Report for

CITY OF FAIRVIEW

Transportation System Plan

Prepared by

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Chapter 1
Summary

BACKGROUND

This chapter summarizes the Transportation System Plan (TSP) in the form of a PowerPoint presentation. The following text (before the presentation) provides a brief summary of each slide contained in the presentation. More detail is available on each of these topics in Chapters 2 - 10 of the plan.

SUMMARY

TSP Process

This slide presents an overview of the process that was undertaken to develop the TSP. There are basically two parallel tracks, one for the technical analysis and one for the public process.

TSP Components

There are basically six components to the TSP—five of them are modal elements and the sixth is land use. Separate chapters were written for each of the components in the TSP.

Goals & Policies

Seven transportation related goals were developed along with a number of policies associated with each of the goals. The goals are summarized on the slide. In addition to the goals & policies a number of implementing actions were also identified. These are summarized in both Chapter 2: Goals & Policies and in Chapter 10: Funding/Implementation.

Relationship of TSP to Regional Planning

The intent of this slide is to show how the TSP fits into other planning activities that are taking place in the region. As the TSP was developed, coordination with adjacent jurisdictions as well as ODOT, Metro and Tri-Met occurred through the East Multnomah County Transportation Committee (EMCTC).

Pedestrians

The consultant and the CAC developed and ranked strategies for pedestrian facilities in Fairview. These strategies are listed, in order of rank, on the slide. These strategies provide a means for prioritizing pedestrian projects in Fairview. Based on needs, a Pedestrian Master Plan was developed. Using the strategies developed, a Pedestrian Action Plan was developed, providing one level of prioritization for

pedestrian projects in Fairview. The Pedestrian Master Plan is shown on the slide.

Bicycles

Similar to the pedestrian mode, the consultant and CAC developed and ranked strategies for bicycle facilities in Fairview. These strategies are listed, in order of rank, on the slide. These strategies provide a means for prioritizing bicycle projects in Fairview. Based on needs, a Bicycle Master Plan was developed. Using the strategies developed, a Bicycle Action Plan was developed, providing one level of prioritization for bicycle projects in Fairview. The Bicycle Master Plan is shown on the slide.

Transit

Similar to the pedestrian and bicycle modes, the consultant and CAC developed and ranked strategies for transit facilities in Fairview. These strategies are listed, in order of rank, on the slide. These strategies provide a means for prioritizing bicycle projects in Fairview. Based on needs, a Transit Master Plan was developed. Transit services are planned for and provided by Tri-Met.

Motor Vehicles

This slide summarizes the next seven slides. There are several components to the motor vehicles portion of the TSP.

Functional Classification

This slide lists the proposed functional classification categories for Fairview. Several of them are standard and are already used in Fairview (i.e. Arterial, Collector, Local). An additional category has been added, the Neighborhood category. More detail on this new classification can be found in Chapter 8. This slide also identifies the routes where a new classification is proposed.

Land Use

Land use changes were considered in conjunction with the impact on the transportation system. Proposed changes were recommended and are shown in the graphic.

Connectivity/Local Street Plan

This slide summarizes the need for local streets and connectivity in Fairview. A plan was developed, showing generally where local street connections might go (graphic). However, it is important that Metro's Functional Plan requirements are met, regardless of whether an arrow shows on this map, or not.

Circulation/Capacity Needs

This slide identifies that Metro's 2020 travel demand forecast model was used to develop future traffic volumes. A number of specific issues were identified in Fairview, as listed.

Intersection & Traffic Signal Master Plans

Master Plans were developed for intersection level improvements (i.e. turn lanes, etc.) as well as where traffic signals are currently located and where they may ultimately be located.

Street Maintenance

Street maintenance is a key component of Fairview's public works budget. This slide summarizes the need to maintain its infrastructure investment.

Other Motor Vehicle Issues

There are a several motor vehicle issues which were addressed in the Plan. Neighborhood Traffic Management has become a popular topic recently, parking, access management, transportation demand management (TDM) and transportation system management (TSM)/intelligent transportation systems (ITS). More detail on each of these topics can be found in Chapter 8: Motor Vehicles.

Trucks

Key truck routes were identified in Fairview. These are shown on the Truck Route Master Plan graphic.

Funding/Implementation

This slide summarizes the costs associated with the proposed modal plans. Chapter 10: Funding/Implementation summarizes funding mechanisms that are available and funding Fairview currently receives. Much of the plan will have to be built by fronting development and/or sources of funding which are not currently used in Fairview.

Chapter 2
Goals and Policies

BACKGROUND

These goals and policies have been developed to guide the City's twenty-year vision of transportation system needs. They are intended to replace the current transportation related goals and policies in the Fairview Comprehensive Plan (these can be found in the appendix of this report). State Transportation Planning Rule requirements adopted since the time that the current City goals were developed call for a more comprehensive and balanced approach to transportation policy, addressing walking, bicycling, transit, rail, truck and other modes as well as automobile travel.

These goals and policies are a result of widespread technical work by staff, the Fairview TSP Citizen's Advisory Committee and the consultant. Using input from the CAC regarding their likes/dislikes about transportation in Fairview, goals and policies were developed.

The City of Fairview Draft TSP Goals and Policies consist of seven goals with related policies organized under each goal. The goals are simple, brief guiding statements which describe a desired result. The policies focus on how goals will be met by describing the types of actions that will contribute to achieving the goal. Figure 2-1 provides an outline of the relationship between goals, policies, actions and implementation. The existing City of Fairview goals in the Transportation Element of the Comprehensive Plan have been incorporated into these Goals and Policies, reflecting other regional policy from the state, region and adjacent jurisdictions.

Below many of the policies, the italic text represents a detailed description about the intent of the policy. While the italics provide the intent of the policy, they are not implementable as a land use action without inclusion in land use regulations.[1] The Draft TSP Goals and Policies are linked to mode maps provided in the City of Fairview TSP. The TSP includes master plan maps for motor vehicles, pedestrians, bicycles, transit and other modes.

In addition to the transportation related goals and policies, the goals & policies related to other elements of the Fairview Comprehensive Plan were reviewed in terms of both transportation and land use. Several modifications to these policies in other elements are also recommended.

[1] ORS 197.175(2); ORS 197.195(1).

From Vision to Action
Fairview Transportation System Plan

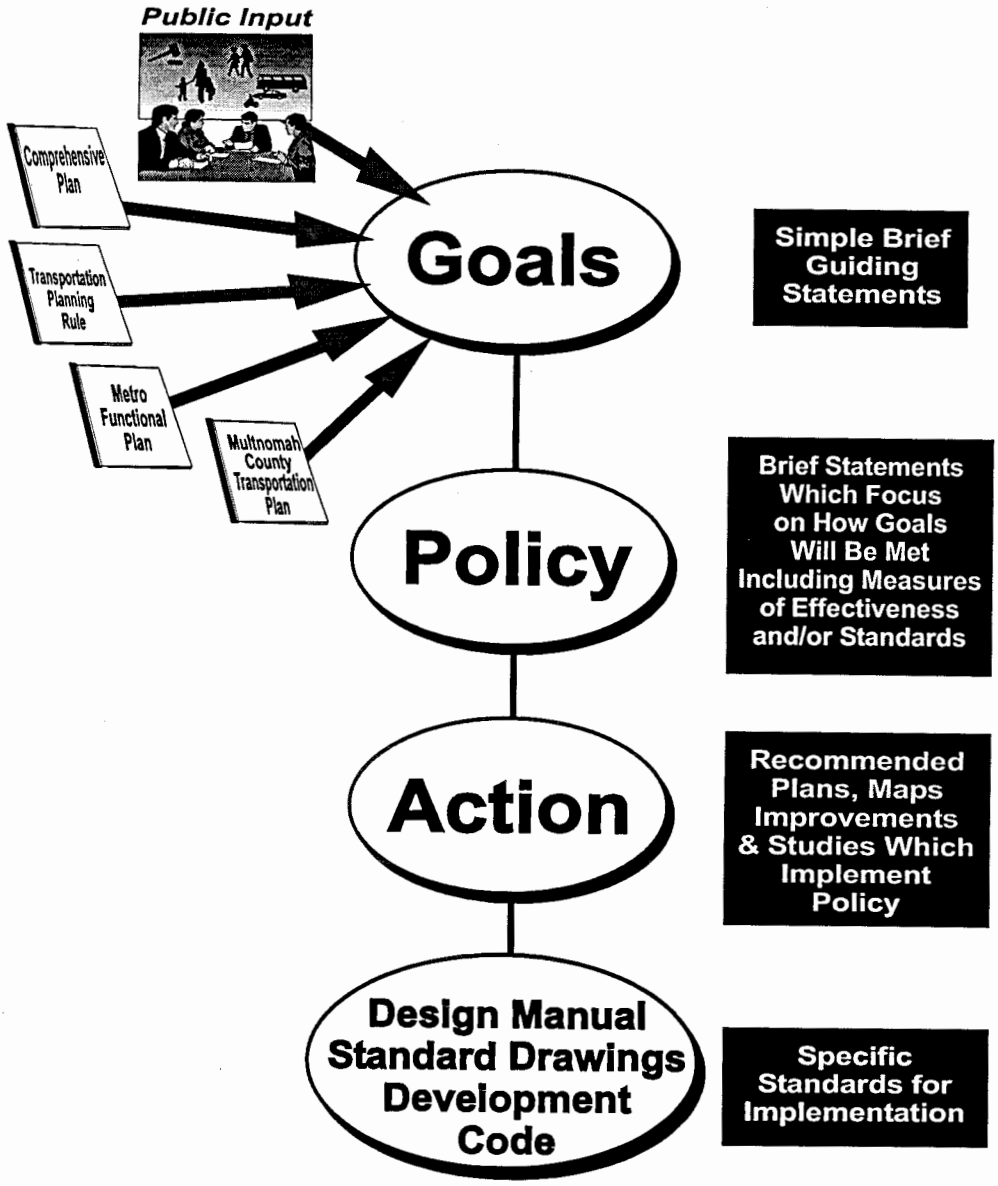

Figure 2-1
GOALS AND POLICIES RELATIONSHIP

GOALS AND POLICIES

Goal 1—Livability

Plan, design and construct transportation facilities in a manner which enhances the livability of Fairview.

Policy 1 Maintain the livability of Fairview through proper location and design of transportation facilities.

Design streets and highways to respect the characteristics of the surrounding land uses, natural features, and other community amenities.

Policy 2 Encourage pedestrian accessibility by providing safe, secure and desirable pedestrian routes.

The City will develop and maintain a pedestrian plan in Fairview, outlining pedestrian routes. Sidewalk standards will be developed to define various widths, as necessary, for City street types.

Policy 3 Protect neighborhoods from excessive through traffic and travel speeds while providing reasonable access to and from residential areas. Build local and neighborhood streets to minimize speeding.

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

Policy 4 Relate the design of street capacity and improvements to their intended use.

A functional roadway classification system shall be developed for Fairview which meets the City's needs and is coordinated with County, Regional and State roadway classification systems. Appropriate design standards for roadways in the City should be coordinated and developed by the responsible jurisdiction.

Goal 2—Balanced Transportation System

Provide a balanced transportation system, incorporating all modes of transportation (Including motor vehicle, bicycle, pedestrian, transit and other modes).

Policy 1 Develop and implement public street standards that recognize the multi-purpose nature of the street right-of-way for utility, pedestrian, bicycle, transit, truck and auto use.

Develop and maintain a series of system maps and design standards for motor vehicles, bicycle, pedestrian, transit and truck facilities in Fairview.

Policy 2 The City shall coordinate with Tri-Met to improve transit service to Fairview. Fixed route transit will use arterial and collector streets in Fairview.

The Regional Transportation Plan (RTP) and Tri-Met service plan will be the guiding documents for development of Fairview's transit plan. The City should provide input to Tri-Met regarding their specific needs as they annually review their system, through EMCTC.

Policy 3 Bicycle lanes must be constructed on all arterials and collectors within Fairview (with construction or reconstruction projects). All schools, parks, public facilities and retail areas shall have direct access to a bikeway.

The City will develop a bicycle plan which connects key activity centers (such as schools, parks, public facilities and retail areas) with adjacent access. Standards for bicycle facilities within Fairview will be developed and maintained. Where activity centers are on local streets, connections to bicycle lanes shall be designated.

Policy 4 Sidewalks must be constructed on all streets within Fairview (with construction or reconstruction projects), except where a specific alternative plan has been developed (i.e. Fairview Village Plan and Fairview Renaissance Plan). All schools, parks, public facilities and retail areas shall have direct access to a sidewalk.

The City will develop a pedestrian plan which connects key activity centers with adjacent access. Standards for pedestrian facilities within Fairview will be developed and maintained.

Policy 5 Bicycle and pedestrian plans shall be developed which link to recreational trails.

The bicycle and pedestrian plans will need to indicate linkages between recreational and basic pedestrian networks. Design standards for recreational elements will need to be developed and maintained.

Policy 6 Local streets shall be designed to encourage a reduction in trip length by providing connectivity and limiting out-of-direction travel. Provide connectivity to activity centers and destinations with a priority for bicycle and pedestrian connections.

The purpose of this policy is to provide accessibility within Fairview, with a focus on pedestrian connectivity. Pedestrian connectivity can be provided via pedestrian/bike paths between cul-de-sacs and/or greenways where auto connectivity does not exist or is not feasible. Wherever necessary, new streets built to provide connectivity shall incorporate traffic management design elements, particularly those which inhibit speeding. As a planning guideline, require local streets to have connections every 530 feet for local and neighborhood streets.

Policy 7 Fairview will participate in vehicle trip reduction strategies developed regionally.

DEQ and Metro are developing regional policies regarding trip reduction. Some of these policies are aimed at provision of parking and others are aimed at ridesharing (Employee Commute Options—ECO rules).

Goal 3—Safety

Strive to achieve a safe transportation system by developing street standards, access management policies and speed controls when constructing streets and by making street maintenance a priority.

Policy 1 Design of streets should relate to their intended use.

A functional classification system shall be developed for Fairview which meets the City's needs and respects needs of other agencies (Multnomah County, Metro, ODOT). Appropriate design standards for these roadways will be developed by the appropriate jurisdiction.

Policy 2 Street maintenance shall be a priority to improve safety in Fairview.

The City shall coordinate with Multnomah County for the maintenance of those facilities within the City maintained by the County

Policy 3 Safe and secure pedestrian and bikeways shall be designed between parks and other activity centers in Fairview.

Policy 4 Safe and secure routes to schools shall be designated for each school and any new residential project shall identify the safe path to school for children.

Working with the school district, citizens, and developers, the City will need to undertake a process of defining school routes. This will need to be added to land use regulations for residential uses (excluding senior housing types).

Policy 5 Access management standards for arterial and collector streets shall follow the Multnomah County design manual to improve safety in Fairview.

Multnomah County's draft design manual provides access control standards. These standards shall be applied to all new road construction and new development. For roadway reconstruction, existing driveways shall be compared with the standards and a reasonable attempt shall be made to comply (consolidating driveways accessing or a lower classification street are examples).

Policy 6 Consider establishing a City monitoring system that regularly evaluates, prioritizes and mitigates high accident locations within the City.

Review traffic accident information regularly to systematically identify, prioritize and remedy safety problems. Working with the County, develop a list of high collision sites and projects necessary to eliminate such problems. Require development applications to identify mitigation for high collision locations if they generate 10% increase to existing traffic on an approach to a high collision intersection. Railroad overpasses should be constructed/reconstructed to allow streets passing through to be built to current design standards.

Policy 7 Improve traffic safety through a comprehensive program of engineering, education and enforcement.

Policy 8 New roadways shall meet IES Lighting Standards. Existing roadways shall be systematically retrofitted with roadway lighting.

Priority locations for roadway lighting include paths to schools, parks, and town center. The City shall coordinate with the County lighting district.

Goal 4—Performance Measures

Transportation performance measures shall be set and maintained by the City.

Policy 1 A minimum intersection level of service standard shall be set for the City of Fairview. All public facilities shall be designed to meet this standard.

Level of service D, Highway Capacity Manual, Chapters 9, 10 and 11 (or subsequent updated references) is recommended to balance provision of roadway capacity with level of service and funding. Monitor Metro and Multnomah County's current work to develop a level of service standard.

Policy 2 Parking ratios shall be set to provide adequate parking, while providing an incentive to limit the use of the single occupant vehicle.

Parking standards shall be listed in the development code for the City of Fairview. DEQ encourages lower parking ratios to encourage use of alternative modes (walking, biking, transit, car pooling, etc.).

Policy 3 Work with Multnomah County, Metro and ODOT to develop, operate and maintain intelligent transportation systems, including coordination of traffic signals.

Policy 4 Provide a cost-effective transportation system where the public, land use development and users pay their respective share of the system's costs proportional to their respective demands placed upon the multi-modal system.

Goal 5—Accessibility

Develop transportation facilities which are accessible to all members of the community and minimize out of direction travel.

Policy 1 Design and construct transportation facilities to meet the requirements of the Americans with Disabilities Act.

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

Work toward the eventual connection of streets identified on the plan as funds are available and opportunities arise. As a planning guideline, require local streets to have connections every 530 feet for local and neighborhood streets.

Policy 3 Work with Multnomah County to develop an efficient arterial grid system that provides access within the City, and serves through City traffic.

As outlined in Title 6 of the Metro Urban Growth Management Functional Plan, access connection standards will be developed. The arterial street system should facilitate street and pedestrian connectivity.

Goal 6—Goods Movement

Provide for efficient movement of goods and services.

Policy 1 Design arterial routes, highway access and adjacent land uses in ways that facilitate the efficient movement of goods and services.

Policy 2 Require safe routing of hazardous materials consistent with federal and state guidelines.

Work with federal agencies, the Public Utility Commission, the Oregon Department of Energy and ODOT to assure consistent laws and regulations for the transport of hazardous materials.

Goal 7—Coordination

Implement the Transportation System Plan (TSP) in a coordinated manner.

Policy 1 Coordinate and cooperate with adjacent agencies (including Multnomah County, Wood Village, Troutdale, Gresham, Metro and ODOT) when necessary to develop transportation projects which benefit the region as a whole in addition to the City of Fairview.

Maintain plan and policy conformance to the Regional Transportation Plan and Transportation Planning Rule (OAR 660-012). Seek compatibility with all adjacent county and city jurisdiction plans.

RECOMMENDED CHANGES TO OTHER COMPREHENSIVE PLAN POLICIES

The following changes to existing policies in the Fairview Comprehensive Plan are recommended:

Urbanization Element

Policy 5. Retail and service commercial businesses serving clientele from the planning area and nearby locations will be encouraged to develop in clusterings along Fairview Avenue at Halsey Street and Sandy Boulevard. Existing commercial establishments not located in areas designated by the Plan for commercial use will be allowed to continue but will not be permitted to expand beyond their present sites.

OTHER PLANS

The relationship of the TSP to other regional planning documents can be puzzle of acronyms, activities and plans. Figure 2-2 summarizes the transportation planning puzzle, identifying where the Fairview TSP fits within the on-going regional context of planning. Many of the most common planning initiatives and terms are reduced to acronyms, which are summarized below:

TPR – Transportation Planning Rule, Statewide Planning Goal 12 developed by Department of Land Conservation and Development (DLCD) to guide transportation planning in Oregon.

OTP – Oregon Transportation Plan, a federally mandated plan developed by Oregon Department of Transportation (ODOT) to guide statewide transportation development.

OHP – 1998 Draft Oregon Highway Plan, defines policies and investment strategies for Oregon's state highway system for the next 20 years. It further refines the foals and policies of the Oregon Transportation Plan and is part of Oregon's Statewide Transportation Plan.

RTP – Regional Transportation Plan, developed by metropolitan planning organizations (MPO) to guide regional transportation investment, required to secure federal funding. In Portland this task is performed by Metro (Metropolitan Service District). Two levels of improvements have been identified: 1) Preferred – all needed improvements and 2) Strategic—those improvements that can likely be funded within the next 20 years.

TSP – Transportation System Plan, a requirement of the TPR for cities and counties in Oregon to guide local transportation decisions and investments. (ORS 660-012-0015(3)).

Corridor Plan – ODOT transportation plans which focus on state transportation corridors to specifically outline needs, modes, strategies and effective investment.

Access Management – Methods to address improved safety and performance of state highways through control of access commensurate with facility needs.

ITS – Intelligent Transportation Systems. Use of advancing technology to improve movement of people and goods safely.

TDM – Transportation Demand Management. An element of the TSP that includes a series of actions to reduce transportation demand during peak periods.

ECO – Employee Commute Options. An urban area TDM program required by Department of Environmental Quality (DEQ) of employers of 50 or more persons to reduce vehicle trips.

Functional Plan – Metro's recently adopted plan (November 21, 1996) which outlines mandatory criteria for evaluating transportation systems and land use, translating state and regional policy to local requirements necessary to implement the 2040 planning effort. Title 2 and Title 6 require that the City adopt changes to its land use regulations to address parking ratios, connectivity and level of service.

2040 – A long range effort directed by Metro to explore the choices for growth in the next 50 years and defining performance standards for local government to implement the regional growth concept. It defines several development types which will create higher density population and employment centers in the region. They are as follows:

- **Regional Center:** Compact centers of employment and housing served by high quality transit. They will become the focus of transit and highway improvements.
- **Town Center:** Provides for localized services within a 2-3 mile radius, with a community identity. There is a Wood Village/Fairview town center identified, centered on the intersection of 223rd Avenue/Halsey Street.
- **Station Areas:** Development centered on LRT or high capacity transit, accessible by all modes.
- **Main Street:** Similar to town centers, an area with a traditional commercial identity, but smaller in scale, along a street with good transit services. Fairview has a main street designated on Halsey between about 213th and 223rd.
- **Corridors:** Development along a primary and frequent transit corridor that encourages mixed use and pedestrian access to transit.

Comprehensive Plan - Fairview Village – This plan is a proposal for Fairview Village, a mixed-use development. The focus of the plan is to create a community that allows its residents to function comfortably without the use of a car.

Renaissance Plan – The purpose of this plan is to revive and enhance the City of Fairview's core area during the City's expected growth period.

Fairview Parks and Recreation/Open Space Master Plan – This master plan serves as a guide in the conservation and development of the City of Fairview's open space areas.

Fairview Area Comprehensive Plan – This plan is a strategy to guide the City in the conservation, protection and development of the City of Fairview.

Multnomah County Comprehensive Framework Plan Volume 2: Policies – This document outlines Multnomah County's Functional Classification System.

City of Fairview Transportation Puzzle

CITY OF FAIRVIEW
Transportation System Plan

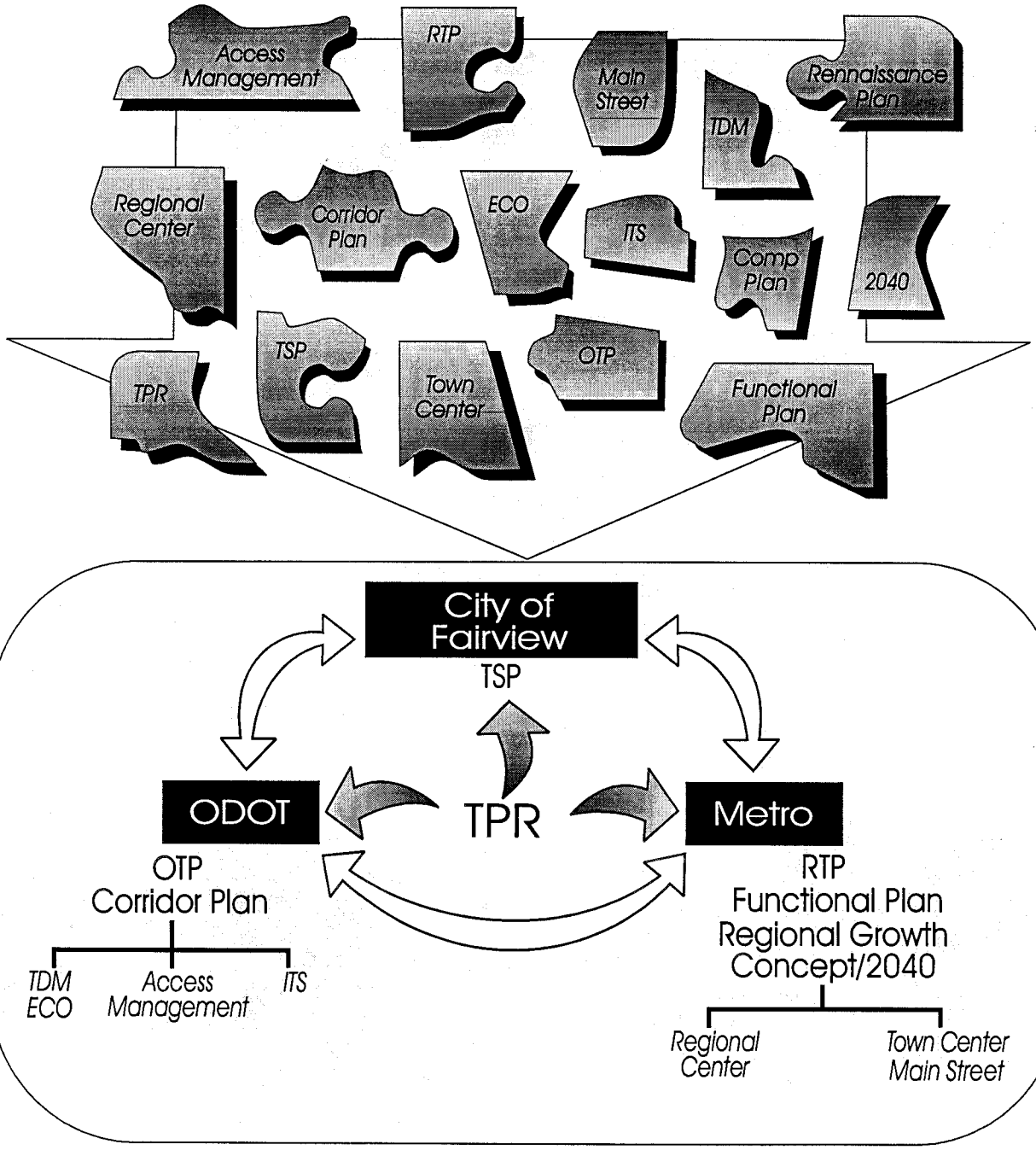

Figure 2-2
RELATIONSHIP OF TSP TO REGIONAL PLANNING

Chapter 3
Existing Conditions

This chapter summarizes existing traffic and transportation conditions in the City of Fairview. It considers vehicle traffic, as well as transit, pedestrian and bicycle modes. To understand existing travel patterns and conditions, a variety of aspects of the city's transportation system were considered. In the fall of 1998, an inventory of traffic conditions in Fairview was undertaken to establish a base year for all subsequent analysis. Much of this data provides a benchmark (basis of comparison) for future assessment of transportation performance in Fairview relative to desired policies.

The following sections briefly describe all the various modes of transportation in Fairview. For the motor vehicle system, information is provided for existing roadway functions, circulation, traffic speeds and volumes and levels of service in the Fairview transportation system.

PREVIOUS WORK

There have been several previous studies in recent years which have related to transportation issues in Fairview. These studies provide background into transportation needs and opportunities in the area, and have been important resources for conduct of the current study. An annotated bibliography of a few key studies is provided below:

***Transportation Planning Rule,* Oregon Administrative Rules (OAR) 660-12.** The adoption of the Transportation Planning Rule (TPR) in May 1991, (updated in November, 1998) mandates comprehensive transportation planning for cities in Oregon. The TPR defines the specific requirements for a transportation system plan. The areas of analysis addressed in the TPR for a transportation system plan include the following:

- Roadway capacity and level of service
- Transit capacity and capacity utilization
- Bicycle and pedestrian system capacity
- Adjustment of turning movement volumes produced by travel demand forecasting models
- Estimation of future transportation needs (person travel), reflecting:
    - population and employment forecasts consistent with comprehensive plans
    - measures to reduce reliance on the automobile
    - increased residential, commercial and retail development densities
    - location of neighborhood shopping centers near residential areas
    - better balance between jobs and housing within subareas
    - maximum parking limits for office and institutional developments

    - appropriate levels of transportation facilities to serve land uses identified in transportation plans
    - increases in average automobile occupancy
    - increases in modal shares of non-automobile modes
    - TDM programs and rearranged land uses on the number and length of automobile trips per capita
    - land use and subdivision regulations to increase non-auto trip making
- Estimation of future goods movement needs
- Access management

***DRAFT Oregon Highway Plan*, Oregon Department of Transportation, January, 1998.** The Oregon Highway Plan (OHP) is a specific element of the Oregon Transportation Plan. The OHP identifies relationships with other plans, identifies needs, policies to address the needs, strategies to address the needs and alternatives at three different funding levels. Alternate methods of meeting or altering needs and financing options are also discussed.

***Oregon Transportation Plan*, Oregon, 1992.** The Oregon Transportation Plan (OTP) sets the general direction for transportation development statewide for the next twenty years. The purpose of the plan is to guide development of a safe, convenient and efficient transportation system that promotes economic prosperity and livability. The OTP contains two elements: Policy and Systems. The OTP provides overall direction for allocating resources and coordinating modes of transportation. It also reviews the relationship of transportation to land use, economic development, the environment, and energy use. Key aspects of the OTP focus on a transportation system that is balanced, efficient, accessible, environmentally responsible, has connectivity among places and modes and carriers, is safe and financially stable.

***Oregon Bicycle and Pedestrian Plan*, Oregon Department of Transportation, June, 1995.** This plan serves the following purposes:

- To implement the actions recommended by the Oregon Transportation Plan
- To guide ODOT, MPO's, the cities and counties of Oregon and other agencies in developing bikeway and walkway systems
- To explain the laws pertaining to the establishment of bikeways and walkways
- To provide information to citizens interested in bicycle and pedestrian transportation
- To fulfill the requirements of the Intermodal Surface Transportation Efficiency Act (ISTEA), whereby each state must adopt a statewide bicycle and pedestrian plan
- To fulfill the requirements of the Oregon Administrative Rule 660-12 (Transportation Planning Rule 12), and
- To provide standards for planning, designing and maintaining bikeways and walkways

The document includes two sections, including the Policy & Action Plan and Bikeway & Walkway Planning, Design, Maintenance & Safety. The first section contains background information, legal mandates and current conditions, goals, actions and implementation strategies ODOT proposes to improve bicycle and pedestrian transportation. The second section will assist ODOT, cities and counties in designing, constructing and maintaining pedestrian and bicycle facilities. Design standards are recommended and information on safety is provided.

Oregon Rail Freight Plan, **Oregon Department of Transportation, August 17, 1994.** The Oregon Rail Freight Plan is an element of the Oregon Transportation Plan (OTP) and includes a description of the Oregon Rail System, Rail Policies and the Planning Process, Light Density Line Analysis and Financing the Rail Program.

Statewide Transportation Improvement Program 1998-2001, **Oregon Department of Transportation, January 1996.** This document, referred to as the STIP, is a program schedule for the Oregon Department of Transportation. The purpose of the STIP is to schedule funding for Oregon's highest priority transportation projects for the next two years. The reconstruction of Halsey Street to include bike and pedestrian facilities was the only project listed in the STIP relevant to Fairview.

Region 2040, **Concepts for Growth, Metro, June, 1994.** This report documents Metro' s Region 2040 program, which attempts to gauge what could happen 50 years from when the study was initiated. The report outlines three growth concepts, outlines the advantages and disadvantages of each concept, describes a preferred alternative and outlines the building blocks needed to construct a preferred alternative.

Regional Transportation Policy, **Metro, July 25, 1996.** These are the updated *Regional Transportation Plan* policies which are driven by requirements contained in the state Transportation Planning Rule (TPR) and the need to support the Region 2040 Growth Concept with a multi-modal, balanced transportation system. This document provides the policy context and framework for transportation system planning required under the state TPR for cities and counties. The overall goal of the RTP is to develop a safe, efficient and cost-effective transportation system that serves the region' s current and future travel needs and implement the 2040 Growth Concept while recognizing the financial constraints and environmental impacts associated with that system. The guiding principals of the plan include public involvement, accessibility and mobility, system cost, timing and prioritization of system improvements and environmental, economical and social impacts.

Interim Federal Regional Transportation Plan, **Metro, April, 1995, and ongoing development of the RTP.** The purpose of the federal regional transportation plan (RTP) is to develop a transportation system that provides adequate levels of accessibility to a growing region at the same time recognizing the financial constraints and environmental impacts associated with that system. The current adopted RTP from 1995 meets the requirement of the federal Intermodal Transportation Efficiency Act (ISTEA) of 1991, the Clean Air Act Amendments (CAAA) of 1990, and the Americans with Disabilities Act (ADA) of 1991. Current work to update the RTP is on-going by Metro and is anticipated to be adopted in 1999/2000. This report includes a roadway functional classification map, freight network map, primary transit network map, proposed regional bicycle network map and a proposed national highway system map. The recommended transportation improvements in the RTP Project List Round 2, November 4, 1998 for Fairview include the following:

- Halsey Street – widen to three lanes from 223rd Avenue to 238th Avenue
- 223rd Avenue – retrofit bike lanes and sidewalks from Halsey Street to Marine Drive
  Glisan Street – widen to five lanes from 202nd Avenue to 207th Avenue
- Multnomah Kennel Club – construct new collector from Halsey Street to Glisan Street
- 207th Avenue/ 223rd Avenue – Access Management Plan to protect mobility to Gresham
- Fairview/ Wood Village – improve pedestrian and transit facilities on Halsey, Glisan and on neighborhood streets

Note that the RTP has three project lists: preferred – including all the identified projects to 2020; strategic – limits the project list to necessary projects for 2020; existing resources – narrows lists to funded projects.

***Urban Growth Management Functional Plan,* Metro, Adopted November 21, 1996.** Metro's regional functional plan is a policy tool that contains both "recommendations" and "requirements" for changes in local plan. The functional plan relies on further actions, primarily changes to local government comprehensive plans and implementing ordinances, to effectuate the actions described in the plan. The plan is comprised of 10 Titles, as follows:

- Requirements for Housing and Employment Accommodation
- Regional Parking Policy
- Water Quality and Flood Management Conservation
- Retail Employment and Industrial Areas
- Neighbor Cities and Rural Reserves
- Regional Accessibility
- Affordable Housing
- Compliance Procedures
- Performance Measures
- Definitions

Key aspects of the functional plan which relate to transportation issues include Title 2: Regional Parking Policy and Title 6: Regional Accessibility. The intent of Title 2 is to ensure efficient use of land and reductions in auto trips by monitoring and limiting the amount of parking that is provided. The intent of Title 6 is to implement the 2040 growth concept for all modes of transportation, including focusing growth in the concentrated activity centers (i.e. central city, regional centers, etc.) and use alternative modes of transportation to avoid unacceptable levels of congestion. Title 2 and Title 6 require that the City adopt changes to its land use regulations to address parking ratios, connectivity and level of service.

***Multnomah County 1998-2002 Capital Improvement Program,* Multnomah County, 1998.** This Capital Improvement Program (CIP) evaluates, ranks and schedules transportation capital projects needs in Multnomah County for the next five years. The projects identified in the program for the City of Fairview include the following:

- Halsey Street – Widen to three lanes and upgrade from 223rd Avenue to 238th Avenue
- Glisan Street – Widen to five lanes, upgrade and add signal from 202nd Avenue to 207th Avenue
- 223rd Avenue – Widen for improvements from Halsey Street to Marine Drive
- Arata Road – Improvements from 223rd Avenue to 238th Avenue

***East Multnomah County Long Range Transit Plan*, Nelson/Nygaard Consulting, 1995**. This Long Range Transit Plan for East Multnomah County sets the direction for transit development for the next twenty years. The purpose of the plan is to achieve congestion and air quality benefits associated with expected growth. Three sections of recommendations are discussed in detail; service expansions, rail and downtown shuttle projects and capital improvements. The plan shows a new route, offering primary service for the entire extent of Sandy in East Multnomah County to Buxton in Troutdale. Depending on the scenario followed, this new route may serve only peak hour needs.

East Multnomah County Trafficway Plan and Impact Fee Study, **DKS Associates, 1993.** The purpose of this plan is to develop a system development charge (SDC) to help fund transportation improvements in East Multnomah County. The report includes existing transportation deficiencies, future transportation improvements with cost estimates and SDC implementation. All improvement projects identified in the program for Fairview have been completed.

Fairview Area Comprehensive Plan, **City of Fairview, 1979.** The Comprehensive Plan is a strategy to guide the City in the conservation, protection and development of the City of Fairview. It contains specific policies and plans for the developed and undeveloped land areas in the City. The plan has been developed to recognize the City's role in the future of the Portland metropolitan area while preserving the important and meaningful vestiges of the City's past. Elements which affect the physical characteristics of the City are considered, including land, air, water, sewer, transportation systems, schools parks and other public facilities. The transportation section addresses traffic and bikeway circulation and transit services.

Comprehensive Plan – Fairview Village, **McKeever/Morris, Inc., 1994**. The Comprehensive Plan is a proposal for Fairview Village, a mixed-use development. The focus of the plan is to create a community that allows its residents to function comfortably without the use of a car. Improvements include design elements, which enhance the convenience of pedestrians, bicycles and public transportation commuters within the community. This report includes a pedestrian/bicycle circulation map and street plan map with roadway cross-sections, much of which has or is being implemented currently.

City of Fairview Renaissance Plan, **McKeever/Morris, Inc., 1997**. The purpose of this plan is to revive and enhance the City of Fairview's core area during the City's expected growth. The report includes an outline of proposed improvements along with detail sketches of each element. A capital improvements map is included with the report.

Fairview Parks and Recreation/Open Space Master Plan, **McKeever/Morris, Inc., 1994**. This Master Plan serves as a guide in the conservation and development of the City of Fairview's open space areas. The report discusses an assessment of present and future recreational needs, an inventory of existing parks and recreational facilities, an analysis of open space planning opportunities and constraints and plan implementation with system development charges. A final master plan map with proposed pedestrian and bicycle access is included in the plan.

STREET NETWORK

The Transportation Planning Rule requires that classification of streets within the City be provided.[1] The classification must be consistent with state and regional transportation plans for continuity between adjacent jurisdictions. The City of Fairview does not have an existing street classification system as part of its comprehensive plan, but relies on Multnomah County's classification system for arterial and collector routes.[2] All streets not classified by Multnomah County are considered to be local streets.

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1 *Transportation Planning Rule*, State of Oregon, Department of Land Conservation and Development Section 660-12-020(2)(b), April, 1995.

2 *Trafficways and the Functional Classification of Trafficways Map,* Multnomah County Comprehensive Framework Plan Volume 2: Policies, Multnomah County, August, 1995.

FUNCTIONAL CLASSIFICATION

Roadways have two functions, to provide mobility and to provide access. From a design perspective, these functions can be incompatible since high or continuous speeds are desirable for mobility, while low speeds are more desirable for land access. Arterials emphasize a high level of mobility for through movement; local facilities emphasize the land access function; and collectors offer a balance of both functions.

The existing functional classification of streets in Fairview (based on Multnomah County's system) is represented by Figure 3-1. Any street not designated as either an arterial or collector is considered a local street. Fairview's functional classification system was reviewed as part of this project and the proposed functional classification system is discussed in the Motor Vehicle chapter (Chapter 8).

Multnomah County roadway classifications are consistent with City of Fairview designations. A table summarizing functional classification of Fairview streets by other jurisdictions is shown in the appendix of this report.

ODOT and **Metro** only classify roads that are considered to be of statewide or regional significance, respectively. These classifications are compatible with Fairview classifications, although the specific classification names may differ. ODOT and Metro classifications can be found in the *Roadway Functional Classification According to Jurisdiction* table in the appendix of this report. Metro classifications are from the draft RTP.

EXISTING CIRCULATION

The following key routes within Fairview are summarized below to provide a description in terms of functional classification, connectivity, and roadway volumes. Table 3-1 summarizes the street network in Fairview.

ARTERIAL STREETS

Halsey Street is classified by Metro, Multnomah County and Fairview as a Minor Arterial. It provides access to arterial and collector streets within Fairview. Halsey Street is a two-way roadway with bike lanes and sidewalks along its frontage. It is a two-lane street, except from 205th Avenue to 7th Street which has three lanes. The posted speed is 45 miles per hour. It carries approximately 12,500 vehicles daily, or ADT east of 207th Avenue, with about 1,000 vehicles (two-way) during the evening peak hour.

Glisan Street is classified by Metro, Multnomah County and Fairview as a Major Arterial. This route provides access to arterial and collector streets within Fairview. It is a four-lane, two-way street with bike lanes and sidewalks along its frontage. It has a posted speed of 45 miles per hour. It carries approximately 7,300 vehicles daily east of 207th Avenue, with about 1,700 vehicles (two-way) during the evening peak hour.

207th Avenue south of Interstate 84 is classified by Metro, Multnomah County and Fairview as a Major Arterial. It is a four-lane, two-way roadway with a posted speed ranging from 40 to 45 miles per hour. It has bike lanes and sidewalks. It carries about 16,700 vehicles daily, with about 1,450 vehicles (two-way) during the evening peak hour. 207th Avenue north of Interstate 84 is classified as a Major Collector by Multnomah County and Fairview. It is a two-lane, two-way roadway with a posted speed of 40 miles per hour. The roadway has bike lanes and sidewalks.

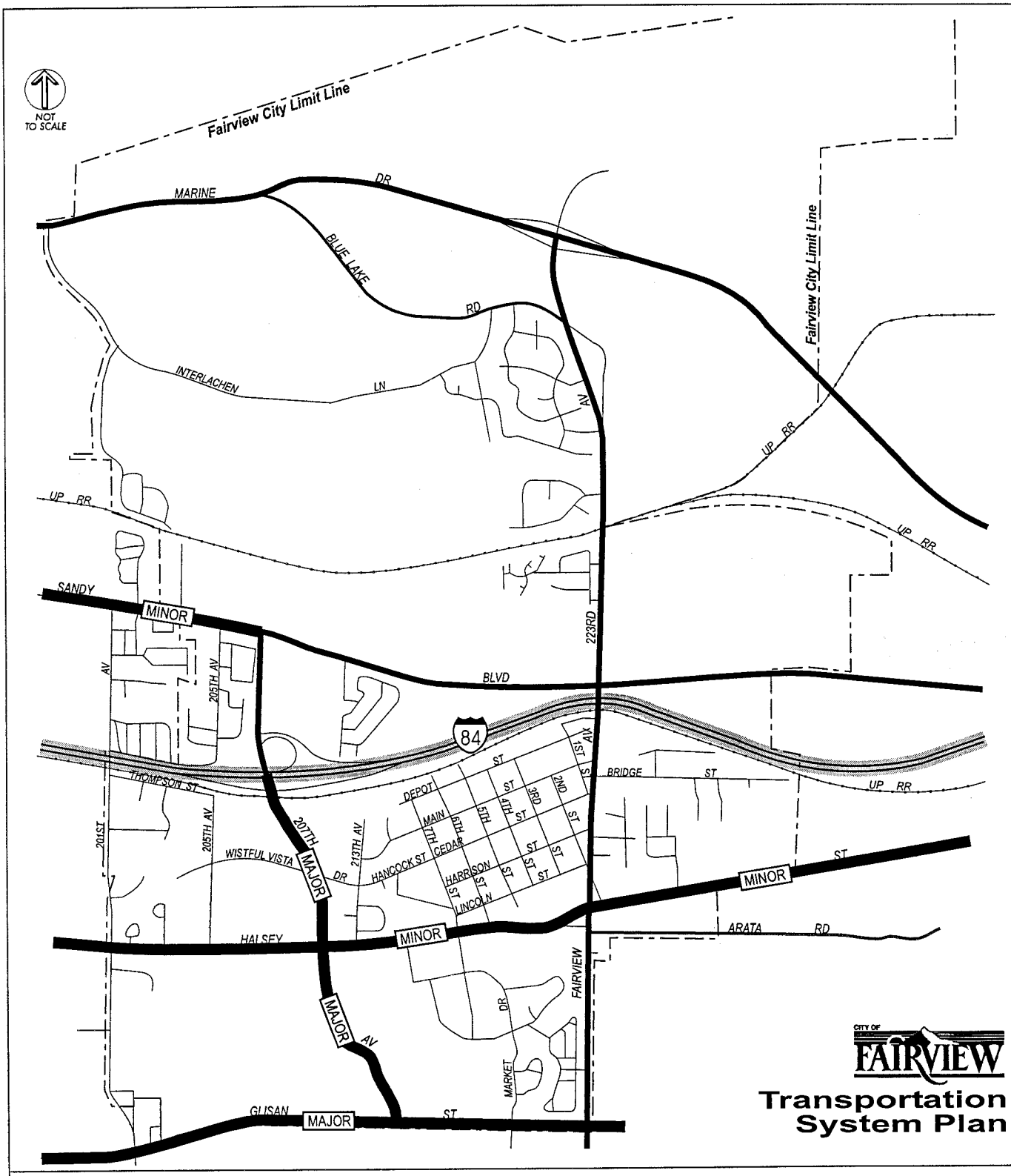
COLLECTOR STREETS

223rd Avenue/Fairview Avenue is classified as a Major Collector by Metro, Multnomah County and Fairview. This roadway provides access to Fairview from the south (Gresham area). 223rd Avenue is a two-way roadway with bike lanes and sidewalks along its frontage. It is a two-lane street, except south of Halsey Street which has four lanes. The posted speed is 35 miles per hour south of Sandy Boulevard and 45 miles per hour north of Sandy Boulevard. It carries about 7,300 vehicles daily south of Interstate 84, with about 650 vehicles (two-way) during the evening peak hour.

Marine Drive is classified as a Major Collector by Multnomah County and Fairview and as a Collector by Metro. It is a two-lane, two-way roadway with a posted speed of 55 miles per hour. It has a shoulder but no sidewalks. An off-street multi-use path is located along the south of the roadway. Marine Drive carries about 8,200 vehicles daily east of Interlachen Lane, with about 750 vehicles (two-way) during the evening peak hour.

Blue Lake Road is classified as a Neighborhood Collector by Multnomah County and Fairview. It is a two-lane, two-way roadway with a posted speed of 25 miles per hour. It has bike lanes west of Blue Lake Park, but no bike lanes east of the park. It has limited sidewalks.

Sandy Boulevard east of 207th Avenue is classified as a Major Collector by Metro, Multnomah County and Fairview. It is a two-lane, two- way roadway with a posted speed of 40 miles per hour. It has no shoulders or bike lanes and limited sidewalks. It carries about 8,800 vehicles daily east of 207th Avenue, with about 800 vehicles (two-way) during the evening peak hour.



LEGEND

- Freeway
- Arterial (MAJOR / MINOR)
- Major Collector
- Neighborhood Collector
- Local Street

Figure 3-1
EXISTING ROADWAY FUNCTIONAL CLASSIFICATION

Table 3-1
Street Network Summary

Street	Functional Classification			Lanes	ADT	PM Peak*	Posted Speed	Peds/ Bikes**
	Fairview	Multnomah County	Metro					
Interstate 84	Freeway	Freeway	Principal Arterial	6			55 mph	N/N
Halsey Street	Minor Art	Minor Art	Minor Art	2	12,500	1,000	45 mph	Y/Y
Glisan Street west of 207th Avenue	Major Art	Major Art	Minor Art	4	NA	NA	45 mph	Y/Y
Glisan Street east of 207th Avenue	Major Art	Major Art	Major Art	4	7,300	1,700	45 mph	Y/Y
207th Avenue south of Interstate 84	Major Art	Major Art	Major Art	4	16,700	1,450	40 mph	Y/Y
207th Avenue north of Interstate 84	Major Coll	Major Coll	Major Art	2	NA	NA	40 mph	Y/Y
223rd Avenue	Major Coll	Major Coll	Collector	2	7,300	650	35/45 mph	Y/Y
Blue Lake Road	Nbhd Coll	Nbhd Coll	NA	2			25 mph	N/N
Marine Drive	Major Coll	Major Coll	Collector	2	8,200	750	55 mph	Y/Y
Sandy Blvd west of 207th Avenue	Minor Art	Minor Art	Major Art	2	NA	NA	45 mph	N/N
Sandy Blvd east of 207th Avenue	Major Coll	Major Coll	Collector	2	8,800	800	45 mph	N/N

*PM Peak = Two-way traffic volume during evening peak hour
**Peds/Bikes = Pedestrian facilities/bicycle facilities (Y=Yes or N=No)
ADT = Average Daily Traffic

PAVEMENT CONDITION

A visual inspection of Fairview' s surface street system is prepared annually by the City of Fairview. This inspection is basically a "report card" of pavement conditions which rates each roadway. Actual roadway ratings prepared by the City are provided in the appendix.

TRAFFIC SPEED AND VOLUME

SPEED

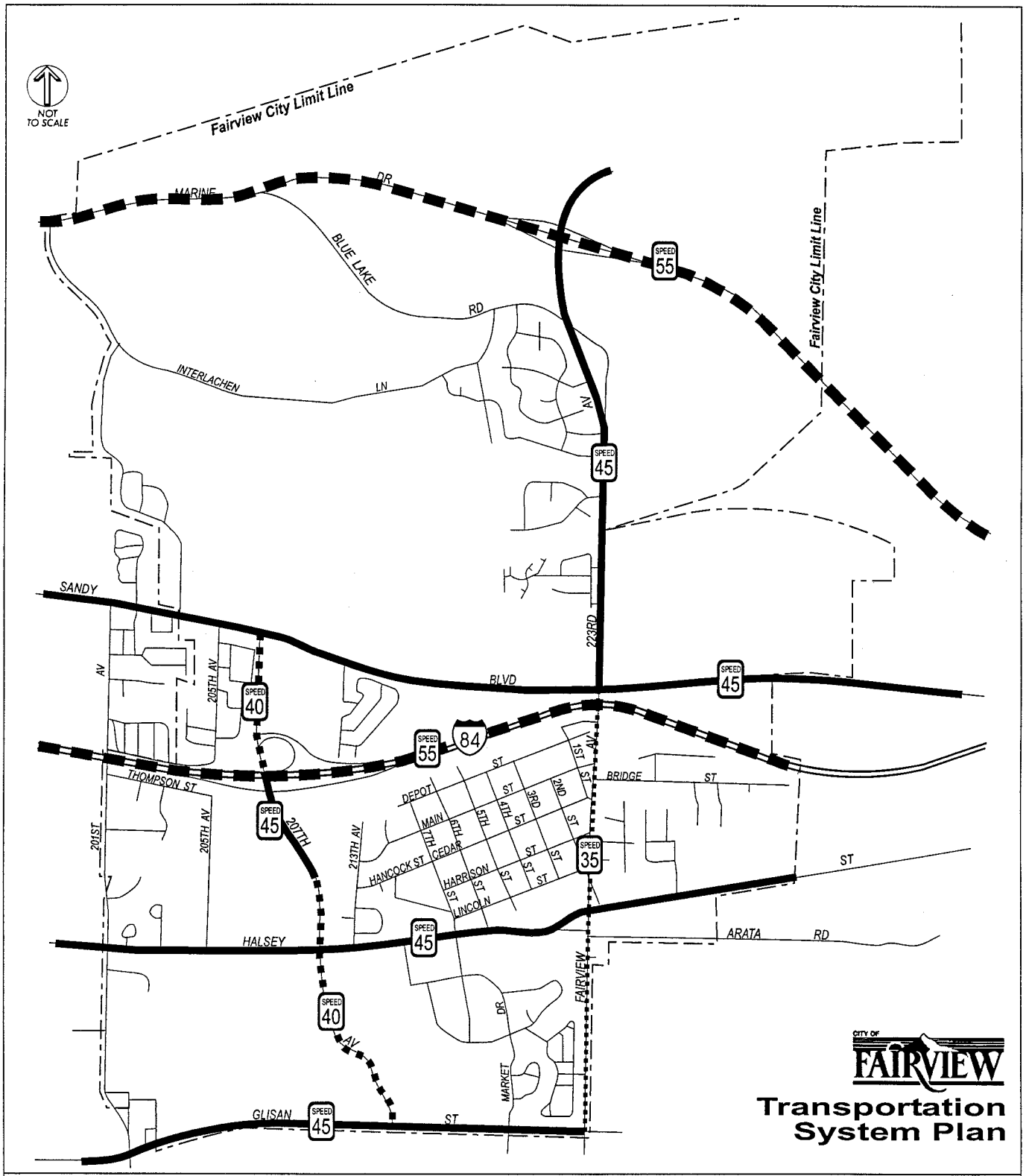
Speed zones on arterials and collectors within the City of Fairview are summarized in Figure 3-2. There are two ways a speed zone can be established by statute. One is in a "residence district," which is vaguely defined in the Oregon Vehicle code under 801.430, and the other is a school zone. A residence district can be posted at 25 mph and a school zone can be posted at 20 mph.

In all other cases, an engineering study is required to determine the appropriate speed zone (the basis is the 85th percentile speed). The study is typically done by the appropriate ODOT region office. The speed zone recommendation (based on the engineering study) is then forwarded from the ODOT region office to Salem to be approved by the State Traffic Engineer. If the jurisdiction requesting the speed study does not agree with the results of the engineering study and recommendation to the State Traffic Engineer, the jurisdiction can appeal the decision to the Speed Zone Review Panel (which meets only once a year). For some perspective on the magnitude of what this board does, this panel reviewed only four cases for the entire state of Oregon in 1997.

Vehicle speeds on several collector and residential streets are a concern for the community. In most cases, speeding becomes very noticeable to pedestrians when it is above 30-35 miles per hour. Speeding can usually be expected on local streets where the streets are wide and straight for long stretches or where downhill grades are extended.

85TH PERCENTILE SPEEDS

Speed surveys have been conducted on several roadways in Fairview. Table 3-2 summarizes the results of these surveys, showing the 85th percentile speed on each route. The 85th percentile speed represents the speed at which 85 percent of the vehicles are traveling slower and 15 percent of the vehicles are traveling faster. The 85th percentile speed is typically used as the posted speed and the speed at which traffic engineering analysis is conducted (i.e. for sight distance calculations, etc.).



LEGEND

- 25 mph or Less Speed Zone
- 35 mph Speed Zone
- 40 mph Speed Zone
- 45 mph Speed Zone
- 55 mph Speed Zone

Figure 3-2
EXISTING SPEED ZONES

Table 3-2
85th Percentile Speeds

Route	*Location*	*85th Percentile Speed*
Halsey Street	East of 207th Avenue	45 mph
Marine Drive	East of Interlachen Lane	53 mph
Sandy Boulevard	East of 207th Avenue	49 mph
207th Avenue	South of Interstate 84	49 mph
223rd Avenue	South of Interstate 84	38 mph
Glisan Street	East of 207th	49 mph
Cedar Street	East of 5th Street	29 mph

TRAFFIC VOLUME

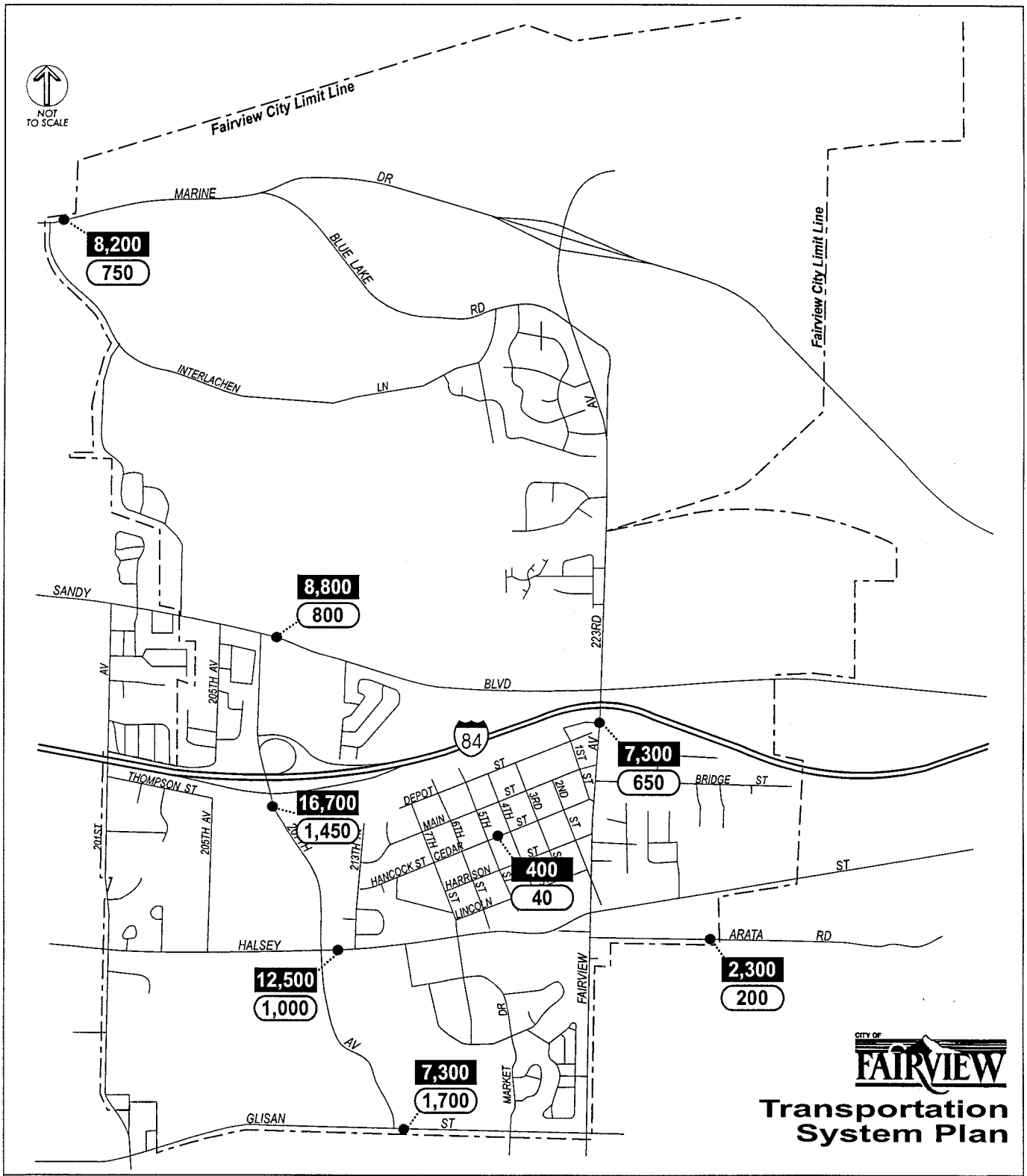
A complete inventory of peak hour traffic conditions was performed in the fall of 1998 as part of the Fairview Transportation System Plan. The traffic counts conducted as part of this inventory provide the basis for analyzing existing problem areas as well as establishing a base condition for future monitoring. Daily and PM peak hour volumes are shown in Figure 3-3. Profiles of daily traffic, which indicate the period when traffic is greatest, are shown in Figure 3-4. The evening peak period is the time when traffic volume is highest (combination of commute, retail and school activities). Turn movement counts were conducted at 16 intersections during the evening (4-6 PM) peak period to determine intersection operating conditions.

On a typical day, 207th Avenue and Halsey Street are the most heavily traveled roadways in Fairview. South of Interstate 84, 207th Avenue carries about 16,700 vehicles per day (two-way). Halsey Street carries about 12,500 vehicles per day (two-way) east of 207th Avenue. Overall, based on traffic counts at gateways to the City, about 41,100 vehicles enter and exit Fairview (about half in and half out) in a given day.

TRAFFIC CONTROL

Fairview has nine signalized intersections within its city limits. Unsignalized intersection control is accommodated through the use of either one-way, two-way, three-way or four-way stop signs. Figure 3-5 shows the traffic control locations in the project study area. Traffic signals are valuable devices for the control of vehicles and pedestrian traffic. Traffic signals, properly located and operated can have one or more of the following advantages:

- They provide for the orderly movement of traffic
- On larger roadways where proper physical layouts and control measures are used, they can increase the traffic handling capacity of the intersection
- They reduce the frequency of certain types of accidents, especially the right angle type
- Under favorable conditions, they can be coordinated to provide continuous or nearly continuous movement of traffic at a definite speed along a given route
- They permit minor street traffic, vehicular or pedestrian, to enter or cross continuous traffic on the major street



LEGEND

10,000 - Average Daily Traffic

(1,000) - PM Peak Hour

Figure 3-3
EXISTING PM PEAK HOUR and AVERAGE DAILY TRAFFIC VOLUMES

Improper or unwarranted signal installation may cause:

- Excessive delay
- Disregard of signal indication
- Out-of-direction travel of alternative routes
- Increased fuel use and wear on vehicles, especially trucks
- Increased accident frequency, particularly rear-end type

Consequently, it is important that the consideration of a signal installation and the selections of equipment be preceded by a thorough study based on consistent criteria. These studies identify the need for left turn phasing, lanes and phase types. The justification for the installation of a traffic signal at an intersection for ODOT, Multnomah County and Fairview is based upon warrants stated in the *Manual on Uniform Traffic Control Devices (MUTCD)*.[3] The MUTCD has been adopted by the state of Oregon and is used throughout the nation.

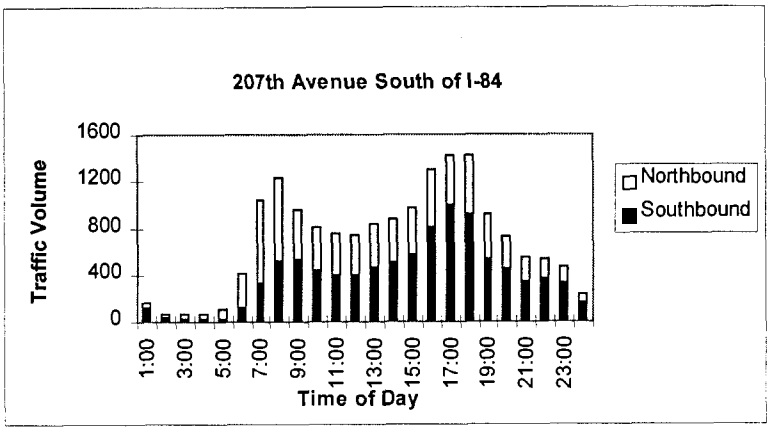
The same conditions hold true for installation of stop sign traffic control. Specific warrants identify conditions which may warrant a traffic signal or a two-way or multi-way stop sign installation. A stop sign is not a cure-all and is not a substitute for other traffic control devices. Guidelines and warrants for stop sign installations are outlined in the MUTCD.

TRAFFIC LEVELS OF SERVICE

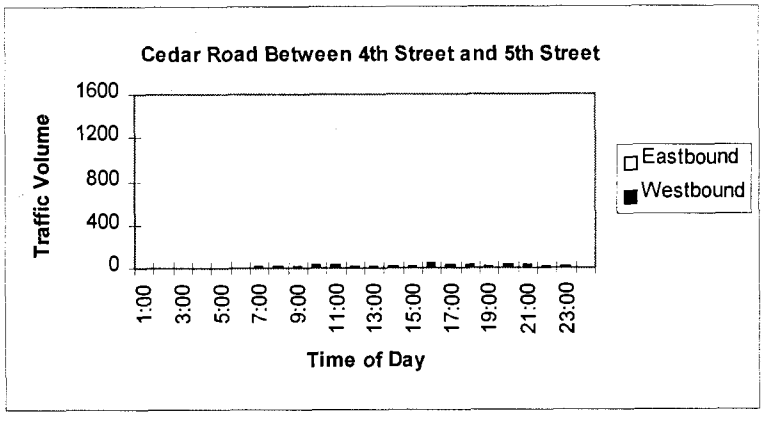
While analysis of traffic flows and functional classifications are useful in understanding the general nature of traffic in an area, traffic volumes alone indicate neither the ability of the street network to carry additional traffic, nor the quality of service afforded by the street facilities. For this, the concept of *level of service* (LOS) has been developed to correlate traffic volume data to subjective descriptions of traffic performance at intersections.

Level of service is used as a measure of effectiveness for intersection operation. These categories are similar to report card ratings for intersection traffic performance. Intersections are the controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is nearly always diminished in their vicinities. Levels of service A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. Level of service D and E are progressively worse peak hour operating conditions and F conditions represent where average vehicle delay exceeds 60 seconds per vehicle entering a signalized intersection and demand has exceeded the capacity. This delay represents jammed conditions and any additional vehicle traffic would require mitigation. This condition is typically evident in long queues and delays. In the past, level of service D has generally been the accepted standard for signalized intersections in urban conditions during peak hour operation, while level of service C or better is accepted for all other times of the day.

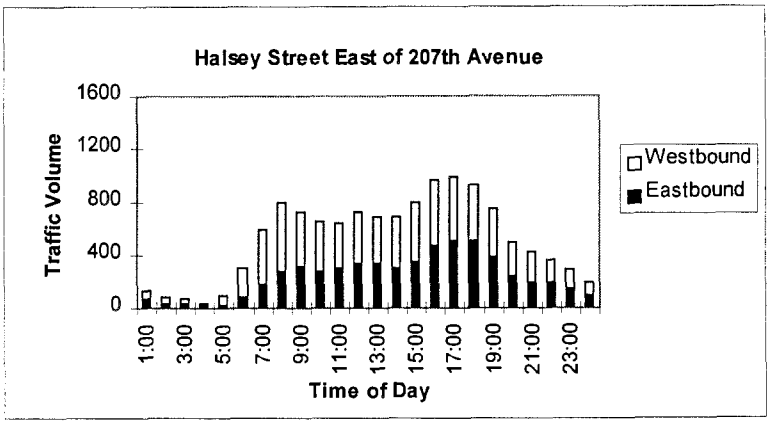
3 *Manual on Uniform Traffic Control Devices for Streets and Highways*, US Department of Transportation, Federal Highway Administration, 1988, pages 4C1-4C12



ADT = 16,700

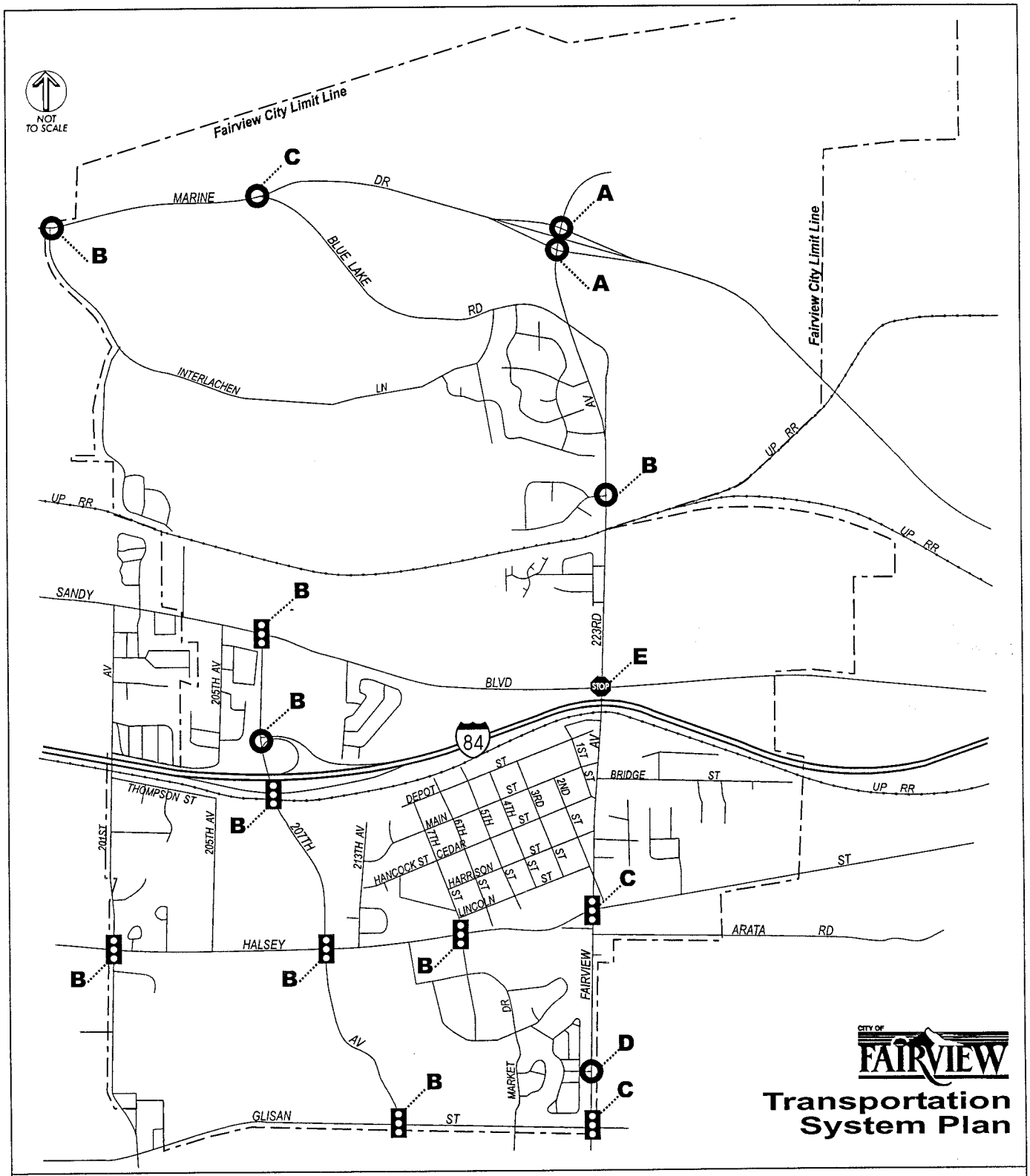


ADT = 400



ADT = 12,500

Figure 3-4
HOURLY TRAFFIC VOLUME SUMMARIES



CITY OF FAIRVIEW

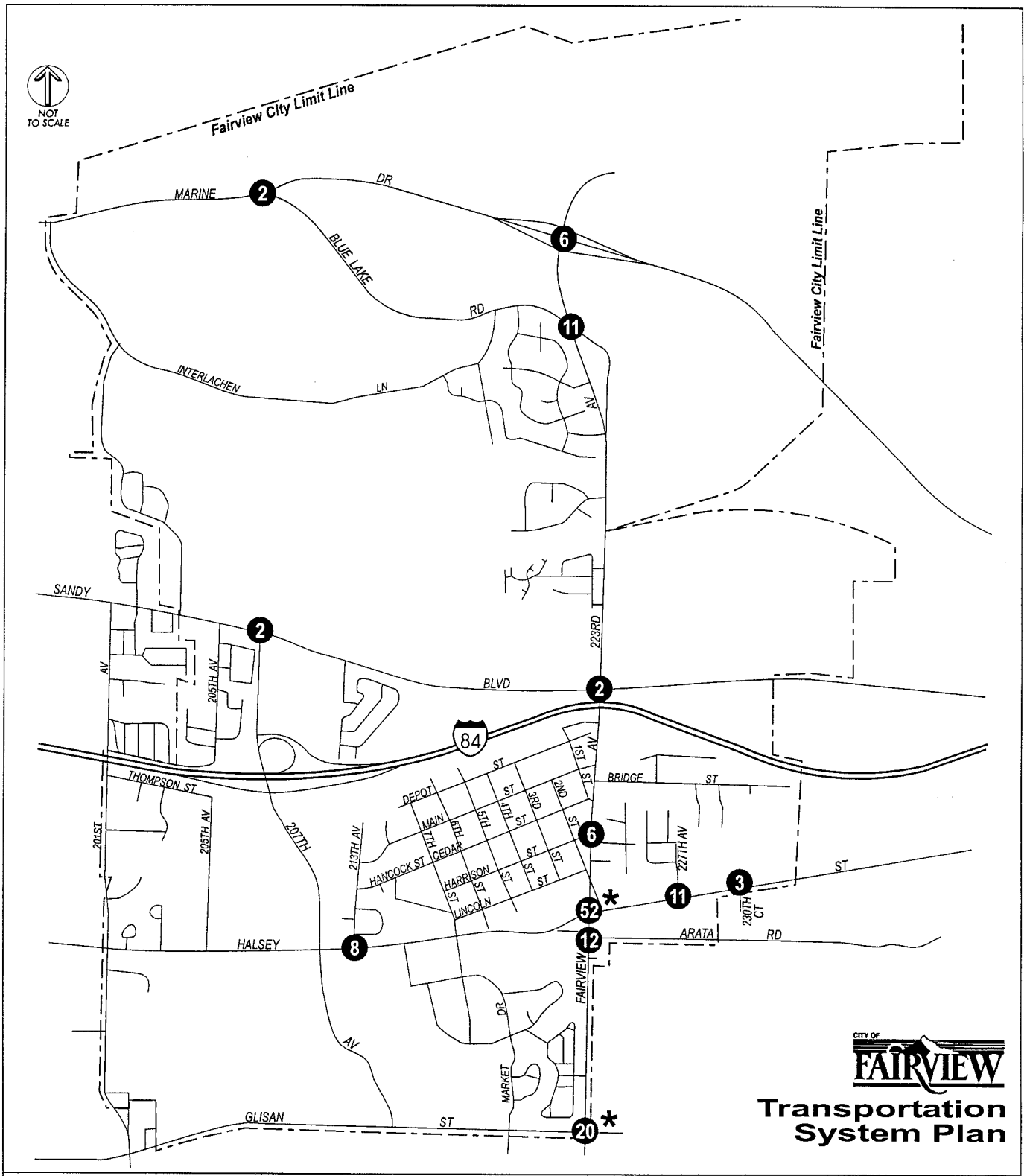
Transportation System Plan

LEGEND

- Signalized Intersection
- STOP - 4-Way Stop
- Unsignalized Intersection
- **A** - PM Peak hour Level of Service

Figure 3-5

STUDY INTERSECTIONS TRAFFIC CONTROL WITH PM PEAK HOUR LEVEL OF SERVICE



LEGEND

00 - Number of Intersection Accidents

* - Intersection has Recently been Improved

Figure 3-6
1995-1997 ACCIDENT LOCATIONS AND FREQUENCY

Unsignalized intersections provide levels of service for major and minor street turning movements. For this reason, LOS E and even LOS F can occur for a specific turning movement, however, the majority of traffic may not be delayed (in cases where major street traffic is not required to stop). LOS E or F conditions at unsignalized intersections generally provide a basis to study the intersection further and to determine availability of acceptable gaps, safety and traffic signal warrants. A summary of the descriptions of level of service for signalized and unsignalized intersections in the City is provided in the appendix.

Table 3-3 provides a summary of peak hour levels of service for the signalized intersections in Fairview. All signalized intersections operate acceptably today (LOS D or better). Level of service calculation sheets can be found in the appendix.

Table 3-3
1998 Peak Hour Intersection Level of Service
Signalized Intersections

	AM Peak Hour			*PM Peak Hour*		
Signalized Intersection	*Level of Service*	*Average Delay*	*Demand/ Capacity*	*Level of Service*	*Average Delay*	*Demand/ Capacity*
201st Avenue/Halsey Street	B	11.0 sec	0.43	B	12.1 sec	0.64
207th Avenue/Halsey Street	C	16.7 sec	0.57	B	14.6 sec	0.56
207th Avenue/I-84 Eastbound ramps	B	11.3 sec	0.48	B	11.6 sec	0.64
207th Avenue/Glisan Street	B	12.2 sec	0.34	B	12.5 sec	0.40
207th Avenue/Sandy Boulevard	B	8.7 sec	0.32	B	10.8 sec	0.61
223rd Avenue/Glisan Street	C	18.0 sec	0.39	C	19.6 sec	0.64
223rd Avenue/Halsey Street	C	16.0 sec	0.54	C	17.9 sec	0.64

Tables 3-4 and 3-5 summarize the capacity analysis for evening peak conditions at seven unsignalized intersections and one all-way-stop controlled intersection in Fairview. These seven additional intersections, combined with the signalized intersections mentioned above, represent the 15 key study intersections identified by City staff for analysis in this study. Unsignalized intersections are subject to a separate capacity analysis methodology. Descriptions of level of service for unsignalized and all-way-stop controlled intersections can be found in appendix of this report.

All unsignalized study area intersections operate at level of service C or better during the evening peak hour, except 223rd Avenue and Sandy Boulevard, which operates at level of service E. Currently, the intersection of 223rd Avenue and Sandy Boulevard meets MUTCD[4] traffic signal warrant 11 (Peak Hour Volume using Figure 3-6 of the MUTCD. At least one MUTCD traffic signal warrant must be met before the installation of a traffic signal is considered.

4 *Manual on Uniform Traffic Control Devices (MUTCD)*, FHWA, 1983.

Table 3-4
1998 Peak Hour Intersection Level of Service
Unsignalized Intersections

Intersection	*AM Peak Hour Level of Service**	*PM Peak Hour Level of Service**
223rd Avenue/Marine Drive EB Ramp	A/B	A/A
223rd Avenue/Marine Drive WB Ramp	A/B	A/A
Blue Lake Road/Marine Drive	A/C	A/C
207th Avenue/Interstate 84 Westbound ramps	C/C	B/B
Interlachen Lane/Marine Drive	A/C	A/B
223rd Avenue/Fairview Lake Way	A/B	A/B
223rd Avenue/Park Lane	A/C	A/D

* Level of service shown is for major street left turn/minor street left turn.

Table 3-5
1998 Peak Hour Intersection Level of Service
All-Way Stop Controlled Intersections

Intersection	*AM Peak Hour Level of Service*	*PM Peak Hour Level of Service*
223rd Avenue/Sandy Boulevard	B	E

ACCIDENTS

Accident data was obtained for the City of Fairview from Multnomah County for the period between January 1, 1995 and December 31, 1997. Figure 3-6 shows accident locations with two or more total reported accidents within 100 feet of an intersection. Table 3-7 summarizes intersection accidents by location and frequency for each year. The intersection of 223rd Avenue and Halsey Street had 52 accidents, the highest number for each year. This intersection has recently been improved, in part to improve its safety. No accident data was available for intersections along 207th Avenue, which opened in 1998.

TRANSIT

Transit service is provided to Fairview by the Tri-County Metropolitan Transportation District of Oregon (Tri-Met). There are two fixed route Tri-Met bus routes which directly serve Fairview: 24 Halsey Street bus route and 23 San Rafael-223rd Avenue bus route (see Figure 3-7). Bus Route 24 provides service between Gateway Transit Center and Troutdale City Hall via Halsey Street at approximately 15-minute headways in the peak commute periods. Bus Route 23 provides service between Gresham City Hall and Gateway Transit Center primarily via Multnomah Greyhound Park and Sandy Boulevard at approximately 60-minute headways in the peak commute hours.

Several Metropolitan Area Expressway (MAX) transit stations are located to the southeast of Fairview which also provide transit service. These stations include Ruby Junction/197th, Rockwood/188th, and a park & ride at 181st/Burnside. Each of the stations are about one to two miles from Fairview.

Table 3-6 summarizes transit boardings and alightings in Fairview for 1990. Bus Route 23 did not operate in the Fairview area in 1990; therefore no ridership data is available. Total (boardings plus alightings) ridership data is available for 1996. Bus Route 24 experienced an approximately 64% increase in total ridership over the last eight years.

Table 3-6
Tri-Met Ridership in Fairview

Bus Route	*1990*				*1996*	
	Direction	*Boardings*	*Alightings*	*Total*	*Total Line Boardings*	*System Rank*
23 San Rafael - 223rd Avenue	Inbound	N/A	N/A	N/A	631	56
23 San Rafael - 223rd Avenue	Outbound	N/A	N/A	N/A		
24 Halsey Street	Inbound	70	10	80	1287	46
24 Halsey Street	Outbound	15	74	89		

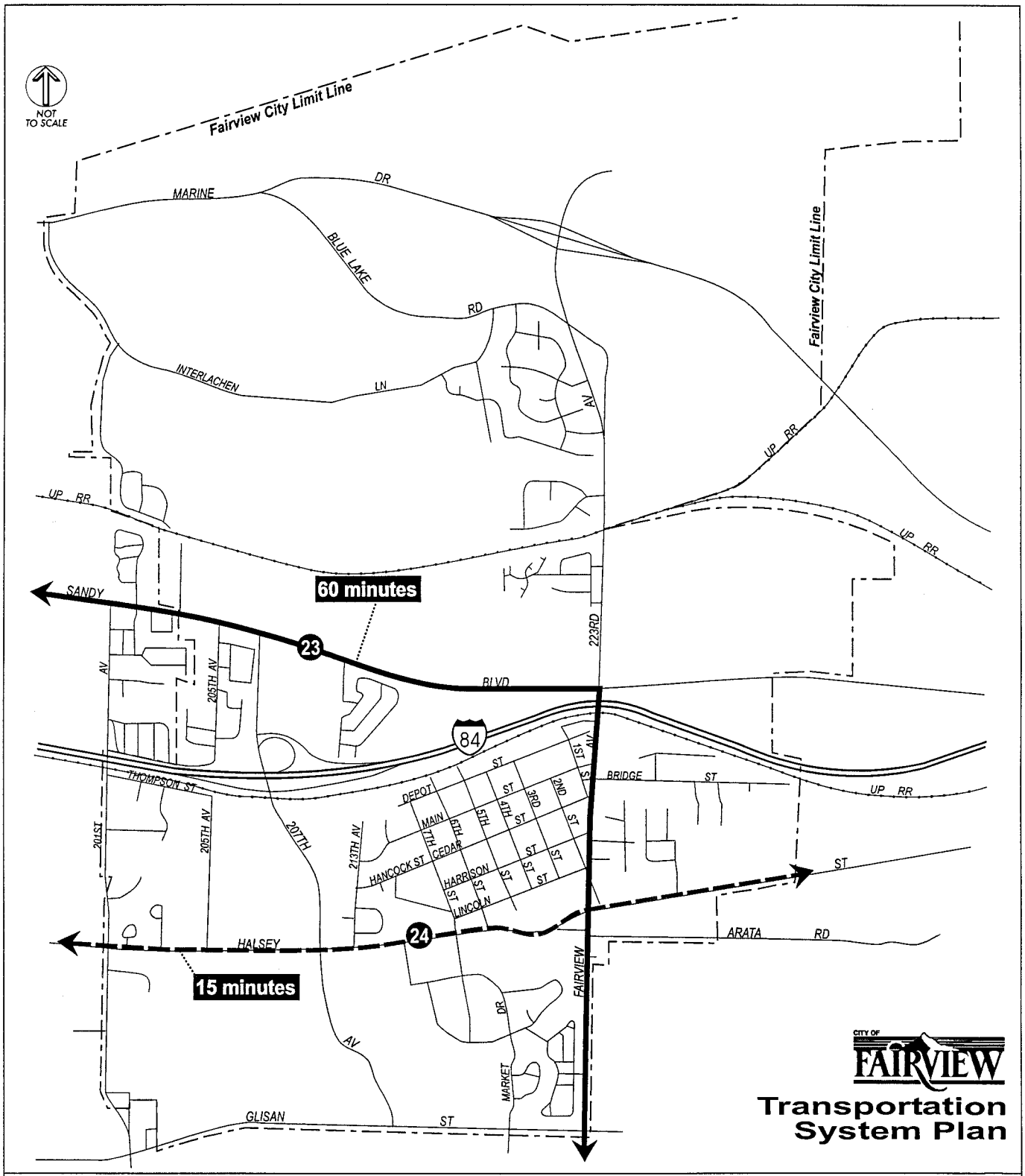
The *Transportation Planning Rule* defines a *Major Transit Stop* generally for light rail or transit transfer stations, or stops which are near (within 1/4 mile) intense development or uses which are likely to generate a high level of transit trips. Currently, no locations in Fairview meet that criteria. School bus service is provided to all students in Fairview, elementary through high school, who live farther than one-mile from the school or must cross a major street while walking to and from school.

BICYCLE

Existing bike lanes and off-street multi-use paths are shown in Figure 3-8. There are several facilities that are shown as proposed bike routes in the Multnomah County 1998-2002 Transportation Capital Improvement Plan and the Multnomah County Bicycle Master Plan. These facilities will be constructed or improved as necessary and as funds become available. These facilities include the following (and will be addressed in more detail in Chapter 6):

- 223rd Avenue / North of Marine Drive to Halsey Street
- Blue Lake Road / 223rd Avenue to park entrance
- Sandy Boulevard / 201st Avenue to 238th Avenue
- Halsey Street / 223rd Avenue to 238th Avenue

Except for Interstate 84, bicycles are permitted on all roadways in Fairview. However, because there are very few bikeways in the City, bicycle use is low. Bicycle counts were conducted at the study area intersections and between zero and five bicyclists were observed during the morning (7-9 AM) and evening (4-6 PM peak periods). Bicycle use in Fairview is generally used for recreational, school and commuting purposes.



LEGEND

- 23 - Route 23 - San Rafael-223rd Avenue
- 24 - Route 24 - Halsey Street
- 00 minutes - Peak Hour Headways

Figure 3-7
EXISTING TRANSIT

Table 3-7
Fairview Intersection Accident Locations and Frequency

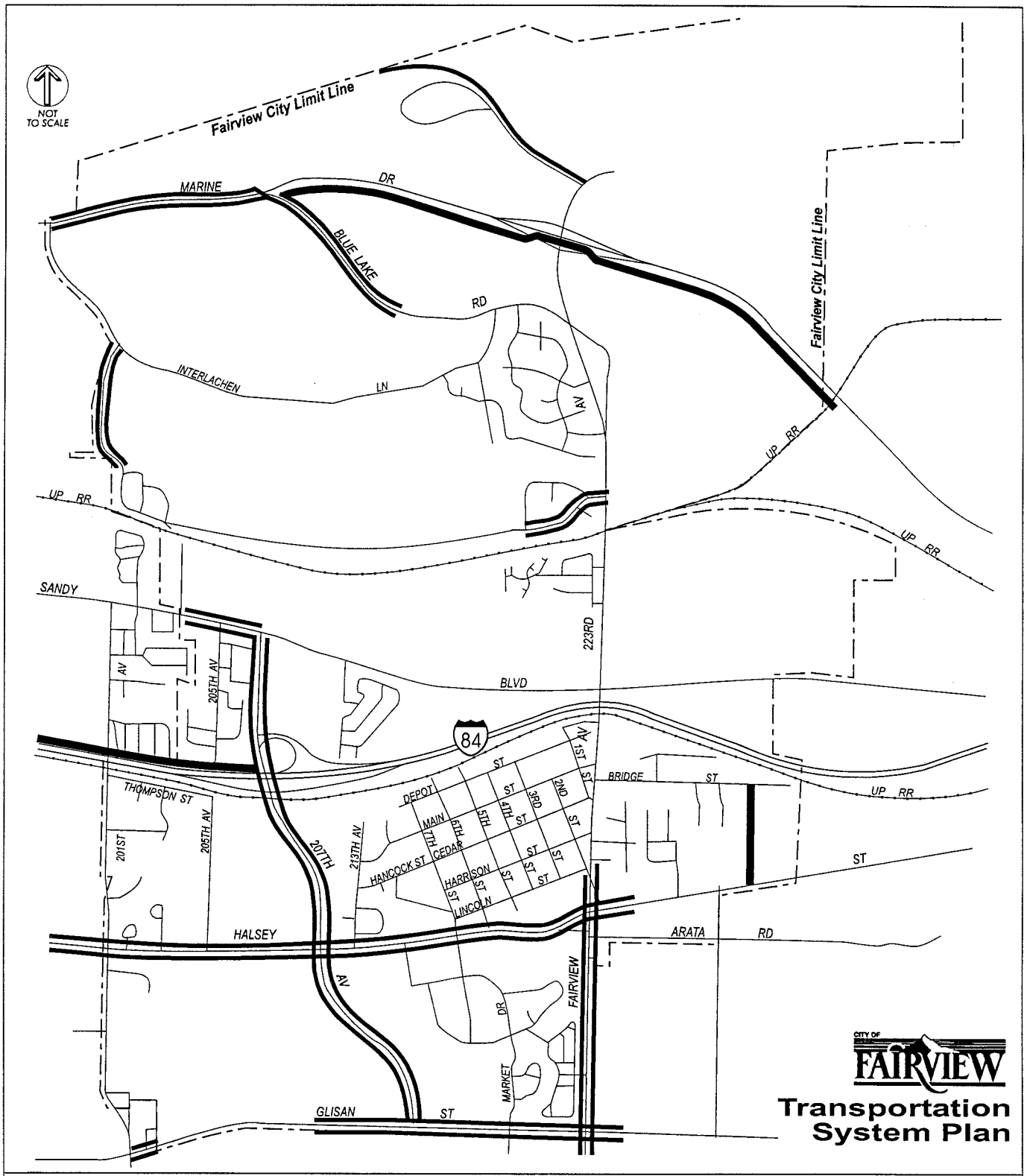
Street	*Cross Street*	*Number of Accidents*			
		1995	*1996*	*1997*	*Total*
223rd Avenue	Halsey Street	20	17	15	52
223rd Avenue	Glisan Street	12	2	6	20
223rd Avenue	Arata Road	7	0	5	12
223rd Avenue	Blue Lake Road	3	2	6	11
227th Avenue	Halsey Street	0	4	7	11
213th Avenue	Halsey Street	5	3	0	8
223rd Avenue	Harrison Street	2	4	0	6
223rd Avenue	Marine Drive	4	0	2	6
230th Court	Halsey Street	0	0	3	3
205th Avenue	Sandy Boulevard	0	0	2	2
Blue Lake Road	Marine Drive	0	2	0	2
223rd Avenue	Sandy Boulevard	0	0	2	2

PEDESTRIANS

A majority of arterial and collector streets in Fairview do not have sidewalks on either side of the street. Connectivity and pedestrian linkages are generally poor on the arterial and collector street system. Although sidewalk availability on the arterial and collector street system is poor, many residential streets do have sidewalks, especially in areas developed within the past ten to fifteen years.

Pedestrian counts were conducted during the evening peak period (4:00 to 6:00 PM) at fourteen key intersections in Fairview. All of these intersections had fifteen or fewer pedestrians in the PM peak hour, except 207th Avenue/Halsey Street which had 67 pedestrians and 223rd Avenue/Halsey Street which had 32 pedestrians.

Sidewalks at least five feet wide are required in all new developments and many new local streets do have sidewalks in the City. In addition to paved sidewalks, pedestrian paths are included in open spaces and parks such as Blue Lake Park.



LEGEND

Existing

- Bike Lanes
- Off Street Multi-use Path

Figure 3-8
EXISTING BIKE FACILITIES

TRUCKS

Principal truck routes in Fairview include Interstate 84 and arterial streets. This system provides connections with truck routes serving areas within and outside of Fairview making efficient truck movement and the delivery of raw materials, goods, services and finished products possible. These routes are generally found in and serve areas where there are concentrations of commercial and/or industrial land uses. North/south access through Fairview is generally provided via 207th Avenue north of I-84 and 223rd Avenue north of Sandy. East/west access is provided via Sandy Boulevard and Marine Drive. Figure 3-9 shows truck routes within Fairview with truck volumes and percentages during the PM peak hour. There is also a designated truck route on local streets along Main Street, 1st Street and Depot Street.

RAIL

A critical railroad east-west trunk link into Portland crosses Fairview. Union Pacific trains pass through Fairview approximately one per hour (both directions). Trains on this line are of varying types, including intermodal trains with containers, trailer beds or box-car type. There are two mainline tracks that cross through Fairview, the Parkrose-Sandy/Kenton Mainline and the I-84/Graham Line. No improvements or changes in rail service are planned at this time. Rail lines in Fairview are shown in Figure 3-10. Amtrak no longer services Pacific Northwest destinations to the east of Portland, therefore no passenger trains cross through Fairview.

AIR

Fairview is served by the Portland International Airport, located in Northeast Portland on the Columbia River. The Portland International Airport is a major air transportation and freight facility, which serves Oregon and Southwest Washington. It provides a base for over twenty commercial airlines and air freight operations. The Port of Portland reported that 12.6 million passengers were served at the Portland International Airport in 1997.

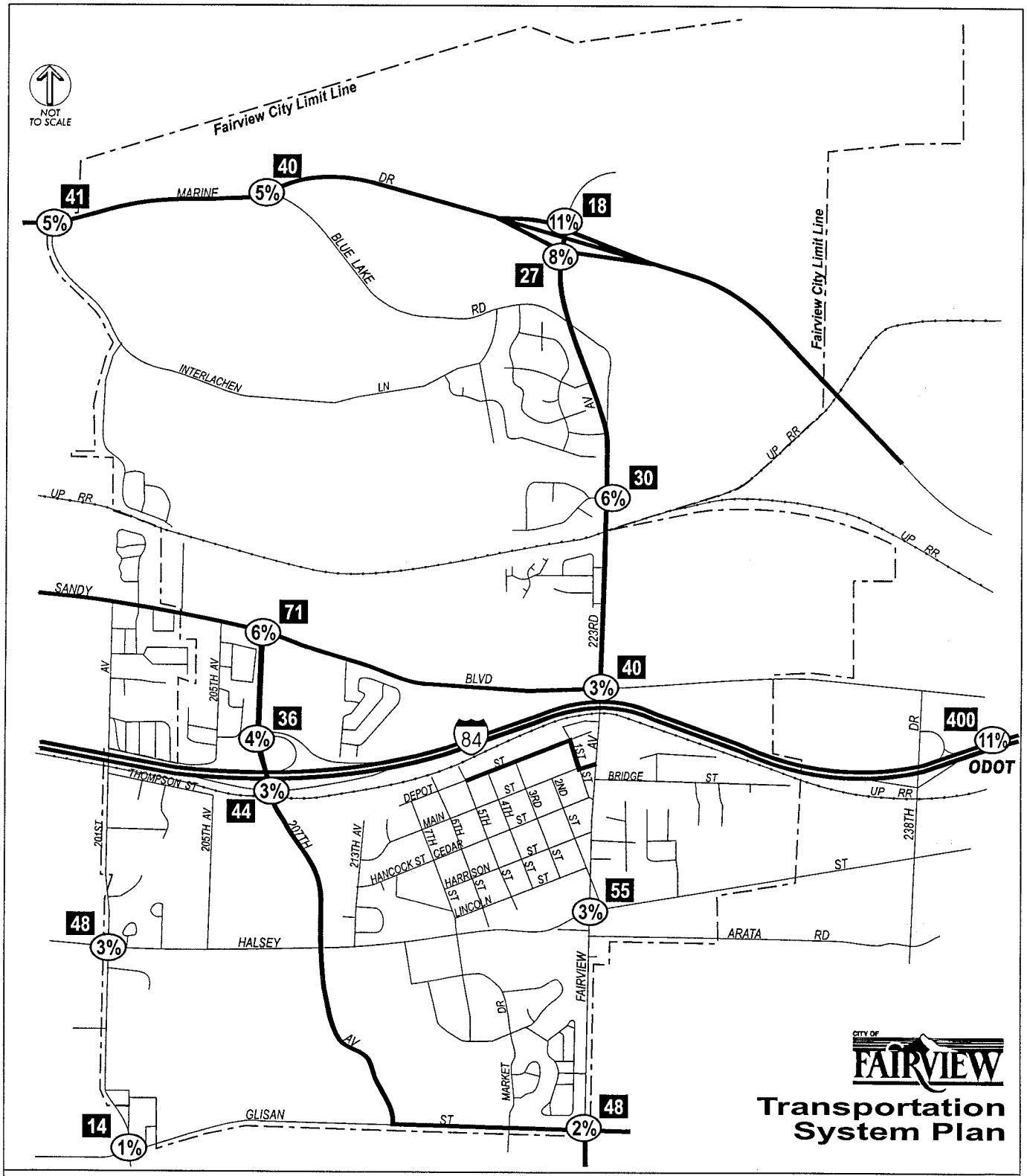
Fairview is also served by the Portland-Troutdale Airport, a general aviation facility located on the northern edge of Troutdale. The airport is home to a number of private entities that provide aviation and aviation-related services, including scenic tours and other charter flights, helicopter and fixed-wing flight training, and aviation repair and maintenance. Both of these airport facilities are outside the City of Fairview.

WATER

The Columbia River is a navigable waterway that supports commercial use. Chinook Landing Marine Park, located at the north end of 223rd Avenue, provides boat access to the Columbia River. Blue Lake and Fairview Lake are used for recreational purposes only. No policies or recommendations in this area of transportation are provided.

PIPELINE

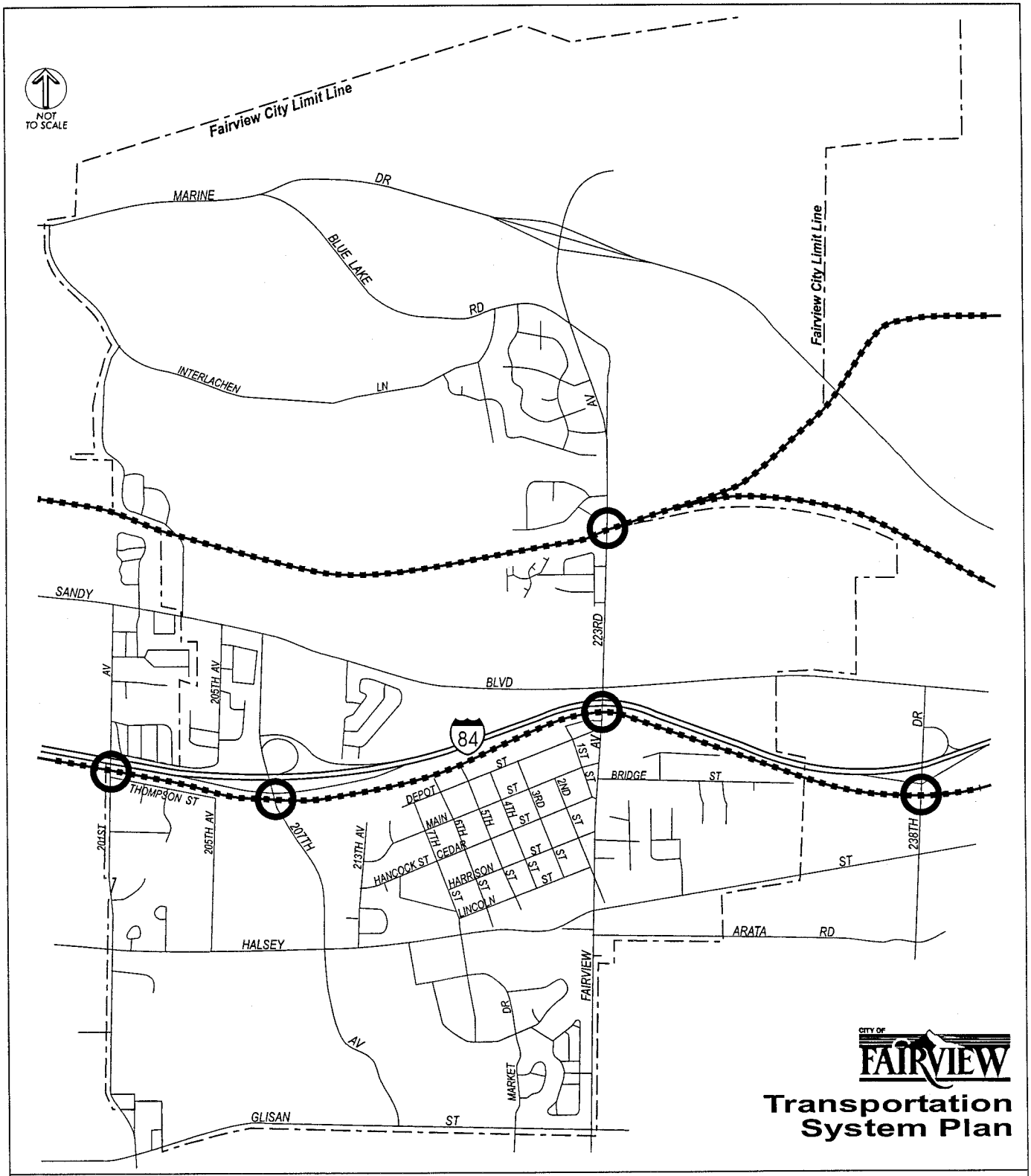
The only major pipeline facilities running through the Fairview area is a high-pressure natural gas feeder line owned and operated by Northwest Natural Gas Company. The feeder line route follows Sandy Boulevard from west of the city limits and extends east towards Troutdale.



LEGEND

- Truck Routes
- 0% - PM Peak Hour Percentage of Trucks
- 00 - PM Peak Hour Traffic Volume

Figure 3-9
EXISTING TRUCK ROUTES



LEGEND

- Existing Railroad Tracks
- Grade Separation

Figure 3-10
EXISTING RAIL ROUTES

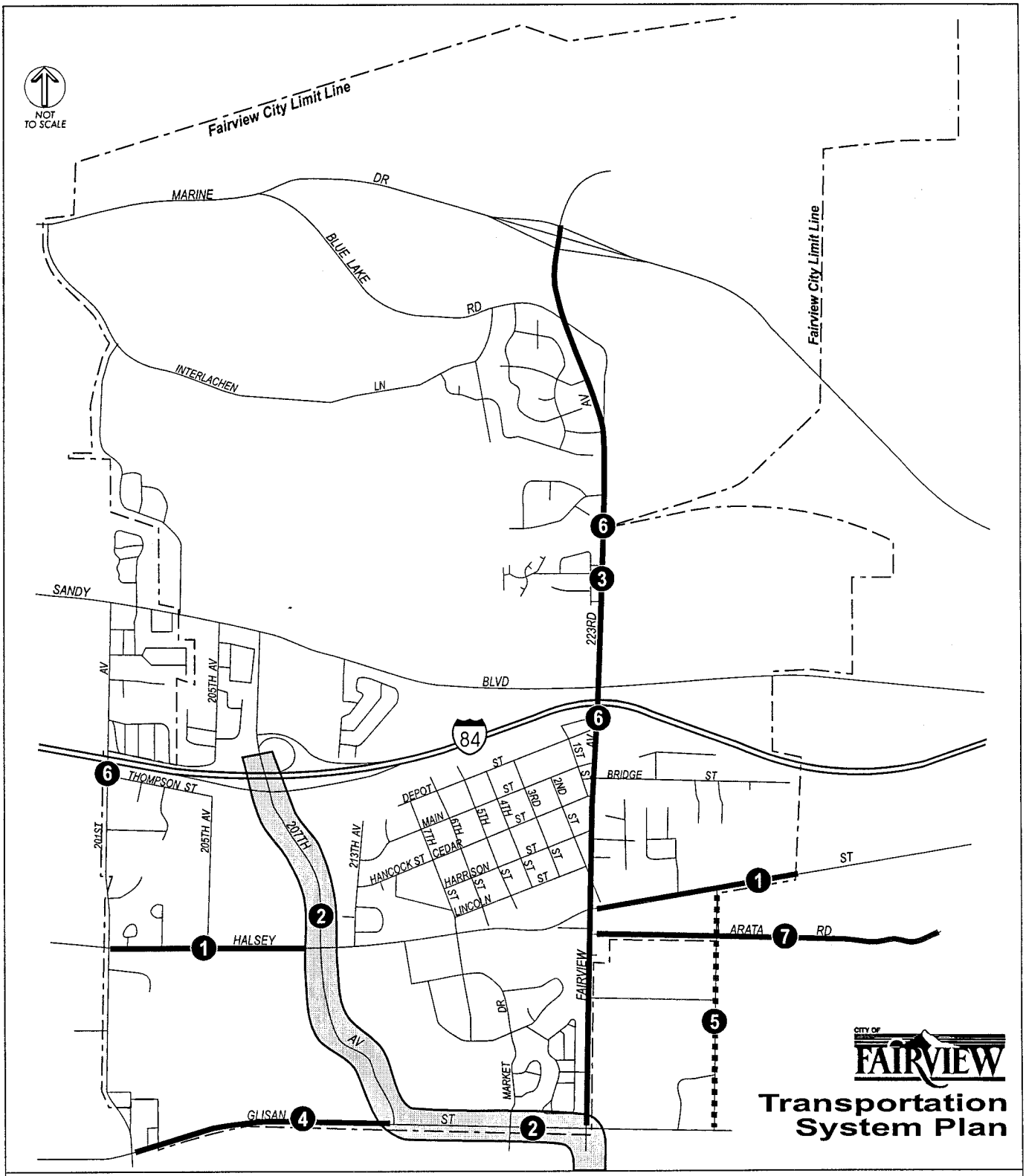
PLANNED IMPROVEMENTS

Several roadway improvements are already planned for the Fairview area by various agencies. Where possible, the agency responsible for the project and project dates are provided. Multnomah CIP refers to projects proposed in the Multnomah County 1998-2002 Transportation Capitol Improvement Plan and Program. These projects are funded by Multnomah County with some federal assistance. Metro RTP refers to projects listed in the draft Metro Regional Transportation Plan developed April 16, 1999.

Figure 3-11 and Table 3-8 summarize the planned improvements in the vicinity of Fairview.

Table 3-8
Fairview Planned Improvements

Number	*Location*	*Project/Limits*	*Plan Source*	*Schedule*
1	Halsey Street	Widen to 3 lanes from 223rd Avenue to 238th Avenue	Metro RTP Multnomah CIP	2000-05 1999-00
		Widen to 5 lanes from 190TH Avenue to 207th Avenue	Multnomah CIP	2000-01
2	207th Avenue/ 223rd Avenue	Access Management Plan to protect mobility to Gresham	Metro RTP	N/A
3	223rd Avenue	Retrofit bike lanes and sidewalks from Halsey Street to Marine Drive	Metro RTP Multnomah CIP	2006-10
4	Glisan Street	Widen to 5 lane from 202nd Avenue to 207th Avenue, upgrade and add signal	Metro RTP/ Multnomah CIP	N/A
5	Multnomah Kennel Club	Construct new collector from Arata Street to Glisan Street	Metro RTP/ Multnomah CIP	N/A
6	Railroad Crossings	202nd Avenue and 223rd Avenue railroad crossing replacement to allow for roadway widening	Metro RTP	2000-05
7	Arata Road	Improvements from 223rd Avenue to 238th Avenue sidewalks, lighting, crossings, bus shelters and benches on Halsey, Glisan and neighborhood streets	Multnomah CIP	N/A
8	Fairview-Wood Village	Improve sidewalks, lighting, crossings, bus shelters and benches on Halsey, Glisan and neighborhood streets	Metro RTP	N/A



LEGEND

- Planned Improvement
- Alignment to be Determined

Figure 3-11
PLANNED IMPROVEMENTS

Chapter 4
Future Demand and Land Use

This chapter summarizes the methodology used to obtain future year forecasts for various modes in the City of Fairview.

The plan for street improvements within Fairview depends on determining existing needs and needs of future growth. As a first step in assessing future needs, Metro's urban area traffic forecast model and land use forecast for 2020 was identified as a source for determining future traffic volumes in Fairview. This traffic forecast model translates land uses into roadway volume projections. These traffic volume projections form the basis for identifying potential roadway deficiencies and for evaluating alternative circulation improvements. This section describes the forecasting process, including key assumptions and the analysis of the land use scenario developed from the current Comprehensive Plan development designations and allowed densities. Future change of these variables could significantly change the future travel forecast.

PROJECTED LAND USES

Land use is a key factor in how the transportation system operates. The amount of land that is developed, the type of land uses and how the land uses are mixed together have a direct relationship to expected demands on the transportation system. Understanding the amount and type of land use is critical to taking actions to maintain or enhance transportation system operation.

Projected land uses were developed for all areas within the urban growth boundary reflecting the comprehensive plan and Metro's land use assumptions for year 2020. Complete land use data sets were developed for the following conditions:

- Existing Base 1994 Conditions
- Year 2020

The base year model is updated every two to three years. For this study effort, the available base model provided by Metro was for 1994. Land uses were inventoried throughout Fairview (and the adjacent jurisdictions) by Metro. This land use database includes the number of dwelling units, number of retail employees and number of other employees. Table 4-1 summarizes the land uses for existing conditions and the future scenario in the Fairview area.[1] A detailed summary of the land uses for each

[1] Based on Metro=s 2020 land use forecasts.

Transportation Analysis Zone (for both the 1994 and 2020 model years) is included in the appendix. These data are updated regionally providing more detailed information. As the land use data is updated in the future, TSP updates can reflect current conditions and new forecasts.

If land uses are significantly changed in proportion to each other (i.e. there is a significant increase in retail employment relative to households), there will be a shift in the overall operation of the transportation system. Retail land uses generate significantly higher numbers of trips than do households and other land uses. The location and design of retail land uses in a community can greatly affect transportation system operation. Additionally, if a community is homogeneous in land use character (i.e. all employment, all residential), the system must support export of trip making. Typically, there should be both residential type land uses as well as employment type land uses so that some residents may work locally, reducing the need for residents to commute long distances to work. Fairview has a mix of land uses, however, many residents must travel outside the City for employment opportunities.

Table 4-1
Fairview Area* Land Use Summary

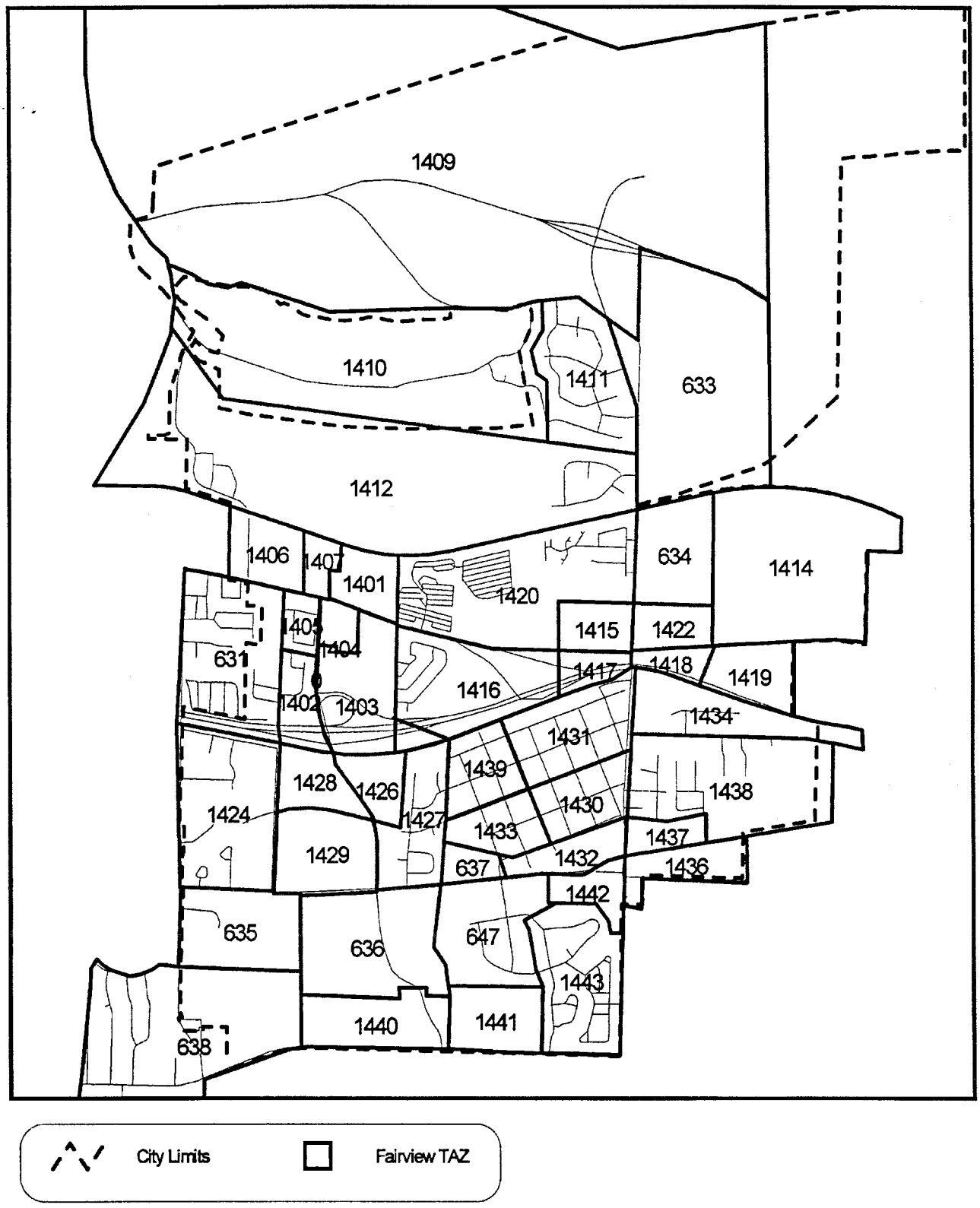
Land Use	*1994*	*2020*	*Growth*	*Percent Increase*
Households	2,014	4,760	2,746	136%
Retail Employees	155	740	585	377%
Other Employees	2,090	6,000	3,910	187%

Source: Metro

Table 4-1 indicates that a significant amount of growth is expected in Fairview area in the coming years. These land use quantities should be monitored to make sure that Fairview is working to achieve a balance of land use that is compatible with the available transportation system. This TSP balances transportation needs with the forecasted 2020 land uses.

Land uses were inventoried throughout Fairview by Metro. This land use database includes the number of dwelling units, number of retail employees and number of other employees. Table 4-2 summarizes the land uses for existing conditions and the future scenario by transportation analysis zones (TAZ's).

For traffic forecasting, the land use data is stratified into geographical areas called traffic analysis zones (TAZ's) which represent the sources of vehicle trip generation. There are about 5-10 Metro TAZ's which represent Fairview and its vicinity. These 5-10 TAZ's were disaggregated, as part of this plan, into about 40-50 TAZ's to more specifically represent land use in and around Fairview. The original Metro and disaggregated model zone boundaries are shown in Figure 4-1. Metro uses EMME/2, a computer based program for transportation planning, to process the large amounts of data for the Portland Metropolitan area.



City Limits Fairview TAZ

Fairview Transportation Analysis Zones (TAZ's)
Figure 4-1

Table 4-2
Fairview Land Use Summary

	Households		*Retail Employees*		*Other Employees*	
TAZ	*1994*	*2020*	*1994*	*2020*	*1994*	*2020*
631	400	480	1	5	12	80
633	1	168	0	0	49	559
634	0	20	1	16	8	106
635	1	1	0	0	897	898
636	13	105	0	6	1	207
637	11	22	4	5	18	59
638	220	258	0	0	15	58
647	0	240	0	200	0	350
1401	0	30	3	8	53	120
1402	10	31	0	0	1	7
1403	30	100	1	8	11	129
1404	1	12	0	32	6	28
1405	91	94	0	1	1	11
1406	3	39	2	6	32	96
1407	3	28	0	1	0	9
1409	6	117	0	0	66	637
1410	125	194	0	0	13	54
1411	11	117	0	0	0	38
1412	3	335	0	0	1	232
1414	0	36	29	67	235	476
1415	9	73	2	69	13	29
1416	60	161	9	16	75	120
1417	0	12	5	0	38	45
1418	0	12	2	0	19	40
1419	0	20	8	0	62	115
1420	118	319	1	0	11	102
1422	0	16	0	0	4	40
1424	118	191	0	0	54	92
1426	1	23	0	0	0	17
1427	36	64	0	0	8	59
1428	8	34	0	0	2	24
1429	39	90	0	0	8	48
1430	56	69	9	15	40	61
1431	50	78	14	27	59	107
1432	74	95	9	26	40	100
1433	128	135	1	4	5	20
1434	55	84	8	21	34	82
1436	13	42	26	39	113	160
1437	0	11	7	14	32	56
1438	251	369	10	44	42	164

TAZ	*Households*		*Retail Employees*		*Other Employees*	
	1994	*2020*	*1994*	*2020*	*1994*	*2020*
1439	42	59	2	7	9	28
1440	19	19	0	2	0	8
1441	0	8	0	0	0	180
1442	6	60	1	100	3	100
1443	2	290	0	0	0	50
Total	**2,014**	**4,760**	**155**	**740**	**2,090**	**6,000**

Source: Metro

METRO AREA TRAFFIC MODEL

The development of future traffic system needs for Fairview depends on the ability to accurately forecast travel demand resulting from estimates of future population and employment for the City. The objective of the transportation planning process is to provide the information necessary for making decisions on when and where improvements should be made in the transportation system to meet travel demands.

Metro has developed an urban area travel demand model as part of the Regional Transportation Plan Update process to help identify street and roadway needs. Traffic forecasting can be divided into several distinct but integrated components that represent the logical sequence of travel behavior (Figure 4-2). These components and their general order in the traffic forecasting process follow:

- Trip Generation
- Trip Distribution
- Mode Choice
- Traffic Assignment

The initial roadway network used in the traffic model was the existing streets and roadways. Future land use scenarios were tested and roadway improvements were added in to mitigate traffic conditions, using programmed improvements as a starting basis. Forecasts of PM peak hour traffic flows were produced for every major roadway segment within the Fairview. Traffic volumes are projected on most arterials and collector streets. Some local streets are included in the model, but many are represented by centroid connectors in the model process.

Trip Generation. The trip generation process translates land use quantities (in numbers of dwelling units and retail and other employment) into vehicle trip ends (number of vehicles entering or leaving a TAZ) using trip generation rates established during the model verification process. The trip rates were based upon Institute of Transportation Engineers research[2] and documentation and adjusted to suit the Portland area in the calibration process. PM peak hour trip rates used in the Metro model are summarized in Table 4-3.

[2] *Trip Generation Manual, 6th Edition*, Institute of Transportation Engineers, 1997.

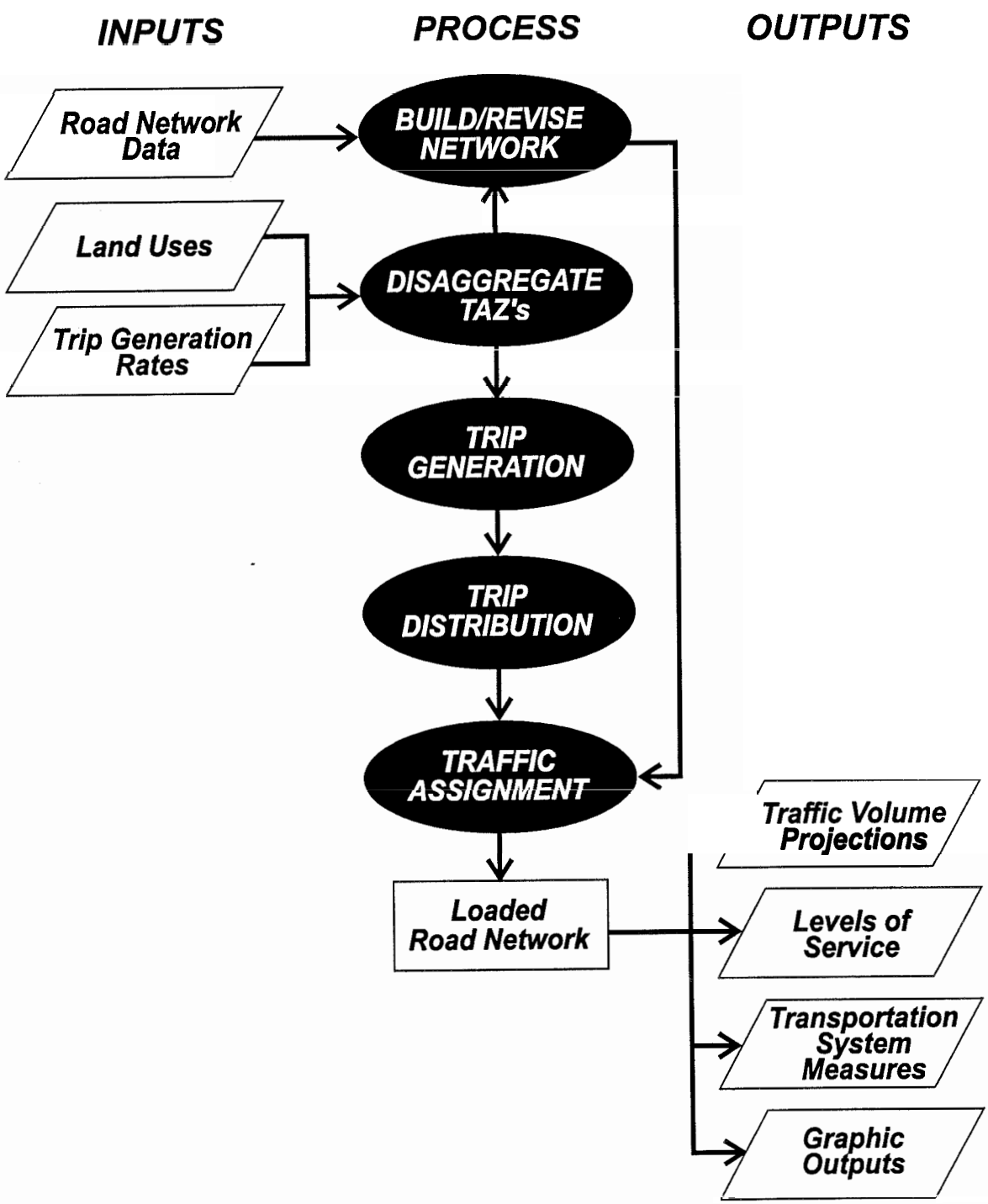


Figure 4-2
TRAFFIC FORECASTING MODEL PROCESS

Table 4-3
Average PM Peak Hour Trip Rates Used in Metro Model

Unit	*Average Trip Rate/Unit* In	Out	Total
Household	0.43	0.19	0.62
Retail Employee	0.78	0.69	1.47
Other Employee	0.07	0.29	0.36

Source: Metro

Table 4-4 illustrates the estimated growth in daily vehicle trips generated within the Fairview, between 1994 and 2020. It indicates that vehicle trip generation in Fairview would grow by approximately 178 percent (almost double) between 1994 and 2020 if the land develops according to Metro's assumptions. Assuming a 20-year time horizon to the 2020 scenario, this represents a growth rate of about three percent per year.

Table 4-4
Existing and Future Projected Trip Generation
PM Peak Hour Vehicle Trips

Trips	*1994*	*2020*	*Growth*	*Percent Increase*
Fairview Area	2,230	6,200	3,970	178%

Source: Metro

Trip Distribution. This step estimates how many trips travel from one zone in the model to any other zone. The distribution is based on the number of trip ends generated in each zone pair, and on factors that relate the likelihood of travel between any two zones to the travel time between the zones.

In projecting long-range future traffic volumes, it is important to consider potential changes in regional travel patterns. Although the locations and amounts of traffic generation in Fairview are essentially a function of future land use in the city, the distribution of trips is influenced by growth in neighboring areas such as Portland, Gresham, Wood Village, etc.. External trips (trips which have either an origin or destination in Fairview and the other trip end outside Fairview) and through trips (trips which pass through Fairview and have neither an origin nor a destination there) were projected using trip distribution patterns based upon census data and traffic counts performed at gateways into the Metro area UGB.

Mode Choice. This is the step where it is determined how many trips will be by single-occupant vehicle, transit or carpool. The 1994 mode splits would be incorporated into the base model and adjustments to that mode split may be made for the future scenario, depending on any expected changes in transit or carpool use. These considerations are built into the forecasts used for 2020. In the Fairview area, the 2020 model assumes approximately six percent would use transit and average vehicle occupancy would be about 1.15 passengers during the evening peak period.

Traffic Assignment. In this process, trips from one zone to another are assigned to specific travel routes in the roadway network, and resulting trip volumes are accumulated on links of the network until all trips are assigned.

Different models are actually used for auto assignment versus transit assignment. Various techniques exist for auto assignment, such as all-or-nothing, stochastic, incremental capacity restraint and equilibrium capacity restraint. The EMME/2 package, among others, uses the equilibrium capacity restraint technique, which is considered to produce the most realistic network traffic loading of all the techniques. With this technique, the auto trips are assigned iteratively to the network in such a way that the final traffic loading will closely approximate the true network "equilibrium." Network equilibrium is defined as the condition where no traveler can achieve additional travel time savings by switching routes. Between iterations, network travel times are updated to reflect the congestion effects of the traffic assigned in the previous iteration. Congested travel times are estimated using what are called "volume-delay functions" in EMME/2. There are different forms of volume/delay functions, all of which attempt to simulate the capacity restraint effect of how travel times increase with increasing traffic volumes. The volume-delay functions take into account the specific characteristics of each roadway link, such as capacity, speed, and facility type.

Model Verification. The base 1994 modeled traffic volumes were compared against actual traffic counts across screenlines, on key arterials and at key intersections. Most arterial traffic volumes are closely replicated, even down to turn movements by the model based upon detailed calibration. Based on this performance, the model was used for future forecasting and assessment of circulation changes.

MODEL APPLICATION TO FAIRVIEW

Intersection turn movements were extracted from the model at key intersections for both year 1994 and year 2020 scenarios. These intersection turn movements were not used directly, but the increment of the year 2020 turn movements over the year 1994 turn movements was applied (added) to existing (actual 1998) turn movement counts in Fairview. Actual turn movement volumes used for future year intersection analysis can be found in Chapter 8: Motor Vehicles.

LAND USE ALTERNATIVES/AMENDMENTS

A substantial amount of effort was spent in the TSP process, on developing several land use alternatives for several key areas in Fairview. A summary of the process that was undertaken and the proposed land use changes can be found in the appendix of this report.

Chapter 5
Pedestrians

This chapter summarizes existing and future pedestrian needs in the City of Fairview, outlines the criteria to be used in evaluating these needs, provides a number of strategies for implementing a pedestrian plan and recommends a pedestrian Action Plan for the City of Fairview. The needs, criteria and strategies were identified in working with the City's TSP Citizen' s Advisory Committee. This committee provided input regarding the transportation system in Fairview, specifically exploring pedestrian needs. The methodology used to develop the pedestrian plan combined citizen and staff input, specific Transportation Planning Rule requirements[1] and continuity to the regional pedestrian network.[2]

NEEDS

A limited number of sidewalks are provided on the arterial and collector roadways (see Figure 2-11) in the City of Fairview, resulting in a fair existing pedestrian network. However, several residential subdivisions in Fairview are relatively new and a majority of them have sidewalks available. Continuity and connectivity are key issues for pedestrians in Fairview since, generally, if there is a sidewalk available, there will be sufficient capacity. In other words, it is more important that a continuous sidewalk be available than that it be of a certain size or type.

The most important existing pedestrian needs in Fairview are providing sidewalks on arterials and collectors and connectivity to key activity centers in the City. This includes the need for safe, well lighted arterial and collector streets. Arterials and collectors can act as barriers to pedestrian movement if safe facilities are not provided. In the future, pedestrian needs will be similar, but there will be additional activity centers that will need to be considered and interconnected.

Walkway needs in Fairview must consider the three most prevalent trip types:

- Residential based trips – home to school, home to home, home to retail, home to park, home to transit, home to entertainment, home to library

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1 *Transportation Planning Rule*, State of Oregon, DLCD, Sections 660-12-020(2)(d) and 660-12-045-3.

2 Version 4.0, *Regional Pedestrian System*, December 1, 1997.

- Service based trips – multi-stop retail trips, work to restaurant, work to services, work/shop to transit
- Recreational based trips – home to park, exercise trips, casual walking trips

Residential trips need a set of interconnected sidewalks radiating out from homes to destinations within one-half to one mile. Beyond these distances, walking trips of this type become significantly less common (over 20 minutes). Service based trips require direct, conflict-free connectivity between uses (for example, a shopping mall with its central spine walkway that connects multiple destinations). Service based trips need a clear definition of connectivity. This requires mixed use developments to locate front doors which relate directly to the public right-of-way and provide walking links between uses with one-half mile. Recreational walking trips have different needs. Off-street trails, well landscaped sidewalks and relationships to unique environmental features (creeks, trees, farmland) are important.

Because all of these needs are different, there is no one pedestrian solution. The most common need is to provide a safe and interconnected system that affords the opportunity to consider the walking mode of travel, especially for trips less than one mile in length.

FACILITIES

Sidewalks should be built to current design standards of the City of Fairview/Multnomah County and in compliance with the Americans with Disabilities Act (at least four feet of unobstructed sidewalk).[3] Wider sidewalks may be constructed in commercial districts or on arterial streets. Additional pedestrian facilities may include accessways, pedestrian districts and pedestrian plazas, as defined in the *Transportation Planning Rule*:[4]

> *Accessway*: A walkway that provides pedestrian and/or bicycle passage either between streets or from a street to a building or other destination such as a school, park or transit stop.
>
> *Pedestrian District*: A plan designation or zoning classification that establishes a safe and convenient pedestrian environment in an area planned for a mix of uses likely to support a relatively high level of pedestrian activity.
>
> *Pedestrian Plaza*: A small, semi-enclosed area usually adjoining a sidewalk or a transit stop which provides a place for pedestrians to sit, stand or rest.

These designations will be provided as the TSP is implemented. Any pedestrian districts, for example the area near Halsey Street and 223rd Avenue, may be identified in further studies which address pedestrian issues. In addition, pedestrian issues in *Main Street* and *Town Center* areas should be

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3 *Americans with Disabilities Act*, Uniform Building Code.

4 *Transportation Planning Rule*, State of Oregon, Department of Land Conservation and Development, OAR-660-12-005(2, 14 and 15).

reviewed in greater detail for pedestrian accessibility, facilities and/or street crossing treatments. The land uses proposed in the *Main Street* and *Town Center* areas will help to promote more pedestrian use. Better pedestrian access should be developed to support and encourage this use.

Sidewalks should be sized to meet the specific needs of the adjacent land uses and needs. Guidance to assess capacity needs for pedestrians can be found in the *Highway Capacity Manual and Pushkarev and Zupan*.[5] Typically, the base sidewalks sizing for local and neighborhood routes should be 5 feet.

As functional classification of roadways change, so should the design of pedestrian facilities. Collectors may need to consider minimum sidewalk widths of 6 to 8 feet and arterials should have sidewalk widths of 6 to 10 feet. Wider sidewalks may be necessary depending upon urban design needs and pedestrian flows (for example, adjacent to storefront retail or near transit stations). Curb-tight sidewalks are generally acceptable at the local and neighborhood route classification, however, with high vehicle volumes and on collector/arterial streets, landscape strips between the curb and the sidewalk should be required. Where curb-tight sidewalks are the only option, additional sidewalk width should be provided to accommodate the other street side features (light poles, mail boxes, etc.).

CRITERIA

Fairview=s Citizen=s Advisory Committee created a set of goals and policies to guide transportation system development in Fairview (see Chapter 2). Several of these policies pertain specifically to pedestrian needs:

Goal 1

Policy 2 *Encourage pedestrian accessibility by providing safe, secure and desirable pedestrian routes.*

Goal 2

Policy 4 *Sidewalks must be constructed on all streets within Fairview (with construction or reconstruction projects), except where a specific alternative plan has been developed (i.e. Fairview Village Plan and Fairview Renaissance Plan). All schools, parks, public facilities and retail areas shall have direct access to a sidewalk.*

Policy 5 *Bicycle and pedestrian plans shall be developed which link to recreational trails.*

Policy 6 *Local streets shall be designed to encourage a reduction in trip length by providing connectivity and limiting out-of-direction travel. Provide connectivity to activity centers and destinations with a priority for pedestrian connections.*

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5 *Highway Capacity Manual*, Special Report 209, Transportation Research Board, 1994; Chapter 13; and Pushkarev, Zupan, Urban Spaces for Pedestrians, 1975.

Goal 3

Policy 3 *Safe and secure pedestrian and bicycle ways shall be designed between parks and other activity centers in Fairview.*

Policy 4 *Safe and secure routes to schools shall be designed for each school and any new residential project shall identify the safe path to school for children*

Goal 5

Policy 1 *Design and construct transportation facilities to meet the requirements of the Americans with Disabilities Act.*

These goals and policies are the criteria that all pedestrian improvements in Fairview should be compared against to determine if they conform to the intended vision of the City.

STRATEGIES

Several strategies were evaluated by the Citizen=s Advisory Committee for future pedestrian projects in Fairview. These strategies aimed at providing the City with priorities to direct its funds toward pedestrian projects that meet the goals and policies of the City:

Strategy 1 - "Fill in Gaps in the Network Where Some Sidewalks Exist"

This strategy provides sidewalks which fill in the gaps between existing sidewalks where a significant portion of a pedestrian corridor already exists. This strategy maximizes the use of existing pedestrian facilities to create complete sections of an overall pedestrian network.

Strategy 2 - "Pedestrian Corridors that Connect Neighborhoods"

This strategy puts priority on linking neighborhoods together with pedestrian facilities. This can include walkways at the end of cul-de-sacs and direct connections between neighborhoods (avoiding "walled" communities).

Strategy 3 - "Connect Key Pedestrian Corridors to Schools, Parks, Recreational Uses & Activity Centers"

This strategy provides sidewalks leading to activity centers in Fairview, such as schools and parks. This strategy provides added safety on routes to popular pedestrian destinations by separating pedestrian flow from auto travel lanes. These routes are also common places that children may walk, providing them safer routes. A key element of this strategy is to require all new development to define direct safe pedestrian paths to parks, activity centers, schools and transit (in the future) within one mile of the development site. Direct will be defined as 1.25 times the straight line connection to these points from the development. Any gaps (off-site) will be defined (location and length).

Strategy 4 - "Reconstruct All Existing Substandard Sidewalks to City of Fairview Standards"

This strategy focuses on upgrading any substandard sidewalks to current city standards. Current standards are for five-foot sidewalks to meet ADA[6] requirements. Several sidewalks exist that do not meet the minimum five-foot requirement. Fronting property owners are responsible for sidewalk maintenance where pavement has fallen into disrepair.

Strategy 5 - "Pedestrian Corridors that Connect to Major Recreational Facilities Such as the 40-Mile Loop"

This strategy provides a connection between the sidewalk network and major recreational facilities, such as the 40-mile loop.

Strategy 6 - "Transit Facilities"

This strategy provides sidewalks leading to major transit facilities, such as bus stops, which service a high volume of riders. This strategy increases pedestrian safety and encourages transit use.

Table 5-1 provides an assessment of how each of the strategies meets the requirements of each of the goals and policies.

RECOMMENDED PEDESTRIAN FACILITY PLAN

The strategies that had been evaluated by the Citizen's Advisory Committee were ranked by each member of the committee according to his or her vision of priorities for the City of Fairview. The ranking of these strategies is listed in Table 4-1 from most important to least important. Four strategies were considered to be a high priority for pedestrians in Fairview. These strategies were filling in network gaps, connections to transit facilities, connections between neighborhoods and connections to schools, parks, and activity centers.

A list of likely actions to achieve fulfillment of these priorities was developed into a Pedestrian Master Plan. The Pedestrian Master Plan (Figure 4-1) is an overall plan and summarizes the "wish list" of pedestrian-related projects in Fairview. From this Master Plan, a more specific, shorter term, Action Plan was developed. The Action Plan consists of projects that the City should give priority to in funding. As development occurs, streets are rebuilt and other opportunities (such as grant programs) arise, projects on the Master Plan should be pursued as well.

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6 *Americans with Disabilities Act*, Uniform Building Code.

Table 5-1
Pedestrian Facility Strategies Comparisons

Strategy	Policies 1-2	2-4	2-5	2-6	3-3	3-4	5-1
1. Fill in gaps in network where some sidewalks exist	★★	★★	★★	★★	★★	★★	★
2. Connect pedestrian corridors to major transit facilities	★	★	○	★★	★	○	★
3. Pedestrian corridors that connect neighborhoods	★★	★★	★	★★★	★	★	★
4. Connect key pedestrian corridors to schools, parks & activity centers	★★★	★★★	★★★	★★★	★★★	★★★	★
5. Connect to major recreational uses	★	★★	★★★	★★	★★★	○	★
6. Reconstruct all sidewalks to City of Fairview standards	★	★	★	★	★	★	★★★

○ Does not meet criteria ★★ Mostly meets criteria
★ Partially meets criteria ★★★ Fully meets criteria

It is preferable to provide pedestrian facilities on one side of the street if it means a longer section of the system could be covered (i.e. sidewalk on one side of the street for two miles is preferable to sidewalk on both sides of the street for one mile). In the case of significant stretches where sidewalk is only provided on one side of the road, particular emphasis should be placed on developing safe crossing locations. Development shall still be responsible for any frontage improvements, even if a pedestrian facility already exists opposite the proposed development. Sidewalks on both sides of all streets are the ultimate desire.

POTENTIAL PROJECT LIST

Table 5-2 outlines potential pedestrian projects in Fairview. The City, through its Capital Improvement Program (CIP), joint funding with other agencies (Multnomah County, Metro) and development approval would implement these projects. The following considerations should be made for each sidewalk installation:

- Every attempt should be made to meet City standards
- Sidewalks should be a minimum of five feet wide
- Landscape strips should be considered and are encouraged (see standard street cross-sections in Motor Vehicles chapter)

Action Plan Projects

Figure 5-2 and Table 5-2 summarize the Pedestrian Action Plan.

Table 5-2
Potential Pedestrian Projects

Rank*	Project	From	To
		Action Plan Projects	
H-1	223rd Avenue (both sides)	Halsey Street	Existing sidewalk north of Sandy Boulevard
H-2	201st Avenue (east side)	Glisan Street	Existing sidewalk adjacent to Reynolds Elementary
H-3	201st Avenue (east side)	Halsey Street	I-84 overpass bridge (Fairview City Limits)
H-4	Halsey Street (south side)	201st Avenue	205th Avenue
H-5	Halsey Street (north side)	Existing sidewalk west of 205th	Existing sidewalk east of 205th
H-6	Sandy Boulevard (south side)	Existing sidewalk east of 207th	223rd Avenue
H-7	Blue Lake Road	Interlachen Lane	Blue Lake Park entrance
		Other Potential Projects	
M-1	Glisan Street	201st Avenue	Existing sidewalk west of 207th
M-2	Arata Road	223rd Avenue	East Fairview City Limits
M-3	Bridge Street	223rd Avenue	East end of roadway
M-4	Sandy Boulevard (north side)	223rd Avenue	207th Avenue
M-5	Multi-Use Path on railroad tracks ROW	223rd Avenue	West Fairview City Limits
M-6	Sandy Boulevard	223rd Avenue	East Fairview City Limits
M-7	223rd Avenue (east side)	Sandy Boulevard	Marine Drive
	Old Town Fairview	Numerous Projects	

X H=High, M=Medium, L=Low Priority

Complementing Land Development Actions

It is important that, as new development occurs, connections or accessways are provided to link the development to the existing pedestrian facilities in as direct manner as possible. As a guideline, the sidewalk distance from the building entrance to the public right-of-way should not exceed 1.25 times the straight line distance. If a development fronts a proposed sidewalk (as shown in the Pedestrian Master Plan), the developer shall be responsible for providing the walkway facility as part of any frontage improvement required for mitigation. It is also very important that residential developments consider the routes that children will use to walk to school and provide safe and accessible sidewalks to accommodate these routes, particularly within one mile of a school site. Additionally, all commercial projects generating over 1,000 trip ends per day should provide a pedestrian connection plan showing how pedestrian access to the site links to adjacent uses, the public right-of-way and the site front door. Conflict free paths and traffic calming elements should be identified, as appropriate.

Address Gaps in Pedestrian System

Many of the areas developed in Fairview 5 to 25 years ago did not provide sidewalks. These areas create gaps in the pedestrian walking system that become more important as land development continues. Current land developments build sidewalks on project frontages, but have little means or incentive to extend sidewalks beyond their property. Property owners without sidewalks are unlikely to independently build sidewalks that do not connect to anything. In fact, some property owners are resistant to sidewalk improvements due to cost (they do not want to pay) or changes to their frontage (they may have landscaping in the public right-of-way). As an incentive to fill some of these gaps concurrent with development activities, the City could consider an annual walkway fund that would supplement capital improvement-type projects. A fund of about $40,000 to $50,000 per year could build over a quarter mile of sidewalk. If matching funds were provided, over double this amount may be possible. The fund could be used several ways:

- Matching other governmental transportation funds to build connecting sidewalks identified in the master plan.
- Matching funds with land use development projects to extend a developer's sidewalks off-site to connect to non-contiguous sidewalks.
- Supplemental funds to roadway projects which build new arterial/collector sidewalks to create better linkages into neighborhoods.
- Matching funds with adjacent landowners that front the proposed sidewalk.

Parks and Trails Development

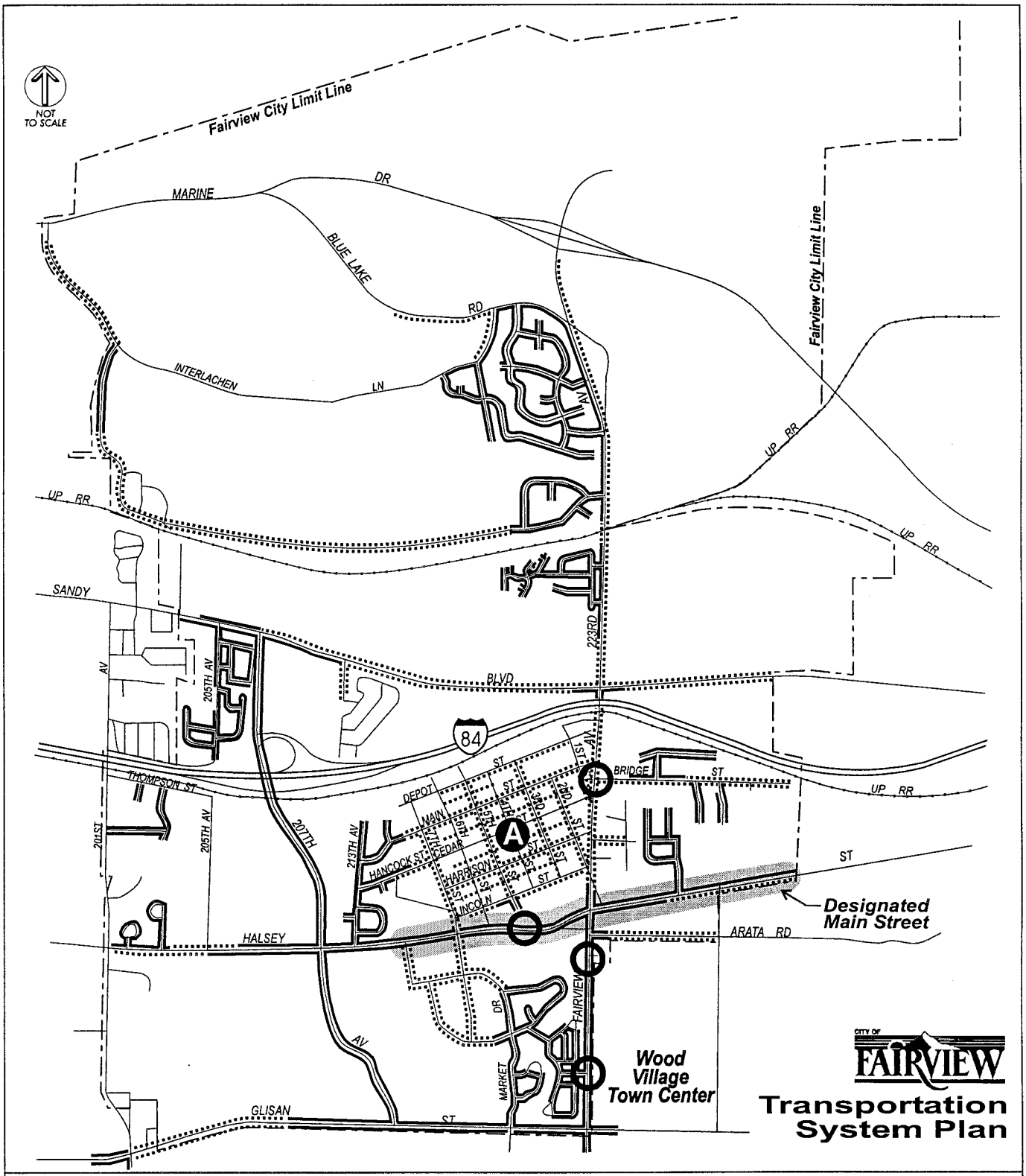
The City Parks and Recreation Department and Metro Greenspaces programs are responsible for the majority of off-street trail opportunities. These two agencies must coordinate their pedestrian plans to provide an integrated off-street walking system in Fairview. Recent Metro Greenspaces initiatives and City park projects provide an opportunity to implement the off-street trails in Fairview as an integrated element of the pedestrian action plan.

Safety

Pedestrian safety is a major issue. Pedestrian conflicts with motor vehicles are a major issue in pedestrian safety. These conflicts can be reduced by providing direct links to buildings from public rights-of-way, considering neighborhood traffic management (see Chapter 8: Motor Vehicles), providing safe roadway crossing points and analyzing/reducing the level of pedestrian/vehicle conflicts in every land use application.

In setting priorities for the pedestrian action plan, school access was given a high priority to improve safety. However, beyond simply building more sidewalks, school safety involves education and planning. Many cities have followed guidelines provided by Federal Highway Administration and Institute of Transportation Engineers. Implementing plans of this nature has demonstrated accident reduction benefits. However, this type of work requires staffing and coordination by the School District as well as the City to be effective.

Several "pedestrian crossing evaluation" locations were identified on the Pedestrian Master Plan and on the Pedestrian Action Plan. These are locations where it may be desirable (where warrants are met) to install a pedestrian activated signal for the sole purpose of allowing pedestrians to cross the roadway.



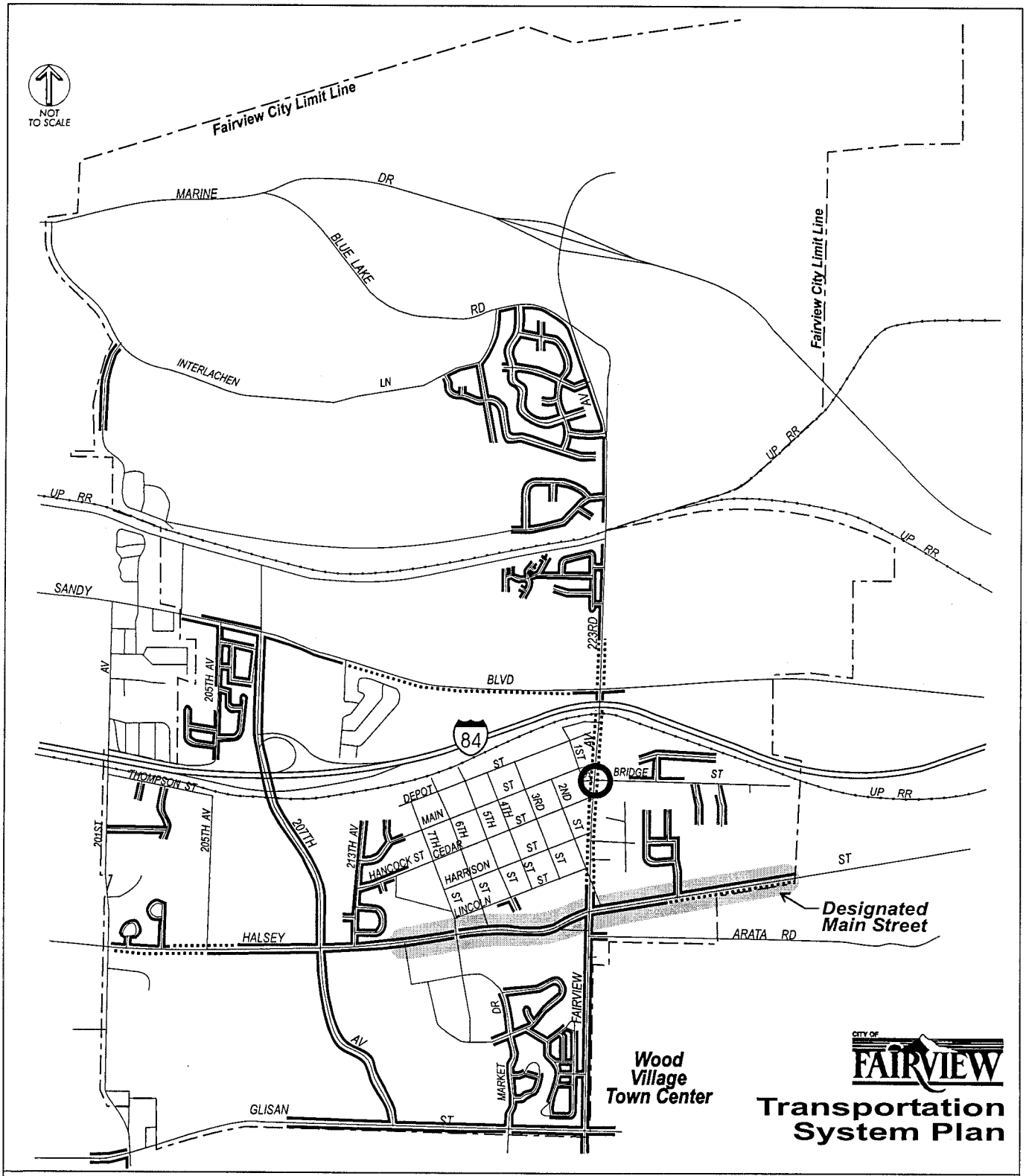
LEGEND

- Existing Sidewalks
- Proposed Sidewalks
- Pedestrian Crossing Evaluation
- Designated Main Street

Note: Multi-Use Trails shown on Bicycle Master Plan

A Note: Proposed sidewalks in the "Core" area would be constructed as "Pedestrian Pathways" as defined in the *"Renaissance Plan"*.

Figure 5-1
SIDEWALK MASTER PLAN



LEGEND

- Existing Sidewalks
- Proposed Sidewalks
- Pedestrian Crossing Evaluation
- Designated Main Street

Figure 5-2
SIDEWALK ACTION PLAN

Chapter 6
Bicycles

This chapter summarizes existing and future facility needs for bicycles in the City of Fairview. The following sections outline the criteria to be used to evaluate needs, provide a number of strategies for implementing a bikeway plan and recommend a bikeway plan for the City of Fairview. The needs, criteria and strategies were identified in working with the City's Citizen' s Advisory Committee. This committee provided input regarding the transportation system in Fairview, specifically exploring bicycle needs. The methodology used to develop the bicycle plan combined citizen and staff input, specific Transportation Planning Rule requirements[1] and continuity to the regional bicycle system.[2]

Metro's *Draft Regional Transportation Plan (RTP)* has identified a Proposed Regional Bicycle Network. The following Fairview streets are classified as follows in the RTP:

- 223rd Avenue (south of Sandy) Regional Access Bikeway
- Sandy Boulevard Regional Corridor Bikeway
- Halsey Street Regional Corridor Bikeway
- 223rd Avenue (north of Sandy) Regional Corridor Bikeway
- Marine Drive Community Connector Bikeway/Off-Street Multi-Use Path
- I-84 Off-Street Multi-Use Path
- 207th Avenue Community Connector Bikeway
- Glisan Street Community Connector Bikeway

NEEDS

Continuous bikeways are currently only provided on Halsey Street, 207th Avenue and along Marine Drive in the City of Fairview. In addition, there are a few segments where bikeways do exist where new development and roadway improvements have occurred. Continuity and connectivity are key issues for bicyclists and the lack of facilities (or gaps) cause significant problems for bicyclists in Fairview.

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1 *Transportation Planning Rule*, State of Oregon, DLCD, Section 660-12-020(2)(d), 660-12-035(3)(e), 660-12-095(3)(b & c).

2 *Regional Bicycle System Map, Draft 3.0*, Metro, July 2, 1997.

Without connectivity of the bicycle system, this mode of travel is severely limited (similar to a road system full of cul-de-sacs). The TPR[3] calls for all arterial and collector streets to have bicycle facilities. To meet the TPR requirements and fill in existing gaps in the existing bicycle system, an action plan that focuses on a framework system should be developed to prioritize bicycle investment.

Bicycle trips are different from pedestrian and motor vehicle trips. Common bicycle trips are longer than walking trips and generally shorter than motor vehicle trips. Where walking trips are attractive at lengths of a quarter mile (generally not more than a mile), bicycle trips are attractive not only for these short trips, but lengths of two to three miles. Bicycle trips can generally fall into three groups: commuters, activity-based and recreational. Commuter trips are typically home/work/home (sometimes linking to transit) and are made on direct, major connecting roadways and/or local streets. Bicycle lanes provide good accommodations for these trips. Activity based trips can be home-to-school, home-to-park, home-to-neighborhood commercial or home-to-home. Many of these trips are made on local streets with some connections to the major functional classification streets. The needs are for lower volume/speed traffic streets, safety and connectivity. It is important for bicyclists to be able to use through streets. Recreational trips share many of the needs of both the commuter and activity-based trips, but create greater needs for off-street routes, connections to rural routes and safety. Bicycle facility needs fall into two primary categories: route facilities and parking facilities. Bicycle lanes are the most common route facilities in Fairview. Racks, lockers and shelters are typical bicycle parking facilities.

FACILITIES

Bicycle facilities can generally be categorized as bike lanes, bicycle accommodation, or off-street bike paths/multi-use trails. Bike lanes are areas within the street right-of-way designated specifically for bicycle use. Federal research has indicated that bike lanes are the most cost effective and safe facilities for bicyclists when considering all factors of design. Bicycle accommodations are where bicyclists and autos share the same travel lanes, including a wider outside lane and/or bicycle boulevard treatment (priority to through bikes on local streets). Multi-use paths are generally off-street routes (typically recreationally focused) that can be used by several transportation modes, including bicycles, pedestrians and other non-motorized modes (i.e. skateboards, roller blades, etc.). The term bikeway is used in this plan to represent any of the bicycle accommodations described above. The bicycle plan designates where bike lanes and multi-use paths are anticipated and any other bicycleways are expected to be bike accommodations (i.e. shared with motor vehicles).

[3] Oregon Administrative Rules, Chapter 660, Division 12, Section 045(3).

Bicycle lanes adjacent to the curb are preferred to bicycle lanes adjacent to parked cars. Six-foot bicycle lanes are recommended. Design features in the roadway can improve bicycle safety[4]. For example, using curb storm drain inlets rather than catch basins significantly improves bicycle facilities. On reconstruction projects, bicycle lanes of five feet may need to be considered. Bicycle accommodations can be provided by widening the curb travel lane (for example, from 12 feet to 14 or 15 feet). This extra width makes bicycle travel more accommodating and provides a greater measure of safety. Signing and marking of bicycle lanes should follow the *Manual on Uniform Traffic Control Devices*, as adopted for Oregon.

CRITERIA

Fairview's Citizen's Advisory Committee created a set of goals and policies to guide transportation system development in Fairview (see Chapter 2). Several of these policies pertain specifically to bicycle needs:

Goal 2

Policy 3 *Bicycle lanes should be constructed on all arterials and collectors within Fairview (with construction or reconstruction projects). All schools, parks, public facilities and retail areas shall have direct access to a bikeway.*

Policy 5 *Bicycle and pedestrian plans shall be developed which link to recreational trails.*

Goal 3

Policy 3 *Safe and secure pedestrian and bikeways shall be designed between parks and other activity centers in Fairview.*

These goals and policies are the criteria that all bikeway improvements in Fairview should be measured against to determine if they conform to the intended direction of the City.

Policy 2-3 sets a specific requirement that bicycle lanes be constructed on all arterials and collectors within Fairview and that all schools, parks, public facilities and retail areas have direct access to a bikeway. Table 6-1 summarizes the bicycle corridors created by overlaying the bicycle network over the arterial and collector system in Fairview.

Since bicyclists can generally travel further than pedestrians, connections that lead to regional destinations such as Portland and Gresham areas are important. Fairview's bicycle network should connect to Multnomah County's, Wood Village's and Gresham's bicycle networks and be consistent with the Regional Bicycle System. Key locations where connections should be made to these other jurisdictions' networks include 201st Avenue, Glisan Street and Sandy Boulevard.

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4 *Oregon Bicycle and Pedestrian Plan*, ODOT, June, 1995; this provides an in-depth discussion on bicycle network development.

Table 6-1
Corridors in Proposed Bikeway Network

North-South Corridors	East-West Corridors
201st Avenue	Glisan Street
207th Avenue	Halsey Street
223rd Avenue	Sandy Boulevard
	Marine Drive

STRATEGIES

Several strategies were considered for construction of future bikeway facilities in Fairview. These strategies were studied to provide the City with priorities since it is likely that the available funding will be insufficient to address all of the projects identified in the Bikeway Master Plan.

Strategy 1 – "Fill in Gaps in the Network where Some Bikeways Exist"

This strategy provides bikeways which fill in the gaps between existing bikeways where a significant portion of a bikeway corridor already exists. This strategy maximizes the use of existing bicycle facilities to create complete sections of an overall bikeway network. Examples would include Halsey, Glisan, Blue Lake and Interlachen, where short segments would complete routes.

Strategy 2 – "Bicycle Corridors that Commuters Might Use"

This strategy focuses on providing bicycle facilities where commuters are likely to go such as local (within Fairview) or regional (i.e. Troutdale, Gresham or downtown Portland) employment centers or leading to transit which provides access to regional employment centers. Examples would include Sandy and Glisan.

Strategy 3 – "Bicycle Corridors that Access Commercial Areas@

This strategy puts priority on bicycle lanes for arterials/collectors which provide access to commercial areas within the City. Examples would include 223rd and Halsey.

Strategy 4 – "Connect Key Bicycle Corridors to Schools, Parks, Recreational Facilities and Activity Centers"

This strategy provides bikeway links to schools, parks, recreational facilities and activity centers from the arterial/collector bikeway network. This alternative provides added safety to likely bicyclist destinations as well as destinations where children are likely to travel. Examples would include 223rd, 201st, Glisan, Halsey and the off-street multi-use paths near Fairview Village.

Strategy 5 – "Bicycle Corridors that Connect Neighborhoods"

This alternative puts priority on bicycle lanes for routes which link neighborhoods together. Some of these could include paths crossing parks, schools or utility rights-of-way.

Strategy 6 – "Construct All Bikeways to City of Fairview/Multnomah County Standards"

This strategy focuses on upgrading any substandard existing bikeways to current city standards. Current standards are for six-foot wide bike lanes with appropriate striping and signs for bicycle safety.

Strategy 7 – "Bicycle Corridors that Connect to Major Recreational Facilities Such as the 40-Mile Loop"

This strategy provides a connection between the bikeway network and major recreational facilities, such as the 40-mile loop. Examples would be the Gresham-Fairview Trail, 223rd Avenue and the off-street link between Interlachen and Blue Lake.

Table 6-2 summarizes the strategies in terms of meeting the transportation goals and objectives.

Table 6-2
Bikeway Facility Strategies Comparisons

Strategy		Policies		
		2-3	2-5	3-3
1.	Connect key bicycle corridors to schools, parks, recreational facilities & activity centers	✱✱✱	✱✱✱	✱✱✱
2.	Connect bicycle corridors to major recreational facilities	✱✱	✱✱✱	✱✱✱
3.	Bicycle corridors that connect neighborhoods	✱✱	✱	✱✱
4.	Fill in gaps in the network where some bikeways exist	✱✱	✱	✱✱
5.	Reconstruct existing bikeways to Fairview and Multnomah County standards	✱	✱	✱
6.	Connect bicycle corridors to commercial areas	✱✱✱	✱	✱
7.	Bicycle corridors that commuters might use	✱✱✱	✱	✱✱

○ Does not meet criteria
✱ Partially meets criteria
✱✱ Mostly meets criteria
✱✱✱ Fully meets criteria

RECOMMENDED BIKEWAY FACILITY PLAN

The strategies that had been evaluated by the Citizen's Advisory Committee were ranked by the committee. Each task force member was assigned a certain number of points that he or she could allocate to each of the strategies according to his or her vision of priorities for the City of Fairview. The ranking of these strategies follows, from most important to least important:

- Connect key bicycle corridors to schools, parks, recreational facilities and activity centers (public facilities, etc.)
- Connect bicycle corridors to major recreational facilities (such as the 40-mile loop)
- Bicycle corridors that connect neighborhoods
- Fill in gaps in the network where some bikeways exist
- Construct existing bikeways to Fairview/Multnomah County standards
- Connect bicycle corridors to commercial areas
- Bicycle corridors for commuters

A list of likely actions to achieve fulfillment of these priorities was developed into a Bicycle Master Plan. The Bicycle Master Plan (Figure 6-1) is an overall plan and summarizes the "wish list" of bicycle-related projects in Fairview, providing a long-term map for planning bicycle facilities. From this Master Plan, a more specific, shorter term, Action Plan was developed. The Action Plan (Figure 6-2) consists of projects that the City should actively try to fund. These projects form a basic bicycle grid system for Fairview. As development occurs, streets are rebuilt and other opportunities (such as grant programs) arise, projects on the Master Plan should be pursued as well. Also, the City of Fairview needs to coordinate with Gresham regarding the Gresham-Fairview Trail (GFT) and the linkage to Fairview Lake Way that opens up bicycle/pedestrian access to the industrial park currently under development to the west.

POTENTIAL PROJECT LIST

Table 6-3 outlines potential bicycle projects in Fairview. The City, through its Capital Improvement Program (CIP), joint funding with other agencies (County, Metro) and development approval would implement these projects. Figure 6-2 summarizes the Bicycle Action Plan.

Multi-use paths identified on the bicycle plans should be aligned to cross roadways at intersections for safe crossing rather than crossing roadways at mid-blocks without traffic control.

Table 6-3
Bicycle Project Priorities

Rank*	Project	From	To
		Action Plan Projects	
H-1	223rd Avenue	Halsey Street	Blue Lake Road
H-2	Halsey Street	223rd Avenue	East City Limits
H-3	Interlachen	Fairview Lake Way	Marine Drive
H-4	Gresham-Fairview Trail	Glisan Street	Halsey Street
H-5	Gresham-Fairview Trail	Sandy Boulevard	Fairview Lake Way
		Other Master Plan Projects	
M-1	Sandy Boulevard	East City Limits	West City Limits
M-2	Blue Lake Road	Park Entrance	223rd Avenue
M-3	Fairview Lake Way	Interlachen	223rd Avenue
M-4	Glisan Street	West City Limits	Existing Bike Lanes
M-5	223rd Avenue	Blue Lake Road	North of Marine Drive
M-6	Wood Village Drive	Glisan Street	Halsey Street
M-7	Railroad Right-of-Way	West City Limits	East City Limits
M-8	Marine Drive (Off-Street)	Interlachen	Blue Lake
M-9	Marine Drive (On-Street)	Blue Lake Road	Fairview City Limits
M-10	Salish Ponds (Off-Street)	Trail within Park	

* H=High, M=Medium, L=Low Priority

Bike lanes are proposed on Marine Drive east of Blue Lake Road to provide a continuous (uninterrupted) route for bicyclists. Development on the south side of Marine Drive is creating access points which interrupt the existing multi-use path. There are sufficient shoulders (approximately eight feet wide) to accommodate bike lanes on Marine Drive. In the westbound direction, a bike lane would be desirable, however, in the eastbound direction, consideration should be given to the fact that the bike lane would be almost immediately adjacent to the existing off-street multi-use path.

The Bicycle Master Plan envisions an off-road multi-use path along the northern boundary of Blue Lake Park as shown in the Multi-Use Path Study Area of Figure 6-1. Metro is in the process of updating the Blue Lake Park master plan and will consider the multi-use path and bike lane in the context of the overall park design. Issues that need to be addressed during Metro's master planning process include, but are not limited to, potential impact to natural resources, daily closure of the park and potential conflicts with park operations and maintenance activities. Fairview residents interested in this issue should contact Metro to become involved with the Blue Lake Park master planning process.

The Gresham-Fairview Trail is shown on both the Master Plan and the Action Plan. This trail is technically outside the City of Fairview, but it is shown because it is in close proximity to Fairview and will eventually provide key links to Fairview's bicycle network. The Gresham-Fairview Trail is mostly in Gresham and Multnomah County.

COMPLEMENTING LAND DEVELOPMENT ACTIONS

The Transportation Planning Rule requires that bicycle parking facilities be provided as part of new residential developments of four units or more, new retail, office and institutional developments, and all transit transfer stations and park and ride lots.[5]

It is important that, as new development occurs, connections or accessways are provided to link the development to the existing bicycle and pedestrian facilities in as direct manner as is reasonable. If a development fronts a proposed bikeway or sidewalk (as shown in the Bicycle or Pedestrian Master Plans), the developer shall be responsible for providing the bikeway or walkway facility as part of any half-street improvement required for project mitigation.

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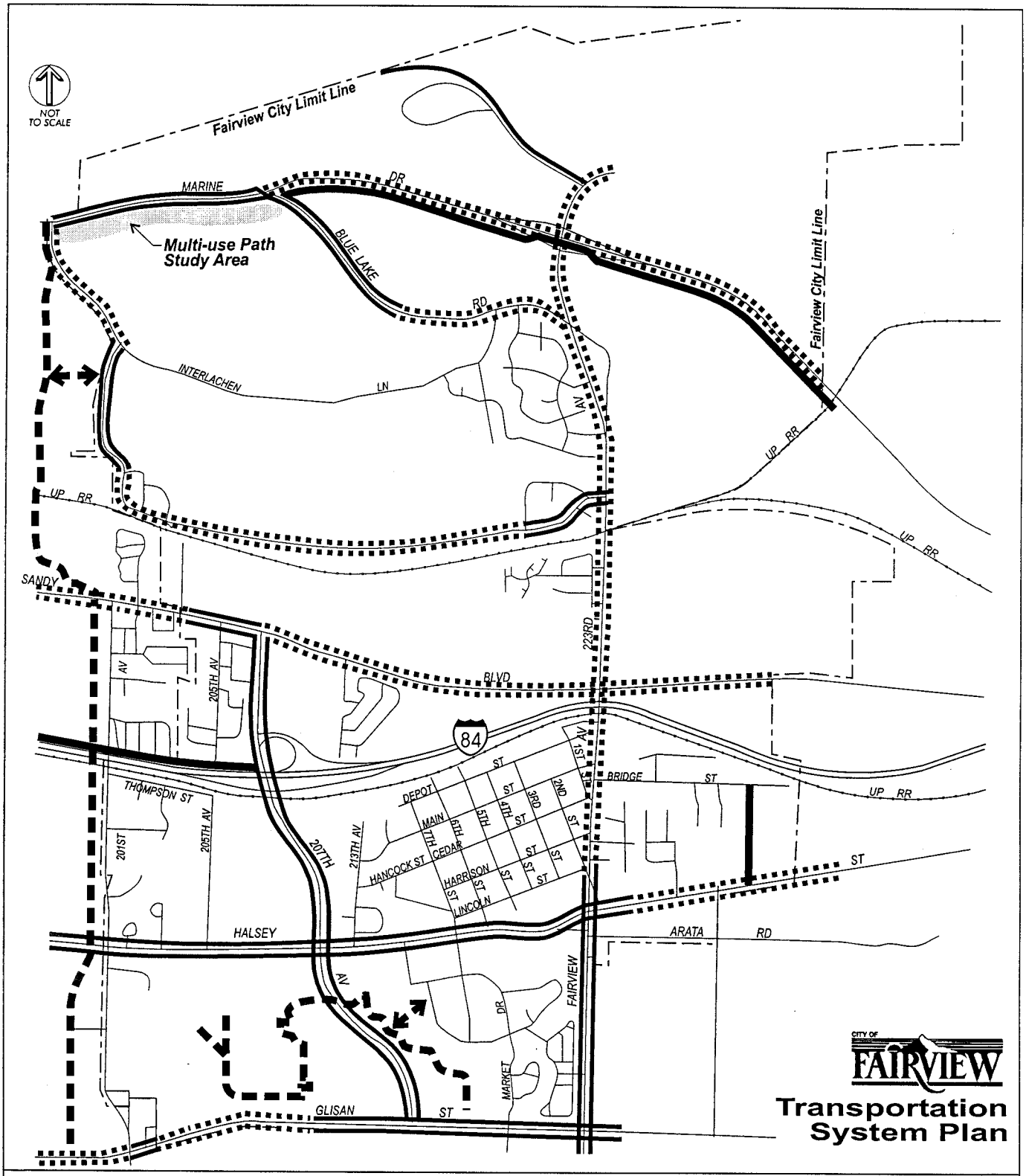
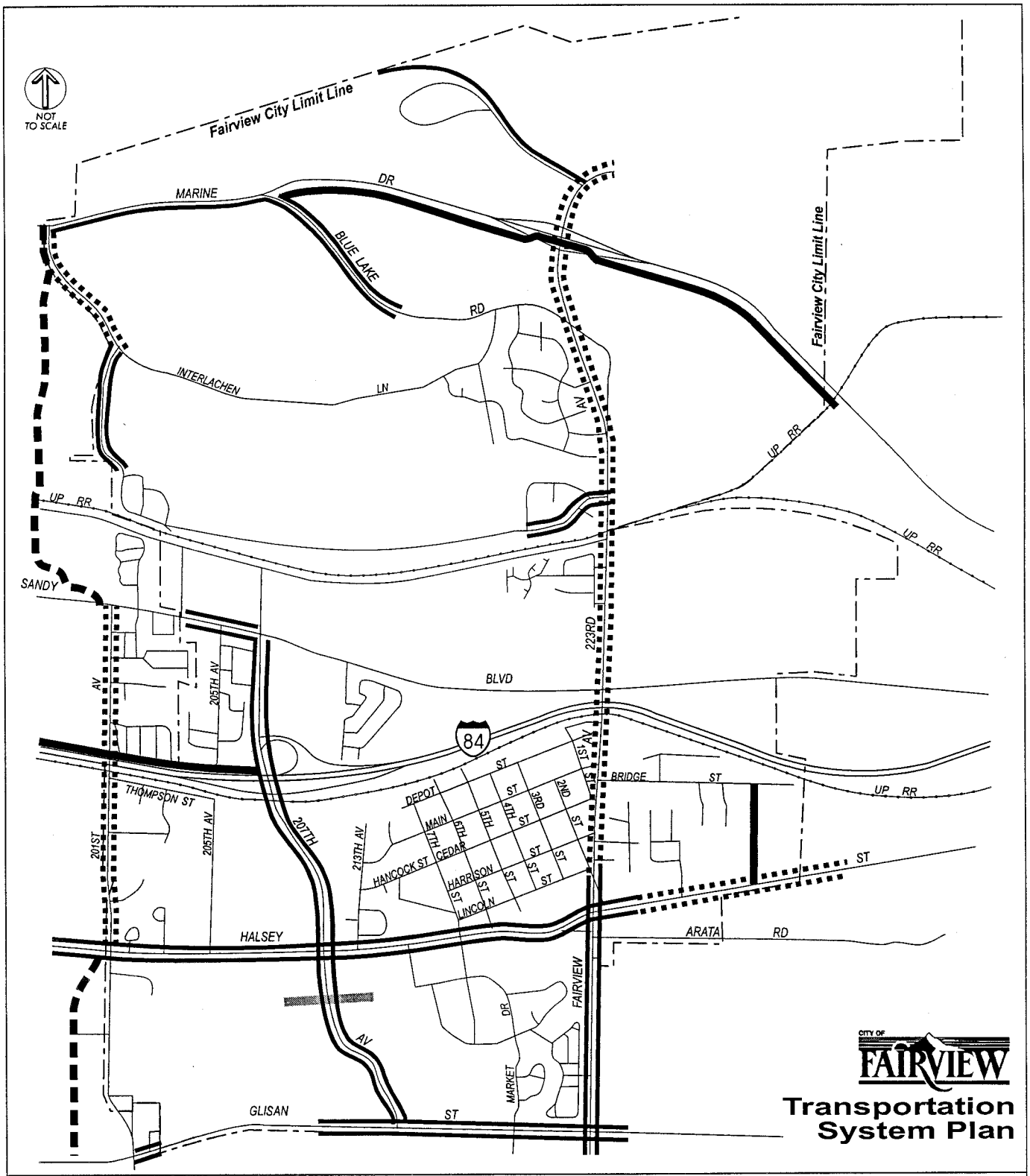
5 *Transportation Planning Rule*, State of Oregon, Department of Land Conservation and Development, Section 660-12-045(3)(a).



LEGEND

Existing	Proposed	
	▪▪▪▪▪▪	- Bike Lanes
	▬ ▬ ▬	- Off Street Multi-use Path
		- Multi-use Path Study Area

Figure 6-1
BICYCLE MASTER PLAN



LEGEND

Existing	Proposed	
———	▪▪▪▪▪	- Bike Lanes
———	▬ ▬ ▬	- Off Street Multi-use Path
▒▒▒		- Bike Connection

Figure 6-2
BICYCLE ACTION PLAN

Chapter 7
Transit

This chapter summarizes existing and future transit needs in the City of Fairview. The following sections outline the criteria to be used to evaluate needs, provides a number of strategies for implementing a transit plan and recommends a transit plan for the City of Fairview. The needs, criteria and strategies were identified in working with the City's Citizen's Advisory Committee. This committee provided input regarding the transportation system in Fairview, specifically exploring transit needs. The methodology used to develop the transit plan combined citizen and staff input.

NEEDS

There are currently two-fixed bus routes which service the City of Fairview. Bus Route 24 provides service on Halsey Street and Bus Route 23 provides service on Sandy Boulevard, west of 223rd Avenue, and 223rd Avenue, south of Sandy Boulevard. Existing transit headways on bus routes in Fairview range from 15 minutes on Bus Route 24 to one hour on Bus Route 23 during peak commute periods.

Metro's Draft Regional Transportation Plan (RTP) identifies Halsey Street, 201st Avenue, 223rd Avenue and Sandy Boulevard as part of the *primary bus network*[1]. Existing Tri-Met service covers each of these routes today. Primary routes provide the backbone of the transit system and are intended to provide high quality service operating at frequencies of 15 minutes all day.

One of Fairview's greatest transit needs in the future will be improving transit service to industrially-zoned land in the northeast portion of the City along Sandy Boulevard. Rapidly increasing employment creates a much greater opportunity to create productive public transit routing in Fairview.

CRITERIA

Fairview's Citizen's Advisory Committee created a set of goals and policies to guide transportation system development in Fairview. These goals and policies represent the criteria that all transit improvements in Fairview should be compared against to determine if they conform to the intended vision of the City. A few of these policies pertain specifically to transit needs:

[1] *Public Transportation System Map*, Metro, Draft 2.1, March 18, 1997.

Goal 2

Policy 2 *The City shall coordinate with Tri-Met to improve transit service to Fairview. Fixed route transit will use arterial and collector streets in Fairview.*

Policy 7 *Fairview will participate in vehicle trip reduction strategies developed regionally.*

Goal 5

Policy 1 *Design and construct transportation facilities to meet the requirements of the Americans with Disabilities Act.*

STRATEGIES

Tri-Met is responsible for any changes in routes through their annual transit service plan process. In order for the City to have its transit needs assessed, the City can provide input to Tri-Met through this process.

Several strategies were developed for the implementation of future transit facilities in Fairview. These strategies were developed to provide the City with priorities in providing guidance to Tri-Met since it is likely that the available funding will be insufficient to address all of the projects identified in the Transit Master Plan.

Strategy 1 – "Provide Access to Commercial/Employment Areas"

This strategy focuses on providing access to locations where people choose to do their shopping. Commercial areas in and near Fairview might include the planned Town Center in Fairview/Wood Village, retail areas in Gresham and Troutdale, etc.

Strategy 2 – "Provide Access to Activity & Service Centers"

This strategy focuses on providing transit access to destinations such as community centers, hospitals, schools, churches, etc.

Strategy 3 – "Provide Express Routes to Regional Employment Centers"

This strategy is aimed at providing service directly from Fairview to regional employment centers without necessarily using MAX. This might include a few stops in Fairview followed by express service to Gresham Town Center or downtown Portland (one or two stops at park & ride lots along the way).

Strategy 4 – "Provide Direct Access to MAX"

This strategy focuses on providing direct access to Light Rail Transit Stations. This allows greater connectivity to the regional transit network.

Strategy 5 – "Provide Service Often in Peak Commute Periods"

This strategy focuses on decreasing the headways between buses during peak morning and evening commute periods. This increases operating costs for Tri-Met and without increased ridership (or potential for more ridership), Tri-Met would not upgrade services.

Strategy 6 – "Provide Park & Ride Lots"

This strategy provides park & ride lots at locations where concentrated transit demand exists or where it is desirable for Tri-Met to stop.

Strategy 7 – "Provide Bus Shelters"

This strategy focuses on installation of bus shelters along bus routes in Fairview. The need for bus shelters at bus stops should be evaluated in conjunction with any new commercial or residential development adjacent to a transit street.

Strategy 8 – "Provide Daily Transit Services"

This strategy provides an upgrade from weekday only bus routes to daily bus routes. This increases operating costs for Tri-Met and would require a potential increase in ridership.

Table 7-1 summarizes the strategies in terms of meeting the transportation goals and policies of Fairview.

Table 7-1
Transit Strategies Comparisons

Strategy	Policies		
	2-2	2-7	5-1
1. Provide Access to Commercial/Employment Areas	✱✱	✱✱	✱✱
2. Provide Access to Activity and Service Centers	✱✱	✱✱	✱✱
3. Provide Express Routes to Regional Employment Centers	✱✱	✱✱	✱✱
4. Provide Direct Access to MAX	✱✱	✱✱	✱✱
5. Provide Service Often in Peak Commute Periods	✱✱	✱✱	✱✱
6. Provide Park & Ride Lots	✱✱	✱✱	✱✱
7. Provide Bus Shelters	✱✱	✱	✱✱
8. Provide Daily Transit Services	✱✱	✱✱	✱✱

○ Does not meet criteria
✱ Mostly meets criteria
✱✱ Partially meets criteria
✱✱✱ Fully meets criteria

RECOMMENDED TRANSIT PLAN

The strategies that had been developed by the Citizen' s Advisory Committee were then ranked by the committee. Each committee member was assigned a certain number of points that he or she could allocate to each of the strategies according to his or her priorities. The ranking of these strategies follows, from most important to least important:

- Provide Bus Shelters
- Provide Direct Access to MAX
- Provide Access to Activity and Service Centers
- Provide Access to Commercial Areas
- Provide Access to Employment Areas
- Provide Express Routes to Regional Employment Centers (i.e. Downtown Portland)
- Provide 7-days-a-week Service
- Provide Park & Ride Lots
- Provide Service Often (i.e. every 20 minutes) in Peak Commute Periods

The proposed Recreation Route (Jitney) to Blue Lake Park and the proposed extension of service on Sandy to the east were suggestions made by the Citizen's Advisory Committee. It was felt that transit access to the park would be desirable in the summer months and a jitney service may be a viable means of providing that service. The extension of service along Sandy to the east is desirable because of the large amount of developable industrial land to the north of Sandy, east of 223rd Avenue.

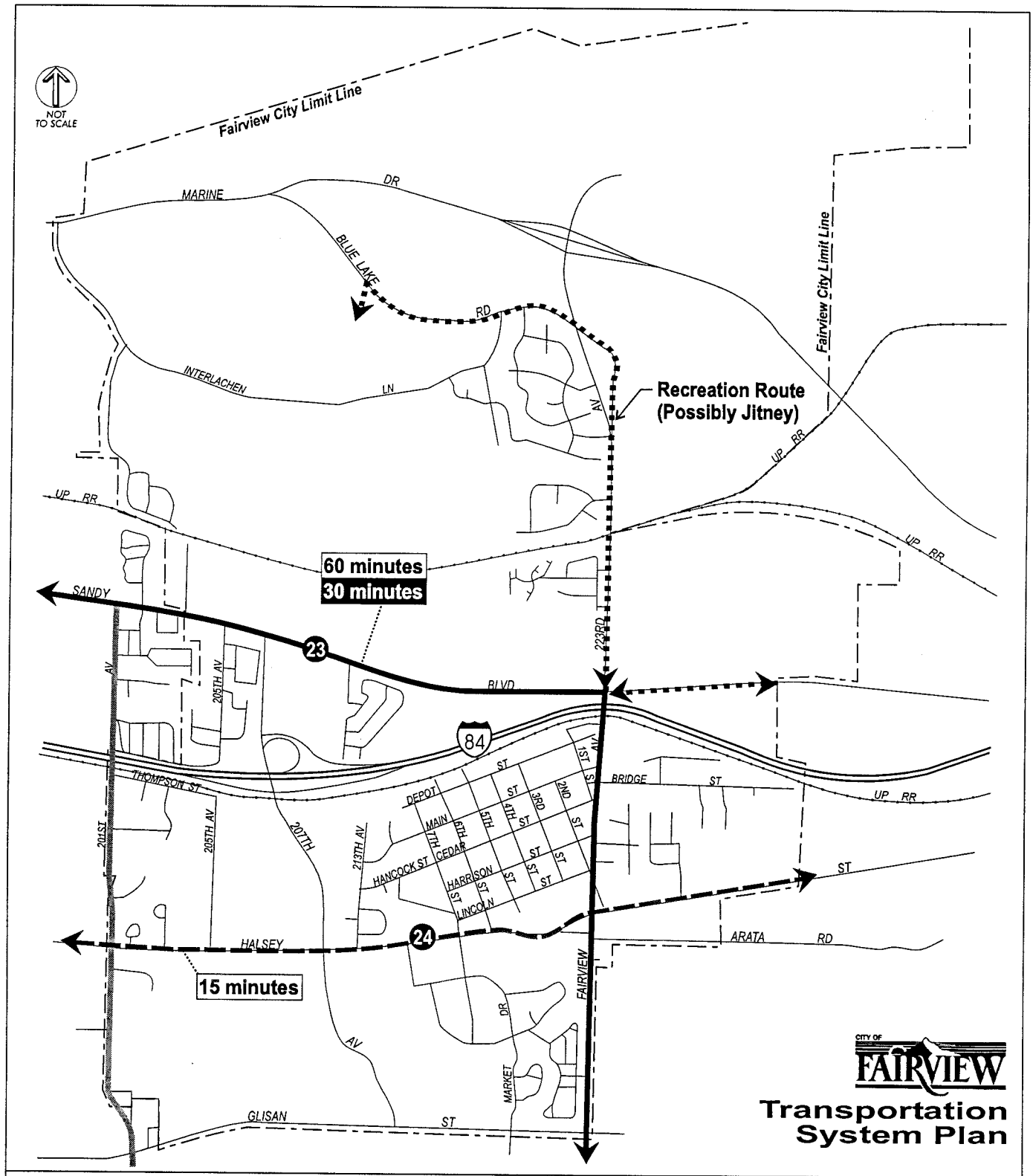
POTENTIAL PROJECT LIST

Proposed transit routes/facilities are summarized in Figure 7-1 and Table 7-2. Transit projects were determined based on strategies listed above and project feasibility.

Table 7-2
Potential Transit Projects

Rank	Project	Description
1	Provide Transit Amenities at Major Transit Stops	Provide shelters, information kiosks, etc along Sandy, 223rd and Halsey in Fairview with land use development.
2	Expand Transit Services	Upgrade weekday only bus routes to include weekends.
3	Decrease Headways	Provide more frequent transit service during peak commute periods.
4	Establish Additional Transit Routes	Provide service along Sandy Boulevard east of 223rd Avenue (new industrial area) and direct access to Light Rail Transit Center (MAX)
5	Improve Pedestrian Connections to Transit Facilities	Construct sidewalks, crosswalks, etc. adjacent to transit routes and facilities (i.e. park-and-ride lots, bus stops, etc.).

Figure 7-1 – Recommended Transit Network



CITY OF FAIRVIEW

Transportation System Plan

LEGEND

- 23 - Route 23 - San Rafael-223rd Avenue
- 24 - Route 24 - Halsey Street
- Potential Transit Routes (Metro Primary Bus Designation)
- Proposed Transit Routes
- 00 minutes - *Existing* Peak Hour Headways
- 00 minutes - *Proposed* Peak Hour Headways

Figure 7-1
TRANSIT MASTER PLAN

Chapter 8
Motor Vehicles

This chapter summarizes needs for the motor vehicle system for both existing and future conditions in the City of Fairview. This chapter also outlines the criteria to be used in evaluating needs, provides a number of strategies and recommends plans for motor vehicles (automobiles, trucks, buses and other vehicles). The needs, criteria and strategies were identified in working with the City's TSP Citizen's Advisory Committee. This group explored automobile and truck needs in the City of Fairview and provided input about how they would like to see the transportation system in their city develop. The Motor Vehicle modal plan is intended to be consistent with other jurisdictional plans including Metro's *Draft Regional Transportation Plan (RTP)*, Multnomah County's *Comprehensive Framework Plan (Volume 2: Policies)*, and ODOT's *Oregon Transportation Plan* (OTP).

The motor vehicle element of the TSP involves several elements as shown in Figure 8-1. This chapter is separated into the following ten sections:

- Criteria
- Functional Classification (including summary of cross sections and local street connectivity)
- Circulation and Capacity Needs
- Safety
- Maintenance
- Neighborhood Traffic Management
- Parking
- Access Management
- Transportation System Management/Intelligent Transportation Systems
- Truck Routes

Note that Interlachen Lane is included in Fairview's planning area. The City does not have jurisdiction over a majority of this street, however, it is required to plan for transportation in the event that it is eventually annexed to the City of Fairview.

CRITERIA

Fairview's TSP Citizen's Advisory Committee created a set of goals and policies to guide transportation system development in Fairview (see Chapter 2). Many of these goals and policies pertain specifically to motor vehicles. These goals and policies represent the criteria that all motor vehicle improvements or changes in Fairview should be measured against to determine if they conform to the intended direction of the City.

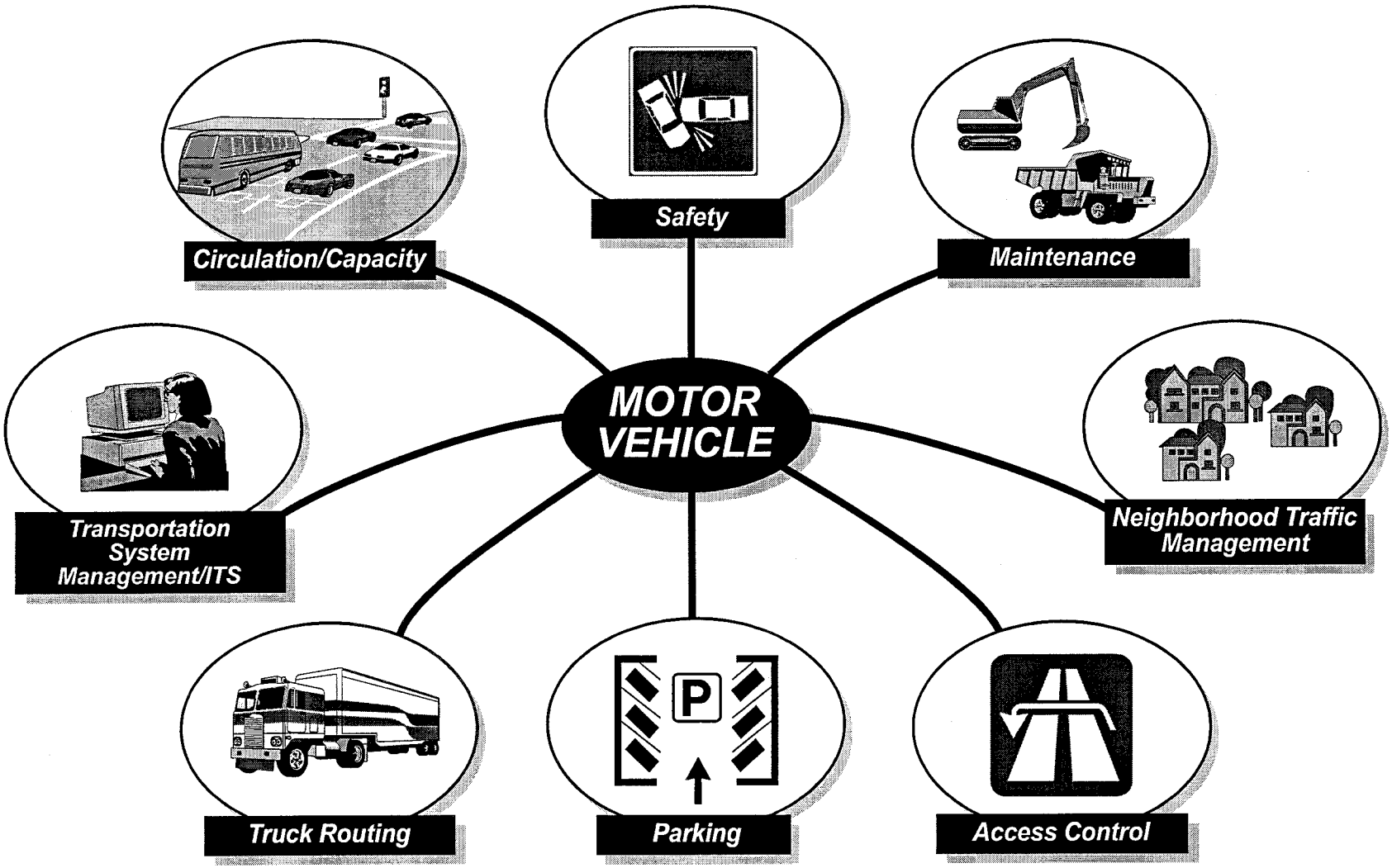


Figure 8-1
VEHICULAR ELEMENTS OF THE STREET PLAN

Goal 1: Livability

Policy 1. Maintain the livability of Fairview through proper location and design of transportation facilities.

Policy 3. Protect neighborhoods from excessive through traffic and travel speeds while providing reasonable access to and from residential areas. Build local and neighborhood streets to minimize speeding.

Policy 4. Relate the design of street capacity and improvements to their intended use.

Goal 2: Balanced Transportation System

Policy 1. Develop and implement public street standards that recognize the multi-purpose nature of the street right-of-way for utility, pedestrian, bicycle, transit, truck and auto use.

Policy 6. Local streets shall be designed to encourage a reduction in trip length by providing connectivity and limiting out-of-direction travel. Provide connectivity to activity centers and destinations with a priority for bicycle and pedestrian connections

Policy 7. Fairview will participate in vehicle trip reduction strategies developed regionally.

Goal 3: Safety

Policy 1. Design of streets should relate to their intended use.

Policy 2. Street maintenance shall be a priority to improve safety in Fairview.

Policy 5. Access management standards shall be developed in conjunction with the functional classification system for Fairview to improve safety in Fairview.

Policy 6. Establish a City monitoring system that regularly evaluates, prioritizes and mitigates high accident locations within the City.

Policy 7. Improve traffic safety through a comprehensive program of engineering, education and enforcement.

Goal 4: Performance Measures

Policy 1. A minimum intersection level of service standard shall be set for the City of Fairview. All public facilities shall be designed to meet this standard.

Policy 3. Work with Multnomah County, Metro, and ODOT to develop, operate and maintain intelligent transportation systems including coordination of traffic signals.

Goal 5: Accessibility

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

Policy 3. Work with Multnomah County to develop an efficient arterial grid system that provides access within the City and serves through City traffic.

Goal 6: Goods Movement

Policy 1. Design arterial routes, highway access and adjacent land uses in ways that facilitate the efficient movement of goods and services.

FUNCTIONAL CLASSIFICATION

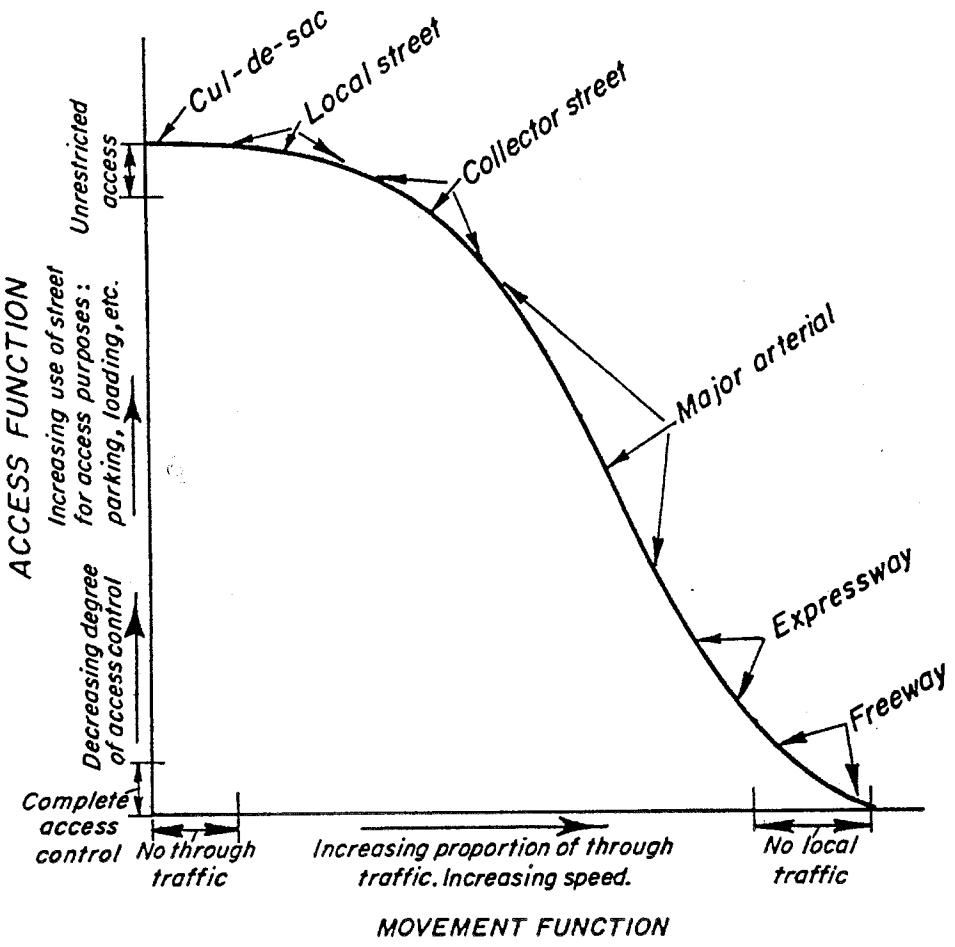
Roadways have two functions, to provide mobility and to provide access. From a design perspective, these functions can be incompatible since high or continuous speeds are desirable for mobility, while low speeds are more desirable for land access. Arterials emphasize a high level of mobility for through movement; local facilities emphasize the land access function; and collectors offer a balance of both functions (Figure 8-2).

Functional classification has commonly been mistaken as a determinate for traffic volume, road size, urban design, land use and various other features which collectively are the elements of a roadway, but not its function. For example, the traffic on a roadway can be more directly related to land uses and because a roadway carries a lot or a little traffic does not necessarily determine its function. The traffic volume, design (including access standards) and size of the roadway are outcomes of function, but do not define function.

Function can be best defined by connectivity. Without connectivity, neither mobility nor access can be served. Roadways that provide the greatest reach of connectivity are the highest level facilities. Arterials can be defined by regional level connectivity. These routes go beyond the city limits in providing connectivity and can be defined into two groups: principal arterials (typicaly state routes) and arterials. The movement of persons, goods and services depends on an efficient arterial system. Collectors can be defined by citywide or district wide connectivity. These routes span large areas of the city but typically do not extend significantly into adjacent jurisdictions. They are important to city circulation. The past textbooks on functional classification then define all other routes as local streets, providing the highest level of access to adjoining land uses. These routes do not connect at any significant regional, city wide or district level.

Recent work in the area of neighborhoods and their specific street needs provides a fourth level of functional classification – neighborhood route. In many past plans, agencies defined a minor collector or a neighborhood collector; however, use of the term collector is not appropriate. Collectors provide citywide or large district connectivity and circulation. There is a level between collector and local streets that is unique due to its level of connectivity. Local streets can be cul-de-sacs or short streets that do not connect to anything.[1] Neighborhood routes are commonly used by residents to circulate into or out of their neighborhood. They have connections within the neighborhood and between neighborhoods. These

[1] Or in the case of neo-traditional grid systems, extensive redundancy in facilities results in local status to streets that have greater than local connectivity.



Source: University of California, 'Fundamentals of Traffic Engineering' Wolfgang S. Homburger and James H. Kell

Figure 8-2
STREET FUNCTION RELATIONSHIP

routes have neighborhood connectivity, but do not serve as citywide streets. They have been the most sensitive routes to through, speeding traffic due to their residential frontages. Because they do provide some level of connectivity, they can commonly be used as cut-through routes in lieu of congested or less direct arterial or collector streets which are not performing adequately. Cut-through traffic has the highest propensity to speed, creating negative impacts on these neighborhood routes. By designating these routes, a more systematic citywide program of neighborhood traffic management can be undertaken to protect these sensitive routes.

In the past, traffic volume and roadway size were linked to functional classification. More recently, urban design and land use have also been tied to functional classification. Discussions of neo-traditional street grids that eliminate the need for functional classification adds another commentary. This tends to become confusing, complicating an essential transportation planning exercise. The planning effort to identify connectivity of routes in Fairview is essential to preserve and protect future mobility and access, by all modes of travel. In Fairview, it is not possible to have a citywide neo-traditional layout. Past land use decisions, topography and environmental features preclude this[2]. Without defining the varying levels of connectivity now in the TSP, the future impact of the adopted Comprehensive Plan land uses will result in a degraded ability to move goods and people (existing and new) in Fairview. The outcome would be intolerable delays and much greater costs to address solutions later rather than sooner.

By planning an effective functional classification of Fairview streets[3], the City can manage public facilities pragmatically and cost effectively.

These classifications do not mean that because a route is an arterial it is large and has lots of traffic. Nor do the definitions dictate that a local street should only be small with little traffic. Identification of connectivity does not dictate land use or demand for facilities. The demand for streets is directly related to the land use. The highest level connected streets have the greatest potential for higher traffic volumes, but do not necessarily have to have high volumes as an outcome, depending upon land uses in the area. Typically, a significant reason for high traffic volumes on surface streets at any point can be related to the level of land use intensity within a mile or two. Many arterials with the highest level of connectivity have only 33 to 67 percent "through traffic". Without the connectivity provided by arterials and collectors, the impact of traffic intruding into neighborhoods and local streets goes up substantially.

If land use is a primary determinate of traffic volumes on streets, then how is it established? In Oregon, land use planning laws require the designation of land uses in the Comprehensive Plan. Fairview's Comprehensive Plan land uses have been designated for over two decades. These land use designations are very important not only to the City for planning purposes, but to the people that own land in Fairview. The adopted land uses in Fairview have been used in this study, working with the Metro regional forecasts for growth in the region for the next 20 years. A regional effort, coordinated

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[2] While subdivisions or areas of neo-traditional development exist and are possible (even desirable), on the whole, the concept cannot be generically applied to the city in lieu of functional classification.

[3] Including definition of which routes connect through Fairview, within Fairview and which routes serve neighborhoods and the local level in the city.

by Metro and local agencies, has been undertaken to allocate the determined overall land use in the most beneficial manner for transportation. Without this allocation, greater transportation impacts would occur (wider and more roads than identified in this plan). As discussed in Chapter 10, if the outcome of this TSP is either too many streets or solutions that are viewed to be too expensive, it is possible to reconsider the core assumptions regarding Fairview's livability– its adopted land uses or its service standards related to congestion. The charge of this TSP (as mandated by State law) is to develop a set of multi-modal transportation improvements to support the Comprehensive Plan land uses. Key to this planning task is the functional classification of streets.

Multnomah County owns and maintains Fairview's arterial and collector streets. As such, Fairview typically relies upon the County's functional classification system and street design standards for those roadways. In reviewing Fairview's functional classification system, Multnomah County's system was used as a base condition.

Functional Classification Definitions

The proposed functional classification of streets in Fairview is represented by Figure 8-3. Any street not designated as either an arterial, collector or neighborhood route is considered a local street.

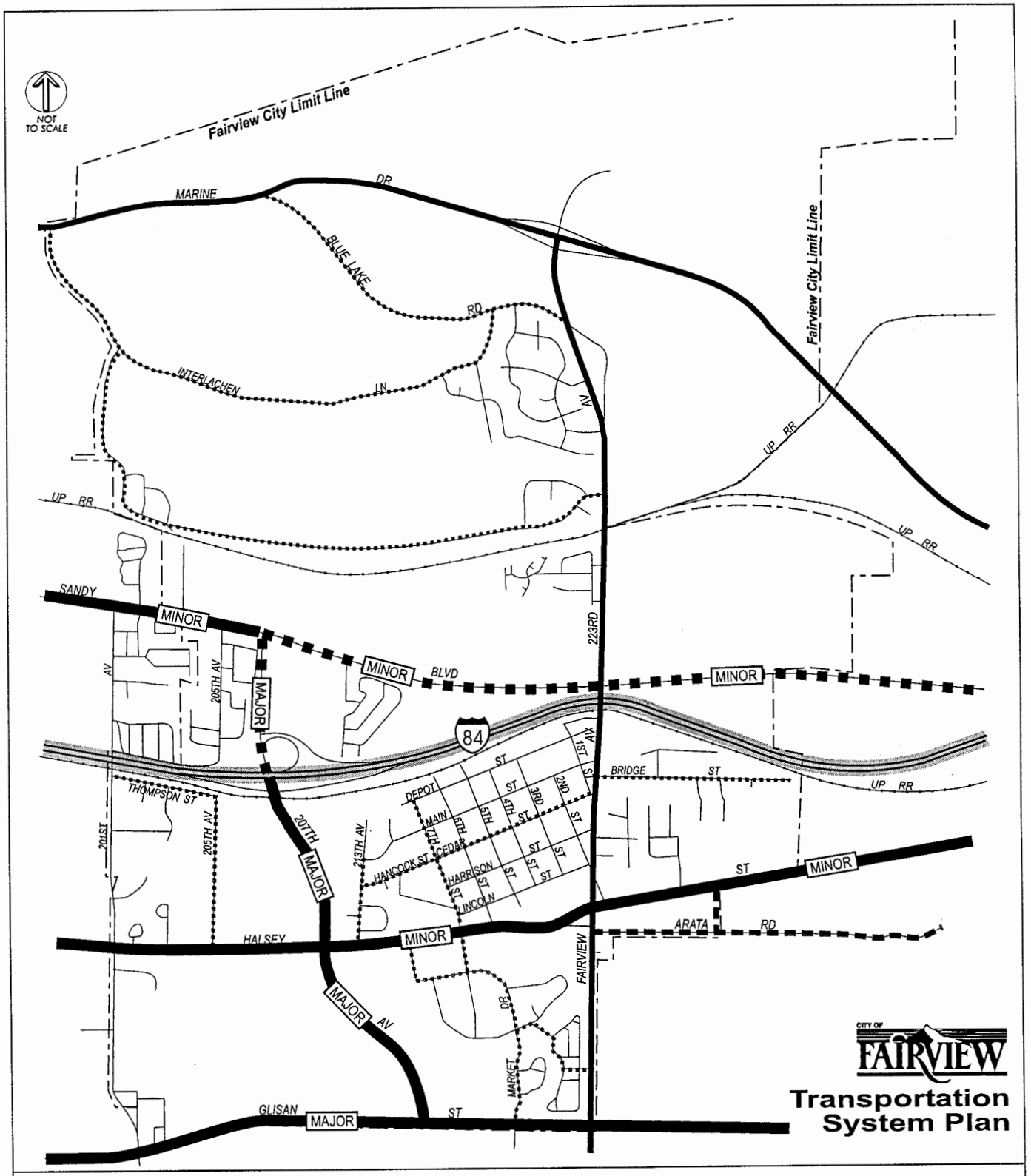
Principal Arterials are typically freeways and state highways that provide the highest level of connectivity. These routes connect over the longest distance (sometimes miles long) and are less frequent than other arterials or collectors. These highways generally span several jurisdictions and many times have statewide importance (as defined in the ODOT Level of Importance categorization)[4].

Arterial streets serve to interconnect and support the principal arterial highway system. These streets link major commercial, residential, industrial and institutional areas. Arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets in lieu of a well placed arterial street. Many of these routes connect to cities surrounding Fairview.

Collector streets provide both access and circulation within residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system.

Neighborhood routes are usually long relative to local streets and provide connectivity to collectors or arterials. Because neighborhood routes have greater connectivity, they generally have more traffic than local streets and are used by residents in the area to get into and out of the neighborhood, but do not serve citywide/large area circulation. They are typically about a quarter to a half-mile in total length. Traffic from cul-de-sacs and other local streets may drain onto neighborhood routes to gain access to collectors or arterials. Because traffic needs are greater than a local street, certain measures should be considered to retain the neighborhood character and livability of these routes. Neighborhood traffic management measures are often appropriate (including devices such

[4] Oregon Highway Plan, ODOT, 1991.



LEGEND

- Freeway

Existing	Proposed	
▬▬	▮▬▮▬	- Arterial (MAJOR / MINOR)
▬▬	▬ ▬ ▬	- Major Collector
▬▬	·····	- Neighborhood
▬▬		- Local Street

Figure 8-3
PROPOSED ROADWAY FUNCTIONAL CLASSIFICATION

as speed humps, traffic circles and other devices – refer to later section in this chapter). However, it should **not** be construed that neighborhood routes automatically get speed humps or any other measures. While these routes have special needs, neighborhood traffic management is only one means of retaining neighborhood character and vitality.

Local Streets have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

Functional Classification Changes

The proposed functional classification differs from the existing approved functional classification. Neighborhood routes were not defined in the existing functional classification. The proposed functional classification was developed following detailed review of Fairview's, Multnomah County's and Metro's current proposals for functional classification. Table 8-1 summarizes the major differences between the proposed functional classification and the existing designations for streets in Fairview. This table also outlines the streets which were previously designated collectors that are now identified as neighborhood routes.

Criteria for Determining Changes to Functional Classification

The criteria used to assess functional classification have two components: the extent of connectivity (as defined above) and the frequency of the facility type. Maps can be used to determine regional, city/district and neighborhood connections. The frequency or need for facilities of certain classifications is not routine or easy to package into a single criterion. While planning textbooks call for arterial spacing of a mile, collector spacing of a quarter to a half-mile, and neighborhood connections at an eighth to a sixteenth of a mile, this does not form the only basis for defining functional classification. Changes in land use, environmental issues or barriers, topographic constraints, and demand for facilities can change the frequency for routes of certain functional classifications. While spacing standards can be a guide, they must consider other features and potential long term uses in the area (some areas would not experience significant changes in demand, where others will). Linkages to regional centers and town centers are another consideration for addressing frequency of routes of a certain functional classification. Connectivity to these areas is important, whereas linkages that do not connect any of these centers could be classified as lower levels in the functional classification.

Table 8-1
Proposed Changes to Existing Roadway Classification

Roadway	Roadway Classification According to Jurisdiction			Proposed TSP
	Fairview	Mult County	Metro	
Sandy Boulevard (east of 207th Avenue)	Major Collector	Major Collector	Collector of Regional Significance	Minor Arterial
207th Avenue (north of I-84)	Major Collector	Major Collector	Collector of Regional Significance (Proposed)	Major Arterial
Inverness Drive	Major Collector	Major Collector	Collector of Regional Significance (Proposed)	N/A
Arata Road	Neighborhood Collector	Neighborhood Collector	N/A	Major Collector

Changes from Collector or Local designation to Neighborhood Route

Blue Lake Road	7th Street
Interlachen Lane	213th Avenue
Fairview Lake Way	Market Drive
Bridge Street	Park Lane
Cedar Street	205th Avenue
Hancock Street	Thompson Street

The proposed changes in functional classification on Sandy Boulevard, 207th Avenue, Inverness Drive and Arata Road affect Multnomah County roadways. These proposed changes have been discussed with County staff and they are in the process of reviewing these changes.

It should be noted that the functional classification of Marine Drive was retained as a major collector since all of the adjacent jurisdictions designate it a collector. However, the actual connectivity of Marine Drive defines an arterial route. Because of the adjacent jurisdiction designations, no change was sought for Marine Drive.

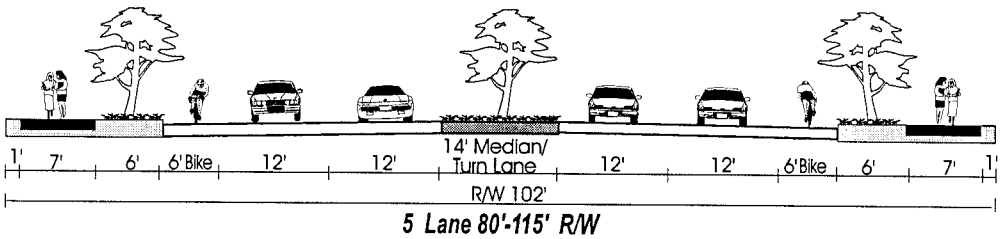
Characteristics of Streets for each Functional Classification

The design characteristics of streets in Fairview were developed to meet the function and demand for each facility type. Because the actual design of a roadway can vary from segment to segment due to adjacent land uses and demands, the objective was to define a system that allows standardization of key characteristics to provide consistency, but also to provide criteria for application that provides some flexibility, while meeting standards. Figures 8-4 to 8-9 depict sample street cross-sections and design criteria for arterials, collectors, neighborhood routes and local streets.

The analysis of capacity and circulation needs for Fairview outlines several roadway cross sections. The most common are 2, 3 and 5 lanes wide. Where center left turn lanes are identified (3 or 5 lane sections), the actual design of the street may include sections without center turn lanes (2 or 4 lane sections) or with median treatments, where feasible[5]. The actual treatment will be determined within the design and public process for implementation of each project. The plan outlines requirements which will be used in establishing right-of-way needs for the development review process. The right-of-way (ROW) requirements for arterial and collector streets on the Multnomah County system are 50-97 feet for collector streets, 80-112 feet for three-lane arterials and 80-115 feet for five-lane arterials. Note that Multnomah County arterial and collector street cross-sections may vary where the roadway is designated by Metro's Regional Street Design Designations as a Regional Street, Community Street, Regional Boulevard or Community Boulevard (See Table 8-2). The amount of variance is defined in Multnomah County's Street Design Manual.

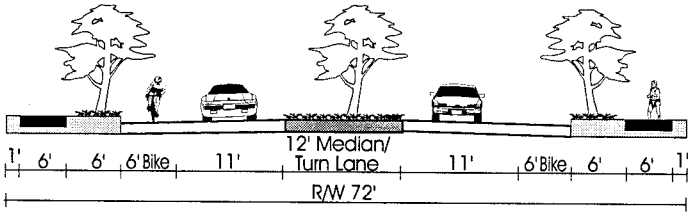
[5] For example, under a railroad overpass.

Principal/Major Arterial (Glisan St./207th Av.)



5 Lane 80'-115' R/W

Minor Arterial (Sandy Blvd./Halsey St./223rd Av.)



3 Lane 80'-105' R/W

Criteria	Principal/Major Arterial	Minor Arterial
Vehicle Lane Widths:	11-14 ft.	11-12 ft.
On Street Parking:	None	None
Bicycle Lanes:	5-6 ft.	5-6 ft.
Sidewalks:	6-8 ft.	5-8 ft.
Landscape Strips:	0-8 ft.	0-8 ft.
Medians/Turn Lane Widths:	12-15 ft.	12-14 ft.
Neighborhood Traffic Management:	Not Appropriate	Not Appropriate

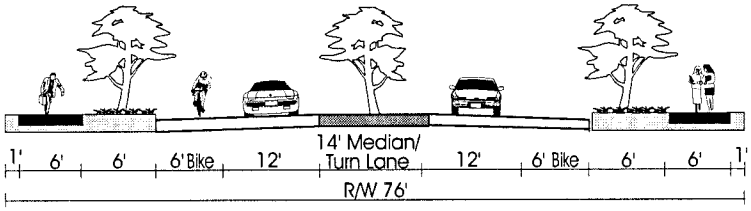
Legend

P - On-street Parking Lane

Note: Multnomah County to apply Metro's Regional Street Design Classification (ie; Boulevards and Streets) to determine specific roadway component widths.

Figure 8-4
MULTNOMAH COUNTY ARTERIAL SAMPLE STREET CROSS SECTIONS

Major Collector (Marine Dr./223rd Av.)



3 Lane 60'-97' R/W

Criteria	Major Collector
Vehicle Lane Widths:	10-12 ft.
On Street Parking:	5-8 ft.
Bicycle Lanes:	5-6 ft.
Sidewalks:	6-7 ft.
Landscape Strips:	0-8 ft.
Medians/Turn Lane Widths:	10-14 ft.
Neighborhood Traffic Management:	Under Special Conditions

Legend

P - *On-street Parking Lane*

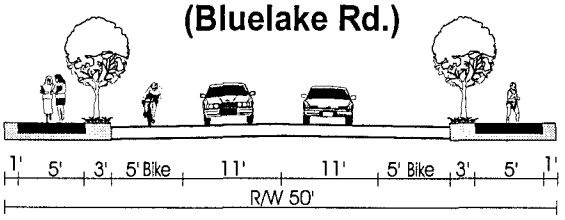
Note: Multnomah County to apply Metro's Regional Street Design Classification (ie; Boulevards and Streets) to determine specific roadway component widths.

Figure 8-5
MULTNOMAH COUNTY COLLECTOR SAMPLE STREET CROSS SECTIONS

CITY OF FAIRVIEW

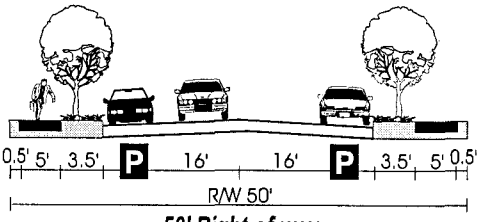
Transportation System Plan

Neighborhood Without Parking With Bike Lanes (Bluelake Rd.)



2 Lane 50' R/W

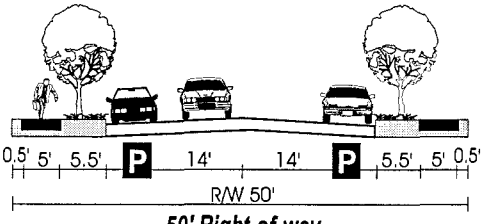
32' Neighborhood Residential



50' Right-of-way

>1,000 vpd

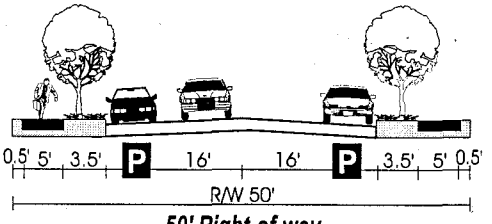
28' Standard Residential



50' Right-of-way

<1,000 vpd

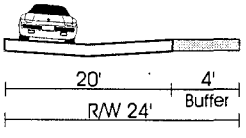
32' Standard Residential



50' Right-of-way

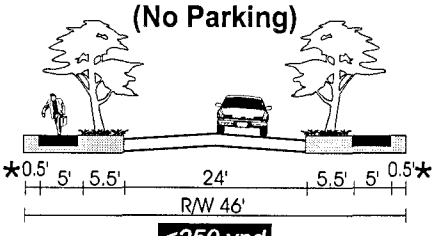
>1,000 vpd

Alley (one-side buffer) (No Parking)



One Side Access *

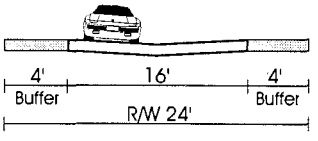
Cul-de-sac (No Parking)



<250 vpd

* - *Adjacent to private landscape*

Alley (two-side buffer) (No Parking)



Legend

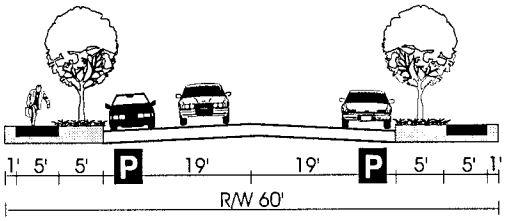
P - *On-street Parking Lane*

Note: If sidewalks are provided adjacent to curb without landscape strip, in Fairview, the minimum sidewalk width shall be 6 feet for locals.

Figure 8-6

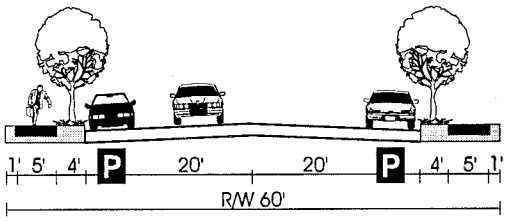
PROPOSED FAIRVIEW RESIDENTIAL LOCAL SAMPLE STREET CROSS SECTIONS

38' Standard Commercial



60' Right-of-way

40' Standard Industrial



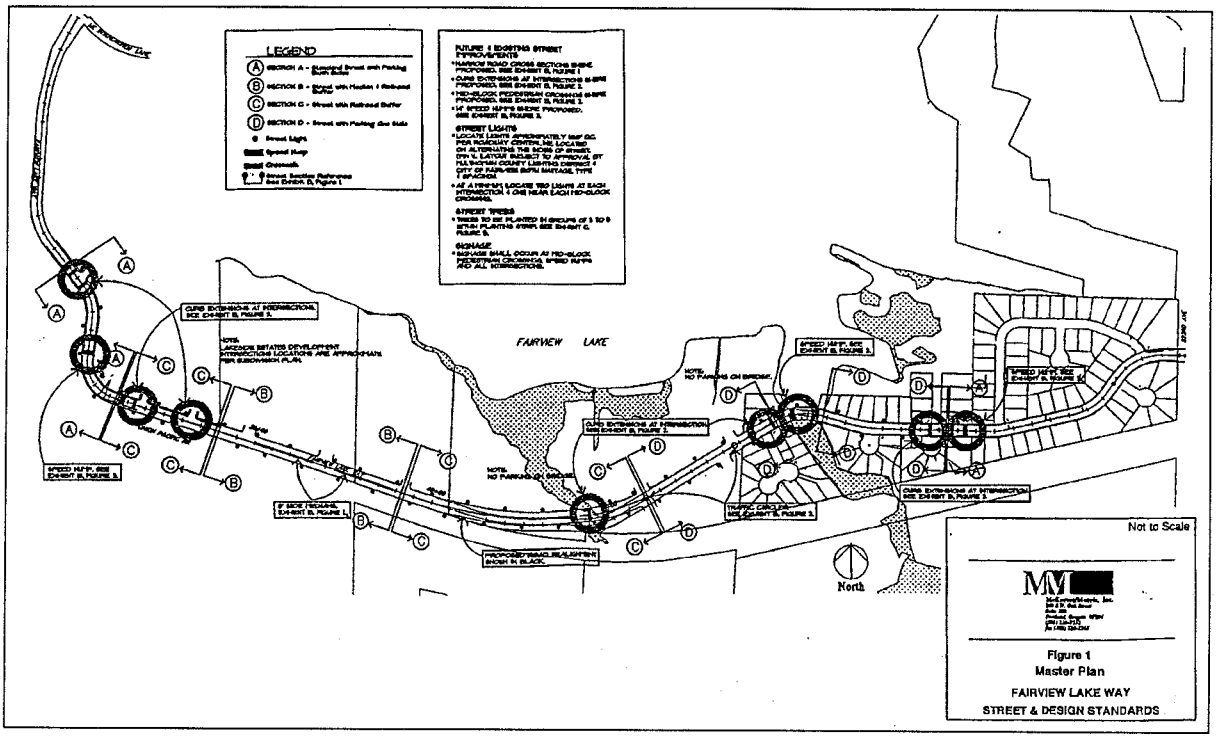
60' Right-of-way

Legend

P - *On-street Parking Lane*

Note: If sidewalks are provided adjacent to curb without landscape strip, in Fairview, the minimum sidewalk width shall be 6 feet for locals.

Figure 8-7
PROPOSED FAIRVIEW COMMERCIAL/INDUSTRIAL LOCAL SAMPLE STREET CROSS SECTIONS (60 Foot Right-of-way)



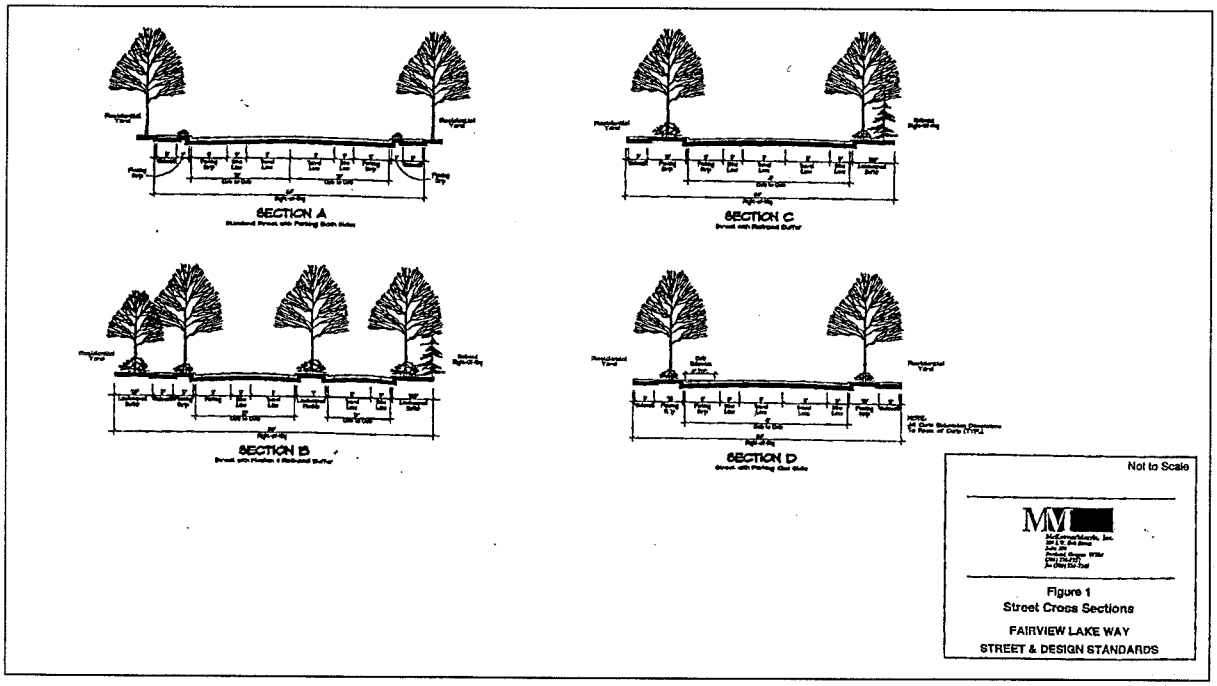


Figure 8-8
FAIRVIEW LAKE WAY
SAMPLE STREET CROSS SECTIONS

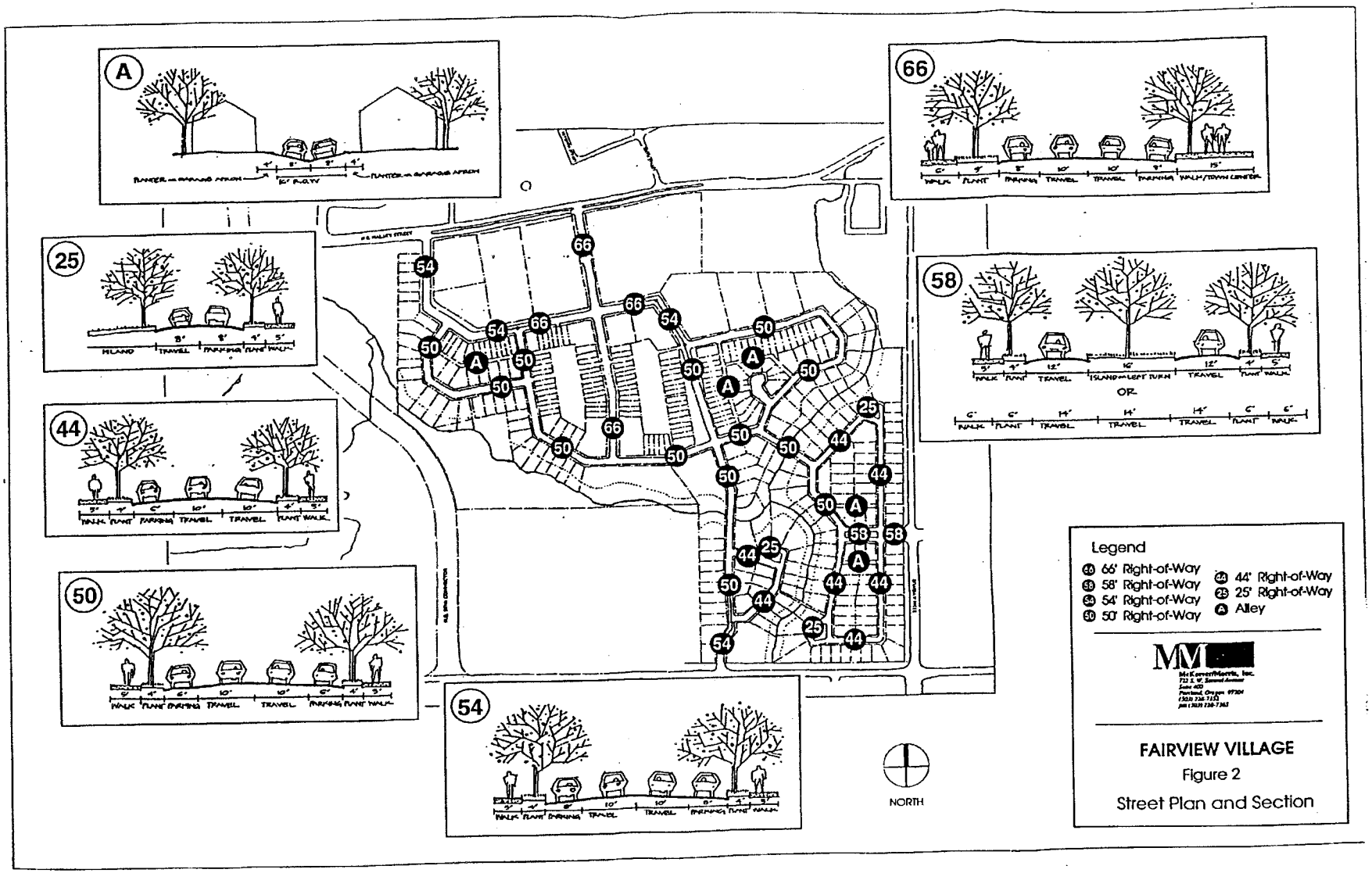

A
66
25
58
44
50
54
NORTH
Legend
66' Right-of-Way
58' Right-of-Way
54' Right-of-Way
50' Right-of-Way
44' Right-of-Way
25' Right-of-Way
Alley
FAIRVIEW VILLAGE
Figure 2
Street Plan and Section

Figure 8-9

Wherever arterial or collectors cross each other, planning for additional right-of-way to accommodate turn lanes should be considered within 500 feet of the intersection. Figure 8-10 summarizes the Fairview streets which are anticipated within the TSP planning horizon to require right-of-way for more than two lanes. Planning level right-of-way needs can be determined utilizing Figure 8-10 and the lane geometry outlined later in this chapter. Specific right-of-way needs will need to be monitored continuously through the development review process to reflect current needs and conditions (that is to say that more specific detail may become evident in development review which requires improvements other than these outlined in this 20 year general planning assessment of street needs).

These cross sections are provided for guiding discussions that will update the City of Fairview *Standard Specifications for Public Works Construction.* Note that Figures 8-8 and 8-9 reflect street cross-section already adopted by the City specifically for Fairview Lake Way and for Fairview Village.[6] There is an on-going discussion at the regional level regarding street cross sections. Many of the major streets in Fairview are maintained and operated by Multnomah County or ODOT. Metro has specified Regional Street Design designations in their draft of the RTP[7]. These designations change over the length of the road. The City of Fairview will need to coordinate with regional agencies to assure consistency in cross section planning as the County Transportation Plan and the Metro Regional Transportation Plan move forward. The designations are summarized below in Table 8-2. The Metro definitions for their designations are provided in the Appendix.

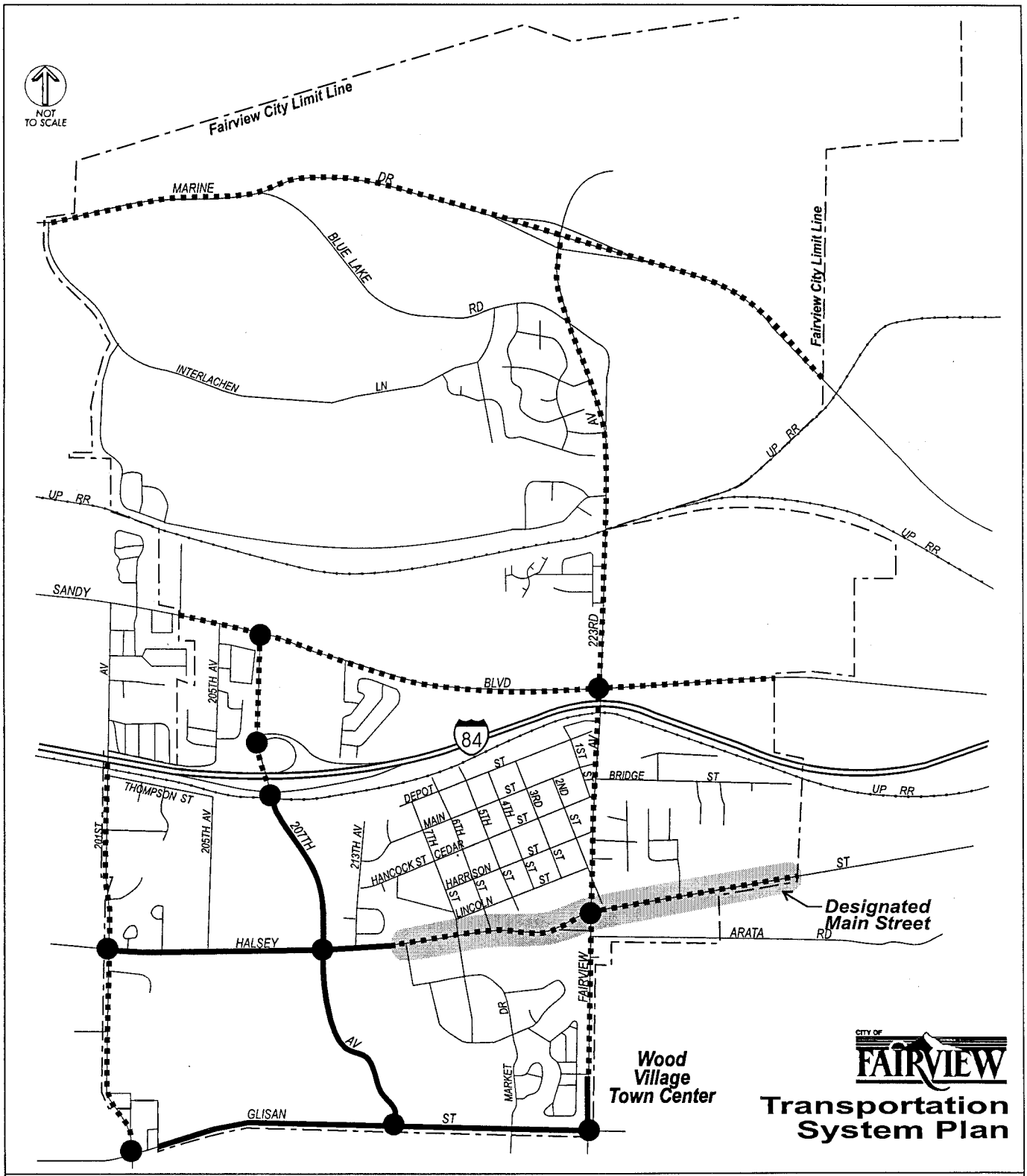
Table 8-2
Metro Regional Street Design Designations

ROADWAY	DESIGNATION
I-84	Freeway
207th Avenue	Regional Street
Glisan Street (east of 207th Avenue)	Regional Street
Halsey Street (east of 207th Avenue)	Community Boulevard
223rd Avenue (between Halsey & Glisan)	Community Boulevard
Halsey Street (west of 207th Avenue)	Community Street
Glisan Street (west of 207th Avenue)	Community Street
223rd Avenue (between Halsey & Sandy)	Community Street
207th Avenue (north of I-84)	Urban Road
Sandy Boulevard	Urban Road
Marine Drive	Urban Road
223rd Avenue (north of Sandy)	Urban Road

NOTE: Refer to Metro's RTP Policy Chapter for background on guidelines for streets, 1997.

[6] Fairview Lake Way: Resolution 13-1998. Fairview Village Comprehensive Plan.

[7] Refer to Regional Street Design System, Preliminary Draft RTP, Metro, June 17, 1999.



LEGEND

- 2/3 Lanes
- 4/5 Lanes
- Designated Main Street

Note: All Arterial/Arterial, Arterial/Collector and Collector/Collector intersections should plan for needed ROW for turn lanes within 500 ft. of intersection.

Figure 8-10
FUTURE STREETS WHERE ROW IS PLANNED FOR MORE THAN TWO LANES

Connectivity/Local Street Plan

Much of the local street network in Fairview is already existing and, in many cases, fairly well connected. In other words, multiple access opportunities exist for entering or exiting neighborhoods. A good example of this is the "Old Town" part of Fairview, where a "grid" street system is in place. However, there are a number of locations in Fairview where, due to the lack of connection points, the majority of neighborhood traffic is funneled onto one single street. This type of street network results in out-of-direction travel for motorists and an imbalance of traffic volumes that impacts residential frontage. By providing connectivity between neighborhoods, out-of-direction travel and vehicle miles traveled (VMT) can be reduced, accessibility between various modes can be enhanced and traffic levels can be balanced out between various streets. Several goals and policies established by this TSP are intended to accomplish these objectives.

In Fairview, some of these local connections can contribute with other street improvements to mitigate capacity deficiencies by better dispersing traffic. Several roadway connections will be needed within neighborhood areas to reduce out of direction travel for vehicles, pedestrians and bicyclists. This is most important in the sub-areas north of I-84 where newer development is possible. South of I-84, most of the land is built out or under a master plan (Fairview Village). The land adjacent to 207th Avenue is subject to access control which limits connectivity. Figure 8-11 shows the proposed Local Street Connectivity Plan for Fairview. In most cases, the connector alignments are not specific and are aimed at reducing potential neighborhood traffic impacts by better balancing traffic flows on neighborhood routes. The arrows shown in the figures represent potential connections and the general direction for the placement of the connection. In each case, the specific alignments and design will be better determined upon development review. The criteria used for providing connections is as follows[8]:

- Every 300 to 500 foot grid for pedestrians and bicycles
- Every 500-1,000 foot grid for automobiles

To protect existing neighborhoods from potential traffic impacts of extending stub end streets, connector roadways should incorporate neighborhood traffic management into their design and construction. Neighborhood traffic management is described later in this chapter.

The arrows shown on the local connectivity figures indicate priority connections only. Topography, railroads and environmental conditions limit the level of connectivity in Fairview. Other stub end streets in the City's road network may become cul-de-sacs, extended cul-de-sacs or provide local connections. Connections from these stub end streets could be deemed appropriate and beneficial to the public, as future development occurs. The goal would continue to be improved city connectivity for all modes of transportation.

[8] Metro Functional Plan Title 6 calls for pedestrian/bicycle connectivity every 330 feet and motor vehicle connectivity every 530 feet.

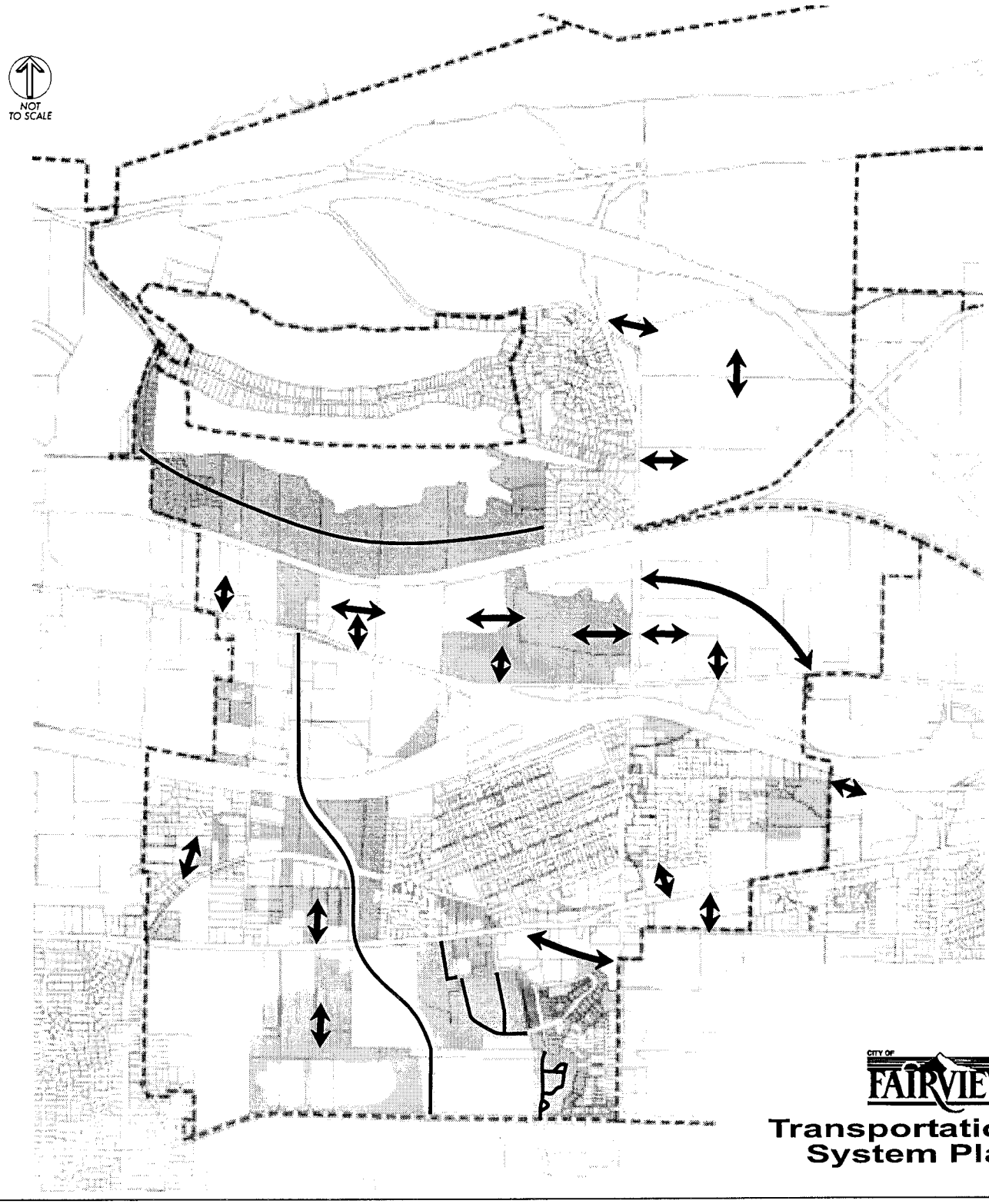


Figure 8-11
LOCAL STREET CONNECTIVITY

CIRCULATION AND CAPACITY NEEDS

The motor vehicle capacity and circulation needs in Fairview were determined for existing and future conditions. The process used for analysis is outlined below, followed by the findings and recommendations of the analysis. The extent and nature of the street improvements for Fairview are significant. This section outlines the type of street improvements that would be necessary as part of a long range master plan. Phasing of implementation will be necessary since all the improvements cannot be done at once. This will require prioritization of projects and periodic updating to reflect current needs. Most importantly, it should be understood that the improvements outlined in the following section are a guide to managing growth in Fairview, defining the types of right-of-way and street needs that will be required as development occurs.

Model Forecasts

Existing conditions were identified in Chapter 3. Future capacity needs were developed using a detailed travel demand forecast tool, based on the Metro regional travel demand model. This detailed model more accurately reflects access and land use in Fairview than the regional travel demand model. Evening peak hour traffic volumes were forecast for the future (year 2020) scenario for the Fairview area. This 2020 forecast included the highest level of transit service given regional funding constraints. It assumes that Transportation Demand Management (TDM) will occur. The initial 2020 test was performed on a street network which included existing roads, plus those improvements which are currently funded and would likely be implemented before the 2020 scenario is reached. In, or near, Fairview, these improvements include the following:

- Halsey Street (widen to 3 lanes between 223rd Avenue and 238th Avenue—Metro RTP/Multnomah County CIP)
- 223rd Avenue (Retrofit bike lanes and sidewalks from Halsey Street to Marine Drive—Metro RTP, Multnomah County CIP)
- Glisan Street (Widen to 5 lanes from 202nd Avenue to 207th Avenue—Metro RTP, Multnomah County CIP)
- Multnomah Kennel Club (Construct new collector between Halsey Street and Glisan Street—Metro RTP)
- 207th Avenue/Glisan Street/223rd Avenue (Access Management Plan to protect mobility—Metro RTP)
- Arata Road (Improvements from 223rd Avenue to 238th Avenue—Multnomah County CIP)

Future Needs

Future transportation conditions were evaluated in a similar manner to existing conditions. Improvements to intersections, roadways between intersections and brand new or extended facilities were considered and a package of recommended improvements was determined.

Forecasts of 2020 traffic volumes were developed using the forecast model. These data were reviewed and refined to produce detailed year 2020 PM peak hour traffic forecasts at intersections. When assigned

to the roadway network, this level of traffic growth is expected to create the need for improvements at several locations. Table 8-3 summarizes the intersection levels of service under year 2020 base future conditions and, where required, under a mitigated scenario. Traffic signal warrant analyses were performed for all unsignalized intersections operating at LOS E or worse under future base (2020) conditions (Table 8-4). Traffic signal warrants were based on the *Manual on Uniform Traffic Control Device*'s (MUTCD) Warrant 11 (Peak Hour Volume).[9]

Table 8-3
2020 Intersection Level of Service
PM Peak Hour

Intersection	2020 Base	2020 Mitigated	2020 Mitigated (New Land Use*)
Signalized Intersections (future)	*Delay LOS V/C*		
223rd Avenue/Halsey Street	45.6 E >1.0	39.2 D 0.95	27.5 D 0.83
223rd Avenue/Glisan Street	>60.0 E >1.0	29.8 D 0.96	38.8 D 0.99
223rd Avenue/Sandy Boulevard	>60.0 F >1.0	34.5 D 0.93	30.5 D 0.88
207th Avenue/Glisan Street	30.6 D 0.99	30.6 D 0.99	29.9 D 0.99
207th Avenue/Halsey Street	>60.0 F >1.0	32.1 D 0.93	34.5 D 0.95
201st Avenue/Halsey Street	>60.0 F >1.0	33.7 D 0.97	31.8 D 0.97
207th Avenue/I-84 EB	10.8 B 0.82	10.8 B 0.82	15.6 C 0.87
Village Drive/Halsey Street	13.2 B 0.68	13.2 B 0.68	10.8 B 0.48
207th Avenue/Sandy Boulevard	38.4 D 0.99	16.7 C 0.69	20.6 C 0.82
223rd Avenue/Park Lane	B/F	21.2 C 0.78	12.8 B 0.48
Unsignalized Intersections	*Major Street LOS/Minor Street LOS*		
223rd/Marine Drive EB Ramp	A/C	A/C	A/C
223rd Avenue/Fairview Lake Way	B/D	B/D	B/D
223rd Avenue/Marine Drive WB Ramp	A/B	A/B	A/B
207th Avenue/I-84 WB	A/C	A/C	A/C
Blue Lake Road/Marine Drive	A/C	A/C	A/C
Interlachen/Marine Drive	B/F	B/E	B/E

*Assumes higher intensity commercial land use along Halsey Street.

Table 8-4
Traffic Signal Warrants
MUTCD Peak Hour Volume Warrant

Intersection	Warrant Met?
207th Avenue/Sandy Boulevard	Yes
207th Avenue/I-84 WB Ramps	No
Interlachen/Marine Drive	No
223rd Avenue/Park Lane	Yes

[9] *Manual on Uniform Traffic Control Devices for Streets and Highways*, Federal Highway Administration, 1988 Edition.

Traffic Signal Guidelines

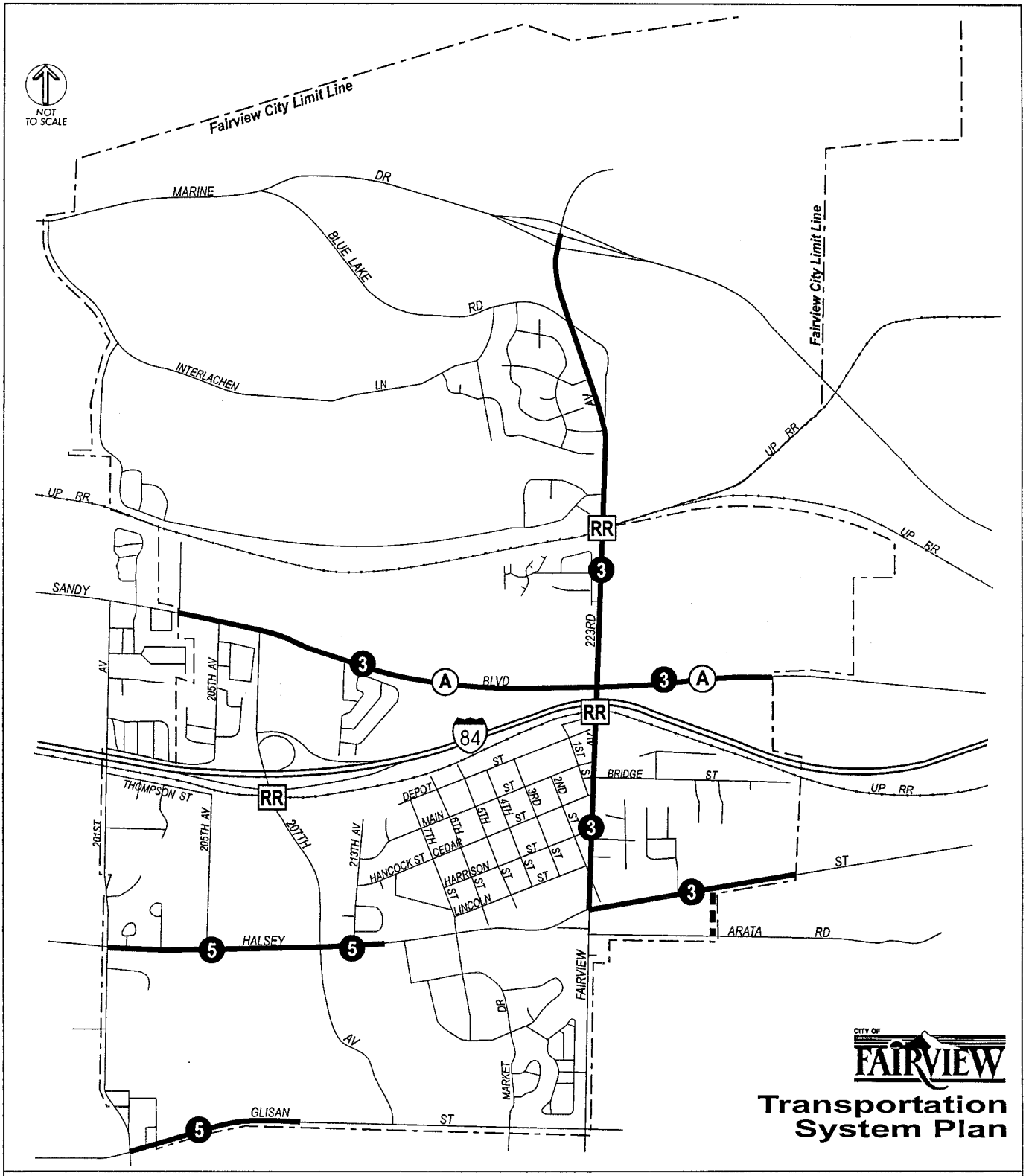
All traffic control devices should meet MUTCD standards prior to their installation. On arterial streets, signals should generally be spaced at least 1,000 feet apart for efficient operation. A detailed traffic engineering evaluation shall be conducted before the installation of any traffic signal. ODOT signal design and signal phasing guidelines should be followed for all traffic signal installations.

Improvements

The improvements needed to mitigate 2020 conditions are described in Tables 8-5 and 8-6 and are shown in Figure 8-12. Prioritization should occur in coordination with the CIP process. All improvements on arterials and collectors shall include sidewalks, bike lanes and transit facilities. These improvement lists should be used as a starting point for inclusion in regional funding programs for streets.

Table 8-5
Future Street Improvements
(All Projects include sidewalks, bicycle lanes and transit accommodations as required)

Location	Description	Funding Status*
Sandy Boulevard	Widen to three lanes between City Limits lines	Not Funded
Halsey Street	Widen to five lanes between 201st Avenue and 207th Avenue (and/or 1st Fairview Village Access)	Not Funded
223rd Avenue	Widen to three lanes between Halsey Street and Marine Drive	Not Funded
Halsey Street	Widen to three lanes between 223rd Avenue and 238th Avenue	Metro RTP
Halsey Street	Widen to five lanes between 190th Avenue and 207th Avenue	Multnomah County CIP
Glisan Street	Widen to five lanes between 201st Avenue and existing five-lane section	Metro RTP
Railroad Crossings	223rd Avenue (2), 201st Avenue	Metro RTP



LEGEND

- Street Widening
- New Street
- 2 - Number of Lanes
- A - Access Control Strategy
- RR - RR Crossing Improvement

Figure 8-12
STREET IMPROVEMENT PLAN

Table 8-6
City of Fairview 2020 Intersection Improvements

No.	Intersection	Description*
1	223rd Avenue/Halsey Street	Eastbound Right Turn Overlap Phase Extend Traffic Signal Cycle Length (consider Protected/Permissive signal phasing)
2	223rd Avenue/Glisan Street	Southbound Right Turn Lane Eastbound Right Turn Overlap Phase **Extend Traffic Signal Cycle Length**
3	223rd Avenue/Sandy Boulevard	Install Traffic Signal Northbound Left Turn Lane Southbound Left Turn Lane Eastbound Left Turn Lane Westbound Left Turn Lane Eastbound Right Turn Lane **Southbound Right Turn Lane** Consider Roundabout as alternative to turn lanes/signal
4	207th Avenue/Halsey Street	Northbound Right Turn Lane Southbound Left Turn Lane (2nd) Southbound Right Turn Lane Westbound Right Turn Overlap Phase
5	201st Avenue/Halsey Street	Southbound Right Turn Lane Eastbound Right Turn Lane Westbound Right Turn Lane Protected/Permissive Phasing All Approaches Extend Traffic Signal Cycle Length
6	207th Avenue/Sandy Boulevard	Install Permanent Traffic Signal Eastbound Right Turn Lane Protected Phasing Westbound
7	Interlachen/Marine Drive	Eastbound Right Turn Lane Westbound Left Turn Lane
8	Blue Lake/Marine Drive	Eastbound Right Turn Lane Westbound Left Turn Lane
9	223rd Avenue/Park Lane	Install Traffic Signal
	Pedestrian Crossing Evaluation/Signals	Study and determine appropriate locations for Pedestrian Crossing Signals

ed under 2020 Base conditions. **Bold** indicates additional needs with expanded commercial zoning along Halsey Street.

Assessment of Need

Based upon the evaluation of intersection level of service, nine of the study intersections operate at or worse than level of service D in the 2020 evening peak hour with no improvements (Table 8-3). This compares with one intersection operating at this level today. The impact of future growth (caused by nearly 4,000 additional trips in the evening peak hour in 2020 as compared to today) would be severe without significant investment in transportation improvements. Poor performance on freeways and arterials would result in substantial impacts (added through traffic) to neighborhood and collector routes. The most significant issue areas can be grouped into the following:

- **Halsey Street.** Halsey is one of the key east-west routes through Fairview. It provides access both to the "core area" part of Fairview to the north and to Fairview Village to the south. Halsey Street is designated by Metro as a "Main Street" to the west of 223rd Avenue, and is planned by the City to be a mixed-use area containing a combination of residential and commercial land uses. The desire has been expressed for this area to be pedestrian friendly. Based on input from the Citizen's Advisory Committee, there is a strong desire, on the part of the community, for Halsey Street to remain a three-lane roadway, at least between 7th Street and 223rd Avenue. Capacity analysis conducted on future year traffic forecasts indicate that Halsey Street would need to be constructed to a five-lane section between 207th Avenue and the first Fairview Village access point. East of this access point, to 223rd Avenue, a three-lane street cross-section should provide adequate capacity. In the event that the Mount Hood Parkway is eventually constructed, it would provide additional capacity that may relieve Halsey Street through Fairview. In that event, five-lanes may or may not be necessary between 207th Avenue and the Fairview Village access point.

- **223rd Avenue/Sandy Boulevard.** This intersection will require improvement in the future due to the potential for development along both Sandy Boulevard and 223rd Avenue. While a traffic signal could be designed to operate safely at this location, there are grading and sight distance issues to be addressed which could be expensive. If it is determined that a traffic signal is the appropriate solution at this intersection, it is likely that additional turn lanes would also be required, adding right-of-way impacts.

  Another option for this intersection is the construction of a roundabout. A roundabout would require some additional right-of-way, but, at this location, would not require more than one approach travel lane in width. Vehicles would enter the roundabout on a right turn (entering from either eastbound or westbound Sandy or from northbound or southbound 223rd) and continue in a counter-clockwise direction until they reach the appropriate exit location. Roundabouts provide a high level of capacity and, while all vehicles would need to slow down, no vehicles would need to stop at the intersection. For more information on roundabouts (and how the compare with signalized intersections), refer to http://www.odot.state.or.us./techserv/engineer/pdu/roundabout.htm. A web site's summary can be found in the appendix of this report.

Prohibition of the westbound left turn was tested at this location to determine whether it had an impact on Fairview streets (particularly 223rd Avenue south of Sandy Boulevard). The result of this testing indicates that a very small amount of traffic (less than 30 vehicles in the evening peak hour) may be diverted away from 223rd Avenue. Most of the redirected traffic ends up on Halsey Street and Glisan Street (east of 223rd Avenue) before finding its way back to 223rd Avenue. This restriction does not provide substantial benefit to Fairview.

- **207th Connection.** The City is planning a substantial commercial site (potentially a grocery store) at the southeast corner of 207th Avenue/Halsey Street. Access to the site is currently planned via Halsey Street and through Fairview Village. It is anticipated that some of thetraffic traveling to this proposed commercial site is likely to come from 207th Avenue. The potential for a connector roadway from 207th Avenue into the commercial site, and thus, Fairview Village, has been discussed. Multnomah County is intent on preserving 207th Avenue/Glisan Street/223rd Avenue as a regional through route and prefers that no additional access be taken from the route. However, the potential impact is that Halsey may need to be constructed as a five-lane section in order to accommodate the proposed commercial site if additional access is not provided. A connection to 207th Avenue would have the added benefit of keeping through moving traffic that chooses to stop at the commercial site out of the core area of Fairview (Halsey/223rd). It was determined that this connection does not provide sufficient benefit to warrant a change in access control along 207th, so this alternative was removed from consideration.

- **Sandy Boulevard.** There is a significant barrier to street connectivity north of Sandy Boulevard since the Union Pacific Railroad is located less than 1,000 feet north of Sandy in some locations. However, it is important to try to develop some connectivity north of Sandy, so that each parcel does not have access on Sandy Boulevard (multiple cul-de-sacs), which is a state highway. According to the *DRAFT 1998 Oregon Highway Plan*, the access spacing standards for Sandy Boulevard (a District Highway) require 330 feet in an urban setting. According the DRAFT Multnomah County Design Standards, the County would require about 395 feet between local streets or about 295 feet between driveways on Sandy (a proposed minor arterial).

- **207th Avenue North Connector.** A new street connection between 207th Avenue and Airport Way (via the South Shore Corporate Park) is listed in the Regional Transportation Plan and is shown in the Multnomah County Functional Classification Map (as Inverness Drive). This project was evaluated based on capacity needs and feasibility and it was determined that it would not be a desirable project. While some traffic would make use of this route, there is already substantial development in the way (a manufactured home park and a sewage treatment plan), that would be costly to move and/or destroy. A more logical connection point to Sandy, if a roadway such as this is to be built, would be to align with 201st Avenue, or west of 201st Avenue, in Gresham.

- **Railroad Crossings.** There are several railroad crossings in Fairview which result in substandard width for the roadways which pass below them. Two of them are located on 223rd Avenue (one just south of I-84 and one about a quarter to a half-mile north of Sandy Boulevard)

and one is located on 201st Avenue (just south of I-84). The crossing on 223rd Avenue just south of I-84 only provides about 20 feet of paved width between abutments. There is no room for curbs, sidewalk or shoulder under this crossing. The crossing on 223rd Avenue north of Sandy also only provides about 20 feet of paved width between abutments (with 14 feet of vertical clearance). However, at this crossing, there is about 15 feet on either side between the crossing columns and the abutment that could potentially be used for pedestrian/bicycle access. This may provide an alternative in the near term until funding for a new crossing is available. The crossing on 201st Avenue provides about 24 feet of pavement and about six feet on either side which could be used for sidewalk. These railroad overcrossings would need to be rebuilt to accommodate a standard roadway cross-section beneath them (particularly to accommodate pedestrians and bicyclists).

- **Lack of intersection turning capacity.** Many intersections experience LOS E conditions, not for need of through capacity, but the need for additional right or left turning capacity. Several intersection turn movement improvements have been identified and are shown in Figure 8-13.

Recommended Improvement Plan

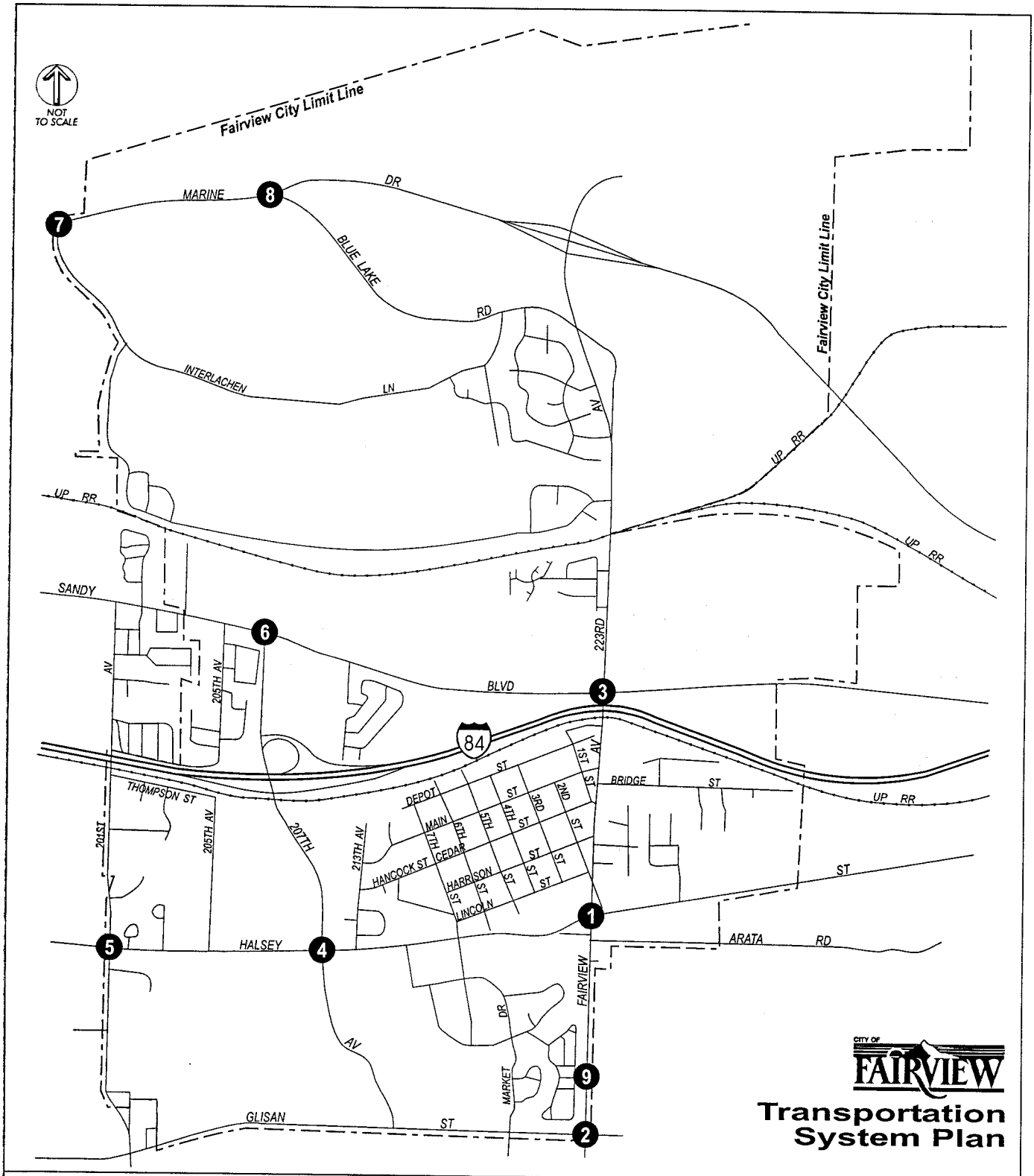
To address these deficiencies, a series of alternatives and strategies were considered. The range of strategies includes:

- **Do nothing:** This results in severe impacts to motor vehicle and transit circulation in Fairview with delays which would not be tolerable.

- **Assume that alternative modes can serve excess demand.** The TSP analysis assumed that alternative modes would be developed to their optimal levels. The order of magnitude of trips to be served in 2020 goes well beyond the capacity of the alternative mode systems by themselves, even at their optimal levels.

- **Build all the road capacity necessary to achieve level of service D conditions at intersections.** This strategy may be feasible in the long term, but would have significant impact on right-way-way for roads. Larger roads would be the result which is contrary to the more livable, pedestrian friendly outcome expressed by the CAC.

- **Pragmatically add capacity to all modes, developing a balanced system. Outline the long-term configuration of streets to allow development to best accommodate needs.** This is the strategy that was pursued. It involves significant system improvements, but is the only alternative that balances performance between modes, consistent with regional policy.



LEGEND

Figure 8-13
INTERSECTION IMPROVEMENT LOCATIONS

Land Use

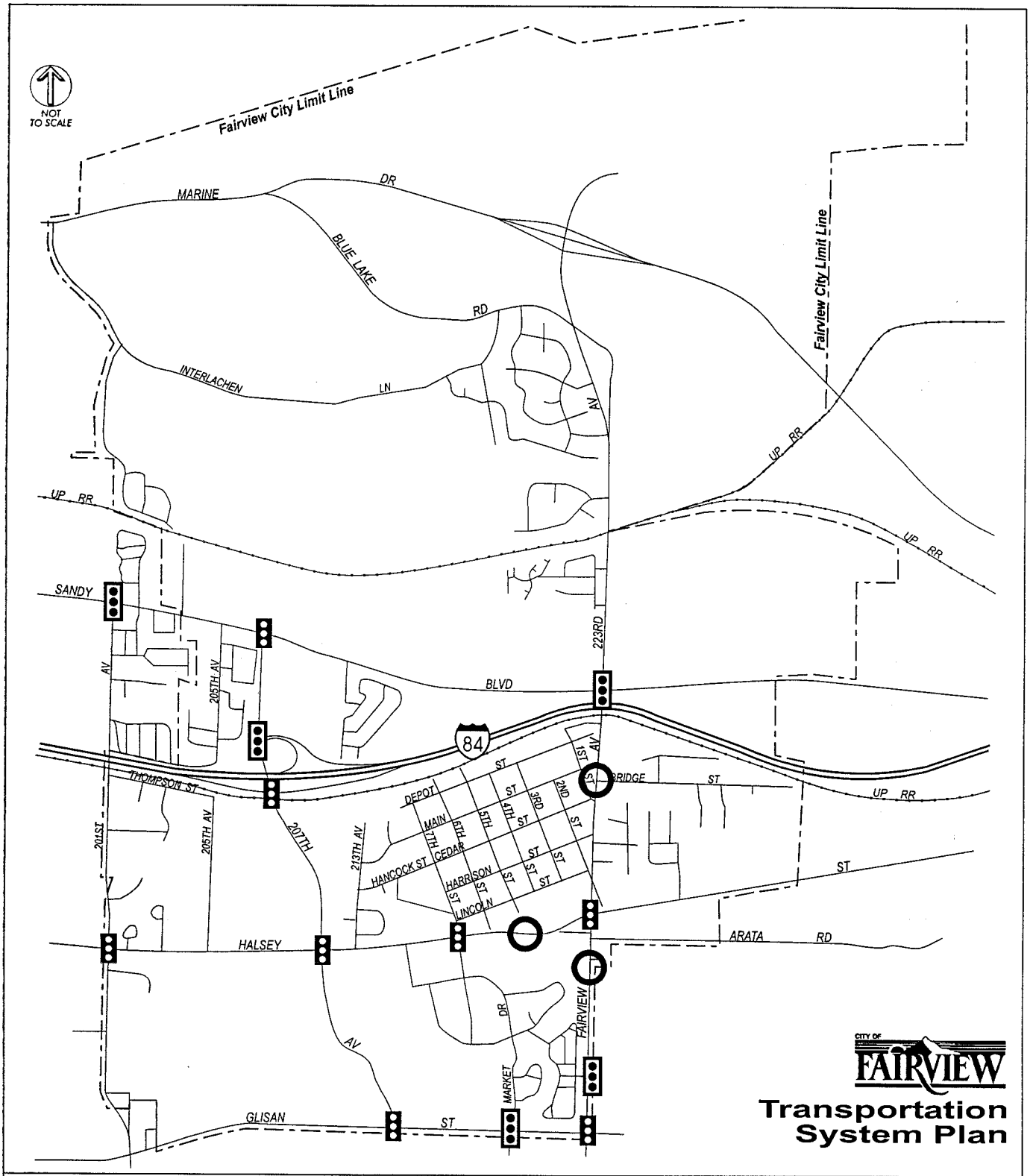
The potential to site commercial/retail uses in Fairview was studied as part of the TSP to determine if there were better or additional locations that would be better from a transportation perspective (shorter trips, more walk trips, improved traffic). In general, it was found that more retail will generate more vehicle trips, no matter where it is located. Retail zoning exists at many of the sites considered. No level of commercial use or shuffling of prospective sites results in fewer street improvements. The appendix includes a full analysis of the land use/transportation testing for the Fairview TSP. Intersection level of service results for the higher intensity land use alternatives are shown previously in Table 8-3.

Intersection Turning Capacity: A series of intersection improvements were identified which primarily add turning movement capacity (Table 8-6 and Figure 8-13). These roadway improvements typically consist of left and right turn lanes and/or traffic signals. Nine of the study intersections require significant improvements.

Traffic Signals: To guide future implementation of traffic signals to locations which have the maximum public benefit by serving arterial/collector/neighborhood routes, a framework master plan of traffic signal locations was developed (Figure 8-14). The intent of this plan is to outline potential locations where future traffic signals would be placed to avoid conflicts with other development site oriented signal placement. To maintain the best opportunity for efficient traffic signal coordination on arterials, spacing of up to 1,000 feet should be considered. No traffic signal should be installed unless it meets **Manual of Uniform Traffic Control Devices** warrants. Two key traffic signal issues should be addressed within the transportation policy of Fairview:

- Establishing a traffic signal spacing standard of 1,000 feet and a traffic signal master plan to guide future traffic signal placements. When this standard is not met, additional evaluation should be prepared to assure signal progression can be efficiently maintained;

- Traffic signals disrupt traffic flow. Their placement is important for neighborhood access, pedestrian access and traffic control. To not utilize the limited placements of traffic signals to serve private land holdings will limit the potential for use that will generally benefit the public, neighborhoods and pedestrian access. Limiting placement of traffic signals to locations that are public streets would minimize or eliminate the potential for traffic signals solely serving private access.



LEGEND

- Existing Signalized Intersection
- Potential Signalized Intersection
- Pedestrian Crossing Evaluation

Figure 8-14
TRAFFIC SIGNAL MASTER PLAN

SAFETY

Needs

Accident data was obtained for the City of Fairview from Multnomah County. Chapter 3 provides detailed data regarding motor vehicle accidents in Fairview. Several strategies are suggested for improving safety in the City of Fairview. These strategies aimed at providing the City with priorities that meet the goals and policies of the City.

- Work with other agencies such as Multnomah County and ODOT to help prioritize and fund safety programs - coordinated approach
- Develop a citywide safety priority system which identifies high accident locations, ranks the locations and identifies safety mitigation measures
- Address safety issues on an as needed basis

Suggested Improvements

Most of these high accident locations are included in future street improvements listed in Tables 8-5 and 8-6. In the short term, specific action plans should be prepared to address whether beneficial improvements at these locations can be made without affecting future plans.

A future issue with regard to safety involves the decision to go to three lanes from two lanes or five lanes from four lanes. National research has clearly demonstrated the benefits of providing a turning lane when daily traffic volumes exceed 15,000 vehicles per day[10]. While widening the street can commonly be viewed as pedestrian unfriendly, the potential impact of not having a turning lane is that accident rates will increase substantially (11 to 35 percent) on two lane roads compared to three lane roads.

One safety action that can have an immediate impact is to condition all land use development projects that require access on city streets to maintain adequate sight distance. This should address all fixed or temporary objects (plants, poles, buildings, signs, etc.) that potentially obstruct sight distance. Any property owner, business, agency or utility that places or maintains fixed or temporary objects in the sight distance of vehicles, bicycles or pedestrians should be required to demonstrate that adequate sight distance is provided (per American Association of State Highway and Transportation Officials).[11]

MAINTENANCE

Preservation, maintenance and operation are essential to protect the City investment in transportation facilities. The majority of current gas tax revenues are used to maintain the transportation system. With an increasing road inventory and the need for greater maintenance of older facilities, protecting and expanding funds for maintenance is critical.

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[10] Multilane Design Alternatives for Improving Suburban Highways, TRB NCHRP Report No. 282, March 1986.

[11] "A Policy on Geometric Design of Highways and Streets", Green Book American Association of State Highway and Transportation Officials, 1994.

A Pavement Management Program is a systematic method of organizing and analyzing information about pavement conditions to develop the most cost effective maintenance treatments and strategies. As a management tool, it aids the decision-making process by determining the magnitude of the problem, the optimum way to spend funds for the greatest return on the dollar, and the consequences of not spending money wisely. Fairview maintains an annual program of pavement management and monitors conditions in setting priorities for overlays, slurry seals and joint sealing. With over 17 miles of roadway and one bridge to maintain, maintenance is one of the largest transportation expenditures, requiring about $250,000 per year.

A pavement management program can be a major factor in improving performance in an environment of limited revenues. A pavement management program is not and should not be considered the answer to every maintenance question. It is a tool that enables the public works professional to determine the most cost-effective maintenance program. The concept behind a pavement management system is to identify the optimal rehabilitation time and to pinpoint the type of repair which makes the most sense. With a pavement management program, professional judgment is enhanced, not replaced.

A visual inspection of Fairview's surface street system was prepared by a consultant for the City of Fairview. This inspection, basically a "report card" of the street system rates each roadway in Fairview. Actual roadway ratings prepared by the City of Fairview are provided in the appendix. Table 8-7 summarizes the roadway maintenance funding history for the last four fiscal years

A critical concept is that pavements deteriorate 40 percent in quality in the first 75 percent of their life. However, there is a rapid acceleration of this deterioration later, so that in the next 12 percent of life, there is another 40 percent drop in quality. A pavement management system can identify when pavements will begin to deteriorate before rapid deterioration starts to focus preventative maintenance efforts cost effectively. These solutions are generally one-fifth to one-tenth the cost required after a pavement is 80 percent deteriorated. Figure 8-24 illustrates the pavement life cycle. For this reason, support of gradual increases to the gas tax to support maintenance is critical.

Table 8-7
City of Fairview Street Maintenance Budget Summary[12]

Requirements	FY 96-97 actual	FY 97-98 actual	FY 98-99 budgeted	FY 99-00 budgeted	Description
Operating Supplies	$ 10,371	$ 13,867	$ 14,300	$ 12,000	
Street Maintenance Services	$ 9,812	$ 3,768	$ 15,000	$ 15,000	
Office Equipment	$ -	$ -	$ 2,000	$ 2,000	
Traffic Calming	$ -	$ -	$ 1,400	$ 10,000	
Transfer to General Fund	$152,932	$173,396	$184,025	$198,082	(Administrative & Personnel)
Total	$173,115	$191,032	$216,725	$237,082	

[12] Based on information received from Jeff Sarvis, City of Fairview Public Works Department, April 19, 1999.

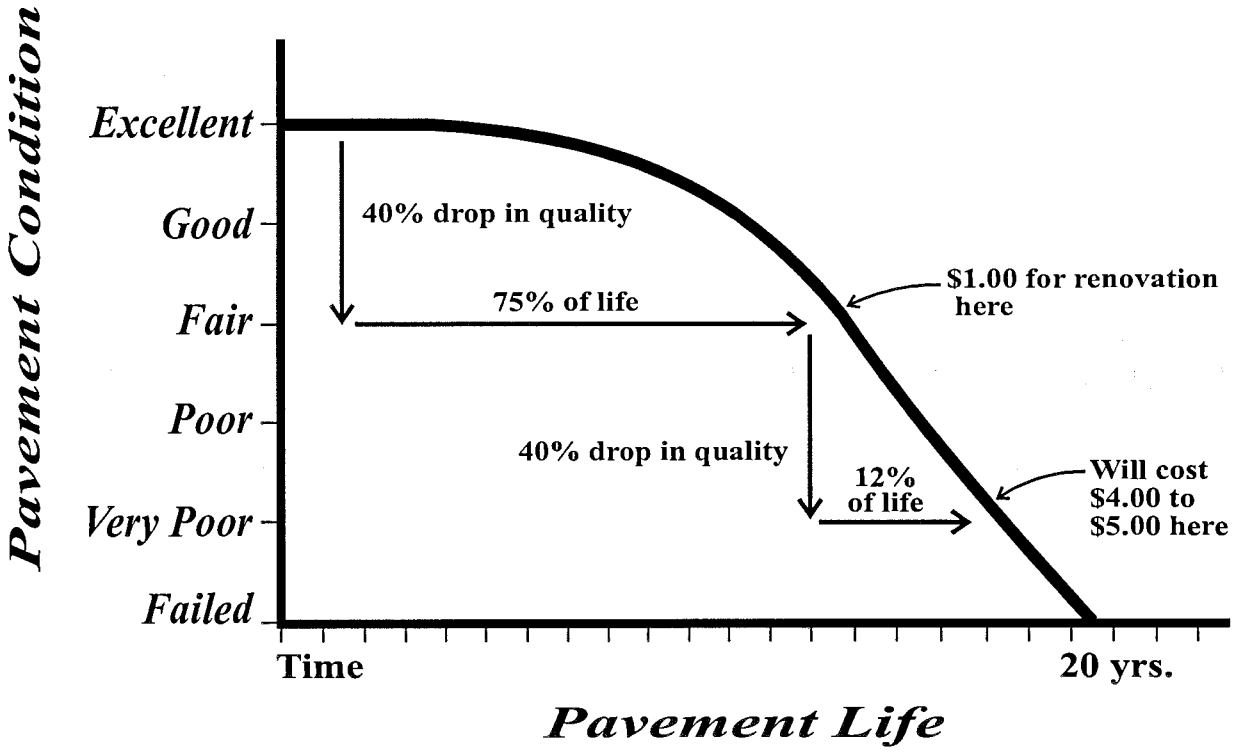


Figure 8-15
PAVEMENT LIFE CYCLE

NEIGHBORHOOD TRAFFIC MANAGEMENT

Neighborhood Traffic Management (NTM) is a term that has been used to describe traffic control devices typically used in residential neighborhoods to slow traffic or possibly reduce the volume of traffic. NTM is descriptively called traffic calming due to its ability to improve neighborhood livability. Fairview has done very little in the way of testing and implementing NTM measures such as speed humps, chokers, pavement texturing, circles, chicanes and other elements. The City has no formalized NTM program. The following are examples of neighborhood traffic management strategies:

- speed wagon (reader board that displays vehicle speed)
- speed humps
- traffic circles
- medians
- landscaping
- curb extensions
- chokers (narrows roadway at spots in street)
- narrow streets
- closing streets
- photo radar
- on-street parking
- selective enforcement
- neighborhood watch

Typically, NTM can receive a favorable reception by residents adjacent to streets where vehicles travel at speeds above 30 MPH. However, NTM can also be a very contentious issue within and between neighborhoods, being viewed as moving the problem rather than solving it, impacting emergency travel or raising liability issues. A number of streets in Fairview have been identified in the draft functional classification as neighborhood routes. These streets are typically longer than the average local street and would be appropriate locations for discussion of NTM applications. A wide range of traffic control devices is being tested throughout the region, including such devices as chokers, medians, traffic circles and speed humps. NTM traffic control devices should be tested within the confines of Fairview before guidelines are developed for implementation criteria and applicability. Also, NTM may be considered in an area wide manner to avoid shifting impacts between areas and should only be applied where a majority of neighborhood residents agree that it should be done. Strategies for NTM seek to reduce traffic speeds on neighborhood routes, thereby improving livability. Research of traffic calming measures demonstrates their effectiveness in reducing vehicle speeds. Table 8-8 summarizes nationwide research of over 120 agencies in North America.

The City has recently adopted a speed hump management program. This program can use regional experience and success to help prioritize implementation and address issues on a systematic basis rather than a reactive basis. Criteria should be established for the appropriate application of NTM in the City. This would address warrants, standards for design, funding, special conditions for functional classifications other than neighborhood routes and the required public process.

Table 8-8
NTM Performance

Measures	No. of Studies	Speed Reduction (MPH) Low	High	Average	Volume Change (ADT) Low	High	Ave.	Public Satisfaction
Speed Humps	262	1	11.3	7.3	0	2922	328	79%
Speed Trailer	63	1.8	5.5	4.2	0	0	0	90%
Diverters	39	-	-	.4	85	3000	1102	72%
Circles	26	2.2	15	5.7	50	2000	280	72%
Enforcement	16	0	2	2	0	0	0	71%
Traffic Watch	85	.5	8.5	3.3	0	0	0	98%
Chokers	32	2.2	4.6	3.3	45	4100	597	79%
Narrow Streets	4	5	7	4.5	0	0	0	83%

SOURCE: *Survey of Neighborhood Traffic Management Performance and Results, ITE District 6 Annual Meeting, by R S. McCourt, July 1997.*

PARKING

Parking has typically been a benign transportation issue in the past for Fairview. New land uses were required to provide the code designated number of parking spaces to assure there would be no impact to surrounding land uses (overflow parking). These parking ratios were developed based upon past parking demand characteristics of each land use type. Most recently, parking has become an element of transportation planning policy through two actions. The adoption of the Transportation Planning Rule in 1991, which was updated in November 1998 (sections 660-12-020(2g) and 660-12-045(5c)) and the Metro Functional Plan of November 1996, Title 2. By adopting the minimum and maximum parking ratios outlined in Title 2, the City will be able to address the TPR required reduction in parking spaces per capita over time.

Several strategies were identified to address the desire to reduce parking needs in Fairview:

- Shared parking
- Parking pricing
- Parking needs should be reviewed by individual developments at the site plan review stage. Parking provisions should be compared to demand, as identified by ITE or DEQ.[13]
- Maximum Parking Ratios

One of the concerns with parking reduction policies is the impact to adjacent land uses should the vehicle needs of a site exceed the provision of parking.

ACCESS MANAGEMENT

Access management is important, particularly on high volume roadways for maintaining traffic flow and mobility. Where local and neighborhood streets function to provide access, collector and aterial streets

[13] *Parking Demand*, 2nd Edition, Institute of Transportation Engineers, 1987; and *Peak Parking Space Demand Study*, Oregon Department of Environmental Quality, by JHK & Associates, June 1995.

serve greater traffic volume. Numerous driveways or street intersections increase the number of conflicts and potential for accidents and decrease mobility and traffic flow. Fairview, as with every city, needs a balance of streets which provide access with streets that serve mobility.

Several access management strategies were identified to improve access and mobility in Fairview:

- Provide left turn lanes where warranted for access onto cross streets
- Work with land use development applications to consolidate driveways where feasible
- Meet Multnomah County/ODOT access requirements on arterials
- Establish City access standards for new developments
- Develop city access requirements that are consistent with Metro Title 6 access guidelines

The following recommendations are made for access management:

- Incorporate a policy statement regarding prohibition of new single-family residential access on arterials and collectors. A design exception process should be outlined that requires mitigation of safety and NTM impacts. This addresses a problem in Fairview where property owners consume substantial staff time on issues of residential fronting impacts.
- Use Multnomah County and ODOT standards for access on arterials and collectors (see tables showing Multnomah County and ODOT standards in Appendix).
- Specific access management plans be developed for 207th Avenue, Glisan Street, Sandy Boulevard, 223rd Avenue and Halsey Street to maximize the capacity of the existing facilities and protect their functional integrity.

TRANSPORTATION DEMAND MANAGEMENT

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

- Work with employers to install bicycle racks
- Work with property owners to place parking stalls for carpoolers near building entrances
- Provide information regarding commute options to larger employers
- Encourage linkage of housing, retail and employment centers
- Encourage flexible working hours
- Encourage telecommuting
- Provide incentives to take transit and use other modes (i.e. free transitpass)
- Schedule deliveries outside of peak hours

TRANSPORTATION SYSTEM MANAGEMENT/ INTELLIGENT TRANSPORTATION SYSTEMS

Transportation System Management (TSM) focuses on low cost strategies to enhance operational performance of the transportation system. Measures that can optimize performance of the transportation system include signal improvements, intersection channelization, access management (noted in prior section), HOV lanes, ramp metering, rapid incident response, and programs that smooth transit operation. The most significant measure that can provide tangible benefits to the traveling public is traffic signal coordination and systems. Traffic signal system improvements can reduce the number of stops by 35 percent, delay by 20 to 30 percent, fuel consumption by 12.5 percent and emissions by 10 percent[14]. This can be done without the major cost of roadway widening. Ramp metering has been proven to improve freeway performance, reducing travel time, reducing accidents, increasing vehicle speed and reducing fuel consumption. ODOT plans to meter westbound on-ramps to I-84. As ramp metering is installed in Fairview, the City should work with ODOT to develop ramp meter bypass lanes for high occupancy vehicles and transit.

Several of the strategies were elements of an Intelligent Transportation System (ITS) plan being implemented regionally by ODOT and participating agencies. ITS focuses on a coordinated, systematic approach toward managing the region's transportation multi-modal infrastructure. ITS is the application of new technologies with proven management techniques to reduce congestion, increase safety, reduce fuel consumption and improve air quality. One element of ITS is Advanced Traffic Management Systems (ATMS). ATMS collects, processes and disseminates real-time data on congestion alerting travelers and operating agencies, allowing them to make better transportation decisions. Examples of future ITS applications include routine measures such as "smart" ramp meters, automated vehicle performance (tested recently in San Diego), improved traffic signal systems, improved transit priority options and better trip information prior to making a vehicle trip (condition of roads – weather or congestion, alternative mode options – a current "real time" schedule status, availability/pricing of retail goods). Some of this information will be produced by Fairview, but most will be developed by ODOT or other ITS partners (private and public). The information will be available to drivers in vehicles, people at home, at work, at events or shopping. The Portland region is just starting to implement ITS and the City of Portland and ODOT have already developed their own ITS strategic plans.

TRUCKS

Efficient truck movement plays a vital role in maintaining and developing Fairview's economic base. Well planned truck routes can provide for the economical movement of raw materials, finished products and services. Trucks moving from industrial areas to regional highways or traveling through Fairview are different than trucks making local deliveries. The transportation system should be planned to accommodate this goods movement need. The establishment of through truck routes provides for this efficient movement while at the same time maintaining neighborhood livability, public safety and minimizing maintenance costs of the roadway system. A map of proposed through

[14] *Portland Regionwide Advanced Traffic Management System Plan,* ODOT, by DKS Associates, October 1993.

truck routes in Fairview was developed (Figure 8-16). This is aimed at addressing the through movement of trucks, not local deliveries. The objective of this route designation is to allow these routes to focus on design criteria that is "truck friendly", i.e., 12 foot travel lanes, longer access spacing, 35 foot (or larger) curb returns and pavement design that accommodates a larger share of trucks. Because these routes are through routes and relate to regional movement, the Metro regional freight system was reviewed. The Draft Regional Transportation Plan[15] includes the following routes in the regional freight system in Fairview, which are consistent with the city map:

- I-84 — Main Roadway Route
- Marine Drive — Road Connector
- Sandy Boulevard — Road Connector
- 223rd Avenue (north of I-84) — Road Connector
- 207th Avenue — Road Connector
- Glisan Street (east of 207th Avenue) — Road Connector

In addition, there is an adopted truck route on local streets (Main Street/1st Street/Depot Street). The portions of these streets which are included in the truck route would be appropriate locations to apply the local industrial street cross-section (Figure 8-7) if those streets are ever reconstructed.

Criteria

Fairview's Citizen's Advisory Committee created a set of goals and policies to guide transportation system development in Fairview (see Chapter 2). Several of these policies pertain specifically totrucks:

Goal 2: Multi-Modal

Policy 1. Develop and implement public street standards that recognize the multi-purpose nature of the street right-of-way for utility, pedestrian, bicycle, transit, truck and auto use.

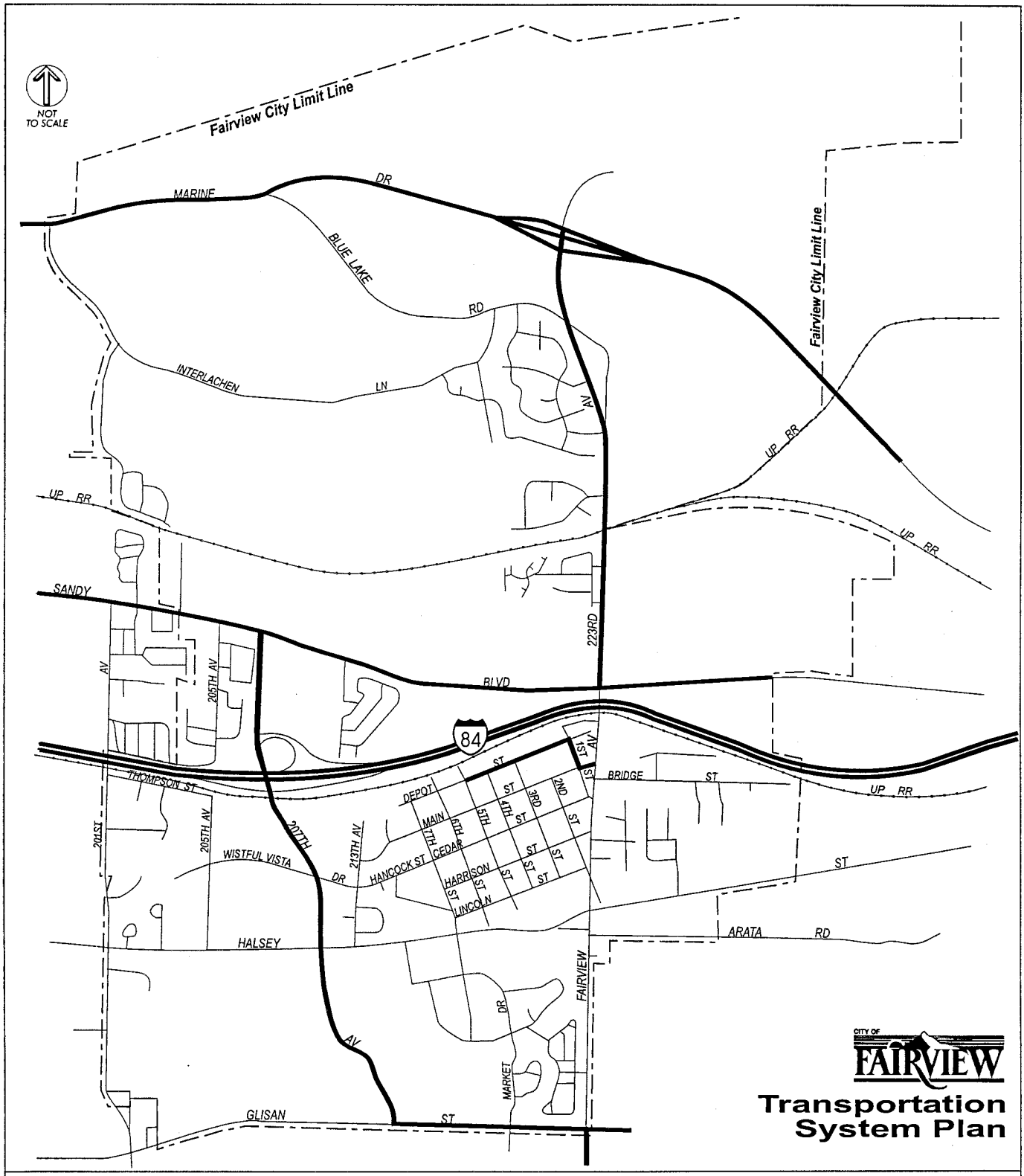
Goal 6: Goods Movement

Policy 1. Design arterial routes, highway access and adjacent land uses in ways that facilitate the efficient movement of goods and services.

Policy 2. Require safe routing of hazardous materials consistent with federal and state guidelines.

These goals and policies are the criteria that all truck related improvements in Fairview should be measured against to determine if they conform to the intended vision of the City.

[15] *Draft Regional Transportation Plan*, Metro, Version 4.0, December 1, 1997.



LEGEND

——— - Truck Routes

Figure 8-16
TRUCK ROUTES MASTER PLAN

Chapter 9
Other Modes

This chapter summarizes existing and future rail, air, water and pipeline needs in the City of Fairview. While auto, transit, bicycle and pedestrian transportation modes have a more significant effect on the quality of life in Fairview, other modes of transportation must be considered and addressed.

CRITERIA

No goals or policies were developed related to rail, air, water or pipeline transportation systems.

RECOMMENDED FACILITIES

Rail

An east-west railroad link into Portland crosses Fairview north of I-84 and a second link crosses Fairview just south of I-84. The north line is referred to as the *Kenton Line* and the south line as the *Graham Line*[1]. Both lines lead to the Albina yard in north Portland. Trains run through Fairview at a rate of approximately one per hour in each direction. Most crossings of the railroad are grade separated (I-84, 223rd Avenue, 201st Avenue, 207th Avenue). No improvements or changes in rail service are planned at this time. Grade separation structures on 201st and 223rd Avenues need to be widened to provide safe, standard geometry for motor vehicle, pedestrian and bicycle travel.

Air

There are no airports within the City of Fairview. Fairview is served by the Portland International Airport, located approximately 10 miles to the west in Northeast Portland on the Columbia River. Fairview is also served by the Portland-Troutdale Airport, a general aviation facility located on the northern edge of Troutdale. No airports are expected within the City in the future. Therefore, no policies or recommendations in this area of transportation are provided for Fairview.

1 Per telephone conversation with Linda of the Director of Terminal Operation's office, April 23, 1999.

Water

The Columbia River is a navigable waterway that supports commercial use. Chinook Landing Marine Park, located at the north end of 223rd Avenue, provides boat access to the Columbia River. Blue Lake and Fairview Lake are used for recreational purposes only. No policies or recommendations in this area of transportation are provided for Fairview.

Pipeline

The only major pipeline facilities running through the Fairview area is a high-pressure natural gas feeder line owned and operated by Northwest Natural Gas Company. The feeder line route follows Sandy Boulevard from west of the city limits and extends east towards Troutdale. No future pipelines are expected within the City. No policies or recommendations in this area of transportation are provided for Fairview.

Chapter 10
Funding/Implementation

This chapter outlines the funding sources which can be used to meet the needs of the transportation system. The costs for the elements of the transportation system plan are outlined and compared to the potential revenue sources. Options are discussed regarding how costs of the plan and revenues can be balanced.

Transportation funding is commonly viewed as a user fee system where the users of the system pay for infrastructure through motor vehicle fees (such as gas tax and registration fees) or transit fares. However, a great share of motor vehicle user fees goes to road maintenance, operation and preservation of the system rather than construction of new system capacity. Much of what the public views as new construction is commonly funded (partially or fully) through property tax levies, traffic impact fees and fronting improvements to land development.

The overall transportation system needs can typically outpace dedicated funding sources. A key to balancing needs and funding are user fees. Motor vehicle fees have become a limited source of funding new transportation system capacity due to many factors:

- Gas taxes have been applied on a fixed cents per gallon basis not a percentage basis. Increases in the gasoline tax have not kept pace with cost of transportation needs. The Department of Transportation's Bureau of Transportation Statistics data indicates that in real terms the amount of federal gas tax paid by American households has actually declined by 41 percent from 1965 (when Interstate freeway building was at its peak) to 1995. That occurred with the real dollar gas tax increasing from 4 cents to 18.4 cents in the same time frame (although 4.3 cents per gallon were added for deficit reduction, not transportation, in the last ten years).

- Oregon gas taxes have not increased since 1992 (currently 24 cents per gallon) and registration fees have been at $15 per vehicle per year for over ten years. Significant new roadway construction, particularly that attributed to new development, has increased Fairview's inventory of roads and maintenance during this time. Additionally, the demands of region-wide growth have increased the need for capacity improvements in the system.

- Significant improvements in fuel economy over the last 15 years have reduced the relationship of user fees to actual use. For example, a passenger car with 12,000 miles of use in a year at 15 miles per gallon could generate about $350 per year in revenue using current federal, state and county gas tax levels (about 44 cents) compared to less than $200 per year with a 27 miles per gallon vehicle (a 45 percent reduction).

- The bill is coming due on many roads built 20 years ago in terms of maintenance. As the inventory of roads increased, the use of the roads increased faster. This is evident from national transportation statistics. The number of passenger cars and miles of urban roadways doubled from 1960 to 1995. However, the number of vehicle miles traveled on those roadways increased 470%. This increased use proportionally increases maintenance needs. Many of these roads are heavily used and the maintenance activities in the urban area have a substantial impact on operation unless work is conducted in off-peak periods, which increases the cost to maintain these roads. To compound matters, the amount of passenger car fuel consumed from 1960 to 1995 has only increased 66%, reducing the rate that revenue comes in from user fees relative to actual use.

FUNDING

Funding Sources and Opportunities

There are several potential funding sources for transportation improvements. Table 10-1 summarizes several funding options available for transportation improvements. These are sources which have been used in the past by agencies in Oregon. In most cases these funding sources when used collectively are sufficient to fund transportation improvements for local communities. Due to the complexity of today's transportation projects, it is necessary to seek several avenues of funding projects. Unique or hybrid funding of projects generally will include these funding sources combined in a new package. Examples of funding sources which generally do not provide funding for roadways include: Property Tax General Funds, Car Rental Tax, Transient Lodging Tax, Business Income Tax, Business License Tax and Communication Services Tax.

The federal gas tax is allocated through Intermodal Surface Transportation Efficiency Act (ISTEA). The United States Congress has approved reauthorization of transportation funding (TEA 21) for the next six years. Federal transportation funds are distributed in the Portland region by Metro (hence the term "regional funds"). ISTEA/TEA 21 funds are much more flexible than state gas tax funds, with an emphasis on multi-modal projects. ISTEA/TEA 21 funds are allocated through several programs including the National Highway System (NHS), Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) Improvement Programs. NHS funds focus on the interstate highway system and CMAQ funds are targeted for air quality non-attainment areas.

Within the Portland region, funding for major transportation projects often is brought to a vote of the public for approval. This is usually for a large project or list of projects. Examples of this public funding includes the Major Streets Transportation Improvement Program (MSTIP) in Washington County or the Westside Light Rail Project. Because of the need to gain public approval for transportation funding, it is important to develop a consensus in the community which supports needed transportation improvements. That is the value of the Transportation System Plan. In most communities where time is taken to build a consensus regarding a transportation plan, funding sources can be developed to meet the needs of the community.

Table 10-1
Potential Transportation Revenue Sources

Type	Description
Traffic Impact Fees (TIF) & System Development Charges (SDC)	Traffic Impact Fees or System Development Charges (SDCs) have been used in Oregon and throughout the United States. The cornerstone to development of TIF/SDCs involves two principles: 1) there must be a reasonable connection between growth generated by development and the facilities constructed to serve that growth (generally determined by level of service or connectivity); and 2) there must be a general system-wide connection between the fees collected from the development and the benefits development receives. Charges are typically developed based on a measurement of the demand that new development places on the street system and the capital costs required to meet that demand. Multnomah County has a traffic impact fee (TIF), however, Fairview has chosen not to participate in this funding mechanism.
Gas Tax	The State, cities and counties provide their basic roadway funding through a tax placed on gasoline. State gas tax is approved legislatively while voters approve local gas taxes. State funds are dedicated to roadway construction and maintenance, with one percent allocated to pedestrian and bicycle needs. This tax does not fall under the Measure 5 limits, because it is a pay-as-you-go user tax. Multnomah County has a three-cent gas tax.
Other Motor Vehicle Fees	The state collects truck weight mile taxes, vehicle registration fees and license fees. These funds are pooled together with the gas tax in distributing state motor vehicle fees to local agencies. Annual motor vehicle fee allocations to Fairview (including the County gas tax revenue) amount to about $230,000 (including gas tax).
Street Utility Fees	Certain cities have used street utility fees for maintenance. The fees are typically collected monthly with water or sewer bills. These funds are not for capacity improvements, but for supporting local roadway maintenance based upon land use type and trip generation. This frees other revenue sources for capacity needs. Utility fees can be vulnerable to Measure 5 limitations, unless they include provisions for property owners to reduce or eliminate charges based on actual use.
Exactions	Frontage improvements are common examples of exaction costs passed to developers. These have been used to build much of Fairview's local street system. Developers of sites adjacent to unimproved roadway frontage are responsible for providing those roadway improvements. Developers of sites adjacent to improvements identified as TIF/SDC projects can be credited the value of their frontage work, which is included in the TIF/SDC project-list cost estimate. Since Fairview does not participate in Multnomah County's SDC, the credits would not apply in this case.
Local Improvement Districts (LID)	LIDs provide a means for funding specific improvements that benefit a specific group of property owners. Assessments are placed against benefiting properties to pay for improvements. LIDs can be matched against other funds where a project has system wide benefit beyond benefiting the adjacent properties. Similarly, districts can be created for tax increment type financing. A variation of LID can be Reimbursement Agreements or latecomers agreements where one private individual/firm builds a road for common use by others and as they develop they reimburse the builder.
Special Assessments	A variety of special assessments are available in Oregon to defray costs of sidewalks, curbs, gutters, street lighting, parking and CBD or commercial zone transportation improvements. These assessments would likely fall within the Measure 50 limitations. A regional example would be the Westside LRT where the local share of funding was voter approved as an addition to property tax.
Driveway Fees	Gresham collects a Public Street Charge and a Driveway Approach Permit Fee. These fees are project specific and revenue varies year to year based upon development permits. These funds are used for city maintenance and operation. Fairview has a right-of-way fee covering review and inspection of all flat work for new construction.
Employment Taxes	Tri-Met collects a tax for transit operations in the Portland region through payroll and self-employment taxes. Approximately $120 million are collected annually in the Portland region for transit.
Oregon Special Public Works Fund	The Special Public Works Fund (SPWF) Program was created by the legislature in 1985 as an economic development element of the Oregon Lottery. The program provides grants and loan assistance to eligible municipalities. There has been limited use of these funds on urban arterials. These funds are commonly used on state highways.

COSTS

Cost estimates (general order of magnitude) were developed for the projects identified in the motor vehicle, bicycle and pedestrian elements. Costs estimates from the RTP projects in Fairview were used in this study. Other projects were estimated using general unit costs for transportation improvements, but do not reflect the unique project costs that can (on some projects due to right-of-way, environmental mitigation and/or utilities) significantly add to project cost (25 to 75 percent in some cases). Development of more detailed project costs can be prepared in the future with more refined financial analysis. Since many of the projects overlap elements of various modes, the costs were developed at a project level incorporating all modes, as appropriate. It may be desirable to break project mode elements out separately, however, in most cases, there are greater cost efficiencies of undertaking a combined, overall project. Each of these project costs will need further refinement to detail right-of-way requirements and costs associated with special design details as projects are pursued. Table 10-2 summarizes the elements of the plan which were not project specific and how costs will be addressed for these elements.

It should be noted that all costs are 1999 based. Using the Engineering News Record[1] research on historical construction costs, it can be anticipated that (based on the past ten years) construction costs will increase about 2.5-2.75 percent per year. Since 1979, construction costs have increased 100 percent over 20 years.

Tables 10-3, 10-4 and 10-5 summarize the key projects in the TSP by three key groups including:

- Bicycle Improvements
- Pedestrian Improvements
- Motor Vehicle Improvements

Many of the project costs have been developed by Multnomah County, Metro or ODOT for projects in the RTP. These project costs have been utilized for the purposes of this TSP.

[1] Engineering News Record, construction cost index data, enr.com.

Table 10-2
Issues With Non-Auto, Pedestrian and Bicycle Costs

Mode	Issues
Parking	The TSP does not define specific projects. Off-street parking will be provided by private property owners as land develops.
Neighborhood Traffic Management	Specific NTM projects are not defined. These projects will be subject to neighborhood consensus based upon City of Fairview placement and design criteria. A city NTM program, if desired, should be developed with criteria and policy adopted by the City Council. Traffic humps can cost $2,000 to $4,000 each and traffic circles can cost $3,000 to $8,000 each. A speed trailer can cost about $10,000. It is important, where appropriate, that any new development incorporate elements of NTM as part of its on-site design. The City currently plans to spend about $10,000 in 1999-00 for NTM.
Public Transportation	Tri-Met will continue to develop costs for implementing transit related improvements. The City can supplement this by incorporating transit features through development exactions and roadway project design. Developing new transit services in Fairview similar to the corridor services outlined in the TSP will require Tri-Met to reallocate funding or seek additional sources of operating funds.
Trucks/Freight	Roadway funding will address these needs. Roadway undercrossings of railroads can use special Public Utilities Commission funds set aside for safety improvements to railroad crossings.
Rail	Costs to be addressed and funded by private railroad companies and the state.
Air, Water, Pipeline	Not required by City.
Transportation Demand Management	DEQ has established regional guidelines. Private business will need to support employee trip reduction programs. Conditions of land use approval for employers of 50 or more people should include a condition requiring TDM, as required by DEQ regionally.

Table 10-3

Pedestrian Action Plan Project List

(Assumes Construction Independent of Other Roadway Improvements)

Project	*From*	*To*	*Approximate Cost ($1,000s of dollars)*
223rd Avenue (both sides)	Halsey Street	Existing sidewalk north of Sandy Boulevard	$500,000
Halsey Street (south side)	201st Avenue	205th Avenue	$180,000
Halsey Street (north side)	Existing sidewalk west of 205th Avenue	Existing sidewalk east of 205th Avenue	$150,000
Sandy Blvd (south side)	Existing sidewalk east of 207th Avenue	223rd Avenue	$375,000
		Pedestrian Action Plan Total Cost:	**$1,205,000**

Table 10-4

Bicycle Action Plan Project Priorities

(Assumes Construction Independent of Other Roadway Improvements)

Project	*From*	*To*	*Approximate Cost (1000's of dollars)*
223rd Avenue	Halsey Street	Blue Lake Road	$1,100,000
Halsey Street	223rd Avenue	East City Limits	$250,000
		Bicycle Action Plan Projects Total Cost:	**$1,350,000**

Table 10-5

Motor Vehicle Project List

(All projects include sidewalks, bicycle lanes and transit accommodations as required)

Location	*Description*	*Funding Status**	*Cost*
Sandy Boulevard	Widen to three lanes between City Limits lines	Not Funded	$7,900,000
Halsey Street	Widen to five lanes between 207th Avenue & west Fairview Village Access	Not Funded	$450,000
223rd Avenue	Widen to three lanes between Halsey Street and Marine Drive	Not Funded	$6,200,000
Halsey Street	Widen to three lanes between 223rd Avenue and 238th Avenue	Metro RTP	$2,015,000
Halsey Street	Widen to five lanes between 190th Avenue to 207th Avenue	Multnomah County CIP	$2,345,000
Glisan Street	Widen to five lanes between 201st Avenue and existing five-lane section	Metro RTP	$870,000
Railroad Overcrossings	223rd Avenue (2), 201st Avenue	Metro RTP	$9,200,000
	Motor Vehicle Street Improvement Total Cost:		**$28,980,000**

* - Planned indicates projects included in the Metro RTP or Multnomah County CIP. Not in Plans indicates projects that have not be previously addressed in one of the local or regional transportation improvement plans.

Table 10-6
Future Intersection Improvement List

No.	*Intersection*	*Description**	*Approximate Cost*
1	223rd Avenue/Halsey Street	Eastbound Right Turn Overlap Phase	
		Extend Traffic Signal Cycle Length	$50,000
2	223rd Avenue/Glisan Street	Southbound Right Turn Lane	
		Eastbound Right Turn Overlap Phase	
		Extend Traffic Signal Cycle Length	$300,000
3	223rd Avenue/Sandy Boulevard	Install Traffic Signal	
		Northbound Left Turn Lane	
		Southbound Left Turn Lane	
		Eastbound Left Turn Lane	
		Westbound Left Turn Lane	
		Eastbound Right Turn Lane	
		Southbound Right Turn Lane	$2,650,000
4	207th Avenue/Halsey Street	Northbound Right Turn Lane	
		Southbound Left Turn Lane (2nd)	
		Southbound Right Turn Lane	
		Westbound Right Turn Overlap Phase	$1,800,000
5	201st Avenue/Halsey Street	Southbound Right Turn Lane	
		Eastbound Right Turn Lane	
		Westbound Right Turn Lane	
		Protected/Permissive Phasing (All Approaches)	
		Extend Traffic Signal Cycle Length	$900,000
6	207th Avenue/Sandy Boulevard	Install Permanent Traffic Signal	
		Eastbound Right Turn Lane	
		Protected Phasing Westbound	$400,000
7	Interlachen/Marine Drive	Eastbound Right Turn Lane	
		Westbound Left Turn Lane	$1,000,000
8	Blue Lake/Marine Drive	Eastbound Right Turn Taper	
		Westbound Left Turn Lane	$800,000
9	223rd Avenue/Park Lane	Install Traffic Signal	$150,000
	Pedestrian Crossing Evaluation/Signals	Study and determine appropriate locations for Pedestrian Crossing Signals	$500,000
		TOTAL	**$8,550,000**

* Needed under 2020 Base Conditions. Bold indicates additional needs with expanded commercial zoning along Halsey.

ACTION ITEMS

Beyond the capital improvements identified in the previous sections, a number of actions should be undertaken to implement the TSP. The following *Action Items* relate to each of the recommended *Fairview Comprehensive Plan Goals and Policies.*

Goal 1—Livability

Policy 1:

- *Design streets and highways to respect the characteristics of the surrounding land uses, natural features, and other community amenities.*

Policy 2:

- *Maintain the City's adopted pedestrian plan, which outlines the City's pedestrian routes (see Fairview Comprehensive Plan, Figure 1 – Sidewalk Master Plan). Develop sidewalk standards to define various widths, as necessary, for City street types.*

Policy 3:

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

Policy 4:

- *Maintain the City's functional roadway classification system (see Fairview Comprehensive Plan, Figure 2 – Roadway Functional Classification). Appropriate design standards for roadways in the City should be coordinated and developed by the responsible jurisdiction.*

Goal 2—Balanced Transportation System

Policy 1:

- *Develop and maintain a series of system maps and design standards for motor vehicles, bicycle, pedestrian, transit and truck facilities in Fairview.*

Policy 2:

- *Defer to the Regional Transportation Plan (RTP) and Tri-Met service plan as the guiding documents for development of Fairview's transit plan. The City should provide input to Tri-Met regarding the City's specific needs as they annually review their system, through EMCTC (East Multnomah County Transportation Committee) (see Fairview Comprehensive Plan, Figure 3 – Transit Master Plan).*

Policy 3:

- *Construct facilities shown in the adopted bicycle plan, which connect key activity centers (such as schools, parks, public facilities and retail areas) with adjacent access (see Fairview Comprehensive Plan, Figure 4 – Bicycle Master Plan). Develop and maintain standards for bicycle facilities within Fairview. Where*

activity centers are on local streets, connections to bicycle lanes shall be designated.

Policy 4:

- *Construct facilities shown in the pedestrian plan, which connect key activity centers with adjacent access. Develop and maintain standards for pedestrian facilities within Fairview (see Fairview Comprehensive Plan, Figure 1 – Sidewalk Master Plan).*

Policy 5:

- *Take advantage of linkages between recreational and basic pedestrian networks on both the bicycle and pedestrian plans. Develop and maintain design standards for recreational elements within the City.*

Policy 6:

- *Provide pedestrian connectivity via pedestrian/bike paths between cul-de-sacs and/or greenways where auto connectivity does not exist or is not feasible. Where appropriate, new streets built to provide connectivity shall incorporate traffic management design elements, particularly those which inhibit speeding. Require local streets to have connections every 530 feet for local and neighborhood streets, as a planning guideline (see Fairview Comprehensive Plan, Figure 5 – Local Street Connectivity).*

Policy 7:

- *Defer to the regional policies being developed by DEQ and Metro regarding trip reduction. Some of these policies are aimed at provision of parking and others are aimed at ridesharing (Employee Commute Options — ECO rules).*

Goal 3—Safety

Policy 1:

- *Adopt and maintain the proposed street functional classification system for Fairview, which meets the City's needs and respects the needs of other agencies (i.e., Multnomah County, Metro, ODOT) (see Fairview Comprehensive Plan, Figure 2 – Roadway Functional Classification). Maintain and update appropriate design standards for these roadways and refer to those standards developed by other jurisdictions, where appropriate.*

Policy 2:

- *Coordinate with Multnomah County for the maintenance of those facilities within the City that are maintained by the County.*

Policy 3:

No Action Item recommended.

Policy 4:

- *Work with the school district, citizens, and developers to undertake a process of defining school routes. This will need to be added to land use regulations for residential uses (excluding senior housing types).*

Policy 5:

- *Apply the access control standards identified in Multnomah County's draft Design Manual to all new road construction and new development in Fairview. For roadway reconstruction, existing driveways shall be compared with the standards and a reasonable attempt shall be made to comply (consolidating driveways or using a lower classification street are examples).*

Policy 6:

- *Review traffic accident information regularly to systematically identify, prioritize and remedy safety problems. Work with the County to develop a list of high collision sites and projects necessary to eliminate such problems. Require development applications to identify mitigation for high collision locations if they generate 10% increase to existing traffic on an approach to a high collision intersection. Railroad overpasses should be constructed/reconstructed to allow streets passing through to be built to current design standards.*

Policy 7:

No Action Item recommended.

Policy 8:

- *Coordinate with the County lighting district to establish priority locations for roadway lighting (including paths to schools, parks, and town center).*

Goal 4—Performance Measures

Policy 1:

- *Monitor Metro and Multnomah County's current work to develop a level of service standard. Level of service D, Highway Capacity Manual, Chapters 9, 10 and 11 (or subsequent updated references) is recommended to balance provision of roadway capacity with level of service and funding.*

Policy 2:

- *List parking standards in Title 19 of the City of Fairview Municipal Code. DEQ encourages lower parking ratios to encourage use of alternative modes (walking, biking, transit, car pooling, etc.).*

Policy 3:

No Action Item recommended.

Policy 4:

No Action Item recommended.

Goal 5—Accessibility

Policy 1:

No Action Item recommended.

Policy 2:

- *Work toward the eventual connection of streets identified on the plan as funds are available and opportunities arise. As a planning guideline, require local streets to have connections every 530 feet for local and neighborhood streets.*

Policy 3:

- *Access connection standards will be developed and implemented as outlined in Title 6 of the Metro Urban Growth Management Functional Plan. The arterial street system should facilitate street and pedestrian connectivity.*

Goal 6—Goods Movement

Policy 1:

No Action Item recommended.

Policy 2:

- *Work with federal agencies, the Public Utility Commission, the Oregon Department of Energy and ODOT to assure consistent laws and regulations for the transport of hazardous materials.*

Goal 7—Coordination

Policy 1:

Maintain plan and policy conformance to the Regional Transportation Plan and Transportation Planning Rule (OAR 660-012). Seek compatibility with all adjacent county and city jurisdiction plans.

FINANCING ISSUES

The collective funding requirements of the Fairview TSP is outlined by mode in Table 10-7. Based upon current sources of funding, the cost of the needs far exceeds the existing funding projected over the next 20 years. It should be noted that elements of the bicycle and pedestrian project lists which are redundant to the street improvement list were deducted to avoid double counting. A major portion of this difference can be made up by land use development exactions, where unimproved frontage is built to the TSP standards as projects are implemented. Since a significant number of the transportation projects directly serve new development of vacant land, it can be assumed that fronting improvements would be a means to implement many of the projects with these characteristics. However, many of the street improvements are not on unimproved frontage or have minor lots adjacent to them. The magnitude of the fronting improvements is such that the City and County will need to develop private/public partnerships to assure the reasonable delivery of future improvements in a timely manner.

Table 10-7
Costs for Fairview Transportation Plan over 20 years (1999 Dollars)

Transportation Element		**Approximate Cost**
Street Improvement Projects*:	Current Plans	$12,415,000
	Fronting Improvement	$6,000,000
	Unfunded/Not in Plans	$19,115,000
City Road Maintenance (assumes 4% per year growth)		$7,500,000
Bicycle Action Plan (Included in Street Projects)		**$1,350,000****
Pedestrian Action Plan (Included in Street Projects)		**$1,205,000****
Neighborhood Traffic Management ($10,000/yr)		$200,000
TWENTY YEAR TOTAL in 1999 Dollars		**$45,230,000**

* Many of these projects include multi-modal elements built with streets, such as bike lanes and sidewalks. Bicycle and pedestrian costs are shown for information only, and are included in the multi-modal street improvement costs. While projects in the RTP do not have committed funds, they represent a level of funding that is considered likely over the next 20 years given current funding sources.

** These projects are included in the Street Improvements category as multi-modal projects and are, therefore, not included separately in the 20-year total.

The funding sources, which can be used for various modes of transportation are summarized in Table 10-8. Historically, funding sources have been developed to support roadways for automobiles. Few funding sources have been allocated to other travel modes. Other travel modes were commonly implemented as an element of a roadway project, if funded at all. One funding source that the City receives for other modes include an allocation of the state motor vehicle fees which come to the City being dedicated to pedestrian/bicycle facilities. While federal gas tax funds are specifically allocated to multi-modal and balanced investments in transportation, other sources of funds such as state gas tax cannot be used for anything but highway use. To address these other modes, the City will need to specifically seek funds for a balanced transportation system, while managing the overall needs and revenues.

Table 10-8
Fund Source by Project Type

Source	Bicycle	Pedestrian	Streets	Maintenance	Transit
Traffic Impact Fee (TIF) System Development Charges (SDC)	•	•	✓		
Gas Tax/Motor Vehicle Fees					
STATE	•	•	✓	✓	
FEDERAL	✓	✓	✓	✓	✓
Street Utility Fees				✓	
Exaction's	•	✓	✓		
Local Improvement Districts (LID)	•	•	✓		
Tax Increment Financing	✓	✓	✓		
Special Assessments		•	✓	✓	✓
Driveway Fees			✓	✓	
Payroll Employee Tax					✓
Oregon Special Public Works Fund	•	•	✓		✓

• Typically as part of roadway project where other modes are incorporated
✓ Used as a primary source of funding

Current transportation revenue for the City of Fairview can be summarized as noted in Table 10-9. Presuming a constant funding level for 20 years, this would potentially fund about $5,280,000 of transportation projects (mostly maintenance and operation). As a comparison to this number, the amount of regional funding allocated to transportation projects in Fairview was calculated using the RTP constrained funding scenario. Approximately $12 million in transportation projects have been

identified in the current funding programs.[2] This clearly points out that there is a serious shortfall between the cost of the transportation plan and the current funding sources. The transportation plan costs of $51.5 million are much greater than the best case revenue scenario of about $24 million using existing funding sources. This leaves a funding shortfall of about $27.5 million.

Table 10-9
Estimation of Available Transportation Funding From Existing Sources
1999 Dollars (approximate)

Source	Approximate Annual Revenue
State Motor Vehicle Fees/County Gas Tax to City	$230,000
Right-of-Way Permits	$25,000
County Shared Revenue (maintenance on roads transferred to County)	$9,000
ANNUAL TOTAL	**$264,000**
20 YEARS OF CURRENT FUNDING	**$5,280,000**
Currently Planned Street Improvement Projects	$12,415,000
Fronting Improvements	$6,000,000
Total Available Over 20 Years	**23,695,000**

[2] Regional Transportation Plan Project List, Round 2, Metro, April, 1999.