 5,000 historic resources that are protected from demolition. This inventory includes districts, buildings, trees, and landmarks of historic value. These inventories are being updated as part of the community planning process.