



REPORT
TRANSPORTATION SYSTEM PLAN
CITY OF MT. VERNON

June 1997

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The contents of this document do not necessarily reflect the views or policies of the State of Oregon.

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CHAPTER 1: INTRODUCTION

The Mt. Vernon Transportation System Plan (TSP) guides the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. This TSP constitutes the transportation element of the city's Comprehensive Plan and satisfies the requirements of the Oregon Transportation Planning Rule (TPR).

PLANNING AREA

The Mt. Vernon TSP planning area includes the entire area inside the city's urban growth boundary (UGB). The planning area is shown on Figure 1-1. Roadways included in the TSP fall under several jurisdictions: Mt. Vernon, Grant County, and the State of Oregon.

Mt. Vernon is located in the central portion of Grant County, 8 miles west of the City of John Day. Mt. Vernon's population in 1996 reached 645 residents, which is about 8.0 percent of the county's population.

Highway 26, classified as a state highway, travels from west to east through the downtown area along West Main Street, where it joins Highway 395 from the north. Together, these highways overlap one another as part of East Main Street and proceed east towards the City of John Day. Two county roads enter the urban area from the south; Harper Creek Road and Ingle Creek Road. Once inside the UGB, these roads become local city streets known as West Riverside Street and East Riverside Street, respectively.

Mt. Vernon has a sporadic street system, with a semi-grid type pattern in the northwest quadrant of the city.

A land use zoning map of the Mt. Vernon TSP planning area is shown on Figure 1-2. This map was taken from the City of Mt. Vernon Comprehensive Plan.

The zoning in Mt. Vernon includes commercial, industrial, residential, and public uses. The commercial uses focus around Highway 26 (Main Street) from the west city limits almost to the east city limits. The residential uses are broken down into general residential, which lies within the existing city limits, and suburban residential, which covers all of the residential land outside of the city limits and within the UGB. Most of the industrial land lies on the east side of the city, south of Highway 26. Much of this land is outside of the current city limits but within the UGB. Public uses include the schools, parks, and sewage lagoons.

PLANNING PROCESS

The Mt. Vernon TSP was prepared as part of an overall project in Grant County that involved preparing individual plans for Grant County and the six communities of: Dayville, Long Creek, Monument, Mt. Vernon, Prairie City, and Seneca. Each plan was developed through a series of technical analyses combined with systematic input and review by the city, the Local Working Group, the TAC, ODOT, and the public. Key elements of the process include:

- Involving the Mt. Vernon community (Chapter 1)
- Defining goals and objectives (Chapter 2)
- Reviewing existing plans and transportation conditions (Chapters 3 and 4 and Appendix A)
- Developing population, employment and travel forecasts (Chapter 5)
- Developing and evaluating potential transportation system improvements (Chapter 6)

- Developing the TSP (Chapter 7)
- Developing a capital improvement program (Chapter 8)
- Developing Recommended Policies and Ordinances (Chapter 9)

Community Involvement

Community involvement was an important part of developing the Mt. Vernon TSP. Interaction with the community was achieved with several different techniques including, a local working group, a transportation advisory committee, stakeholder interviews, and newspaper articles.

Because the overall project involved seven different jurisdictions, a local working group was formed for each community. The local working group functioned as a citizen advisory committee, providing local knowledge, guidance to the consultant team, and review of work products. Two meetings were held during the plan development process. The first meeting was held to discuss transportation issues and concerns to serve as the basis for identifying and evaluating improvement alternatives for the community. The second meeting was held to review the draft TSP.

In addition to the local working groups, a Transportation Advisory Committee (TAC) was formed for the overall project. The TAC consisted of citizens and representatives from each city, Grant County and the Oregon Department of Transportation (ODOT). The purpose of the TAC meetings was to disseminate general information about the planning process and to share information about the needs in each community and the county. Three TAC meetings were held during the planning process.


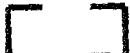
Goals and Objectives

Using input from the city, the TAC, and the community, a set of goals and objectives were defined for the Mt. Vernon TSP. These goals and objectives were used to make decisions about various potential improvement projects. They are described in Chapter 2.

Review and Inventory of Existing Plans, Policies, and Public Facilities

To begin the planning process, applicable Mt. Vernon and Grant County transportation and land use plans and policies were reviewed and an inventory of public facilities was conducted. The purpose of these efforts was to understand the history of transportation planning in the Mt. Vernon area, including the street system improvements planned and implemented in the past, and how the city is currently managing its ongoing development.

The inventory of existing facilities catalogs the current transportation system. The results of the inventory are described in Chapter 3, while Chapter 4 describes how the system operates. Appendix A summarizes the inventory of all streets in the Mt. Vernon planning area.

 CITY LIMITS
 URBAN GROWTH BOUNDARY

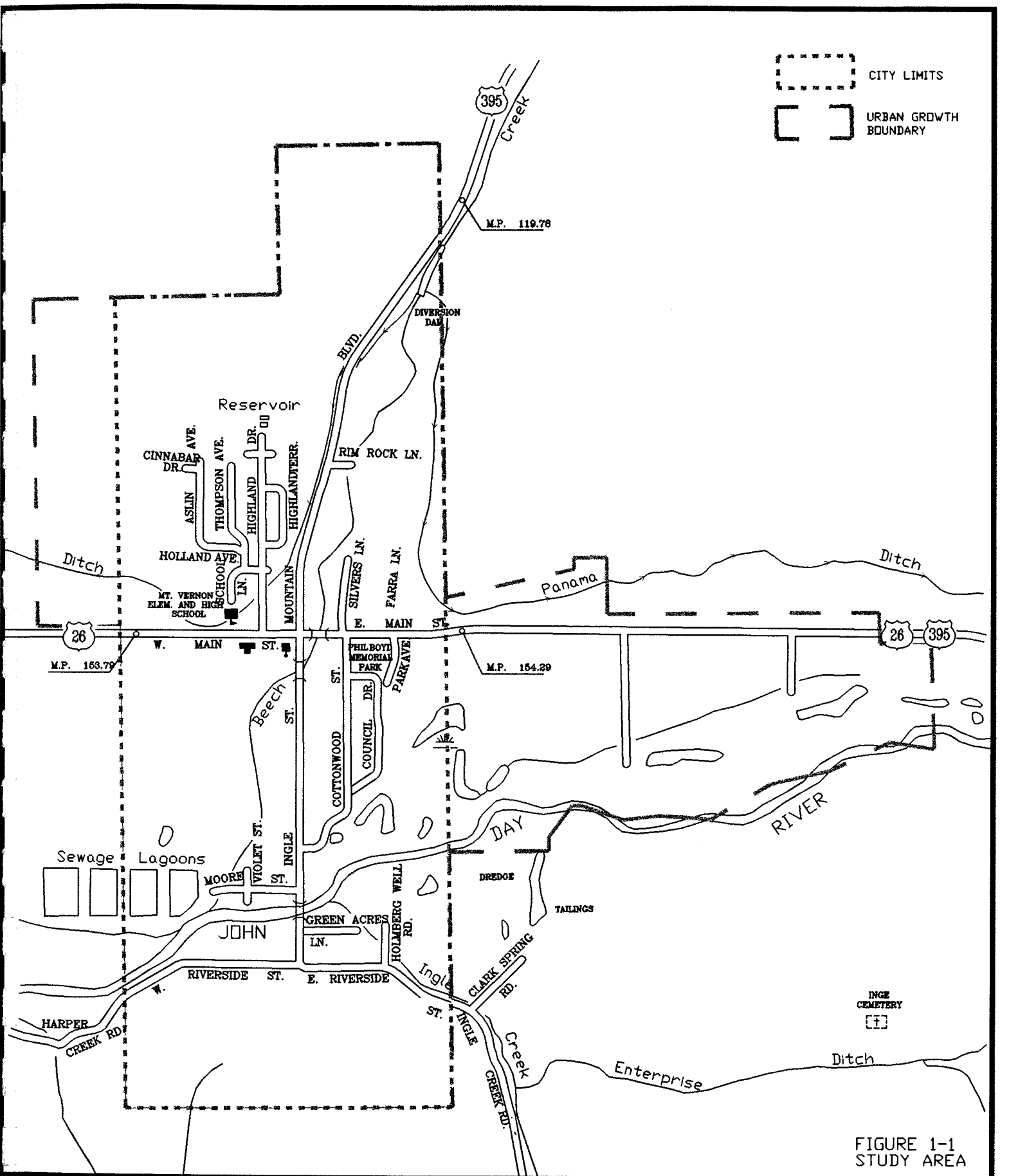
















FIGURE 1-1
STUDY AREA

- | | | | |
|---|---|---|-----------------|
|  | MAINLINE STATE HIGHWAY |  | PUBLIC BUILDING |
|  | STREET OPEN FOR TRAVEL |  | COURT HOUSE |
|  | INTERSTATE ROUTE |  | CITY HALL |
|  | U.S. ROUTE |  | ARMORY |
|  | STATE ROUTE |  | POST OFFICE |
|  | TERMINATION OF FA SYSTEM |  | SCHOOL |
|  | STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED |  | LIBRARY |

GRANT COUNTY
CITY OF MT. VERNON

0 500 1000 FEET



C=COMMERCIAL
 R=RESIDENTIAL
 I=INDUSTRIAL
 P=PUBLIC
 SR=SUBURBAN RESIDENTIAL

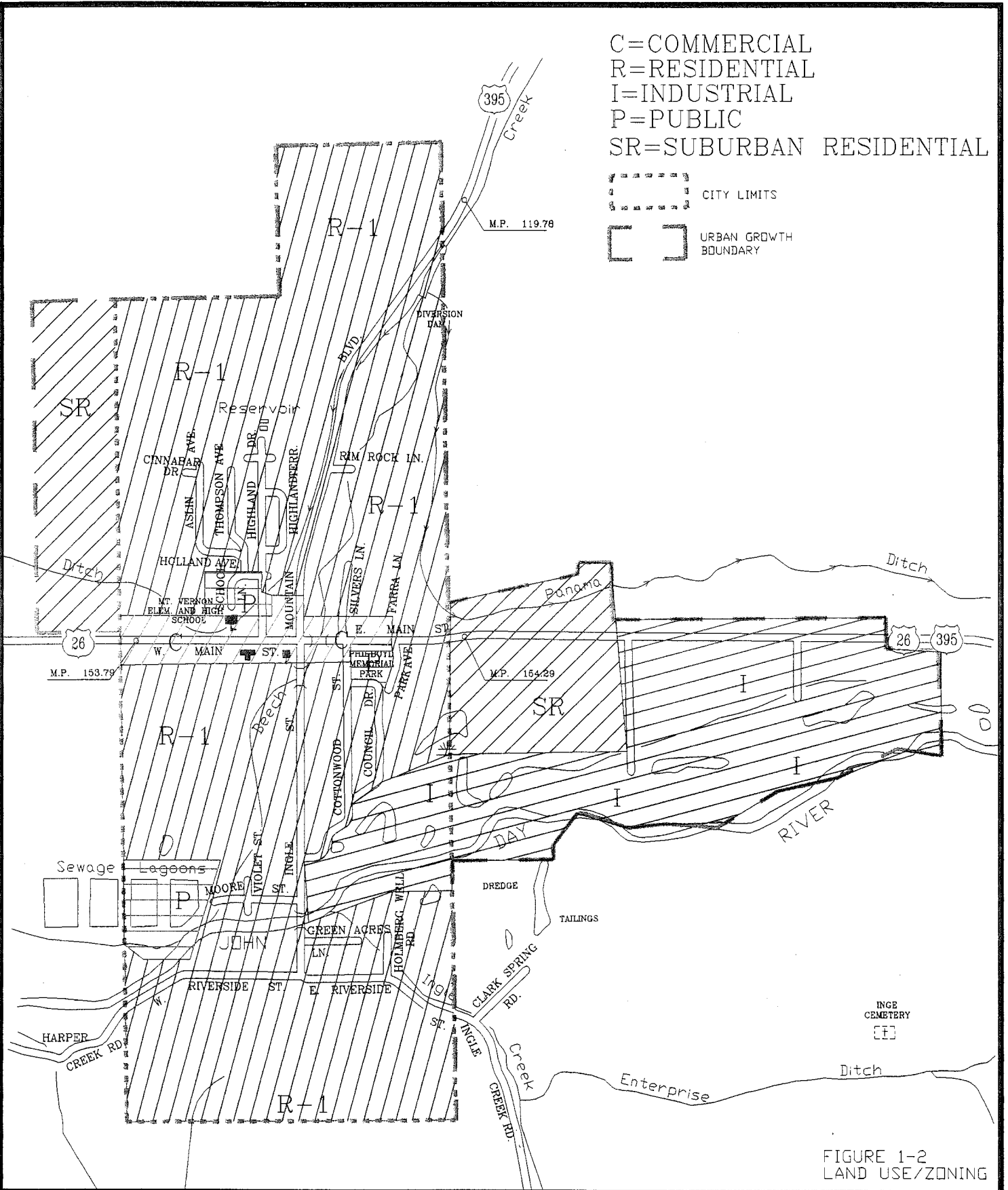
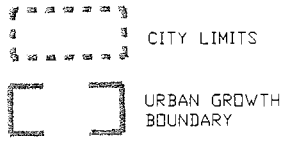


FIGURE 1-2
 LAND USE/ZONING

- MAINLINE STATE HIGHWAY
 - STREET OPEN FOR TRAVEL
 - INTERSTATE ROUTE
 - U.S. ROUTE
 - STATE ROUTE
 - TERMINATION OF FA SYSTEM
 - PUBLIC BUILDING
 - COURT HOUSE
 - CITY HALL
 - ARMORY
 - POST OFFICE
 - SCHOOL
 - LIBRARY
- ALL STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED

CITY OF MT. VERNON

0 500 1000 FEET



Future Transportation System Demands

The TPR requires the TSP to address a 20-year forecasting period. Future traffic volumes for the existing plus committed transportation systems were projected using ODOT's *Level 1 -- Trending Analysis* methodology. The overall travel demand forecasting process is described in Chapter 5.

Transportation System Potential Improvements

Once the travel forecasts were developed, it was possible to evaluate a series of potential transportation system improvements. The initial evaluation was the "No Build" option, which is the existing street system plus any currently committed street system improvements. Then, transportation demand management measures and potential transportation improvements were developed and analyzed as part of the transportation system analysis. These improvements were developed with the help of the local working group, and they attempt to address the concerns specified in the goals and objectives (Chapter 2). After evaluating the results of the potential improvements analysis, several transportation system improvements were selected. These recommended improvements are described in Chapter 6.

Transportation System Plan

The TSP addresses each mode of transportation and provides an overall implementation program. The street system plan was developed from the forecasting and potential improvements evaluation described above. The bicycle and pedestrian plans were developed based on current usage, land use patterns, and the requirements set forth by the TPR. The public transportation, air, waterborne, rail, and pipeline plans were developed based on discussions with the owners and operators of those facilities. Chapter 7 details the plan elements for each mode.

Funding Options

The City of Mt. Vernon will need to work with Grant County and ODOT to finance new transportation projects over the 20-year planning period. An overview of funding sources that might be available to the community is provided in Chapter 8. This synopsis includes current and potential revenue sources as well as debt financing options.

Recommended Policies and Ordinances

Suggested Comprehensive Plan policies and implementing zoning and subdivision ordinances are included in Chapter 9.

CHAPTER 2: GOALS AND OBJECTIVES

The purpose of the TSP is to provide a guide for Mt. Vernon to meet its transportation goals and objectives. The following goals and objectives were developed from information supplied by the Transportation Advisory Committee, the Local Working Group, city staff, and public response. Throughout the planning process, each element of the plan was evaluated against these parameters.

An overall goal was developed, then more specific goals and objectives were formulated. The goals and objectives are listed below. These goals and objectives are addressed in the following plan chapters.

OVERALL TRANSPORTATION GOAL: Develop a transportation system that enhances the livability of Mt. Vernon and accommodates growth and development through careful planning and management of existing and future transportation facilities.

GOAL 1: Preserve the function, capacity, level of service, and safety of the state highways.

Objectives:

- A. Develop access management standards.
- B. Develop alternative, parallel routes.
- C. Promote alternative modes of transportation.
- D. Promote transportation demand management programs.
- E. Promote transportation system management.
- F. Develop procedures to minimize impacts to and protect transportation facilities, corridors, or sites during the development review process.

GOAL 2: Improve and enhance safety and traffic circulation on the local street system.

Objectives:

- A. Develop an efficient street grid system for Mt. Vernon.
- B. Improve and maintain existing roadways to preserve the capacity, level of service, and safety of the existing transportation system.
- C. Examine the need for speed reduction in specific areas.
- D. Identify local problem spots and recommend solutions; e.g., the intersection of North Highway 395 and Highway 26.
- E. Ensure planning coordination between the City of Mt. Vernon, Grant County, the state, and the US Forest Service.

GOAL 3: Identify roadway system needs to accommodate developing or undeveloped areas without undermining the rural nature of the local community.

Objectives:

- A. Adopt policies and standards that address street connectivity, spacing, and access management.
- B. Integrate new arterials and collectors into the existing grid system.
- C. Improve access into and out of Mt. Vernon for goods and services.
- D. Improve access onto and off arterial roadways to encourage growth.

GOAL 4: Increase the use of alternative modes of transportation (walking, bicycling, and transit) through improved access, safety, and service.

Objectives:

- A. Provide sidewalks and safe crossings on urban arterial and collector streets.
- B. Provide shoulders on rural collector and arterial streets.
- C. Provide appropriate bikeways where high use occurs or may occur.
- D. Provide a safe and efficient system of multi-use paths through the urban area.
- E. Promote alternative modes and carpool programs through community awareness and education.
- F. Plan for future transit service expansion by sustaining funding to local transit efforts and seeking consistent state support.

CHAPTER 3: TRANSPORTATION SYSTEM INVENTORY

As part of the planning process, DEA conducted an inventory of the existing transportation system in Mt. Vernon. This inventory covered the street system as well as the pedestrian, bikeway, public transportation, rail, air, waterborne, and pipeline systems.

STREET SYSTEM

Transportation in the United States is dominated by cars and trucks. The mobility provided by the personal automobile has resulted in a great reliance on this form of transportation. Likewise, the ability of trucks to carry freight to nearly any destination has greatly increased their use. As a result, the basis of transportation in all American cities is the roadway system, and most transportation dollars are devoted to building, maintaining or planning roads to carry automobiles and trucks.

This trend is clearly seen in the existing Mt. Vernon transportation system, which consists almost entirely of roadway facilities for cars and trucks. The street system will most likely continue to be the basis of the transportation system for at least the 20-year planning period; however, encouraging the use of cars and trucks must be balanced against other factors. The increasing cost of constructing new roadway facilities, livability factors, the ability to accommodate other modes of transportation, and negative impacts on adjacent land uses should also be considered.

Street Layout

The street system is divided up into four quadrants by Highway 26, Highway 395, and Ingle Street. Travel between the northwest and northeast portions of the city is indirect with Main Street (Highway 26) as the only route.

Street connectivity on many of the local streets in the city is poor, especially in the northwest quadrant. Several streets either have dead ends or end with cul-de-sacs creating discontinuities. The composition of the local streets in this area may be due to the moderate grade created by the sloping hillsides.

Inventory

The existing street system inventory was conducted for all roadways within Mt. Vernon including state highways and county roads that lie within the planning area. 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 limits
- presence of curb and gutter
- general pavement conditions

Figure 3-1 shows the roadway functional classification and jurisdiction. Appendix A lists the complete inventory.

State Highways

Discussion of the Mt. Vernon street system must include all state highways that traverse the planning area. Although Mt. Vernon has no direct control over these highways, adjacent development as well as traffic patterns are heavily influenced by the highways. Mt. Vernon is served by US Highways 26 and 395. Highway 26 serves as the major east-west route through town with public, commercial, and residential development focused along the corridor inside the city limits. It is a two-lane facility with speed limits ranging from 55 mph outside the city limits to 30 mph within the city. Highway 395 intersects Highway 26 from the north. It is also a two-lane facility with a speed limit of 55 mph up to the midpoint between the city limits and its intersection with Highway 26, where the speed limit is reduced to 30 mph. Development is sparse along this stretch of highway until nearing Highway 26.

Oregon Highway Plan

The 1991 Oregon Highway Plan (OHP) classifies the state highway system into four levels of importance (LOI): Interstate, Statewide, Regional, and District. ODOT has established primary and secondary functions for each type of highway and objectives for managing the operations for each one.

Highways 26 and 395 through Mt. Vernon are classified as highways of statewide importance. According to the OHP, the primary function of a state highway is to “provide connections and links to larger urban areas, ports, and major recreation areas that are not directly served by interstate highways.” A secondary function is “to provide links and connections for intra-urban and intra-regional trips.” The overall emphasis is to provide safe and efficient high-speed through travel in rural areas, and high- to moderate-speed operations in urban or urbanizing areas. This means that design factors such as controlling access and providing passing lanes are of primary importance along both highways.

Recently, two Oregon highways in Grant County were included in the National Highway System (NHS). Highway 26 was included in the NHS because of its statewide importance. Highway 395 was added as a congressional high priority route in the NHS. This is a new national classification system to identify highways of significance.

Street Classification

The City of Mt. Vernon has no street classification system identified in its comprehensive plan. Therefore, a classification system was created at five levels: state highway/arterial streets, county major collectors, county minor collectors, city collector streets, and local city streets. These categories were created based on street functionality and jurisdiction.

State Highways/Arterial Streets

State highways often function as arterial streets, forming the primary roadway network within and through a region. They provide a continuous road system that distributes traffic between neighborhoods and districts. Generally, arterial streets are high capacity roadways that carry high traffic volumes with minimal localized activity. In smaller communities, such as Mt. Vernon, the state highways/arterial streets often serve both regional and local traffic demands.

LEGEND

- STATE HIGHWAY/ARTERIAL STREET
- COUNTY MAJOR COLLECTOR
- COUNTY MINOR COLLECTOR
- CITY COLLECTOR STREET
- CITY LOCAL STREET
- PRIVATE ROAD
- CITY LIMITS
- URBAN GROWTH BOUNDARY

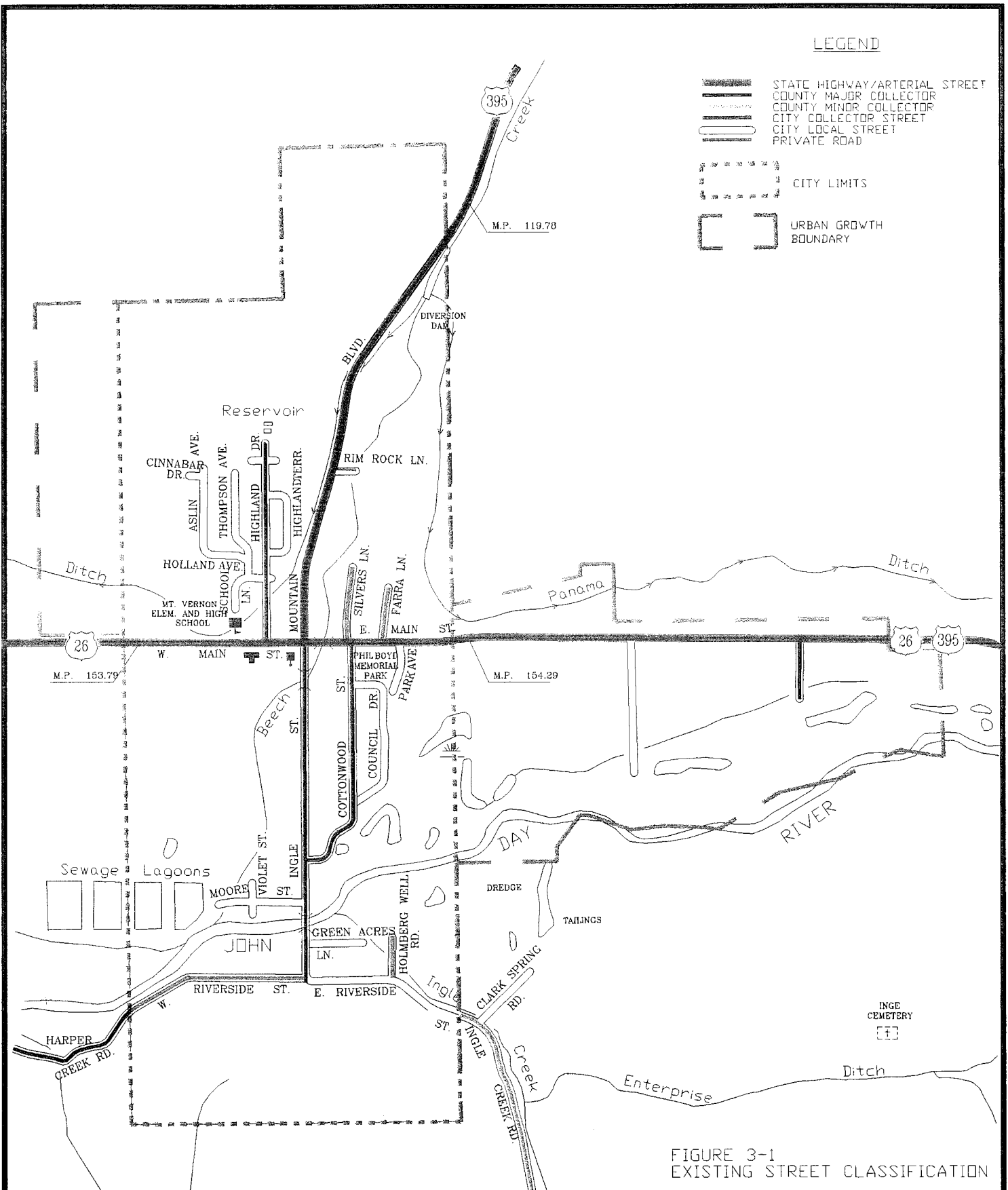


FIGURE 3-1
EXISTING STREET CLASSIFICATION

- | | | | |
|--|---|--|-----------------|
| | MAINLINE STATE HIGHWAY | | PUBLIC BUILDING |
| | STREET OPEN FOR TRAVEL | | COURT HOUSE |
| | INTERSTATE ROUTE | | CITY HALL |
| | U.S. ROUTE | | ARMORY |
| | STATE ROUTE | | POST OFFICE |
| | TERMINATION OF FA SYSTEM | | SCHOOL |
| | ALL STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED | | LIBRARY |

0 500 1000 FEET

CITY OF MT. VERNON



Highways 26 and 395 are arterial streets. In the downtown core of the city these two highways intersect with each other and Ingle Street creating a common four-way intersection that is STOP-controlled.

County Roads

The Grant County Road Department classifies all roadways under county jurisdiction into four categories; arterial streets, major collectors, minor collectors, and local streets. The classification of these roadways is based on the intended function and observed traffic volumes. County roads on an arterial level are primarily long distance roads because they are designed to connect regions, smaller communities, and highways in the county together. A secondary function would be to provide access to roads of a lesser classification. Arterial roadways are usually paved and may experience traffic flows of up to 500 vehicles per day. The primary function of a major collector is to tie US Forest Service roads, minor collectors, and local roads to nearby highways or arterial roadways. These roads also provide access to agricultural, forest, and recreational areas. Major collector roads are usually unpaved in the rural areas and partially to fully paved in the urban areas of the county with traffic volumes reaching up to 400 vehicles per day. County roads classified as minor collectors are shorter distance roads which branch off a highway, arterial or major collector and provide access to agricultural, forest and recreational areas, and possibly a few rural residential homes. Minor collectors are mostly unpaved with very little traffic. Local county roads are short distance roads which may serve as a short logging road or a driveway to one or a few homes. They are unpaved and carry very low traffic volumes as well.

Within the Mt. Vernon planning area limits, there are two county roads: Harper Creek Road (RD #79) and Ingle Creek Road (RD #48). Outside the city limits, Harper Creek Road is a paved county road classified as a major collector. The portion of Ingle Creek Road also outside the city limits is also county owned, but unpaved, and is classified as a minor collector. Inside the city limits these roads become East and West Riverside Streets, both of which are paved. West Riverside Street is privately owned road and is maintained by residents along that street. East Riverside Drive is under the jurisdiction of the city.

City Collector Streets

Three roadways have been designated as city collector streets: Ingle Street, Cottonwood Street, and Highland Drive. These roadways serve to connect local streets with higher class roadways such as Highway 26. Ingle Street also provides a link between Highway 26 and the two county roads.

Local City Streets

Local city streets are designed to carry the very low traffic volumes associated with the local uses which abut them. In Mt. Vernon there are seventeen local streets as displayed in Figure 3-1.

Privately Owned Streets

There are four privately owned streets in the city: Farra Lane, Silvers Lane, Rim Rock Lane, and West Riverside Street. The first three are graded and graveled roads. The last is paved.

PEDESTRIAN SYSTEM

The most basic transportation option is walking. Walking is the most popular form of exercise in the United States and can be performed by people of all ages and all income levels. However, it is not often considered as a means of travel. This is mainly because pedestrian facilities are generally an afterthought and not planned as an essential component of the transportation system.

An average trip length for a pedestrian is around 1/2 mile. The relatively small size of Mt. Vernon indicates that walking could be employed regularly to reach a variety of destinations in the area.

Currently, there are sidewalks located on both sides of Highway 26, beginning west of the elementary and high schools where the road widens and ending at the Highway 395 intersection. There are no sidewalks east of this intersection. To provide safety for students walking to school, sidewalks are located on the west side of Highland Avenue from the highway up to School Lane and on the south side of School Lane (Figure 3-2).

On the low volume local roadways, pedestrians and autos can both share the roadway without safety being a critical issue.

BIKEWAY SYSTEM

Like pedestrians, bicyclists are often overlooked when considering transportation facilities. Bicycles take up little space on the road or parked, do not contribute to air or noise pollution, and offer relatively higher speeds than walking. Because of the small size of Mt. Vernon, a cyclist can travel to any destination in town within a matter of minutes.

In a typical city, a short trip that would be taken by bicycle is around two miles. Judging from the size of Mt. Vernon, average bicycle trip lengths would be much shorter.

Mt. Vernon currently has no sanctioned bikeways. On low volume roadways, such as many of the local streets, bicyclists and autos can safely and easily share the roadway. On a higher volume roadway, such as Highway 395, safety for the bicyclists should be an important issue.

PUBLIC TRANSPORTATION

The City of Mt. Vernon has no local (city-only) public transportation services; however, paratransit and long distance services are provided by The People Mover based in John Day. They provide passenger services to senior citizens and the disabled and also serve the general public. Their equipment consists of one minivan, two 15-passenger vans, and one 26-passenger tour bus. All of these vehicles are equipped with facilities for the disabled.

The People Mover paratransit services include dial-a-ride services, van service to meal sites, and a Friday shopping run. The dial-a-ride service operates between 9:00 a.m. and 5:00 p.m. five days a week (Monday through Friday). The van service to meal sites operates on Monday and Wednesday. These services are available to the cities of Canyon City, John Day, Mt. Vernon, and Prairie City.

The only option available for out-of-county travel is also provided by the People Mover. The People Mover shuttle van operates three times a week (MWF) from Prairie City, providing service west to Bend. Stops include John Day, Mt. Vernon, Mitchell, Prineville, and Redmond. The shuttle travels westbound in the

LEGEND

- EXISTING SIDEWALK
- ⋯ CITY LIMITS
- ▭ URBAN GROWTH BOUNDARY

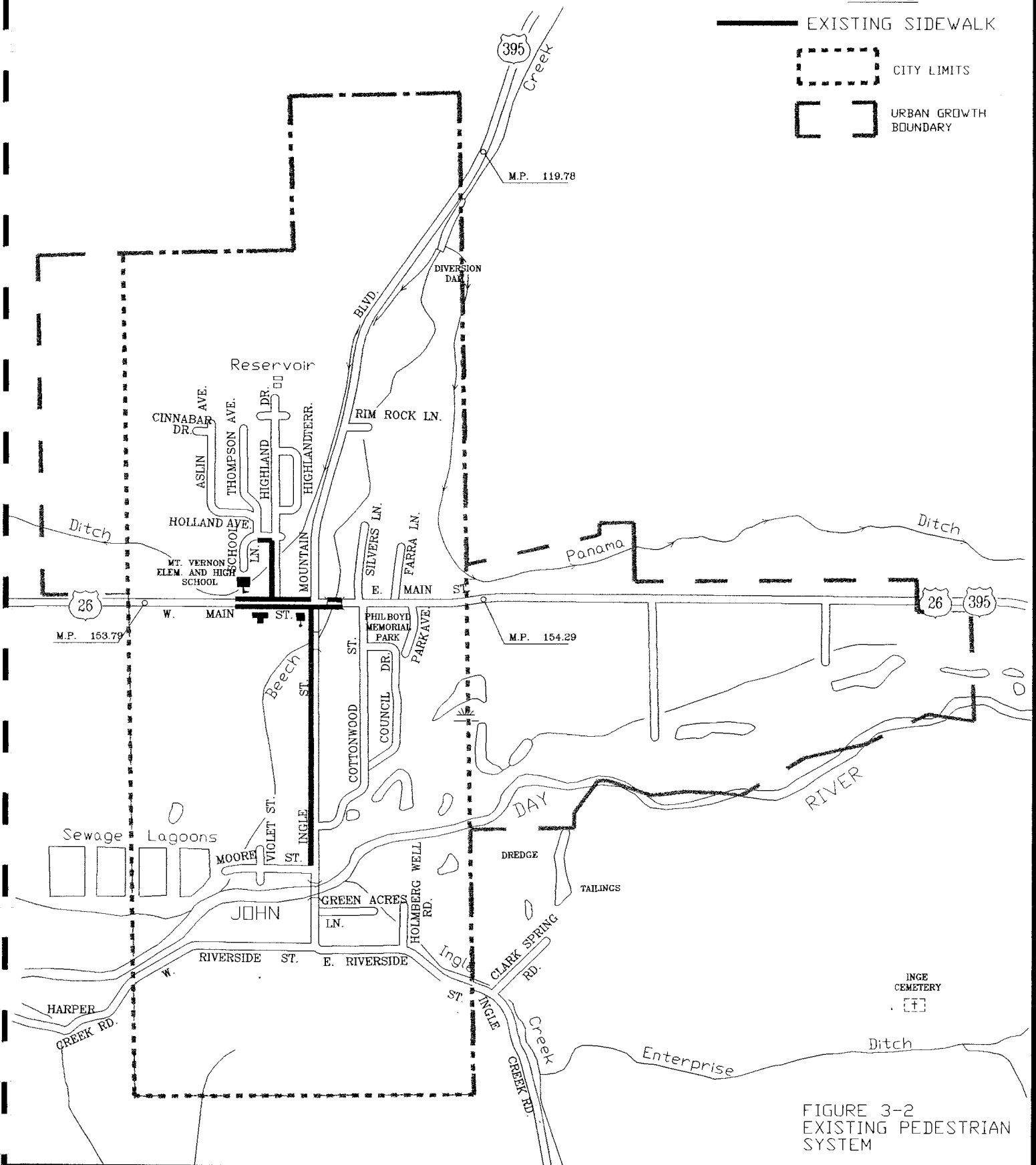


FIGURE 3-2
EXISTING PEDESTRIAN SYSTEM

- | | | | |
|---|--------------------------|---|-----------------|
| — | MAINLINE STATE HIGHWAY | ■ | PUBLIC BUILDING |
| — | STREET OPEN FOR TRAVEL | ■ | COURT HOUSE |
| — | INTERSTATE ROUTE | ■ | CITY HALL |
| — | U.S. ROUTE | ■ | ARMORY |
| — | STATE ROUTE | ■ | POST OFFICE |
| — | TERMINATION OF FA SYSTEM | ■ | SCHOOL |
| — | | ■ | LIBRARY |
- ALL STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED

0 500 1000 FEET

CITY OF MT. VERNON



morning and returns eastbound in the afternoon. Connections with Greyhound Bus Lines in Prineville, Redmond, and Bend are possible for transfers to other destinations. The People Mover also stops at the Redmond Airport with advance notice.

Currently, The People Mover is able to fully meet the demand for their services.

The small size and low traffic volumes on city streets indicate that mass transit is not currently necessary. A citywide public transportation program would not be economically feasible at this time. The TPR exempts cities with a population less than 25,000 from including mass transit facilities in their development regulations.

RAIL SERVICE

Currently, there is no passenger or freight rail services provided in Grant County. The nearest rail line follows the Interstate 84 corridor from Portland to Boise, Idaho and points east. This line serves only freight traffic. AMTRAK passenger service along the line was terminated in May of 1997.

AIR SERVICE

Currently, there is no private or commercial air service provided in Mt. Vernon. The nearest private service is located at the state airport in John Day. This airport is used by recreational flyers, businesses, and public agencies. The nearest commercial airports are in Redmond, about 140 miles to the west via Highway 26, or Pendleton about 120 miles to the north via Highway 395.

PIPELINE SERVICE

The City of Mt. Vernon has no pipeline services.

WATERBORNE SERVICE

The City of Mt. Vernon has no waterborne transportation services.

CHAPTER 4: CURRENT TRANSPORTATION CONDITIONS

As part of the planning process, the current operating conditions for the transportation system were evaluated. This evaluation focused primarily on street system operating conditions since the automobile is by far the dominant mode of transportation in Mt. Vernon. This involved analysis of existing traffic volumes, street capacity, and street safety. Census data were also examined to determine where local residents work and the mode of transportation used to get to work.

1995 TRAFFIC VOLUMES

The 1995 Average Daily Traffic (ADT) volumes for the City of Mt. Vernon were collected. ADT volumes are defined as the average amount of two-way traffic recorded on a roadway over a 24-hour period. The 1995 ADT information was obtained from two sources; the Oregon Department of Transportation *Traffic Volume Tables*, published in May 1996, and traffic counts performed by the Grant County Road Department.

Average Daily Traffic

The ADT volumes on Highway 26 (Main Street), Highway 395 (Mountain Boulevard), and two county roads are shown in Figure 4-1. Traffic volumes within the city are highest along Highway 26, slightly lower along Highway 395, and lowest on the county or local city streets serving the residential areas. An extensive traffic count program involving the local city streets was not necessary due to the size of the city.

The volumes shown on Figure 4-1 are average volumes for the year. During the summer months, traffic volumes on both highways are typically higher. Seasonal traffic volume information is not available for this highway. However, information is available from the three permanent traffic recorders in Grant County: one located on Highway 395 near Long Creek and the other two on Highway 26 near Dayville and Prairie City. These recorders indicate that traffic volumes during the summer months are around 35 percent higher than average volumes.

Truck Volumes

Truck volume information along Highways 26 and 395 is not available at any locations immediately outside of Mt. Vernon. To estimate truck volumes, data from the permanent counters located just east of Dayville on Highway 26 and just north of Long Creek on Highway 395 were used. The data on Highway 26 indicate that truck traffic was about 14.4 percent of the total 1995 ADT outside of Dayville. With an ADT volume of about 1,500 just west of Mt. Vernon, this would equate to about 215 trucks per day. The data on Highway 395 indicate that truck traffic was about 13.4 percent of the total 1995 ADT north of Long Creek. With an ADT volume of 750 just north of Mt. Vernon, this would equate to about 100 trucks per day. Within the city itself, truck volumes as a percentage of total traffic may be slightly lower because local traffic activity increases the overall traffic volume.

1995 Street Capacity

Transportation engineers have established various standards for measuring traffic capacity of roadways or intersections. Each standard is associated with a particular level of service (LOS). The LOS concept requires consideration of factors that include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort and convenience, and operating cost. Six standards have been established ranging from Level A where traffic flow is relatively free-flowing, to Level F, where the street system is totally saturated with traffic and movement is very difficult.

Analysis of the street system capacity in Mt. Vernon focused on the most congested intersection in the city where traffic volumes are the greatest. This is at the intersection of Highway 26 and Highway 395. Determining the LOS at this intersection will identify the worst possible traffic operations for all intersections in the city. Currently, this intersection is STOP-controlled on the minor approaches of Highway 395 to the north and Ingle Street to the south, with continuous flow on Highway 26. There is a hazard warning light that flashes red on the minor approaches and yellow on Highway 26.

The LOS criteria for an unsignalized intersection is listed in Table 4-1. Level of service is defined by the average total delay vehicles experience for individual approaches or for the intersection as a whole.

**TABLE 4-1
LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS**

Level of Service	Average Total Delay (seconds/vehicle)
A	< = 5.0
B	> 5.0 and < = 10.0
C	> 10.0 and < = 20.0
D	> 20.0 and < = 30.0
E	> 30.0 and < = 45.0
F	> 45.0

Source: Transportation Research Board, *Highway Capacity Manual*,
Special Report 209, Third Edition, 1994, p. 10-12.

The LOS at the intersection of the highways was determined from a 16-hour manual turning movement count performed by ODOT on October 18, 1993. This count indicated the peak hour occurred between 5 and 6 p.m. To determine the worst possible traffic operations at this intersection, peak hour traffic was increased by 35 percent, to reflect peak summer month conditions in 1995.

Under these assumptions, the minor approaches on Highway 395 and Ingle operate well with a LOS B. The approaches on Highway 26 operate exceptionally well at LOS A. This indicates all other lower volume local roads accessing either highway in the city are also operating at a LOS B or better.

SAFETY ANALYSIS

As part of the existing conditions evaluation, a safety analysis was performed along Highways 26 and 395 within Mt. Vernon. Accident data for the three-year period between 1993 and 1995 was collected using information from the ODOT Accident Summary Database. According to the database, two accidents have

LEGEND
1700=ADT VOLUME

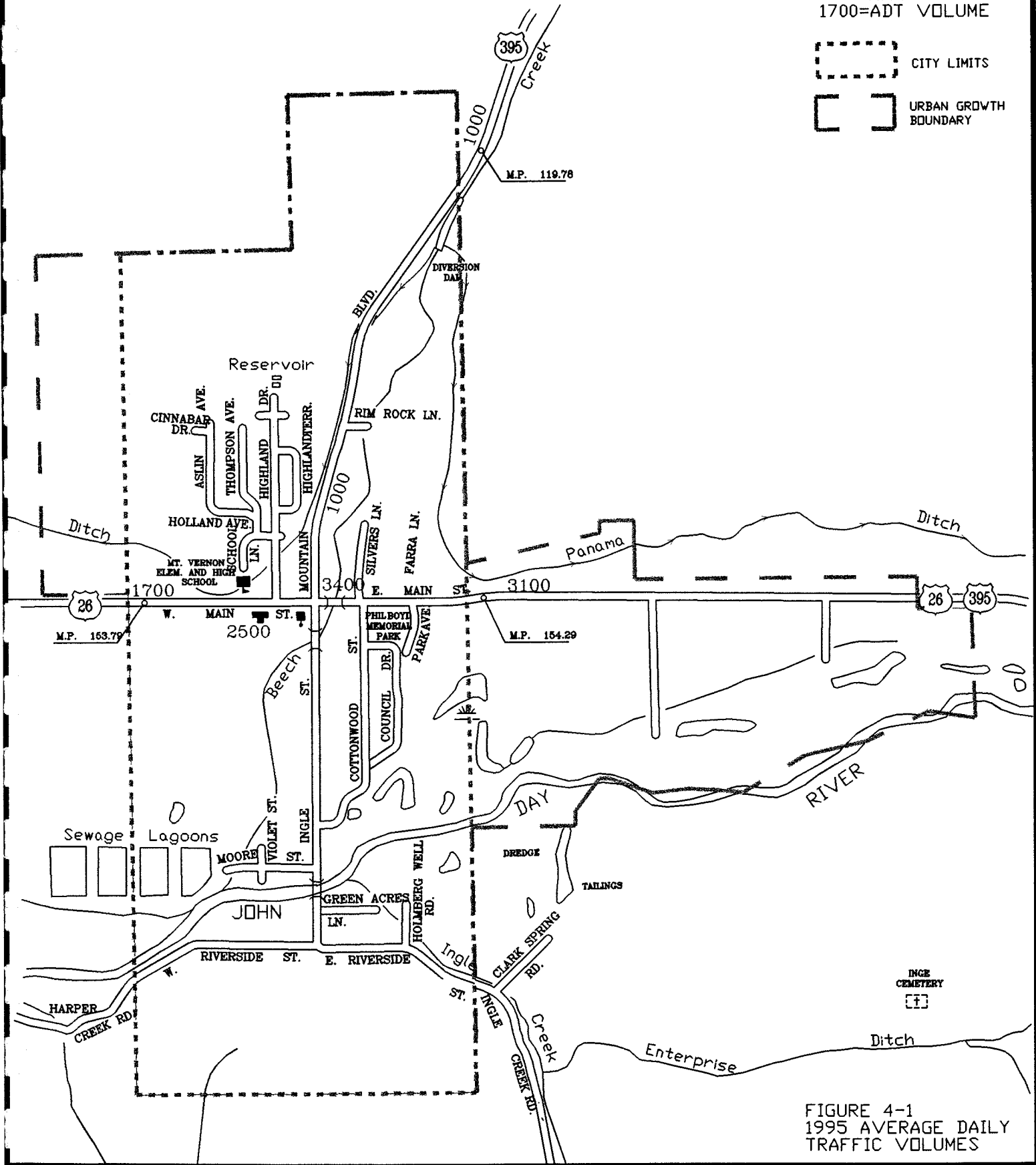
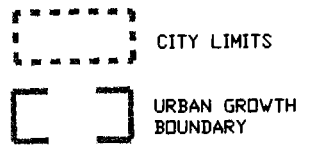


FIGURE 4-1
1995 AVERAGE DAILY
TRAFFIC VOLUMES

- | | | | |
|--|---|--|-----------------|
| | MAINLINE STATE HIGHWAY | | PUBLIC BUILDING |
| | STREET OPEN FOR TRAVEL | | COURT HOUSE |
| | INTERSTATE ROUTE | | CITY HALL |
| | U.S. ROUTE | | ARMORY |
| | STATE ROUTE | | POST OFFICE |
| | TERMINATION OF PA SYSTEM | | SCHOOL |
| | STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED | | LIBRARY |

0 500 1000 FEET

GRANT COUNTY
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occurred during this period, both on Highway 26. The first accident occurred near Park Avenue. It involved a turning type collision with one person sustaining a Type A or severe injury. The second accident occurred about 350 feet further west. This accident involved a rear end collision with two people sustaining a Type B, or moderate injury, and Type C, or least severe injury.

Due to the low number of accidents in the city, there does not seem to be any apparent safety issues on the state highways.

JOURNEY-TO-WORK INFORMATION

Place of Work

According to the 1990 US Census, Mt. Vernon had a total of 189 residents who work. Of these residents, 57 worked inside the city and 132 commuted elsewhere. A majority of the residents who worked inside the city had commute times of around 10 minutes or less. Most of those who worked elsewhere had commute times between 10 and 25 minutes, indicating that the nearby cities of John Day, Canyon City, and possibly Dayville are the destinations of these commuters.

Travel Mode Distribution

Although the automobile is the primary mode of travel for most residents in the Mt. Vernon area, some other modes are used as well. Modal split data is not available for all types of trips; however, the 1990 Census data do include statistics for journey-to-work trips as shown in Table 4-2.

Most Mt. Vernon residents travel to work via a private vehicle. In 1990, 87.8 percent of all trips to work were made by auto, van, or truck. Trips in single-occupancy vehicles made up 63.5 percent of all trips, and the percentage of workers in a carpool was relatively high accounting for 24.3 percent of all trips.

Bicycle usage was shown to be nonexistent (zero percent) in 1990. Since the census data do not include trips to school or other non-work activities, overall bicycle usage is probably higher.

Pedestrian activity was relatively high (10.6 percent of trips to work). Because of the small size of the Mt. Vernon community, walking trips are easy and most destinations can be reached fairly quickly. Again, census data do not include trips to school or other non-work activities.

Census data show that around 1.6 percent of the working population worked at home.

Although the census data reflect the predominant use of the automobile, the growing population and employment opportunities, relatively short travel distances within the city, and clear weather conditions during the warmer seasons are favorable for other modes of transportation. The statewide emphasis on providing pedestrian and bicycle facilities along with roadways encourages the use of these modes.

TABLE 4-2
JOURNEY TO WORK TRIPS

Trip Type	1990 Census	
	Trips	Percent
Private Vehicle	166	87.8
<i>Drove Alone</i>	<i>(120)</i>	<i>(63.5)</i>
<i>Carpooled</i>	<i>(46)</i>	<i>(24.3)</i>
Public Transportation	0	0
Motorcycle	0	0
Bicycle	0	0
Walk	20	10.6
Other	0	0
Work at Home	3	1.6
Total	189	100.0

Source: 1990 US Bureau of Census.

CHAPTER 5: TRAVEL FORECASTS

The traffic forecast prepared for the City of Mt. Vernon, projects traffic volumes for the year 2017 based on historical growth on the state highway system, historical population growth, and projected population growth. The forecast was only prepared for Highway 26 and Highway 395 in the planning area, since the volumes on these roadways are much higher than on any other road in the city.

LAND USE

Land use, with respect to population growth, plays an important part in projecting future traffic volumes. In some instances the historical population growth of a city may be related to the historical traffic growth trend on roads in the city. If a relationship is found between the two, future traffic growth on roadways may be guided by population projection estimates. Both historical and projected population for Mt. Vernon are summarized in Table 5-1.

TABLE 5-1
MT. VERNON POPULATION TRENDS

Year	Population	% Change
1960	502	
1970	423	-15.7
1980	569	+34.5
1990	549	-3.5
1995 Estimated	645	+17.5
2017 Projected	825	+27.9

Source: Portland State University's Center for Population Research and Census and the State of Oregon Office of Economic Analysis.

The technical memorandum titled *Population and Employment Analysis* summarizes the methodology and data sources used to determine both historical and projected population for the city (see Appendix B). The analysis also includes population statistics pertaining to nearby cities as well as population and employment statistics for Grant County as a whole.

Historical

Historically, Mt. Vernon's population has risen and fallen over a 35-year period from 1960 to 1995. Overall, the city's population has grown from 502 to 645 during this period resulting in a 28.5 percent increase or an average annual increase of 0.72 percent per year.

Projected

The population of Mt. Vernon is expected to increase from 645 to 825 persons by the year 2017. This is an overall increase of 27.9 percent and an annual increase of 1.12 percent per year.

HISTORICAL TRAFFIC VOLUMES

Before projecting future traffic growth, it is important to examine past growth trends on the roadway system in Mt. Vernon. Historical data is only available for Highway 26 and Highway 395; however, these roads carry far more traffic than any other street in the urban area.

Historical traffic volumes along Highway 26 and Highway 395 were established using the ADT volume information presented in the ODOT Traffic Volume Tables for the years 1975 through 1995. The ADT volumes were obtained at several locations along both highways within the planning area. Averaging the ADT volumes at each location together for each year and using a linear regression analysis, an average annual growth rate was determined for each highway. Table 5-2 summarizes the growth rates along with the total growth in traffic for this period.

TABLE 5-2
HISTORICAL GROWTH RATES (1975-1995)

Highway Section	Average Annual Growth Rate	Total Growth
Highway 26 within urban area	1.46%	33.7%
Highway 395 within urban area	1.25%	28.1%

From 1975 to 1995, the annual traffic growth rate was 1.46 percent per year on Highway 26 and 1.25 percent per year on Highway 395. These values lie above and below the annual population growth in Mt. Vernon for the same time period (estimated at +1.32 percent per year). Being that almost all local roads access Highway 26 in the planning area, the higher traffic growth rate on this highway compared to the population growth of the city reflects the current trend toward an increase in per capita vehicle miles traveled, and shows that through traffic is growing at a higher rate than local traffic related to the city.

FORECASTING METHODOLOGY

The traffic forecast for Mt. Vernon was performed using a Level 1 - Trending Forecast¹ analysis. This type of forecast projects future traffic volumes based on one or more of the following growth factors; the historical growth trends on the state highway system, the historical population growth, and the projected population growth.

The methodology used in this forecast assumed that traffic demand on the state highway system will grow at a rate equivalent to the historical traffic growth trends on Highway 26 and Highway 395. To confirm that using these trends in the Trending Forecast analysis was the best projection methodology, comparisons were made with the historical and projected population growth for the city.

Comparisons show that the historical traffic growth rate for Highway 26 is higher than either the historical or projected population growth rates for the city. Traffic volumes on Highway 26 have increased consistently over the last 20 years at a rate of 1.46 percent per year. The population of Mt. Vernon has increased at a slower rate of 1.32 percent per year for the same time period and the projected population growth rate is expected to be only 1.12 percent per year. Therefore, the Trending Forecast methodology is appropriate.

¹ ODOT *Transportation System Planning Guidelines*, August 1995, pg. 29.

It was also assumed that traffic on Highway 395 will grow consistently with the historical traffic growth trend for this highway even though the historical population growth is higher. This is because there is only one access point (private driveway) along Highway 395 in the urban area. All other local streets intersect with Highway 26. It is expected that traffic related to future population growth in the city will predominantly affect Highway 26.

FUTURE TRAFFIC VOLUMES

Projected traffic volumes for the year 2017 are illustrated in Figure 5-1. The ADT volumes on the state highways were determined by applying the historical traffic growth trends to existing 1995 counts. By the year 2017, traffic volumes are expected to grow by about 28 percent on Highway 26 and 24 percent on Highway 395. Although the percentage increase is moderate for both highways, the overall ADT volumes will remain fairly low on most parts of the two highways in the planning area. Traffic volumes will be noticeably higher along Highway 26, between Highland Drive and Cottonwood Street, as a result of increased through and local traffic. The ADT volumes along Highway 26 (Main Street) are expected to reach 3,190 and 4,340 vehicles west and east of Highway 395 (Mountain Boulevard). The ADT volume along Highway 395, north of Highway 26, is projected to reach 1,240 vehicles.

Traffic volumes on the two county roads outside the urban area, Harper Creek Road and Ingle Creek Road, are projected to increase by around 28 percent, which is consistent with the future population growth rate of the city. ADT volumes are estimated to be around 145 vehicles on Harper Creek Road and 50 vehicles on Ingle Creek Road.

HIGHWAY SYSTEM CAPACITY

With ADT volumes remaining fairly low in the future, travel conditions are expected to remain favorable throughout the city. This is supported by the estimated future traffic operations at the busiest intersection in the city, Highway 26 and Highway 395/Ingle Street, where the LOS is expected to remain at a satisfactory level.

Analysis Results

To evaluate the future traffic operations at the intersection, the PM peak hour volumes used in the existing operations analysis for the peak summer month were factored up to year 2017 levels. This was done by increasing the existing traffic volumes by about 28 percent on the Highway 26 approaches and by about 24 percent on Highway 395 approach in accordance with the historical traffic volume trends. Existing traffic volumes on the Ingle Street approach to the south were increased by about 28 percent to account for traffic related to future population growth.

Under these assumptions, the peak hour traffic operations at this intersection will remain unchanged. The approaches to this intersection on Highway 395 and Ingle Street will be at LOS B and Highway 26 will operate at LOS A.

LEGEND
2170=ADT VOLUME

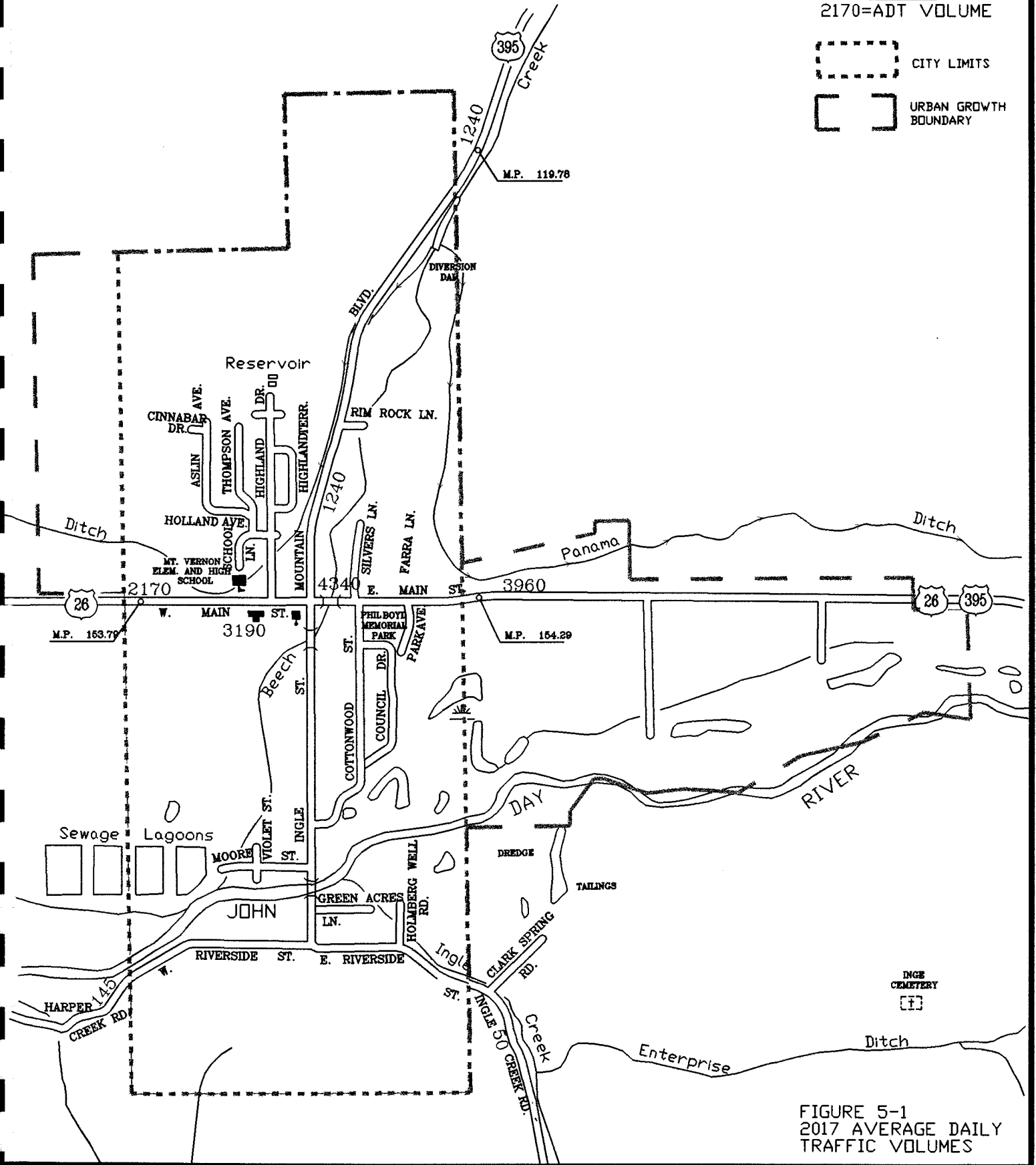
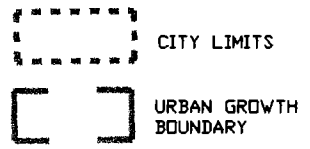


FIGURE 5-1
2017 AVERAGE DAILY
TRAFFIC VOLUMES

- MAINLINE STATE HIGHWAY
- STREET OPEN FOR TRAVEL
- INTERSTATE ROUTE
- U.S. ROUTE
- STATE ROUTE
- TERMINATION OF PA SYSTEM
- STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED
- PUBLIC BUILDING
- COURT HOUSE
- CITY HALL
- ARMORY
- POST OFFICE
- SCHOOL
- LIBRARY

0 500 1000 FEET

GRANT COUNTY
CITY OF MT. VERNON



CHAPTER 6: IMPROVEMENT OPTIONS ANALYSIS

Potential transportation improvements for the City of Mt. Vernon were developed and evaluated as part of the transportation system analysis. These potential improvements were developed with the help of the TAC, and attempt to address the concerns specified in the goals and objectives (Chapter 2). Based on an analysis of these projects, a list of improvements to be incorporated into the TSP is recommended.

Each of the transportation system improvement options was developed to address specific deficiencies and safety and access concerns. The following list includes all of the potential transportation system improvements considered. Improvement Alternatives 4 through 9 and 11 are illustrated in Figure 6-1.

1. Revise zoning code to allow and encourage mixed-use development and redevelopment.
2. Implement transportation demand management strategies.
3. Implement speed control measures along Main Street.
4. Improve the intersection of Highway 26 and 395.
5. Provide for future development south of West Riverside Street.
6. Upgrade substandard roads.
7. Improve Beech Creek Bridge on Highway 26/395.
8. Construct sidewalks along Highway 395 (Mountain Boulevard).
9. Provide shoulder parking along Highway 26/395 adjacent to the City Park.
10. Provide a multi-use path along the John Day River Greenbelt.
11. Construct sidewalks along Highway 26 (Main Street).

As discussed in the remaining sections of this chapter, not all of these considered improvements were recommended. Recommendations were based on the evaluation of each project using the criteria described below.

EVALUATION CRITERIA

The evaluation of the potential transportation improvements was based on a qualitative review of safety, environmental, socioeconomic, and land use impacts, as well as estimated cost. The effect of each potential project on traffic patterns was not evaluated since existing and future traffic projections for the city indicate there will be no deficiencies in the capacity of the street system over the next 20 years.

Safety was the first qualitative factor to be evaluated. Although driver safety is considered in these projects, pedestrian and bicycle safety are a critical concern for the city. Environmental factors were also evaluated, such as air quality, noise, and water quality. Evaluation of socioeconomic and land use impacts considered right-of-way requirements, impacts to adjacent lands, and community livability. The final factor in the

evaluation of each potential transportation improvement was cost. Costs were estimated in 1997 dollars based on preliminary alignments for each potential transportation system improvement.

EVALUATION OF POTENTIAL TRANSPORTATION IMPROVEMENTS

Alternative 1. Revise Zoning and Development Codes

Overview: One of the goals of the Oregon TPR is to reduce the reliance on the automobile. One way a city jurisdiction can do this is through amendments in zoning and development codes to permit mixed use developments and increases in density in certain areas. Specific amendments include allowing neighborhood commercial uses within residential zones and allowing residential uses within commercial zones. Such code amendments can encourage residents to walk and bicycle throughout the community by providing shorter travel distances between land uses.

Impacts: These code revisions are more effective in medium to large sized cities with populations of 25,000 and over, but in cities such as Mt. Vernon, they may not be appropriate. Because of Mt. Vernon's size, the decision of what mode of transportation to use when making a trip inside the city is not influenced by distance. The longest distance between city limit boundaries in Mt. Vernon is around one mile, a distance short enough to walk, ride a bike, or drive. Distances between different land uses, such as residential and commercial, is even shorter. More than 10 percent of the population already walks to work, which is higher than the statewide average.

Increasing density may have some effect on development in Mt. Vernon. Population is projected to increase almost 28 percent (180 additional residents) in the next 20 years.

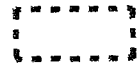

Cost: No direct costs are associated with making the zoning code amendments.

Recommendation: Revisions to zoning and development codes to allow for increased density are recommended.

Alternative 2. Implement Transportation Demand Management (TDM) Strategies

Overview: The TPR also recommends that cities should evaluate TDM measures as part of their TSPs. These strategies are designed to change the demand on the transportation system by providing facilities for other modes of transportation, implementing carpooling programs, and applying other transportation measures within the community, such as staggering work schedules at local businesses. TDM strategies may be more effective in larger, more urban, cities but some strategies can still be useful in smaller cities such as Mt. Vernon. Provisions for alternative modes of transportation, such as sidewalks and bike lanes, and implementing a county-wide carpooling program can be beneficial for residents in the city. Other TDM measures such as staggering work shift schedules at local businesses may not be appropriate since there are no large businesses in the urban area.

The City of Mt. Vernon currently has a sidewalk system that helps to promote the principles of TDM measures. There are sidewalks along much of Main Street (Highway 26) supporting pedestrian traffic in the downtown commercial core and the sidewalks along Highland Drive and School Lane link the downtown area to the Mt. Vernon Elementary and High School and the homes in the northern portion of the city. The

 CITY LIMITS
 URBAN GROWTH BOUNDARY

ALTERNATIVE 8:
CONSTRUCT SIDEWALK
ALONG HIGHWAY 395
(P. 6-10)

ALTERNATIVE 4: IMPROVE
THE INTERSECTION OF HIGHWAY
26 AND 395. (P. 6-5)

ALTERNATIVE 7:
WIDEN THE BEECH CREEK BRIDGE
ON HIGHWAY 26/396. (P. 6-9)

ALTERNATIVE 11:
CONSTRUCT SIDEWALK ALONG
HIGHWAY 26. (P. 6-12)

ALTERNATIVE 6:
UPGRADE SUBSTANDARD
ROADS. (P. 5-9)















ALTERNATIVE 9:
ACCESS TO CITY PARK
FROM HIGHWAY 26/395
(P. 6-12)

ALTERNATIVE 5: OPTION A
ACQUIRE, WIDEN, AND PAVE
WEST RIVERSIDE STREET

ALTERNATIVE 5: OPTION B
INGLE STREET EXTENSION

ALTERNATIVE 5: OPTION C
HARPER CREEK ROAD EXTENSION ACROSS
THE JOHN DAY RIVER TO COUNTY ROAD #66

FIGURE 6-1
TRANSPORTATION SYSTEM
IMPROVEMENTS

-  MAINLINE STATE HIGHWAY
-  STREET OPEN FOR TRAVEL
-  INTERSTATE ROUTE
-  U.S. ROUTE
-  STATE ROUTE
-  TERMINATION OF FA SYSTEM
-  ALL STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED
-  PUBLIC BUILDING
-  COURT HOUSE
-  CITY HALL
-  ARMORY
-  POST OFFICE
-  SCHOOL
-  LIBRARY

0 500 1000 FEET

CITY OF MT. VERNON



sidewalk located on the west side of Ingle Street provides a pedestrian route between Main Street and the residences in the southern portion of the city.

All future street improvement projects, whether they involve constructing a new roadway or upgrading an existing roadway, should include the addition of some sort of pedestrian facility, such as new sidewalks or walkways. Implementing a TDM measure such as this will further enhance the city's pedestrian system. All new street improvement projects should also consider bicycle lanes as well.

Implementing a local carpool program in Mt. Vernon alone is not necessary because of Mt. Vernon's geographical size. However, a county-wide carpool program is possible. Because intercity commuting is a factor in Grant County, residents who live in Mt. Vernon and work in other cities should be encouraged to carpool with a fellow coworker or someone who works in the same area.

Impacts: Providing adequate facilities for pedestrians and bicyclists increases the livability of a city, and improves traffic and pedestrian safety. With more emphasis on walking or biking in the city, conditions such as air quality and noise levels would be improved as well.

As street improvements are made to the existing street system, projects involving the construction of new sidewalks may require on-street street parking to be implemented in place of parking on grass or gravel shoulders. In situations where the right-of-way is limited, constructing sidewalks may prevent on-street parking as well.

Cost: The estimated cost to install a new sidewalk on one side of an existing street is around \$30 per linear foot. This includes a 6-foot wide walkway composed of 4 inches of concrete and 2 inches of aggregate. Curbing would cost an additional \$5 per linear foot.

The cost to construct an asphalt sidewalk is about \$10 per linear foot. This estimate assumes that the asphalt pad is 6 feet wide and composed of 2 inches of asphalt and 4 inches of aggregate. Asphalt sidewalks require more maintenance than concrete sidewalks. Maintenance would include sealing every five years at about \$0.50 per linear foot and resurfacing every 10 years at about \$2.50 per linear foot.

The cost to install bike lanes on both sides of an existing road is around \$45 per linear foot. This cost includes widening the roadway by 5 feet on both sides, installing curbs, using a fill composed of 4 inches of asphalt and 9 inches of aggregate, and placement of a 8 inch painted stripe.

These costs are for standalone improvements; the costs can be reduced when they are included as needed in roadway improvement projects throughout the Mt. Vernon area.

Costs associated with a county-wide carpool program were not determined as part of this plan.

Recommendation: Implementing TDM strategies would provide needed facilities for pedestrians and bicyclists, increase the safety of the roadway system, and enhance the quality of life in the Mt. Vernon area. Therefore, the TDM strategies summarized above are recommended.

Alternative 3. Implement Speed Control Measures Along Main Street

The residents of Mt. Vernon are concerned about traffic exceeding the posted speed limit along Highway 26 and Highway 26/395 (Main Street) through the city. Residents would like to see a system developed that would encourage traffic to slow down to a more appropriate speed.

In response to the public's concern over this issue, DEA compiled a variety of speed control measures used on the roadways of many cities in the state. These measures were reviewed at one of the TAC meetings. After the review, TAC members representing each jurisdiction selected speed control measures that they felt were most appropriate for their jurisdiction. The speed control measures selected for Mt. Vernon are summarized below. A technical memorandum explaining the different types of speed control measures available can be found in Appendix C.

Option A. Speed Detector Trailer

Overview: A speed detector is an instrument that uses a radar to detect the speeds of vehicles traveling on a roadway. The purpose of the speed detector is not to enforce the posted speed limit but to make drivers more aware of their speed and surroundings. A large display on the instrument indicates to the targeted driver what speed his/her vehicle is traveling. The display can be located near a speed limit sign indicating the legal speed limit. This machine is portable, as it is usually mounted on a trailer, and can be placed in any location.

Safety: Utilization of a speed detector may or may not effectively discourage speeding. Initially, driver response to the speed detector may be effective, but after some time, drivers may become accustomed to the machine and disregard it. There have also been situations where the effect of the detector is counteractive. Some drivers do not take the detector seriously and have been known to speed up to see how high a speed they can register on the display.

Impacts: The detector has no effect on reducing the noise levels of traffic passing by since it will not reduce traffic volumes and has only a minor effect on speed. The detector is battery operated and does not produce any noise.

A detector unit should be placed far enough to one side of the street shoulder so as not to create a hazardous situation.

Cost: The cost to purchase a speed detector and trailer is around \$10,000 to \$11,000 and requires yearly maintenance and repair. Also, the speed detector unit is susceptible to vandalism.

Option B. Driver Education and Public Service Signage

Overview: This option is designed to inform the residents of Mt. Vernon and other residents in the county about the concern for speeding along the highway through town. To inform drivers, residents in the community can be informed through newspaper articles, mailings, cable access channels, and public signage. Pedestrians can be warned about the hazards of crossing the highway by installing public service signs at all crosswalks.

Safety: This option is geared towards improving driver and pedestrian safety.

Impacts: No impacts are associated with this option.

Cost: No costs were estimated for this option.

Option C. Increase Enforcement

Overview: This option would increase the enforcement of the speed limit along Highway 26 and Highway 26/395 through town, by increasing police patrols.

Safety: In the presence of police enforcement, motorists tend to slow down. Speed enforcement not only reduces speed but also has the tendency to reduce accident severity as well. Studies have shown that the variance of speed distribution is reduced by enforcement. The effect of enforcement on speed variance is of interest since it is related to accident involvement. Other studies have shown that the effect of enforcement is to shift the entire speed distribution in the direction of lower speeds without actually altering speed distribution.

Impacts: As would be expected, the greater the number of enforcement measures present in a given area or the greater the frequency of presence, the greater the impact on the speed of traffic in that area.

Enforcement also appears to have a carryover effect. That is, the speed suppression effect remains for some period of time after the enforcement unit is removed. The duration of this effect and the factors which can alter it are not well defined, but are associated with driver communication and frequency of exposure.

Economic and work force constraints usually prohibit widespread or long-term employment of speed enforcement measures. Mt. Vernon has no city police department. However, there are three state patrol officers who patrol the five state highways in the county, and four county patrol officers. Taking into consideration the working shifts and daily duties of these officers, these patrol officers may not have enough time to provide the speed enforcement Mt. Vernon residents feel is necessary. Also, a major influence in increasing speed enforcement in an area is a high accident history, which Mt. Vernon does not have.

Cost: There are no costs associated with increasing police enforcement in the City of Mt. Vernon utilizing the current state and county patrol officers. The cost to hire an additional patrol officer for the City of Mt. Vernon alone would be high, roughly \$30,000 per year (excluding benefits). It may be feasible, however, for all incorporated cities in the county to share the cost of a single patrol officer hired specifically to enforce the speed limits in all cities in the county.

Recommendations

Since the purpose of each speed control measure, described above, is to discourage speeding along the highway through town and improve bicycle and pedestrian safety, all of the speed control measures are recommended. It should be noted that because the Kimberly-Mt. Vernon Highway is under the jurisdiction of the state, the City of Mt. Vernon will need to work with and get approval from ODOT to implement any of these measures.

Alternative 4. Improve the Intersection of Highway 26 and 395

Overview: This project would modify the existing curb radii of the northeast and northwest corners of the intersection of Highway 26 and 395 (see Figure 6-1). The existing curb radii on both corners are around 14 feet and need to be increased to accommodate the right-turn movements of large trucks. Trucks making right turns from Highway 26/395 onto Highway 395, around the northeast curb return, have been known to jump the curb and drive on the gravel shoulder. Trucks also take up part of the oncoming travel lanes when making right turns at both corners.

Currently, both corners on the north side have continuous curbing along them, with a gravel reservoir for pedestrians. The two corners on the south side of this intersection have handicap ramps and there are striped crosswalks on all four corners, however, the striping is faded and in need of repainting. By modifying the curb returns of both corners on the north side, this would also allow for the addition of handicap ramps and concrete reservoirs for pedestrians. This will allow pedestrians to cross more safely at all four corners of the intersection.

Safety: An adequate turning radius for a typical semi-truck is around 55 feet. A turning radius of this size allows a truck to make a safe right-turn without crossing over into an oncoming lane or driving the rear wheels over the corner. Increasing the turning radii at both corners to 55 feet would require the restaurant on the northeast corner to be relocated and would adversely affect the access to the gas station on the northwest corner. In order to preserve the restaurant and the access to the gas station, a turning radius of around 20 to 25 feet can only be provided. This would allow trucks to negotiate right-turns far more easily than existing conditions permit.

Modifying the curb returns of both corners to include handicap ramps and concrete reservoirs will improve access for the disabled at this intersection.

Impacts: Increasing the turning radius on the northeast corner will directly impact the Wounded Buffalo Restaurant located there. A turning radius of 20 or 25 feet may only require the relocation of the restaurant's sign on the south side of the building, but a turning radius to 55 feet would require the relocation of the entire building.

Increasing the turning radius on the northwest corner to 20 or 25 feet may not affect the access to the gas station but will require the relocation of several signs and a utility pole presently located on the corner.

Cost: The estimated cost to remove the existing curbs, relocate any signs, and reconstruct the northwest and northeast corners to include larger turning radii is around \$6,000, or around \$3,000 per corner.

Recommendations: This project is recommended based on the safety improvements for truck turning movements at this intersection. Increasing the turning radius up to 20 or 25 feet on each corner will allow trucks to make right turns more easily and should preserve the restaurant on the northeast corner and the access to the gas station on the northwest corner. However, this project may be met with stiff opposition by the property owners on both corners. An engineering study will be needed to determine a reasonable turning radius for both corners. The study should take into account the concerns for truck safety and the needs of the property owners.

As part of this project, it is also recommended that handicap ramps and concrete pedestrian reservoirs are installed on both corners to improve pedestrian access.

Sidewalks along the north side of Highway 26/395 from the northeast corner extending 100 feet east to the Beech Creek Bridge sidewalk should also be considered part of this project. Adding these sidewalks would cost an additional \$3,000 for a total project cost of \$9,000.

Alternative 5. Provide for Future Development South of West Riverside Street

Residents in Mt. Vernon have expressed an interest in developing the area south of West Riverside Street, within the city limits. The City of Mt. Vernon will not allow any additional development in this area because of the poor access conditions along West Riverside Street. It is a narrow road about 15 feet wide

with a substandard pavement. The roadway is located on a prescriptive easement, meaning that the residents along the road own the right-of-way but the public has legal access to the road. West Riverside Street is bordered by five residences on the south side and three residences on the north side. This road provides the only access to Harper Creek Road (County Road #79) west of the city limits and UGB line.

There have also been complaints from the residents along West Riverside Street about the through traffic, particularly large trucks, which are using this road to access Harper Creek Road. These residents are worried that traffic volumes will increase in the future since the county has no restrictions on future development along Harper Creek Road outside the UGB of Mt. Vernon.

Three options have been identified to address both the access concerns for new development in the city and the through traffic concerns along West Riverside Street. These projects are described and evaluated below.

Option A. Acquire, Widen, and Pave West Riverside Street

Overview: This project entails acquiring the necessary right-of-way along West Riverside Street up to Harper Creek Road, widening the roadway, and paving it (see Figure 6-1). Traffic from future development in this area will then be able to access West Riverside Street directly along with traffic accessing Harper Creek Road.

Safety: The current width of West Riverside Street is substandard for a two-lane facility. Widening and paving this road to local residential street standards will improve driver safety and traffic circulation. This project should also include pedestrian facilities that are in conformance with the recommended street standards for a residential street. Installing these facilities will improve pedestrian safety along the road.

Impacts: This option would require the city to acquire the necessary right-of-way along West Riverside Street. It would also require the relocation of the mobile home located two houses in off of Ingle Street on the south side of West Riverside Street.

There is a relatively large drainage ditch on the south side of West Riverside Street, approximately two feet deep. Future drainage along the road can be handled with the use of curbing as part of the street upgrade.

Fences line the entire northern side of West Riverside Street. Widening this roadway may require these fences to be relocated or taken down. Research should be done to determine if the street can be widened to the south so as not to disrupt the fence line on the north side.

Cost: It is estimated that around a 1,000 foot stretch of West Riverside Street, extending west from Ingle Street just past the last residence in the city, will require widening and repaving. At a cost of \$250 per linear foot to upgrade this road, this option is estimated to cost around \$250,000 to construct. The remaining section of West Riverside Street, up to the Harper Creek Road connection, would remain in its present state.

Option B. Extend Ingle Street to the South

Overview: This option involves extending Ingle Street further south where traffic from future developments in this area can access Ingle Street directly and bypass West Riverside Street altogether (see Figure 6-1). The city and County could arrange to have Harper Creek Road tie into the new Ingle Street extension so through traffic on Harper Creek Road can also bypass West Riverside Street.

Safety: This project would improve driver safety by providing a new roadway built to city standards. This new roadway would create a better access than West Riverside Street for local traffic related to new development in the area and through traffic using Harper Creek Road.

Impacts: The Ingle Street extension to the south would pass through existing pasture lands. This southerly alignment appears to conflict with a wetland, however, so the road would either need to swing around it or mitigation measures would be required.

This project would not require the city to acquire any right-of-way or relocate any homes along West Riverside Street. The city, however, would have to acquire the necessary right-of-way along the alignment of the Ingle Street extension. This project would create the opportunity for the county to realign Harper Creek Road to intersect the Ingle Street extension at the city limits.

This improvement would involve construction of a small segment of roadway outside of the Mt. Vernon UGB. As a result a goal exception would be required. If Grant County were to realign Harper Creek Road so that it met Ingle Street and closed access to West Riverside Street, an exception may not be necessary.

Costs: The estimated cost for a new roadway is around \$300 per linear foot. This includes the cost to construct the facility which is increased by a contingency factor of 40 percent to account for studies, engineering design, and other unforeseeable factors. Assuming the Ingle Street extension would extend 400 feet south and 1,400 feet west to the city limits, for a total length of 1,800 feet, this extension would cost the city around \$540,000 to construct. Realigning a 200-foot section of Harper Creek Road to tie into the Ingle Street extension at the city limits would cost the county around \$60,000 to construct. These cost estimates do not include the costs associated with wetland mitigation or right-of-way acquisition.

Option C. Extend Harper Creek Road Across the John Day River to County Road #66

Overview: This project would not improve local access along West Riverside Street but would eliminate part of the need to access this road. This project involves extending Harper Creek Road north across the John Day River to intersect with County Road #66. This extension would establish a more direct and attractive route for through traffic between Harper Creek Road and Highway 26. Vacating the section of Harper Creek Road that connects to West Riverside Street would eliminate through traffic on that road altogether.

Safety: Providing a new and more direct connection between Highway 26 and Harper Creek Road would improve the safety of the residents who drive, walk, and bike along West Riverside Street and Ingle Street in Mt. Vernon. Through traffic, particularly trucks, would no longer use this route to access Harper Creek Road.

Impacts: This project would involve a new roadway extending north from Harper Creek Road to County Road #66. This would require the County to secure the necessary right-of-way along the alignment. A bridge crossing over the John Day River would also be required. Also, a home is located at the southern end of County Road #66 which would prevent a direct connection. The new roadway alignment would have to pass around this home.

Costs: The cost to construct a new roadway is around \$300 per linear foot. The length of roadway required to extend Harper Creek Road to County Road #66 is unclear. Also, a bridge crossing over the John Day River would make this project very expensive to construct.

All costs associated with this option would be handled by the county due to the project location.

Recommendations

Option B is recommended over the other two options. The main concern of this project is to provide good quality access to future developments south of West Riverside Street. By extending Ingle Street to the south, this access is provided, bypassing West Riverside Street altogether. This option will have no adverse impacts to the homes along West Riverside Street. To address residents concerns about the through traffic along West Riverside Street, it is also recommended that the city and county work together to establish a connection between the proposed Ingle Street connection and Harper Creek Road at the city limits. A goal exception may be required for any work done outside the UGB.

Alternative 6. Upgrade Substandard Roads

Overview: Several roads in the city are substandard and are in need of repaving or paving (see Figure 6-1). Roads which require repaving are Thompson Avenue, Park Avenue, and Green Acres Lane. Gravel roads which require pavement are Violet Street and Moore Street.

Safety: Safety is not affected by this alternative.

Impacts: Upgrading these streets will improve the community livability for the residents who reside on these streets.

Cost: The estimated cost to repave a road using 2 inches of asphalt is around \$2 per square foot. The estimated cost to pave a gravel road using 2 inches of asphalt and 6 inches of aggregate is around \$3 per square foot. Table 6-1 displays the costs associated with the repaving and paving of the five substandard roads in the city.

**TABLE 6-1
CONSTRUCTION COSTS FOR UPGRADING SUBSTANDARD STREETS**

Improvement/Road	Unit Cost	Street Width	Project Length	Total Cost
<i>Repave</i>	\$2/square foot			
Thompson Avenue		28 feet	700 feet	\$39,200
Park Avenue		24 feet	400 feet	\$19,200
Green Acres Lane		24 feet	500 feet	\$24,000
<i>Pave</i>	\$3/square foot			
Violet Street		24 feet	300 feet	\$21,600
Moore Street		24 feet	700 feet	\$50,400
Total				\$154,400

Recommendations: These projects are recommended over the course of the planning period. However, it is also recommended that each of these projects include the addition of a pedestrian facility in correspondence with the recommended street design standards for a local street.

Alternative 7. Improve Beech Creek Bridge on Highway 26/395

A concern was raised by the residents of Mt. Vernon about the possibility that the 3.33-foot wide sidewalks on both sides of the bridge are too narrow and do not meet the Americans with Disabilities Act (ADA) standards (see Figure 6-1). This standard requires a minimum sidewalk clearance of at least 5 feet to accommodate disabled persons using wheelchairs.

Two options have been identified to provide wider sidewalks along the bridge. One option would be to widen the decking of the Beech Creek Bridge extending the sidewalks further out and the second option would be to widen the existing sidewalks inward by decreasing the travel lane widths.

Option A. Widen Beech Creek Bridge

Overview: This improvement would widen the decking of the Beech Creek Bridge approximately 4 to 5 feet to allow for wider sidewalks while maintaining the existing travel lanes.

Another option would be to construct a nearby parallel bridge for pedestrians on one side of the highway. The existing bridge deck could then be reconstructed to provide a 6-foot wide sidewalk on the opposite side from the parallel structure, and the 30-foot travel surface for vehicles could be maintained.

Safety: Since the Beech Creek Bridge spans only 80 feet, the width of the sidewalks are not required to meet ADA standards. Only if the bridge spanned 100 feet or more would the ADA standards be warranted. Also, the existing sidewalks on the bridge are wide enough to safely accommodate a single pedestrian or a disabled person in a wheelchair.

Impacts: Widening the bridge 4 to 5 feet would involve major reconstruction of the bridge structure. Traffic flow would be severely disrupted during this time frame.

Adding a parallel structure and reconfiguring the deck would have fewer traffic impacts but would require special connections from the existing sidewalks to the parallel structure.

Cost: The cost of widening the bridge has not been estimated because it would require either major reconstruction of the bridge or some kind of nearby parallel facility to accommodate pedestrians in one direction.

Option B. Widen the Existing Sidewalks Inward

Overview: This improvement would increase the width of the existing sidewalks from 3.33 feet to 5 feet by extending the sidewalk into the existing travel lane. The roadway surface between the curbs is currently 30 feet. With the sidewalk widening, the roadway surface would decrease to just under 27 feet which would allow for two 13.5-foot travel lanes.

Safety: Widening the sidewalks would provide a greater buffer between pedestrians and motor vehicles. The resulting narrower travel lanes may also slow traffic through town slightly. Safety studies have indicated that narrowing travel lanes to widths which remain greater than 11 feet does not increase the number of accidents which occur. In fact, the reverse is often true as drivers are more cautious on narrower roadway surfaces.

Impacts: Highway 26/395 carries a high volume of trucks. Although widening the sidewalks would provide more space for pedestrians, the narrower travel lanes would mean that trucks would be slightly closer to the edge of the sidewalk.

Cost: The estimated cost for widening the sidewalks on the Beech Creek Bridge is estimated under \$6,000. This cost assumes the sidewalks would be widened to 5 feet and the ramps at each corner would also be improved.

Recommendations

The width of the sidewalks along the Beech Creek Bridge are not required to meet ADA standards and are considered wide enough to safely accommodate a single pedestrian or disabled person in a wheelchair. Therefore, Option A is likely to be prohibitively expensive and Option B is recommended because it addresses the city concerns.

Alternative 8. Construct Sidewalk Along Highway 395 (Mountain Boulevard)

Overview: This project includes the construction of sidewalks both sides of Highway 395 (see Figure 6-1). Sidewalks are proposed along the east side of the highway, starting from the intersection at Highway 26 (Main Street) and extending about 1,600 feet north, to the edge of the urban area. Sidewalks are proposed along the west side, from Highway 26 extending 530 feet north. Both sides of the highway currently have curbing in this area.

On the east side of the highway, pedestrians currently travel on the shoulders or in areas where on-street parking is located. In several locations, fence lines, vegetation, and landscaping of homes force pedestrians off the shoulder and onto the highway itself. This creates a potentially hazardous situation as pedestrians are in the travel lane of the highway.

On the west side of the highway, from Highway 26 to a point 530 feet north, pedestrians use the shoulder and on-street parking area for walking. From this point up to the end of the urban area, the steep slopes of the city's hillsides prevent pedestrians from using the shoulder. Pedestrians either choose to travel on the highway in this area or cross over to the east side where there is more protection from traffic.

Safety: Constructing sidewalks along one or both sides of the highway would improve pedestrian safety dramatically. This section of Highway 395 is one of the busiest in terms of traffic volumes, with around 1,000 vehicles per day using this facility.

Impacts: The construction of sidewalks on the east side of the highway will affect the fence lines, vegetation, and landscaping borders of many property owners. This project will require clearing at least 5 feet in from the existing curb to install sidewalks. The on-street parking area near Highway 26, alongside the restaurant and gas station, will be maintained. Also, some residents will no longer be able to park on the curb and shoulder, as this area will be used for a sidewalk. One house, in particular, lies close to the edge of the roadway where the installation of a sidewalk may be aesthetically unpleasant for the property owners.

The construction of sidewalks for 1,600 feet along the west side of the highway is mostly restricted by the city's hillsides in this area. A retaining wall could be placed along the highway in this area to install sidewalks but would be very expensive to build. The 530-foot section, from Highway 26 extending north,

would only require the removal of some vegetation with little impact to the residences along the street. It would also serve adjacent development. Beyond that point, the hillside prohibits any development.

Cost: The cost to construct a concrete sidewalk facility, on one side of the road, is around \$25 per linear foot. To minimize impacts to adjacent property owners, this assumes that the sidewalk is 5 feet wide with the existing curbing already in place. The cost estimate also assumes the sidewalk is composed of 4 inches of concrete and 6 inches of aggregate.

With a total length of 1,600 feet proposed for new sidewalks on the east side and 530 feet proposed on the west side, it would cost around \$53,250 to install concrete sidewalks.

Recommendations: Since this project will improve pedestrian safety and improve community livability, it is recommended.

Alternative 9. Provide Shoulder Parking Along Highway 26/395 Adjacent to the City Park

Overview: Residents have expressed an interest in installing on-street parking adjacent to the Phil Boyd Memorial Park and along the shoulder Highway 26/395 (see Figure 6-1). Because there is no easy parking on the highway, some potential park users may be passing by without stopping. Adding the parking could attract some additional tourists to stop in Mt. Vernon.

To install a parking pad along the shoulder of the highway would require extensive fill and the extension of the paved surface. One or two stairways connection the parking to the park would also be necessary given the roadway elevation versus the park elevation.

Sidewalks would also be recommended. Because they are discussed for Highway 26/395 in Alternative 11, they have not been included here.

Safety: The only safety issue would be the standard concerns associated with on-street parking. These include pedestrian safety, vehicles entering and exiting the traffic stream, and doors opening into oncoming traffic.

Impacts: This project would require at least 8 feet of additional street width. The park is set lower than the roadway with elevations differences varying between 4 and 6 feet. A fence separates the park from the present fill slope. With the additional 8 feet of fill needed to widen the roadway and address the elevation differences, the fence would need to be moved. As a result some of the park area would be lost; however, there are no park facilities immediately adjacent to the fence.

Cost: This project is estimated to cost about \$12,000. This estimate includes about 400 cubic yards of fill, a pavement extension of 8 feet, and a wooden stairway accessing the park.

Recommendation: Since this improvement could help foster tourism in Mt. Vernon at a relatively low cost, it is recommended.

Alternative 10. Provide a Multi-Use Path Along the John Day River Greenbelt

Overview: The citizens of Mt. Vernon have expressed an interest in providing a multi-use path along the John Day Greenbelt, extending from Mt. Vernon's city limits heading east towards the logging yards.

Residents are also interested in developing an alternative route for pedestrians and bicyclists, other than Highway 26/395, between the city and the Clyde Holiday State Park located about 1 mile to the east. It could also serve other recreational users, such as horseback riders.

These concerns were combined to evaluate the development of a multi-use path, extending from Mt. Vernon to the Clyde Holiday State Park. This path would travel along the north side of the John Day River, south of the logging yards, and would be approximately 7,000 feet in length.

Safety: A multi-use path would provide a safer conditions for pedestrians and bicyclists traveling between Mt. Vernon and the state park.

Impacts: The bulk of the alignment, approximately 5,500 feet of pathway, falls inside Mt. Vernon's UGB. The remaining 1,500 feet of pathway is outside Mt. Vernon's UGB. Therefore, this project would have to be a joint venture involving City and County officials. They would have to work together to secure the necessary right-of-way along the John Day River to develop this project.

There may be strong opposition against this project by the private land owners between the city and the state park. One private land owner directly adjacent to the state park owns a cattle ranch, where cattle graze along the banks of the John Day River.

Cost: The cost to clear, prepare, and construct a 10-foot wide asphalt path is around \$16 per linear foot. This assumes the pathway is composed of 2 inches of asphalt and 4 inches of aggregate. (These costs do not include special engineering problems, such as steep grades, retaining walls, drainage, or land acquisition.) Asphalt pathways also require some maintenance. Sealing, at approximately \$0.70 per linear foot, would need to be done about every 5 years, and resurfacing, at approximately \$2.50 per linear foot, would need to be done every 10 years.

With an estimated project length of around 7,000 feet, a new asphalt path would cost around \$157,000 to complete. If costs are shared between Grant County and the City of Mt. Vernon based on length within the UGB, the City would be responsible for \$123,000 and the County would be responsible for \$34,000.

Recommendation: The City of Mt. Vernon is interested in working with Grant County to pursue this project because of its benefits to the community and the region. There may be some opposition by the property owners along the alignment of the proposed multi-use path; however, it is recommended for inclusion in the plan. Efforts to implement this project will need to be coordinated with Grant County and the state since the connection with Clyde Holiday State Park would lie in their jurisdiction.

Alternative 11. Construct Sidewalk Along Highway 26/395 (Main Street)

Overview: This project includes the construction of sidewalks on both sides of Highway 26/395 from the Beech Creek Bridge to the east city limits (MP 154.29). Currently, the highway is 30 feet wide and has gravel shoulders. The total estimated sidewalk length would be approximately 1,000 feet on each side (see Figure 6-1).

Safety: Constructing sidewalks along one or both sides of the highway would improve pedestrian safety dramatically. This section of Highway 26/395 is the busiest in Mt. Vernon, with existing traffic volumes of 3,400 vehicles per day and projected traffic volumes of about 4,300 vehicles per day.

Impacts: The construction of sidewalks should have a minimal impact on either side of the roadway since no curbs are in place and development is generally set back from the highway. There appears to be adequate space for the sidewalks.

Cost: The cost to construct a concrete sidewalk with curbs on one side of the road is about \$35 per linear foot. This assumes that the sidewalk is 6 feet wide with 4 inches of concrete and 2 inches of aggregate.

With a total length of 2,000 feet proposed for new sidewalks, it would cost around \$70,000 to install concrete sidewalks.

Recommendations: Since this project will improve pedestrian safety and improve community livability, it is recommended.

SUMMARY

Table 6-2 summarizes the recommendations of the street system modal plan based on the evaluation process described in this chapter. Chapter 7 describes how these improvement options fit into the modal plans for the Mt. Vernon area.

TABLE 6-2
TRANSPORTATION IMPROVEMENT OPTIONS:
RECOMMENDATION SUMMARY

Option	Recommendation
1. Revise Zoning and Development Codes	• Implement
2. Implement TDM Strategies	• Implement
3. Speed Control Measures	
Speed Detector Trailer	• Implement
Driver Education and Public Service Signage	• Implement
Enforcement	• Implement
4. Improve the Intersection of Highway 26 and 395	• Implement
5. Provide for Future Development South of W. Riverside St.	
Acquire, Widen, and Pave West Riverside Street	• Do not implement
Extend Ingle Street to the South	• Implement
Extend Harper Creek Road Across the John Day River to County Rd. #66	• Do not implement
6. Repave Or Pave Substandard Roads	• Implement
7. Improve Beech Creek Bridge on Highway 26/395	
Widen the Beech Creek Bridge for Wider Sidewalks	• Do not implement
Widen the Sidewalks Inward on Existing Structure	• Implement
8. Construct Sidewalk Along Highway 395 (Mountain Blvd.)	• Implement
9. Provide Shoulder Parking Along Highway 26/395 Adjacent to the City Park	• Implement
10. Provide a multi-use path along the John Day River Greenbelt	• Implement
11. Construct Sidewalk Along Highway 26 (Main Street)	• Implement

CHAPTER 7: TRANSPORTATION SYSTEM PLAN

The purpose of this chapter is to provide detailed operational plans for each of the transportation systems within the community. The City of Mt. Vernon TSP covers all the transportation modes that exist and are interconnected throughout the urban area. Components of the TSP include street classification standards, access management recommendations, transportation demand management measures, modal plans, and an implementation program.

STREET DESIGN STANDARDS

Street design standards relate the design of a roadway to its function. The function is determined by operational characteristics such as traffic volume, operating speed, safety, and capacity. Street standards are necessary to provide a community with roadways that are relatively safe, aesthetic, and easy to administer when new roadways are planned or constructed. A good, well-connected grid system of relatively short blocks can minimize excessive volumes of motor vehicles by providing a series of equally attractive or restrictive travel options. This street pattern is also beneficial to pedestrians and bicyclists.

The development of the City of Mt. Vernon TSP provides the city with an opportunity to review and revise street design standards to more closely fit with the functional street classification, and the goals and objectives of the TSP. The recommended street standards are shown graphically in Figure 7-1 and Figure 7-2, summarized in Table 7-1, and described in detail on the following pages. Since the City of Mt. Vernon TSP includes land within the UGB, urban road standards should be applied in these outlying areas as well. Although portions of the city, especially outside the city boundary, may presently have a rural appearance, these lands will ultimately be part of the urban area. Retrofitting rural streets to urban standards in the future is expensive and controversial; it is better to initially build them to an acceptable urban standard.

TABLE 7-1
RECOMMENDED STREET STANDARDS FOR THE CITY OF MT. VERNON

Classification	Pavement Width	Right-of-Way Width	Min. Posted Speed
Local Residential - Option 1	32-36 feet	60 feet	15-25 mph
Local Residential - Option 2	28 feet	50 feet	15-25 mph
Local Residential - Option 3	24 feet	50 feet	15-25 mph
Alley	16-20 feet	20 feet	15 mph
Collector	36 feet	60 feet	25-35 mph
Arterial - Option 1	36 feet	60 feet	25-45 mph
Arterial - Option 2	52 feet	80 feet	25-45 mph

Local Residential Streets

The design of a residential street affects its traffic operation, safety, and livability. The residential street should be designed to enhance the livability of the neighborhood as well as to accommodate less than 1,200 vehicles per day. Design speeds should be 15-25 mph. When traffic volumes exceed approximately 1,000 to 1,200 vehicles per day, the residents on that street will begin to notice the traffic as a noise and safety

problem. To maintain neighborhoods, local residential streets should be designed to encourage low speed travel and to discourage through traffic.

Cul-de-sac, or "dead-end" residential streets are intended to serve only the adjacent land in residential neighborhoods. These streets should be short, serving a maximum of 20 single family houses. Because cul-de-sac streets limit street and neighborhood connectivity, they should only be used where topographical or other environmental constraints prevent street connections. Where cul-de-sacs must be used, pedestrian and bicycle connections to adjacent cul-de-sacs or through streets should be included.

Three local residential street options have been identified varying in width and ability to accommodate parking. Narrower streets should be encouraged for several reasons. They improve neighborhood aesthetics and discourage speeding and through traffic. They also reduce right-of-way needs, construction costs, storm water run-off, and the need to clear vegetation.

Option 1

The first option for a local residential street is a 32- to 36-foot roadway surface within a 60-foot right-of-way, as shown in Figure 7-1. The cross section will accommodate passage of two lanes of moving traffic, one in each direction, with curb parking on each side. Five-foot sidewalks should be provided on each side of the roadway. An optional planting strip has been included with a width up to 5 feet.

Option 2

Another option for a narrower roadway section should be a 28-foot roadway surface within a 50-foot right-of-way, as shown in Figure 7-1. The 28-foot cross section will accommodate passage of two lanes of moving traffic, one in each direction, with curb parking on one side. Narrower streets improve neighborhood aesthetics and discourage speeding and through traffic. They also reduce right-of-way needs, construction costs, storm water run-off, and the need to clear vegetation.

Five-foot sidewalks should be provided on each side of the roadway. An optional planting strip has been included with a width up to 5 feet.

Option 3

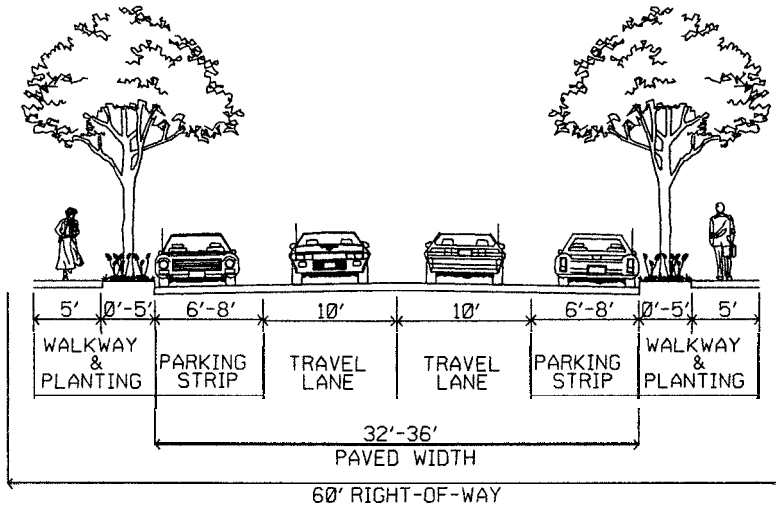
A third option for local residential streets provides a 24-foot roadway surface within a 50-foot right-of-way, as shown in shown in Figure 7-1. The 24-foot cross section will accommodate passage of two lanes of moving traffic, one in each direction, with no on-street parking. Five-foot wide sidewalks should be provided on each side of the roadway, located adjacent to the curb.

Alleys

Alleys can be a useful way to diminish street width by providing rear access and parking to residential areas. Including alleys in a subdivision design allows homes to be placed closer to the street and eliminates the need for garages to be the dominant architectural feature. This pattern, once common, has been recently revived as a way to build better neighborhoods. In addition, alleys can be useful in commercial and industrial areas,



OPTION 1:



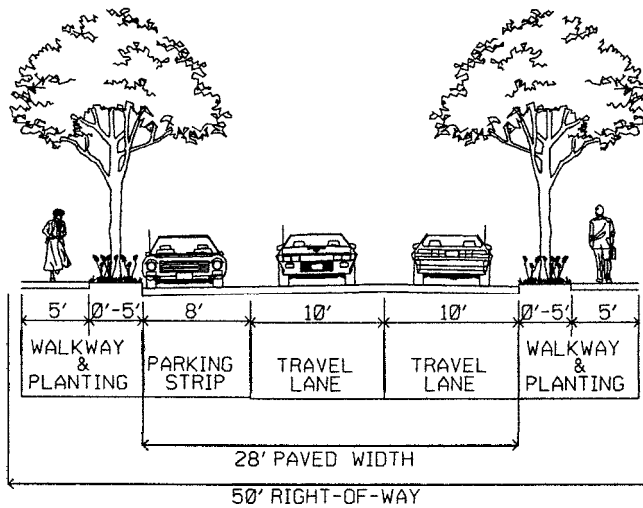
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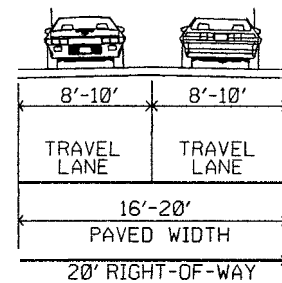
DAVID EVANS AND ASSOCIATES, INC.

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PORTLAND, OR. 97201-4830 (503) 223-6663

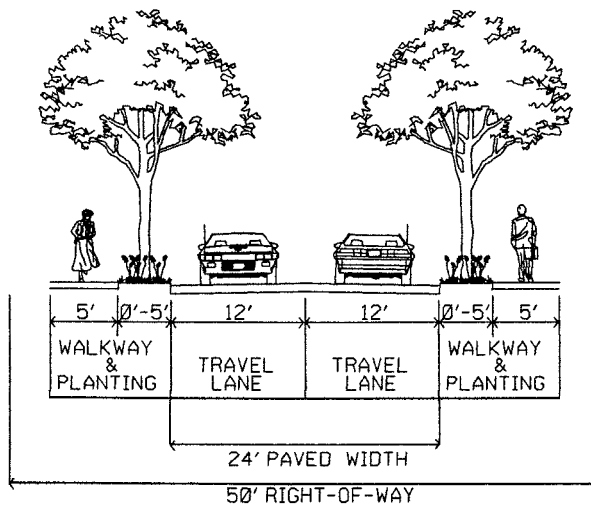
OPTION 2:



ALLEY



OPTION 3:



**FIGURE 7-1
STREET STANDARDS
-LOCAL RESIDENTIAL
STREETS**

COLLECTOR

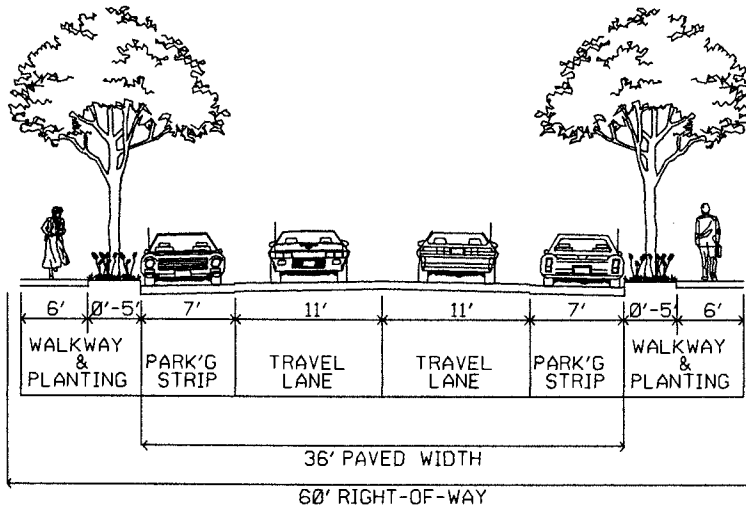


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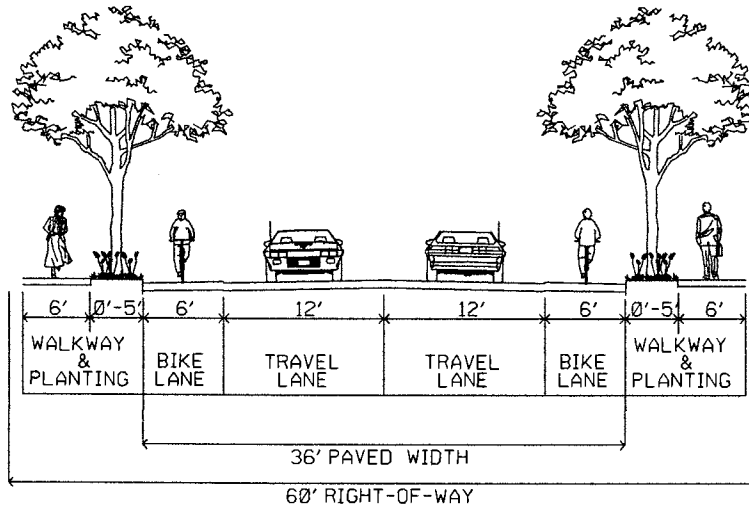


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AND ASSOCIATES, INC.**

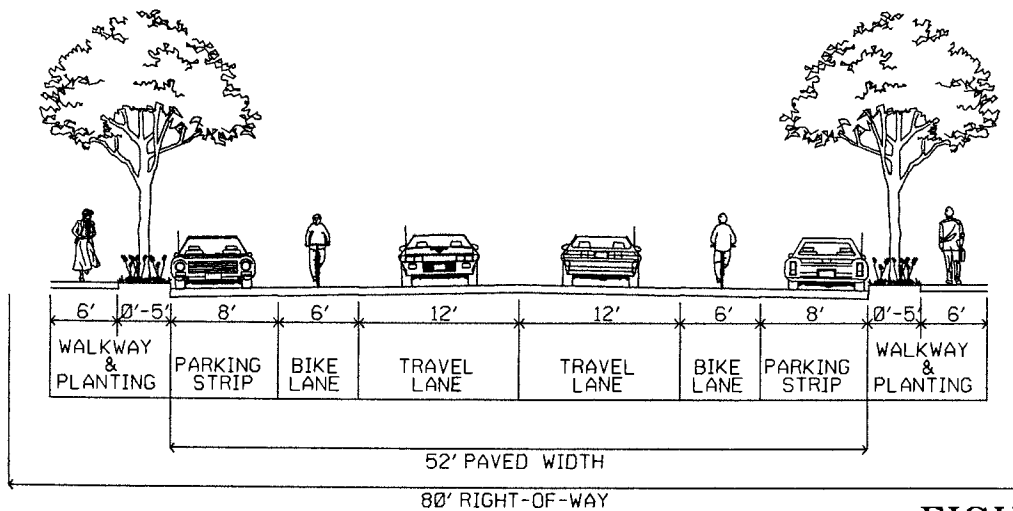
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ARTERIAL- OPTION 1:



ARTERIAL- OPTION 2:



**FIGURE 7-2
STREET STANDARDS
-COLLECTOR AND
ARTERIAL STREETS**

allowing access by delivery trucks off the main streets. Alleys should be encouraged in the urban area of City of Mt. Vernon. Alleys should be 16-20 feet wide, with a 20-foot right-of-way, as shown in Figure 7-1.

Collector Streets

Collector streets are primarily intended to serve abutting lands and local access needs of neighborhoods. They are intended to carry between 1,200 and 10,000 vehicles per day, with a design speed of 25 to 35 mph. Collector streets may serve either residential, commercial, industrial, or mixed land uses.

Figure 7-2, shows a cross section with a 60-foot right-of-way and a 36-foot paved width. The 36-foot cross section allows two 11-foot travel lanes and parking on both sides of the street. The roadway can also be striped to provide two travel lanes plus left-turn lanes at intersections or driveways by removing parking for short distances.

Six-foot sidewalks should be provided on each side of the roadway. An optional planting strip has been included with a width up to 5 feet. In commercial or business areas, the sidewalks may be 8 feet wide or extend to the property line, and may be located adjacent to the curb to facilitate loading and unloading at the curb.

Arterial Streets

Arterial streets form the primary roadway network within and through a region. They provide a continuous roadway system that distributes traffic between different neighborhoods and districts. Generally, arterial streets are higher capacity roadways that carry high traffic volumes with minimal localized activity. Design speeds should be between 25 and 45 mph. Residential property should not face or be provided with access onto arterial streets.

Two arterial street options have been identified varying in width and ability to accommodate bike lanes.

Option 1

Figure 7-2 shows a cross section with a 60-foot right-of-way and a 36-foot paved width. The 36-foot cross-section allows two 12-foot travel lanes with two 6-foot bike lanes. Six-foot sidewalks should be provided on each side of the roadway. An optional planting strip has been included with a width up to 5 feet. In commercial or business areas, the sidewalks may be 8 feet wide or extend to the property line, and may be located adjacent to the curb to facilitate loading and unloading at the curb.

Option 2

Another option for arterial streets maintains on-street parking, as shown in Figure 7-2. The section provides a 52-foot paved surface within an 80-foot right-of-way to allow for two 12-foot travel lanes, two 6-foot bike lanes, and two 8-foot parking lanes. The bike lanes should be striped between the parking lane and the travel lane.

Six-foot sidewalks should be provided on each side of the roadway. An optional planting strip has been included with a width up to 5 feet. In commercial or business areas, the sidewalks may be 8 feet wide or

extend to the property line, and may be located adjacent to the curb to facilitate loading and unloading at the curb.

Bike Lanes

In cases where a bikeway is proposed within the street right-of-way, 12 feet of roadway pavement (between curbs) should be provided for a 6-foot bikeway (arterial streets) on each side of the street, as shown in Figure 7-2. The striping should be done in conformance with the State Bicycle and Pedestrian Plan (1995). In cases where curb parking will exist with a bike lane, the bike lane will be located between the parking and travel lanes. In some situations, curb parking may have to be removed to permit a bike lane.

The bikeways on new streets or streets to be improved as part of the street system plan should be added when the improvements are made. The implementation program identifies an approximate schedule for these improvements.

On arterial and collector streets that are not scheduled to be improved as part of the street system plan, bike lanes may be added to the existing roadway at any time to encourage cycling, or when forecast traffic volumes exceed 2,500 to 3,000 vehicles per day. The striping of bike lanes on streets that lead directly to schools should be high priority.

Sidewalks

A complete pedestrian system should be implemented in the urban portion of the City of Mt. Vernon planning area. Every urban street should have sidewalks on both sides of the roadway, when possible, as shown on the cross sections in Figure 7-1 and Figure 7-2. Sidewalks on residential streets should have a 5-foot wide paved width with a 5-foot wide planting strip separating it from the street. Collector streets should have 6-foot wide sidewalks with optional planting strips. Arterial streets should have at least 6-foot sidewalks with optional planting strips. In commercial areas, sidewalks may be 8 feet wide or extend to the property line. They may also be located adjacent to the curb to facilitate loading and unloading.

Cul-de-sacs should be discouraged; however, where they must be used, a pedestrian and bicycle accessway connecting to adjacent cul-de-sacs or through street should be included.

In some cases, constraints, such as topography, may make it unfeasible to construct sidewalks on both sides of a local residential street. Under rare circumstances, sidewalks may be provided on only one side of the street; however, this practice should be discouraged.

Another essential component of the sidewalk system is street crossings. Intersections must be designed to provide safe and comfortable crossing opportunities. This includes not only signal timing (to ensure adequate crossing time) and crosswalks, but also such enhancements as curb extensions and center medians.

Curb Parking Restrictions

Curb parking should be prohibited at least 25 feet from the end of an intersection curb return to provide sight distance at street crossings.

Street Connectivity

Street connectivity is important because a well-connected street system provides more capacity than a disconnected one, provides alternate routes for local traffic, and is more pedestrian and bicycle friendly. Ensuring that the existing grid is extended as development occurs is important to Mt. Vernon's continued livability. Cul-de-sacs and "dead-end" streets should be discouraged. To this end, public through streets should have a minimum spacing of 500 feet. The only exceptions to this spacing standard should result from natural or man-made barriers.

ACCESS MANAGEMENT

Access management is an important tool for maintaining a transportation system. Too many access points can diminish the function of an arterial, mainly due to delays and safety hazards created by turning movements. Traditionally, the response to this situation is to add lanes to the street. However, this can lead to increases in traffic and, in a cyclical fashion, require increasingly expensive capital investments to continue to expand the roadway.

Reducing capital expenditures is not the only argument for access management. Additional driveways along arterial streets lead to an increased number of potential conflict points between vehicles entering and exiting the driveway, and through vehicles on the arterial streets. This not only leads to increased vehicle delay and a deterioration in the level of service on the arterial, but also leads to a reduction in safety.

Research has shown a direct correlation between the number of access points and collision rates. In addition, the wider arterial streets that can ultimately result from poor access management can diminish the livability of a community. Therefore, it is essential that all levels of government maintain the efficiency of existing arterial streets through better access management.

Access Management Techniques

The number of access points to an arterial can be restricted through the following techniques:

- Restricting spacing between access points (driveways) based on the type of development and the speed along the arterial
- Sharing of access points between adjacent properties
- Providing access via collector or local streets where possible
- Constructing frontage roads to separate local traffic from through traffic
- Providing service drives to prevent spill-over of vehicle queues onto the adjoining roadways
- Providing acceleration, deceleration, and right turn only lanes
- Installing median barriers to control conflicts associated with left turn movements
- Installing side barriers to the property along the arterial to restrict access width to a minimum

Recommended Access Management Standards

Access management is hierarchical, ranging from complete access control on freeways to increasing use of streets for access purposes, parking and loading at the local level. Table 7-2 describes recommended general access management guidelines by roadway functional classification.

Application

These access management restrictions are generally not intended to eliminate existing intersections or driveways. Rather, they should be applied as new development occurs. Over time, as land is developed and redeveloped, the access to roadways will meet these guidelines. In some cases, where there is a recognized problem, such as an unusual number of collisions, these techniques and standards can be applied to retrofit existing roadways.

**TABLE 7-2
RECOMMENDED ACCESS MANAGEMENT STANDARDS**

Functional Classification	Public Road		Private Drive ⁽²⁾	
	Type ⁽¹⁾	Spacing	Type	Spacing
Arterial				
Highway 26: General	at-grade	¼ mile	L/R Turns	500 feet
STA (MP 153.79 to MP 154.29)	at-grade	350 feet	L/R Turns	150 feet
Highway 395: General	at-grade	¼ mile	L/R Turns	500 feet
STA (MP 120.00 to MP 120.51)	at-grade	350 feet	L/R Turns	150 feet
Other Arterials within UGB	at-grade	350 feet	L/R Turns	150 feet
Collector	at-grade	250 feet	L/R Turns	125 feet
Local Street	at-grade	250 feet	L/R Turns	Access to Each Lot
Alley	at-grade	100 feet	L/R Turns	Access to Each Lot

STA = Special Transportation Area

⁽¹⁾ For most roadways, at-grade crossings are appropriate.

⁽²⁾ Allowed moves and spacing requirements may be more restrictive than those shown to optimize capacity and safety. Any access to a State Highway requires a permit from the ODOT District Office. Access will generally not be granted where there is a reasonable alternative access.

State Highways

Access management is important to promoting safe and efficient travel for both local and long distance users along state highways. Although the City of Mt. Vernon may designate Highways 26 and 395 as arterial streets within their transportation system, the access management category for this facility should generally follow the guidelines of the OHP.

General

On both Highways 26 and 395, within Mt. Vernon's UGB, OHP Category 4², "Limited Control" applies. This classification permits at-grade intersections or interchanges at a minimum spacing of one-quarter mile. Private driveways should have a minimum spacing of 500 feet from each other and from intersections. Traffic signals are permitted at a minimum of one-half mile spacing. These requirements are similar to the general access management guidelines specified for Highways 26 and 395 under arterial roadways in Table 7-2.

² Table 1 - Access Management Classification System, Appendix B, 1991 Oregon Highway Plan.

Special Transportation Area

While the OHP access management guidelines can be applied to some portions of the highways, the layout of the existing downtown grid street system along Highways 26 and 395 in Mt. Vernon does not meet these guidelines. The OHP Category 4 cannot be met on these sections of highway where centralized commercial development and high pedestrian activity define downtown Mt. Vernon. To maintain the character of this area, less restrictive access measures are recommended.

To address this issue, a Special Transportation Area (STA) is recommended on Highway 26 from the east city limits (MP 153.79) to the west city limits (MP 154.29). This STA should also extend northwards on Highway 395 from Highway 26 (MP 120.51) to approximately Rim Rock Lane (MP 120.00). To accommodate existing public roadway spacing and allow reasonable access spacing for private driveways, less restrictive access standards are recommended for this downtown section. Within the STA, access standards should allow intersection spacing at a minimum of 350 feet and driveway spacing at a minimum of 150 feet (see Table 7-2).

MODAL PLANS

The City of Mt. Vernon modal plans have been formulated using information collected and analyzed through a physical inventory, forecasts, goals and objectives, and input from local community representatives. The plans consider transportation system needs for City of Mt. Vernon during the next 20 years assuming the growth projections discussed in Chapter 5. The timing for individual improvements will be guided by the changes in land use patterns and growth of the population in future years. Specific projects and improvement schedules may need to be adjusted depending on when and where growth occurs within City of Mt. Vernon.

Street System Plan

The street system plan, shown in Figure 7-3, for the City of Mt. Vernon does not include the construction of any new street projects.

Street Improvements

The following improvements to the street system are included in the street system plan:

- *Intersection of Highways 26 and 395* - Increase the turning radius up to 20 or 25 feet on the northeast and northwest corners of the intersection. Add ADA ramps and concrete pedestrian reservoirs on both corners. (Estimated cost = \$6,000.)
- *Ingle Street* - Extend Ingle Street southwards and then westwards to connect with Harper Creek Road. This new roadway would create a bypass around West Riverside Street and open new land to development on the south side of the city. (Estimated cost = \$600,000.)
- *Thompson Avenue* - Repave the existing section Thompson Avenue. (Estimated cost = \$39,200.)
- *Park Avenue* - Repave the existing section of Park Avenue. (Estimated cost = \$19,200.)

- *Green Acres Lane* - Repave the existing section of Green Acres Lane. (Estimated cost = \$24,000.)
- *Violet Street* - Upgrade and pave the existing gravel section of Violet Street. (Estimated cost = \$21,600.)
- *Moore Street* - Upgrade and pave the existing gravel section of Moore Street. (Estimated cost = \$50,400.)
- *Highway 26/395* - Widen the roadway and install on-street parking along Phil Boyd Memorial Park. (Estimated cost = \$12,000.)

The implementation program, described later in this chapter, provides a prioritized list of these improvements.

Speed Control Measures

The City of Mt. Vernon has identified some transportation system management measures which it would like to implement to help control speeds along Highway 26 through town. These measures include:

- *Speed Detector Trailer* - Make drivers more aware of their speed and surroundings by using a speed detector to display actual vehicle speed as a driver passes through town. (Estimated cost = \$10,000 - \$11,000 for speed detector purchase plus annual operating expenses.)
- *Driver Education and Public Service Signage Program* - Inform drivers about the hazards of speeding and inform pedestrians about safety along state highways. (Estimated would be a function of the specific program created.)
- *Speed Limit Enforcement* - Use police to enforce speed limits through town. (Estimated cost = \$30,000 annually for an additional patrol officer excluding vehicle costs.)

The small size of Mt. Vernon would make it difficult to raise funding to pay for these measures. However, if the costs are shared with several other cities, Grant County, and even the state, it may be possible for Mt. Vernon to implement a speed control program. Discussions with other jurisdictions should be a high priority for city officials to determine what kind of county-wide enforcement program may be possible and how the City of Mt. Vernon could participate in and contribute to it. The total estimated cost of these speed control measures cannot be easily calculated because exact programs are unknown at this time and some of the costs are annual costs.

Pedestrian System Plan

A complete pedestrian system should be implemented in the City of Mt. Vernon. As funding permits, every paved street and new street should have sidewalks on both sides of the roadway to meet the requirements set forth in the street standards. Pedestrian access on walkways should be provided between all buildings including shopping centers and abutting streets and adjacent neighborhoods. (Ordinances specifying these requirements are included in Chapter 9.)

Four pedestrian projects have been identified, as shown in Figure 7-4.

LEGEND

- STATE HIGHWAY/ARTERIAL STREET
- COUNTY MAJOR COLLECTOR
- COUNTY MINOR COLLECTOR
- CITY COLLECTOR STREET
- CITY LOCAL STREET
- PRIVATE ROAD
- NEW STREET
- CITY LIMITS
- URBAN GROWTH BOUNDARY

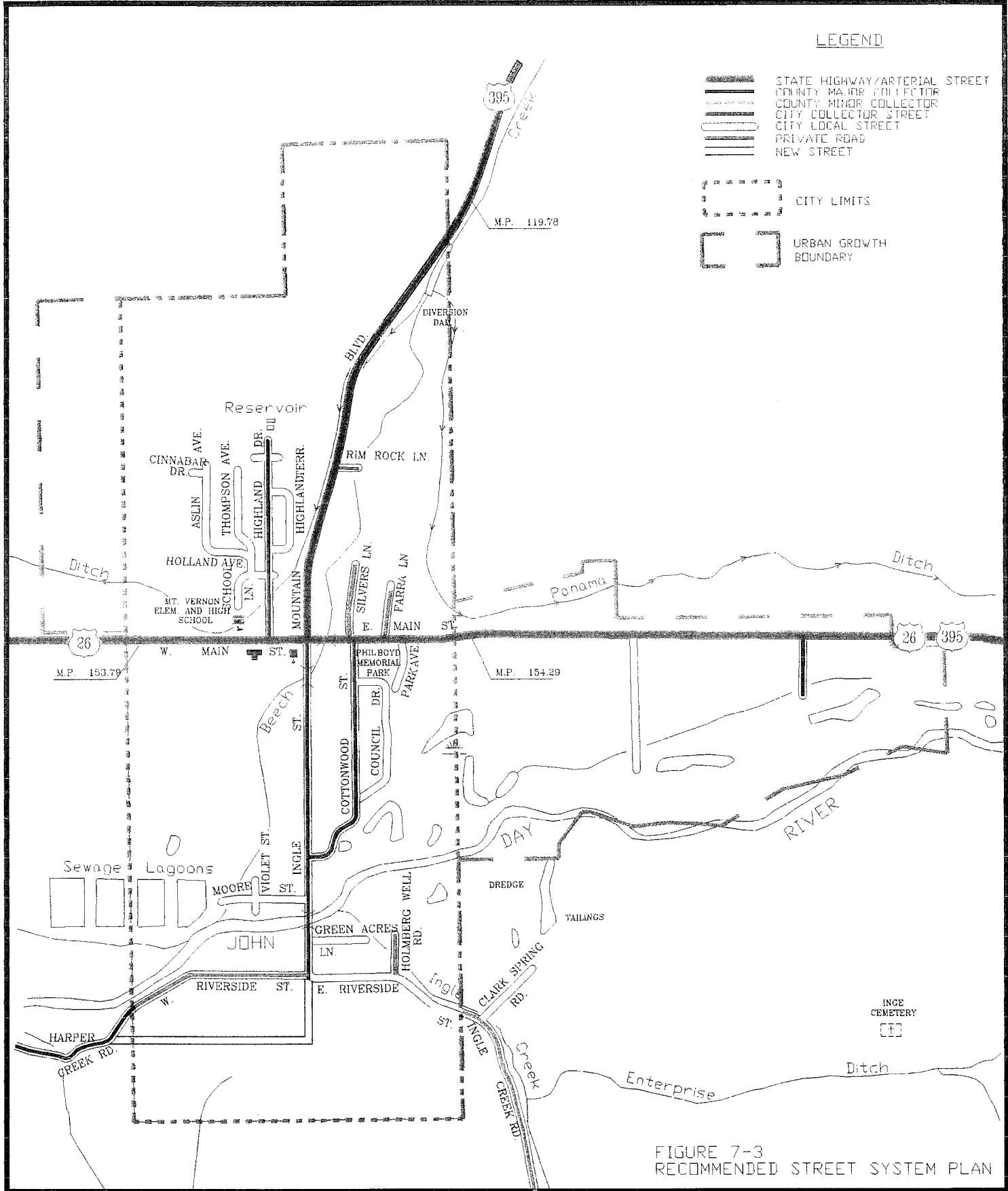


FIGURE 7-3
RECOMMENDED STREET SYSTEM PLAN

- MAINLINE STATE HIGHWAY
- STREET OPEN FOR TRAVEL
- INTERSTATE ROUTE
- U.S. ROUTE
- STATE ROUTE
- TERMINATION OF FA SYSTEM
- ALL STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED
- PUBLIC BUILDING
- COURT HOUSE
- CITY HALL
- ARMORY
- POST OFFICE
- SCHOOL
- LIBRARY

CITY OF MT. VERNON

0 500 1000 FEET



- *Highway 395* - Construct concrete sidewalks along both sides of Highway 395 north of Highway 26. On the west side of the highway, sidewalks would be added for a length of 530 feet. On the east side of the highway, sidewalks would be added for a length of 1,600 feet. (Estimated cost = \$53,000 for concrete sidewalks.)
- *Highway 26/395 West of Beech Creek* - Construct a 5-foot sidewalk on the north side of Highway 26/395 from Highway 395 to the Beech Creek Bridge. This sidewalk should be added when the improvements to the intersection of Highways 26 and 395 are implemented. (Estimated cost = \$3,000 for concrete sidewalks.)
- *Beech Creek Bridge* - Widen the existing sidewalks to 5 feet and install new ramps at the ends. (Estimated Cost = \$6,000.)
- *Highway 26/395 East of Beech Creek* - Construct a 6-foot sidewalk on both sides Highway 26 from the Beech Creek Bridge to the east city limits. (Estimated Cost = \$70,000.)
- *Multi-Use Path* - Construct a 10-foot wide recreational path along the John Day River from Mt. Vernon to Clyde Holiday State Park. (Estimated Cost = \$157,000.)

Over time, sidewalks shall also be added to streets that currently lack them and are not programmed for improvements. Missing sidewalk segments should be added whenever an opportunity presents itself (such as infill development, special grants, etc.).

Because of the relatively low traffic volumes on most roadways in Mt. Vernon, asphalt pathways could be provided instead of a concrete sidewalk. In general, asphalt pathways are a lower cost alternative to concrete sidewalks. Construction costs for asphalt pathways are about 40 percent of the costs for concrete sidewalks; however, maintenance, such as sealing and resurfacing the asphalt, must occur more frequently.

Bicycle System Plan

No specific bicycle facility improvements are recommended for the City of Mt. Vernon.

Shared roadways, where bicyclists share normal vehicle lanes with motorists, are generally acceptable if speeds and traffic volumes are relatively low. On the collector and local streets in Mt. Vernon, shared roadways are not an issue; however, on arterial roadways bike lanes are recommended.

Highways 26 and 395 function as arterial streets through Mt. Vernon, which means that they should have bike lanes on both sides of the street as specified in the street standards listed earlier in this chapter and as required by the TPR. Based on the trendline projections described in Chapter 5, Highway 26 is project to carry volumes approaching 4,000 vehicles per day while Highway 395 is projected to carry almost 1,400 vehicles per day in 20 years.

On Highway 26, volumes are already at 3,500 vehicles per day. Accident statistics on the highway do not indicate that there are frequent conflicts between bicyclists and motorized vehicles. This is due in part to relatively low bicycle usage in the area. To install bicycle lanes along Highway 26 would involve removing on-street parking through downtown Mt. Vernon. The Beech Creek Bridge would not be wide enough to accommodate bicycles and would need to be widened. Shoulders would need widening on sections where no on-street parking exists. Some of these improvements would be expensive and others would be

controversial. At this time, no specific bikeway improvements are recommended; however, ODOT should track both traffic volumes and accident rates on this facility to identify any problems in the future.

Shared travel lanes on Highway 395 should be acceptable with the relatively low projected traffic volumes. Again, ODOT should track both traffic volumes and accident rates on this facility to identify any problems in the future.

Bicycle parking is generally lacking in City of Mt. Vernon. Bike racks should be installed in front of downtown businesses and all public facilities (schools, post office, library, city hall, and parks). Typical rack designs cost about \$50 per bike plus installation. Bicycle parking requirements are further addressed in Chapter 9 (Policies and Ordinances).

Transportation Demand Management Plan

Through transportation demand management (TDM), peak travel demands can be reduced or spread to more efficiently use the transportation system, rather than building new or wider roadways. Techniques that have been successful and could be initiated to help alleviate some traffic congestion include carpooling and vanpooling, alternative work schedules, bicycle and pedestrian facilities, and programs focused on high density employment areas.

In Mt. Vernon, where traffic volumes are low and the population and employment is small, implementing TDM strategies is not practical in most cases. However, the sidewalks improvements recommended earlier in this chapter are also considered TDM strategies. By providing these facilities, the City of Mt. Vernon is encouraging people to travel by other modes than the automobile.

Because intercity commuting is a factor in Grant County, residents who live in Mt. Vernon and work in other cities should be encouraged to carpool with a fellow coworker or someone who works in the same area. Implementing a local carpool program in Mt. Vernon alone is not practical because of the city's small size; however, a county-wide carpool program is possible. Based on journey-to-work statistics from the 1990 Census, almost 25 percent of all work trips are currently made by carpool. The City of Mt. Vernon should support state and county carpooling and vanpooling programs which could further boost carpooling ridership.



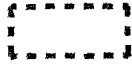

No costs have been estimated for the TDM plan. Grants may be available to set up programs; other aspects of Transportation Demand Management can be encouraged through ordinance and policy.

Public Transportation Plan

The City of Mt. Vernon has no local (city-only) public transportation services. However, there is paratransit and long distance services provided by The People Mover company based in John Day. They provide passenger services to senior citizens and the disabled and also serve the general public.

No specific expansions of any of these services is currently planned; however, with county-wide population growth projected about 15 percent over the next 20 years, additional demand for these services can be expected. Furthermore, increased usage of these services should be encouraged. The resulting increase in demand may require some expansion in the future.

LEGEND

-  EXISTING SIDEWALK
-  FUTURE SIDEWALK
-  CITY LIMITS
-  URBAN GROWTH BOUNDARY

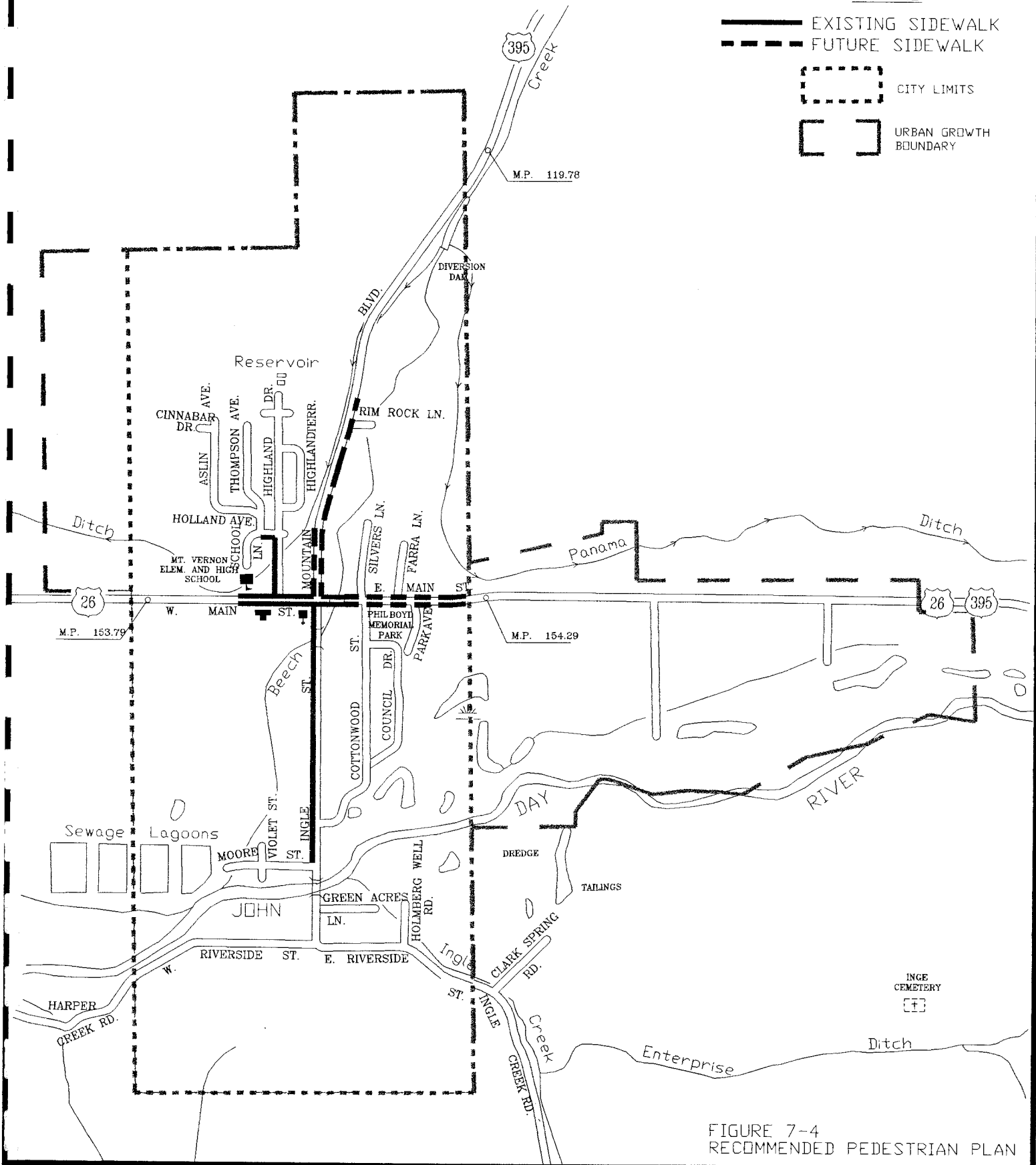
















FIGURE 7-4
RECOMMENDED PEDESTRIAN PLAN

-  MAINLINE STATE HIGHWAY
-  STREET OPEN FOR TRAVEL
-  INTERSTATE ROUTE
-  U.S. ROUTE
-  STATE ROUTE
-  TERMINATION OF FA SYSTEM
-  STATE HIGHWAYS AND FEDERAL AID ROADS SHOWN IN RED
-  PUBLIC BUILDING
-  COURT HOUSE
-  CITY HALL
-  ARMORY
-  POST OFFICE
-  SCHOOL
-  LIBRARY

0 500 1000 FEET

CITY OF MT. VERNON



No costs have been estimated for expanding existing public transportation services. Some potential funding sources include grants to conduct feasibility studies and State and Federal funding to purchase equipment.

Rail Service Plan

The City of Mt. Vernon has no passenger or freight rail services.

Air Service Plan

The City of Mt. Vernon has no air transportation services.

Pipeline Service Plan

The City of Mt. Vernon has no pipeline transportation services.

Waterborne Service Plan

The City of Mt. Vernon has no waterborne transportation services.

TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM

Implementation of the City of Mt. Vernon TSP will require both changes to the city comprehensive plan and zoning code and preparation of a 20-year capital improvement plan. These actions will enable City of Mt. Vernon to address both existing and emerging transportation issues throughout the urban area in a timely and cost effective manner.

One part of the implementation program is the formulation of a 20-year capital improvement program (CIP). The purpose of the CIP is to detail what transportation system improvements will be needed as Mt. Vernon grows and provide a process to fund and schedule the identified transportation system improvements. Ultimately the transportation CIP should be integrated into the existing city CIP, Grant County CIP, and the ODOT Statewide Transportation Improvement Program (STIP). This integration is important since the TSP proposes that all three governmental agencies will participate in funding the transportation improvement projects.

Model policy and ordinance language that conforms with the requirements of the TPR are contained in Chapter 9 of this report. The proposed ordinance amendments will require approval by the City Council and those that affect the unincorporated urban area will also require approval by the Board of County Commissioners.

20-Year Capital Improvement Program

The CIP is shown with the following priorities:

- Phase 1, 1998 to 2002
- Phase 2, After 2002

These priorities are based on current need, the relationship between transportation service needs, and the expected growth of the city. The following schedule indicates priorities and may be modified to reflect the availability of finances or the actual growth in population and employment.

The CIP is summarized in Table 7-3. The cost of each project is listed in the CIP is shown in present day (1997) dollars by jurisdiction as well as total approximate opening year dollars. These costs include design, construction, and some contingency costs. They are preliminary estimates and do not include right-of-way acquisition, water or sewer facilities, or detailed intersection design. Some of the CIP elements have costs that cannot be easily calculated because exact programs are unknown at this time and some of the costs are annual costs. The total for each phase and overall show the known costs only.

TABLE 7-3
PRIORITIZED CAPITAL IMPROVEMENT PROGRAM (1997) DOLLARS

Project Description	Estimated Cost			
	Local	County	State	Total
<i>Phase 1: 1998 To 2002</i>				
Implement Speed Control Measures along Highway 395*	Unknown	Unknown	Unknown	Unknown
Improve the turning radii on the northeast and northwest corners of the Highway 26/395 intersection	\$0	\$0	\$6,000	\$6,000
Add sidewalks along the north side of Highway 26 from Highway 395 to the Beech Creek Bridge	\$0	\$0	\$3,000	\$3,000
Repave the existing section Thompson Avenue	\$39,200	\$0	\$0	\$39,200
Repave the existing section of Park Avenue	\$19,200	\$0	\$0	\$19,200
Repave the existing section of Green Acres Lane	\$24,000	\$0	\$0	\$24,000
Upgrade and pave the existing gravel section of Violet Street	\$21,600	\$0	\$0	\$21,600
Upgrade and pave the existing gravel section of Moore Street	\$50,400	\$0	\$0	\$50,400
<i>Phase 2: After 2002</i>				
Widen Highway 26 and install on-street parking adjacent to Phil Boyd Memorial Park	\$12,000	\$0	\$0	\$12,000
Extend Ingle Street southwards and then westwards to connect with Harper Creek Road	\$540,000	\$60,000	\$0	\$600,000
Construct concrete sidewalks along both sides of Highway 395 north of Highway 26 - 530 feet on west side and 1,600 feet on east side	\$0	\$0	\$53,000	\$53,000
Widen the sidewalks on the Beech Creek Bridge to 5 feet and install new ramps at each end	\$0	\$0	\$6,000	\$6,000
Construct concrete sidewalks along both sides of Highway 26 from the Beech Creek Bridge to the east city limits	\$0	\$0	\$70,000	\$70,000
Construct a Multi-Use Path along the John Day River from Mt. Vernon to Clyde Holiday State Park	\$123,000	\$34,000	\$0	\$157,000
Subtotal Phase 1	\$154,400	\$0	\$9,000	\$163,400
Subtotal Phase 2	\$675,000	\$94,000	\$129,000	\$898,000
Total	\$729,400	\$94,000	\$138,000	\$1,061,400

*The costs for implementing speed control measures along Highway 26 cannot be easily calculated because exact programs are unknown at this time and some of the costs are annual costs

Mt. Vernon has identified a total of 14 projects in its CIP with a total known cost of approximately \$1 million. Eight Phase 1 projects have been identified with a known cost of \$163,400. The actual implementation of some of the speed control measures will be determined by the programs outlined through

cooperative efforts with other cities, Grant County, and ODOT. Six Phase 2 projects have been identified with a total estimated cost of \$898,000.

CHAPTER 8: FUNDING OPTIONS AND FINANCIAL PLAN

The TPR requires TSPs to evaluate the funding environment for recommended improvements. This evaluation must include a listing of all recommended improvements, estimated costs to implement those improvements, and a review of potential financing mechanisms to fund proposed transportation improvement projects. The City of Mt. Vernon's TSP identifies 14 improvement projects over the next 20 years with a known cost of about \$1 million. This section of the TSP provides an overview of the City of Mt. Vernon's revenue outlook and a review of some funding and financing options that may be available to the City of Mt. Vernon.

Pressures from increasing growth throughout much of Oregon have created an environment of estimated improvements that remain unfunded. The City of Mt. Vernon will need to work with Grant County and ODOT to finance new transportation projects over the 20-year planning horizon. The actual timing of these projects will be determined by the rate of population and employment growth actually experienced by the community. If population growth exceeds the anticipated rate, the improvements may need to be accelerated. Slower than expected growth will relax the improvement schedule.

HISTORICAL STREET IMPROVEMENT FUNDING SOURCES

In Oregon, state, county, and city jurisdictions work together to coordinate transportation improvements. In addition to this overlapping jurisdiction of the road network, transportation improvements are funded through a combination of federal, state, county, and city sources.

Table 8-1 shows the distribution of road revenues for the different levels of government within the state by jurisdiction level. Although these numbers were collected and tallied in 1991, ODOT estimates that these figures accurately present the current revenue structure for transportation-related needs.

TABLE 8-1
SOURCES OF ROAD REVENUES BY JURISDICTION LEVEL

Revenue Source	Jurisdiction Level			Statewide
	State	County	City	Total
State Road Trust	58%	38%	41%	48%
Local	0%	22%	55%	17%
Federal Road	34%	40%	4%	30%
Other	9%	0%	0%	4%

Source: ODOT 1993 Oregon Road Finance Study.

At the state level, nearly half (48 percent in Fiscal Year 1991) of all road-related revenues are attributable to the State Highway Fund, whose sources of revenue include fuel taxes, weight per mile taxes on trucks, and vehicle registration fees. As shown in the table, the state road trust is a considerable source of revenue for all levels of government. Federal sources (generally the federal highway trust account and federal forest revenues) comprise another 30 percent of all road-related revenue. The remaining sources of road-related revenues are generated locally, including property taxes, LIDs, bonds, traffic impact fees, road user taxes, general fund transfers, receipts from other local governments, and other sources.

As a state, Oregon generates 94 percent of its highway revenues from user fees, compared to an average of 78 percent among all states. This fee system, including fuel taxes, weight distance charges, and registration fees, is regarded as equitable because it places the greatest financial burden upon those who create the greatest need for road maintenance and improvements. Unlike many states that have indexed user fees to inflation, Oregon has static road-revenue sources. For example, rather than assessing fuel taxes as a *percentage* of price per gallon, Oregon's fuel tax is a fixed amount (currently 24 cents) per gallon.

Transportation Revenue Outlook

ODOT's policy section recommends certain assumptions in the preparation of transportation plans. In its *Financial Assumptions* document prepared in March 1995, ODOT projected the revenue of the State Highway Fund through year 2018. The estimates are based on the following assumptions:

- Fuel tax (and weight per mile fee) increases of 1 cent per gallon per year, with an additional 1 cent per gallon every fourth year;
- TPR goals are met; and
- Inflation occurs at an average annual rate of 3.7 percent (as forecast by DRI).

Figure 8-1 shows the forecast in both current-dollar and inflation-deflated constant (1995) dollars. As highlighted by the constant-dollar data, the highway fund is expected to grow faster than inflation early in the planning horizon, with growth slowing to a rate somewhat less than inflation around year 2004, continuing a slight decline through the remainder of the planning horizon.

The State Highway Fund is expected to remain a significant source of funding for the City of Mt. Vernon during the next 20 years. Although the City has historically received revenue from this fund for transportation maintenance and improvements, Mt. Vernon should be cautious of relying heavily on this source, since funds are expected to decline after 2005.

REVENUE SOURCES

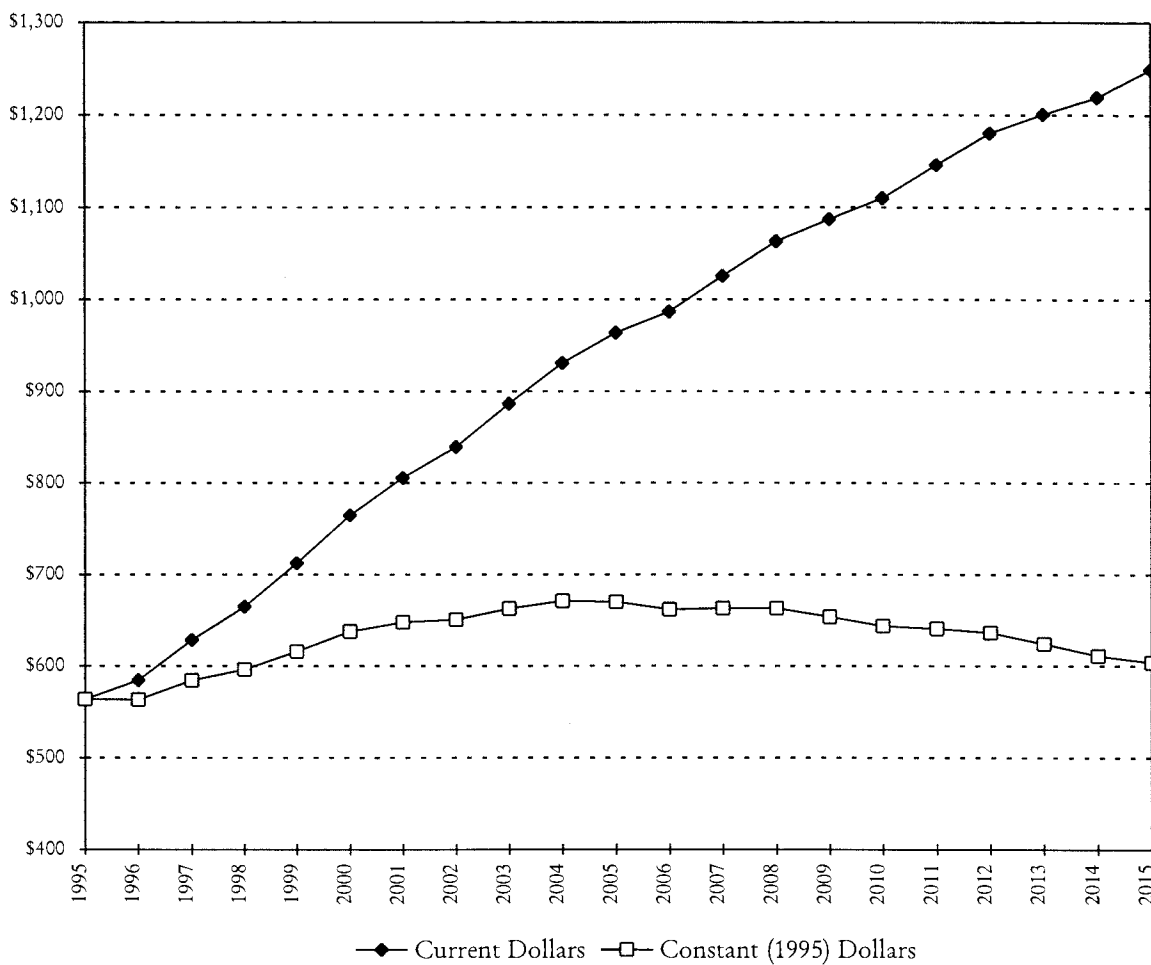
In order to finance the recommended transportation system improvements in Mt. Vernon, it will be important to consider a range of funding sources. Recent property tax limitations have created the need for local governments to seek revenue sources other than the traditional property tax. The use of alternative revenue funding has been a trend throughout Oregon as the full implementation of Measure 5 has significantly reduced property tax revenues. This trend is expected to continue with the recent passage of Measure 47 and its revised version, Measure 50. The alternative revenue sources described in this section may not all be appropriate in the City of Mt. Vernon; however, this overview is being provided to illustrate the range of options currently available to finance transportation improvements during the next 20 years.

Property Taxes

Property taxes have historically been the primary revenue source for local governments. This dependence is due, in large part, to the fact that property taxes are easy to implement and enforce. Property taxes are based on real property (i.e., land and buildings) which have a predictable value and appreciation to base taxes upon. This is opposed to income or sales taxes which can fluctuate with economic trends or unforeseen events.



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Source: ODOT Financial Assumptions

FIGURE 8-1
STATE HIGHWAY FUND

Property taxes can be levied through: 1) tax base levies, 2) serial levies, and 3) bond levies. The most common method uses tax base levies which do not expire and are allowed to increase by six percent per annum. Serial levies are limited by amount and time they can be imposed. Bond levies are for specific projects and are limited by time based on the debt load of the local government or the project.

The historic dependence on property taxes is changing with the passage of Ballot Measure 5 in the early 1990s. Ballot Measure 5 limits the property tax rate for purposes other than payment of certain voter-approved general obligation indebtedness. Under full implementation, the tax rate for all local taxing authorities is limited to \$15 per \$1,000 of assessed valuation. As a group, all non-school taxing authorities are limited to \$10 per \$1,000 of assessed valuation. All tax base, serial, and special levies are subject to the tax rate limitation. Ballot Measure 5 requires that all non-school taxing districts' property tax rate be reduced if together they exceed \$10 per \$1,000 per assessed valuation by the county. If the non-debt tax rate exceeds the constitutional limit of \$10 per \$1,000 of assessed valuation, then all of the taxing districts' tax rates are reduced on a proportional basis. The proportional reduction in the tax rate is commonly referred to as compression of the tax rate.

Measure 47, an initiative petition, was passed by Oregon voters in November 1996. It is a constitutional amendment that reduces and limits property taxes and limits local revenues and replacement fees. The measure limits 1997-98 property taxes to the lesser of the 1995-96 tax minus 10 percent, or the 1994-95 tax. It limits future annual property tax increase to three percent, with exceptions. Local governments' lost revenue may be replaced only with state income tax, unless voters approve replacement fees or charges. Tax levy approvals in certain elections require 50 percent voter participation.

The state legislature created Measure 50, which retains the tax relief of Measure 47 but clarifies some legal issues. This revised tax measure was approved by voters in May 1997.

The League of Oregon Cities (LOC) estimated that direct revenue losses to local governments, including school districts, will total \$467 million in fiscal year 1998, \$553 million in 1999, and increasing thereafter. The actual revenue losses to local governments will depend on actions of the Oregon Legislature. LOC also estimates that the state will have revenue gains of \$23 million in 1998, \$27 million in 1999, and increasing thereafter because of increased personal and corporate tax receipts due to lower property tax deduction.

Measure 50 adds another layer of restrictions to those which govern the adoption of tax bases and levies outside the tax base, as well as Measure 5's tax rate limits for schools and non-schools and tax rate exceptions for voter approved debt. Each new levy and the imposition of a property tax must be tested against a longer series of criteria before the collectible tax amount on a parcel of property can be determined.

The implementation of Measure 50 will require that cities and counties protect and prioritize funding for public safety and public education. Another major requirement of Measure 50 is that cities and counties must obtain voter approval to raise fees for services, if the increased fee revenue is a substitute for property tax support.

The Governor's Office and state legislature are in the process of preparing the new budget for the next biennium. Based on the preliminary budget released by the Governor's Office, cities and counties will not receive additional funding from the state to reduce the impacts of Measure 50. Instead, the new budget will focus on retaining and increasing support for basic school education programs. Again, the preliminary budget will likely be modified during the current legislative session.

System Development Charges

System Development Charges (SDCs) are becoming increasingly popular in funding public works infrastructure needed for new local development. Generally, the objective of systems development charges is to allocate portions of the costs associated with capital improvements upon the developments that increase demand on transportation, sewer, or other infrastructure systems.

Local governments have the legal authority to charge property owners and/or developers fees for improving the local public works infrastructure based on projected demand resulting from their development. The charges are most often targeted towards improving community water, sewer, or transportation systems. Cities and counties must have specific infrastructure plans in place that comply with state guidelines in order to collect SDCs.

The City of Mt. Vernon could implement SDCs for their transportation system. The fee is collected when new building permits are issued. The cities would calculate the fee based on trip generation of the proposed development. Residential calculations would be based on the assumption that a typical household will generate a given number of vehicle trips per day. Nonresidential use calculations are based the number of trips generated or on employee ratios for the type of business or industrial uses. The SDC fees will help construct and maintain the transportation network throughout the TSP study area. The implementation of SDCs in the City of Mt. Vernon is not considered a practical funding option since the rate of new development has been slow, and is not expected to grow significantly in the future.

State Gas Taxes

Gas tax revenues received from the State of Oregon are used by all counties and cities to fund street and road construction and maintenance. In Oregon, the state collects gas taxes, vehicle registration fees, overweight/overheight fines, and weight per mile taxes and returns a portion of the revenues to cities and counties through an allocation formula. The revenue share to cities is divided among all incorporated cities based on population. The theory is that these taxes are somewhat tied to the benefits people receive, since those who drive more would pay more. Like other Oregon cities, the City of Mt. Vernon uses its State Gas Tax allocation to fund street construction and maintenance.

Local Gas Taxes

The Oregon Constitution permits counties and incorporated cities to levy additional local gas taxes with the stipulation that the moneys generated from the taxes will be dedicated to street-related improvements and maintenance within the jurisdiction. At present, only a few local governments (including the Cities of Woodburn and The Dalles, and Multnomah and Washington Counties) levy a local gas tax. Based on the experiences of other local jurisdictions, the City of Mt. Vernon may have difficulty gaining public support for a local gas tax, even on a countywide basis.

Vehicle Registration Fees

The Oregon Vehicle Registration Fee is allocated to the state, counties, and cities for road funding. Oregon counties are granted authority to impose a vehicle registration fee covering the entire county. The Oregon Revised Statutes allow Grant County to impose a biannual registration fee for all passenger cars licensed within the county. Although both counties and special districts have this legal authority, vehicle registration

fees have not been imposed by local jurisdictions. Like fuel taxes, this fee would be somewhat tied to the benefits of the transportation system, because it would be paid by automobile owners in the county. In order for a local vehicle registration fee program to be viable in Grant County, all the incorporated cities and the county would need to formulate an agreement that would detail how the fees would be spent on future street construction and maintenance.

Local Improvement Districts

The Oregon Revised Statutes allow local governments to form Local Improvement Districts (LIDs) to construct public improvements. LIDs are most often used by cities to construct localized projects such as streets, sidewalks, or bikeways. The statutes allow formation of a district by either the city government or property owners. Cities that use LIDs are required to have a local LID ordinance that provides a process for district formation and payback provisions. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation. The types of allocation methods are only limited by the Local Improvement Ordinance. The cost of LID participation is considered an assessment against the property which is a lien equivalent to a tax lien. Individual property owners typically have the option of paying the assessment in cash or applying for assessment financing through the city. Since the passage of Ballot Measure 5, cities have most often funded local improvement districts through the sale of special assessment bonds.

Grants and Loans

The majority of the grant and loan programs available today are geared towards economic development and not specifically for construction of new streets. Typically, grant programs target areas that lack basic public works infrastructure needed to support new or expanded industrial businesses. Because of the popularity of some grant programs such as the Oregon Special Public Works Fund, the emphasis has shifted to more of a loan program. Many programs require a match from the local jurisdiction as a condition of approval. Because grant programs are subject to change, they should not be considered a secure long-term funding source for the City of Mt. Vernon.

These programs include the Immediate Opportunity Grant, the Oregon Special Public Works Fund program, and the Special Small City Allotment program which are described below.

Immediate Opportunity Grant Program

The Oregon Economic Development Department (OEDD) and ODOT collaborate to administer a grant program designed to assist local and regional economic development efforts. The program is funded to a level of approximately \$5,000,000 per year through state gas tax revenues. The following are primary factors in determining eligible projects:

- Improvement of public roads;
- Inclusion of an economic development-related project of regional significance;
- Creation of primary employment; and
- Ability to provide local funds to match grant (lesser matches may also be considered).

The maximum amount of any grant under the program is \$500,000. Local governments which have received grants under the program include Washington County, Multnomah County, Douglas County, City of Hermiston, Port of St. Helens, and the City of Newport.

Oregon Special Public Works Fund

The Special Public Works Fund (SPWF) program was created by the 1995 State Legislature as one of the several programs for the distribution of funds from the Oregon Lottery to economic development projects in communities throughout the state. The program provides grant and loan assistance to eligible municipalities primarily for the construction of public infrastructure that supports commercial and industrial development that results in permanent job creation or job retention. To be awarded funds, each infrastructure project must support businesses wishing to locate, expand, or remain in Oregon. SPWF awards can be used for improvement, expansion, and new construction of public sewage treatment plants, water supply works, public roads, and transportation facilities.

While SPWF program assistance is provided as both loans and grants, the program emphasizes loans in order to assure that funds will return to the state over time for reinvestment in local economic development infrastructure projects. The maximum loan amount per project is \$11,000,000 and the term of the loan cannot exceed the useful life of the project or 25 years, whichever is less. Interest rates for loans funded with the State of Oregon Revenue Bonds are based on the rate the state may borrow through the Oregon Economic Development Department Bond Bank. The department may also make loans directly from the SPWF and the term and rate on direct loans can be structured to meet project needs. The maximum grant per project is \$500,000, but may not exceed 85 percent of the total project cost.

Jurisdictions that have received SPWF funding for projects that include some type of transportation-related improvement include the Cities of Baker City, Bend, Cornelius, Forest Grove, Madras, Portland, Redmond, Reedsport, Toledo, Wilsonville, Woodburn, and Douglas County.

Special Small City Allotment Program

This program is restricted to cities with populations under 5,000 residents. Unlike the OEDD Immediate Opportunity Grant program and the Oregon Special Public Works Fund, no locally funded match is required for participation. Grant amounts are limited to \$25,000 and must be earmarked for surface projects (drainage, curbs, sidewalks, etc.). However, the program does allow jurisdictions to use the grants to leverage local funds on non-surface projects if the grant is used specifically to repair the affected area.

Public Transportation Funds

There are several different grants and loans which are available to fund public transportation, including:

- Special Transportation Fund (STF)
- Section 5311
- Community Transportation Program
- Special Transportation District

The public transportation grant and loan programs may be applicable to funding The People Mover system in Grant County. However, funding opportunities may be limited since the system serves a small rural population that is spread out in small communities in the County. These grant and loan programs require a local funding match from the participating local government agencies.

Bicycle and Pedestrian Program Funds

The state Bicycle and Pedestrian Program has grants available for bicycle and pedestrian system improvements. These improvements must benefit the overall transportation system by providing good, alternative transportation options to the automobile. Funds are not available for bicycle and pedestrian facilities which serve a purely recreational use. The bicycle and pedestrian grant program requires a local match to fund the identified improvements.

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. The STIP, which identifies transportation for a three-year funding cycle, is updated on an annual basis. Starting with the 1998 budget year, ODOT will then identify projects for a four-year funding cycle. In developing this funding program, ODOT must verify that the identified projects comply with the Oregon Transportation Plan (OTP), ODOT Modal Plans, Corridor Plans, local comprehensive plans, and ISTEA Planning Requirements. The STIP must fulfill ISTEA planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on a review of the ISTEA planning requirements and the different state plans. ODOT consults with local jurisdictions before highway-related projects are added to the STIP.

The highway-related projects identified in the City of Mt. Vernon's TSP will be considered for future inclusion on the STIP. The timing of including specific projects will be determined by ODOT based on an analysis of all the project needs within Region 5. The TSP will provide ODOT with a prioritized project list for The City of Mt. Vernon for the next 20 years. The City of Mt. Vernon, Grant County, and ODOT will need to communicate on an annual basis to review the status of the STIP and the prioritization of individual projects within the project area. Ongoing communication will be important for the city, county, and ODOT to coordinate the construction of both local and state transportation projects.

ODOT also has the option of making some highway improvements as part of their ongoing highway maintenance program. Types of road construction projects that can be included within the ODOT maintenance programs are intersection realignments, additional turn lanes, and striping for bike lanes. Maintenance related construction projects are usually done by ODOT field crews using state equipment. The maintenance crews do not have the staff or specialized road equipment needed for large construction projects.

An ODOT funding technique that will likely have future application to the City of Mt. Vernon's TSP is the use of state and federal transportation dollars for off-system improvements. Until the passage and implementation of ISTEA, state and federal funds were limited to transportation improvements within highway corridors. ODOT now has the authority and ability to fund transportation projects that are located outside the boundaries of the highway corridors. The criteria for determining what off-system improvements can be funded have not yet been clearly established. It is expected that this new funding technique will be used to finance local system improvements that reduce traffic on state highways or reduce the number of access points for future development along state highways.

The transportation funding program ISTEA expires at the end of this fiscal year. Congress is considering several bills which would reauthorize the program in various forms. In general, funding levels are expected to remain stable or slightly higher.

FINANCING TOOLS

In addition to funding options, the recommended improvements listed in this plan may benefit from a variety of financing options. Although often used interchangeably, the words financing and funding are not the same. Funding is the actual generation of revenue by which a jurisdiction pays for improvements, some examples include the sources discussed above: property taxes, SDCs, fuel taxes, vehicle registration fees, LIDs, and various grant programs. In contrast, financing refers to the collecting of funds through debt obligations.

There are several of debt financing options available to the City of Mt. Vernon. The use of debt to finance capital improvements must be balanced with the ability to make future debt service payments and to deal with the impact on its overall debt capacity and underlying credit rating. Again, debt financing should be viewed not as a source of funding, but as a time shifting of funds. The use of debt to finance these transportation system improvements is appropriate since the benefits from the transportation improvements will extend over a period of years. If such improvements were to be tax financed immediately, a large short-term increase in the tax rate would be required. By utilizing debt financing, local governments are essentially spreading the burden of the costs of these improvements to more of the people who are likely to benefit from the improvements and lowering immediate payments.

General Obligation Bonds

General obligation bonds (GOs) are voter-approved bond issues which represent the least expensive borrowing mechanism available to municipalities. GO bonds are typically supported by a separate property tax levy specifically approved for the purposes of retiring debt. The levy does not terminate until all debt is paid. The property tax levy is distributed equally throughout the taxing jurisdiction according to assessed value of property. General obligation debts are typically used to make public improvement projects that will benefit the entire community.

State statutes require that the general obligation indebtedness of a city not exceed three percent of the real market value of all taxable property in the city. Since general obligation bonds would be issued subsequent to voter approval, they would not be restricted to the limitations set forth in Ballot Measures 5 and 50 (revised Measure 47). Although new bonds must be specifically voter approved, Measure 50 provisions are not applicable to outstanding bonds, unissued voter-approved bonds, or refunding bonds.

Limited Tax Bonds

Limited tax general obligation bonds (LTGOs) are similar to general obligation bonds in that they represent an obligation of the municipality. However, a municipality's obligation is limited to its current revenue sources and is not secured by the public entity's ability to raise taxes. As a result, LTGOs do not require voter approval. However, since the LTGOs are not secured by the full taxing power of the issuer, the limited tax bond represents a higher borrowing cost than general obligation bonds. The municipality must pledge to levy the maximum amount under constitutional and statutory limits, but not the unlimited taxing

authority pledged with GO bonds. Because LTGOs are not voter approved, they are subject to the limitations of Ballot Measures 5 and 50 (revised Measure 47).

Bancroft Bonds

Under Oregon statute, municipalities are allowed to issue Bancroft bonds that pledge the city's full faith and credit to assessment bonds. As a result, the bonds become general obligations of the city but are paid with assessments. Historically, these bonds provided a city with the ability to pledge its full faith and credit in order to obtain a lower borrowing cost without requiring voter approval. However, since Bancroft bonds are not voter approved, taxes levied to pay debt service on them are subject to the limitations of Ballot Measures 5 and 50 (revised Measure 47). As a result, since 1991, Bancroft bonds have not been used by municipalities who were required to compress their tax rates.

CHAPTER 9: RECOMMENDED POLICIES AND ORDINANCES

In 1991, the Oregon TPR was adopted to implement State Planning Goal 12 - Transportation (amended in May and September 1995). The TPR requires cities and counties to complete a TSP that includes policies and ordinances to implement that plan. Although the City of Mt. Vernon had not completed its TSP until now, a TSP Work Program was completed for the City in 1995. The Mt. Vernon Comprehensive Plan was updated in April 1997, and its ordinances were updated in 1995; therefore, these planning documents are generally in compliance with the TPR and will need only minor additions to be in compliance with this TSP.

ELEMENTS REQUIRED BY THE TRANSPORTATION PLANNING RULE

The applicable portion of the TPR is found in Section 660-12-045 *Implementation of the Transportation System Plan*. In summary, the TPR requires that local governments revise their land use regulations to implement the TSP in the following manner:

- *Amend land use regulations to reflect and implement the Transportation System Plan.*
- *Clearly identify which transportation facilities, services, and improvements are allowed outright, and which will be conditionally permitted or permitted through other procedures.*
- *Adopt land use or subdivision ordinance measures, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions, to include the following topics:*
 - ⇒ *access management and control;*
 - ⇒ *protection of public use airports;*
 - ⇒ *coordinated review of land use decisions potentially affecting transportation facilities;*
 - ⇒ *conditions to minimize development impacts to transportation facilities;*
 - ⇒ *regulations to provide notice to public agencies providing transportation facilities and services of land use applications that potentially affect transportation facilities;*
 - ⇒ *regulations assuring that amendments to land use applications, densities, and design standards are consistent with the Transportation System Plan.*
- *Adopt land use or subdivision regulations for urban areas and rural communities to provide safe and convenient pedestrian and bicycle circulation and bicycle parking, and to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel.*
- *Establish street standards that minimize pavement width and total right-of-way.*

These elements are discussed in the following sections, where they are grouped by similarity in terms of appropriate policy and ordinance.

APPROVAL PROCESSES FOR TRANSPORTATION FACILITIES

Section 660-12-045(1) of the TPR requires that cities and counties amend their land use regulations to conform with the jurisdiction's adopted TSP. This section of the TPR is intended to clarify the approval process for transportation-related projects.

Recommended Policies for Approval Process

Policies should clarify the approval process for different types of projects. The following policies are recommended to be adopted in the Transportation Section of the Mt. Vernon Comprehensive Plan:

- *The Transportation System Plan is an element of the City of Mt. Vernon 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.*
- *Operation, maintenance, repair, and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.*
- *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.*
- *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.*

Recommended Ordinances for Approval Process

Projects that are specifically identified in the TSP and for which the jurisdiction has made all the required land use and goal compliance findings are permitted outright, subject only to the standards established by the Plan. Mt. Vernon has addressed transportation projects in general in its Comprehensive Plan and in Article 5 of its Ordinance.

PROTECTING EXISTING AND FUTURE OPERATION OF FACILITIES

Section 60-12-045(2) of the TPR requires that jurisdictions protect future operation of transportation corridors. For example, an important arterial for through traffic should be protected in order to meet the community's identified needs. In addition, the proposed function of a future roadway must be protected from incompatible land uses. It is also important to preserve the operation of existing and proposed transportation facilities, such as airports, that are vulnerable to the encroachment of incompatible land uses.

Other future transportation facilities that the City of Mt. Vernon may wish to protect include the space and building orientation necessary to support future transit, and right-of-ways or other easements for accessways, paths, and trails. Policies are suggested below that will demonstrate the desire of the community to protect these transportation facilities.

Protection of existing and planned transportation systems can be provided by ongoing coordination with other relevant agencies, adhering to the road standards, and to the access management policies and ordinances suggested below.

Recommended Policies for Protection of Transportation Facilities

- *The City of Mt. Vernon shall protect the function of existing and planned roadways as identified in the Transportation System Plan.*
- *The City of Mt. Vernon shall include a consideration of a proposal's impact on existing or planned transportation facilities in all land use decisions.*
- *The City of Mt. Vernon shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.*
- *The City of Mt. Vernon shall consider the potential to establish or maintain accessways, paths, or trails prior to the vacation of any public easement or right-of-way.*
- *The City of Mt. Vernon shall preserve right-of-way for planned transportation facilities through exactions, voluntary dedication, or setbacks.*

Recommended Access Control Ordinances

The following ordinances are recommended to support the access management standards.

Section _____ ACCESS MANAGEMENT

A. General

The intent of this ordinance is to manage access to land development to preserve the transportation system in terms of safety, capacity, and function. This ordinance shall apply to all arterials and collectors within the City of Mt. Vernon and to all properties that abut these roadways. This ordinance is adopted to implement the access management policies of the City of Mt. Vernon as set forth in the Transportation System Plan.

B. Corner Clearance

1. *Corner clearance for connections shall meet or exceed the minimum connection spacing requirements for that roadway.*
2. *New connections shall not be permitted within the functional area of an intersection or interchange as defined by the connection spacing standards of this ordinance, unless no other reasonable access to the property is available.*
3. *Where no other alternatives exist, the City may allow construction of an access connection along the property line farthest from the intersection. In such cases, directional connections (i.e. right in/out, right in only, or right out only) may be required.*

C. Joint and Cross Access

1. *Adjacent commercial or office properties classified as major traffic generators (i.e. shopping plazas, office parks), shall provide a cross access drive and pedestrian access to allow circulation between sites.*
2. *A system of joint use driveways and cross access easements shall be established wherever feasible and shall incorporate the following:*
 - a) *A continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.*
 - b) *A design speed of 10 mph and a maximum width of 20 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;*
 - c) *Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross-access via a service drive;*
 - d) *A unified access and circulation system plan for coordinated or shared parking areas is encouraged.*
3. *Shared parking areas shall be permitted a reduction in required parking spaces if peak demands do not occur at the same time periods.*
4. *Pursuant to this section, property owners shall:*
 - a) *Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;*
 - b) *Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the City and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;*
 - c) *Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.*
5. *The City may reduce required separation distance of access points where they prove impractical, provided all of the following requirements are met:*
 - a) *Joint access driveways and cross access easements are provided in accordance with this section.*
 - b) *The site plan incorporates a unified access and circulation system in accordance with this section.*
 - c) *The property owner enters into a written agreement with the City, recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint use driveway.*
6. *The City may modify or waive the requirements of this section where the characteristics or layout of abutting properties would make a development of a unified or shared access and circulation system impractical.*

D. Access Connection and Driveway Design

1. *Driveways shall meet the following standards:*
 - a) *If the driveway is a one way in or one way out drive, then the driveway shall be a minimum width of 10 feet and a maximum width of 12 feet and shall have appropriate signage designating the driveway as a one way connection.*
 - b) *For two-way access, each lane shall have a minimum width of 10 feet and a maximum width of 12 feet.*
2. *Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view. Construction of driveways along acceleration or deceleration lanes and tapers shall be avoided due to the potential for vehicular weaving conflicts.*
3. *The length of driveways shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe conflicts with on-site circulation.*

E. Requirements for Phased Development Plans

1. *In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and composed of more than one building site shall be reviewed as single properties in relation to the access standards of this ordinance. The number of access points permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of this ordinance and both shall be cited for any violation.*
2. *All access must be internalized using the shared circulation system of the principal development or retail center. Driveways shall be designed to avoid queuing across surrounding parking and driving aisles.*

F. Nonconforming Access Features

1. *Legal access connections in place as of (date of adoption) that do not conform with the standards herein are considered nonconforming features and shall be brought into compliance with applicable standards under the following conditions:*
 - a) *When new access connection permits are requested;*
 - b) *Change in use or enlargements or improvements that will increase trip generation.*

G. Reverse Frontage

1. *Lots that front on more than one street shall be required to locate motor vehicle accesses on the street with the lower functional classification.*
2. *When a residential subdivision is proposed that would abut an arterial, it shall be designed to provide through lots along the arterial with access from a frontage road or interior local road. Access rights of these lots to the arterial shall be dedicated to the City of Mt. Vernon and recorded with the deed. A*

berm or buffer yard may be required at the rear of through lots to buffer residences from traffic on the arterial. The berm or buffer yard shall not be located with the public right-of-way.

H. Flag Lot Standards

- 1. Flag lots shall not be permitted when the result would be to increase the number of properties requiring direct and individual access connections to the State Highway System or other arterials.*
- 2. Flag lots may be permitted for residential development when necessary to achieve planning objectives, such as reducing direct access to roadways, providing internal platted lots with access to a residential street, or preserving natural or historic resources, under the following conditions:*
 - a) Flag lot driveways shall be separated by at least twice the minimum frontage requirement of that zoning district.*
 - b) The flag driveway shall have a minimum width of 10 feet and maximum width of 20 feet.*
 - c) In no instance shall flag lots constitute more than 10 percent of the total number of building sites in a recorded or unrecorded plat, or three lots or more, whichever is greater.*
 - d) The lot area occupied by the flag driveway shall not be counted as part of the required minimum lot area of that zoning district.*
 - e) No more than one flag lot shall be permitted per private right-of-way or access easement.*

I. Lot Width-to-Depth Ratios

- 1. To provide for proper site design and prevent the creation of irregularly shaped parcels, the depth of any lot or parcel shall not exceed 3 times its width (or 4 times its width in rural areas) unless there is a topographical or environmental constraint or an existing man-made feature.*

J. Shared Access

- 1. Subdivisions with frontage on the state highway system shall be designed into shared access points to and from the highway. Normally a maximum of two accesses shall be allowed regardless of the number of lots or businesses served. If access off a secondary street is possible, then access should not be allowed onto the state highway. If access off a secondary street becomes available, then conversion to that access is encouraged, along with closing the state highway access.*

K. Connectivity

- 1. The street system of proposed subdivisions shall be designed to connect with existing, proposed, and planned streets outside of the subdivision as provided in this Section.*
- 2. Wherever a proposed development abuts unplatted land or a future development phase of the same development, street stubs shall be provided to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with a temporary turn-around unless specifically exempted by the Public Works Director, and the restoration and extension of the street shall be the responsibility of any future developer of the abutting land.*

3. *Minor collector and local residential access streets shall connect with surrounding streets to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation. Connections shall be designed to avoid or minimize through traffic on local streets. Appropriate design and traffic control such as four-way stops and traffic calming measures are the preferred means of discouraging through traffic.*

L. Variances to Access Management Standards.

1. *The granting of the variance shall meet the purpose and intent of these regulations and shall not be considered until every feasible option for meeting access standards is explored.*
2. *Applicants for a variance from these standards must provide proof of unique or special conditions that make strict application of the provisions impractical. Applicants shall include proof that:*
 - a) *Indirect or restricted access cannot be obtained;*
 - b) *No engineering or construction solutions can be applied to mitigate the condition; and*
 - c) *No alternative access is available from a street with a lower functional classification than the primary roadway.*
3. *No variance shall be granted where such hardship is self-created.*

PROCESS FOR COORDINATED REVIEW OF LAND USE DECISIONS

A lack of coordination between state and local decision processes can result in costly delays and changes in public road and highway projects, as well as some maintenance and operation activities. Section 660-12-045(2)(d) of the TPR requires that jurisdictions develop a process for the coordinated review of land use decisions affecting transportation facilities. The following recommended policies will establish coordinated review.

Recommended Policies for Coordinated Review

- *The City of Mt. Vernon shall coordinate with the 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.*
- *The City of Mt. Vernon shall provide notice to ODOT of land use applications and development permits for properties that have frontage or access onto Highway 26 or Highway 395.*
- *The City of Mt. Vernon shall consider the findings of ODOT's draft Environmental Impact Statements and Environmental Assessments as integral parts of the land use decision-making procedures. Other actions required, such as a goal exception or plan amendment, will be combined with review of the draft EA or EIS and land use approval process.*

Recommended Process for Applying Conditions to Development Proposals

Section 660-12-045(2)(e) of the TPR requires that jurisdictions develop a process that allows them to apply conditions to development proposals to in order to minimize impacts on transportation facilities.

The Site Plan review process is a useful tool for a small jurisdiction. The City of Mt. Vernon may wish to implement a Site Plan review process that includes a requirement to provide data on the potential traffic impacts of a project through a traffic impact study or, at the minimum, an estimation of the number of trips expected to be generated. Recommended language to be included under Site Plan Criteria is as follows:

- *The proposed use shall impose an undue burden on the public transportation system. For developments that are likely to generate more than 400 average daily motor vehicle trips (ADTs), the applicant shall provide adequate information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding street system. The developer shall be required to mitigate impacts attributable to the project.*
- *The determination of impact or effect and the scope of the impact study should be coordinated with the provider of the affected transportation facility.*

If the City of Mt. Vernon decides to implement a Site Plan review process, conditions such as the following may be included in the ordinance, to be applied in the event that a proposed project is demonstrated to potentially have an adverse effect on the transportation system. These are additional to the conditions imposed by the recommended Access Management Ordinance included previously.

- *Dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or accessways shall be required where the existing transportation system will be impacted by or is inadequate to handle the additional burden caused by the proposed use.*
- *Improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways, paths, or streets that serve the proposed use where the existing transportation system may be burdened by the proposed use.*

Recommended Regulations to Provide Notice to Public Agencies

Review of land use actions is typically initiated by a Notice. This process is usually defined by a Procedures Ordinance or Noticing Policy. This Ordinance or Policy should be amended to provide for timely notice to ODOT regarding any land use action on or adjacent to Highway 26 or Highway 395. Similarly, all actions by the City potentially affecting a county road should provide notice to Grant County.

Information that should be conveyed to reviewers includes:

- *Project location.*
- *Proposed land use action.*
- *Location of project access point(s).*

Additional information that could be supplied to the review upon request (provided the information is available) includes a site plan showing the following:

- *Distances to neighboring constructed access points, median openings, traffic signals, intersections, and other transportation features on both sides of the property;*
- *Number and direction of lanes to be constructed on the driveway, plus striping plans;*
- *All planned transportation features (lanes, signals, bikeways, walkways, crosswalks, etc.);*
- *Trip generation data or appropriate traffic studies;*
- *Parking and internal circulation plans for vehicles and pedestrians;*
- *Plat map showing property lines, right-of-way, and ownership of abutting properties; and*
- *A detailed description of any requested variance.*

Recommended Regulations to Assure that Amendments are Consistent with the Transportation System Plan

Section 660-12-045(2)(g) of the TPR requires that jurisdictions develop regulations to assure that all development proposals, plan amendments, or zone changes conform with the TSP. This requirement can be addressed by adding a policy to the Comprehensive Plan, as follows:

- *All development proposals, plan amendments, or zone changes shall conform with the adopted Transportation System Plan.*

Within the zoning ordinance, development proposals can be addressed through Site Plan Review, discussed above. Zone changes and plan amendments can be partially addressed by the following language:

- *The applicant must show that the proposed change conforms with the Comprehensive Plan.*

The following statements should be added to the local ordinance and policy language governing zone changes and plan amendments:

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

 1. *Changes the functional classification of an existing or planned transportation facility;*
 2. *Changes standards implementing a functional classification system;*
 3. *Allows types or levels of land use that would result in levels of travel or access what are inconsistent with the functional classification of a transportation facility; or*
 4. *Would reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.**
- B. *Amendments to the comprehensive plan and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:*

1. *Limiting allowed land uses to be consistent with the planned function of the transportation facility;*
2. *Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or,*
3. *Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.*

SAFE AND CONVENIENT PEDESTRIAN AND BICYCLE CIRCULATION

Bicycling and walking are often the most appropriate mode for short trips. Especially in small cities where the downtown area is compact, walking and bicycling can replace short auto trips, reducing the need for construction and maintenance of new roads. However, the lack of safe and convenient bikeways and walkways can be a strong discouragement for these mode choices. The TPR (660-12-045(3)) requires that urban areas and rural communities plan for bicycling and walking as part of the overall transportation system.

In general, the Mt. Vernon Ordinances adequately address bicycle circulation and parking. However, there is no mention of bicycle or pedestrian transportation in the Mt. Vernon Comprehensive Plan. The following policies are recommended.

Recommended Policies for Pedestrian and Bicycle Circulation

To comply with the objectives of the TSP and the TPR, the City of Mt. Vernon should amend its Comprehensive Plans with policies such as the following to protect, support, and encourage bicycle and pedestrian travel.

- *It is the policy of the City of Mt. Vernon to plan and develop a network of streets, accessways, and other improvements, including bikeways, walkways, and safe street crossings to promote safe and convenient bicycle and pedestrian circulation within the community.*
- *The City of Mt. Vernon 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.*
- *In areas of new development the City of Mt. Vernon shall investigate the existing and future opportunities for bicycle and pedestrian accessways. Many existing accessways such as user trails established by school children distinguish areas of need and should be incorporated into the transportation system.*
- *Bikeways shall be included on new arterials and major collectors within the Urban Growth Boundary, as identified in the TSP. Walkways shall be included on new streets within the city, as identified in the TSP.*
- *Retrofitting existing streets with walkways and bikeways shall proceed on a prioritized schedule, as identified in the TSP.*
- *Design and construction of walkways and bikeways shall follow the guidelines established by the Oregon Bicycle and Pedestrian Plan.*

- *Bicycle parking facilities shall be provided at all new residential multifamily developments of four units or more, commercial, industrial, recreational, and institutional facilities.*

Recommended Ordinances for Street Network

- I. A well-connected street network is important for the circulation of local traffic, bicycles, and pedestrians. The Mt. Vernon Ordinance should incorporate the following language into the existing requirements for cul-de-sac design.
 - A. *Cul-de-Sacs and Accessways.*
 1. *Cul-de-sacs or permanent dead-end streets may be used as part of a development plan; however, through streets are encouraged except where topographical, environmental, or existing adjacent land use constraints make connecting streets infeasible. Where cul-de-sacs are planned, accessways shall be provided connecting the ends of cul-de-sacs to each other, to other streets, or to neighborhood activity centers.*
 2. *Accessways for pedestrians and bicyclists shall be 10 feet wide and located within a 20-foot wide right-of-way or easement. If the streets within the subdivision are lighted, the accessways shall also be lighted. Stairs or switchback paths may be used where grades are steep.*
 3. *Accessways for pedestrians and bicyclists shall be provided at mid-block where the block is longer than 600 feet.*
 4. *The Hearings Body may determine, based upon evidence in the record, that an accessway is impracticable. Such evidence may include but is not limited to:*
 - a) *Physical or topographic conditions make an accessway connection impractical. Such conditions include but are not limited to extremely steep slopes, wetlands, or other bodies of water where a connection cannot reasonably be provided.*
 - b) *Buildings or other existing development on adjacent lands physically preclude a connection now or in the future, considering potential for redevelopment.*
 - c) *Where accessways would violate provisions of leases, easements, covenants, restrictions, or other agreements existing as of May 1, 1995 that preclude a required accessway connection.*

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APPENDIX A:

Table A-1

1996 Major Streets Inventory

Mt. Vernon Transportation System Plan

TABLE A-1
1996 MAJOR STREETS INVENTORY
Mt Vernon Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalks	Bikeway	Pavement Condition
Aslin Avenue										
Holland Avenue to End	City	Local	25	28	2	Yes	Yes	No	Shared	Good
Cinnabar Drive										
Aslin Avenue to Dead End	City	Local	25	26	2	Yes	Yes	No	Shared	Good
Cottonwood Street										
Ingle Street to Council Drive South	City	Collector	25	30	2	No	Yes	No	Shared	Good
Council Drive South to Council Drive North	City	Collector	20	30	2	Yes	Yes	No	Shared	Good
Council Drive North to Main Street (Highway 26)	City	Collector	20	30	2	Yes	Yes	No	Shared	Good
Council Drive										
Cottonwood Street South to Cottonwood Street North	City	Local	25	22-30	2	No	Yes	No	Shared	Good
East Riverside Street										
East of Ingle Street	City	Local	25	20	2	No	No	No	Shared	Poor
Farra Lane										
Highway 26 to Dead End	Private	Local	25	NA	2	No	No	No	Shared	Gravel/Dirt
Green Acres Lane										
Ingle Street to Dead End	City	Local	25	26	2	No	No	No	Shared	Poor
Highland Drive										
Main Street (Highway 26) to School Lane	City	Collector	25	26	2	Yes	Yes	Yes-West	Shared	Good
School Lane to Highland Terrace South	City	Collector	25	26	2	Yes	Yes	No	Shared	Good
Highland Terrace South to Highland Terrace North	City	Collector	25	36	2	Yes	Yes	No	Shared	Good
Highland Terrace North to End	City	Collector	25	30	2	Yes	Yes	No	Shared	Good

TABLE A-1
1996 MAJOR STREETS INVENTORY
Mt Vernon Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalks	Bikeway	Pavement Condition
Highland Terrace										
Highland Drive South to Highland Drive North	City	Local	25	26	2	Yes	Yes	No	Shared	Good
Holland Avenue										
Negus Heights to Thompson Avenue	City	Local	25	30	2	Yes	Yes	No	Shared	Good
Thompson Avenue to Aslin Avenue	City	Local	25	30	2	Yes	Yes	No	Shared	Good
Ingle Street										
Riverside Street to Green Acres Lane	City	Collector	25	30	2	Yes	Yes	No	Yes-W	Good
Green Acres Lane to Moore Street	City	Collector	25	30	2	Yes	Yes	Yes-W	Yes-W	Good
Moore Street to Cottonwood Street	City	Collector	25	30	2	Yes	Yes	Yes-W	Yes-W	Good
Cottonwood Street to Main Street (Highway 26)	City	Collector	25	30	2	Yes	Yes	Yes-W	Yes-W	Good
Main Street (Highway 26)										
West of Mt Vernon City Limits	State	Arterial	55	24	2	No	No	No	Shared	Good
W/CL to Street Widening	State	Arterial	30	24	2	No	No	No	Shared	Good
Street Widening to Highland Drive	State	Arterial	30	44	2	Yes	Yes	Yes	Shared	Good
Highland Drive to Mountain Boulevard (Highway 395)	State	Arterial	30	44	2	Yes	Yes	Yes	Shared	Good
Mountain Boulevard (Highway 395) to Cottonwood Street	State	Arterial	30	30	2	No	No	No	Shared	Good
Cottonwood Street to Park Avenue	State	Arterial	30	30	2	No	No	No	Shared	Good
Park Avenue to ECL	State	Arterial	30	30	2	No	No	No	Shared	Good
East of Mt Vernon City Limits	State	Arterial	55	30	2	No	No	No	Shared	Good
Mountain Boulevard (Highway 395)										
Main Street (Highway 26) to 0.3 miles North	State	Arterial	30	43	2	Yes	Yes	No	Shared	Good
0.3 miles North to City Limits	State	Arterial	55	30	2	No	No	No	Shared	Good
North of Mt. Vernon City Limits	State	Arterial	55	30	2	No	No	No	Shared	Good

TABLE A-1
1996 MAJOR STREETS INVENTORY
Mt Vernon Transportation System Plan

Street Segment	Jurisdiction	Classification	Speed Limit (mph)	Street Width (feet)	# of Travel Lanes	Curbs	On-Street Parking	Sidewalks	Bikeway	Pavement Condition
Negus Heights School Lane to Holland Avenue	City	Local	25	28	2	Yes	Yes	No	Shared	Good
Park Avenue Highway 26 to Dead End	City	Local	25	NA	2	No	No	No	Shared	Partially Paved
Rim Rock Lane Highway 395 to Dead End	Private	Local	25	NA	2	No	No	No	Shared	Gravel/Dirt
School Lane Highland Drive to Negus Heights	City	Local	25	26	2	Yes	Yes	Yes-South	Shared	Good
Silvers Lane Highway 26 to Dead End	Private	Local	25	NA	2	No	No	No	Shared	Gravel/Dirt
Thompson Avenue Holland Avenue to End	City	Local	25	28	2	No	Yes	No	Shared	Unimproved
West Riverside Street West of Ingle Street	City	Local	25	15	2	No	No	No	Shared	Good
Moore Street Ingle Street to Dead End	City	Local	25	NA	2	No	No	No	Shared	Gravel/Dirt
Violet Street North Dead End to South Dead End	City	Local	25	NA	2	No	No	No	Shared	Gravel/Dirt

APPENDIX B:

Technical Memorandum

Grant County Population and Employment Analysis

TECHNICAL MEMORANDUM

GRANT COUNTY POPULATION AND EMPLOYMENT ANALYSIS

METHODOLOGY AND DATA SOURCES

Population estimates and projections were developed from historical data as reported by the Census Bureau. Portland State University's Center for Population Research and Census (PSU CPRC) developed annual population estimates for cities and counties for the purpose of allocating certain state tax revenues to cities and counties. The State of Oregon Office of Economic Analysis (OEA) provided long-term (through year 2040) state population forecasts, disaggregated by county, for state planning purposes. OEA also developed county-level employment forecasts based on covered employment payrolls as reported by the Oregon Employment Department.

The Office of Economic Analysis used business-cycle trends (as reflected by the Employment Department's employment forecasts) as the primary driver of population and employment for the short term. For the long term, the forecasts shift to a population-driven model, which emphasizes demographics of the resident population, including age and gender of the population, with assumptions regarding life expectancy, fertility rate, and immigration. DEA used a methodology based on OEA's county-distribution methodology in developing population and employment forecasts for each of the cities in Grant County.¹ DEA calculated a weighted average growth rate for each jurisdiction (weighting recent growth more heavily than past growth) and combined this average growth rate with the projected county-wide growth rate. This methodology assumes convergence of growth rates because of the physical constraints of any area to sustain growth rates beyond the state or county average for long periods of time. These constraints include availability of land and housing, congestion, and other infrastructure limitations. The forecasts were then modified to reflect more recent official estimates and local knowledge.

These population and employment forecasts were developed to determine future transportation needs. The amount of growth, and where it occurs, will affect traffic and transportation facilities in the study area. This report is not intended to provide a complete economic forecast or housing analysis, and it should not be used for any purpose other than that for which it is designed.

HISTORICAL GROWTH

Interestingly, population levels in most of Eastern Oregon are close to, or actually lower than, those experienced earlier in the century. Counties included in this phenomenon include Baker, Harney, Union, Wallowa, and Grant Counties. The population of Grant County actually declined in the 1960s and 1980s, reflecting the general slowdown in the state's economy during these time periods. As a result of this population activity, the population of Grant County increased by less than two percent between the 1960

¹ Seneca was not an incorporated city until after the 1970 census. Since its incorporation, its population has declined from an estimated 405 in 1971 to a count of 191 in the 1990 census, increasing again to 230, the official 1996 estimate. Because of the short and varied history of population growth, DEA applied an average annual growth rate of 0.5 percent to Seneca.

and 1990 Censuses (from 7,726 in 1960 to 7,853 in 1990). The following table shows the population trend for selected communities in Grant County.

GRANT COUNTY HISTORICAL POPULATION TREND

	1960	1970	1980	1990	1960-1990 Change	
					Number	CAARG*
Grant County	7,726	6,996	8,210	7,853	127	0.05%
Dayville	234	197	199	144	(90)	-1.61%
Long Creek	295	196	252	249	(46)	-0.56%
Monument	214	161	192	162	(52)	-0.92%
Mount Vernon	502	423	569	549	47	0.30%
Prairie City	801	867	1,106	1,117	316	1.11%
Seneca**	n.a.	n.a.	285	191	n.a.	n.a.

* Compound Average Annual Rate of Growth

** Seneca was not an incorporated city until after the 1970 Census.

Source: U.S. Bureau of the Census.

Despite this minimal growth in population since 1970, other demographic changes have occurred that may impact the community's employment and travel patterns. For example, there have been national trends of both decreasing household size and increasing numbers of workers per household.

Household size in Grant County has gone from an average of 2.98 persons per household in 1970 to an average of 2.51 persons in 1990. Changes in life expectancy and lifestyle choices (i.e. electing to delay marriage and childbearing) have resulted in relatively high proportions of "empty-nester," "singles," and "couples-without-children" households.

The number of jobs per household has also been increasing. With 6,996 reported persons in 1970 and total employment estimated at 2,750, the population/employment ratio in 1970 was 2.54 persons per job. In 1995, there were 3,760 jobs for the estimated population of 7,950, for a population/employment ratio of 2.11 persons per job. The increasing numbers of jobs in relation to population is due to a number of factors including a low savings rate, increased life expectancy, and higher education levels. These factors have combined to increase the labor participation rate, particularly by women and older adults.

CURRENT POPULATION AND EMPLOYMENT LEVEL

Estimated at 7,950 in 1995, the population of Grant County has remained relatively stable since the 1990 Census, with an average annual growth rate of 0.25 percent. The following table shows the estimated change in population for Grant County and the various jurisdictions from 1990 to 1995. Although Dayville, Mount Vernon, and Seneca have managed to grow at annual rates of over three percent since 1990, these rates are calculated on relatively small population bases, reflecting the population increases of 41 people (in Dayville), 96 (Mount Vernon), and 39 (Seneca).

GRANT COUNTY POPULATION LEVEL

	1990	1995	1990-1995 Change	
			Number	CAARG*
Grant County	7,853	7,950	97	0.25%
Dayville	144	185	41	5.14%
Long Creek	249	235	(14)	-1.15%
Monument	162	170	8	0.97%
Mount Vernon	549	645	96	3.28%
Prairie City	1,117	1,170	53	0.93%
Seneca	191	230	39	3.79%

* Compound Average Annual Rate of Growth

Source: Portland State University Center for Population Research and Census.

Employment levels have declined slightly since 1990. This decline is, in part, attributable to an increase in the unemployment rate throughout Oregon. Average unemployment rates for Grant County hit a low for the decade at 8.8 percent in 1989 and 1990. Since then, unemployment has climbed, reaching an average 12.2 percent in 1993 and 10.3 percent for 1995.

GRANT COUNTY EMPLOYMENT

	1990	1995	1990-1995 Change	
			Number	CAARG*
Grant County Employment	3,850	3,760	(90)	-0.47%
Unemployment Rate	8.8%	10.3%	n.a.	n.a.

* Compound Average Annual Rate of Growth

Note: These figures are reported as place-of-work series, rather than place-of-residence. In other words, these estimated total jobs in Grant County may be held by residents of other counties. The impact of this difference is considered minimal for Grant County as the 1990 Census reports that over 95 percent of workers who live in Grant County also work in the County.

Source: Oregon Employment Department.

The county unemployment rates contrast with the economic performance of the state as a whole. The state's unemployment rate has been at approximately 5 percent for several years, and has just begun creeping upward. As of November 1996, the statewide unemployment rate was 5.5 percent--still a historically low rate, but the state's highest level in over two years.

POPULATION AND EMPLOYMENT FORECASTS

Grant County is expected to experience small population gains for the next 20 years. Like much of Eastern Oregon, the economy of Grant County remains largely seasonal, with nearly one-quarter of all employment agriculture-based. Therefore, the population increases are difficult to predict, and are not likely to be as

stable as the forecasts appear to imply. The population forecast for Grant County and the jurisdictions of Dayville, Long Creek, Monument, Mount Vernon, and Seneca are shown in five-year increments in the following table. Population forecasts for Prairie City were drawn from Prairie City's Comprehensive Plan.

GRANT COUNTY POPULATION FORECAST

	1995	2000	2005	2010	2015	2017
Grant County	7,950	8,292	8,517	8,742	8,989	9,088
Dayville	185	187	188	190	193	194
Long Creek	235	240	244	248	253	255
Monument	180	185	186	190	193	195
Mount Vernon	645	688	729	771	809	825
Seneca	230	236	242	248	254	257

Source: 1995 estimates developed by Portland State University Center for Population Research and Census; County forecasts developed by State of Oregon Office of Economic Analysis; and Jurisdiction forecasts developed by David Evans and Associates, Inc.

The population of Grant County is expected to increase by over 14 percent between 1995 and year 2017, from the 1995 estimate of 7,950 to an estimated 9,088 in year 2017. The only jurisdictions expected to grow faster are Mount Vernon (with a forecast increase of nearly 28 percent between 1995 and year 2017, from 645 in 1995 to an estimated 825 in year 2017), and Prairie City.

The Office of Economic Analysis also developed forecasts of Non-Agricultural Employment by county. Oregon Employment data suggests that nearly one-quarter (an estimated 25 percent in 1995) of all employment in Grant County is agriculture-based. This agriculture-based proportion, although higher than the state average, is typical for counties in Eastern Oregon. Although the economy has been moving toward a greater degree of diversification, this proportion has remained relatively stable over the last 25 years: Agricultural employment accounted for 26 percent of total estimated employment in 1970, only one percent greater than the 1995 estimate of 25 percent. Based on the 1995 proportion, the following table shows non-agricultural and estimated total employment for Grant County.

GRANT COUNTY EMPLOYMENT FORECAST

	1995	2000	2005	2010	2015	2017
Non-Agricultural Employment	2,830	3,051	3,161	3,231	3,255	3,265
Estimated Total Employment	3,760	4,016	4,161	4,253	4,284	4,297

Source: Non-Agricultural employment forecasts developed by the State of Oregon Office of Economic Analysis; 1995 estimates developed by the Oregon Employment Department; and Estimated total employment forecasts developed by David Evans and Associates, Inc.

Employment is expected to grow by over 14 percent from 1995 to year 2017, keeping the population/employment ratio relatively stable (increasing slightly from 2.11 persons per job to 2.12 persons per job).

APPENDIX C:

Technical Memorandum

Speed Control Measures

TECHNICAL MEMORANDUM

SPEED CONTROL MEASURES

Numerous studies have been carried out to determine the influence of particular roadway features on traffic speed. Some of the most significant characteristics of roadway features are curvature, grades, length of grade, number of lanes, surface condition, sight distance, lateral clearance, number of intersections, and built-up areas near the roadways. Some of the main reasons drivers give for speeding include being in a hurry, to avoid a potential danger, to keep up with other traffic, and to maintain a speed with which the driver feels comfortable.

This technical memorandum describes a variety of speed control measures to address public concern over high-speed traffic through the downtown areas of many of the cities in Grant County. Speed control measures consist of physical controls, passive controls, and psycho-perception controls. Specific speed control techniques for each of these three categories are summarized in the following pages and listed in Table 1 located at the end of this memorandum.

Physical Controls

Physical speed controls are those measures which are physically constructed to restrict or affect vehicle operation or performance. Speed control techniques that can be designed or built into transportation systems include the use of road markings, texturing, medians, street narrowing, and other physical features. They often result in other "traffic calming" benefits such as reduced traffic volumes and noise levels in congested areas. High construction costs somewhat limit extensive use of these types of speed control measures.

Speed Bumps

Speed bumps are short bumps in a roadway used in parking lots, on private roads, and around universities. Their effectiveness at reducing speed is somewhat inconsistent, as drivers tend to slow down to reduce vehicle rocking while traveling over the bumps but will then increase their speeds between the bumps to make up for lost time. They increase the likelihood of vehicle damage and loss of control even when driving over them at low speeds. Speed bumps can be effective in lowering traffic volumes; however, they cause an increase in noise. They also cause problems for snowplows. Speed bumps have moderately high construction costs and little to no maintenance costs once constructed.

Road Humps

Road humps are typically 12 feet long and three to four inches high and can be safely crossed at speeds of 30 mph. Extensive testing has indicated that road humps are effective in reducing speeds on residential streets; that in the 85th percentile, speeds closely match the 25 mph speed limit used on most residential streets. Road humps are less likely than speed bumps to cause loss of control or vehicle damage caused by vehicles bottoming-out. Tests also showed a reduction in injury accidents and no statistically significant change in accidents on surrounding streets that could have been used as alternate routes. Speed bumps tend to reduce traffic volumes by discouraging through traffic on local neighborhood streets. Noise levels go down by slowing down traffic. Speed humps have moderately high construction costs and little to no maintenance costs once constructed.

Rumble Strips

Like road humps, rumble strips have been found to be effective in reducing average travel speeds and are less likely than speed bumps to cause loss of control or vehicle damage. Rumble strips typically consist of rows of raised metallic saucer-like elements affixed to the roadway which cause a mild rumbling under the vehicle and a significant amount of noise when driven over. The effect is to make motorists more aware of their speed and their surroundings with the intent of causing drivers to slow down. This in turn improves safety. Rumble strips have moderate construction costs and low maintenance costs once installed.

A significant disadvantage to this control measure is that it is difficult to construct a rumble surface that would not generate too much noise for adjacent residents. Raised metallic rumble strips also cause maintenance problems for snowplows and can be a hazard if dislodged.

Rumble strips can also be constructed by scoring the roadway pavement, which may be more desirable as they would create less noise. They would not result in a raised profile which would interfere with snowplows and there would be nothing that could become dislodged.

Median Barrier

The primary function of medians is to restrict conflicting turning movements by not allowing left turns from a travel lane into a driveway. Wide medians can also allow for turning pockets at intersections, provide pedestrian refuge, and reduce pavement width. Medians can be as narrow as two to four feet wide within a limited right-of-way.

Medians often slow traffic by giving the appearance of a parkway setting and narrow lanes. They improve safety and may increase the capacity of high-volume streets by limiting conflicting mid-block movements and channelizing traffic at complex intersections. They may improve safety at certain locations by making side street driveways right turn in and out only. Medians also increase pedestrian safety and ability to cross wider streets by providing mid-street pedestrian refuge. Construction costs for medians are high; however, they have low maintenance costs once constructed.

Traffic Circle

Traffic circles are primarily used to reduce delay at intersections and improve safety. Traffic circles have advantages over traffic signals because they improve intersection operations, tend to have lower accident rates, less severe accidents, and cost less. Entry into traffic circles is continuous and controlled by yield signs. In many situations the capacity is similar to other intersection traffic control.

Traffic circles may reduce delays at intersections and can improve local street access as well as decrease speed depending on design. Traffic circles reduce the number of conflict points and the number and severity of crashes at some locations. Safety may be an issue in areas where drivers are not used to and are unclear about how to use them. Other disadvantages are that they may reduce the opportunity for pedestrians to cross roads and they can be intimidating to bicyclists. Traffic circles also have high construction costs.

Chokers and Road Narrowing

Lateral clearance on a roadway has been proven to have an effect on travel speeds, albeit a minor effect. The narrower a road is, the more slowly drivers tend to travel.

Where on-street parking exists, constructing sidewalks with curb extensions, or bulbs at intersections such that the sidewalk is extended to the end of the parking lane is an effective way to narrow a road. Narrower streets mean shorter crosswalk lengths, thus improving pedestrian safety by reducing the amount of time pedestrians are in the street. Narrow streets also shorten the pedestrian phase at signalized intersections, thus allowing a redistribution of green time to the traffic movements which need it most. They can also slow traffic in these areas.

Road narrowing usually does not result in reduced traffic volumes nor in reduced noise. This measure may cause problems for cyclists if the curb extension conflicts with a bike lane.

This improvement option can be made at a moderate to high construction cost. The cost of a single curb extension is about \$2,000. For all four corners of an intersection, the total cost would be about \$8,000. Once constructed, there is little to no maintenance required for this option.

Passive Controls

Passive speed control measures do not physically alter vehicle operation or speed. They typically consist of regulatory signs or signals and rely on driver compliance to be effective. This inherently makes them less effective at controlling speeds than physical controls. Their relatively low construction costs, however, may make them more practical to implement on a large-scale basis.

Stop Signs

Experience in the United States over the years indicates that stop signs installed on local streets have little effect on speed except in the immediate vicinity of the signs. Tests found that motorists start to slow down 200 feet before the intersection and return to near normal speed about 100 feet past the stop point. Studies also showed that speeds between intersections are not significantly changed but tend to increase slightly after the installation of stop signs. In addition, some tests found that stop signs installed to control speed were disobeyed on a wide scale. When not forced to stop by a priority vehicle, few drivers came to a complete stop and many did not stop at all. The Manual on Uniform Traffic Control Devices requires that stop signs not be used for speed control.

Speed Limit Signs

Speed limit laws often specify general limits for residential streets, business districts, school zones, or rural areas. The laws usually recognize that safe speed varies from road to road and permit highway agencies to raise or lower speed limits on the basis of an engineering or traffic survey. The basic intent of speed zoning is to identify a safe and reasonable limit for a given road section or zone. The most widely accepted method of setting speed limits is the 85th percentile speed. This is the speed that 85 percent of traffic is moving at or below and reflects the safe speed for the given roadway conditions as determined by a large majority of drivers. The 85th percentile speed is in the speed range where the accident involvement rate is lowest.

Numerous studies have been carried out on the effects of speed limits. Studies on urban and rural roads indicate that speed limits have little or no effect on traffic speed and that drivers respond to changing roadway conditions more so than posted speed limits. A survey of drivers indicated that over three-fourths of the motorists indicated they drive at a speed that traffic and road condition will permit regardless of the posted speed limit. Although the motorists tended to think of speeding as one of the primary causes of accidents, they did not feel that going ten mph over the legal limit was very wrong. One speed study indicated that when the speed limit was raised to match the 85th percentile speed, there was essentially no change in speed. Where the speed limit was lowered, the spread in speeds increased and compliance dropped from 89 percent to 24 percent.

In summary, changing the posted speed limit can be done at a low construction cost with little to no maintenance problems or cost; however, lowering posted speed limits rarely results in actual reductions in speed. Speed zones need to be constantly enforced to be effective. Lowering the posted speed limit rarely results in improved safety because any safety benefits realized by slower speeds is negated by an increase in speed variance. Speed limits can also give pedestrians a false sense of security by expecting drivers to obey signs. Changes to the posted speed limit are not likely to result in any changes in traffic volumes or noise either.

Traffic Activated Signs

Radar can be used to activate variable message signs when vehicles are traveling faster than the speed limit. These signs display the speed indication and the message SLOW DOWN or TOO FAST with flashing beacons to drivers exceeding the posted speed limit. Speed limit signs without beacons produced no significant reductions in speed. Some tests indicated that there was an increase in the speed variance with the speed violation sign. This is an unfavorable effect since it has been shown to increase the likelihood of accidents. Other tests indicated that speeds became more uniform. It is unlikely that a traffic activated sign would have any effect on traffic volumes or noise. These signs have moderately high construction costs and low maintenance costs.

Psycho-Perception Controls

Psycho-perception controls are those speed control measures that rely on drivers' attitudes, perceptions, and reactions to their surroundings. These include knowledge about speed enforcement, perceived safe traveling speed, and reaction to changes in the surrounding environment. They rely less on physically slowing vehicles or driver compliance with the law and more on the human psyche. Nonetheless, their benefits can be quantified and they make an important contribution to speed control.

Enforcement

In the presence of police enforcement, motorists tend to slow down. The magnitude of the speed decrease depends on the relative level of the speed limit and the perceived severity of the threat and enforcement. A marked police vehicle parked with lights flashing and simulating an arrest produces the largest reduction in speed. Stationary enforcement is more effective than moving enforcement in controlling speed. In most cases, the decrease in speed is less than three mph but reductions up to ten mph have been observed. As would be expected, the greater the number of enforcement measures present in a given area or the greater the frequency of presence, the greater the impact on the speed of traffic in that area.

The distance that the speed suppression effect extends from the enforcement measure depends on the frequency or strategy of patrol, the patrol method, the traffic situation, and other factors. In most cases, this distance is less than three miles either side of the measure, but there have been reports of an effect up to four miles upstream and ten miles downstream of the enforcement.

Enforcement also appears to have a carryover effect. That is, the speed suppression effect remains for some period of time after the enforcement unit is removed. The duration of this effect and the factors which can alter it are not well defined, but are associated with driver communication and frequency of exposure.

Speed enforcement not only reduces speed but also has the tendency to reduce accident severity as well. Studies have shown that the variance of speed distribution is reduced by enforcement. The effect of enforcement on speed variance is of interest since it is related to accident involvement. Other studies have shown that the effect of enforcement is to shift the entire speed distribution in the direction of lower speeds without actually altering speed distribution.

Economic and manpower constraints usually prohibit widespread or long-term employment of speed enforcement measures.

Transverse Markings

Transverse markings consist of a series of pavement markings placed across the road. Pavement marking materials consist of paint, thermoplastic, or pre-cut adhesive backed lines. The spacing between the markings gradually decreases as the area of speed control is approached. The marking pattern is intended to give the illusion of high speed and cause drivers to slow down. Tests have shown transverse markings to be successful in producing speed reductions, especially for speeders, and to reduce speed-related accidents, as well as all accidents. The technique may not affect those who are familiar with the area.

Transverse markings do not result in a decrease in traffic volumes nor a decrease in noise. They can create a hazard to pedestrians and bicyclists because some markings are slicker than the normal pavement when wet. Providing painted markings can be accomplished at a low construction cost and do not require much maintenance beyond routine painting.

Crosswalks

Providing marked crosswalks is primarily to improve pedestrian safety. Sometimes crosswalks are effective in causing drivers to slow down when approaching intersections with marked crosswalks. Raised or textured crosswalks are more effective than painted crosswalks at producing this effect, as they act as speed humps; however, they could result in an increase in noise and are not recommended for streets with high traffic volumes. They could also create a safety hazard for bicyclists.

Marked crosswalks indicate to drivers that they are approaching an area of high pedestrian volumes and that they are expected to yield the right-of-way to pedestrians. Crosswalks make crossing streets more pleasant because they delineate and reinforce pedestrian crossing. Area businesses may consider this option a plus.

A danger associated with this improvement option is that marked crosswalks could give pedestrians a false sense of security, especially at unsignalized intersections.

Providing painted crosswalks can be accomplished at a low construction cost (approximately \$3 per linear foot) and do not require much maintenance beyond routine painting. Raised or textured crosswalks have higher construction costs and little to no maintenance costs.

Odd Speed Limit Signs

Differentiated speed limits and advisory speed limits can be considered "odd" speed limits. Differentiated speed limits can consist of different speed limits for day and night or different speed limits for cars and trucks. Advisory speed limits are often used to aid drivers in selecting safe speeds for hazardous locations such as curves, roadwork sites, intersections, and road sections with lower design speeds.

When different speed limits are used for day and night, the night speed limits are generally set at five to ten mph lower than day speed limits. There are no reports available on the effectiveness of these limits, although speeds are generally lower and accident risk has been found to be greater at night.

Different speed limits for cars and trucks have also been used. One study of differentiated speed limits indicated that the actual difference in car and truck speeds was less than the posted ten mph differential except on steep upgrades where trucks could not maintain speed. At most sites studied the actual difference between car and truck speeds was less than six mph.

Studies have indicated that drivers exceeded advisory speeds of 15 to 35 miles per hour but did not exceed 45 and 50 mph speed advisories. Advisory and regulatory 35 mph speed limit signs were shown to have little if any effect on speed compared to the standard curve sign. In general, drivers were not influenced by raising or lowering advisory speeds, but they were influenced by the sharpness of the curve. Additionally, drivers using a highway repeatedly, quickly learn the speed that curvature and road conditions will allow and advisory speeds can be expected to have little effect on them.

As with typical speed limit signs, odd speed limit signs can be installed at a low construction cost with little to no maintenance problems or cost; however, they rarely result in actual reductions in speed. These signs also have a tendency to be ignored, and are more subject to vandalism.

Vertical Elements Along Roadway

This option consists of adding a vertical architectural element to the sides of a two-lane highway within an urban area to give the appearance of narrowness. This technique, sometimes called "Gateway Treatment," also gives drivers a sense of "place," i.e., the feeling that they have entered an urban area with lower speed limits, on-street parking, conflicting pedestrian and bicycle movements, and increased highway access.

This treatment may improve pedestrian safety because it causes drivers to be more alert; however, it could also distract motorists' attention.

The most common and most aesthetically pleasing way of accomplishing this is with the use of trees in a landscaped strip along the highway's edge. Trees provide shade and improve the landscape. The subliminal effect of getting drivers to slow down when driving a stretch of highway treated in this way is best achieved when the trees consist of mature shade trees which provide a canopy over the road somewhat limiting peripheral vision; however, it takes many years for newly-planted trees to reach the maturity level needed to provide the desired effect. The disadvantages of using trees are that trees may conflict with utility lines and outdoor advertising, they may obscure traffic signs and limit sight distance, and trees with heavy leaves or

fruit can create slippery conditions. Issues of maintenance including irrigation and drainage must be determined. Appropriate species must be selected so that roots do not disturb sidewalks.

Other vertical elements which could be used in place of trees are period street lamps, signs or even moving building lines closer to the highway edge to provide the illusion of a more narrow right-of-way. Care should be taken so as not to block drivers' sight distance.

This option is a popular improvement because of its aesthetic value, and because it does not compromise safety nor create negative noise impacts. This improvement option is estimated to have moderate to high construction costs; however, there is little to no maintenance required after construction.

Narrowing Lane Widths

Narrowing lane widths may slow traffic through the perceived higher risk of collision in narrower lanes. One study indicated no reduction in roadway capacity when changed from 12-foot-wide to 11-foot-wide lanes. This study noted a decrease in accidents; however, the reduction could not clearly be attributed to the lane modification. Another study of arterials and collectors suggests that for speeds of 30 mph, a 20-foot width is sufficient for a two-lane, two-way road.

Narrowing lane widths marginally shortens crossing distance and may increase pedestrian safety. This technique also has the effect of widening pedestrian space.

Significant narrowing is not feasible where through traffic volumes are close to road capacity. Lanes narrower than 11 feet on through, high volume streets may have higher accident rates. In addition, this technique may limit some truck movements depending on how narrow the streets are. There may also be a decrease in bicycle safety depending on how narrow the lanes are. Motorists may not wait, but attempt to move around a bicyclist even in narrow lanes. The presence of bike lanes might help although motorists might drive in bike lanes.

Narrowing lanes with the use of pavement markings can be accomplished at a low construction cost and little to no maintenance cost.

Bicycle Lanes

Bicycles should be accommodated on virtually all roadways. For most local streets, the traffic volume and speeds are low enough that bicycles and autos can safely share the same roadway. On collector streets and arterials, both the volume and speed of the automobile traffic is high enough that a designated space is needed for bicyclists. In urban areas where there are curbs, a six-foot bike lane is recommended for bicycles, and special care taken to secure safe bicycle passage through intersections. In rural areas without curbs and sidewalks, the typical recommended facility is a shoulder bikeway, where a six-foot standard paved shoulder is provided for bicycles. According to the Oregon Bicycle and Pedestrian Plan, the guideline for rural arterials with a design hour volume of less than 200 vpd is for a paved shoulder which is four feet wide.

Bicycle lanes also improve bicyclist safety and encourage more bicycle trips by improving the cycling experience by taking bike trips out of the general flow traffic lanes. Depending on the existing pavement width, bike lanes can be provided at a low construction cost simply by restriping an existing road (approximately \$0.40 per linear foot). If a roadway has to be widened to provide a bike lane or a paved shoulder, it can be done at a relatively high construction cost (approximately \$45 per linear foot for a facility

five feet wide on both sides of the road, built to highway standards, with curbs and striping). After construction, little to no maintenance is required except for routine painting of pavement markings.

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