Final Report

City of Aurora
Transportation System Plan

Adopted January 8, 2002
As amended by Ordinance 418

November 1999

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CHAPTER 1
INTRODUCTION

This transportation system plan (TSP) addresses the anticipated transportation needs for the year 2018. The TSP is being prepared to address federal and state regulations that require urban areas to do long-range planning. The long range planning is intended to serve as a guide for the City of Aurora to management their existing transportation facilities and to plan for the development of future transportation facilities.

REQUIREMENTS

The TSP was developed in compliance with the requirements of TEA-21, the Statewide Planning Goal 12, and the Transportation Planning Rule (TPR – OAR Chapter 660, Division 12).

The TEA-21 legislation specifies requirements for statewide and metropolitian area planning. Although TEA-21 does not specify requirements for areas less than a population of 50,000, it is still relevant to Aurora TSP planning since it defines how federal aid is dispersed for highway and transit projects. The planning requirements under TEA-21 parallel the requirements under the TPR.

Statewide Planning Goal 12 was developed "to provide and encourage a safe, convenient and economic transportation system." The following guidelines are to be followed in developing or updating a TSP:

> "A transportation plan shall (1) consider all modes of transportation including mass transit, air, water, pipeline, rail, highway, bicycle and pedestrian; (2) be based upon an inventory of local, regional and state transportation needs; (3) consider the differences in social consequences that would result from utilizing differing combinations of transportation modes; (4) avoid principal reliance upon any one mode of transportation; (5) minimize adverse social, economic and environmental impacts and costs; (6) conserve energy; (7) meet the needs of the transportation disadvantaged by improving transportation services; (8) facilitate the flow of goods and services so as to strengthen the local and regional economy; and (9) conform with local and regional comprehensive land use plans."

The Oregon TPR requires that cities, counties, Metropolitan Planning Organizations (MPOs), and state agencies prepare and adopt TSPs. A TSP is defined as "a plan for one or more transportation facilities that are planned, developed, operated and maintained in a coordinated manner to supply continuity of movement between modes, and within and between geographic and jurisdictional areas." The TPR encourages multi-modal transportation systems to reduce the dependence on auto traffic.

Although the City of Aurora was eligible for an exemption to the TPR requirements since it has a population of less than 2,500, the city elected to produce a TSP to help plan its future transportation needs. This plan was developed under a Transportation Growth Management (TGM) grant. The TSP elements produced included the following:

- Street system plan for a network of arterials, collectors, and local streets
- Bicycle and pedestrian plan
- Public transportation plan
- Air, rail, water, and gas pipeline plan
- Policies and land use regulations for implementing the TSP

- Transportation system and demand management plan
- Transportation financing plan

PLANNING AREA

The planning area of the City of Aurora TSP is the urban growth boundary (UGB). The City of Aurora street layout is in a discontinuous grid pattern. There are only a few north-south and east-west streets that are continuous and provide significant access. Highway 99E, Main Street, Airport Road, and Liberty Street are the major north-south travel corridors serving the City. Ehlen Road, 1st Street, 2nd Street, 3rd Street, Bob's Avenue, and Ottaway Road are the primary east-west roads in Aurora.

The commercial downtown area of the City of Aurora is primarily centered along Main Street. Other areas with commercial development are along Highway 99E. The remainder of the city streets generally serves as local access streets for the residential areas.

Highway 99E bisects Aurora literally in half. This separates the primary residential area with the commercial area along Main Street. Residents cross a very busy Highway 99E through stop-controlled intersections. There are no traffic signals to facilitate this movement for both vehicles and pedestrians. Also, because Highway 99E bisects Aurora by a diagonal alignment, it creates two triangles comprised of five closely spaced intersections. These triangles present a potential traffic safety issue as there are several movements motorists can take to cross Highway 99E in a small space.

THE PLANNING PROCESS

The TSP planning process was a combination of technical analyses; comment and review by Aurora and ODOT; input from a Technical Advisory committee (TAC); and public involvement through a series of public open houses. The key elements of the planning process included the following:

- Review existing plans, policies, and standards – see Appendix A
- Public Involvement – series of public open houses, newsletters, survey/questionnaire, direct mailings, and TAC meetings – See Appendix B
- Development of transportation goals, objectives, and policies
- Inventory existing transportation system and develop existing conditions
- Determine future transportation needs
- Develop and evaluate transportation system alternatives
- Develop and implement the TSP

CHAPTER 2
TRANSPORTATION GOALS AND OBJECTIVES

The purpose of the TSP is to provide a guide for the City of Aurora to meet its transportation goals and objectives. The following goals and objectives were developed from information contained in the city's Comprehensive Plan, public input from the public involvement process, and to meet the requirements of the Transportation Planning Rule (TPR). An overall goal was drawn from the plan, along with more specific goals and objectives.

OVERALL TRANSPORTATION GOAL

To provide and encourage a safe, convenient, and economic transportation system.

Goal 1 – Preserve the function, capacity, level of service, and safety of the state highway.

Objectives

A. Develop access management standards that will meet the requirements of the TPR and also consider the needs of the affected communities.

B. Provide a greater degree of safety for pedestrians walking along Highway 99E, especially between the downtown area and the post office at the southwest corner of Highway 99E and Ottaway Road.

C. Promote alternative modes of transportation.

D. Promote transportation demand management programs (i.e., ridesharing and park and ride).

E. Promote transportation system management.

F. Develop procedures to minimize impacts to and protect transportation facilities, corridors, or sites during the development review process.

Policies

A. The City shall coordinate all transportation-related activities impacting Highway 99E with the Oregon Department of Transportation. The Oregon Department of Transportation will also coordinate all transportation-related activities impacting Highway 99E with the City of Aurora.

B. The City shall conform to Oregon Department of Transportation standards and practices with transportation issues concerning Highway 99E. The Oregon Department of Transportation will also consider standards and practices of Aurora with transportation issues concerning Highway 99E especially as it impacts the historic district.

C. The City shall coordinate with the Oregon Department of Transportation on all land use decisions impacting Highway 99E. The Oregon Department of Transportation will also coordinate with the City of Aurora on any decisions it makes that impact Highway 99E.

D. The City shall work with the Oregon Department of Transportation to further refine and eventually implement one of the Highway 99E transportation improvement alternatives identified in the Transportation System Plan or another alternative yet to be defined.

Goal 2 – Improve and enhance safety and traffic circulation and preserve the level of service on local street systems.

Objectives

A. Develop an efficient road network that would maintain a LOS D or better.

B. Improve and maintain existing roadways.

C. Ensure planning coordination between Aurora, Marion County, and the State.

D. Examine the need for speed reduction in specific areas.

E. Identify local traffic problems and recommend solutions.

F. Develop a more pedestrian-friendly Aurora consistent with historical preservation goals.

Policies

A. Approval Processes for Transportation Facilities

The following policies relate to the approval processes for transportation facilities:

1. The Transportation System Plan is an element of the City's Comprehensive Plan. It identifies the general location of transportation improvements. Changes in the specific alignment of proposed public road and highway projects that shall be permitted without plan amendment if the new alignment falls within a transportation corridor identified in the Transportation System Plan.

2. Operation, maintenance, repair, and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.

3. Dedication of right-of-way, authorization of construction and the construction of facilities and improvements, for improvements designated in the Transportation System Plan, the classification of the roadway and approved road standards shall be allowed without land use review.

4. Changes in the frequency of transit services that are consistent with the Transportation System Plan shall be allowed without land use review.

5. For State projects that require an Environmental Impact Study (EIS) or Environmental Assessment (EA), the draft EIS or EA shall serve as the documentation for local land use review, if local review is required.

   (a) Where the project is consistent with the Transportation System Plan, formal review of the draft EIS or EA and concurrent or subsequent compliance with applicable development standards or conditions;

   (b) Where the project is not consistent with the Transportation System Plan, formal review of the draft EIS or EA and concurrent completion of necessary goal exceptions or plan amendments.

B. Protection of Transportation Facilities

The following policies relate to the protection of existing and planned transportation facilities:

1. The City shall protect the function of existing and planned roadways as identified in the Transportation System Plan.

2. The City shall include a consideration of their impact on existing or planned transportation facilities in all land use decisions.

3. The City shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.

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

5. The City shall preserve right-of-way for planned transportation facilities through exactions, voluntary dedication, or setbacks.

C. The local street plan in the Transportation System Plan shall be implemented by local developments. The local street plan identifies general alignments of future local streets and maintains a grid system whenever possible. Developers shall be required to follow the general goals and objectives of the local street plan. Flexibility is allowed only as the proposed modifications still meet the integrity of the overall plan and circulation objectives.

Any modifications to the local street plan shall be reviewed by the Planning Commission. The Planning Commission will then make a recommendation to the City Council. The City Council will make a final determination to allow or deny any modification. The decision for modification shall be based on the criteria whether the integrity of the overall local street plan is still met and circulation objectives can still be achieved.

Goal 3 – Identify the 20-year roadway system needs to accommodate developing or undeveloped areas without undermining the current nature of the City of Aurora.

Objectives

A. Adopt policies and standards that address street connectivity, spacing, and access management.

B. Integrate new arterial and collector routes into a grid system with an emphasis on reducing pressure on traditionally heavy traffic routes. The grid system is in nature with the historic character of Aurora and cul de sacs should be discouraged.

C. Improve access into and out of the City for goods and services.

D. Improve the access onto and off of arterial roadways.

Goal 4 – Increase the use of alternative modes of transportation (walking, bicycling, rideshare/carpooling, and transit) through improved access, safety, and service. This shall be done in a manner consistent with the historic nature of Aurora.

Objectives

A. Provide sidewalks, bikeways and safe crossings on arterial and collector streets demonstrating those needs and in a manner consistent with the historic nature of Aurora.

B. Provide shoulders on rural collector and arterial streets.

C. Develop a city-wide bicycle plan.

D. Promote alternative modes and rideshare/carpool programs through community awareness and education.

E. Plan for future expanded transit service by coordinating with regional transit service efforts.

F. Seek Transportation and Growth Management (TGM) and other funding for projects evaluating and improving the environment for alternative modes of transportation.

G. Periodically assess pedestrian and bicycle modes of transportation within the city and develop programs to meet demonstrated needs.

H. The City will seek for its transportation disadvantaged citizens the creation of a customer-oriented regionally coordinated public transit system that is efficient, effective, and founded on present and future needs.

Policies

A. Pedestrian and Bicycle Circulation

1. It is the policy of the City to plan and develop a network of streets, access-ways, and other improvements, including bikeways, sidewalks, and safe street crossings to promote safe and convenient bicycle and pedestrian circulation within the community. Any alternative mode improvements within the historic area of

Aurora must have prior approval from the historic review board (HRB). HRB shall be included in the planning of any alternative mode improvement within the historic district.

2. The City shall require streets and accessways where appropriate to provide direct and convenient access to major activity centers, including downtown, schools, shopping areas, and community centers.

3. The City shall follow the sidewalk improvement plan to develop the pedestrian system. Included within the pedestrian plan is a priority system that shall be followed.

4. Bicycle facilities on local streets shall be shared facilities with general traffic since local street traffic volumes are low and narrow local roads create a hardship in the development of exclusive bike lanes.

5. Retrofitting existing arterials and collectors within the Urban Growth Boundary with bike lanes shall be considered only when deemed appropriate and practical by the City Council.

6. The development of bike lanes shall be considered for all new arterials and collectors within the Urban Growth Boundary except on limited access freeways. The consideration the development of bike lanes shall be based on availability of right-of-way and financial ability.

7. Wherever and whenever practically possible, bikeways and pedestrian accessways shall connect to local and regional travel routes.

8. Bikeways and pedestrian accessways shall be designed and constructed to minimize potential conflicts between transportation modes. Design and construction of such facilities shall follow the guidelines established by the Oregon Bicycle and Pedestrian Plan.

B. Transit

1. Support the continued operation of existing public transit services is a priority.

2. The City shall support efforts to coordinate with governmental and private agencies in the planning and provision of public transportation services and support a regional program to improve services, particularly for the transportation disadvantaged.

3. The City will cooperate with Marion County and other agencies in investigating public transit possibilities, including bus and rail.

4. The City will coordinate with other jurisdictions when the need for park-and-ride facilities is studied.

5. The City shall support the creation of a single regional brokerage for transportation services to include such features as a single 1-800-number point of contact for all persons needing transportation services; opportunity for all public and private service providers, including new providers, to participate and compete on a equal footing;

provides a single point of contact for all funding agencies providing services to special need clients; and provides a single point of contact for reimbursement of providers of transportation services to special need clients.

6. To implement the brokerage system, the provision of a 1-800-number for access to regional transportation services for the citizens of the City shall be required as a condition of renewal of franchise for telecommunications providers.

Goal 5 – Provide and encourage a safe, convenient and economic transportation system.

Objectives

A. Continue to develop the road system as the principal mode of transportation.

B. Seek further improvement of mass transit systems to the City of Aurora by encouraging more frequent scheduling of commercial carriers and by continued support of those systems presently developed for mass transit in the region.

C. Continue to support programs for the transportation disadvantaged where such programs are needed and are economically feasible.

D. Encourage the development to occur near existing community centers where services are presently available so as to reduce the dependence on automotive transportation.

E. Continue to monitor the needs of the transportation disadvantaged and provide support as required.

F. Cooperate with the Oregon Department of Transportation Highway Division in the implementation of the ODOT Statewide Transportation Improvement Program (STIP) as it meets the needs of Aurora and its historic district.

Goal 6 – Ensure that the road system within the city is adequate to meet public needs.

Objectives

A. Develop a city-wide transportation system plan.

B. Meet identified maintenance and level of service standards on the city and state highway system.

C. Direct commercial development and use access onto major arterials by means of improved city roads.

D. Ensure that roads created in land division and development be designed to tie into existing and anticipated road circulation patterns.

E. Review and revise, if necessary, street cross-section standards for local, collector, and arterial streets to enhance safety and mobility.

F. Develop an access management strategy for Highway 99E.

G. Evaluate the need for traffic control devices, particularly along Highway 99E.

H. Analyze the safety of travelling speeds and consider modifying posted speeds as necessary.

I. As funding becomes available, implement the improvements identified in the transportation system plan (TSP).

Goal 7 – Improve coordination among the City of Aurora, Marion County, and the Oregon Department of Transportation (ODOT).

Objectives

A. Cooperate with ODOT in the implementation of the Statewide Transportation Improvement Program (STIP). ODOT shall also coordinate with the City of Aurora in keeping it informed regarding the implementation and update effort of the STIP.

B. Encourage improvement of state highways that protects the historical nature of Aurora, especially Highway 99E.

C. Work with Marion County and ODOT in establishing cooperative road improvement programs and schedules. Marion County and ODOT shall also coordinate their road improvement programs and schedules with the City of Aurora.

D. Work to establish the right-of-way needed for new roads identified in the TSP.

E. Take advantage of federal and state highway funding programs.

Policies

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

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

C. Multi-jurisdictional issues impacting Aurora's historic district shall be coordinated with Aurora's historic review board (HRB) and shall preserve and protect the historic nature of Aurora.

CHAPTER 3
TRANSPORTATION SYSTEM INVENTORY

As part of the planning process, an inventory was conducted of the existing transportation system in the City of Aurora. This inventory covered the street system, as well as pedestrian, bikeway, public transportation, rail, air, water and pipeline systems.

STREET SYSTEM

The existing street system inventory was conducted for all roadways within Aurora. Inventory elements include:

- street classification and jurisdiction
- street width and right-of-way
- number of travel lanes
- presence of on-street parking, sidewalks, or bikeways
- speed limit; and
- general pavement conditions

Appendix C lists the complete roadway inventory.

State Highway – Highway 99E

Discussion of the Aurora street system must include the state highway that traverses the planning area. Although Aurora has no direct control over the state highway, adjacent development and local traffic patterns are heavily influenced by the state highway. Aurora is served by one state highway, Highway 99E, which generally runs in a north-south direction and provides access to Portland to the north and Salem to the south. Highway 99E serves as the major route through town with significant commercial development focused along it. Through the downtown area, Highway 99E is a three-lane roadway with a 30 mph speed limit. Outside the downtown area, Highway 99E is a two-lane roadway with a 45 mph speed limit.

The *1999 Oregon Highway Plan* (OHP) classifies the state highway system into six categories: Interstate Highways, Statewide Highways, Intermodal Connectors, Regional Highways, and District Highways. Highway 99E in Aurora is identified as a district highway. In addition to the highway classifications, there are four special purpose designations. These special designations include special land use, freight route, Scenic Byway, and lifeline route designations.

According to the *1999 OHP*, the primary function of a district highway is to "provide connections and links for intercity, inter-community, and intra-city movements. The management objective for statewide highways is to provide for safe and efficient high-speed, continuous-flow operation in rural areas and high- to moderate-speed operations with limited interruptions of flow in urban and urbanizing areas.

Within the *1999 OHP*, provisions exist for the City to consider developing a STA with its functional classification and comprehensive plans. If an STA were implemented with Aurora, the City could implement access management standards such as closer street spacing, signal spacing, travel time and level of service, and street treatments. These standards would emphasize local accessibility and community function over capacity and through traffic needs. It should be noted that the formation of an STA requires

that certain conditions be met. The criteria for STAs are related to creating compact mixed-use land use patterns supported by multi-modal facilities and to primarily provide access to community activities.

Street Classification

Identification of the roadway functions is the basis for planning roadway improvements and the appropriate standards (right-of-way, roadway width, design speed) that would apply to each roadway facility. The following definitions serve as a general guide in determining street classifications:

- ***Arterials*** – Intra-and-inter-community roadways connecting community centers with major facilities. In general, arterials serve both through and local traffic. Access should be partially controlled with infrequent access to abutting properties.

- ***Collectors*** - Streets connecting residential neighborhoods with smaller community centers and facilities, as well as access to the arterial system. Property access is generally a higher priority for collector arterials; through-traffic movements are served as a lower priority.

- ***Local Access Streets*** - Streets within residential neighborhoods connecting housing (also can be commercial, industrial, etc.) with the collector and arterial system. Property access is the main priority; through traffic movement is not encouraged.

Based on the current Aurora Comprehensive Plan, Aurora has the following arterials:

- Ehlen Road from the western city limits to Main Street
- Airport Road from Ehlen Road to the northern city limits
- 1st Street from Main Street to Highway 99E
- Main Street from 1st Street to Highway 99E
- Highway 99E.

The following collectors exist within the Aurora urban growth boundary:

- Main Street from Highway 99E to Ottaway Road
- Ottaway Road from its western terminus to Highway 99E.

Figure 3-1 shows the roadway functional classification.

The roadway functional classification shown in Figure 3-1 is not consistent with the roadway functional classification in the ODOT database. The ODOT functional classification map only shows Highway 99E, Ehlen Road, and Main Street from First Street to Highway 99E as minor arterials. The differences between the City's and ODOT's roadway functional classification system will be resolved as the functional classification plan is developed for the TSP.

The major travel corridors serving the City of Aurora are Ehlen Road, Main Street in the downtown area, Airport Road, and Highway 99E. These roadways provide access to regional facilities and are the City's

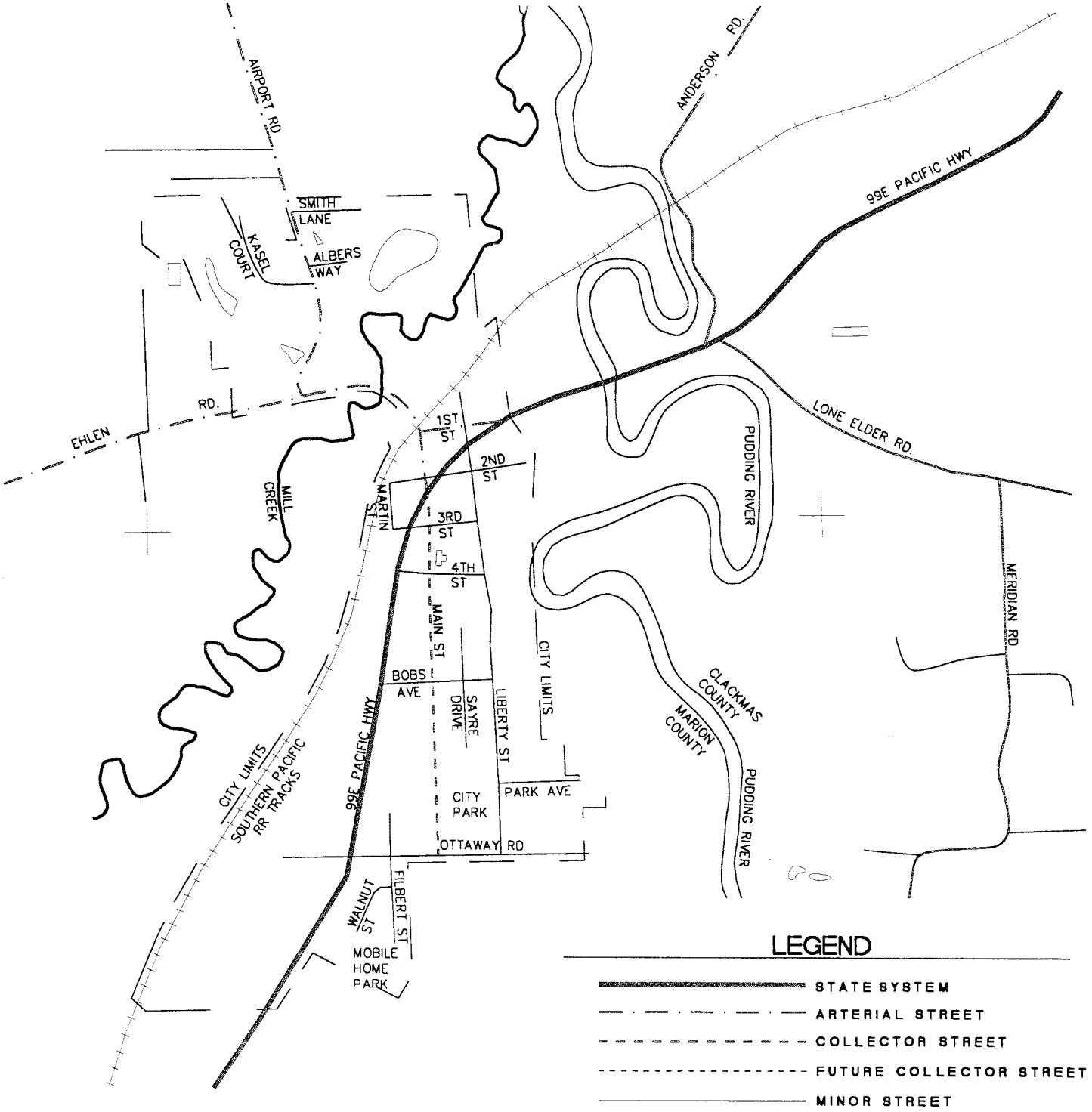


FIGURE 3-1
EXISTING STREET CLASSIFICATIONS

main through-routes. The other roadways primarily serve as local access streets. East of Highway 99E, a general grid system serves the City's primary residential area.

In the fall of 1999, Marion County will be improving the Ehlen Road/1st Street/Liberty Street alignment. Ehlen Road will be transitioned to 1st Street as the primary travel route. Main Street will "T" into this alignment and will support only right-in, right-out traffic movements. Ehlen Road will continue on the east side of Main Street to along 1st Street and then align south to Liberty Street. The northern leg of the Highway 99E/Liberty Street intersection will be realigned at a right angle with Highway 99E. The 1st Street connection to Highway 99E will be closed. A traffic signal will be installed at the Highway 99E/Liberty Street intersection. This improvement is shown in Figure 3-2.

Bridges

There are no bridges listed in the Oregon Department of Transportation's bridge inventory for the City of Aurora. However, one bridge within the City does exist. It is located on Ehlen Road and crosses Mill Creek. This bridge is owned and maintained by Marion County and is listed in Marion County's bridge inventory.

Marion County rates its bridges on a sufficiency rating from a scale of zero to 100. The higher the rating, the better the condition of the bridge. The Mill Creek bridge on Ehlen Road has a sufficiency rating of 98.70 which means it is in excellent condition.

PEDESTRIAN SYSTEM

The relatively small size of Aurora indicates that walking could be employed regularly for short trips to reach a variety of destinations. Typically, a short trip that would be taken by a pedestrian would be about one-half mile. Encouraging pedestrian activities may not only decrease the use of the personal automobile but may also provide benefits for retail businesses. Where people find it safe, convenient, and pleasant to walk, they may linger and take notice of shops overlooked before.

Sidewalks are limited in the City of Aurora. They exist generally in the downtown area along Main Street, 2nd Avenue, and 3rd Avenue. Other sidewalk locations exist sporadically in the residential areas but are typically narrow, in poor condition, and disjointed. The sidewalk locations, their width, and condition are shown in Figure 3-3. Widths of less than 5 feet or poor conditioned sidewalks are considered deficient.

BIKEWAY SYSTEM

ODOT categorizes bicycle facilities into the following four major classifications:

- Shared roadway - Bicycles and vehicles share the same roadway area under this classification. The shared roadway facility is best used where there is minimal vehicle traffic to conflict with bicycle traffic.

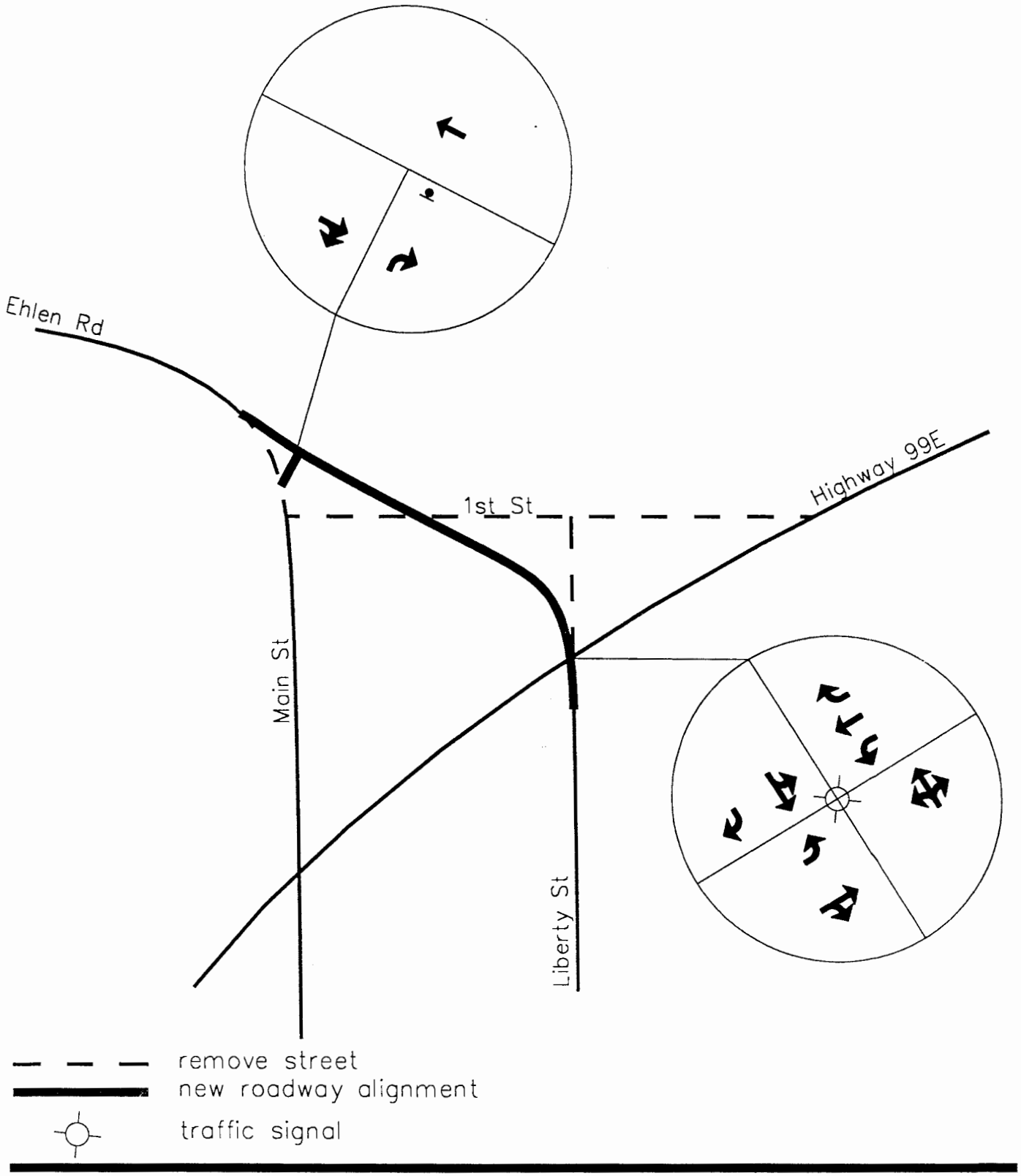


FIGURE 3-2
Ehlen Road/1st street/Liberty Street
Realignment and Improvement

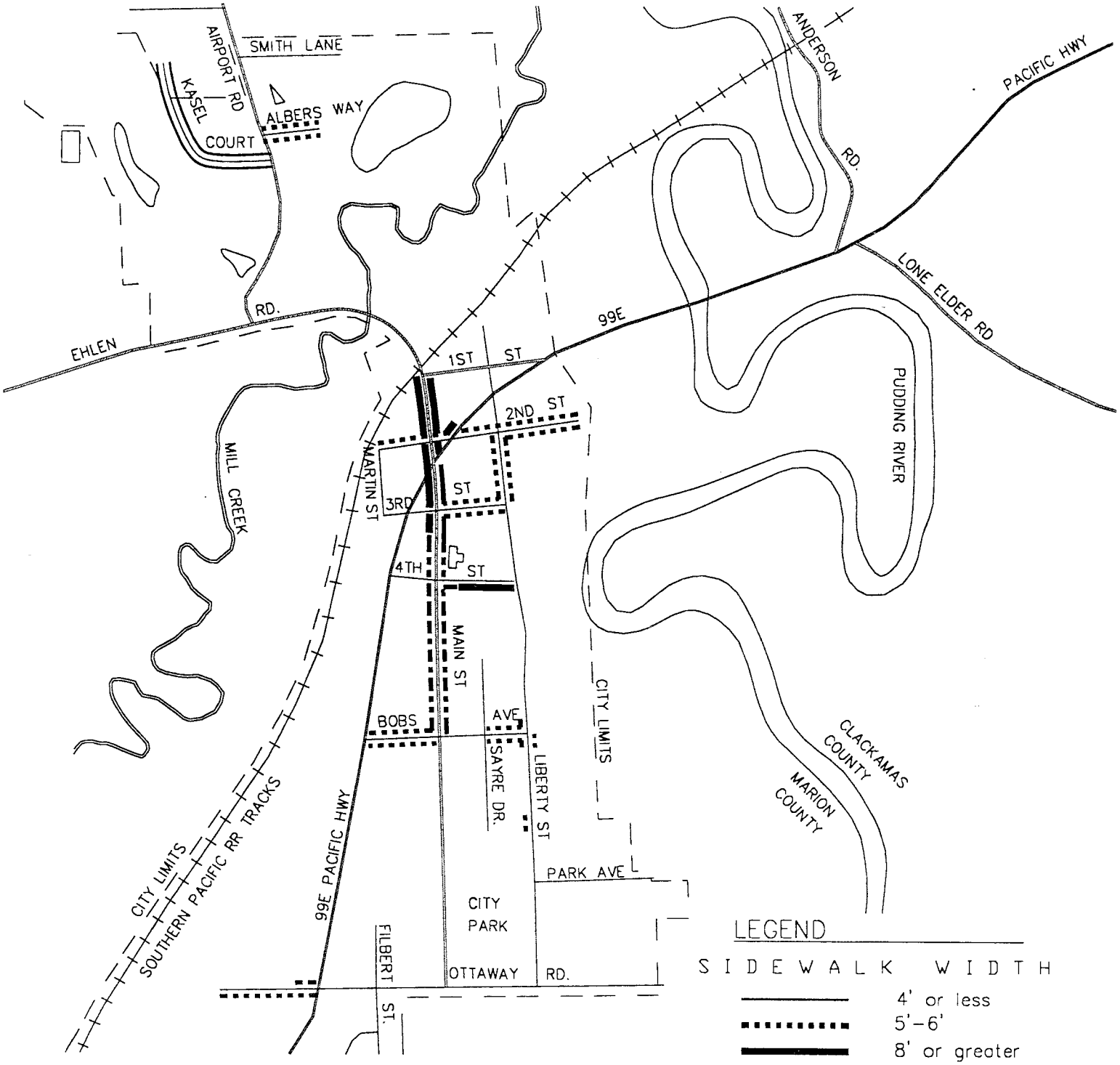


FIGURE 3-3
EXISTING SIDEWALK LOCATIONS

- Shoulder bikeways - This bicycle facility consists of roadways with paved shoulders to accommodate bicycle traffic.

- Bike lanes - Separate lanes adjacent to the vehicle travel lane for the exclusive use of bicyclists are considered bike lanes.

- Bike paths - These bicycle facilities are exclusive bicycle lanes separated from the roadway.

The only bicycle facility within the City is six-foot shoulders along Highway 99E which provide bicyclists with a shoulder bikeway. No other designated facilities currently exist.

PUBLIC TRANSPORTATION

Greyhound provides the only bus service to Aurora, and is on a flag-stop basis only. The Greyhound service route is along the I-5 corridor. Currently, there are eight northbound and eight southbound buses daily.

Although no fixed-route bus service exists within the City of Aurora, a number of Aurora commuters drive to Canby and Wilsonville to access Tri-met commuter buses.

Amtrak utilizes the Southern Pacific Railroad line through Aurora but does not have a local stop. Local residents wanting to utilize this service must drive to Salem that is approximately 28 miles to the south.

The initial stage of a regional transportation brokerage system will be instituted effective July 1, 2000, and includes service to the City of Aurora. This is a result of the following process.

The Salem Area Mass Transit District [SAMTD] is defined as the "governing body" responsible for the distribution of Special Transportation Funds [STF] throughout Marion and Polk Counties. These funds are for the benefit of seniors and disabled persons. The SAMTD has delegated responsibility for this to their Special Transportation Advisory Committee [STAC]. In August 1998, the STAC and SMATD adopted a strategic plan, "Moving Toward Action, The Marion and Polk Counties' **Regional Transportation Enhancement Plan [RTEP]**. The RTEP outlined the following essential points:

- Transportation services for the transportation disadvantaged are a recognized, significant local and regional transportation service inadequacy.

- The transportation disadvantaged are recognized to be all persons without the ability or capability to use personal conveyance to travel.
  These include but are not limited to:
  Seniors – Anyone 60 years of age or older.
  Mobility Limited – A person 16 years of age or older who has a temporary or permanent physical, mental or emotional impairment that substantially limits them from going outside their place of residence alone.
  Youth – Anyone between 12 and 16 years of age.
  Resource Limited – Individuals in a household with low to moderate incomes who are unable to meet basic human needs due to lack of financial resources and who generally may have no personal auto access.

- Response to ADA [Americans with Disabilities Act] is not the same thing as addressing the needs of the transit disadvantaged. Many, but not all, ADA qualifying individuals are Transit Disadvantaged. The overwhelming majority of Transit Disadvanted do not qualify as ADA.

- Increasing transportation choices for seniors and disabled will increase transportation choices for all citizen's.

- Inter-community and Intra-community transportation are equally necessary for the transportation disadvantaged.

- The region should seek for its transportation disadvantaged citizens the creation of a customer-based [oriented] regionally coordinated public transit system that is efficient, effective, and founded on present and future needs.

- To implement this strategy, it is essential that the strategy become a part of all city, county and regional Transportation Systems Plan [TSP].

- Identification and retention of community identity and autonomy is essential.

- A regional system must be held accountable for levels and quality of service.

- The regional system must be financially sustainable.

- The use of innovative technology to maximize efficiency of operation, planning and administration of public transportation is essential.

- All community public and private transportation assets including those of schools should be eventually considered to attain maximum efficiency.

The system as envisioned would embrace:

- A single regional brokerage [mobility manager] for all public transportation services.

- A single 1-800- number point of contact for all persons needing transportation services.

- An opportunity for all service providers, including new providers, to participate and compete on an equal footing.

- A single point of contact for all funding agencies providing services to special need clients.

- A single point of contact for reimbursement of providers of transportation services to special need clients.

AIR SERVICE

The Aurora State Airport is approximately one-half mile northwest of the City of Aurora. The airport is home to 214 aircraft. The airport has a 5,000' x 100' runway. Due to its runway size and close proximity to Portland, the Aurora State Airport is becoming more and more popular to private plane owners as well as corporate plane users.

A number of community residents are concerned about the close proximity of the airport to the City of Aurora, and its impact to the community.

PIPELINE SERVICE

Although not often considered as transportation facilities, pipelines carry liquids and gases very efficiently. The use of pipelines can greatly reduce the number of trucks and rail cars carrying fluids such as natural gas, oil, and gasoline.

The Oregon Office of Energy defines jurisdictional gas pipelines as those that are 16-inches or larger in diameter and 5-miles or longer in length. There are no current lines meeting that criteria at this time in the immediate area of the City of Aurora. Northwest Natural has several 12-inch mains in and around the City of Aurora.

There is a 24-inch natural gas pipeline proposed by Northwest Natural that may fall within the City of Aurora urban growth boundary. This proposed pipeline is just entering the permitting process and the final alignment has not been established. Local municipality participation and approval criteria will be used by the Oregon Energy Facility Siting Council prior to finalization. This proposed line would connect to an interstate pipeline to the north near Wilsonville which is under federal jurisdiction.

RAIL SERVICE

There is one rail line, the Southern Pacific Railroad, through the City of Aurora. This rail line runs parallel to Highway 99E on the west side. One railroad crossing in town exists on Ehlen Road just north of First Street. There are approximately 16 trains per day using these tracks.

WATER TRANSPORTATION

There are no navigable waterways within the City of Aurora and therefore no significant water transportation services available.

CHAPTER 4
CURRENT TRANSPORTATION CONDITIONS

As part of the planning process, the current operating conditions for the transportation system were evaluated.

TRAFFIC VOLUMES

A.m. and p.m. peak hour turning movement traffic volumes were collected in May 1998 at the following study area intersections:

- Main Street/1st Street
- Highway 99E/1st Street
- Highway 99E/Liberty Street
- Liberty Street/1st Street
- Highway 99E/Main Street
- Highway 99E/2nd Street
- Main Street/2nd Street

These counts were also supplemented by 1996 turning movement count information provided by Marion County at the following intersections:

- Highway 99E/Bob's Avenue
- Highway 99E/Ottaway Road
- Ehlen Road/Airport Road

The Marion County traffic counts were adjusted to the 1998 base year by applying a historical traffic growth factor. The historical traffic growth factor was derived from historical traffic count information on Highway 99E which was provided by ODOT.

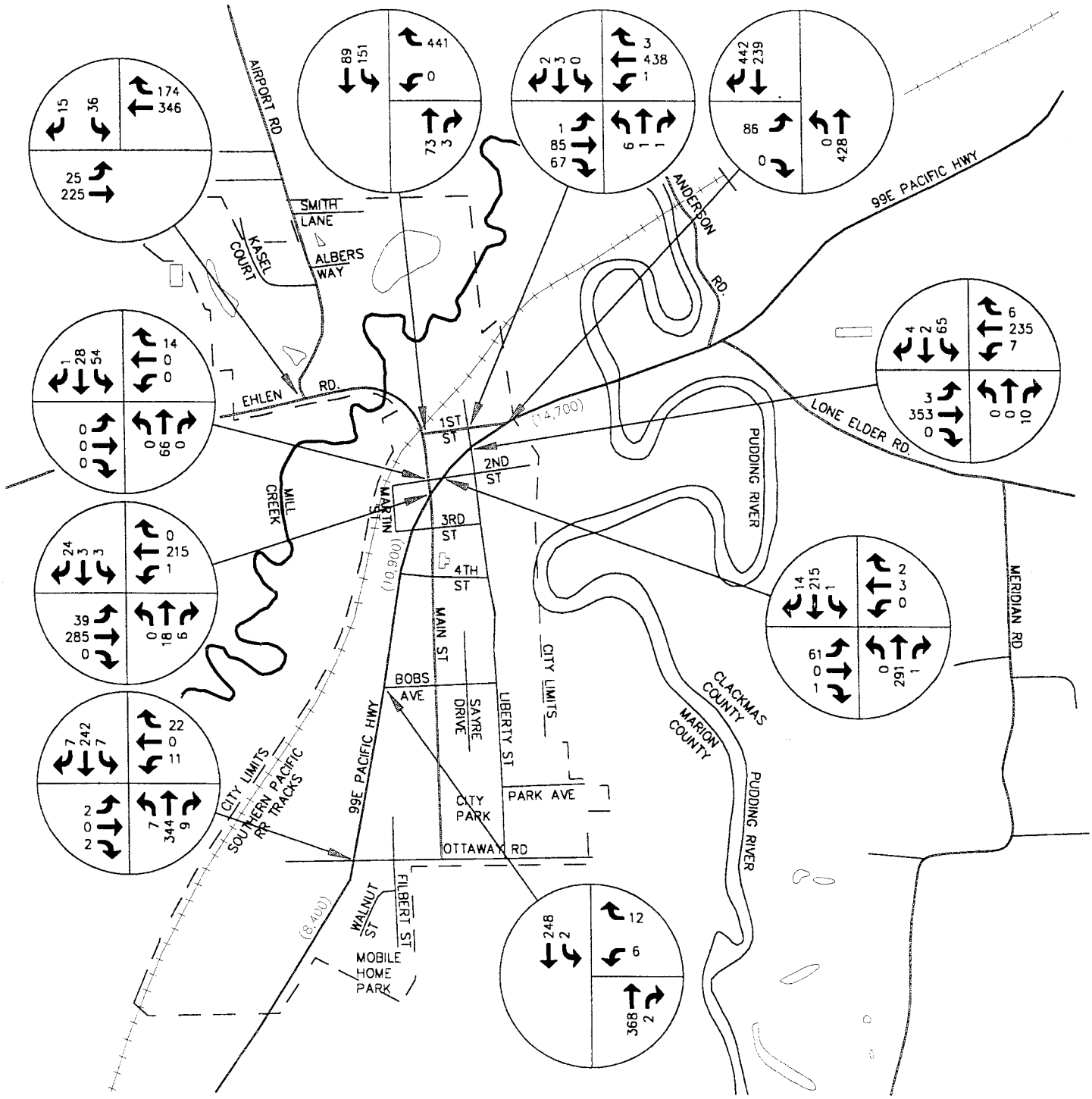
The study intersections generally represent major intersections and intersections adjacent to land uses generating a significant amount of traffic. The a.m. and p.m. peak hour traffic volumes are shown in Figures 4-1 and 4-2, respectively.

The a.m. peak hour traffic counts indicate that the a.m. peak hour begins from about 6:30 to 7:00 a.m. depending on the location. The p.m. peak hour generally begins occurs from about 4:15 to 4:30 p.m.

Existing average daily traffic volumes were obtained from ODOT's *1997 Traffic Volume Tables* and factored to obtain 1998 daily traffic volumes. These daily traffic volumes are also shown in Figures 4-1 and 4-2. As shown, the average daily traffic volumes on Highway 99E range from 8,400 to 14,700 vehicles per day (vpd) in the Aurora urban growth boundary.

LEVEL OF SERVICE

The following section provides a summary of the level of service (LOS) analysis conducted for the Aurora urban growth boundary intersections and roadways. The level of service definition, methodologies used in calculating level of service, and the results of the analysis are summarized below. The purpose of this

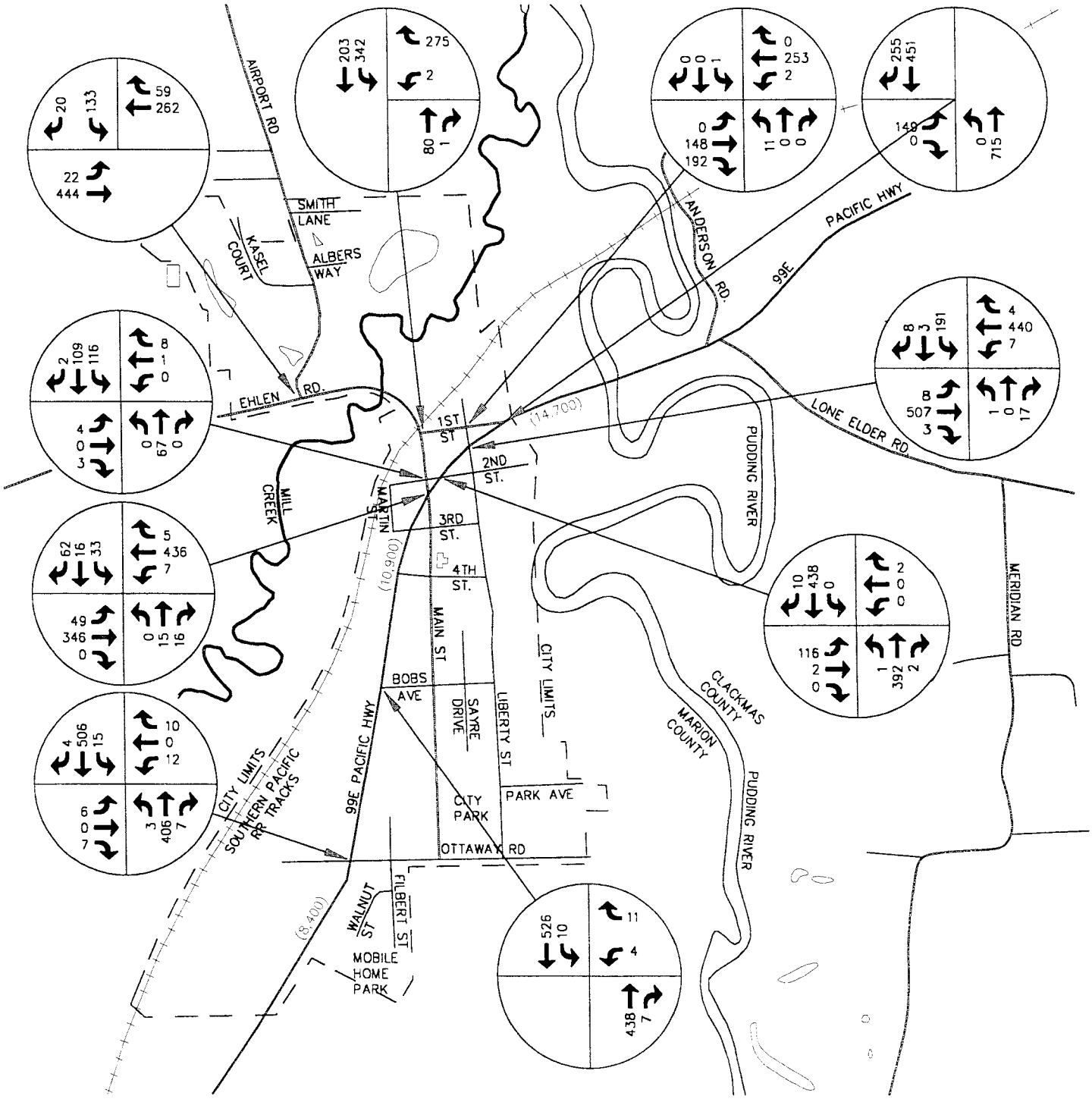


200 → A.M. Peak Hour Traffic Volume

(3000) Daily Traffic Volume

FIGURE 4-1

1998 A.M. PEAK HOUR TRAFFIC VOLUMES



200 → P.M. Peak Hour Traffic Volume

(3000) Daily Traffic Volume

FIGURE 4-2

1998 P.M. PEAK HOUR TRAFFIC VOLUMES

information is to provide an overview of LOS and to identify its relationship to the transportation goals and policies of the City.

Level of Service Definition

Level of Service (LOS) is an estimate of the quality and performance of transportation facility operations in a community. The degree of traffic congestion and delay is rated using the letter "A" for the least amount of congestion to the letter "F" for the highest amount of congestion. The following Level of Service categories provide general descriptions of the different levels of service defined. Along city streets, the community decides what level of traffic congestion is tolerable (i.e. decides whether "C," "D," or some other level). The choice of a particular LOS threshold can vary by planning sub-area, roadway classification, or specific corridor or street.

Along the state highway system (Highway 99E), ODOT has defined the level of service standard in the 1999 *Oregon Highway Plan* (OHP). Acceptable level of service is measured based on volume-to-capacity ratio (v/c). The v/c ratio is a measure of the percentage of used capacity on the roadway and ranges from 0.00 which indicates no traffic volumes on the roadway to 1.00 which indicates that the entire capacity of the roadway is being utilized. On Highway 99E, the v/c standard is 0.85 as defined in the 1999 *OHP*.

The level of service methodology for unsignalized intersections was based on reserve or unused capacity available for critical turning movements. A theoretical capacity is established for each critical turning movement and is subtracted by the flow rate of that movement to calculate the remaining capacity which is known as the reserve capacity. Level of service values range from LOS A, indicating free-flowing traffic, to LOS F, indicating extreme congestion and long vehicle delays. Table 4-1 summarizes the relationship between level of service and reserve capacity at unsignalized intersections.

TABLE 4-1
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Reserve Capacity	Expected Delay
A	400 or more	Little or no delay
B	300 to 399	Short delays
C	200 to 299	Average delays
D	100 to 199	Long delays
E	0 to 99	Very long delays
F	less than 0	Failure - extreme congestion

Level of service at the roadway mid-blocks was calculated based on comparing the volume-to-capacity ratio (v/c) to the Highway 99E v/c standard of 0.85. The v/c ratio is a measure of the percentage of used capacity on the roadway and ranges from 0.00 (which indicated no traffic volumes on the roadway) to 1.00 (which indicates that the entire capacity of the roadway is being utilized). This methodology is not for design

purposes but only for generalized planning purposes to develop an order of magnitude of traffic congestion along existing roadways.

The capacity of the roadway was developed from standard practice planning roadway capacities generally accepted in the transportation planning profession. For a two-lane roadway, the daily roadway capacity ranges from approximately 10,000 to 18,000 vehicles. The actual daily capacity is dependent on the roadway characteristics and can be estimated from peak hour volume data in the 1985 *Highway Capacity Manual*, Transportation Research Board. Smaller cities such as Aurora are likely to have a lower daily roadway capacity due to its less urban character. Therefore, a conservative capacity of 14,000 was used for this generalized planning exercise to determine an order of magnitude of congestion along Aurora's roadways. Typically, the 14,000 to 15,000 range is used for capacity two-lane arterial roadways in smaller cities or rural areas. Lower daily capacities are typically only used for local streets and collectors. Higher two-lane roadway capacities are used in urban areas.

The traffic volumes are from actual daily traffic counts conducted. To derive the v/c ratio, the daily traffic volume is divided by the standard practice planning roadway capacity. A maximum standard v/c ratio of 0.85 has been established by ODOT for Highway 99E.

Existing Level of Service

Based on current a.m. peak hour, p.m. peak hour, and daily traffic volumes, level of service was calculated for the study area intersections and roadway mid-blocks. The results of the unsignalized intersection level of service analysis are summarized in Table 4-2. The results of the roadway mid-block analysis are summarized in Table 4-3.

As shown in Table 4-2, all of the study area intersections in the a.m. peak hour operate at LOS C or better. In the p.m. peak hour, two study area intersections operate at LOS E for one of the movements. At the Highway 99E/Liberty Street intersection, the southbound Liberty Street approach operates at LOS E in the p.m. peak hour. The southbound left-turn movement at the Ehlen Road/Airport intersection also operates at LOS E in the p.m. peak hour.

The Highway 99E roadway section at the east city limits has a v/c ratio of 0.92 that is below the 0.85 standard. This means that this section is experiencing more congestion that desirable. The other mid-block sections are operating above the 0.85 v/c standard.

TABLE 4-2
EXISTING INTERSECTION LEVEL OF SERVICE

	AM Peak		PM Peak	
Unsignalized Intersection	LOS	Reserve Capacity	LOS	Reserve Capacity
Highway 99E/First Street				
Northbound Left	-	-	-	-
Eastbound Approach	-	-	-	-
Highway 99E/Liberty Street				
Northbound Approach (Liberty)	A	805	A	617
Southbound Approach (Liberty)	C	298	E	8
Eastbound Left (99E)	A	1269	A	957
Westbound Left (99E)	A	1042	A	925
Highway 99E/Second Street				
Northbound Left (99E)	A	1280	A	1009
Southbound Left (99E)	A	1124	A	1066
Eastbound Approach (Second)	B	365	D	181
Westbound Approach (Second)	A	573	A	832
Highway 99E/Main Street				
Northbound Approach (Main)	A	497	A	441
Southbound Approach (Main)	A	782	B	302
Eastbound Left (99E)	A	1242	A	965
Westbound Left (99E)	A	1141	A	1127
Highway 99E/Bob's Avenue				
Southbound Left (99E)	A	1067	A	941
Westbound Approach (Bob's)	A	578	A	444
Main Street/Second Street				
Northbound Left (Main)	A	1652	A	1503
Southbound Left (Main)	A	1491	A	1368
Eastbound Approach (Second)	A	1331	A	735
Westbound Approach (Second)	A	1225	A	1062
Liberty Street/First Street				
Northbound Approach (Liberty)	A	485	A	501
Southbound Approach (Liberty)	A	567	A	513
Eastbound Left (First)	A	1013	A	1280
Westbound Left (First)	A	1394	A	1135
Highway 99E/Ottaway Road				
Northbound Left (99E)	A	1215	A	903
Southbound Left (99E)	A	1095	A	963
Eastbound Approach (Ottaway)	A	540	B	333
Westbound Approach (Ottaway)	A	593	B	304
Ehlen Road/Airport Road				
Southbound Left (Airport)	B	316	E	63
Southbound Right (Airport)	A	764	A	843
Eastbound Left (Ehlen)	A	873	A	1036
Main Street/First Street				
Southbound Left (Main)	A	1368	A	1139
Westbound Approach (First)	A	754	A	893

TABLE 4-3
EXISTING ARTERIAL ROADWAY LEVEL OF SERVICE SUMMARY

Roadway	Section	AADT	Capacity	V/C Ratio
Highway 99E	East City Limits	14,700	16,000	0.92
	South of Main Street	10,900	16,000	0.68
	South of Ottaway Road	8,400	14,000	0.60

TRAFFIC ACCIDENTS

Accident data at the study area intersections and roadway mid-block sections were obtained from ODOT. Data was provided for a three-year period between January 1, 1995 and December 31, 1997. Table 4-4 summarizes the accident data for the roadway mid-block sections. Table 4-5 summarizes the accident data for the study area intersections.

The accident rate for the roadway mid-block sections were reported in both average accidents per year and accidents per million vehicle miles of travel. For comparison purposes the average state accident rate for non-freeway state facilities was 1.76 accidents per million vehicle miles traveled in 1996 according to the 1996 State Highway System Accident Rate Tables, ODOT, 1997. As shown in Table 4-4, the following three roadway mid-block sections have accident rates greater than the state average:

- Highway 99E from First Street to Liberty Street
- Main Street from First Street to Second Street
- Kasel Court from Airport Road to its terminus

It should be noted that although these roadway segments have an average accident rate higher than the statewide average, the actual number of accidents occurring on these roadways is small. All of these locations have a rate less than 1.3 accidents per year. These high accident rates are predominantly a function of very short roadway segment lengths or low traffic volumes which tends to increase the relative importance of even a single accident.

TABLE 4-4
ROADWAY SEGMENT ACCIDENT SUMMARY (JANUARY 1994 TO DECEMBER 1996)

Roadway Segment	Average Accidents per Year by Severity			Total (acc/yr)[2]	Total (acc/mvm)[3]
	PDO[1]	Injury	Fatal		
Highway 99E					
First St Liberty St	0.0	0.3	0.0	0.3	1.03
Main St to 3rd St	0.7	0.6	0.0	1.3	8.36
Bob's Av to Ottaway Rd	0.3	1.0	0.0	1.3	1.74
Main Street					
1st St to 2nd St	0.7	0.0	0.0	0.7	10.20
Kasel Court					
Airport Rd to terminus	0.3	0.0	0.0	0.3	11.30

[1] PDO = property damage only
[2] acc/yr = accidents per year
[3] acc/mvm = accidents per million vehicle miles of travel

As shown in Table 4-5, the intersection accident rates ranged from 0.05 to 1.37 accidents per million entering vehicles. Accident rates in this range are typically considered normal.

TABLE 4-5
INTERSECTION ACCIDENT SUMMARY (JANUARY 1994 TO DECEMBER 1996)

Intersection	Average Accidents per Year by Severity			Total (acc/yr)[2]	Total (acc/mev)[3]
	PDO[1]	Injury	Fatal		
Highway 99E/1st St	0.3	0.0	0.0	0.3	0.05
Highway 99E/Main St	1.0	0.7	0.0	1.7	0.38
Highway 99E/Ottaway Rd	0.0	0.7	0.0	0.7	0.16
Airport Rd/Kasel Ct	0.3	0.0	0.0	0.3	0.41
Ehlen Rd/Main St	0.3	0.0	0.0	0.3	0.07
Liberty St/1st St	0.0	0.7	0.0	0.7	0.25
Main St/Ottaway Rd	0.3	0.0	0.0	0.3	1.37

[1] PDO = property damage only
[2] acc/yr = accidents per year
[3] acc/mev = accidents per million entering vehicles

DEPARTURE TO WORK DISTRIBUTION FROM CENSUS

One way to maximize the use of the existing transportation system is to spread peak traffic demand over several hours instead of a single hour. Statistics from the 1990 Census for Aurora show the spread of departure to work times over a 24-hour period (see Table 4-6). Approximately 25 percent of the total employees depart for work between 7:00 and 8:00 a.m. Another 31 percent depart either the hour before or the hour after the peak.

Assuming an average nine-hour work day, the corresponding afternoon peak can be determined for work trips. Using this methodology, the peak work travel hour would occur between 4:00 and 5:00 p.m. which corresponds with the peak hour of activity measured for traffic volumes. This is consistent with the afternoon peak hours indicated on the p.m. peak hour counts.

Carpooling and telecommuting are briefly discussed in the travel mode distribution section. These travel modes can effectively reduce the demand on the local and regional transportation system.

TRAVEL MODE DISTRIBUTION

Although the automobile is the primary mode of travel for most residents in Aurora, some other modes are used as well. Modal split data is not available for all types of trips; however, the 1990 census data does include statistics for journey-to-work trips as shown in Table 4-7. The census data reflects the predominant use of the automobile.

Most Aurora residents travel to work via private vehicle. In 1990, 78 percent of all trips to work were in an auto, van, or truck. Carpooling accounted for10 percent of work trips. The remaining 12 percent of work trips were accounted by walking, bicycling, telecommuting, and other means.

Walking as a means of getting to work was used by 20 people compared to zero people who used public transportation. However, the census does not account for other, non-work uses of transportation, such as shopping or recreation.

TABLE 4-6
DEPARTURE TO WORK DISTRIBUTION

	1990 Census	
Departure Time	**Trips**	**Percent**
12:00 a.m. to 4:59 a.m.	6	2.1
5:00 a.m. to 5:59 a.m.	11	4.0
6:00 a.m. to 6:59 a.m.	46	16.5
7:00 a.m. to 7:59 a.m.	86	30.9
8:00 a.m. to 8:59 a.m.	42	15.1
9:00 a.m. to 9:59 a.m.	18	6.5
10:00 a.m. to 10:59 a.m.	8	2.9
11:00 a.m. to 11:59 a.m.	18	6.5
12:00 p.m. to 3:59 p.m.	28	10.1
4:00 p.m. to 11:59 p.m.	15	5.4
Total	278	100.0

TABLE 4-7
JOURNEY TO WORK TRIPS

	1990 Census	
	Trips	Percent
Car, Truck, or Van:		
Drove alone	222	77.7
Carpooled	29	10.1
Public Transportation	0	0.0
Motorcycle	0	0.0
Bicycle	3	1.0
Walked	20	7.0
Other Means	4	1.4
Worked at Home	8	2.8
Total	286	100.0

EXISTING DEFICIENCIES

The following level of service problems exist:

- At the Highway 99E/Liberty Street intersection, the southbound Liberty Street approach operates at LOS E in the p.m. peak hour.

- The southbound left-turn movement at the Ehlen Road/Airport intersection also operates at LOS E in the p.m. peak hour.

- The Highway 99E roadway section at the east city limits has a v/c ratio of 0.92 which correlates to LOS E.

Main Street, 2nd Street, and 3rd Street intersect Highway 99E and form five closely spaced intersections. These five intersections form two back-to-back triangles. The following problems exist:

- Problem 1 - Highway 99E/Main Street:

  Highway 99E and Main Street intersect at a very acute angle. This angle creates sight distance and turning movement problems for motorists. Southbound Main Street traffic destined north on Highway 99E will generally use 2nd Street to access Highway 99E due to the difficult left turning angle and sight distance issues at Main Street. Northbound Main Street traffic destined south on Highway 99E will generally use 3rd Street to access Highway 99E due to the difficult left turning angle and sight distance issues at Main Street.

- Problem 2 – Highway 99E/Main Street:

  Pedestrians crossing Main Street have a long distance to travel. The long crossing length is due to the 65-foot street width and acute intersection angle which results in a pedestrian crossing length of approximately 119 feet.

- Problem 3 - Highway 99E/2nd Street:

  As stated above, the Highway 99E/2nd Street intersection provides southbound Main Street traffic destined north on Highway 99E better turning conditions than the Highway 99E/Main Street intersection. However, this intersection is less than 100 feet from the Highway 99E/Main Street intersection. Conflicts between the Highway 99E/Main Street and Highway 99E/2nd Street intersections may arise due to the close intersection spacing.

- Problem 4 – Highway 99E/3rd Street:

  As stated above, the Highway 99E/3rd Street intersection provides northbound Main Street traffic destined south on Highway 99E better turning conditions than the Highway 99E/Main Street intersection. However, this intersection is less than 100 feet from the Highway 99E/Main Street intersection. Conflicts between the Highway 99E/Main Street and Highway 99E/3rd Street intersections may arise due to the close intersection spacing.

- Problem 5 – Main Street/2nd Street:

  The Main Street/2nd Street intersection is less than 100 feet from the Highway 99E/Main Street intersection. Conflicts between these intersections may arise due to the close intersection spacing. Due to the short block length of 2nd Street between Main Street and Highway 99E (75 feet), westbound 2nd Street traffic may spill back onto Highway 99E.

- Problem 6 – Main Street/3rd Street:

  The Main Street/3rd Street intersection is less than 100 feet from the Highway 99E/Main Street intersection. Conflicts between these intersections may arise due to the close intersection spacing. Due to the short block length of 3rd Street between Main Street and Highway 99E (60 feet), eastbound 3rd Street traffic may spill back onto Highway 99E.

CHAPTER 5
2018 TRAFFIC VOLUME FORECAST

2018 TRAFFIC FORECAST METHODOLOGY

The population growth in the City of Aurora between 1980 and 1997 has been modest. Based on historical population information, the City of Aurora's population has increased from 523 to 675 from 1980 to 1997. This equates to an annual population growth rate of 1.5 percent. Table 5-1 summarizes this information.

TABLE 5-1
AURORA HISTORIC POPULATION GROWTH TREND

1980	1997	1980-1997 Percent Change	Annual Growth Rate
523	675	29.1%	1.5%

Marion County has projected that Aurora's future population growth will occur at 1.4 percent per year. This future growth is very consistent with Aurora's historical growth. The City of Aurora has supported Marion County's population forecast. See Ord. 415

The 2018 traffic projections developed as part of this study are used as the basis for assessing future roadway conditions and likely improvement requirements. These projections have been developed by deriving an annual traffic growth factor from historical daily traffic counts on Highway 99E.

Table 5-2 shows the Highway 99E annual traffic growth rate in the City of Aurora between 1980 and 1997. As shown in Table 5-2, the historic annual traffic growth rates range from 1.8 to 3.9 percent. The higher traffic growth has occurred in the northern area of Aurora. This traffic growth in the northern part of Aurora and Highway 99E can be attributed to commuter traffic traveling through Aurora to and from I-5. The weighted average historic annual traffic growth rate is 3.0 percent in the City of Aurora. This 3.0 annual traffic growth rate was applied to the existing traffic counts for 20 years to derive the 2018 traffic volumes. The 2018 A.M. and P.M. peak hour traffic volume forecasts based on the annual traffic growth rate of 3.0 percent are shown in Figures 5-1 and 5-2, respectively.

TABLE 5-2
AURORA HISTORIC TRAFFIC GROWTH TRENDS ON HIGHWAY 99E

Milepost	Location Description	1980 ADT	1997 ADT	Annual Growth Rate
24.83	Northeast city limits	8,200	13,900	3.2%
25.02	0.01 miles south of Main Street	3,100	4,700	3.9%
25.70	0.14 miles south of Ottaway Road	3,150	5,000	1.8%
		Weighted Average		3.0%

2018 LEVELS OF SERVICE/DEFICIENCIES

Levels of service analyses were conducted based on the 2018 traffic volumes shown in Figures 5-1 and 5-2. The results of the analysis are summarized in Tables 5-3 and 5-4. As shown in Table 5-1, five of the eight study area intersections are projected to operate below LOS D. The traffic operations at these intersections are discussed below. The remaining three study area intersections are projected to operate at LOS D or better.

All of the study area intersections on Highway 99E are projected to operate at LOS E/F in the 2018 P.M. peak hour with the exception of the Highway 99E/Bob's Avenue intersection. The poor level of service can be attributed to heavy traffic volumes on Highway 99E making turning movements from the side streets difficult. Based on local knowledge from city staff and the planning commission, the significant increase in traffic on Highway 99E is primarily from commuting traffic cutting through the City of Aurora. Traffic from Canby destined to the south is likely to use the Ehlen Road interchange rather than the Miley Road interchange to avoid backtracking north to south. The Miley Road interchange is the southern-most interchange serving Wilsonville. Providing a full access interchange directly west of Canby on Arndt Road may help alleviate the congestion on Highway 99E in Aurora. However, a significant portion of traffic is likely to still prefer the travel route through Aurora since it is more direct to I-5. A combination of reducing the travel speed along the Aurora commuting route and providing direct access to I-5 from Arndt Road is the preferred strategy to reduce cut through traffic in Aurora. The evaluation of this concept was beyond the scope of the TSP and should be considered for another study. Coordination between Clackamas County, Marion County, ODOT, Canby, and Aurora should take place to scope out the study and participate in the study process.

The remainder of this section discusses each individual intersection projected to operate at LOS E/F.

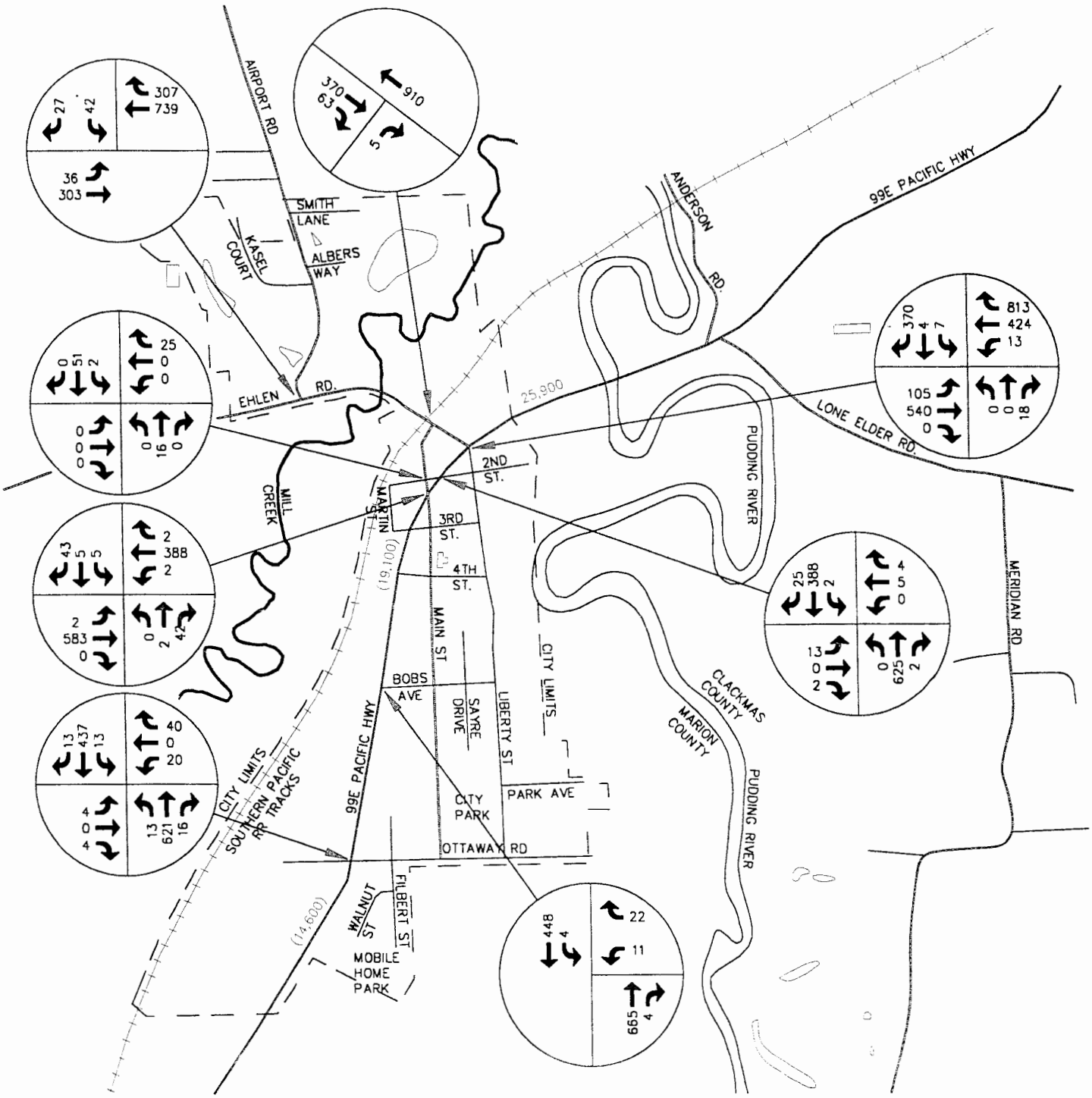
Highway 99E/Liberty Street

The Highway 99E/Liberty Street intersection was assumed to be signalized with the 1999 planned channelization improvements in the 2018 future condition. Even with these assumed improvements, the intersection is projected to operate at LOS F in the 2018 P.M. peak hour. The LOS F condition is a result of high traffic volumes on Highway 99E, as well as a heavy southbound left-turn movement from the Liberty Street approach. To mitigate the LOS F condition, it would be necessary to widen Highway 99E to five lanes. The five-lane widening on Highway 99E would improve the level of service to LOS D. Widening Highway 99E is not likely a preferred alternative due to its significant impacts to the commercial areas of Aurora. Also, the southbound left-turn movement, which is projected at over 800 vehicles, warrants two lanes to mitigate the 2018 P.M. peak hour condition.

Widening Highway 99E would significantly impact the commercial and historical area of Aurora. Based on these impacts to the community, additional widening on Highway 99E may not be feasible. Reducing commuter traffic in Aurora would require regional coordination between Canby, ODOT, Aurora, and Marion County. A combination of traffic calming features to reduce the travel time to and from the Ehlen Road interchange, direct access to I-5 for Canby residents with a new Arndt Road interchange, and strict policy measures discouraging this traffic would be needed to reduce the commuter traffic through Aurora.

Highway 99E/Second Street

The eastbound and westbound approaches of the Highway 99E/Second Street interchange are projected to operate at LOS E in the 2018 P.M. peak hour condition. The LOS E condition is more a function of the heavy traffic volumes on Highway 99E than the side street volumes. The modest amount of side

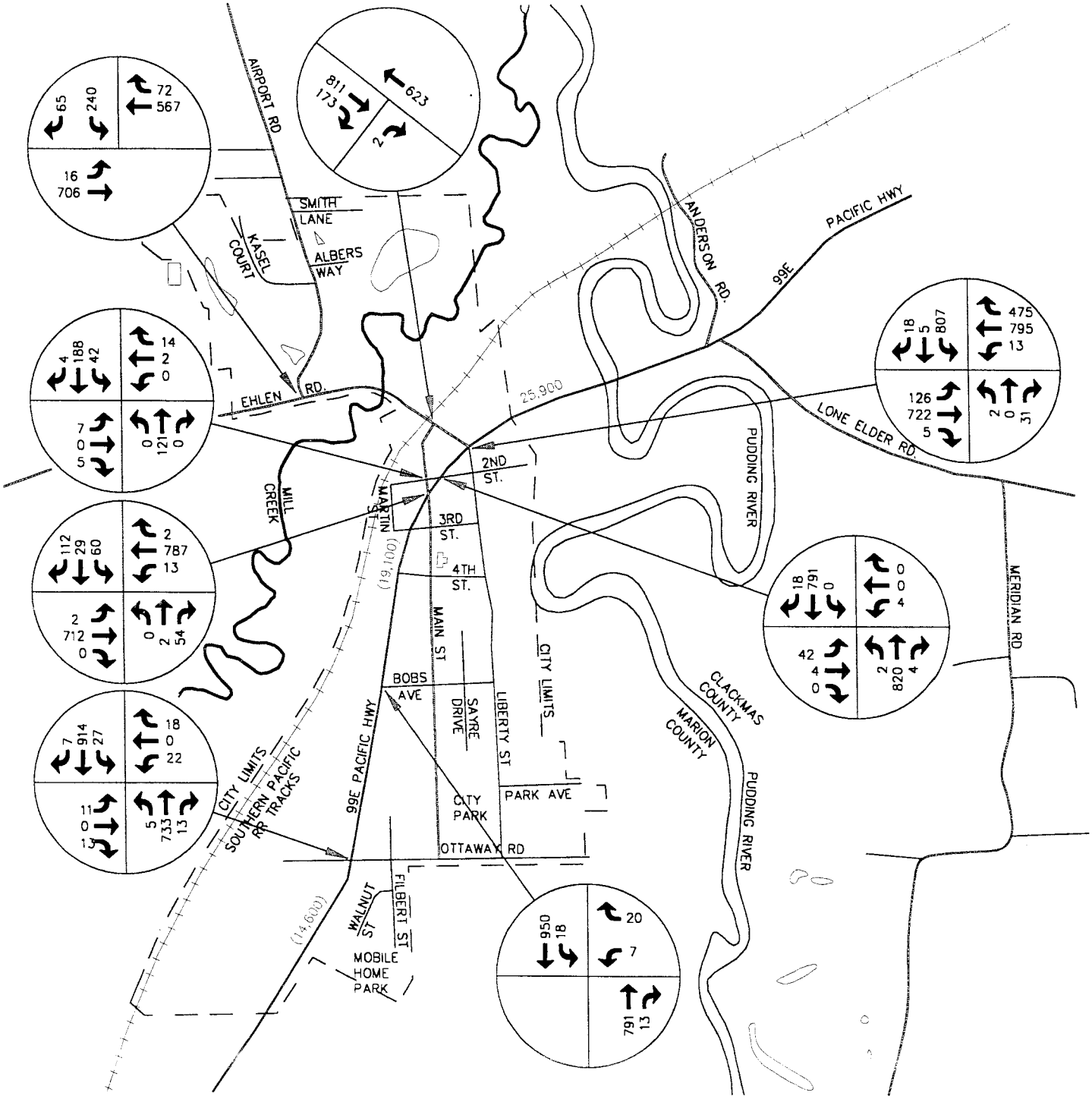


200 ⟶ A.M. Peak Hour Traffic Volume

(3000) Daily Traffic Volume

FIGURE 5-1

2018 A.M. PEAK HOUR TRAFFIC VOLUMES



200 ⟶ P.M. Peak Hour Traffic Volume

(3000) Daily Traffic Volume

FIGURE 5-2
2018 P.M. PEAK HOUR TRAFFIC VOLUMES

TABLE 5-3
2018 INTERSECTION LEVEL OF SERVICE

	AM Peak		PM Peak	
Signalized Intersection	LOS	V/C Ratio	LOS	V/C Ratio
Highway 99E/Liberty Street[1]				
Northbound Approach (Liberty)	C	0.69	F	1.13
Southbound Approach (Liberty)	E	0.94	F	1.21
Eastbound Left (99E)	E	0.94	F	1.21
Westbound Left (99E)	E	0.94	F	1.21
Unsignalized Intersection		Reserve Capacity		Reserve Capacity
Highway 99E/Second Street				
Northbound Left (99E)	A	1012	A	658
Southbound Left (99E)	A	691	A	635
Eastbound Approach (Second)	D	176	E	52
Westbound Approach (Second)	C	284	E	89
Highway 99E/Main Street				
Northbound Approach (Main)	A	493	A	400
Southbound Approach (Main)	A	480	F	<0
Eastbound Left (99E)	A	1027	A	674
Westbound Left (99E)	A	745	A	719
Highway 99E/Bob's Avenue				
Southbound Left (99E)	A	725	A	572
Westbound Approach (Bob's)	C	275	D	133
Highway 99E/Ottaway Road				
Northbound Left (99E)	A	916	A	537
Southbound Left (99E)	A	758	A	593
Eastbound Approach (Ottaway)	C	247	E	61
Westbound Approach (Ottaway)	C	258	E	42
Ehlen Road/Airport Road				
Southbound Left (Airport)	E	40	E	64
Southbound Right (Airport)	B	327	A	435
Eastbound Left (Ehlen)	B	341	A	643
Main Street/Ehlen Road				
Northbound Right (Main)	A	457	A	838
Main Street/Second Street				
Northbound Left (Main)	A	1603	A	1364
Southbound Left (Main)	A	1675	A	1295
Eastbound Approach (Second)	A	1291	A	648
Westbound Approach (Second)	A	1306	A	930

[1] Worst movement reported.

TABLE 5-4
2018 ARTERIAL ROADWAY LEVEL OF SERVICE SUMMARY

Roadway	Section	AADT[1]	Capacity	V/C Ratio
Highway 99E	Northeast City Limits	25,900	16,000	1.62
	South of Main Street	19,100	16,000	1.19
	South of Ottaway Road	14,600	14,000	1.04

[1] AADT = average annual daily traffic

street traffic can divert to the signalized intersection at Highway 99E and Liberty Street so no mitigation is proposed.

Highway 99E/Main Street

As with the previous intersection, the side-street traffic on the southbound Main Street approach is projected to operate at LOS F with the 2018 P.M. peak hour condition. This condition is caused by heavy traffic on Highway 99E conflicting with side-street turning movement traffic. As with the previous intersection, traffic on the southbound Main Street approach can divert to the signalized intersection at Highway 99E and Liberty Street to cross the highway or turn left. Therefore, no mitigation is proposed.

Highway 99E/Ottaway Road

Both side street approaches on Ottaway Road are projected to operate at LOS E in the 2018 P.M. peak hour condition. This condition is caused by the heavy traffic volumes on Highway 99E conflicting with side-street turning movement traffic volumes. The side-street turning movements are very low and would not warrant the installation of a signal at the Highway 99E/Ottaway Road intersection. If the eastbound approach of the intersection could serve as access to the vacant parcels to the south, enough traffic may eventually be generated to justify a future signal.

Ehlen Road/Airport Road

The southbound left-turn movement at the Ehlen Road/Airport Road intersection is projected to operate at LOS E in both the 2018 A.M. and P.M. peak hours. This is due to a heavy southbound left-turn movement from Airport Road conflicting with the heavy through volumes on Ehlen Road. This intersection should be monitored periodically to determine when to install a traffic signal.

Currently, the Ehlen Road/Airport Road intersection is configured such that the eastbound left-turn movement is trapped and must negotiate two movements to enter the northbound traffic stream onto Airport Road. To correct this problem, a conceptual channelization plan has been developed. The improvement proposal would create a more traditional "T" intersection for southbound traffic. This plan is shown in Figure 5-3.

(No Scale)

Parcel Boundaries and Right-of-Way
As Shown are Approximate Only

Figure 5-3
EHLEN ROAD/AIRPORT ROAD
INTERSECTION IMPROVEMENT

Highway 99E

As shown in Table 5-4, all of the Highway 99E roadway segments are projected to operate with a v/c ratio of over 1.00 in the 2018 condition. Two basic alternatives to mitigate the congestion exist. First, Highway 99E could be widened to four or five lanes to mitigate the congestion problem. However, this type of widening would significantly impact the historical nature of the City of Aurora. The second alternative would be to reduce and discourage the amount of commuter traffic cutting through Aurora from Canby and other communities to the north. As stated previously, this would require regional coordination between the City of Aurora, City of Canby, Marion County, and ODOT. A combination of traffic calming features to increase the travel time to and from the Ehlen Road interchange, direct access to I-5 for Canby residents with a new Arndt Road interchange, and strict policy measures discouraging cut through traffic would be needed to reduce the commuter traffic through Aurora.

CHAPTER 6
TRANSPORTATION IMPROVEMENT ALTERNATIVES

Transportation improvement alternatives were centered around improving safety at the five closely spaced intersections between Main Street, 2nd Street, 3rd Street, and Highway 99E.

Sidewalk improvements are discussed in the Pedestrian System Element in the next chapter, Transportation System Plan.

HIGHWAY 99E/MAIN STREET PROBLEMS

Transportation improvement options were developed for the Highway 99E/Main Street roadway segments between 2nd Street and 3rd Street. Main Street, 2nd Street, and 3rd Street intersect Highway 99E and form five closely spaced intersections. These five intersections form two back-to-back triangles. The problems occurring at these intersections have been described on pages 4-10 and 4-11 in Chapter 4, Current Transportation Conditions.

ALTERNATIVES

Five alternatives were developed to mitigate the problems described above. The solutions focused mainly on improving safety and traffic circulation due to the Liberty Street/1st Street/Highway 99E improvement project diverting significant future traffic volumes away from the triangle area. The five alternatives are described below.

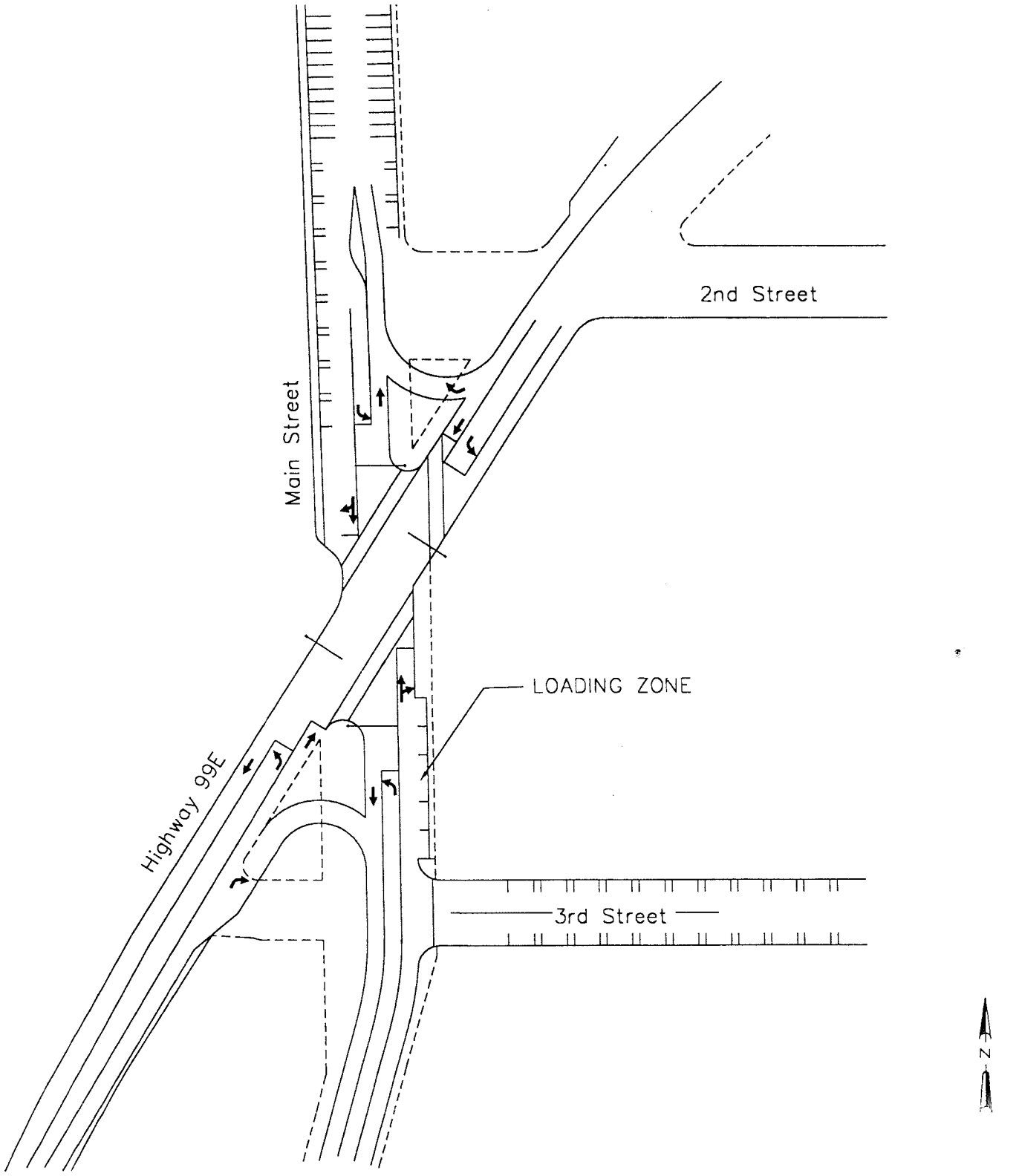
Alternative 1

Alternative 1 (Figure 6-1) involves closing the 2nd Street and 3rd Street segments between Highway 99E and Main Street and signalizing the Highway 99E/Main Street intersection. To improve northbound and southbound right-turn movements from Highway 99E to Main Street, the northbound and southbound right turns are channelized to Main Street prior to the intersection. Since the left-turn movements from Highway 99E to Main Street involve extremely long movements that have a potential of overlapping, the traffic signal should be operated with separate northbound and southbound left-turn phases. The left-turn movements from Main Street to Highway 99E have been channelized in a manner similar to a "U-turn" movement. This requires the stop bars of the left turn bays on Main Street to be set back from the intersection approach.

Alternative 1 solves Problem 1, the acute intersection angle and sight distance problem, by intersection channelization modifications and signalization at the Highway 99E/Main Street intersection.

Problem 2, the long pedestrian crossing distance, still remains a problem in Alternative 1. However, since it is likely that the majority of green time would be allocated to the movements on Highway 99E, there should be sufficient time for pedestrians to cross Main Street.

Alternative 1 eliminates Problems 3, 4, 5, and 6 by eliminating the 2nd and 3rd Street segments between Highway 99E and Main Street.



Not intended for design or construction purposes. Not to scale.

Figure 6-1

Highway 99E and Main Street Conceptual Design Alternative 1

Additional issues with Alternative 1 are the elimination of parking areas along Main Street and the close signalized intersection spacing between the Highway 99E/Liberty Street and Highway 99E/Main Street intersections. Although the close signalized intersection spacing is an issue, a signal at the Highway 99E/Main Street intersection would improve pedestrian safety and allow pedestrians protection with the traffic signal when crossing Highway 99E.

Alternative 2

Alternative 2 (Figure 2) involves creating a "T" intersection between the southbound approach of Main Street and Highway 99E. The northbound approach of Main Street would "T" into 3rd Street and would terminate at this intersection. Third Street would be realigned with Highway 99E to form a right angle, "T" intersection.

To mitigate lost parking from this alternative, an off-street parking lot can be created from the vacated areas between Highway 99E, Main Street, and 3rd Street. Access to this parking lot would be provided from one driveway located directly across the Main Street/3rd Street intersection. Based on a conceptual layout of this parking lot, approximately 25 parking spaces can be provided.

Alternative 2 solves Problem 1, the acute intersection angle and sight distance problem by creating right angle "T" intersections at Highway 99E/Main Street and Highway 99E/3rd Street.

Problem 2, the long pedestrian crossing distance would be reduced by eliminating the existing Highway 99E/Main Street intersection. The Main Street crosswalk at Highway 99E has been reduced to approximately 36 feet with this alternative.

Alternative 2 eliminates Problem 3 by closing the Highway 99E/2nd Street intersection.

Problem 4 is eliminated by closing the existing Highway 99E/Main Street intersection. By closing the Highway 99E/Main Street intersection, the close intersection spacing conflict with the Highway 99E/3rd Street intersection is eliminated.

The Main Street/2nd Street intersection (Problem 5) still remains in Alternative 2. However, in this alternative the 2nd Street segment between Highway 99E and Main Street has been reduced to only a parking area with no access to Highway 99E. With this small parking area generating minimal traffic, the Main Street/2nd Street intersection should have minimal impact to Main Street.

The potential traffic conflicts of Problem 6 are eliminated by closing the existing Highway 99E/Main Street intersection. By closing the Highway 99E/Main Street intersection, the close intersection spacing conflict with the Main Street/3rd Street intersection is eliminated. However, close intersection spacing still exists between the Highway 99E/3rd Street and Main Street/3rd Street intersections. In this alternative, 3rd Street has the right-of-way over Main Street and therefore the short queuing distance on 3rd Street between Highway 99E and Main Street is no longer an issue.

Alternative 3

Alternative 3 (Figure 6-3) involves creating two "T" intersections with the northbound and southbound approaches of Main Street with Highway 99E. The Main Street approaches to Highway 99E would be

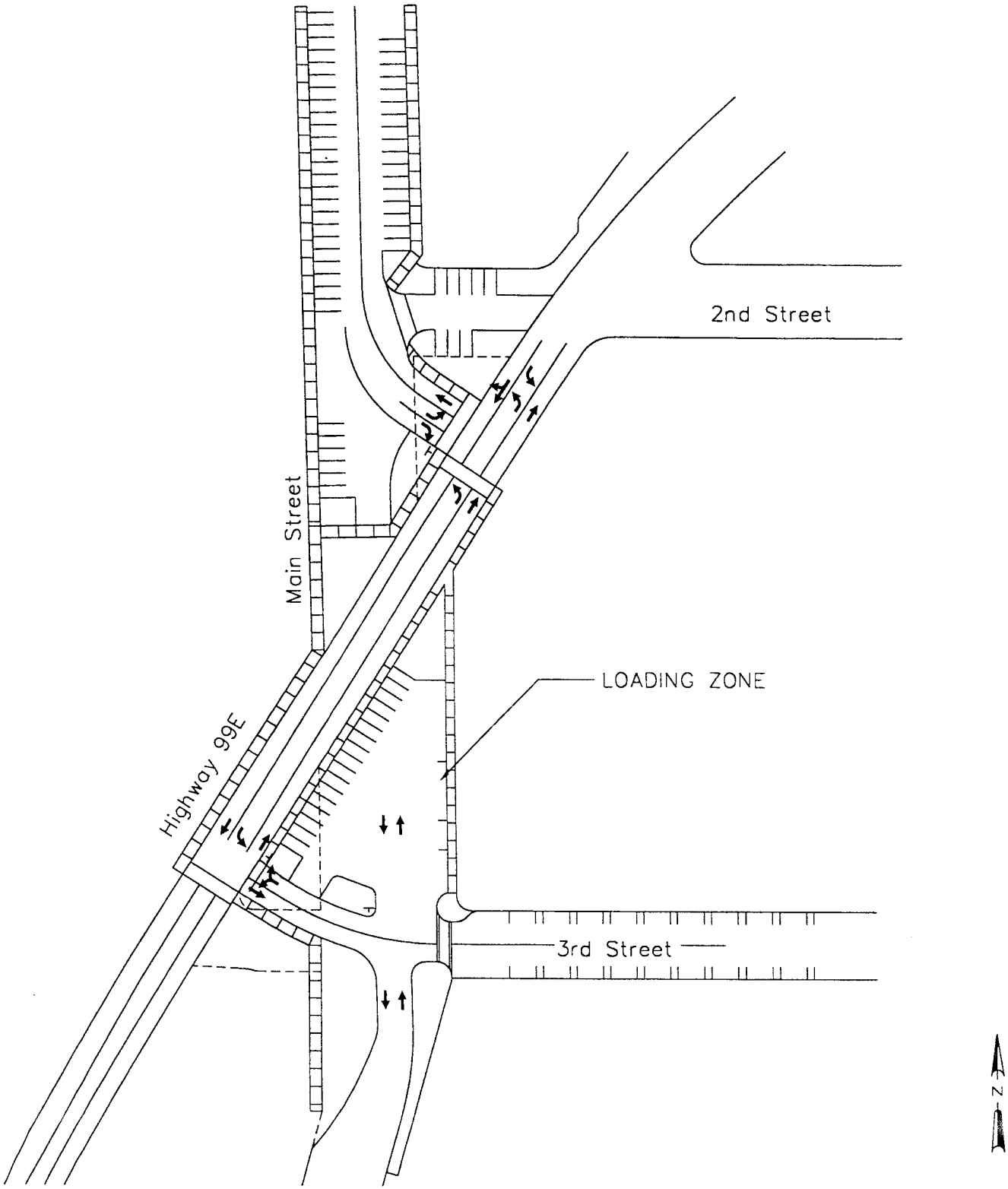


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Figure 6-2
Highway 99E and Main Street Conceptual Design Alternative 2

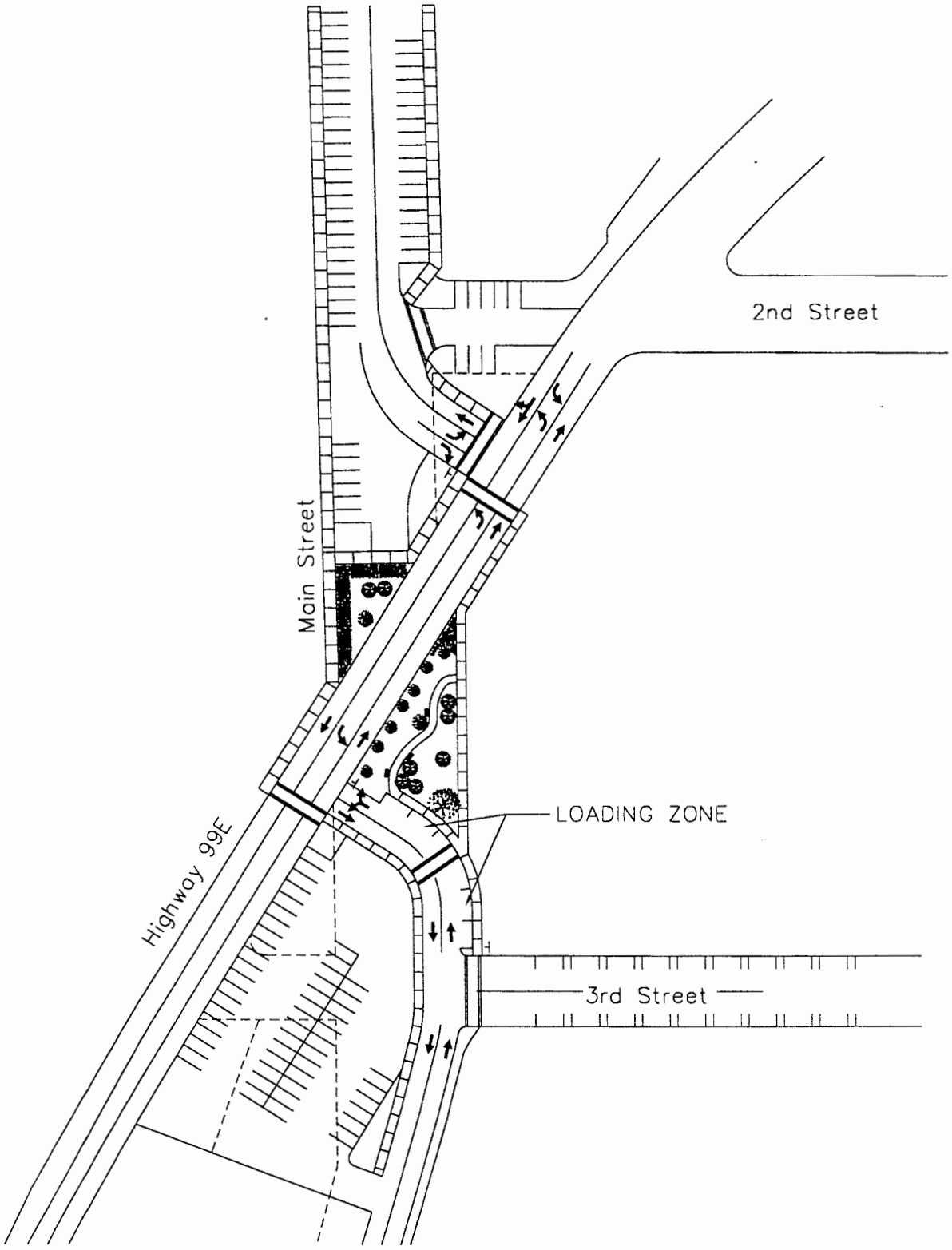

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Figure 6-3

Highway 99E and Main Street Conceptual Design Alternative 3

rebuilt at a 90 degree angle with Highway 99E. This alternative eliminates existing Highway 99E/Main Street intersection and replaces it with two "T" intersections. Both "T" intersections would be stop-controlled. The 2nd Street segment between Highway 99E and Main Street would be restriped into a parking area and would obtain access only from Main Street. The 3rd Street segment between Highway 99E and Main Street would be closed.

To mitigate lost parking from this alternative, an off-street parking lot can be created from the vacated areas of Main Street and 3rd Street with the adjacent vacant lot. Based on a conceptual layout of this parking lot, approximately 51 parking spaces could be provided.

Alternative 3 solves Problem 1, the acute intersection angle and sight distance problem by creating two right angle "T" intersections with Highway 99E and Main Street.

Problem 2, the long pedestrian crossing distance, would be reduced by eliminating the existing Highway 99E/Main Street intersection. The Main Street crosswalk at Highway 99E has been reduced to approximately 36 feet with this alternative.

Alternative 3 eliminates Problems 3, 4, and 6 by removing the Highway 99E/2nd Street intersection and the 3rd Street segment between Highway 99E and Main Street.

The Main Street/2nd Street intersection (Problem 5) still remains in Alternative 3. However, in this alternative the 2nd Street segment between Highway 99E and Main Street has been reduced to only a parking area with no access to Highway 99E. With this small parking area generating minimal traffic, the Main Street/2nd Street intersection should have minimal impact to Main Street.

Alternative 4

Alternative 4 (Figure 6-4) involves creating only one "T" intersection with the southbound approach of Main Street with Highway 99E. The Main Street approaches to Highway 99E would be rebuilt at a 90-degree angle with Highway 99E. This alternative eliminates existing Highway 99E/Main Street intersection and replaces it with one "T" intersections. The "T" intersections would be stop-controlled at the side street approaches. The 2nd Street segment between Highway 99E and Main Street would be restriped into a parking area and would obtain access only from Main Street or be converted to open space. The northbound approach of Main Street would be terminated at 3rd Street.

This alternative eliminates all six of the problems identified, but is very restrictive to local circulation. Northbound Main Street traffic would have to use 3rd Street and Liberty Street to access the other side of Aurora and Highway 99E.

Alterntive 5

Alternative 5 (Figure 6-5) involves creating one "T" intersection with the southbound approach of Main Street with Highway 99E. The Main Street approaches to Highway 99E would be rebuilt at a 90 degree angle with Highway 99E. This alternative eliminates the existing Highway 99E/Main Street intersection and replaces it with one "T" intersection. The "T" intersection would be stop-controlled with right-of-way given to Highway 99E. The 2nd Street segment between Highway 99E and Main Street would be restriped into a parking area and would obtain access only from Main Street. The 3rd Street segment

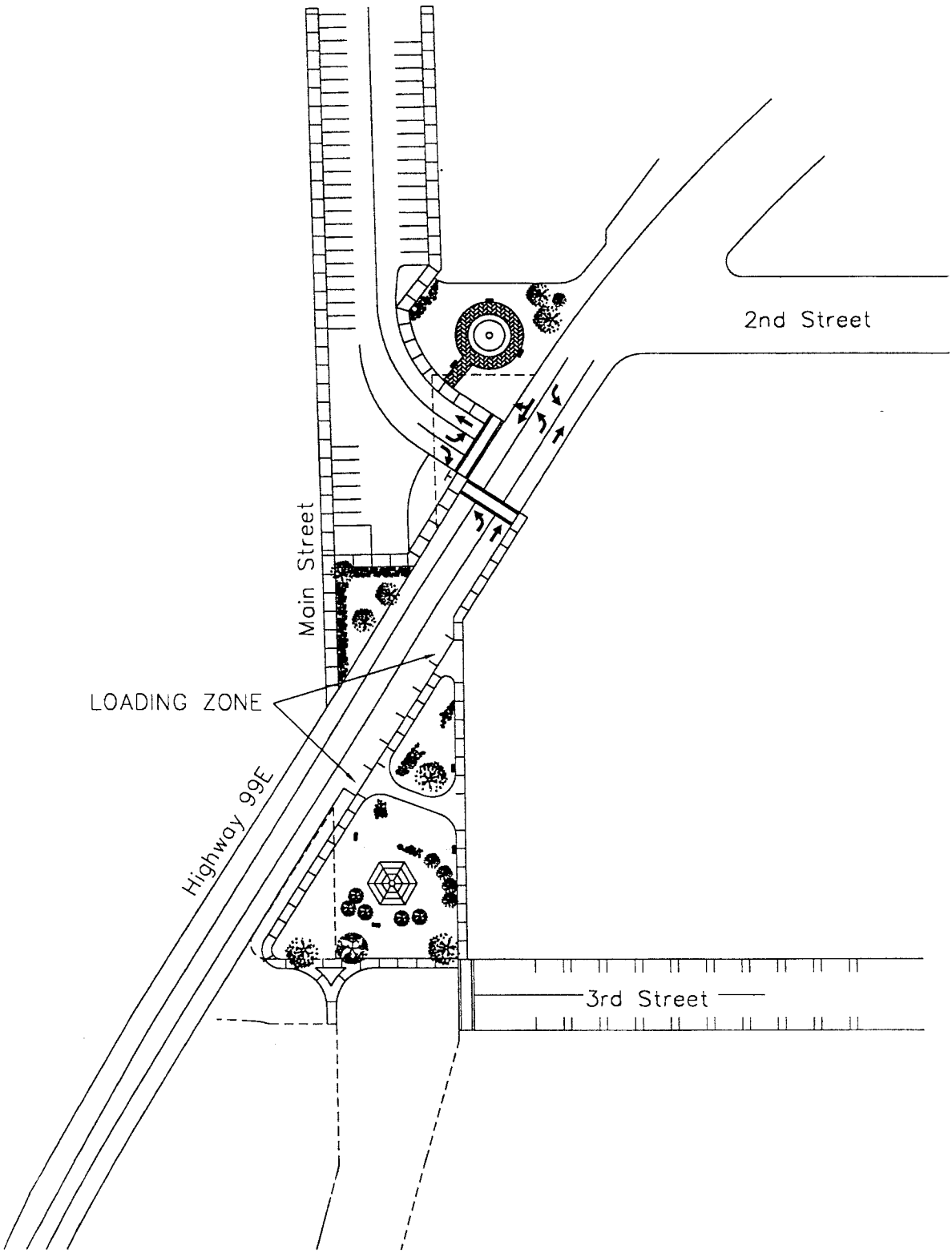

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Figure 6-4

Highway 99E and Main Street Conceptual Design Alternative 4

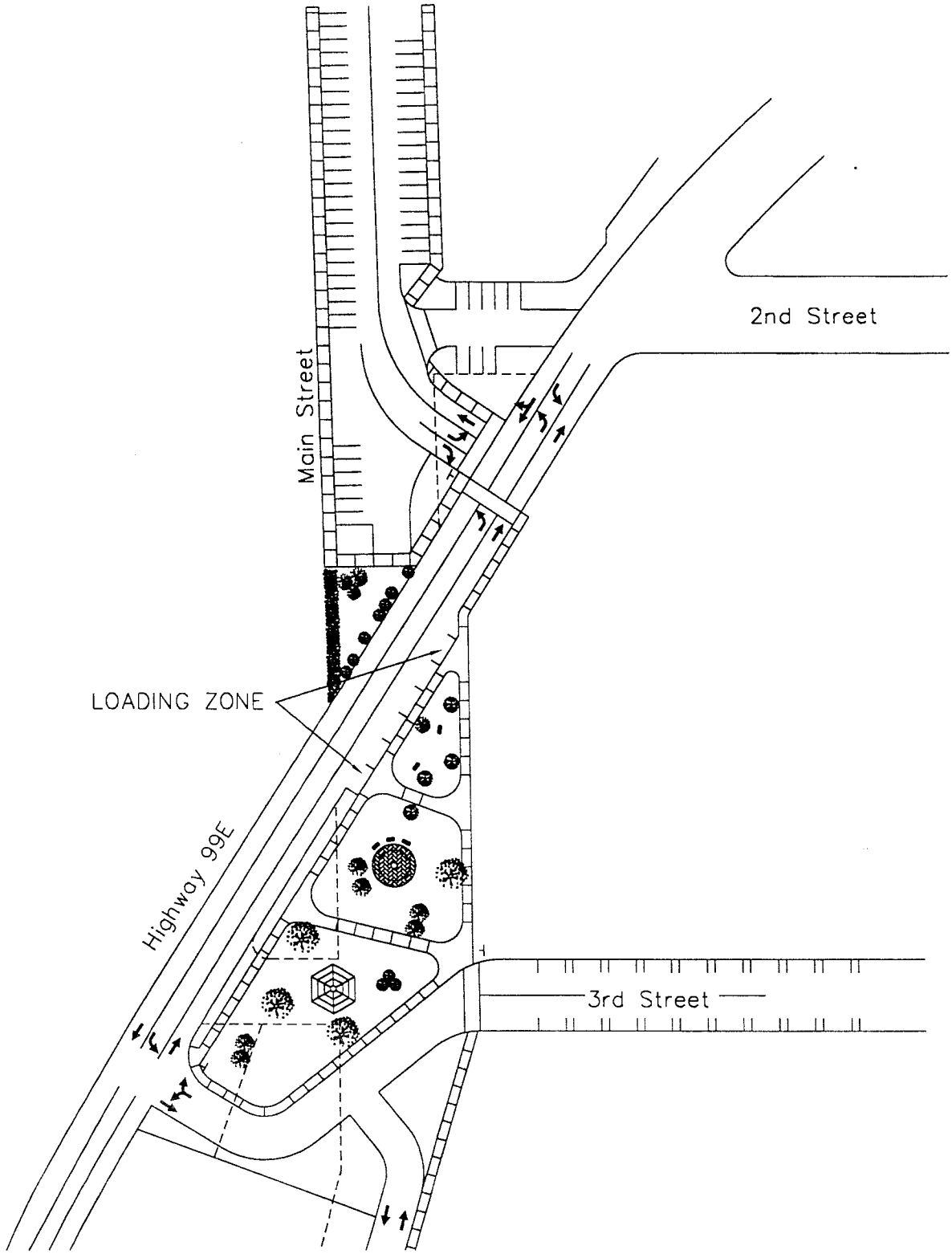

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Figure 6-5
Highway 99E and Main Street Conceptual Design Alternative 5

between Highway 99E and Main Street would be realigned as an elbow to south of its existing alignment. A new right angle intersection would be created with Highway 99E and 3rd Street. Main Street would be terminated at 3rd Street.

This alternative is very similar in concept to Alternatives 2 and 3. It creates the greatest distance between intersections on Highway 99E and is likely to operate the best.

Evaluation of Improvement Options

The five improvement options were evaluated against each other by the following criteria:

- Cost – an assessment of the financial cost of each alternative
- Pedestrian safety in downtown – improvement in pedestrian travel condition
- Circulation impacts – measure of travel pattern changes and ease of travel from one destination to another within the city

Another consideration in the evaluation process was the impact to the historic district. Based on maintaining the historic nature of Aurora, Alternative 2 was preferred by the project Citizen Advisory Committe. Based on the overall evaluation criteria, both Alternatives 2 and 5 were short-listed for further consideration by the project Citizen Advisory Committee.

TABLE 6-1
HIGHWAY 99E/MAIN STREET TRAFFIC IMPROVEMENT OPTIONS EVALUATION

Evaluation Criteria	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Cost	$386,000	$106,000	$236,000	$174,000	$265,000
Pedestrian Safety	Moderate	Good	Good	Good	Good
Circulation Impacts	Low	Moderate	Moderate	Restrictive	Moderate

CHAPTER 7
TRANSPORTATION SYSTEM PLAN

STREET PLAN

Transportation System Plan (TSP) Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (b) A road plan for a system of arterials and collectors and standards for the layout of local streets and other important non-collector street connections. Functional classifications of roads in regional and local TSPs shall be consistent with functional adjacent jurisdictions. The standards for the layout of local streets shall provide for safe and convenient bike and pedestrian circulation necessary to carry out OAR 660-12-045(3)(b). New connections to arterials and state highways shall be consistent with designated access management categories. The intent of this requirement is to provide guidance on the spacing of future extensions and connections along existing and future streets which are needed to provide reasonably direct routes for bicycle and pedestrian travel. The standards for the layout of local streets shall address:

(A) Extensions of existing streets;
(B) Connections to existing or planned streets, including arterials and collectors; and
(C) Connections to neighborhood destinations.

Functional Classification

The functional classification of the City of Aurora roadways have been previously discussed in Chapter 3, Transportation System Inventory. This discussion occurs on pages 3-2 and 3-3. Figure 3-1 of that section depicts the roadway functional classification including the state system.

Street Design Standards

The City of Aurora's street standards are defined in its Subdivision Ordinance. Its street standard is quite simple. Generally, Aurora's development activity has been and continues to be almost exclusively residential. Therefore, its simple street standard has been sufficient in the past. However, this standard does not meet the Transportation Planning Rule. To comply with the Transportation Planning Rule, several standards have been developed and are summarized in Table 7-1. These standards replace the current standard.

There are two local street standards. The first standard is a 28-foot wide local street with 5-foot sidewalks on both sides of the roadway and on-street parking on only one side of the roadway. This is the City of Aurora's skinny street standard. The skinny street standard is to be applied only in cases where residential developments can accommodate three parked vehicles within each lot. Planting strips will be encouraged where rights-of-way allow. The right-of-way requirement is 45 feet. Figure 7-1 depicts the local residential street cross-section.

Table 7-1
Recommended Street Standards

Classification	Pavement Width (ft)	Sidewalk Width (ft)	Bikeway Width (ft)	Parking	ROW (ft)	Design Speed (MPH)
Local Residential[5]	28	5	None	1 side	45	15-25
	36	5	None	2 sides	50	15-25
Collector[5]	38	5	None[1]	2 sides	55	25-35
Rural Arterial	36[3]	None	6[2]	2 sides	60	20-35
Downtown Commercial[4,5]						
Alleys	12-16	None	None	None	20-24	10

[1] Bike lanes will not be required on collector streets if the ADT does not exceed 3,000.
[2] Rural arterials will have shoulder bikeways.
[3] Includes 2-12 foot travel lanes plus 6-foot shoulders.
[4] Subject to historic review board approval on a case by case basis.
[5] Planter strips should be considered as rights-of-way allow.

see ord. 418

see ord. 418

The second local residential street standard is a 36-foot wide street with 8-foot on-street parking lanes and 5-foot sidewalks along both sides of the roadway. This is the standard local street cross-section. The right-of-way requirement is 50 feet. Planting strips will be encouraged where rights-of-way allow.

see ord. 418

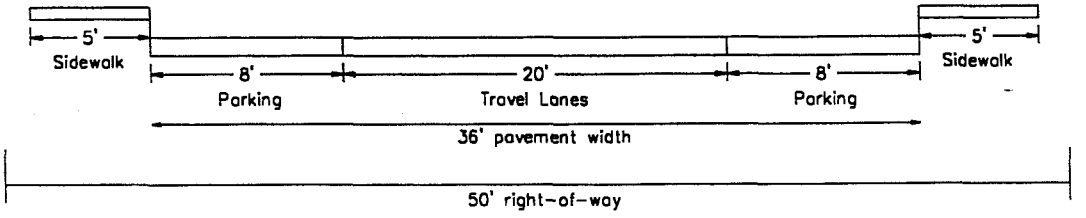
The second local residential street standard is for a 32-foot roadway. The additional 8-foot width is to accommodate parking on both sides of the roadway. Sidewalks of 5 feet are required on both sides of the roadway. The right-of-way requirement is 45 feet. Figure 7-1 depicts the local residential street cross-section.

The collector street standard has a pavement width of 38 feet. The 38-foot standard is based on two 11-foot travel lanes and two 8-foot parking lanes. Five-foot sidewalks are required on both sides of the roadway. Bike lanes will not be required unless the average daily traffic count exceeds 3,000 vehicles a day. The right-of-way requirement is 55 feet. Figure 7-2 shows the collector street standard cross-section.

The rural arterial standard is based on two 12-foot travel lanes plus 6-foot shoulders. The 6-foot shoulder will serve as a shoulder bikeway. Pedestrians will also be able to use the shoulder. The right-of-way requirement is 60 feet. The rural arterial standard is applicable to Ehlen Road and Airport Road. Figure 7-3 shows the rural arterial standard cross-section.

Any downtown street improvement is subject to the historic review board (HRB) approval since the downtown area of Aurora is within the historic district. Roadway cross-sections will be approved by HRB on a case by case basis for downtown streets within the historic district.

As congestion develops, "cut-through" traffic may develop on local roadways such as Liberty Street. If this situation occurs, traffic calming devices should be considered as mitigation. These devices include speed humps, all-way stops, traffic circles, and chicanes. If the local street in question is within the historic district, then HRB approval ~~should~~ must be sought. Figure 7-4 shows several types of chicanes that could be used as traffic calming devices.



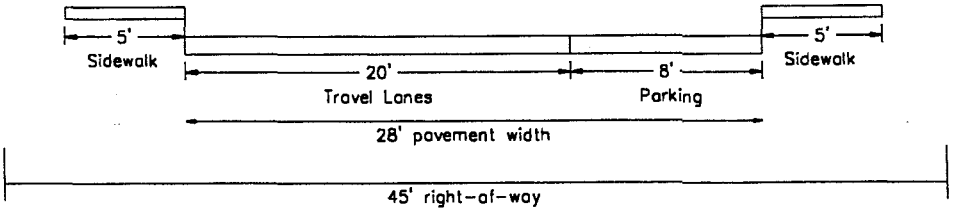


Figure 7-1
Local Street Standard Cross-Section

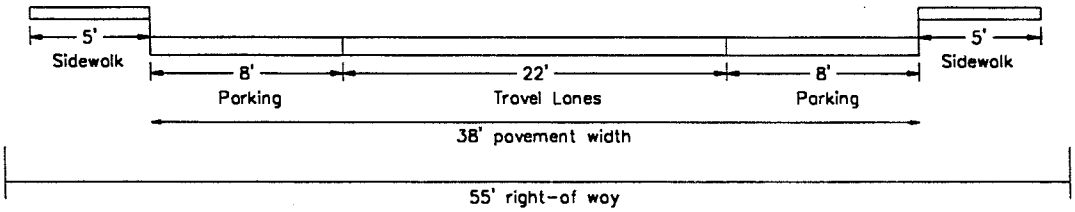


Figure 7-2
Collector Street Standard Cross-Section

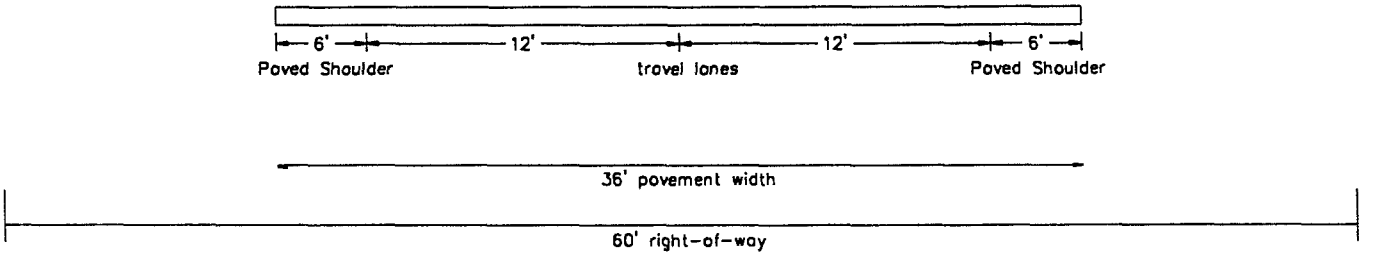
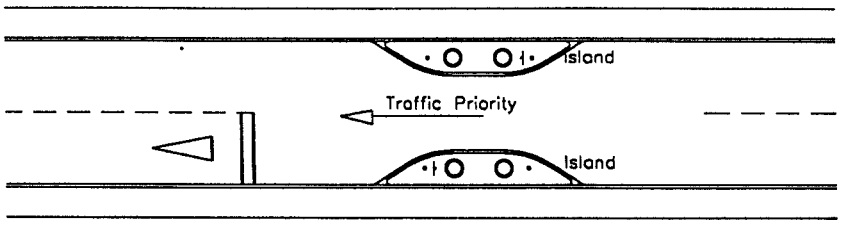
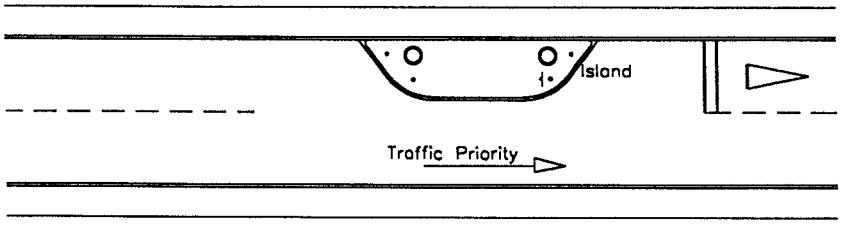


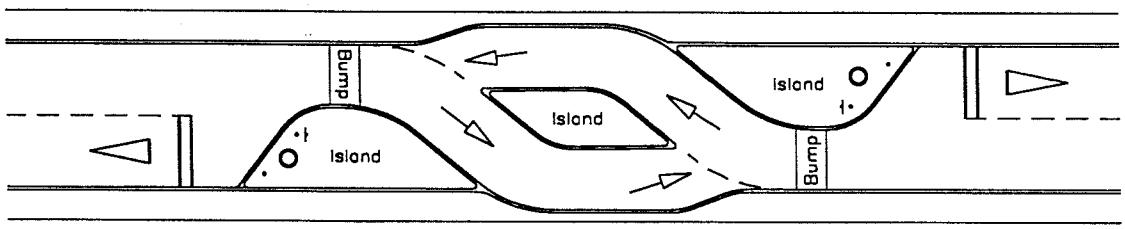
Figure 7-3
Rural Arterial
Street Standard



Standard Pinch Point



Single Side Build-Out



Humped Chicane

NOTE: Pinch-point island areas to be paved with asphalt

- Plastic Hazard Bollard
- Priority Control Signs (posts and lighting units)
- Concrete Planter Tubs

Figure 7-4

Example Traffic Calming Measures

Local Street Network

The purpose of the Local Street Network Plan is to identify future right-of-way that the City of Aurora will need in order to have and maintain, as much as possible, a balanced street network in accordance with the Oregon Transportation Planning Rule. The main body of the existing grid system stretches north to south approximately 8 blocks from First Street to Ottaway Road, but is only 1 to 3 blocks wide east to west from Hwy 99E to Liberty. This system is well connected and predominantly residential. Commercial uses lie mostly along Hwy 99E between 1st Street and 3rd Street. Major destinations within the Urban Growth Area (UGA) include the commercial/historical area at the north end of the grid, the City Park at the south end, and the industrial area located on the west side of Hwy 99E along with the Post Office. The Kasel Court and Albers Way neighborhoods are located in the northwest portion of the UGA off of Airport Road (major arterial). This area is separated from the main grid by the Southern Pacific Railroad and Mill Creek. It's only connection to the existing grid is by Ehlen Road over the Mill Creek bridge.

Extension of the grid network within the City of Aurora and the UGA is constrained by the presence of the major roadways: Hwy 99E, Ehlen Road, and Airport Road. These arterial roads require limiting the number of accesses, which will minimize the number of through streets in the future grid system. The grid system expansion is also constrained due to significant natural topographic barriers such as a floodway and drainage ravine. Only expansion of the grid in the southern portion of the UGA is relatively unimpeded.

A conceptual map showing future extensions and construction of the local street network has been developed. Proposed rights-of-way for the City of Aurora have been placed along current parcel boundaries as much as possible to facilitate dedication as development occurs. Existing parcels have been traversed (where necessary) in a logical manner that is conducive to future development (almost always at 90-degree angles). The network grids have been laid out in sizes ranging from 350 feet to 600 feet (larger in industrial/commercial areas). The grid size varies to suit existing structures and property line locations. In some cases, such as for Main Street south of Ottaway Road and Walnut Street south, the extensions of have been offset to avoid existing development. Roadway layout within the grids has not been designated. The average lot size for future residential developments is likely to be much smaller than in the past. To access all lots within proposed developments, it is likely that an access road(s) will be needed within the proposed grids. Layout of internal roads should remain flexible and be performed by local developers to suit market and site constraints. However, suitable pedestrian accessways to all sides of the grid are required to the maximum extent possible.

Access to main arterials has been limited to only a few new proposed locations. If L.I.D. or Payback Agreements cannot be instituted, it may be possible to grant temporary conditional access onto main arterials for the development of certain parcels until the planned connections to the grid are constructed. That situation could arise for the area south of Filbert Street and Walnut Street. Proposed rights-of-way have been extended to the UGA boundary in several locations (Ottaway Road west and the southern industrial and residential zoned areas) to accommodate future extension. They are also shown along the boundary where the future roads are to be constructed anticipating that half-width right-of-ways will be dedicated as those parcels are developed.

Future expansion of the Urban Growth Area boundary has been accommodated in several ways. The Pudding River presents a major obstacle for grid extension to the east. As a result, no extension or improvements are proposed easterly between Park Avenue and Hwy 99E to the north. Mill Creek and the Southern Pacific Railroad along the west and north side of Hwy 99E will be significant obstacles

affecting any expansion in those directions. The 2nd Street and 3rd Street rights-of-way already extend up to the railroad giving the capability to provide connections to the existing grid especially to the business district. The Ottaway Road right-of-way will be to the west to provide an east-west connection toward the post office and the City Park. Future extension west can easily be accommodated from the proposed loop road within the Industrial zone that abuts the railroad/UGA boundary.

. Figure 7-5 depicts the local street network.

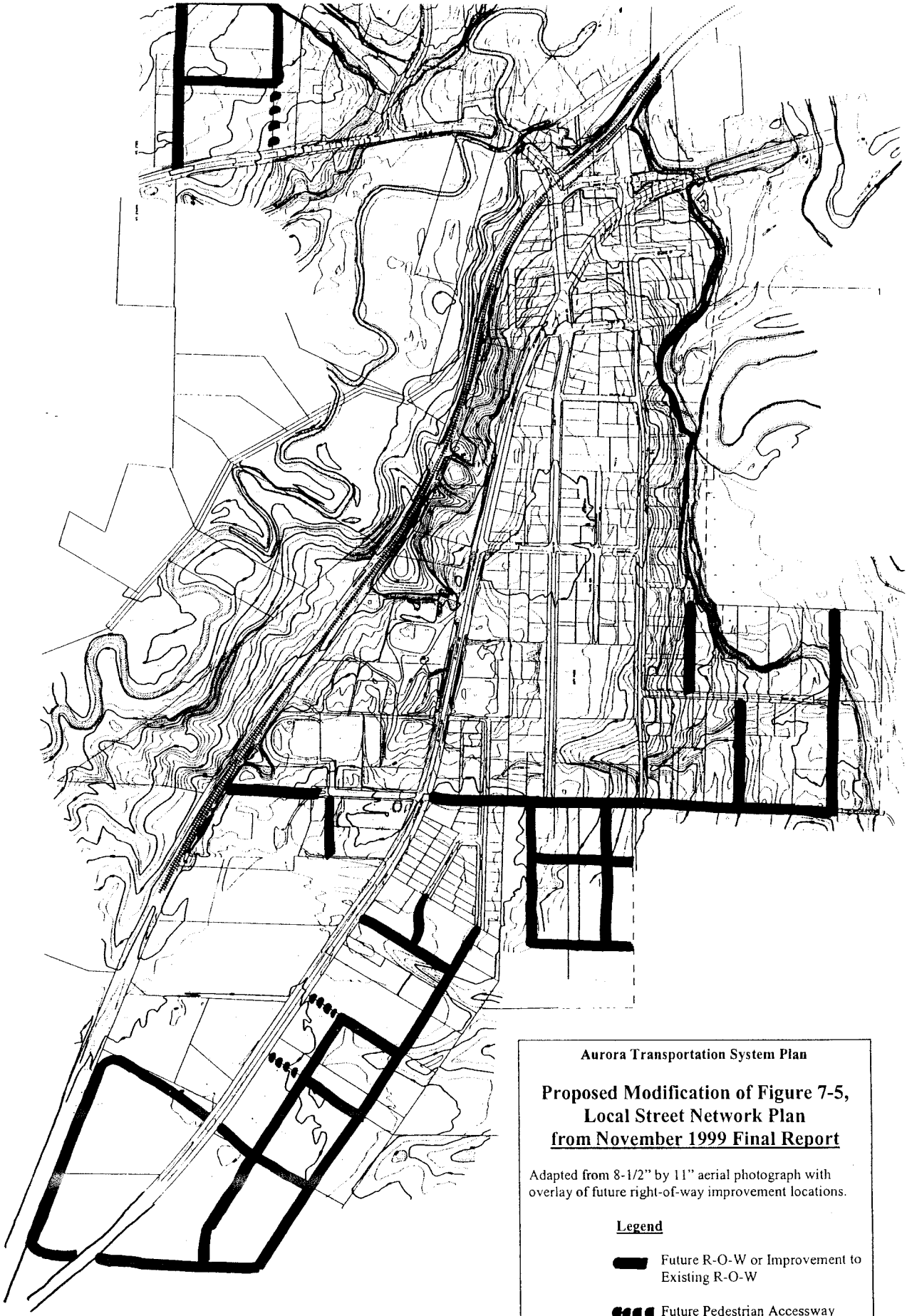
Access Management

Access management is the process in which access to land development is balanced with preserving traffic flow on the transportation system. A hierarchy of standards should be developed depending on the functional classification of roadway. Along arterials, the standard should be more strict allowing less access to preserve the traffic flow capacity of the roadway. In contrast, the local streets would have less strict access spacing standards with a priority given to land development access. Collector streets would have a standard somewhere in-between the arterial and local street standards.

Along Highway 99E, the 1999 *OHP* defines the access spacing standard between 275 and 475 depending on the speed limit. The access spacing standards are shown in Table 7-2.

Table 7-2
Access Spacing Standard

Functional Classification	Posted Speed Range	Minimum Spacing between Driveways and/or Streets
Highway 99E	30 to 40 mph	275-475
Arterial	25-35 mph	150 feet
Collector	25 mph	75 feet
Local	25 mph	50 feet



Aurora Transportation System Plan

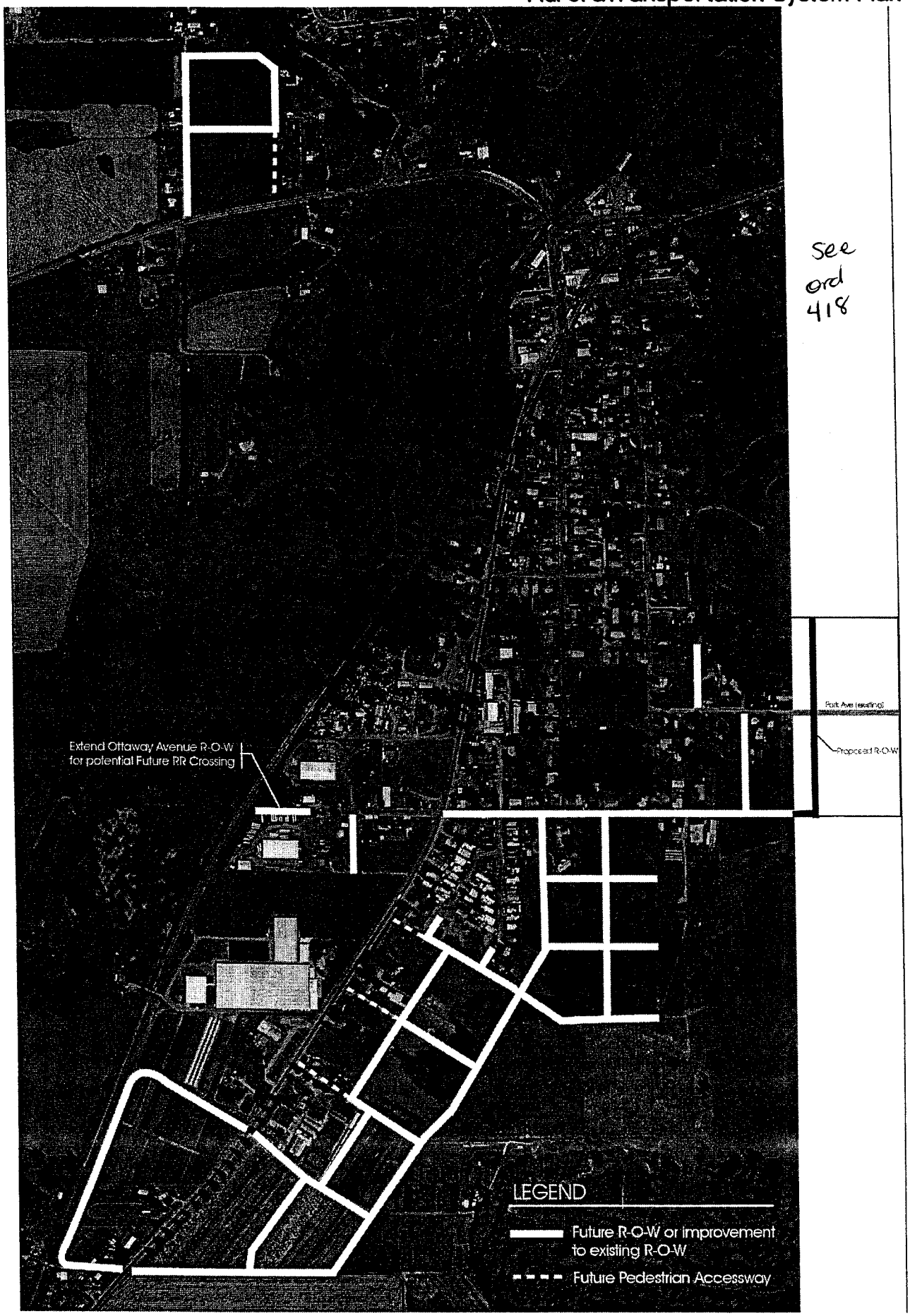
Proposed Modification of Figure 7-5, Local Street Network Plan from November 1999 Final Report

Adapted from 8-1/2" by 11" aerial photograph with overlay of future right-of-way improvement locations.

Legend

- Future R-O-W or Improvement to Existing R-O-W
- Future Pedestrian Accessway

Westlake Consultants, Inc. September 27, 2001



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(No Scale)

Parcel Boundaries and Right-of-Way
As Shown are Approximate Only

Figure 7-5
Local Street Network Plan

PUBLIC TRANSPORTATION PLAN

Transportation Planning Rule (TPR) Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (c) A public transportation plan which:

(A) Describes public transportation services for the transportation disadvantaged and identifies service inadequacies.

(B) Describes intercity bus and passenger rail service and identifies the location of terminals.

(C) For areas within an urban growth boundary which have public transit service, identifies existing and planned transit trunk routes, exclusive transit ways, terminals and major transfer stations, major transit stops, and park-and-ride stations. Designation of stop or station locations may allow for minor adjustments in the location of stops to provide for efficient transit or traffic operation or to provide convenient pedestrian access to adjacent or nearby uses.

(D) For areas within an urban area containing a population of greater than 25,000 persons, not currently served by transit, evaluates the feasibility of developing a public transit system at build out. Where a transit system is determined to be feasible, the plan shall meet the requirements of subsection 2(c)(C) of this section.

The City of Aurora has very limited transit service. There is some local interest to expand this service based on input from the public opinion survey. To expand transit service into the City of Aurora in the future, Aurora should participate in the formation of a public transit brokerage system. This is likely one of the most efficient ways to expand transit service in Aurora. The Marion and Polk Counties Special Transportation Advisory Committee (STAC) in conjunction with the Mid-Willamette Valley Council of Governments is currently working on implementing this concept.

The characteristic of the public transit brokerage system involves a single point of contact for those requiring transportation services. There are currently over 60 service providers and numerous agencies funding various aspects of those services. Many times these services are duplicated. From the single point of contact, coordination of service and payment from the numerous funding sources would be made. The brokerage system would allow all public and private, profit and non-profit, transportation providers to compete for an opportunity to provide service through one point of contact.

PEDESTRIAN SYSTEM

Transportation Planning Rule (TPR) Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (d) A bicycle and pedestrian plan for a network of bicycle and pedestrian routes throughout the planning area. The network and list of facility improvements shall be consistent with the requirements of ORS 366.514.

OAS 660-12-045 Implementation of the Transportation System Plan

(6) In developing a bicycle and pedestrian circulation plan as required by 660-12-020(2)(d), local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas. Appropriate improvements should provide for more direct, convenient and safer bicycle or pedestrian travel within and between residential areas and neighborhood activity centers (i.e. schools, shopping, transit stops). Specific measures include, for example, constructing walkways between cul-de-sacs and adjacent roads, providing walkways between buildings, and providing direct access between adjacent uses.

The City of Aurora Pedestrian Plan was developed to enhance the pedestrian system to encourage more residents to walk when making short trips within the city and to enhance business within Aurora. For a functional pedestrian system, connectivity between activity centers such as the downtown, city hall, and residential areas is important. The pedestrian plan strives to connect these activity centers and provide safe facilities for its users.

Because of the limited size of Aurora, it does not have the resources to retrofit every city street with sidewalks. Instead, local connectivity between activity centers and major north-south and east-west walking routes were used to develop the pedestrian plan. Figure 7-6 shows the pedestrian plan.

The sidewalk improvements are prioritized as high, medium, and low priorities. The high priority projects are envisioned to be constructed within 5 years. The medium priority projects would be targeted to be constructed between 5 and 10 years. The low priority projects are targeted to be constructed between 10 and 20 years.

The bicycle plan is depicted in Figure 7-7. There are three planned bicycle facilities. The first facility is a multi-use path along the east side of Highway 99E from the northern city limits to the southern city limits. The second and third facilities are shoulder bikeways and would require widening of the shoulders to 6 feet. The shoulder bikeway on Ehlen Road is planned to be constructed by Marion County in 2000 with the Ehlen Road/Liberty Street/Highway 99E realignment project. The third and final bicycle facility is on Airport Road and would require both widening and paving 6-foot shoulders along the entire length of Airport Road from Ehlen Road to the northern city limits.

AIR, RAIL, WATER AND PIPELINE PLAN

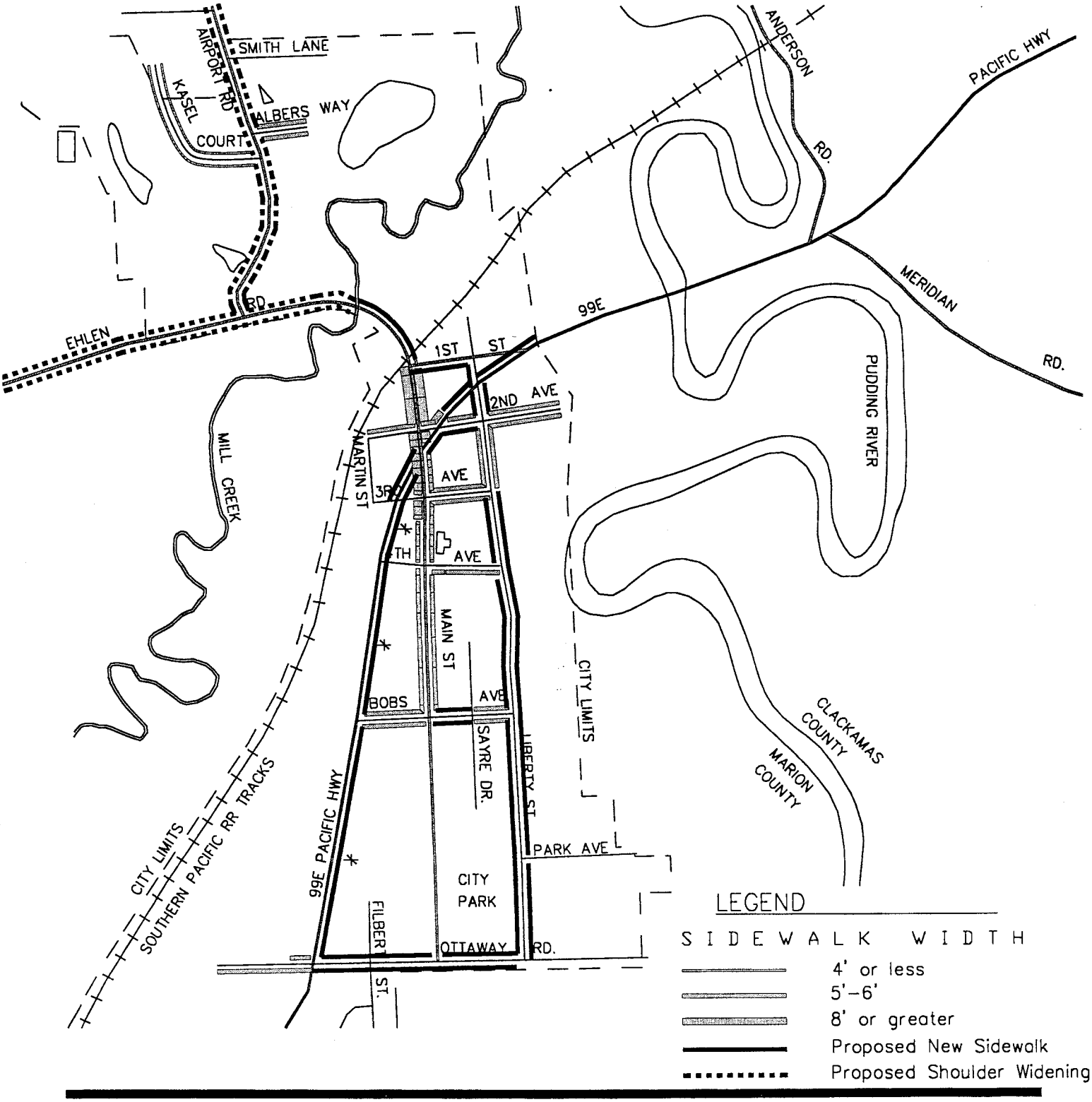
Transportation Planning Rule (TPR) Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (e) An air, rail, water and pipeline transportation plan which identifies where public use airports, mainline and branchline railroads and railroad facilities, port facilities, and major regional pipelines and terminals are located or planned within the planning area. For airports, the planning are shall include all areas within airport imaginary surfaces and other areas covered by state or federal regulations.

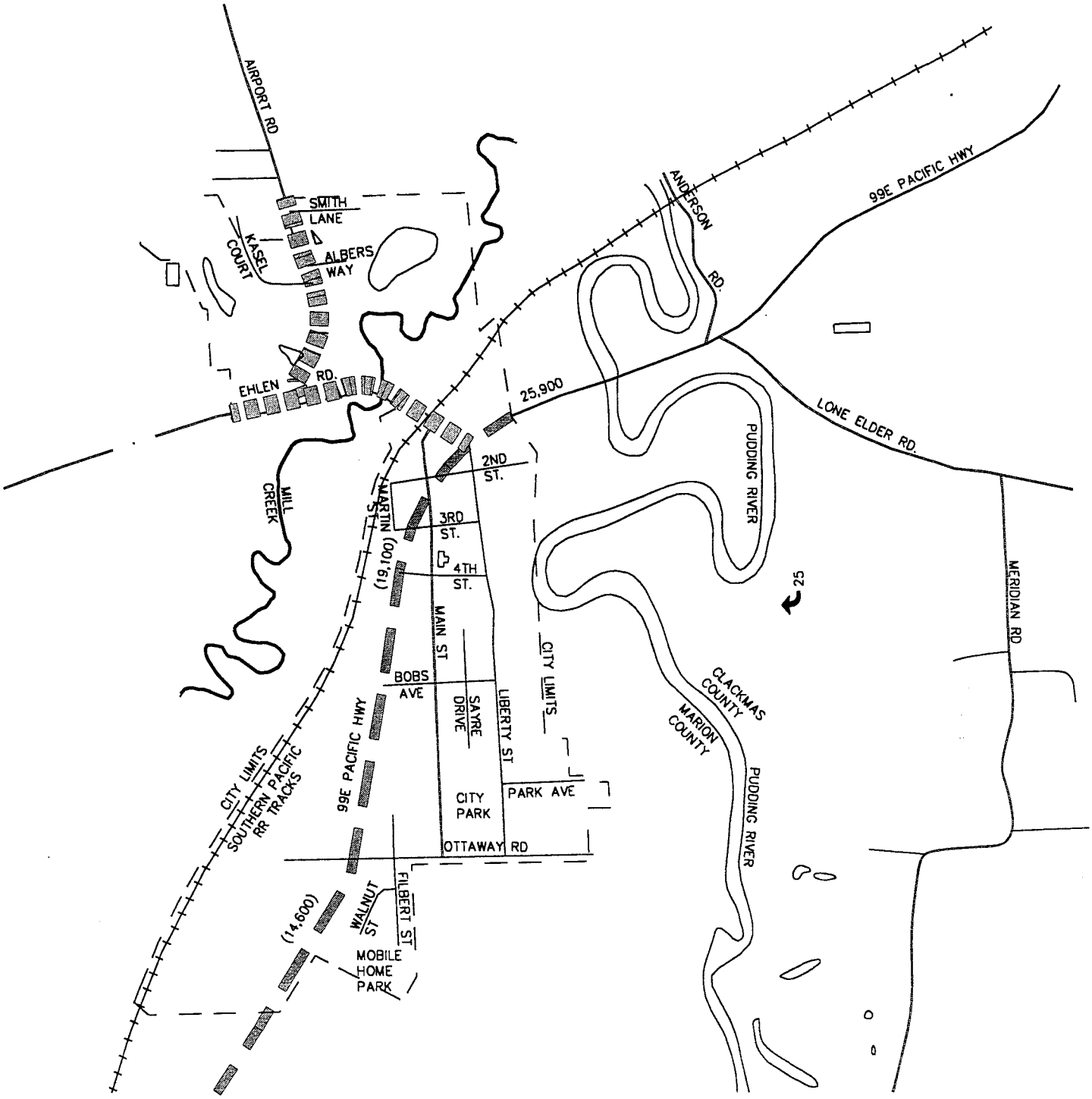
Air Service

The Aurora Airport is approximately one-half mile northwest of the City of Aurora. A revised master plan was recently completed. The improvements identified in the master plan basically called for upgrading the facility to better serve existing patrons.



* This facility is a multi-use pathway seperated from the roadway.

FIGURE 7-6
SIDEWALK IMPROVEMENT PLAN
See Ord. 418



6' SHOULDER BIKEWAY

12' MULTI-USE PATH

FIGURE 7-7
BICYCLE PLAN
See Ord. 418

The noise the Aurora Airport generates has always been a contentious situation between the airport users and the citizens of Aurora. City officials have been involved in the planning process in regards to airport operations and impacts but remain concerned with any increased use of the airport due to its significant noise impact to Aurora residents.

Rail Service

As previously identified, there is one rail line through Aurora. The Southern Pacific Railroad owns and operates this rail line. Approximately 16 trains per day use these tracks. There are no known plans to significantly increase this volume of train traffic in the foreseeable future.

Only one railroad crossing exists within the City of Aurora. It is located on Ehlen Road just north of 1st Street. This railroad crossing is within the Ehlen Road/Liberty Street/1st Street/Liberty Street/Highway 99E realignment project and is likely to be enhanced with better signage and striping next year when the project is constructed.

Water Transportation Service

There are no water transportation services within the planning area of the City of Aurora.

Pipeline Service

There are no major jurisdictional gas pipelines within the planning area of the City of Aurora. However, there is a 24-inch natural gas pipeline proposed by Northwest Natural that may fall within the City of Aurora vicinity. This proposed pipeline is just entering the permitting process and the final alignment has not been established. Local municipality participation and approval criteria will be used by the Oregon Energy Facility Siting Council prior to finalization. This proposed line would connect to an interstate pipeline to the north near Wilsonville which is under federal jurisdiction.

TRANSPORTATION SYSTEM AND DEMAND MANAGEMENT ELEMENT

Transportation Planning Rule (TPR) Requirements

OAR 660-12-020 Elements of Transportation System Plans

(2) (f) For areas within an urban area containing a population greater than 25,000 persons a plan for Transportation system management and demand management.

(g) A parking plan in MPO areas as provided in 660-12-045(5)(c).

The intent of the transportation demand management (TDM) element is to reduce the peak travel demand from the home-to-work and return trips. TDM measures help reduce the need for new or wider roadways. Techniques of TDM that could be implemented in Aurora include alternative work schedules,

ridesharing, pedestrian/bicycle facilities, and telecommuting. These TDM measures are described below and should be encouraged.

Alternative Work Schedules

Alternative work schedules that allow employees to commute during off-peak hours should be encouraged with larger employers. Since Aurora is relatively small with no major employer, this may only be implemented in a limited manner. This measure could also be implemented with large employers outside of Aurora employing Aurora residents. However, this would likely require coordination or partnership with outside employers and would take effort on the city's part to initiate and work out the details of such a program.

Ridesharing

Ridesharing programs work better with larger employers. These employers can establish carpool and vanpool programs with a ride-matching service. Larger employers can encourage ridesharing by subsidizing ridesharing, establishing preferential parking and drop-off sites, and through other promotional incentives. Unfortunately, Aurora does not currently have large employers likely implement such a program. However, at such a time a large employer does locate within Aurora, ridesharing should be encouraged as a TDM measure.

Pedestrian Facilities

The pedestrian and bicycle plan is expected to encourage more walking within the City of Aurora.

Telecommuting

Telecommuting is an effective measure in reducing travel demand. Certain industries are more conducive to telecommuting than others. For example, fairly independent workers in industries with little coordination with others are better candidates for telecommuting than industries that rely on working together. Also, the success of telecommuting is highly dependent on each individual's work ethic.

CHAPTER 8
FINANCING PLAN

TRANSPORTATION IMPROVEMENT REVENUE NEEDS

As part of the requirement of the Transportation Planning Rule (TPR) for TSPs, a financing plan for the recommended improvements was developed. The total cost of transportation projects proposed under this TSP is as follows:

- Alternative 1 $386,000
- Alternative 2 $106,000
- Alternative 3 $236,000
- Alternative 4 $174,000
- Alternative 5 $265,000

The remainder of this chapter is provides an overview of the City of Aurora's revenue outlook in relation to transportation and alternative funding and financing sources to implement the proposed transportation projects identified in the TSP.

TRANSPORTATION REVENUE OUTLOOK

Currently, the City of Aurora does not have a capital improvement program for transportation. Its maintenance budget for streets is minimal and no revenue is available for streets. Aurora is currently developing a sewer system and all available city funds are being utilized to make those necessary improvements. This makes Aurora completely dependent on outside sources of funding for transportation projects. Likely sources are the Oregon Department of Transportation (ODOT) and Marion County. However, these agencies have so many competing demands that funding opportunities may be limited.

REVENUE SOURCES AND FINANCING OPTIONS

Several possible funding sources exist to implement the recommended transportation improvements. The following pages describe the funding sources that may be available.

Local Sources

The following options are available on the local level to raise funds for transportation improvements:

Local Option Gasoline Tax

Revenues raised from a local option gasoline tax could be used by the City to fund recommended transportation improvements. However, with limited sales of gasoline within the city limits, this source is not likely to generate any significant revenue for Aurora. Also, with the potential discrepancy between gasoline sold in Aurora and neighboring jurisdictions may encourage motorists to seek less expensive options outside of Aurora.

Property Taxes

Local property taxes can be used to fund transportation system improvements. A specific allocation of property taxes to transportation improvements could be identified or set at a fixed and predictable level to provide a longer-term stable and predictable source of revenue. This would be important in implementing larger, longer-term projects with a high capital cost. Voter approval is necessary for the use of property taxes to fund roadway improvements and the uncertainty of this approval affects the attractiveness of this revenue choice. Another major disadvantage of using property taxes to support transportation improvements includes the inequity of this tax when compared with the users of the system (a user tax such as the tax on gasoline is more equitable in that persons who drive and use the street system pay for it rather than persons who own property). Additionally, the use of property taxes to fund transportation improvements would be restricted by the limitations of Measure 5.

Debt Funding

The City could issue municipal bonds to finance improvements. This approach would spread the cost of improvements over the life of the bonds and lower the annual expenses during construction years. If revenue bonds are issued, voter approval might not be necessary, but an identified revenue source (i.e., property taxes) would need to be identified to satisfy the bond underwriter. General obligation bonds would require voter approval. Both bonding approaches would be limited by the restrictions of Measure 5 and the bonding capacity of the local agencies.

System Development Charges

Oregon law enables communities to fund growth-related transportation improvements by imposing system development charges. These charges apply to newly developed property and can be used to recover the costs of past or future roadway improvement projects necessitated by growth. They may not be used to fund transportation improvements to serve existing residents. Therefore, while it is relatively easy to estimate the system development charges which would be needed to build improvements associated with growth, these charges will not be sufficient to meet all of the infrastructure needs identified in this plan.

System development charges (SDCs) are considered by many to be an equitable method of funding as they provide for many of the improvements needed because of growth in the community. On the other hand, growth in non-local traffic or traffic attributable to existing residents may also fuel the need for improvements which the system development charges are used to fund. Revenue from SDCs is generally not stable or predictable over time as it is received only when development occurs. During times of economic downturn, this revenue source may taper off entirely. This makes it difficult to rely on this source of funds for larger, multi-phased or multi-year projects.

It is generally advisable to use SDCs to finance those transportation improvements that are tied to local growth needs and, if the anticipated growth does not occur when expected or at all, both the improvement costs and the development charge revenue will not be needed.

Local Improvement Districts

Local improvement districts, known as LIDs, could be formed to finance public transportation improvements. LIDs may be formed by either the city or property owners. Their use and benefit are usually restricted to a specific area. The cost of a project with an LID in place is distributed to each property owner according to the benefit that property receives. With transportation improvements, that benefit may be measured by trips generated by each property. Or, in the example of a sidewalk improvement, the cost could be equitably divided by lineal feet of sidewalk along property frontages. The cost distributed becomes an assessment or lien against the property. It can be paid in cash or through assessment financing.

Non-Local Funding Sources

State Gasoline Tax

Gas tax revenues received from the state are used by all counties and cities to fund road construction and maintenance. The revenue share to cities is divided through an allocation formula related to population. The state gas tax received by Carlton will not sufficiently fund the improvements identified in the TSP and is likely to only cover maintenance needs.

Grants and Loans

Most grant and loan programs available through the state are related to economic development and not specifically for construction of new streets. Programs such as the Oregon Special Public Works Fund provides grant and load assistance for construction of public infrastructure that support commercial and industrial development that results in permanent job creation or retention. Another grant program is the Immediate Opportunity Fund (IOP). Again, this grant is tied to local and regional economic development efforts.

ODOT Funding Options

The State of Oregon provides funding for all highway-related transportation projects through the Statewide Transportation Improvement Program (STIP) administered by ODOT. The STIP outlines the schedule for ODOT projects throughout the state. Projects within the STIP are identified for a four-year funding cycle. In developing this funding program, ODOT must verify that the identified projects comply with the OHP, ODOT modal plans, corridor plans, local comprehensive plans, and TEA-21 planning requirements. The STIP must fulfill TEA-21 planning requirements. Specific transportation projects are prioritized based on a review of the TEA-21 planning requirements and the different state plans. ODOT consults with local jurisdictions before highway related projects are added to the STIP. The Aurora Highway 99E/Main Street realignment improvement project will be considered for insertion to the STIP.

ODOT has the option of making some highway improvements as part of their ongoing maintenance program. Projects such as new sidewalks along Highway 99E may be possible through ODOT's maintenance program.