CITY OF HERMISTON
TRANSPORTATION SYSTEM PLAN
FINAL REPORT

May 30, 1997

Prepared for
The City of Hermiston

Prepared by
David Evans and Associates, Inc.

Outstanding Professionals . . .
Outstanding Quality

DAVID EVANS AND ASSOCIATES, INC.

CITY OF HERMISTON
TRANSPORTATION SYSTEM PLAN
FINAL REPORT

May 30, 1996

Prepared for
The City of Hermiston
180 NE Second Street
Hermiston, Oregon 97838

Prepared by
David Evans and Associates, Inc.
2828 SW Corbett Avenue
Portland, Oregon 97201

INC.

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

Page

TABLE OF CONTENTS

Page

APPENDICES

LIST OF TABLES

LIST OF FIGURES

HERMISTON TRANSPORTTION SYSTEM PLAN

TRANSPORTATION ADVISORY COMMITTEE

Dick Ferranti, Chairman	Tim Mabry
Nathan Crowther	Ken Johnson
Gail Sargent	Margaret Saylor
John Page	DuWayne White
Chris Smalley	Claudia Stewart
Harmon Springer	

HERMISTON TRANSPORTTION SYSTEM PLAN

MANAGEMENT TEAM

Aaron Henson
City Planner
City of Hermiston

Ann Beier
Senior Planner
Umatilla County

Terry McArtor
District Manager
ODOT District 12

Hank McDonald
Building Official
City of Hermiston

Hal Phillips
Public Works Director
Umatilla County

John Preston
Regional Planner
ODOT Region 5

CHAPTER 1: INTRODUCTION

The Hermiston Transportation System Plan guides the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. This Transportation System Plan constitutes the transportation element of the City of Hermiston's Comprehensive Plan and satisfies the requirements of the Oregon Transportation Planning Rule.

STUDY AREA

The Hermiston Transportation System Plan study area includes the City of Hermiston as well as the area within the City's urban growth boundary *(UGB)* and adjacent areas that are currently developing or that have a strong potential to develop within the 20-year planning period. The study area is shown on Figure 1-1. Roadways included in the Transportation System Plan fall under several jurisdictions: the City of Hermiston, Umatilla County, and the State of Oregon.

Approximately 11,050 people live in the City of Hermiston; another 4,500 live in the study area for this Transportation System Plan. Located in northeastern Oregon about 30 miles west of Pendleton, Oregon, and approximately 34 miles south of the Tri-Cities, Washington, Hermiston is a self-contained community. Hermiston provides a variety of residential, shopping, employment, and recreational opportunities within its UGB and the surrounding countryside. The area's economy is strong, with a relatively low unemployment rate. Agriculture is important in the local economy. Non-agricultural jobs are concentrated in the industrial/manufacturing sector (37 percent), service sector (27 percent) and retail sector (21 percent). Large employers outside the planning area but near Hermiston (e.g., Umatilla Army Depot and United Parcel Service) also provide jobs for the area's residents.

Hermiston, like many other smaller communities in Oregon, developed along the state highways serving the region. With the construction of Interstate 84 (I-84) to the south and Interstate 82 (I-82) to the west of the city, much of the conflict between highway traffic and local traffic was eliminated. However, traffic problems still occur in Hermiston, particularly with increased traffic associated with growth along the Highway 395 corridor.

Two state highways traverse the City of Hermiston. Highway 395 (Umatilla-Stanfield Highway) cuts through the center of town from northwest to southeast and is a principal through street. Another principle route is Highway 207, which enters the city from the southwest along Butter Creek Road, proceeds through the core of the city along Hermiston Avenue and Main Street, and exits the city to the norhteast along Diagonal Road.

A comprehensive plan map showing the various existing and future land uses in the Hermiston Transportation System Plan study area is shown on Figure 1-2. This figure was taken from the 1992 Hermiston Comprehensive Plan. The land use development patterns have evolved since the early part of this century. Hermiston has a well-established commercial city core with residential areas radiating out from the downtown. Outside the downtown, commercial development is located along the Highway 395 corridor within the city and extending north toward Umatilla. Industrial uses are located northwest of the downtown core and in the southeast quadrant. Large industrial complexes associated with agricultural processing and the railroad are located outside the urbanized areas of Hermiston.

PLAN ORGANIZATION

The Hermiston Transportation System Plan was developed through a series of technical analyses combined with systematic input and review by the City, the Transportation Advisory Committee (TAC), Management Team, and the public. Key elements of the process included:

- Involving the Hermiston community (Chapter 1) (Appendix D)
- Defining goals and objectives (Chapter 2)
- Reviewing existing plans and transportation conditions (Chapters 3 and 4; Appendix A)
- Developing population, employment and travel forecasts (Chapter 5; Appendix C)
- Developing and evaluating potential transportation system improvements (Chapter 6)
- Developing the transportation system plan (Chapter 7)
- Developing a capital improvement program (Chapter 8)
- Developing Recommended Policies and Ordinances (Chapter 9) (separate from this document)

Community Involvement

Community involvement was an important part of developing the Hermiston Transportation System Plan. The community outreach program included work by a project management team, a transportation advisory committee, and public meetings.

The project management team consisted of staff members from the City of Hermiston, Umatilla County, and the Oregon Department of Transportation (ODOT). The team met a total of seven times to review work products produced by the consultant team. The management team provided direction on technical tasks as the plan was being prepared.

The TAC was appointed to this project by the Hermiston Mayor and City Council. The eleven-member TAC included members of the Hermiston City Council and Planning Commission, and business people from the Hermiston area. The TAC was responsible for reviewing all work products, community outreach with Hermiston residents, and providing policy direction to both the management and consultant teams. The TAC met nine times during the course of preparing this plan, and some members attended the two public meetings and the City Council presentation.

Two open community meetings were held in Hermiston on January 25, 1996, and November 12, 1996. The first meeting was held at the beginning of the planning process in a workshop format to solicit public input on transportation issues and problems to be addressed. The results of this meeting formed the basis for the transportation goal and objectives presented in Chapter 2. The second meeting was held at the end of the process for community review and comments upon completion of the draft Transportation System Plan. On November 4, 1996, the transportation improvement projects were presented to the Hermiston City Council for their review and comments.

Goals and Objectives

Based on input from the City, the TAC, and the community, one overall goal and a set of objectives were defined for the Transportation System Plan. The goal and objectives were used to make decisions about various potential improvement projects. They are described in Chapter 2. The TSP goal and seven objectives were formulated by the TAC over a period of two separate meetings. The TAC specifically limited the number of goals and objectives to address issues and concerns important to Hermiston. The TAC periodically reviewed the goal and seven objectives as the TSP was being prepared.

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

To begin the planning process, all applicable Hermiston and Umatilla 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 Hermiston area, including the street system improvements planned and implemented in the past, and how the city is currently managing its ongoing development. Existing plans and policies are described in Appendix A of this report.

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 B summarizes the inventory of the existing arterial and collector street system.

Future Transportation System Demands

The Transportation Planning Rule requires the Transportation System Plan to address a 20-year forecasting period. In accordance with this, 20-year travel forecasts were developed based on projections of population and employment by different land use categories within the UGB. The overall travel demand forecasting process is described in Chapter 5. The demographic forecast is described in Appendix C.

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 TAC, and they attempt to address the concerns specified in the goals and objectives (Chapter 2). After evaluating the results of the potential improvements analysis, a series of transportation system improvements were selected. These recommended improvements are described in Chapter 6.

Transportation System Plan

The Transportation System Plan 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 Transportation Planning Rule. The public transportation, air, water, 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.

Capital Improvement Program and Funding Options

The capital improvement program was developed from the short-term improvements and the recommended street system plan, while the funding analysis examines options for financing these improvements. These elements are described in Chapter 8.

Recommended Policies and Ordinances

The consultant team provided the City of Hermiston with a set of model comprehensive plan policies and zoning code ordinance amendments that were prepared for ODOT Region 5. City staff reviewed the models and have directed the consultant team to amend specific comprehensive plan policies and zoning code ordinances. Based on the review by city staff and the Management Team, a final set of comprehensive plan policies and zoning code ordinance amendments are detailed in Chapter 9 of this plan. It is recommended that the City of Hermiston adopt the policies and ordinance amendments concurrent with the adoption of the TSP.

CHAPTER 2: GOAL AND OBJECTIVES

The purpose of the Transportation System Plan is to provide a guide for the City of Hermiston to make sound decisions on transportation planning issues over the next 20 years. One of the initial steps in the planning process involved city staff, the management team, and the TAC reviewing existing city goals and objectives, including a review of existing city plans and reports

Based on the input from many people, the TAC selected one goal and seven objectives to guide the preparation of the Hermiston Transportation System Plan. The TAC chose the goal they believed addressed the transportation-related needs of the community. The objectives selected ensure the plan conforms with the Hermiston Comprehensive Plan and the Oregon Transportation Planning Rule.

The goal and objectives were reviewed periodically by the consultant team and TAC as project milestones were reached and technical work products were produced. Hermiston residents were informed and reminded of the project goal and objectives throughout the planning process.

Project Goal

The City of Hermiston will promote a balanced, well-integrated transportation system which provides safe, convenient and efficient access, and facilitates the movement of people and goods.

Project Objectives

The preparation of the Hermiston Transportation System Plan was guided by the following project objectives:

- *Satisfies the Oregon Transportation Planning Rule.*
- *Involves participation by interested transportation user groups and the general public.*
- *Promotes coordination among the City of Hermiston, Umatilla County, and the Oregon Department of Transportation (ODOT).*
- *Considers all modes of transportation.*
- *Improves the traffic circulation pattern.*
- *Protects and enhances neighborhood livability.*
- *Considers new revenue sources for transportation projects.*

CHAPTER 3: TRANSPORTATION SYSTEM INVENTORY

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

STREET SYSTEMS

The most common understanding of transportation is of roadways carrying cars and trucks. Most transportation dollars are devoted to building, maintaining or planning roads to carry automobiles 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.

Encouraging the use of cars and trucks must be balanced against costs, livability factors, the ability to accommodate other modes of transportation, and negative impacts on adjacent land uses; however, the basis of transportation in all American cities is the roadway system. This trend is clearly seen in the existing Hermiston 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; therefore, the emphasis of this plan is on improving the existing street system for all users.

The existing street system inventory was conducted for all highways, arterial roadways, and collector roadways within Hermiston as well as those in Umatilla County that are included in the Transportation System Plan 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
- general pavement conditions
- street segment lengths

Figure 3-1 shows the roadway functional classification and jurisdiction, as well as the location of traffic signals. All streets not classified in the map are local streets. Appendix B lists an inventory of all arterial and collector streets, and some local streets.

State Highways

Discussion of the Hermiston street system must include the state highways that traverse the planning area. Hermiston is accessed by two state highways: Highway 395 and Highway 207. These highways serve as the major routes through the Hermiston urban area with residential, commercial, and industrial development focused along the corridors.

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.

Hermiston has one highway of regional significance (Highway 207) and one highway of district significance (Highway 395). According to the OHP, the primary function of a regional highway is to "provide connections and links to areas within regions of the state, between small urbanized areas and larger population centers, and to higher level facilities." Within urbanized areas, a secondary function is "to serve land uses in the vicinity of these highways." The primary function of a district highway is to "serve local traffic and land access." For both types of highways, the emphasis is on preserving safe and efficient higher speed through travel in rural areas, and moderate to low-speed operations in urban or urbanizing areas. This means that design factors such as controlling access and providing passing lanes are of primary importance.

Recently, Highway 395 has been classified as a congressional high priority route in the National Highway System. This is a new classification system created by the Oregon Department of Transportation (ODOT) to identify highways of significant importance.

Highway 207

Highway 207 is a highway of regional significance, connecting Hermiston with Interstate 84 to the southwest and US Highway 730 to the northeast. Within the city limits, one traffic signal along this route is located at the W Highland Avenue intersection.

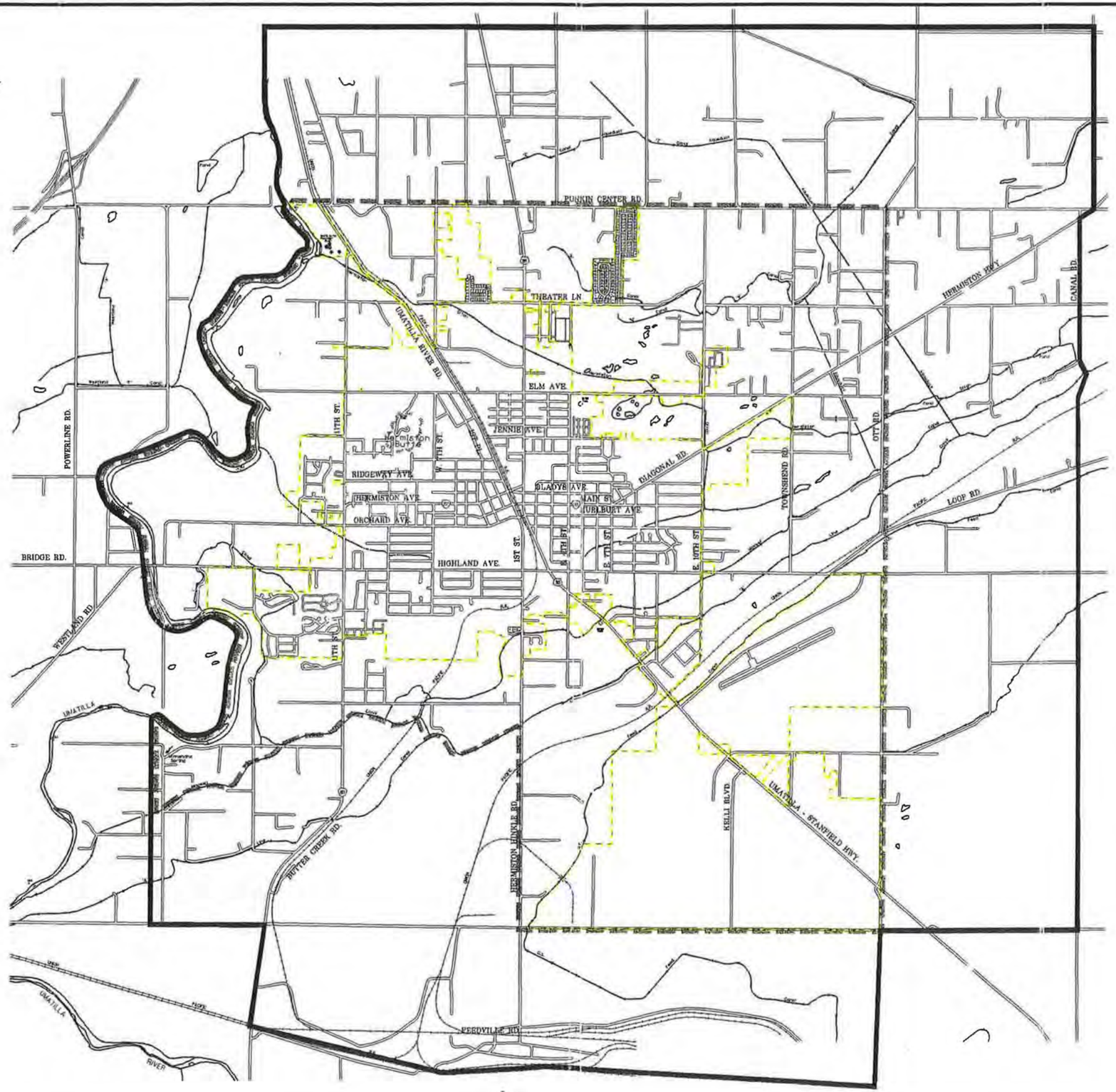
Within the Hermiston urban area, Highway 207 traverses across the heart of the city coinciding with several overlapping local streets and, at one point, Highway 395. Beginning with the interchange at I-84, Highway 207 runs north-south as a two-lane roadway known as the rural Butter Creek Road. The highway follows 11th Street up to Hermiston Avenue through an area where increasing amounts of urban residential development exists adjacent to the highway. Homes directly adjacent to the highway have direct access, whereas other residences access local roads which intersect the highway. The highway then travels east-west along Hermiston Avenue from 11th Street to the signalized intersection at Highway 395 and Gladys Avenue. The section of Highway 207, up to West 6th Street, is bordered by residential developments also with direct access to the highway as well as intersecting residential streets. From West 6th Street to Highway 395, adjacent land uses are predominantly commercial. The entire east-west section of Highway 207 allows on-street parking. The highway then proceeds south, coinciding with Highway 395, to the signalized intersection at Main Street, resuming its east-west alignment along East Main Street. This portion of Highway 207 is located in the downtown core of Hermiston with commercial developments along the highway's alignment and intersecting local streets. The east-west segment along Main Street is also a two-lane roadway with on-street parking present. From East 7th Street, Highway 207 becomes Diagonal Road heading in a northeasterly direction out of town. Diagonal Road is a two-lane roadway with no on-street parking, fewer intersections, and increasing speeds as it heads northeast out of the urban area.

Highway 395

Highway 395 serves as a connection between Interstate 84 to the southeast and Highway 730 to the north. This highway ties together the cities of Stanfield, Hermiston, and Umatilla providing service for local and through traffic as well as providing access to developments along the corridor.

LEGEND

- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS



0 1600 3200 4800

FEET

DAVID EVANS AND ASSOCIATES, INC.

2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 1-1
HERMISTON TSP STUDY AREA

LEGEND

- Urban Growth Boundary
- City Limits
- OS OPEN SPACE

RESIDENTAL:

- Low Density, *R-1 & R-2
- M Medium Density, *R-3
- MH Medium Density/Mobile Home,*R-4
- Future

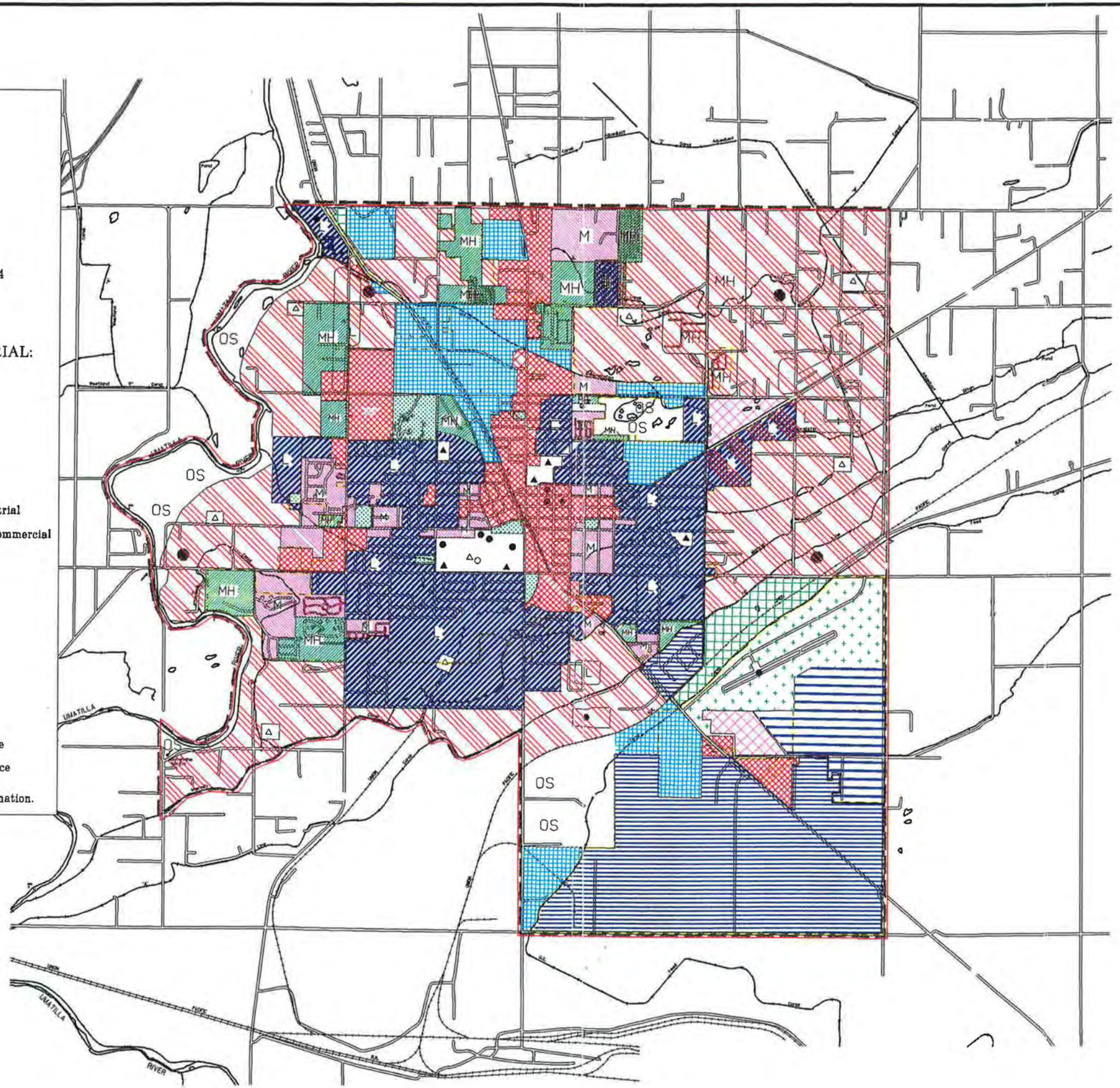
COMMERCIAL AND INDUSTRIAL:

- Commercial, *C-1 & C-2
- Future Commercial
- Industrial, *M-1 & M-2
- Future Industrial
- Mixed Commercial/Industrial
- Future Mixed Commercial/Industrial
- Future Node of Neighborhood Commercial
- Airport

COMMUNITY SERVICE:

- Existing Park
- Potential Park Site
- ▲ Existing School
- △ Potential School
- ● Other Existing Community Service
- ○ Other Potential Community Service

*Corresponding Zoning Ordinance Designation.



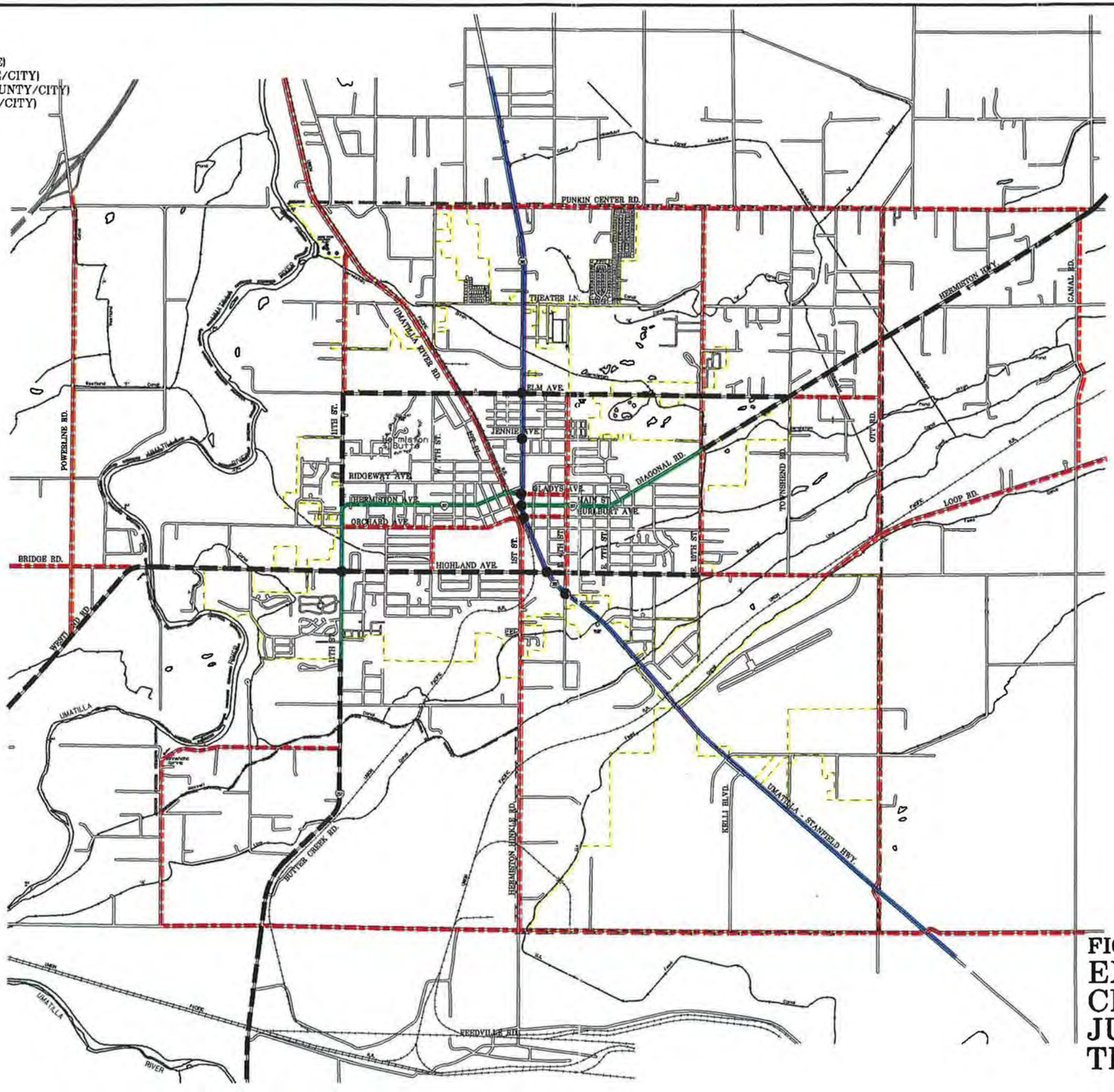
0 1600 3200 4800
FEET

DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 1-2
1992 HERMISTON COMPREHENSIVE PLAN MAP

LEGEND

- PRINCIPAL ARTERIAL (STATE)
- PRINCIPAL ARTERIAL (STATE/CITY)
- MINOR ARTERIAL (STATE/COUNTY/CITY)
- MAJOR COLLECTOR (COUNTY/CITY)
- TRAFFIC SIGNAL
- CITY LIMITS
- UGB



0 1600 3200 4800
FEET

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 3-1
EXISTING STREET CLASSIFICATIONS, JURISDICTIONS AND TRAFFIC SIGNALS

LEGEND

- UNPAVED STREET
- 1/2 PAVED STREET
- UNBASED SUBSTANDARD STREET
- CITY LIMITS
- UGB

0 1000 2000 3000
FEET

DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 3-2
EXISTING UNPAVED STREETS

LEGEND

- CROSSWALKS
- CURB RAMP
- INTERMITTENT SIDEWALKS
- SIDEWALKS
- MULTI-USE PATH
- USER TRAIL
- OBSTRUCTION

(not to scale)

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 3-3
EXISTING PEDESTRIAN FACILITIES

LEGEND

- BIKE LANE
- MULTI-USE PATH
- USER TRAIL

(not to scale)

DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 3-4
EXISTING BICYCLE FACILITIES

This highway is a five-lane facility with continuous left turn lanes. A total of seven traffic signals are located along the highway within the Hermiston urban area. Signals are located at SE 4th Street, Highland Avenue, Hurlburt Avenue, Main Street, Gladys Avenue, Jennie Avenue, and Elm Avenue.

Commercial developments are adjacent to the highway beginning at SE 4th Street, continuing through the downtown area, and proceeding north to Theater Lane. Most of the land adjacent to the highway along this section of the corridor has been fully developed. Many direct access points exist along this portion of the highway serving businesses, restaurants, car dealerships, hotels, etc. Around 70 to 80 percent of land adjacent to the highway has been developed from Theater Lane up to Punkin Center Road at the northern UGB boundary and continuing north to Joy Lane and Bagget Lane. This section includes a mixture of commercial, light industrial and, in some areas, residential land use.

Street Classification

The City of Hermiston has three existing street classification levels: principal and minor arterial streets, major collector streets, and local streets. The classification system covers all city, county and state roadways in the planning area. A discrepancy exists between the street classification map in Hermiston's Comprehensive Plan 1984 and ODOT's functional classification map for the city updated in 1990. There are many roads classified on both maps that do not match. It was decided by city officials that the city's comprehensive plan map properly identifies the existing classification of the streets inside the planning area. It is recommended that ODOT modify their functional classification map of the Hermiston area to match the street classification illustrated in Figure 3-1, and only changes presented in the future street classification map proposed in Figure 7-1 (Chapter 7).

Arterial Streets

Principal and minor arterial streets form the primary roadway network within and through a region. They provide a continuous road system which distributes traffic between neighborhoods and districts. Generally, arterial streets are high capacity roadways which carry high traffic volumes with minimal localized activity.

In Hermiston, there are two principal arterials: Highways 395 and 207. These roadways, as described previously, serve as the focus for most of the commercial development in the city. Highway 395 is a five-lane roadway with continuous left-turn lanes. Highway 207 is a two-lane facility with on-street parking through the commercial areas. The minor arterials along portions of Elm Avenue, 11th Street, Diagonal Road, Highland Avenue, Westland Road, and Butter Creek Road integrate the principal arterials and create a grid system, providing access for adjacent collector and local streets.

Major Collector Streets

Major collector streets connect local neighborhoods or districts to the arterial network. The City of Hermiston has 19 designated major collector streets. Within the study area limits, collector streets include all or portions of the following roads: Punkin Center Road, Elm Avenue, Gladys Avenue, Orchard Avenue, Hurlburt Avenue, Highland Avenue, Loop Road, Bridge Road, Feedville Road, Power Line Road, 11th Street, Umatilla River Road, South 1st Street, East 4th Street, East 10th Street, Ott Road, Canal Road, and Hermiston-Hinkle Road.

Local Streets

Local streets form the majority of the street system in Hermiston. They are designed to carry the very low traffic volumes associated with the local uses which abut them. In Hermiston, the local streets help form part of the grid system; however, they are not intended to function as alternate routes to the arterial and collector street system.

Street Layout

The majority of the Hermiston streets are positioned in a north-south and east-west grid pattern. Several manmade features interrupt the grid system, creating odd shaped blocks and uncommon directions of travel. These features include the Union Pacific Railroad, Highway 207 (along Diagonal Road), Highway 395 (south of Hurlburt Avenue), and several irrigation canals and ditches.

Two rail-lines, operated by the Union Pacific Railroad, traverse the city of Hermiston. Both originate at the Hinkle Railyard south of the city. The first rail-line begins paralleling Highway 207 south of the city limits. It then proceeds to the northeast where it crosses Highland Avenue near Highway 395. The rail-line then follows North 1st Place/Umatilla River Road in the northwest direction towards Umatilla. This rail-line crosses several major roads at grade. The crossings include: South 1st Street, Highland Avenue, Orchard Avenue, Locust Avenue, Hermiston Avenue, and Elm Avenue.

The second rail-line begins at the Hinkle Railyard and heads northeast, passing under Highway 395 just north of Airport Way. This rail-line traverses the more rural areas of the city with three at-grade crossings at Highland Avenue, Ott Road, and Canal Road. At these locations are low-volume sections of roadway.

Highway 207, along Diagonal Road, proceeds in a northeast-southwest direction creating skewed intersections with the local roads, which are positioned in a north-south or east-west direction. There are two intersections with five directions of approach; East 7th Street and Punkin Center Road. The intersection at Elm Avenue has a total of six directions of approach.

Highway 395 is positioned in a northwest-southeast direction from Hulburt Avenue south. Highly skewed intersections exist at SE 2nd Street and SE 4th Street.

Unpaved Roads

An inventory was taken of the unpaved streets that remain within the city limits. Figure 3-2 displays the locations of these streets. The unpaved streets are predominately unpaved sections of local streets throughout the city. They range from facilities that are all gravel to streets that are paved along one travel lane. The city maintains these streets on an annual basis. The City of Hermiston does not have adequate funding to upgrade unpaved streets. When possible, the city does pave some gravel streets are part of other street improvement projects.

Irrigation Canals

A series of irrigation canals are operated by the Hermiston Irrigation District within the city and throughout the urban area. The Maxwell Canal, A Line Canal, Feed Canal, and Hermiston Drain Ditch all form manmade barriers to local streets. The Maxwell Canal flows in a northeasterly direction, passing under Highway 207, S 1st Street, SE 4th Street, Highway 395, SE 9th Street, SE 10th Street, East Highland Avenue, Townsend Road, and Ott Road. With the exception of the crossings at Highway 207 and Highway 395, these crossings are narrow wooden bridges in varying states of disrepair, potentially in need of replacement.

The A Line Canal flows parallel to and south of the Maxwell Canal, in a southwesterly direction. It passes under all the same roads as the Maxwell Canal, plus Canal Road. The A Line Canal bridges are in similar condition to the Maxwell Canal Bridges. The Feed Canal approaches the urban growth boundary from the south and crosses under Feedville Road, then turns northeast and runs roughly parallel to the second rail-line described above. The Feed Canal then crosses under Highway 395, Highland Avenue Extension, and Canal Road.

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, mainly because pedestrian facilities are generally an afterthought and not planned as an essential component of the transportation system.

The relatively flat terrain and small size of Hermiston indicates that walking from one place to another can be done quickly and easily. Typically, the distance commonly walked is around 1/2 mile. Encouraging pedestrian activities may not only decrease the use of the personal automobile but may also provide benefits for retail businesses. Where people find it safe, convenient, and pleasant to walk, they may linger and take notice of shops that were overlooked before. They may also feel inclined to return to renew the pleasant experience time and again.

Hermiston's transportation system was examined for how well it meets the needs of pedestrians. Figure 3-3 displays the pedestrian facilities that exist within the city limits. Walkways and complementary facilities such as crosswalks, curb ramps, paths, and user trails were identified during site visits. The general condition and adequacy of these facilities were noted. Special conditions such as obstacles and inadequate construction or design were also noted. Data pertaining to the pedestrian and bicycle system were obtained from documents supplied by the City, the 1990 Highway Census, and from observations taken during two field visits in November and December 1995.

The resulting inventory was used to develop pedestrian conditions for the arterial and collector streets and for the street network as a whole. Improvements proposed in Chapter 7 in the Pedestrian Plan section are designed to correct major problems in the pedestrian system and to encourage its use.

The City of Hermiston has an extensive and a fairly well integrated pedestrian system, with the most pedestrian-friendly area being located in the downtown core. The city has expressed the need to expand the pedestrian system to improve sidewalks and walkways to new residential areas and around new schools.

Pedestrian Facilities Along Highways

Highway 207, along Hermiston Avenue and Main Street, has continuous sidewalks extending from 11th Street to Diagonal Road at 8th Street. Crosswalks and curb ramps are provided at many of the major intersections to facilitate safe pedestrian traffic flow.

There are two locations along Highway 207 within the city limits where inadequate pedestrian facilities exist. There are no sidewalks or pedestrian crossings along Highway 207/Diagonal Road from 8th to 10th Street and no sidewalks along Highway 207 from Hermiston Avenue to the south city limits.

Highway 395 has continuous sidewalks along both sides of the highway from the north city limits south to the railroad overpass near the armory. These sidewalks support pedestrian activity created by the abundance of commercial developments along this section of the highway. Currently, crosswalks and curb ramps exist at most of the seven signalized intersections along the highway. With the implementation of the District 12 Signal Rehabilitation Project designed by the Oregon Department of Transportation (ODOT), all signalized intersections along the highway in Hermiston will have crosswalks and curb ramps to facilitate safe east-west travel for pedestrians and disabled citizens. Signal timings on Highway 395 at these intersections are adequate with wait times less than 60 seconds and crossing times which require pedestrians to travel no faster than four ft/sec.

Pedestrian Facilities Along City Streets

Of the 38.9 miles of arterial and collector streets in the city, only 17.4 miles (45 percent) have a sidewalk on at least one side and many of these have gaps. For example, sidewalks are present on one side only along Elm Avenue, from East 4th Street to 10th Street and along South 1st Street, from Hermiston Avenue to Highland Avenue. Many of the semi-rural roads, such as Theater Lane, East 10th Street, and 1st Place, are narrow and without sidewalks or shoulders. These streets were originally constructed many years ago either as county roads or when pedestrian access was not an important consideration.

Pedestrian Crossings

Crosswalks and curb ramps are located at intersections in areas which experience heavy pedestrian usage. They are located mainly in the core of the downtown area east of Highway 395, along Gladys Avenue, Main Street, Hurlburt Avenue, and Highland Avenue, and west of Highway 395 along Hermiston Avenue and Highland Avenue. Of the 600 street corners in the Hermiston area only about 230 (38 percent) have curb ramps.

Off-Road Pedestrian Facilities

There is a multi-use path along Highway 207, from 10th Street to Townsend Road and from Ridgeway Avenue to Diagonal Road on 10th Street. This multi-use path offers a walking route, other than the highway shoulder, for pedestrians along Highway 207/Diagonal Road to access the playing fields near Townsend Road. Another multi-use path for pedestrians and bicyclists is located along the north side of Elm Avenue, from 4th Street to 10th Street. This is a narrow asphalt path approximately three feet wide and it is located at-grade and close to the roadway. It is not considered a safe pedestrian route because there is no grade separation from the street.

LEGEND

- GOOD QUALITY
- FAIR QUALITY
- POOR QUALITY

(not to scale)

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 3-5
BICYCLE SYSTEM EQUALITY

Pedestrian System Deficiencies

There are several obstacles in Hermiston that may affect a person's decision to make a trip by walking:

- Highway 395 is a high volume, five lane facility dividing the east and west sections of the City of Hermiston. Although Highway 395 has sidewalks for 2.2 miles through the urban area, they are adjacent to a travel lane without any buffer, are often only 4-ft wide, and are in need of curb ramps at 43 of 70 corners. In the downtown area, there are seven signalized intersections with crosswalks, some of which are in need of medians or refuge islands to become more pedestrian friendly.

- The railroad runs through the city and limits the number of crossings to 6 in 1.1 miles. Although this is a reasonable number of crossings, they are all at-grade and four pedestrian crossings need to be improved.

- Perimeter city streets and roads extending outside the city lack basic pedestrian facilities such as shoulders.

There are also areas where approaches to existing schools and parks, shopping areas, and the downtown vary in quality. The following locations have been identified as places which cannot be accessed by continuous sidewalks:

- Sandstone Middle School
- Highland Hills School
- Oregon State Offices on SE Columbia Drive
- Shopping area at Orchard Ave. and 11th Street
- Good Shepherd Community Hospital

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 higher speeds than walking. Because of the small size of Hermiston, a cyclist can travel to any destination in town within a matter of minutes. Bicycling should be encouraged to reduce the use of automobiles for short trips. Noise, air pollution, and traffic congestion could be mitigated if more short trips were taken by bicycle or on foot. Typically, a short trip that would be taken by bicycle is around two miles.

Bikeway Facilities

A majority of the city of Hermiston has no sanctioned bikeways; bicyclists must share the roadways with motorized vehicles. On low volume roadways, such as many of the local streets, bicyclists and autos can both safely and easily use the roadway. On higher volume roadways, particularly the principal and minor arterial streets, safety for the bicyclists is an important issue. Existing bicycle facilities are presented in Figure 3-4.

Only three roads are striped for bicycles in the city. A portion of Highland Avenue from 11th Street to South 1st Street has striped bike lanes in both directions. The second set of striped bike lanes is located along Elm Avenue from Highway 395 to NE 4th Street. The third set of bike lanes is located along Diagonal Road, beginning at 8th Street and heading to the northeast.

The two multi-use paths mentioned previously along Diagonal Road and Elm Avenue also allow bicycle usage as well.

Of the 38.9 miles of arterials and collectors in Hermiston's urban area, 16.9 miles (43 percent) have some type of bikeway:

- Striped Bike Lane 1.3 miles
- Shoulder (4-ft min.) 7.2 miles
- Shared Roadway (14-ft outside lane min.) 7.7 miles
- Multi-use path (also pedestrian facility) 0.7 miles

The remaining streets either lack facilities or, in the case of some collectors, are low-traffic streets where sharing the roadway is currently acceptable.

Bikeway Evaluation

The inventory of all arterial, collector, and most of the local streets was analyzed to determine the quality of the bicycle system. Results were used to divide the streets into three categories:

- Good – Conducive to bicycle use. Minor improvements, if any, needed.
- Fair – Usable by many cyclists but poses some hazards. Improvements, such as shoulders or lanes, may be needed.
- Poor – Substandard conditions combined with heavy traffic create significant hazards. Should be improved.

Results were transferred to a map (See Figure 3-5, Bicycle Quality), so that gaps in the system are demonstrated graphically.

Over 60 miles of major streets in the Hermiston urban area were examined for cycling conditions. Overall, the streets rated near the break between Good and Fair. The results for 38.9 miles of arterials and collectors are:

- Good 16.5 miles 42%
- Fair 9.0 miles 23%
- Poor 13.4 miles 35%

About 42 percent of the arterials and collectors inside the UGB are rated good for bicyclists, meaning that few improvements are necessary under present conditions. These are streets that have a good surface and ample width (wide outside lane or shoulder).

Many of the streets that rated fair to poor have deteriorated pavement, substandard space for bicyclists, and other problems. About 30 percent of these streets have outside lanes of less than 14 feet (the desirable width for a shared lane) combined with traffic over 3,000 cars per day (the volume at which bike lanes are normally

considered). These streets are the focus of the recommended projects, especially where they can be integrated with existing streets that rated good.

There are several obstacles in Hermiston that may affect a person's decision to make a trip by bicycling:

- There are no bike lanes on Highway 395 and the outside travel lane is generally less than 14 feet, especially in the central area. It is the position of both the City of Hermiston and ODOT District 12 that bicycle travel along Highway 395 in Hermiston should not be encouraged because of the heavy truck traffic on this corridor.

- The railroad divides the city and limits the number of crossings to 6 in 1.1 miles. Although this is a reasonable number of crossings, they are all at-grade and four lack good bicycle crossings.

- Perimeter city streets and roads extending outside the city lack basic bicycle facilities such as shoulders.

In the downtown core, Highway 395 has traffic volumes ranging between 11,200 and 20,500 vehicles per day which is considered very heavy traffic. With traffic volumes of these magnitudes and given the existing lane geometry, the City of Hermiston, Umatilla County, and ODOT District 12 do not consider Highway 395 fit to provide safe travel lanes for bicyclists.

Another impediment to bicycle use is the lack of parking and storage facilities for bikes throughout the Hermiston area. Bicycle racks were noted at a few locations but, in general, bicycle parking appears to be sparse in all areas of the city.

PUBLIC TRANSPORTATION

Public transportation in Hermiston consists of a taxicabs, senior citizen and handicapped transport, intercity bus lines, and rail services. The city has no local fixed route transit service at this time.

Until recently, the taxicab and the senior citizens and handicapped transport services were maintained and operated by JB's Taxi Service. In 1996, this company separated into two organizations. Now Classic Cab operates the taxi service and Hermiston Senior & Disabled Transit operates the senior citizen and handicapped shuttle service. Classic Cab provides taxi rides throughout the Hermiston area as well as service to regional airports in Pendleton, Oregon and Pasco, Washington, the Amtrak station at Hinkle Railyard, and the Hermiston Greyhound terminal. Hermiston Senior & Disabled Transit uses ordinary automobiles equipped to carry handicapped citizens. A total of three vehicles are available for dispatch anywhere in the Hermiston area. Classic Cab and Hermiston Senior and Disabled Transit share dispatching facilities.

Greyhound operates the inter-city bus service in Hermiston. Currently, there are four trips per day leaving for Portland to the west. Bus departure times are at 2:00 a.m., 5:50 a.m., 11:35 a.m., and 2:50 p.m. One trip per day departs for Salt Lake City, Utah, at 4:50 p.m. Two trips per day depart to Spokane, Washington, at 4:00 a.m. and 2:45 p.m. During the summer months, usually from April 1st until October 1st, Greyhound adds an additional trip per day to either Salt Lake City or Portland depending on ridership demand.

The small size and low traffic volumes on city streets would indicate that mass transit is not currently feasible. A citywide public transportation program would not be economically feasible at this time. The Transportation Planning Rule exempts cities with a population under 25,000 from including mass transit facilities in their development regulations. However, Hermiston can plan for future transit services with growth patterns that support rather than discourage transit use in the future.

RAIL SERVICE

Passenger Rail

Amtrak did provide passenger service to and from Hermiston at the Hinkle Railyard, located about five miles south of downtown Hermiston. There were three trips per week on Tuesday, Thursday, and Sunday for passengers heading to cities in eastern Oregon such as La Grande, Pendleton, and Baker City, as well as other cities further east outside of Oregon, such as Boise, Ogden, Denver, and Chicago.

Amtrak is currently experiencing a funding crisis. As a result, passenger service between Portland and Denver, including service to Hermiston and the other cities mentioned above, was discontinued by May 1997. The city needs to recognize the importance of having possible rail services and lend support to Amtrak for its continuation. Hermiston could also lend support by promoting the service to Hermiston residents and outlying communities that have been served by the station at Hinkle for over 100 years.

Freight Rail

Freight rail lines owned and operated by Union Pacific Railroad run through Hermiston parallel to Highway 395 in the downtown core. In addition, the Hinkle Railyards, a major maintenance and repair facility, is located south of Hermiston. At the present time, the Hinkle Railyards handles 794 rail cars a day. This includes fueling, switching, and assembling activities.

The Southern Pacific Railroad has recently merged with Union Pacific Railroad. Based on an EIS published in 1996, the proposed railroad merger is expected to increase rail related activity at the Hinkle Railyard by 43 percent. The railyard was recently precertified to receive Enterprise Zone benefits to attract a maintenance facility. The facility is expected to add up to 200 new jobs to the Hinkle Railyards in the near future.

AIR SERVICE

The city of Hermiston owns and operates the municipal airport. No commercial flights are available at the present time but there is a charter service available. Commercial flights are available in Pasco, Washington, 36 miles north, and in Pendleton, Oregon, 30 miles southeast of Hermiston. Scheduled air service and daily non-stop flights are available throughout the western United States from Portland

The Hermiston municipal airport is at an elevation of 637 feet above Mean Sea Level (MSL). It is located 1.5 miles from downtown Hermiston and has two runways, both of which are 4,500 feet long and positioned in a northwest-southeast direction. The municipal airport is often used by businesses such as Simplot, Gilroy Foods, Les Schwab, UPS, and other larger organizations such as PGE, Bonneville Power, and the Army Corps of Engineers. There is a

charter air service and an agricultural spray operation based at the airport, and local residents also use the airport for recreational purposes. Because the Hermiston Airport is governed by its own master plan, recommendations for its improvement do not fall into the scope of this Transportation System Plan. However, the airport is an essential part of the economy of the area. It is necessary to include the airport when considering future development proposals for the surrounding land. In many localities, uses have been allowed around airports that are not compatible with air traffic. This issue is addressed in Chapter 9 (Recommended Policies and Ordinances).

PIPELINE SERVICE

A four-inch diesel line to the Hinkle Railyard is provided by the Kaneb Corporation. The pipeline originates in the City of Umatilla to the north and proceeds along the east side of East 10th Street in the Hermiston study area. The pipeline is running at about 75 percent capacity.

WATER SERVICE/IRRIGATION

Currently, there is a 42-inch water main providing potable water service throughout the region. The water main traverses the study area from Umatilla River Road, along 11th Street, to the south and extends south of the study area.

CHAPTER 4: CURRENT TRANSPORTATION CONDITIONS

As part of the planning process, the current operating conditions for the Hermiston 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 Hermiston. Accident data was also examined to identify hazardous locations. Lastly, census data was examined to determine travel mode distributions.

TRAFFIC VOLUMES

Existing traffic volume information for the Hermiston area supplemented with a traffic count program was used to identify current traffic volumes along all arterial and collector streets in Hermiston. Manual turning movement counts were performed during the peak PM period in October 1995. A total of 16 counts were taken; eight at signalized intersections and 8 at other key intersections in the city. A total of 16 bi-directional road tube counts were taken at separate locations.

Average Daily Traffic

The 1995 Average Daily Traffic (ADT) on the major streets in Hermiston was collected from the following sources: The 1995 Oregon Department of Transportation's *Traffic Volume Tables*, 24-hour road tube counts, and PM peak hour turning movement counts which were factored up with an average PM peak hour percentage of the ADT. Figure 4-1 displays 1995 ADT volumes.

Highway 395 carries the greatest amount of traffic in Hermiston, and traffic volumes have increased rapidly along this section of highway since ODOT last measured the traffic levels in 1992. In 1995, the ADT reached 10,100 vehicles per day (vpd) near Ott Road at the southern UGB line. This was in increase of 58 percent, up from 6,400 vpd in 1992. Traffic near Jennie Avenue has increased from 14,000 vpd to 20,500 vpd, which is an increase of around 46 percent. Traffic volumes near Punpkin Center Road at the northern UGB line have risen from 12,000 vpd to 16,000 vpd, which is a 33 percent increase. This drastic change in traffic flow is mostly attributed to the increased traffic accessing the commercial developments along the highway and due to increased through traffic.

Highway 207 also carries high traffic volumes. In 1995, volumes ranged between 4,200 and 6,100 vpd along Diagonal Road from Punkin Center Road to East 7th Street. Along Main Street, from East 7th Street to Highway 395, traffic volumes ranged between 5,500 and 7,500 vpd. Along Hermiston Avenue, from Highway 395 to West 11th Street, traffic volumes ranged between 6,200 and 9,100 vpd. Traffic volumes reached 9,800 vpd near Orchard Avenue on West 11th Street, decreasing to 4,100 vpd near Minnehaha Road. Traffic volumes on Highway 207 have not increased as much as traffic on Highway 395.

Other minor arterials which carry a considerable amount of traffic are Elm Avenue from West 11th Street to Highway 207/Diagonal Road; West 11th Street from Elm Avenue to Highway 207/Hermiston Avenue; and Highland Avenue, from Westland Road to East 7th Street.

East 4th Street is designated as a collector street. Between Highway 395 and Elm Street, this street experiences higher daily traffic volumes than any other collector street in the city. Traffic volumes range from 4,200 to 4,800 vpd along this road. Gladys Avenue and Hurlburt Avenue are collector streets that parallel Highway 207/Main Street

and carry volumes of 4,000 and 4,400 vpd, respectively. A section of 1st Place from Elm Avenue to Hermiston Avenue carries about 4,000 vpd. Most other collector streets in Hermiston carry less than 3,000 vpd.

Hourly Traffic Patterns

Generally, traffic volumes on Hermiston roadways tend to have three peaks each day; an AM peak around 8:00-9:00 a.m., a peak around 12:00-1:00 p.m., and a PM peak in the late afternoon around 4:00-5:00 p.m. The mid-day and PM peak hour traffic volumes along most of the streets average about 8 to 9 percent of the total daily traffic volumes. The AM peak hour traffic volume is around seven percent of the daily traffic volume.

Hourly traffic patterns at two key intersections in Hermiston are shown in Figure 4-2. These patterns are based on 16-hour traffic volumes measured by ODOT where Highway 395 intersects with Highland Avenue, and where Highway 395 intersects with Main Street. These locations were selected because they were identified as two of the high activity spots in the city.

At the intersection of Highway 395 and Highland Avenue, hourly traffic volumes increased steadily in the morning until traffic peaked from 12:00-1:00 p.m. Traffic peaked again from 2:00-3:00 p.m., which is most likely related to the high school letting out. Traffic volumes held relatively steady until dropping off after 5:00 p.m.

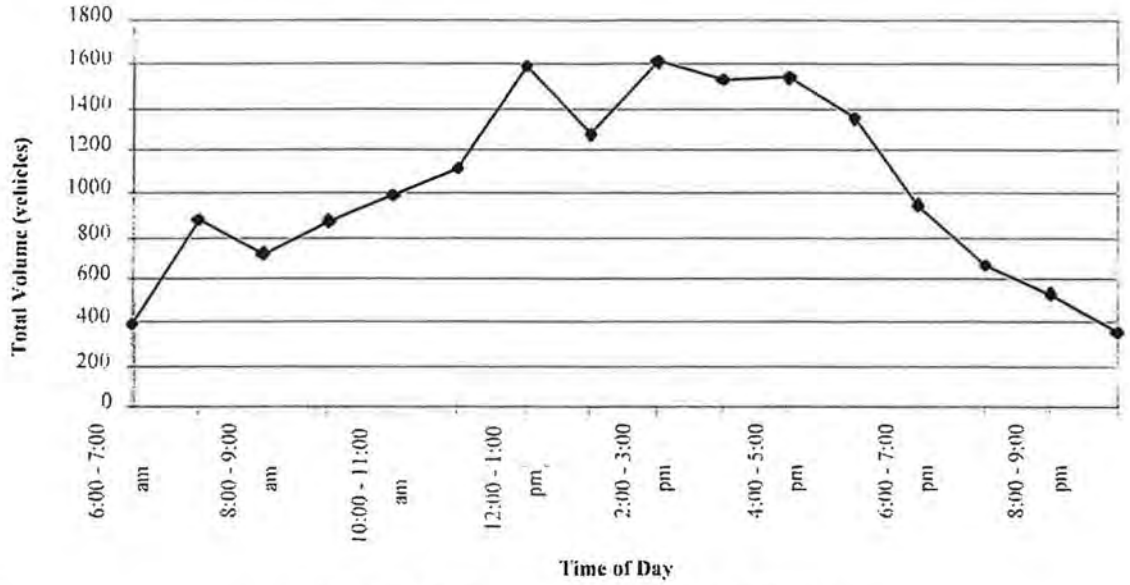
The other intersection of Highway 395 at Main Street did not have multiple peak periods but experienced a gradual increase until traffic peaked from 4:00-5:00 p.m. After 6:00 p.m., traffic volumes dropped significantly, similar to the intersection above.

Analysis of both intersections revealed that traffic tends to increase steadily during the course of an average weekday with occasional peaks around noontime, a peak in the late afternoon around 4:00-5:00 p.m., and decreasing rapidly after 6:00 p.m. Neither intersection seemed to possess an AM peak hour due to a steady increase in traffic up to 12:00 p.m.

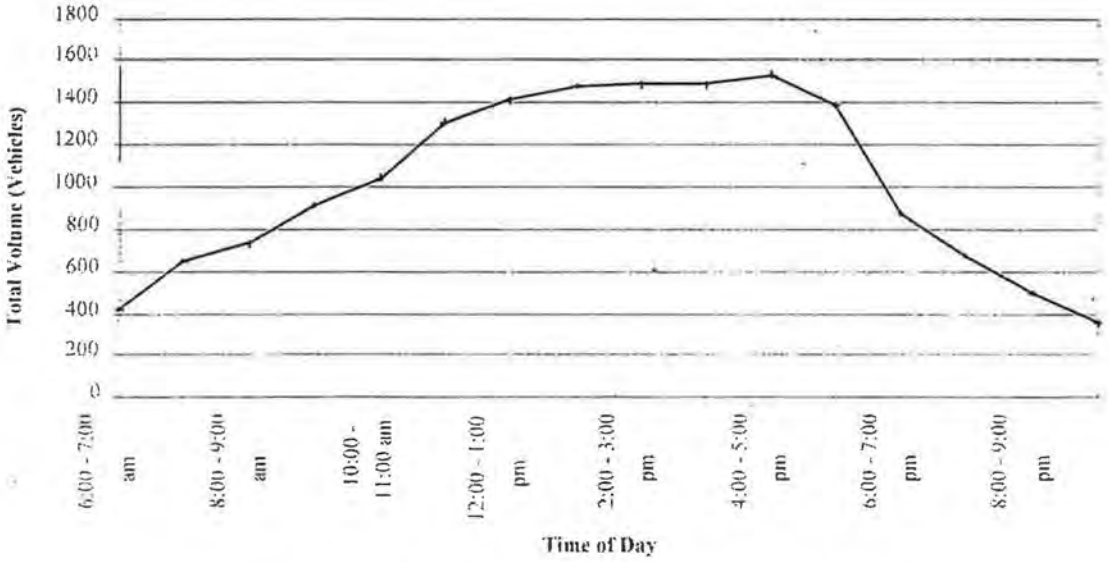
Weekday PM Peak Hour Volumes

From the hourly traffic patterns observed from the road tube and manual turning movement counts, the period of highest activity for an average weekday can be discerned as occurring between 3:00 and 5:30 p.m.; therefore, testing and evaluation of the street system was based on PM peak hour volumes.

Directional PM peak hour volumes are shown on Figure 4-3. Figure 4-4 displays the PM peak hour volumes for the downtown core of Hermiston. The traffic pattern for the peak hour is similar to the daily traffic patterns. Volumes are highest on the state highways. Volumes on these roadways steadily increase as the roadways approach the downtown core from the boundaries of the study area.



Hourly Traffic Pattern on Highway 395 and Highland Ave



Hourly Traffic Pattern on Highway 395 and Main Street

FIGURE 4-2
HOURLY TRAFFIC PATTERNS

Through Traffic

Through traffic on the major roadways which access the city of Hermiston was measured by comparing license plates of vehicles entering and exiting the city during the PM peak period. A total of 10 locations were identified with recorders measuring both directions of traffic. Vehicles which passed through Hermiston in under one-half hour were considered to be through traffic.

Average Trip Lengths

Average trip length information for 1996 was estimated using the calibrated model of 1996 traffic volumes. (See Table 4-1). Development of the Hermiston traffic model is summarized in the travel forecasting chapter (Chapter 5).

About five percent of the total trips are passing through Hermiston without stopping. Another 40 percent are trips that begin in Hermiston and end elsewhere, or begin somewhere else and end in Hermiston. The remaining 55 percent stay within the study area for their entire trip.

Of the trips that are entirely within the study area, most trips made are under two miles in length. Approximately 7.5 percent are less than ½ mile in length, a distance that can be covered by a pedestrian in less than 15 minutes and by a bicyclist in approximately five minutes. Almost 40 percent of the trips within the city are less than one mile in length, a distance which could be covered by a pedestrian in less than 25 minutes and by a bicyclist in less than 10 minutes. Another 36 percent of the trips are between one and two miles in length, and about 16 percent of the trips are between two and three miles in length.

TABLE 4-1
1995 AVERAGE TRIP LENGTHS

Trip Type/Length	Number of Trips	Percentage of Total	Percentage of Total within Hermiston
All Within the Study Area			
Up to 1/4 mile	68	0.8%	1.4%
1/4 to 1/2 mile	281	3.3%	6.1%
1/2 mile to 1 mile	1,508	17.8%	32.6%
1 mile to 2 miles	1,658	19.6%	35.8%
2 miles to 3 miles	762	9.0%	16.5%
3 miles to 6 miles	351	4.2%	7.6%
Subtotal	4,628	54.8%	100.0%
One End of Trip within the Study Area	3,383	40.0%	
Through Trips	440	5.2%	
Total Trips	**8,451**	**100.0%**	

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

LEGEND

1000 = 24-HOUR TRAFFIC VOLUME

5000
2500 10000 TRAFFIC SCALE (VEHICLES)

CITY LIMITS

UGB

0 1000 2000 3000
FEET

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 4-1
EXISTING 24-HOUR TRAFFIC VOLUMES

LEGEND

135 • PM PEAK HOUR TRAFFIC VOLUME

500 / 250 1000 TRAFFIC SCALE (VEHICLES)

CITY LIMITS

UGB

0 1000 2000 3000
FEET

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

SEE FIGURE 4-1

FIGURE 4-3
EXISTING PM PEAK HOUR TRAFFIC VOLUMES

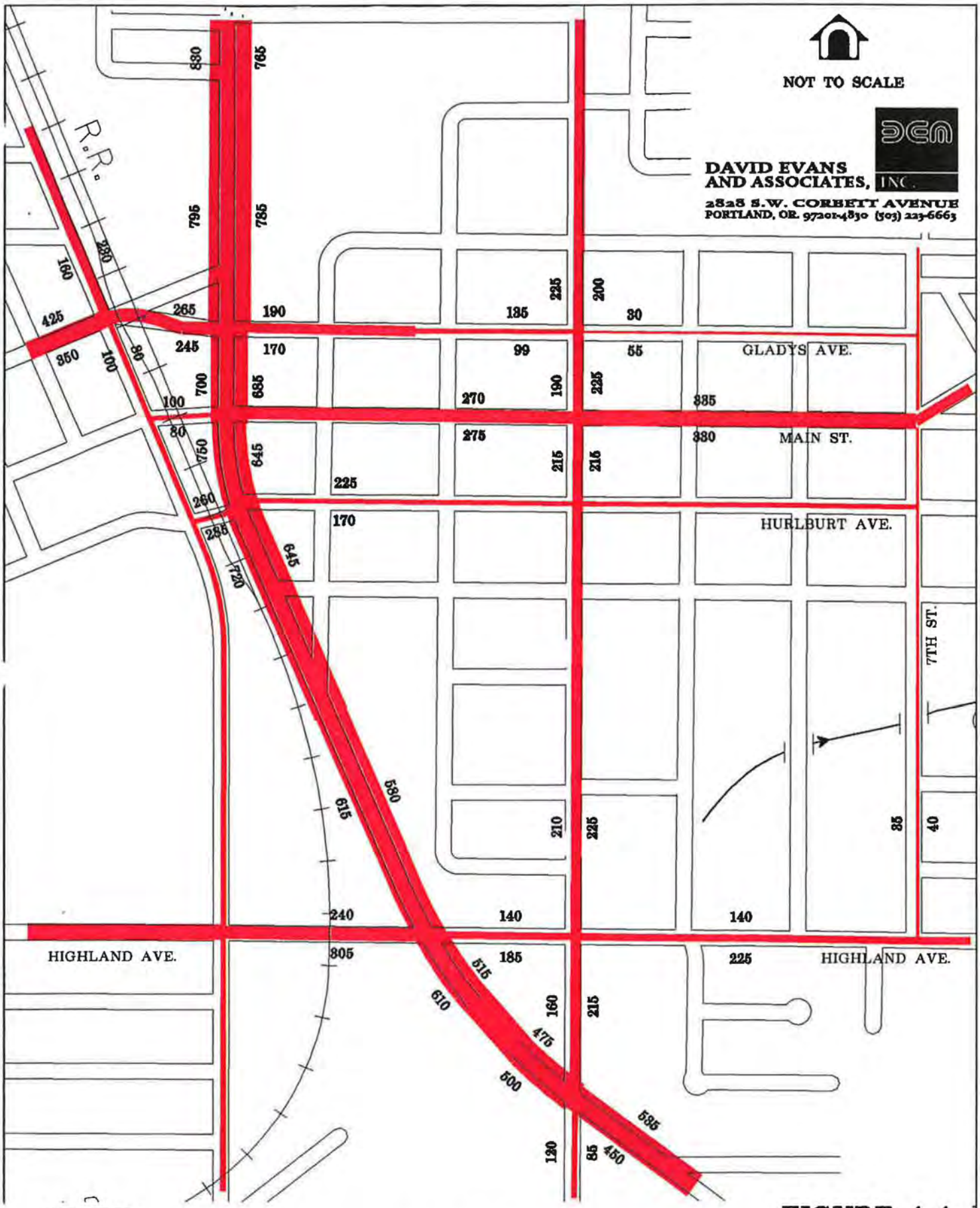


FIGURE 4-4

EXISTING PM PEAK HOUR TRAFFIC VOLUMES -DOWNTOWN

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. Table 4-2 presents the level of service criteria for arterial and collector streets.

TABLE 4-2
LEVEL OF SERVICE CRITERIA FOR ARTERIAL AND COLLECTOR STREETS

Service Level	Typical Traffic Flow Conditions
A	Relatively free flow of traffic with some stops at signalized or stop sign controlled intersections. Average speeds would be at least 30 miles per hour.
B	Stable traffic flow with slight delays at signalized or stop sign controlled intersections. Average speed would vary between 25 and 30 miles per hour.
C	Stable traffic flow with delays at signalized or stop sign controlled intersections. Delays are greater than at level B but still acceptable to the motorist. The average speeds would vary between 20 and 25 miles per hour.
D	Traffic flow would approach unstable operating conditions. Delays at signalized or stop sign controlled intersections would be tolerable and could include waiting through several signal cycles for some motorists. The average speed would vary between 15 and 20 miles per hour.
E	Traffic flow would be unstable with congestion and intolerable delays to motorists. The average speed would be approximately 10 to 15 miles per hour.
F	Traffic flow would be forced and jammed with stop and go operating conditions and intolerable delays. The average speed would be less than 10 miles per hour.

Source: Transportation Research Board, *Highway Capacity Manual*, Special Report 209. National Research Council, 1985.

The Oregon Highway Plan (OHP) establishes operating level of service standards for the state highway system[1]. Highways of regional importance, such as Highway 207, should operate at LOS C or better in urbanizing areas (i.e., average speeds between 20 and 25 mph) and LOS D or better (i.e., average speeds between 15 and 20 mph) in urban areas. It should also be mentioned that within Special Transportation Areas (STAs) such as the vicinity of downtown Hermiston, a LOS of E is acceptable along a regional highway. The purpose of this standard is to balance the importance of pedestrian-oriented districts in the STA with enhanced traffic flow on the highway. Because Highway 395 has been included in the National Highway System, operating conditions should be at least as good as the regional highway. These conditions supersede those recommended in the Oregon Highway Plan for district highways.

The operations at critical signalized intersections in Hermiston were calculated for the weekday PM Peak Hour (see Table 4-3). Conditions were analyzed for the month of October 1995.

[1] 1991 Oregon Highway Plan. Appendix A. Table 1. Operating Level of Service Standards for the State Highway System.

TABLE 4-3
LOS OF SIGNALIZED INTERSECTIONS
OCTOBER 1995

Location	Approaching From			
	West	East	South	North
Highway 395 at				
Elm Avenue	F	D	B	B
Jennie Avenue	D	D	B	B
Gladys Avenue	F	E	B	B
Main Street	E	F	B	B
Hurlburt Avenue	F	E	A	B
Highland Avenue	F	D	B	B
4 th Street	A (NW)	A (SE)	D	D
Highway 207 at				
Highland Avenue	B	B	B	B

Note: F indicates LOS F or worse due to a volume-to-capacity ratio over 1.0 from left-turning traffic.

The signalized intersections of Highway 395 at Elm Avenue, Jennie Avenue, Gladys Avenue, Main Street, Hurlburt Avenue, and Highland Avenue are all pre-timed signals with 120 second cycle lengths. About 70 percentof the green time is allocated to the through traffic heading northbound or southbound on Highway 395. A LOS B or better exists on the Highway 395 approaches at each intersection. These level of services are better than the minimum state requirement of LOS B or LOS E in an STA. Traffic at the approaches of intersecting minor streets for each of these intersections experience a LOS of D or worse. This is due to the small proportion of green time and the shared phasing that exists between eastbound and westbound traffic. A LOS F exists for the eastbound approaches at most of these intersections. The operations analysis revealed that this is due to a large number of left-turn movements and the difficulty in finding sufficient gaps in the opposing traffic in which to turn.

ODOT is currently designing an interconnect between the seven signalized intersections along Highway 395. The interconnect will allow the signals to be coordinated with each other allowing for improved traffic movement along the highway. Eliminating the pretimed signal system may allow for the improvement of substantial minor street operations intersections.

The signalized intersection at Highway 395 and 4th Street is fully actuated. A LOS of A exists for traffic on Highway 395 approaching from both directions. A LOS of D exists for traffic on the 4th street approaches. This signal is not on a fixed cycle length.

Currently there is no interconnection between any of the seven signalized intersections along Highway 395. The fixed timing of six of these intersections help to move traffic along the highway with reasonable progression. Traffic on the minor streets may suffer significant delay in order to move larger traffic volumes along Highway 395. There is one other signalized intersection at Highway 207 and Highland Avenue. This is an actuated intersection, operating under a two phase system. The intersection currently operates at a LOS of B for all approaches.

The operations of several key unsignalized intersections were calculated as well for the same PM peak period (See Table 4-4).

DEA INC.

TABLE 4-4
OPERATIONS OF UNSIGNALIZED INTERSECTIONS
OCTOBER 1995

Location	Approach From	Movement	LOS
Highway 395 at Punkin Center Rd.*	West	(LTR)	D
	East	(LTR)	D
	South	(L,TR)	A/A
	North	(L,TR)	A/A
Highway 395 at Theater Ln.*	West	(LTR)	C
	East	(LTR)	C
	South	(L,TR)	B/A
	North	(L,TR)	B/A
Highland Ave. at W. 7th St.	West	(LTR)	A
	East	(LTR)	B
	South	(LTR)	A
	North	(LTR)	B
Highway 207/Hermiston Ave. at 11th St.	East	(T, R)	A/A
	South	(L, T)	A/A
	North	(L, R)	C/A
Highway 207/Hermiston Ave. at 1st Pl.	West	(LTR)	A
	East	(LTR)	A
	South	(LTR)	C
	North	(LTR)	C
Elm Ave. at Umatilla River Rd.	West	(LTR)	B
	East	(LTR)	B
	South	(LTR)	A
	North	(LTR)	A
Highland Ave. at E. 4th St.	West	(LT, R)	B/A
	East	(L, TR)	B/B
	South	(LTR)	A
	North	(LTR)	A
Highway 207 Main St. at E. 4th St.	West	(LTR)	A
	East	(LTR)	A
	South	(LTR)	C
	North	(LTR)	C
Gladys Ave. at E. 4th St.	West	(LTR)	B
	East	(LTR)	B
	South	(LTR)	A
	North	(LTR)	A

*LOS results taken from Highway 395 Corridor Report by Kittleson & Associates, June 1995.

LTR= Exclusive Left-Through-Right Lane
L= Exclusive Left Lane
LT= Exclusive Left-Through Lane
T= Exclusive Through Lane
TR= Exclusive Through-Right Lane
R= Exclusive Right Lane

Overall, most of the unsignalized intersections are operating at adequate levels-of-service of C or better. The minor approaches at the intersection of Highway 395 and Punkin Center Road are operating at a LOS of D.

TRANSPORTATION DEMAND MANAGEMENT MEASURES

In addition to the inventory of the transportation facilities in Hermiston, transportation demand management measures that are currently in place were also reviewed.

Alternative Work Schedules

One way to maximize the use of the existing transportation system is to spread peak traffic demand over several hours instead of a single hour.

Statistics from the 1990 Census show the spread of departure to work times over a 24-hour period (see Table 4-5). The table shows that there are two one-hour time periods where the largest percentage of employees in Hermiston departed for work. Around 30 percent of the employees departed between 7:00 and 8:00 a.m. and about 20 percent between 6:00 and 7:00 a.m.

Assuming an average nine-hour work day, the corresponding afternoon peak can be determined for work trips. Using this methodology, the peak work travel hour would occur between 4:00 and 5:00 p.m. corresponding to the majority of the percentage of employees who left between 7:00 and 8:00 a.m.

Analysis of the road tube and manual turning movement counts revealed that the PM peak hour occurs between 4:00 and 5:00 p.m. This peak hour corresponds with the peak work travel hour as expected. The employees which constitute 20 percent of the workforce, who left between 6:00 and 7:00 a.m., are expected to be related to the high activity of traffic that exists from 3:00 to 4:00 p.m. as well.

TABLE 4-5
DEPARTURE TO WORK DISTRIBUTION
1990 CENSUS

Departure Time	Trips	Percent
12:00 am to 4:59 am	121	3.0
5:00 am to 5:59 am	370	9.3
6:00 am to 6:59 am	816	20.5
7:00 am to 7:59 am	1,163	29.2
8:00 am to 8:59 am	512	12.8
9:00 am to 9:59 am	160	4.0
10:00 am to 10:59 am	54	1.4
11:00 am to 11:59 am	42	1.1
12:00 p.m. to 3:59 p.m.	422	10.6
4:00 p.m. to 11:59 p.m.	325	8.2
Total	**3,238**	**100.0**

Source: US Bureau of Census.

TRAVEL MODE DISTRIBUTION

Although the automobile is the primary mode of travel for most residents in the Hermiston area, some alternative modes are used as well. Modal split data is not available for all types of trips; however, the 1990 census data does include statistics for journey to work trips as shown in Table 4-6.

Most Hermiston residents travel to work via a private vehicle. In 1990, 90.4 percent of all trips to work were in an auto, van, or truck. Trips in single-occupancy vehicles made-up 71.4 percent of all trips, and carpooling accounted for 19.0 percent.

Bicycle usage was low (approximately 0.8 percent of the total work trips). However, the census data does not include trips to school or other non-work activities. There are only two roadways with dedicated bicycle lanes on them; a portion of Highland Avenue near the high school, from 11th Street to South 1st Street, and a segment of Elm Avenue, from East 4th Street to Highway 395. Installation of additional bicycle lanes, bicycle parking, showers, and locker facilities would help encourage bicycle commuting.

Pedestrian activity was at a moderate level (4.5 percent of trips to work) but slightly lower than some other communities. Again, census data do not include trips to school or other non-work activities.

Although the census data reflects the predominant use of the automobile, the growing population and employment opportunities, relatively short travel distances, level terrain, and clear weather conditions 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 4-6
JOURNEY TO WORK TRIPS
1990 CENSUS

Trip Type	Trips	Percent
Private Vehicle	3,701	90.4
Drove Alone	2,923	71.4
Carpooled	778	19.0
Public Transportation	0	0.0
Motorcycle	24	0.6
Bicycle	34	0.8
Walk	187	4.6
Other	39	0.9
Work at Home	111	2.7
Total	**4,096**	**100.0**

Source: US Bureau of Census.

ACCIDENT ANALYSIS

An accident analysis was performed on all roadways, including Highway 207 and Highway 395, within Hermiston's urban growth boundary. The analysis period was from January 1, 1992 to June 30, 1995. Intersections with a large number of accidents were identified and analyzed for reoccurring situations. Possible safety improvements were then recommended for these intersections based on related accidents.

Highway 207

Table 4-7 displays six intersections along Highway 207 which experienced a large number of accidents during the study period.

TABLE 4-7
ACCIDENT SUMMARY
HIGHWAY 207- HERMISTON HIGHWAY

Total Accidents	Related Accidents	Milepost	Cross-Street	Comments on related accidents
5	3	6.16	East 10th Street	North-South traffic disregarded STOP sign.
14	7	6.99	East 4th Street	North/South traffic did not yield ROW to East/West traffic.
6	4	7.39	1st Place	North/South traffic did not yield ROW to East/West traffic.
4	2	7.69	West 6th Street	North/South traffic did not yield ROW to East/West traffic.
3	0	8.45	Orchard Avenue	No relation.
17	4(3)	8.70	Highland Avenue	Improper left-turn movements without ROW. (Vehicles made wide right-turns.)

(Highway 207 at East 10th Street)

This intersection is a two-way STOP-controlled intersection, with the right-of-way given to the east-west traffic on Highway 207/Diagonal Road.

Three out of the five total accidents at this intersection were related to the northbound and southbound traffic on East 10th Street. Vehicles either disregarded or ran the STOP sign on East 10th Street.

(Highway 207 at East 4th Street)

This intersection is also a two-way STOP-controlled intersection, with right-of-way given to east-west traffic on Highway 207/Main Street.

Seven out of the fourteen accidents were caused by minor street through-traffic heading northbound or southbound on East 4th Street. Traffic either did not yield or did not have the right-of-way when crossing Highway 207/Main Street.

M.P. 7.39 (Highway 207 at 1st Street)

This is a five-legged intersection with right-of-way on Highway 207/Hermiston Avenue to the west and Highway 207/Gladys Avenue to the east. The minor approaches of 1st Street from the northwest and southeast and the approach of Hermiston Avenue from the northeast are STOP-controlled.

Four of the six accidents which occurred are due to combinations of traffic utilizing 1st Street to the northwest and Hermiston Avenue to the northeast. Three of these accidents were caused by traffic not yielding on the 1st Street approach with opposing traffic entering from Hermiston Avenue. The fourth accident occurred when a vehicle from the 1st Street approach to the northwest did not yield to a vehicle which turned left onto Hermiston Avenue heading northeast.

(Highway 207 at West 6th Street)

This intersection is also a two-way STOP-controlled intersection, with right-of-way given to east-west traffic on Highway 207/Hermiston Avenue.

Only four accidents have occurred during this time period, two of which were related to north-south traffic not yielding to east-west traffic.

(Highway 207 at Orchard Avenue)

During this period only three accidents took place. Analysis of these accidents revealed that none were related or similar in any fashion.

Highway 395

Table 4-8 displays seven intersections along Highway 385 which experienced a large number of accidents during the study period.

(Highway 395 at Elm Avenue)

This is a signalized intersection. Currently, there are exclusive left turn lanes and left turn phasing for northbound and southbound traffic on Highway 395. The eastbound and westbound traffic on Elm Avenue have exclusive left-turn lanes and through/right-turn lanes. Both eastbound and westbound traffic share the same phase.

During the analysis period, six of the total 25 accidents occurred by eastbound and westbound traffic making improper left-turns or failing to yield to oncoming traffic.

TABLE 4-8
ACCIDENT SUMMARY
HIGHWAY 395 - HERMISTON STANFIELD HIGHWAY

Total Accidents	Related Accidents	Milepost	Cross Street	Comments on related accidents
25	7(6)	4.84	Elm Avenue	Disregarded traffic signal. (Improper left-turns at EB and WB approaches.)
4	2	5.09	Jennie Avenue	Disregarded traffic signal.
5	0	5.35	North of Hermiston/ Gladys Avenue	No relation.
10	5	5.40	Hwy 207/ Gladys Avenue	Disregarded traffic signal.
10	5	5.46	Hwy 207/ Main Avenue	Disregarded traffic signal.
17	10(3)	5.87	Highland Avenue	Disregarded traffic signal. (Improper left-turn at WB approach.)
NA	NA	6.03	SE 4th Street	Accidents occurred before new traffic signal installation.

NA = not applicable.

(Highway 395 at Elm Avenue)
See below

(Highway 395 at Jennie Avenue)
See below

(Highway 395 at Gladys Avenue)
See below

(Highway 395 at Main Street)
See below

(Highway 395 at Highland Avenue)

At the five signalized intersections listed above, a majority of the accidents are related to drivers disregarding the traffic signals. The similarity between these accidents suggests that the current traffic signals are not enforcing traffic control effectively.

M.P. 6.03 (Highway 395 at SE 4th Street)

A majority of the accidents at this location have occurred before the installation of the new traffic signal in 1995. There have been no significant number of accidents since the installation which would require any safety measures to be implemented.

Within City Limits

Further investigation was done on all other accidents within the city limits. A total of five key intersections were identified which had the largest number of accidents. Table 4-9 displays the five intersections.

TABLE 4-9
ACCIDENT SUMMARY
ACCIDENTS WITHIN THE CITY LIMITS

Total Accidents	Related Accidents	Location	Nearest CrossStreet	Comments on related accidents
28	NA	E. Elm Ave.	N. 1st Pl.	Multiple turning, angle, and rear-end accidents for all directions of traffic.
10	8	E. Gladys Ave.	E. 4th St.	East-West traffic passed the STOP sign or did not yield ROW.
7	6	E. Highland Ave.	E. 4th St.	East-west traffic passed the STOP sign or did not yield ROW.
6	5	E. Elm Ave.	E. 10th St.	North-south traffic passed the STOP sign or did not yield ROW.
6	4	E. Hurlburt Ave.	E. 2nd St.	North-south traffic passed the STOP sign or did not yield ROW.

NA = not applicable.

East Elm Avenue at North 1st Place

A total of 28 accidents occurred at this four-way STOP-controlled intersection. A total of 12 turning type, eight angle type, and six rear-end type accidents occurred. No similar trends were discovered from the analysis of these accidents. The causes of these accidents ranged from disregarding STOP signs, not yielding, driving too fast, following too close, and other improper driving.

This intersection has experienced a large number of accidents in the past two and a half years. Also, traffic volumes along Elm Street and 1st Street are moderately high with a high percentage of trucks.

East Gladys Avenue at East 4th Street

This intersection is STOP-controlled on the east and west approaches. It was determined from the analysis that eight of the ten accidents had similar trends. Five accidents occurred where eastbound or westbound traffic did not yield to the northbound or southbound traffic. The other three related accidents occurred under the same conditions except eastbound or westbound traffic passed the STOP sign.

East Highland Avenue at East 4th Street

This intersection is also STOP-controlled on the east and west approaches. Six of the seven total accidents are related to eastbound or westbound traffic passing the STOP bar or not yielding to northbound or southbound traffic.

East Elm Avenue at East 10th Street

This is a two-way, STOP-controlled, intersection with STOP signs on the north and south approaches. Six accidents occurred at this intersection during the analysis period. Three accidents were related to southbound traffic running the STOP sign and colliding with eastbound or westbound traffic. Two accidents occurred where northbound or southbound traffic did not yield to eastbound traffic.

East Hurlburt Avenue at East 2nd Street

This is also a two-way, STOP-controlled, intersection with STOP signs on the north and south approaches. Six accidents occurred during the analysis period. Three accidents were related to northbound and southbound traffic running the STOP-sign. One accident happened where a vehicle heading southbound did not yield to a westbound vehicle.

CHAPTER 5: TRAVEL FORECASTS

Travel demand forecasting is a method used to predict future traffic conditions in an area, city, or region. This is done to identify where problems will exist in the future along streets and at intersections. Travel forecasts are based on existing and projected future land uses, such as the population and employment in an area. Using a computer modeling program known as QRSII, existing and future traffic conditions were simulated on the street network in the Hermiston study area. The existing (1996) and future year (2016) forecast focused on the PM peak hour which occurs between 4:00 and 5:00 pm for an average weekday. This is the time period when traffic volumes on the local street system are highest.

Modeling the existing and future traffic conditions in Hermiston involved a five step process: 1) study area definition; 2) land use projections; 3) trip generation; 4) trip distribution; and 5) trip assignment. The computer model was calibrated as closely as possible to existing traffic conditions and then used to forecast future conditions. Calibration is achieved when simulated traffic volumes on the roadway system are within approximately ten percent of the actual measured traffic. Each step in the modeling process is described below.

STUDY AREA DEFINITION

The first step in modeling requires defining the study area. This step includes developing a roadway network and traffic analysis zone scheme which accurately represent the road system and density and type of land use activity in the study area. This step was performed with the assistance of city staff and the Project Management Team.

Roadway System Network

The limits of the roadway system network were defined by the boundary of the study area. Within this boundary, a network composed of arterial and collector roads were selected. This network included Highways 395 and 207 as well as county roads and city streets which are vital to the circulation of traffic.

Each roadway in the network has specific distance, speed, and capacity characteristics which are important factors in the traffic forecasting process. Just as these factors help determine the route that a driver takes when traveling between two locations, they also determine to which route the model assigns a trip.

Traffic Analysis Zones

In addition to defining the study area network, a traffic analysis zone (TAZ) scheme was also developed. This is illustrated in Figure 5-1. The TAZ scheme divides the study area into smaller analysis units, or boundaries, which are used to tie land use activity and trips generated by the land use to physical locations within the network. Physical barriers, roadway locations, and land use characteristics are factors used to determine the zone structure. A total of 70 internal traffic analysis zones were identified in the study area.

Each TAZ is represented by a node known as a centroid, where traffic is produced and/or attracted. Each centroid is connected to the network by one or more representative roadways. Since the traffic network does not include every

road that exists within the study area, one centroid connector may represent many local roads which are loading onto a main route.

Outside of the study area, external zones load traffic from external locations, generally traffic from other cities such as Stanfield, Pendleton, or Umatilla. These zones produce three types of trips. The first type is a through trip which begins in one external zone and ends in another external zone passing through the city along the way. The second type is a trip which begins in the city and ends at an external zone. The last type is a trip which begins at an external zone and ends in the city. In the modeling process, the trips traveling to and from these external zones are generally associated with the actual roads leading in and out of the study area. A total of nine external zones were identified where traffic enters and exits the study area.

ESTIMATE AND PROJECT LAND USE

Once the TAZ scheme was defined, both existing and future land use forecasts were developed. The existing land use inventory was used in the model calibration process while the future land use forecast is the basis for the future travel forecasts.

Land use is divided into two categories in the travel forecasting model: those uses which produce trips and those uses which attract trips. Population, represented by the number of single-family, multi-family, and manufactured home dwelling units in each TAZ, was the source of trip productions. Employment, broken down by type of land use (i.e., retail/commercial, office, industrial, etc.), was the basis for estimating trip attractions. When developing the TAZ scheme, boundaries were chosen separating these land uses as much as possible to create boundaries with homogeneous land use.

A more detailed description of the existing and future land use projections is located in the Demographic Analysis report located in Appendix C.

TRIP GENERATION

Vehicle trip generation, the next step in the modeling process, is a method of estimating the number and type of trips a specific land use will produce or attract based on historic data and surveys of similar developments. The trip generation estimates were made for each TAZ in the planning area on the basis of the type and quantity of households and employees at businesses.

Each trip is defined by the land use from which it is produced or originated, the land use to which it is attracted or destined, and the purpose of the trip. Trip generation rates were refined for each origin and destination for specific purposes. The four categories used in the model were:

- *Home-based work* - Trips between home and a place of employment.
- *Home-based shopping* - Trips between home and a retail store.
- *Home-based other* - Trips between home and another land use for a purpose other than employment or shopping (e.g., school trips or day care).
- *Non-home based* - Trips between two non-residential land uses.

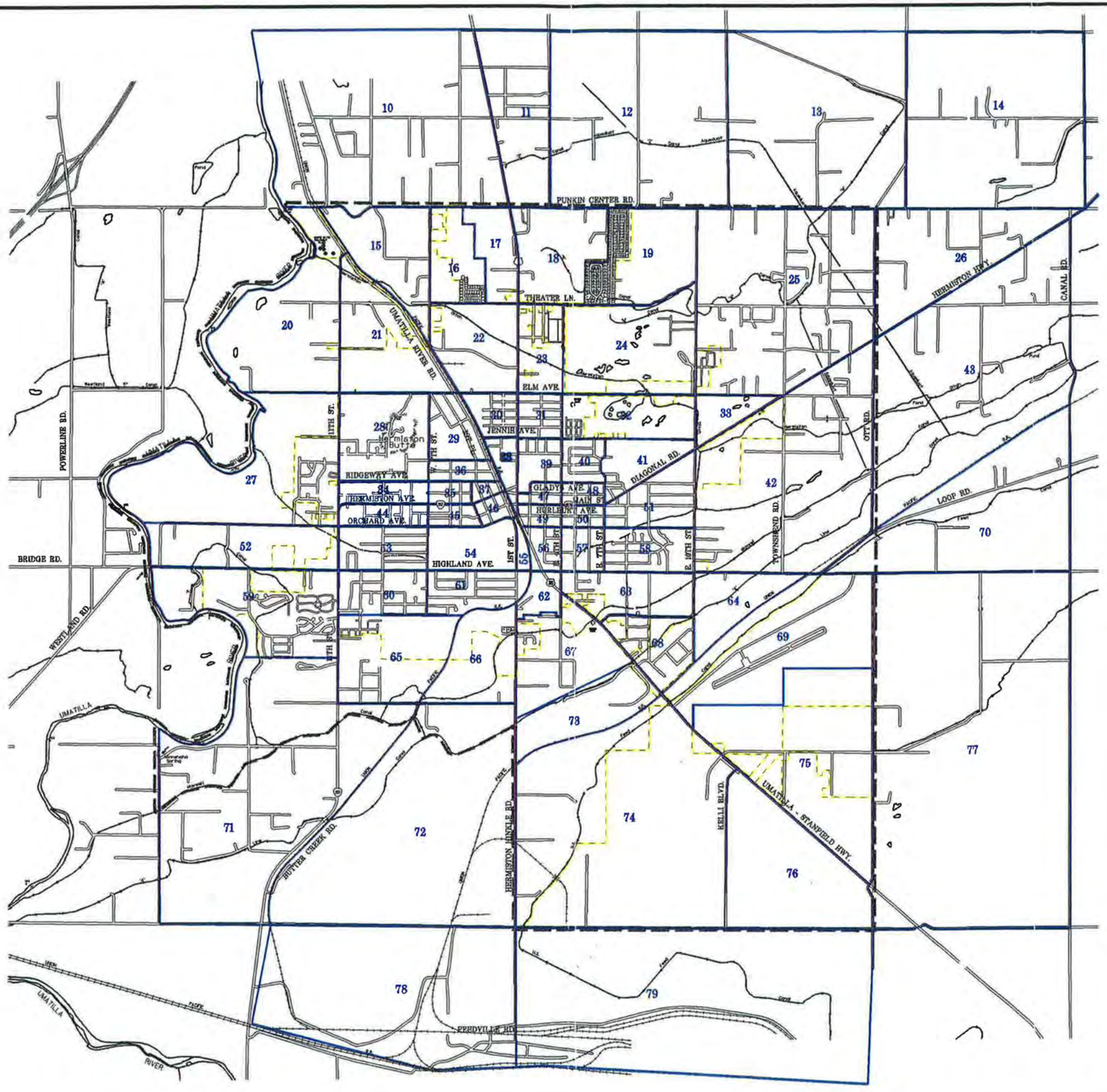
Table 5-1 summarizes the trip rates for each land use category and for each trip purpose.

LEGEND

TAZ BOUNDARY

CITY LIMITS

UGB



0 1600 3200 4800

FEET

DAVID EVANS AND ASSOCIATES, INC.

2828 S.W. CORBETT AVENUE

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

FIGURE 5-1

TRAFFIC ANALYSIS ZONES

TABLE 5-1
TRIP GENERATION RATES

		Single-Family (Trips/DU)	Multi-Family (Trips/DU)	Retail/ Commercial (Trips/Emp)	Industrial (Trips/Emp)	Hospital (Trips/Emp)	Gov. Office (Trips/Emp)	Services (Trips/Emp)	Education (Trips/Emp)
HBW	Origin	0.08	0.06	0.08	0.28	0.08	0.54	0.37	0.52
	Destination	0.34	0.23	0.02	0.07	0.02	0.14	0.09	0.13
	Total	**0.42**	**0.29**	**0.10**	**0.35**	**0.10**	**0.68**	**0.46**	**0.65**
HBS	Origin	0.13	0.09	0.70	0.00	0.00	0.00	0.00	0.00
	Destination	0.16	0.11	0.58	0.00	0.00	0.00	0.00	0.00
	Total	**0.29**	**0.20**	**1.28**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
HBO	Origin	0.07	0.04	0.13	0.00	0.06	0.00	0.00	0.18
	Destination	0.07	0.04	0.13	0.00	0.06	0.00	0.00	0.18
	Total	**0.13**	**0.08**	**0.25**	**0.00**	**0.12**	**0.00**	**0.00**	**0.35**
NHB	Origin	0.13	0.10	0.40	0.05	0.04	0.16	0.10	0.16
	Destination	0.13	0.10	0.40	0.05	0.04	0.16	0.10	0.16
	Total	**0.26**	**0.20**	**0.80**	**0.10**	**0.08**	**0.32**	**0.20**	**0.32**
TOTAL	Origin	0.41	0.29	1.31	0.33	0.18	0.70	0.47	0.86
	Destination	0.69	0.48	1.12	0.12	0.12	0.30	0.19	0.47
	Total	**1.10**	**0.77**	**2.43**	**0.45**	**0.30**	**1.00**	**0.66**	**1.32**

For external TAZs, future trip volumes can be estimated based on the projected increase in population or employment, or based on historic growth on the roadways they represent.

TRIP DISTRIBUTION

Vehicle trip distribution, the fourth step in the modeling process, is a method of estimating the number of vehicle trips that go between each origin and destination pair in the study area. This was performed for all four trip purposes at all TAZs including the external stations representing the roads leading out of the study area.

The basic premise of trip distribution is that the number of trips between two areas is directly related to the size of the attractions or destinations in each zone and inversely related to the travel time between zones. For example, if two destination zones of different sizes were located equal driving times from the origin zone, more trips would be distributed to the larger destination zone. Likewise, if two destination zones of equal size were located 10 and 15 minutes from the origin zone, more of the trips from the origin zone would be distributed to the closer destination zone. This methodology is used by the QRS II program when determining the trip distribution.

VEHICLE TRIP ASSIGNMENT

Trip assignment, the final step in the modeling process, was a method of assigning trips distributed between origin zones and destination zones to specific paths on the street system. In general, a forecasting model uses a capacity-constrained assignment methodology which assigns traffic to the street system based on travel time. Initially the

model assigns each trip to the route with the shortest travel time between its origin and destination. The travel time on each route is then adjusted to account for congestion and delay which may result from the first assignment. As the fastest route becomes congested, its travel time increases. If the travel time increases substantially, another parallel route may become faster. The model then adjusts the traffic assignments by reassigning traffic to the alternate route. Through an iterative process, the model balances travel times and traffic volumes between alternate routes. Using this procedure, the traffic between a single origin/destination pair could be assigned to several routes depending on the congestion of each route, thereby simulating the driving habits of "real world" motorists.

MODEL CALIBRATION

Before projecting future traffic volumes, this entire process of estimating trip generation, distribution, and assignment is completed for existing conditions and compared with actual traffic measurements on the roadway system. The theory behind calibration reasons that if the modeling process forecasts current conditions reasonably well, the same process should then provide a reasonably good estimate of future conditions. To calibrate the model, the trip generation, distribution, and assignment process is repeatedly modified until the assigned volumes approach actual counts, generally within about ten percent of those counts.

FUTURE TRAFFIC FORECASTS

Once the model was calibrated for existing traffic conditions, future traffic volumes could be estimated. Future traffic was first assigned to the existing major street system to determine which portions of the system would be deficient within the next twenty years. The model was then be used to evaluate the effects of alternative roadway configurations on traffic assignment such as the potential extension of 4th Street (Improvement 4 - Chapter 6). This was established as the "No-Build" scenario.

CHAPTER 6: IMPROVEMENT OPTIONS ANALYSIS

This section identifies the potential transportation improvements for the Hermiston area. Those potential improvements were developed with the help of the TAC, and attempt to address the concerns specified in the TSP goal and objectives (Chapter 2).

Some of the potential improvements were developed to address projected future street or intersection deficiencies pertaining to traffic flow and traffic operations. Projected deficiencies were identified through a "No-Build" traffic forecast. This forecast projected traffic volumes for the year 2016 assuming no major improvements would be made to the street system. Other options were developed to address safety and livability concerns such as new bike and pedestrian facilities, improved roads, improved access, and measures to reduce the reliance on the automobile.

The following list includes all of the potential transportation system improvements considered. This list is not based on priority. Improvement options 3 through 9 are illustrated in Figure 6-1.

1. Revise zoning codes to allow and encourage mixed-use development and redevelopment.
2. Implement transportation demand management (TDM) strategies.
3. Implement transportation system management (TSM) strategies.
   a. Signalize the Intersection of Highway 395 and Theater Lane.
   b. Signalize the Intersection of Highway 395 and Punkin Center Road.
   c. Signalize the Intersection of Main Street and East 4th Street.
   d. Improve the 11th Street and Hermiston Avenue Intersection.
   e. Improve the 1st Place and Hermiston Avenue Intersection.
   f. Improve the Highland Avenue and 11th Street Intersection.
4. Extension of East 4th Street.
   a. From Elm Avenue to Theater Lane.
   b. From Theater Lane to Punkin Center Road.
5. Upgrade of East 10th Street.
   a. From Columbia Drive to Elm Avenue.
   b. From Elm Avenue to Punkin Center Road.
6. Upgrade and Realign Theater Lane Between Highway 395 and East 10th Street.
   a. From Highway 395 to 7th Street Alignment.
   b. From 7th Street Alignment to East 10th Street
7. Construct Northern Umatilla River Bridge.
   a. Option 1: Extension of Elm Avenue over the Umatilla River.
   b. Option 2: Extension of Punkin Center Road over the Umatilla River.
8. Truck Route Evaluation
   a. Evaluation of Existing and Potentially New Truck Routes.
   b. Improved Truck Route Signing.
9. Upgrade Umatilla River Road between Hermiston Avenue and Elm Avenue.
10. Upgrade Local Unpaved Streets.

As discussed in the remaining sections of this chapter, not all of these considered improvements were recommended. These recommendations were based on costs and benefits relative to traffic operations, the transportation system, and the community livability.

EVALUATION CRITERIA

The evaluation of the potential transportation improvements was based on the analysis of several factors. The first two factors are traffic projections and traffic operations. The traffic projections section evaluates any anticipated shift in travel patterns. The traffic operation section evaluates whether or not the improvement could reduce congestion or delay on the street system. It also covers the operating conditions of any critical signalized or unsignalized intersections which may be affected by the improvement

In addition to the quantitative traffic analysis, three factors were evaluated qualitatively: 1) safety; 2) environmental factors, such as air quality, noise, and water quality; and 3) socioeconomic and land use impacts, such as right-of-way requirements and impacts on adjacent lands.

The final factor in the evaluation of the potential transportation improvements was cost. Costs were estimated in 1996 dollars based on preliminary alignments for each potential transportation system improvement.

"NO-BUILD" SCENARIO

The "No-Build" scenario establishes the baseline for all other analysis. This scenario assumes that no major changes would be made to the existing transportation system for the next 20 years. However, traffic volumes would increase in Hermiston as population and employment increase by about 27 percent by the year 2016. By comparing the future traffic demand with the unchanged transportation system, we can determine where future problems are likely to occur.

Chapter 5 describes in detail how the existing (1996) traffic model was developed and how future forecasts were performed using similar methods. The "No-Build" forecast was performed using the same methods identified for the existing 1996 forecasts. The results of the "No-Build" forecast for 2016 are shown in Figures 6-2 and 6-3. It is important to note that the PM peak hour volumes illustrated in these figures were not taken directly from the 2016 "No-Build" model run. The volumes shown were obtained using the increased traffic between the 1996 calibrated model and the 2016 "No-Build" model added to existing traffic volumes. Applying the additional traffic between 1996 and 2016 to actual existing traffic would reflect more realistic traffic projections.

Traffic Projections

Motor vehicle traffic volumes throughout the Hermiston area are projected to increase by about 38 percent by the year 2016, if no changes occur to modify the current trend of increasing motor vehicle use.

Improvement 3a: Install Traffic Signal at Highway 395 and Theater Lane

Improvement 3b: Install Traffic Signal at Highway 395 and Punkin Center Road

Improvement 4b: Extend 4th Street from Theater Lane to Punkin Center Road

Improvement 6a: Theater Lane Upgrade Highway 395 to 7th St. Alignment

Improvement 6b: Theater Lane Upgrade 7th St. Alignment to East 10th St.

Improvement 7b: Construct Bridge Across Umatilla River And Connect With Punkin Center Road

Improvement 5b: Improve and Relocate 10th Street from Elm Ave. to Punkin Center Rd.

Improvement 7a: Construct Bridge Across Umatilla River and Connect With Elm Ave.

Improvement 8: Elm Ave./Diagonal Rd. Intersection Improvements (Truck Route Evaluation)

Improvement 3d: Improve 11th Street/ Hermiston Ave. Intersection

Improvement 9: Upgrade Umatilla River Road from Hermiston Ave. to Elm Ave.

Improvement 4a: Extend 4th Street from Elm Ave. to Theater Lane

Improvement 3f: Improve Highland Ave. and 11th St. Intersection

Improvement 5a: Widen and Improve 10th St. from Columbia Dr. to Elm Ave.

Improvement 3c: Install Traffic Signal at Main Street and 4th Street

Improvement 3e: Improve 1st Place/ Hermiston Ave. Intersection

0 1600 3200 4800
FEET

DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 6-1
TRANSPORTATION ALTERNATIVES

LEGEND

135 ▪ PM PEAK HOUR TRAFFIC VOLUME

500
250 1000 TRAFFIC SCALE (VEHICLES)

CITY LIMITS

UGB

0 1000 2000 3000
FEET

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

SEE FIGURE 6-3

FIGURE 6-2
YEAR 2016 NO-BUILD PM PEAK HOUR TRAFFIC VOLUMES

2016 Average Trip Lengths

From the travel demand forecasting model for 1996 and 2016, average trip lengths can be estimated (See Table 6-1.) The percentage of trips with one end in the Hermiston area and trips entirely within the city is similar between 1996 and 2016. However, the percentage of through trips and the overall distribution of trip distances will change somewhat over the next twenty years.

TABLE 6-1
FUTURE AVERAGE TRIP LENGTHS

	1996			2016		
Trip Type/Length	**Number of Trips**	**Percentage of Total**	**Percentage of Subtotal (Trips in Hermiston)**	**Number of Trips**	**Percentage of Total**	**Percentage of Subtotal (Trips in Hermiston)**
All Within the Study Area						
Up to 1/4 mile	68	0.8%	1.4%	90	0.8%	1.5%
1/4 mile to 1/2 mile	281	3.3%	6.1%	262	2.3%	4.4%
1/2 mile to 1 mile	1,508	17.8%	32.6%	1,634	14.0%	27.4%
1 mile to 2 miles	1,658	19.6%	35.8%	2,289	19.6%	38.3%
2 miles to 3 miles	762	9.0%	16.5%	1,096	9.4%	18.3%
3 miles to 6 miles	351	4.2%	7.6%	605	5.2%	10.1%
Subtotal	4,628	54.8%	100.0%	5,979	51.3%	100.0%
One End of Trip within the Study Area	3,383	40.0%		4,546	39.0%	
Through Trips	440	5.2%		1,131	9.7%	
Total Trips	**8,451**	**100.0%**		**11,656**	**100.0%**	

Note: Through trips are trips made through the study area without stopping.

The percentage total trips will decrease slightly for all trips made within the study area from 54.8 percent in 1996 to 51.3 percent in 2016. This is due to the increase in the percentage of through trips for the same time period from 5.2 percent to 9.7 percent. Historical growth trends along the highways, mainly along Highway 395, indicate through traffic will increase at a significantly higher rate than the population and employment growth rate of Hermiston. The percentage of total trips with one end in the Hermiston study area will remain about the same at about 39 to 40 percent between 1996 and 2016.

A shift in the distribution of trips made only in the Hermiston area will also take place. The percentage of trips made within the study area between zero and one mile in length will decrease from 40.1 percent in 1996 to 33.3 percent in 2015. Trips made between one and six miles in length will increase from 59.9 percent to 66.7 percent. This indicates that more vehicles will be making longer trips within the Hermiston area.

These increases in average trip lengths of trips made inside the Hermiston area combined with increased through traffic translate to a greater number of vehicle miles traveled than at present. Although the number of trips generated in the city is expected to increase by about 31.4 percent over the next 20 years, total vehicle miles are expected to increase by about 52 percent during the same time period.

Operations Analysis

The increases in motor vehicle volumes under the assumptions of the forecasting model would result in the intersection operations illustrated in Figure 6-4 for all critical signalized and unsignalized intersections. Operations illustrated in the figure also include 1996 traffic operations for comparison.

The figure illustrates that the through movements at the intersections along Highway 395 will continue to flow smoothly with a LOS of B or better. However, left-turning traffic on the highway and traffic on the minor street approaches will experience higher delays from increased traffic. Operations at many of these approaches will deteriorate from a LOS of D to LOS E or even F. Some examples are the minor street approaches of the unsignalized Punkin Avenue and Theater Lane Avenue intersections with Highway 395 which will deteriorate from a LOS of D and C to F. The operations at the T-shaped intersection of Hermiston Avenue and 11th Street will be at a LOS of B or better for all movements, except for the southbound left-turn movement which will deteriorate from a LOS of C to F. The signalized intersection of Highland Avenue at 11th Street will operate poorly in the future from significant increases in traffic. The existing left-through lanes for all four approaches to this intersection will deteriorte from a LOS of B or C to to LOS F.

Summary

The traffic projections for the "No-Build" scenario indicate a moderate increase in traffic volumes over the next 20 years. Analysis of future operating conditions indicate that several intersections will be performing at a poor level of service. Concern for the future transportation system should focus on addressing the capacity of these intersections, safety, and access issues at other intersections, and improving the street connectivity, circulation of traffic, and the livability of the community.

EVALUATION OF POTENTIAL TRANSPORTATION IMPROVEMENTS

Alternative 1. Revise Zoning and Development Codes

Overview: This improvement would amend the City of Hermiston comprehensive plan and zoning and development code to permit mixed use developments and increase density in certain areas. Specific amendments include allowing neighborhood commercial uses within residential zones and allowing residential uses within commercial zones.

Traffic Projections: Such code amendments can encourage residents to walk and bicycle throughout the community by providing shorter travel distances between land uses. A shift in mode would reduce reliance on the automobile, a goal of the State Transportation Planning Rule.

Operations: These changes combined with the construction of new sidewalks and bicycle lanes (Alternative 2) can help reduce traffic congestion and improve the air quality and noise levels in Hermiston. A detailed analysis is presented under Alternative 2.

Impacts: Maintaining the livability of the community encourages new residents and businesses to locate in Hermiston, helping to keep the area economically viable.

LEGEND

A = 1996 LEVEL OF SERVICE
(A) = 2016 NO-BUILD LEVEL OF SERVICE

0 1000 2000 3000
FEET

DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 6-4
2016 NO-BUILD PM PEAK HOUR LEVEL OF SERVICE

FIGURE 6-3

YEAR 2016 NO-BUILD PM PEAK HOUR TRAFFIC VOLUMES -DOWNTOWN

Costs: No direct costs are associated with making the comprehensive plan policy zoning code amendments.

Recommendations: Permitting mixed use developments and increased density is encouraged within the city limits of Hermiston. Implementation of these measures and changes to the comprehensive plan and zoning ordinances should be at the discretion of city officials. However, making amendments to allow a mixture of residential, industrial, and commercial uses in certain areas outside the city limits and inside the urban growth boundary may not be realistic due to the nature of the existing land use conditions in the Hermiston area. Most of the large employers of Hermiston residents are located outside the city limits; some even outside the urban growth boundary. Planning mixed use developments near these businesses may not be reasonable, based on economic feasibility and community livability. These large employers are located in rural settings as not to conflict with residential uses.

Alternative 2. Implement Transportation Demand Management Strategies

Overview: This type of improvement would attempts to change the demand on the transportation system by providing facilities for other modes of transportation, altering shift schedules, implementing carpooling programs, and applying other transportation measures within the community.

The construction and maintenance of walkways and bikeways is needed within the Hermiston area to improve safety for pedestrians and bicyclists and encourage more residents to limit their use of motorized vehicles. The addition of new sidewalks and bicycle lanes should be considered with all new street improvement projects.

Local businesses should be encouraged to stagger worker shifts so that travel to and from work is spread over a longer period. Currently, several of the largest industrial employers south and southwest of the city have been operating with staggered working shifts. Simplot, which is located along Butter Creek Road, employs a total of 850 full-time and part-time workers. There are 250 full-time workers present from 8 am to 4 pm, 250 full-time workers between 4 pm and 12 am, and 200 full-time workers between 12 am and 8 am. The Hinkle Railyards located near Feedville Road employs 300 workers which are evenly distributed over three shifts a day. The Lamb Weston site located along Westland Road employs about 500 workers evenly distributed over three shifts a day and the US Army Depot further to the southwest employs another 150 workers. Future forecasts project an increase in employment at these industrial sites, especially at the US Army Depot where the installation of an incineration plant is expected to create 1,354 jobs in the Hermiston area. A distribution center for Wal-Mart Stores is also planned near Highway 395 and Feedville Road which will employ about 600 workers. Maintaining the staggered worker shift schedule between the above five businesses into the future will help to spread traffic demand out over a longer period of time resulting in less traffic on the streets which feed into these businesses such as Highland Avenue, Westland Road, 11th Street, Butter Creek Road, 1st Place, and Highway 395 south of Highland Avenue. Local businesses, especially the larger industrial employers mentioned above, should also be encouraged to institute carpooling or vanpooling programs for their employees in the future.

Traffic Projections: A sensitivity exercise was performed to test the effects of TDM measures (Alternative 2) combined with revising the zoning and development codes (Alternative 1) on traffic projections. The average number of trips by trip length were used as the basis of this exercise. Both Alternatives 1 and 2 would result in shifts in modes away from single occupancy vehicle to carpools, vanpools, and other non-auto modes. Therefore, the sensitivity analysis assumed that vehicle trips would be reduced due to increased usage of these other travel options. The results of the sensitivity analysis are summarized in Table 6-2.

TABLE 6-2
EFFECT OF TRANSPORTATION DEMAND MANAGEMENT MEASURES AND REVISED ZONING AND DEVELOPMENT CODES

Trip Type/Length	"No-Build"	A	B	C
Within the Study Area				
Up to 1/4 mile	90	85	80	80
1/4 mile to 1/2 mile	262	249	236	236
1/2 mile to 1 mile	1,634	1,552	1,470	1,470
1 mile to 2 miles	2,289	2,174	2,060	2,060
2 miles to 3 miles	1,096	1,096	1,096	1,096
3 miles to 6 miles	605	605	605	605
Subtotal	5,979	5,761	5,547	5,547
One End of Trip within the Study Area	4,546	4,546	4,546	4,319
Through Trips	1,131	1,131	1,131	1,131
Total Trips	**11,656**	**11,438**	**11,224**	**10,997**
Percent Reduction	NA	1.9%	3.7%	5.6%

"No-Build": No Trip Reductions
A: "No-Build" with a 5% reduction in trips under 2 miles.
B: "No-Build" with a 10% reduction in trips under 2 miles.
C: "No-Build" with a 10% reduction in trips under 2 miles and a 5% reduction in trips with only one end within the study area.

Scenarios A through C looked at different reductions in vehicle trips by trip length due to the implementation of TDM measures and revised zoning and development codes. The reduction in trips of less than two miles was assumed to be between 5 and 10 percent. These reductions would occur predominantly because of modal shifts from motor vehicles to walking or bicycling. Trips which travel in or out of the study area were tested with reductions between 0 and 5 percent. Overall, the options resulted in total trip reductions of less than 6 percent in all cases. Percentage reductions are well below 10 percent due to the high number of through trips and trips with one trip end in the Hermiston area. The reductions at this distance will be mostly from carpooling or vanpooling measures.

Operations: Although each scenario indicates that some beneficial mode shifting would occur, the shift will only slightly improve future traffic operations at intersections and streets.

Impacts: The predicted mode shifts and demand management measures would contribute to improved traffic flow and less congestion. Providing adequate facilities for pedestrians and bicyclists increases the livability of a city, and improves traffic safety. These conditions mean air quality and noise levels would be better than the "No-Build" condition. Fewer vehicle miles traveled would also result in reduced energy consumption.

Costs: Fourteen pedestrian improvements have been identified at an estimated cost of $1.36 million. (Detailed recommendations are provided in Chapter 7.) Fifteen bicycle improvements have been identified at an estimated cost of $938,000. (Detailed recommendations are provided in Chapter 7.) These cost estimates are for stand-alone improvements; the cost can be reduced when they are included as needed in roadway improvement projects throughout the Hermiston area.

Recommendations: Because this option and Alternative 1 attempt to decrease congestion, increase the safety of the roadway system, and enhance the quality of life in the Hermiston area, these transportation improvements are encouraged. High priority should be given to the proposed bicycle and pedestrian improvements identified in Chapter 7. It is the position of the City of Hermiston that it is not the role of government to mandate TDM measures but the city is supportive of private businesses implementing such measures.

Alternative 3. Implement Transportation System Management Strategies

The potential improvements listed in this section are projects designed to improve the operations, accessibility, and safety of the local street system in Hermiston. They address specific deficiencies as well as safety hazards that currently exist or will exist in the future.

Alternative 3A. Signalize the Intersection of Highway 395 and Theater Lane

Overview: This project includes the installation of a traffic signal to help maintain adequate operations and improve safety on the minor approaches of Theater Lane. It is expected that the operations of these approaches will deteriorate from LOS C to LOS F by the year 2016 if a signal is not installed.

To identify if a traffic signal may be needed at this intersection a signal warrant analysis was performed using *The Manual on Uniform Traffic Control Devices 1986* (MUTCD). The MUTCD states that "*Traffic control signals should not be installed unless one or more of the signal warrants in this manual are met.*" Results from the analysis revealed that a traffic signal is not warranted under current conditions but will become warranted within the next few years without any transportation improvements.

Traffic Projections: No changes or shifts in traffic are expected from the installation of this signal.

Operations: Installation of a traffic signal will improve the operations in the year 2016 from LOS F to an estimated LOS D. However, delay will increase slightly on the major approaches of Highway 395.

Impacts: With the installation of the proposed traffic signal at Punkin Center Road and/or the interconnection between existing signals, a traffic signal installed at Theater Lane will help to maintain proper signal progression and platooning of vehicles along the highway. Installing a traffic signal will allow left-turning vehicles accessing Theater Lane and vehicles accessing Highway 395 to safely enter the intersection.

Costs: The cost of installing a traffic signal is expected to be around $200,000. This figure includes funding for right-of-way acquisition.

Recommendations: The installation of a traffic signal at this intersection is recommended. Installing a traffic signal within the next five years will improve the operations and safety of the intersection as traffic increases. A decision to install the signal should also be dependent upon the implementation of Alternative 3B, which includes a traffic signal installation at Punkin Center Road. For reasons of proper platooning of vehicles along the highway and maintaining signal progression, it was originally recommended that a traffic signal be installed at Theater Lane before a traffic signal is installed at Punkin Center Road. However, based on a recent traffic signal warrant analysis conducted by ODOT, a determination has been made that the signal at Highway 395 and Punkin Center should be installed first. This determination was made because a higher number of accidents have take

place at Punkin Center Road. ODOT has already identified funding through the Hazard Elimination Program (HEP) to install the traffic signal at the Highway 395 and Punkin Center intersection in 1998. The final decision to install a traffic signal at Theater Lane is up to ODOT.

Alternative 3B. Signalize the Intersection of Highway 395 and Punkin Center Road

Overview: Traffic operations on the Punkin Center Road approaches are expected to deteriorate as well from LOS D to LOS F by the year 2016. Installation of a traffic signal is expected to maintain sufficient operations and improve the overall safety at this intersection.

Results from a signal warrant analysis revealed that a traffic signal is warranted under current traffic conditions. Warrant 2, Interruption of Continuous Traffic, is the only warrant satisfied at this time. Without any future street improvements, warrants 1, 2, 9, and 11 are expected to be satisfied due to increases in traffic.

Traffic Projections: No changes or shifts in traffic are expected from the installation of this signal.

Operations: Installation of a traffic signal would improve the operations on the Punkin Center Road approaches from LOS F to LOS D but would increase delay slightly along the highway.

Impacts: A traffic signal installed at Punkin Center Road with the potential installation of a traffic signal at Theater Lane one-half mile to the south and the interconnection between existing signals along the highway will help maintain proper signal progression and platooning of vehicles along the highway. Without the potential traffic signal installed at Theater Lane a one mile gap would exist between the signal at Punkin Center Road and the next signalized intersection at Elm Avenue. A spacing this large would result in a poor level of signal progression.

Installing a traffic signal will allow left-turning vehicles accessing Punkin Center Road and vehicles accessing Highway 395 to enter the intersection safely.

Costs: The cost of installing a traffic signal is expected to be around $250,000. This figure includes funding for right-of-way acquisition.

Recommendation: It is recommended that a traffic signal be installed at this intersection. Timing of the installation of a signal is dependent upon several factors including: 1) Signal Warrant Analysis, 2) Deterioration of Operations, 3) Alternative 7B - Extension of Punkin Center Road over the Umatilla River, and 4) Funding. The signal warrant analysis revealed that a signal is currently warranted. If a higher priority is placed on minor street traffic accessing the highway than the continuous flow of traffic along the highway, then a traffic signal is recommended to be installed immediately. As the operations of the intersection deteriorate in the future it is recommended that a signal be installed when excessive delay is experienced by minor street traffic (LOS F). It is anticipated that this will occur within the next five years. It is also recommended that a traffic signal be installed if Punkin Center Road is extended over the Umatilla River to I-82 to the west. Traffic volumes will be considerably higher on the approaches of Punkin Center Road as a result of this extension. Another factor affecting the timing of a traffic signal installation is funding. Currently, ODOT has proposed to provide the funding necessary to install a traffic signal within two years. As discussed under the previous alternative, ODOT District 12 has already identified funding for this new traffic signal through the Hazard Elimination Program (HEP).

Alternative 3C. Signalize the Intersection of Main Street and East 4th Street

Overview: With increased use of East 4th Street as a collector street for local residences and an alternative route to Highway 395, this intersection is experiencing higher north/south cross-street traffic. With the potential construction of the East 4th Street extension (Alternative 5), traffic volumes are expected to increase even more.

A signal warrant analysis using turning movement counts from October 1995 revealed that a traffic signal is not warranted at this time but will be warranted by the year 2016 without any potential street improvements. With the implementation of Alternative 5 it is expected that a signal will be warranted by the year 2013. A more detailed signal warrant analysis of this intersection was also performed by the Oregon Department of Transportation (ODOT). Results of this analysis also revealed that a traffic signal is not warranted at this time.

Traffic Projections: Traffic is expected to shift away from Highway 395 and onto East 4th Street with the installation of a traffic signal due to a reduction in delay on the northern and southern approaches of the intersection.

Operations: Installation of a traffic signal will improve future operations on the minor approaches of 4th Street in the year 2016 from LOS D to LOS B.

Impacts: Delay will increase slightly along Main Street.

Costs: The cost of installing a traffic signal is expected to be around $200,000. This figure includes funding for right-of-way acquisition.

Recommendation: A traffic signal is recommended at this intersection within the next five years. Timing of the installation should depend on the potential implementation of Alternative 5. Extending East 4th Street to either Theater Lane or Punkin Center Road will increase the amount of traffic entering this intersection. Installing a traffic signal would create favorable operations. Above all, funding for this traffic signal in conjunction with the 4th Street extension is expected to be supported by ODOT.

The installation of a traffic signal at Main Street and East 4th Street in conjunction with the extension of 4th Street from Elm Avenue to Theater Lane will improve local traffic circulation and reduce dependence on Highway 395 as a north-south corridor. At the present time, local traffic must rely on Highway 395 for local trips because there are no safe and adequate north-south travel corridors on the east side of Hermiston. The installation of a traffic signal at Main Street and 4th Street and the future extension of 4th Street will improve the local transportation grid and limit future maintenance and improvements to Highway 395 within Hermiston.

Alternative 3D. Improve the 11th Street and Hermiston Avenue Intersection

The geometry and traffic control of this intersection is dissimilar to a normal T-shaped intersection where the minor road usually bisects the major road. At this intersection the major roads intersect at right angles; 11th Street from the south and Hermiston Avenue from the east. The minor approach from the north on 11th Street is stop-controlled.

This unusual configuration was developed because the approach from the south on 11th Street and the approach from the east on Hermiston Avenue are a part of Highway 207 which traverses through the city's downtown area. Traffic approaching from the south on 11th Street and making a left-turn to remain on 11th Street has a limited amount of storage length available. Trucks are restricted access to Hermiston Avenue and are forced to make a left-turn at this location, following the designated truck route north along 11th Street to Elm Avenue. It is estimated that in the future with increased traffic, trucks may find it more difficult to find sufficient gaps in the oncoming traffic and will deteriorate the level of service of this movement. With the limited storage length, traffic may become backed up, creating a bottleneck on this approach and negatively affecting the operations and safety of the entire intersection.

Future traffic operations analysis indicates the level of service of the left-turn movement approaching from the north on 11th Street will deteriorate from LOS C to LOS F by the year 2016. Results from the analysis reveal a LOS of B for traffic continuing northbound on 11th Street, making a left-turn. However, because of the unusual geometry for this movement, the LOS is anticipated to be worse (around D or E) in the future.

To improve the overall safety and operations of this intersection, two options were identified. The options are: 1) Geometrical improvements, and 2) Installation of a traffic signal.

Option 1: Geometrical Improvements

Overview: Geometrical improvements may include: a longer storage length for left-turning traffic approaching from the south on 11th Street creating a sight distance improvements for approaches on Hermiston Avenue and on 11th Street and improving signs and striping.

Traffic Projections: There are no anticipated changes in traffic volumes associated with this improvement.

Operations: Increased storage length for the left-turning traffic approaching from the south on 11th Street would prevent bottlenecking.

Impacts: The overall safety of the intersection may be improved due by better signs and striping.

Costs: Costs associated with this improvement include restriping the lanes for all approaches at around $500 and construct raised medians to protect both sides of the left-turn lane on the south approach at $2000. The total cost for these improvements would be $2500.

Recommendation: Even with the increased storage length to increase the capacity of the left-turn lane on the south approach and the raised medians to protect vehicles in the queue, these geometrical improvements would not significantly improve the safety for vehicles, especially trucks, making the turn. The left-turn movement on the north approach will also deteriorate to a LOS of F by the year 2016. Therefore, this option is not recommended as a viable improvement.

Option 2: Installation of a Traffic Signal

Overview: Another possible improvement would be the installation of a traffic signal Figure 6-5 illustrates an example of this improvement. For existing and future year conditions, three signal warrants were met including: Warrant 1 - the Minimum Vehicular Volume, Warrant 2 - Interruption of Continuous Traffic Flow, Warrant 11 - Peak Hour Volume.

Traffic Projections: There are no anticipated changes or shifts in traffic volumes associated with this improvement.

Operations: With the installation of a traffic signal, the level-of-service of the southbound left-turn movement on 11th Street could be improved from LOS F to LOS C. However, the operations of the other approaches on 11th Street and Hermiston Avenue would be worsened slightly due to minor increases in delay from traffic signal control.

Impacts: The overall safety will be improved by creating a standard signalized T-shaped intersection. With a traffic signal, the northbound traffic would now make through movements instead of left-turns. Driveways of businesses along the west side of 11th Street will either be realigned or will enter the intersection at one driveway from the west. Adding a driveway to the west will require the design of a four-way intersection with phasing included. However, traffic volumes entering or exiting this driveway are expected to be low and will not affect operations significantly. Essentially, the intersection will still operate as a T-shaped intersection.

Costs:

New Signal:	$200,000
Other Channeling, etc:	20,000
Total	$220,000

Recommendations: Because this option would improve the safety and operational characteristics of the intersection it is recommended. Installation of a traffic signal at this location should be done within the next five years.

Alternative 3E. Improve 1st Place and Hermiston Avenue Intersection

This intersection has an unusual configuration and the orientation and traffic control may be confusing to some drivers. It has five approaches: Hermiston Avenue from the southwest and northeast, Gladys Avenue from the east, and 1st Place from the northwest and southeast. STOP-signs are posted on the 1st Place approaches and the Hermiston approach to the northeast.

Hermiston Avenue to the northeast accesses local businesses, such as Tum-a-Lum Lumber, and has also been known to provide a shortcut for westbound traffic along Highway 395. Vehicles occasionally turn onto this road when traffic along the highway becomes congested at the Gladys Avenue intersection. Also, trucks often turn onto Hermiston Avenue to avoid making a sharp right-turn at Gladys Avenue. These are trucks which have deliveries along Hermiston Avenue or are trucks that did not follow the designated truck route along Elm Avenue and 11th Street.

Allowing traffic to access this road can create a hazardous situation with the traffic control at this five-legged intersection. An accident analysis revealed that in the past three years, six accidents have occurred at this intersection, four of which were related to traffic on 1st Place not yielding right-of-way. One of these four accidents involved a collision with a vehicle entering the intersection from Hermiston Avenue to the northeast.

To improve the safety of this intersection, one option has been identified: vacate the section of Tum-a-Lum Road or Hermiston Avenue and extend Ridgeway Avenue east from 1st Place to Highway 395.

Option 1: Vacate Tum-a-Lum Road/Hermiston Avenue and Extend Ridgeway Avenue to Highway 395

Overview: This option would vacate the Hermiston Avenue/Tum-a-Lum Road section between Highway 395 and the five-legged intersection. A new road extending Ridgeway Avenue from 1st Place to Highway 395 would replace the vacated road. This would require the construction of a 550-foot-long roadway and at-grade railroad crossing. This options is illustrated in Figure 6-6.

Traffic Projections: The traffic previously entering the five-legged intersection from the Hermiston Avenue/Tum-a-Lum Road to the southeast would now be rerouted in two possible directions. Traffic traveling southbound in Highway 395 will either access Ridgeway Avenue or proceed onto Gladys Avenue. The extension of Ridgeway Avenue could cause unwanted traffic on the quiet residential neighborhood street along Ridgeway Avenue up to 11th Street. Creating a right-in, right-out access at the new intersection of Ridgeway Avenue and Highway 395 should keep traffic volumes low on this road.

Operations: Existing operations at the five-legged intersection are satisfactory and will improve as it becomes a four-way intersection. The new four-way intersection at Ridgeway Avenue and 1st Place will also operate sufficiently.

Impacts: The overall safety of this five-way intersection will improve as it becomes a common four-way intersection. A common four-way intersection will also be created at Ridgeway Avenue and 1st Place.

Businesses along the southern side of the vacated road will now have to access the Ridgeway Avenue extension. The businesses on the south side of the vacated road should be provided with a driveway accessing Gladys Avenue, not at but nearly to the Gladys Avenue and 1st Place intersection.

The new roadway access on Ridgeway Avenue will become the preferred access for local delivery trucks heading southbound on Highway 395. Large trucks and through truck traffic should be discouraged from using the new road and encouraged to use the designated truck route along Elm Avenue and 11th Street.

Costs:

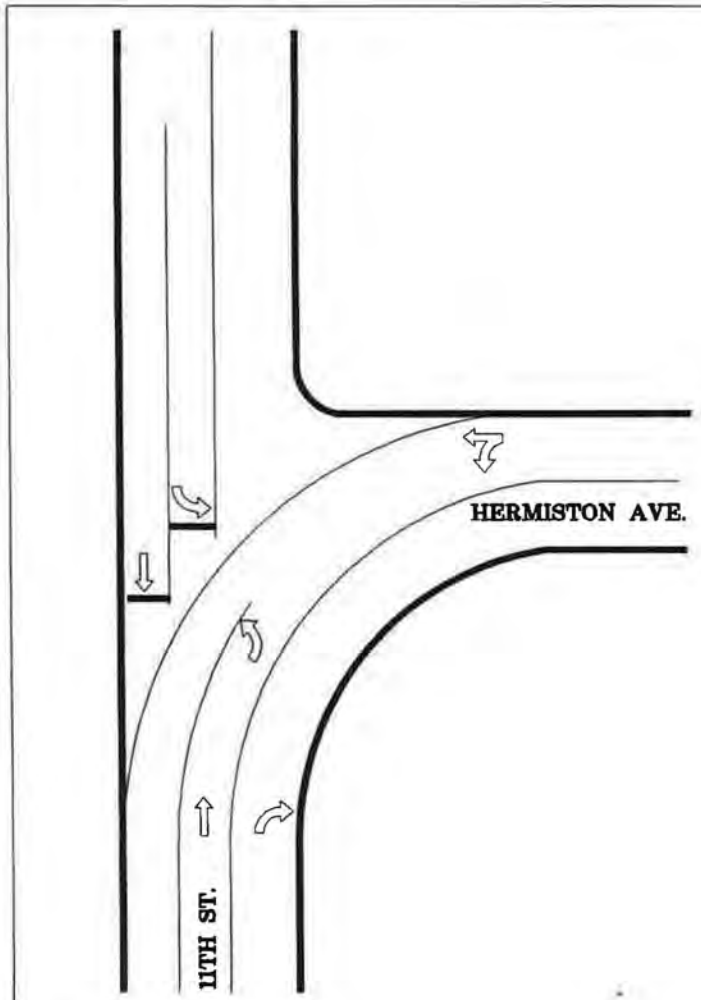
550 ft street @ $300/ft	$165,000
ROW 125 ft x 30 ft @ $1/sf	$3,750
Railroad Crossing	$700,000
Total	$868,750

Cost estimates assumed a 40 foot wide street with curbs and sidewalks.

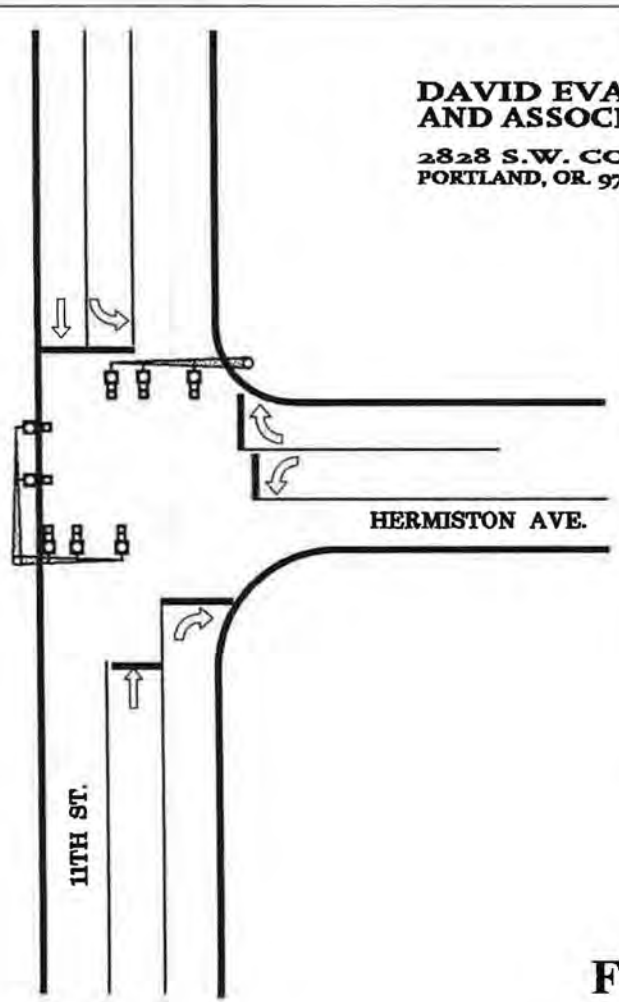
11th Street at Hermiston Ave.

not to scale

DAVID EVANS
AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663



EXISTING
INTERSECTION



PROPOSED
TRAFFIC SIGNAL

FIGURE 6-5
INSTALL TRAFFIC SIGNAL

(not to scale)

DAVID EVANS
AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

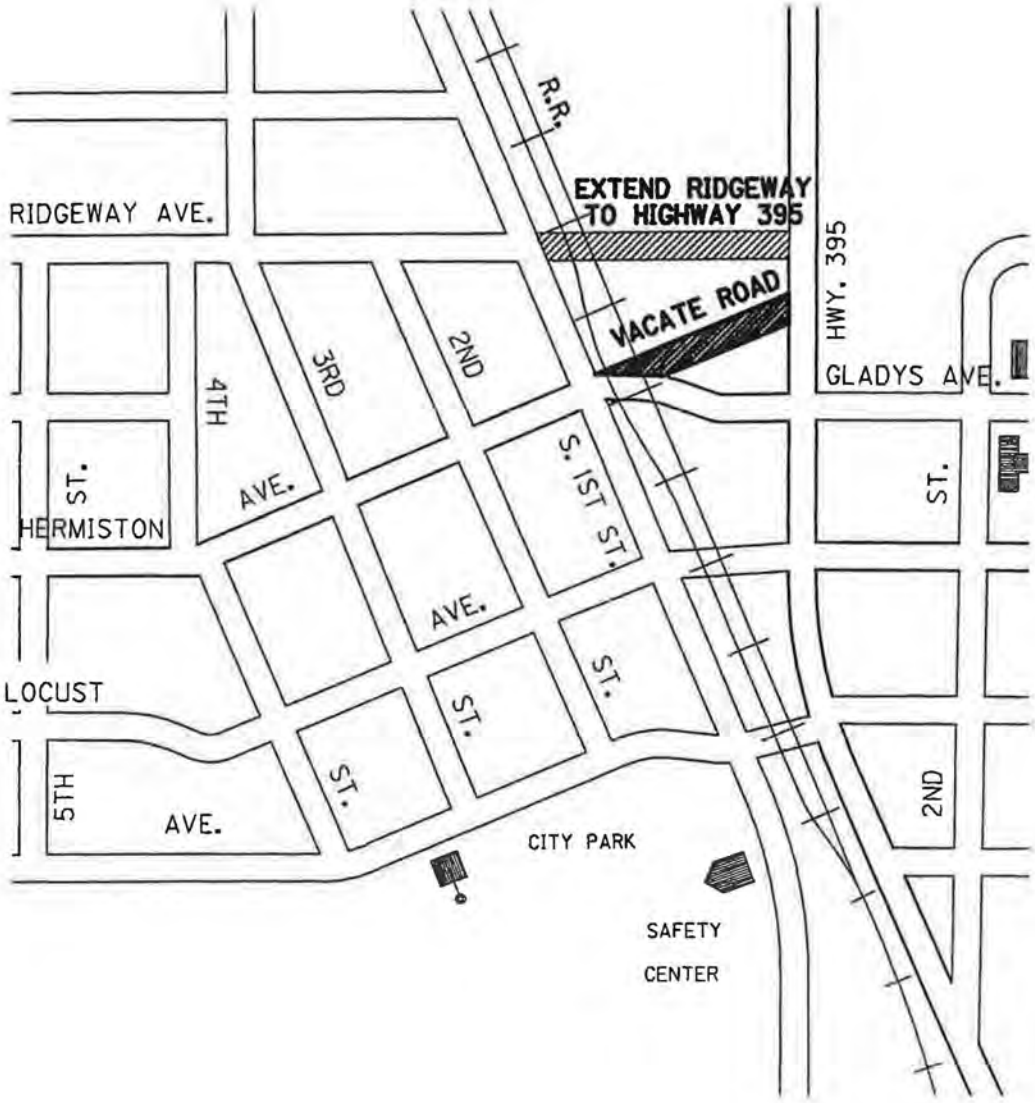


FIGURE 6-6

ALTERNATIVE 3E IMPROVEMENTS

Recommendations: Based on the benefits of improved safety at the existing 1st Place/Gladys Avenue intersection and the improved traffic circulation, this project is recommended. Implementation of this project should be considered in the next five to ten years.

Alternative 3F. Improvements at Highland Avenue and 11th Street Intersection

Overview: Currently, this signalized intersection operates on a two phase system with shared left-through and exclusive right turn lanes on all approaches. Traffic volumes entering this signalized intersection are expected to rise in the future with increased development and employment in the area. With the current two phase system and the lane geometry, this intersection will not have the capacity to handle future traffic demand. The operations of this signalized intersection are expected to deteriorate over the next 20 years from LOS B to LOS F without any street or intersection improvements.

To incorporate increased traffic in the future an analysis was performed to optimize the operations of this intersection using different phasing and lane configuration combinations. The analysis suggests that a signal system utilizing exclusive left turns and left-turn phasing for all approaches will increase the capacity of this intersection (See Figure 6-7).

Traffic Projections: No shifts or changes in traffic are associated with the implementation of this project.

Operations: Operations analysis revealed that a LOS of C can be reached with the addition of left-turn lanes and exclusive left-turn phasing with through-right turn lanes on all approaches.

Impacts: Additional right-of-way may have to be acquired to widen Highland Avenue west of the intersection. Currently the street width is 28 feet and flares out at the intersection to provide a right-turn lane with a short queue. The street will need to be widened by another 12 feet to at least 40 feet to incorporate lane geometry changes. 11th Street has a sufficient street width of 43 to 45 feet on the north and south approaches to handle the proposed lane changes.

Costs: Cost estimates assumed a new traffic signal will need to be installed. However, it may be possible to rewire the signal and install left-turn signals which would decrease the cost. This will depend on the length and location of the mast arms and the type of controller used. Cost estimates also assumed the west approach to be widened by 12 feet for 200 feet of length which includes right-of-way costs and road widening costs. The estimated total cost for this project is:

New traffic signal		$200,000
Additional Right-of-Way	12ftx200ft@$1/sf	$2400
Road Widening	12ftx200ft@$2/sf	$4800
Restriping of Intersection	$0.40/ft@3200ft	$1280
Total		$208,480

Recommendations: Implementation of this project will be dependent upon the construction of the Elm Avenue or Punkin Center Road extension over the Umatilla River. Construction of either of these extensions will reduce the amount of increased traffic expected to enter this intersection going to or from the proposed Army incineration plant southwest of the city. Without either extension, modifications to the existing traffic signal will be needed within the next 20 years to handle future traffic demand.

Alternative 4. Extend East 4th Street

Traffic volumes are projected to increase by as much as 50 percent along Highway 395 within the study area by the year 2016. As congestion and travel delay increases along the highway, a parallel route will become more favorable to some local drivers. The utilization of the existing East 4th Street along with an extension north of Elm Avenue would provide a viable north/south facility parallel to Highway 395. Two options were considered for the East 4th Street extension: 1) Extending it northward to Theater Lane and 2) Extending it further northward to Punkin Center Road.

Alternative 4A. From Elm Avenue to Theater Lane

Overview: Currently, East 4th Street between Highway 395 and Elm Avenue already provides a semi-continuous north-south parallel route for local traffic. Extending East 4th Street from Elm Avenue to Theater Lane would create a safer, more continuous, and efficient parallel route for local traffic which would otherwise use Highway 395. This extension would create additional access to the residential developments bordering the existing East 4th Street south of Theater Lane such as Suncrest Estates as well as other residential developments along Theater Lane. Additional access points could be made available at businesses bordering Highway 395 along the 4th street extension to provide better access. Creating these new access points would help relieve congestion along the highway.

This new north-south parallel route could change the character of the 4th Street corridor. As traffic increases, residential livability will suffer and commercial uses will want to locate along the corridor.

The extension of East 4th Street would involve the construction of a new roadway connecting East 4th Street between Elm Avenue and Theater Lane approximately 2,600 feet in length. The City of Hermiston has partial ownership of the right-of-way along the proposed street alignment. From Theater Lane to the southeast corner of Suncrest Estates, about 1,300 feet in length, a 60-foot-wide right-of-way is owned by the city. From this point south to the Hermiston Drainage Ditch the city will have to acquire right-of-way. This section is approximately 600 feet in length and a 60 foot width is required. The city owns a 400-foot-wide section of right-of-way on the south side of the drainage ditch. However, this section is only 30 feet wide, an additional 30 feet of right-of-way will have to be acquired along the east side of the existing 30 foot section. Another section of right-of-way 60 feet wide will have to be obtained extending from Elm Avenue approximately 200 feet north. Design of the roadway will be according to the City of Hermiston's arterial or collector street standards depending on the future classification of this facility.

A crossing over the Hermiston Drainage Ditch will also be required along this new roadway. This ditch currently carries irrigation runoff storm drainage from runoff. The crossing would likely consist of a culvert crossing approximately 80 feet in length due to the width of the ditch.

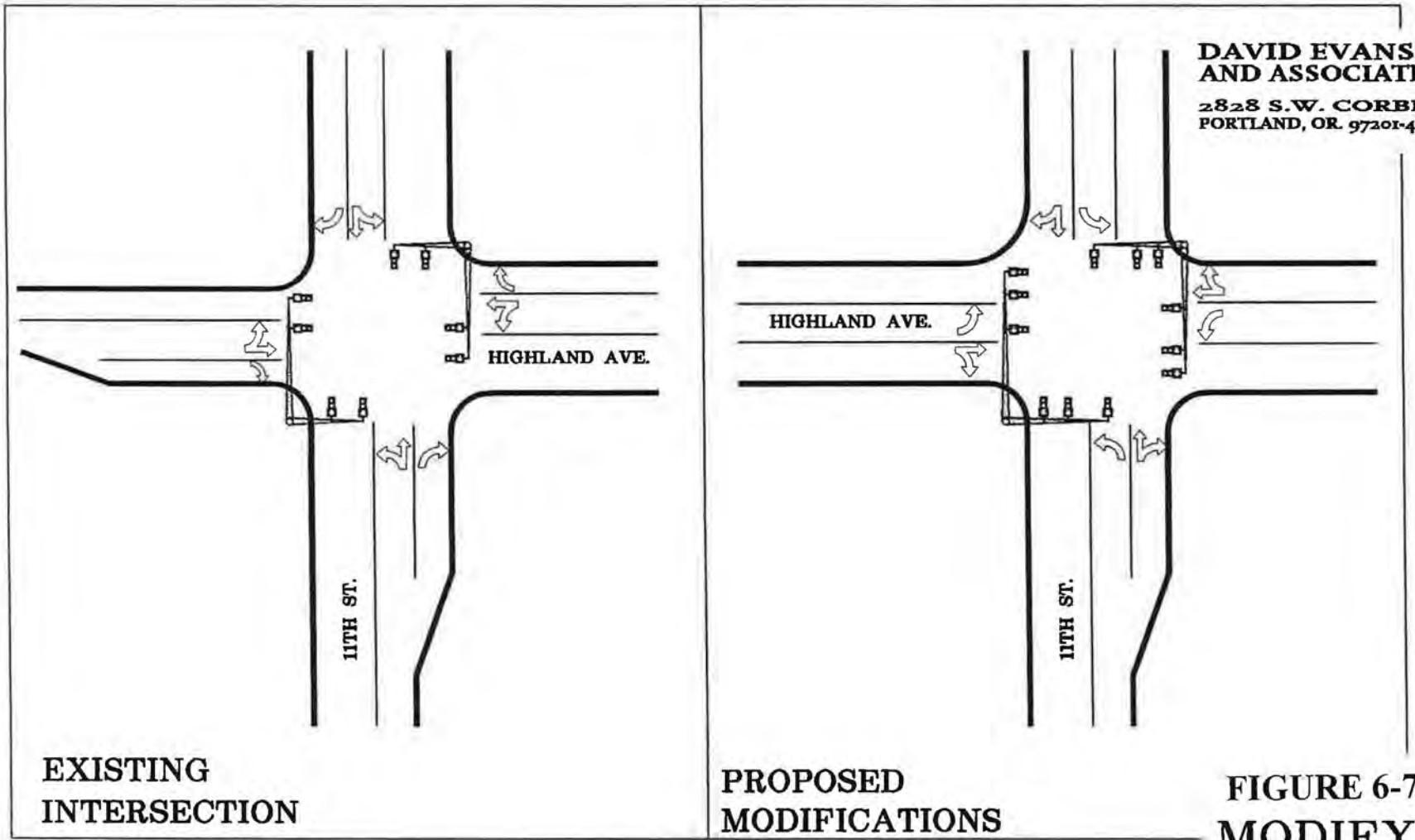
Traffic Projections: Traffic projections for this improvement alternative were performed using the QRS-II traffic model developed for the Hermiston area. The "No-Build" model for the year 2016 was modified to include the 4th Street extension. A comparison was made between the "No-Build" scenario and the 4th Street extension scenario to analyze how traffic patterns will change along the Highway 395 corridor.

The comparison showed that traffic will shift from Highway 395 to East 4th Street as a result of the extension. Traffic volumes along the highway are expected to be reduced by 60 to 100 vehicles per hour (vph) in both

11th Street at Highland Ave.

not to scale

DAVID EVANS
AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663



EXISTING INTERSECTION

PROPOSED MODIFICATIONS

FIGURE 6-7
MODIFY INTERSECTION

This option would also include the replacement of the 'M' Canal crossing with a new culvert type crossing. The 'M' Canal is currently not in use but is not abandoned. The canal follows an easement under the control of the Hermiston Irrigation District.

Traffic Projections: Traffic projections on the street system are not expected to change significantly as a result of this improvement.

Impacts: Updating this street would create better north-south traffic circulation providing a better link between Elm Avenue and Punkin Center Road, and would provide a safe and convenient route for pedestrians and bicyclists.

Realigning the intersection of Glemm Road at Punkin Center Road and 10th Street will create a standard four-way intersection which will maintain the city's grid system. The realignment will also provide better circulation and more convenient access for north/south traffic along East 10th Street and Glemm Road.

Costs: The estimated costs for this improvement are:

5,500 ft street @ $350/ft	$1,925,000
1,500 ft street @ $400/ft	$600,000
1 - 80 ft culvert cross @ $300/ft	$24,000
ROW 1500 ft x 70 ft @ $1/sf	$105,000
Total	$2,654,000

This section of East 10th Street is located outside the city limits and is under the jurisdiction of Umatilla County. Funding for this alternative should to be provided by Umatilla County.

Recommendation: Because this project will improve the livability of the neighborhoods along East 10th Street and improve safety for pedestrians and bicyclists, this project is recommended. Implementation of this project should be considered in the next five to ten years.

Alternative 6. Upgrade and Realign Theater Lane

This alternative includes both the upgrade and a partial realignment of Theater Lane, from Highway 395 to East 10th Street. It involves updating Theater Lane to a more urban facility which includes widening and repaving the roadway, and the addition of curbs, sidewalks, and bicycle lanes.

Alternative 6A. From Highway 395 to 7th Street Alignment

Overview: This project would include the repaving and urban upgrade of Theater Lane to collector street standards, from Highway 395 east to the 7th Street alignment. This section of Theater Lane is a narrow two-lane roadway with a 40-foot right-of-way and no curb and gutter. There is parking available on the shoulders of the street. Pavement conditions are fair, an indication that the street will need repaving soon.

Operations: This improvement combined with *Alternative 6A* will increase traffic circulation along Theater Lane, shorten travel distances, and reduce delay.

Impacts: This improvement combined with *Alternative 6A* would provide a direct east-west route, enhancing the city's grid system.

Cost: The estimated costs for this improvement are:

2,600 ft street @ $350/ft	$910,000
ROW 2600 ft x 30 ft @ $1/sf	$78,000
Total	$988,000

Recommendation: Implementation of this project along with *Alternative 6B* should be considered by city officials in the next five to ten years.

Alternative 6B. From 7th Street Alignment to East 10th Street

Overview: The section of Theater Lane from the 7th Street alignment, just east of the Alora Heights subdivision, is currently unpaved and follows along the 'N' Canal to the northwest where it intersects with East 10th Street. This section of Theater Lane would be realigned to connect with the existing East 10th Street/Theater Lane intersection. This realignment would interconnect the entire length of Theater Lane east of Highway 395 and create a common four-way intersection at East 10th Street. Right-of-way would need to be acquired by the city to realign Theater Lane.

Operations: This improvement would increase traffic circulation along Theater Lane, shorten travel distances, and reduce delay.

Impacts: This improvement may require two crossings over the 'N' Canal which is currently empty but not abandoned. Or it may be possible to realign the canal to run alongside Theater Lane. This would require the cooperation of the Irrigation District.

The vertical drop-off located along the proposed realignment would require a moderate amount of cut and fill to the slopes which would increase construction costs.

Cost: The estimated costs for this improvement are:

2,640 ft street @ $400/ft	$1,056,000
2 - 80 ft canal cross @ $300/ft	$48,000
ROW 1,300 ft x 70 ft @ $1/sf	$91,000
Total	$1,195,000

Recommendation: It is recommended that the realignment of Theater Lane be considered a low priority improvement due to the nature of the N Canal alignment, the natural geographical features of the land along the proposed alignment, and the costs associated with this project. Implementation of this project and *Alternative 6A* should be considered by city officials in the next 10 years.

Alternative 7. Construction of the Umatilla River Bridge

The travel demand forecast performed for the Hermiston area indicates that traffic volumes will increase along Highway 395 in the Hermiston area by about 48 percent in the next 20 years. Although highway capacity may not be an issue now, it may be so in the future. As traffic volumes increase along the highway, a new alternative route may be desired between Hermiston and the City of Umatilla and cities in Washington to the north. Providing a direct east-west link from the Hermiston area to Interstate 82 to the west would provide that alternative route.

There are other reasons for a future need to provide a direct east-west link between the Hermiston area and Interstate 82. With the construction of the US Army incineration plant located five miles southwest of Hermiston it is anticipated that 1,354 new jobs will be created for Hermiston residents. It was assumed in the future "No-Build" travel demand forecast that during the PM peak hour on an average weekday, two-thirds of those workers will be traveling to and/or from work. Without any street improvements it is anticipated that Westland Road, which will be one of the quickest routes to the plant, will experience an additional 200 vph each way. This will have adverse impacts on the intersections of Highland Avenue at 11th Street and Hermiston Avenue at 11th Street without any street or intersection improvements. Providing access to Interstate 82 would divert some of that traffic around the perimeter of the city and away from Westland Road and Highland Avenue.

A roadway constructed over the Umatilla River to Interstate-82 will also provide better access for through traffic heading southwest to Interstate-84. Through traffic that would benefit from this new access would consist of traffic originating from areas northeast of Hermiston and from the smaller cities of Charlestown and Power City to the north.

Two potential street improvements have been identified that would provide this access. Option 1 would extend Elm Avenue over the Umatilla River to connect with Power Line Road. From there traffic will utilize the Interstate 82 interchange to the north. Option 2 would extend Punkin Center Road over the Umatilla River and connecting it to Power Line Road where traffic can access the highway interchange more easily.

Alternative 7A: Extension of Elm Avenue Over the Umatilla River

Overview: Extending Elm Avenue over the Umatilla River would include the following: the paving and widening of Elm Avenue west of 11th Street (2,600 feet in length); construction of a new roadway to the Umatilla River; construction of a bridge over the river(approximately 400 feet long and 62 feet wide); construction of a new roadway to Hogan Road (approximately 2,200 feet in length); the potential upgrading of Powerline Road up to the Interstate 82 interchange as a collector or arterial street (6000 feet in length); the possibility of a traffic signal installation at the Elm Avenue and 11th Street intersection; the possibility of replacing the temporary traffic signal, which is currently being constructed at Elm Avenue and Umatilla River Road, with a permanent signal.

Traffic Projections: No traffic projections were determined for this option since the extension could not be incorporated into the travel forecast (QRS-II) model.

Operations: The operations along streets and intersections affected by this extension were not determined.

Impacts: The extension of a roadway over the Umatilla River will raise environmental issues and concerns about the potential bridge crossing. The livability of the residences located on both sides of the river will also be affected.

Cost: The estimated costs for this improvement are:

Rebuild Elm Ave.	2,600 ft @ $300/ft	$780,000
New Road	900 ft @ $400/ft	$360,000
Bridge	24,800 sf @ $400/sf	$9,920,000
New Road	2,200 ft @ $400/ft	$880,000
Rebuild Hogan Rd.	2,700 ft @ $300/ft	$810,000
Upgrade Powerline Rd.	6,000 ft @ $300/ft	$1,800,000
Traffic Signals (2)		$250,000
ROW Acquisition	17,300 ft x 66 ft @ $1/sf	$1,141,800
Total		$15,941,800

Cost estimates for a new bridge assumed a 62 foot width and 400 foot length. The actual length of the bridge may be longer due to the nature of the Umatilla River floodplain at the river crossing. This would increase the costs of constructing a bridge here.

Alternative 7B: Extension of Punkin Center Road Over the Umatilla River

Overview: Extending Punkin Center Road over the Umatilla River would include the following: realigning, paving, and widening Punkin Center Road from Highway 395 to Umatilla River Road (5,800 feet in length); improvements to the at-grade intersection of the Union Pacific Railroad and crossing; construction of a bridge over the Umatilla River; the widening and paving of Country Lane to Powerline Road (5,800 feet in length); and the potential upgrading of Powerline Road to collector or arterial street standards (approximately 400 feet in length).

Traffic Projections: No traffic projections were determined for this option since the extension could not be incorporated into the travel forecast (QRS-II) model.

Operations: The operations along streets and intersections affected by this extension were not determined.

Impacts: The extension of a roadway over the Umatilla River will raise environmental issues and concerns about the potential bridge crossing. The livability of the residences located on both sides of the river will also be affected.

Cost: The estimated costs for this improvement are:

Rebuild Punkin Center Rd.	5,800 ft @ $300/ft	$1,740,000
New Road	1,000 ft @ $400/ft	$400,000
Bridge	24,800 sf @ $400/sf	$9,920,000
Upgrade Country Lane	5,800 ft @ $300/ft	$1,740,000
Upgrade Powerline Rd.	400 ft @ $300/ft	$120,000
ROW Acquisition	13,400 ft x 66 ft @ $1/sf	$884,400
Total		$14,804,400

Cost estimates for a new bridge assumed a 62 foot width and a 400 foot length. The actual length of the bridge may be longer due to the nature of the Umatilla River floodplain at this location. Extending the length of the bridge structure would increase the cost of this alternative.

Recommendations: Construction of either of these alternatives will provide an additional route other than Westland Road for much of the traffic related to the incineration plant. It will also provide an alternative route for through traffic and a potential truck route.

It should be noted that the improvement falls outside the city limits and UGB of Hermiston. It should be recognized that the city cannot authorize the project at this time, that further coordination with the county would be required, and that a goal exception and/or an extension of the UGB line would need to be approved by the Department of Land Conservation and Development (DLCD).

Alternative 8. Truck Route Evaluation

This alternative has two parts: 1) Evaluation of existing and potentially new truck routes, 2) The upgrading of the current signing for the City of Hermiston's truck routes.

Alternative 8a: Evaluation of Existing and Potentially New Truck Routes

Overview: There are two primary truck routes which traverse the City of Hermiston. One truck route exists entirely along Highway 395 through the city. The second truck route extends from Butter Creek Road which turns into 11th Street, proceeding east on Elm Avenue and onto Diagonal Road leading northeast.

A list of potentially new truck routes were evaluated based on public input and proposed street improvement options:

1) Ott Road, from Highway 395 to Highway 207/Diagonal Road
2) Westland Road
3) Across the potential Umatilla River Bridge to Interstate 82 (Elm Avenue or Punkin Center Road)

Ott Road

Currently, trucks traveling between Highway 207 to the northeast and Highway 395 to the south use Elm Avenue. One problem associated with this truck route is the truck traffic present along Highway 395 through the downtown area. Designating Ott Road would allow truck traffic to bypass the downtown. However, this may not be feasible. Ott Road is an unpaved, gravel based road. Designating this road as a truck route between Highway 395 and 207 would require it to be paved. Also, a connection between Loop Road and Highland Avenue would have to be constructed to provide a direct north-south route along Ott Road. Costs associated with these improvements would be high.

Westland Road

Westland Road was not evaluated as a potential truck route. Currently, Butter Creek Road (Highway 207) south of Highland Avenue serves as the truck route linking Hermiston with Interstate 84 to the southwest. Future traffic projections show that this roadway will operate smoothly with traffic volumes well below the street's capacity.

Therefore, it is anticipated that this roadway will remain a complimentary truck route into the future. A truck route along Westland Road will not be necessary.

Umatilla River Bridge

A truck route located along the potential roadway over the Umatilla River would change the existing truck route configuration for the Hermiston area dramatically. A roadway extension over the Umatilla River along either Elm Avenue (Alternative 7A) or along Punkin Center Road (Alternative 7B) would integrate the existing truck routes along Highway 395 and Elm Avenue with Interstate 82 to the west. Through truck traffic between Interstate 84 to the southwest and Highway 395 to the north would no longer be routed through the downtown core of the city along 11th Street, reducing truck traffic dramatically.

Recommendations: It is recommended that the existing truck routes be maintained along Highway 395, Butter Creek Road, 11th Street, Elm Avenue, and Diagonal Road. Several intersection improvements have been identified and planned for construction which would improve the existing truck routes so that no other routes are needed. Some of these improvements include ODOT's plan to realign the six-way intersection at Diagonal Road and Elm Avenue. Because the existing intersection is skewed, trucks have difficulty turning from Elm Avenue on to Diagonal Road due to limited sight distance. With the intersection realignment, trucks making this movement will have improved sight distance that would allow them to enter the intersection safely. Other improvements planned by ODOT are the retiming of the traffic signals through town along Highway 395 and the curb cut modifications at several intersections including Highway 395 and Elm Avenue to allow trucks to turn corners safely. Also, a traffic signal installation is recommended (Alternative 3D) at the intersection of Hermiston Avenue and 11th Street intersection. This street improvement option will allow truck traffic to flow more easily. All of these improvements mentioned are planned or recommended to be constructed within the next five years. ODOT has identified funding through the Hazard Elimination Program (HEP) to reconstruct the Elm Avenue/Diagonal Road intersection. ODOT expects that this reconstruction will be done within the next five years.

Alternative 8B: Improved Truck Route Signing

Guide signs along Highway 207 which include the streets Diagonal Road, Elm Avenue, and Butter Creek Road/11th Street do not display the truck routes clearly and need to be enlarged and/or placed in areas which are more visible to drivers. Trucks have a history of disregarding these signs and end up on streets or intersections where the existing geometry cannot handle truck turns.

Traffic Projections: Truck traffic volumes are not expected to change with the replacement of truck route signs.

Operations: Street and intersection operations are not expected to change with the replacement of truck route signs.

Impacts: Improved signing will prevent trucks from deviating from the designated truck routes and improve the safety of the street system.

Cost: Costs for new truck route signs are estimated to be around $200/sign.

Recommendations: Because of the low costs involved and the improved safety of the street system, it is recommended that the signing of the city's truck routes be improved along the streets mentioned above.

Alternative 9. Upgrade Umatilla River Road Between Hermiston Avenue and Elm Avenue

Overview: Umatilla River Road is in need of an urban upgrade. It was designed according to county standards as a two-lane roadway with gravel shoulders. In the past, this roadway served as the primary route for traffic heading north towards Umatilla. Since the completion of Highway 395 this road has become more of a collector street for local traffic within the urban parts of the city. This section of Umatilla River Road currently has poor pavement conditions.

The upgrade would involve updating the roadway between Elm Avenue and Hermiston Avenue to collector street standards which would include widening, repaving, and the installation of curbs, sidewalks, and bicycle lanes.

Traffic Projections: Traffic volumes along Umatilla River Road, near Hermiston Avenue, are anticipated to increase from 230 to 375 vehicles northbound and from 160 to 285 vehicles southbound during the PM peak hour in the year 2015. This is an increase of about 69 percent.

Operations: Upgrading the roadway to collector street standards will allow the roadway to handle future traffic demand. The upgrade will increase traffic flow for all modes by providing wider travel lanes for traffic and bike lanes and sidewalks to encourage their use.

Impacts: Widening and repaving the roadway will provide a safe environment for vehicular traffic. Safety for bicyclists and pedestrians will also be improved with the installation of bike lanes, sidewalks, and curbs

Cost: The estimated cost for this improvement is:

3,300 ft street @ $350/ft	$1,155,000
Total	$1,155,000

Recommendations: This project is recommended, and should be considered for development within the next five to ten years.

Alternative 10. Upgrade Local Unpaved Roads

The city of Hermiston has identified the locations of the unpaved, partly paved, and unbased substandard roads within the city's urban growth boundary. These substandard streets are shown in Chapter 3-Existing Conditions (Figure 3-2).

This alternative will require that a priority and funding program be formulated for the City of Hermiston to upgrade the substandard city streets over the next 20 years. The prioritization of improving these streets will depend on which other transportation alternatives are adopted by the City of Hermiston. Some of the substandard streets are close to or within some of the transportation grid patterns of other alternatives. Consideration to improve these substandard streets should be considered when specific transportation alternatives are being programmed.

CHAPTER 7: TRANSPORTATION SYSTEM PLAN

The purpose of this chapter is to provide a detailed transportation system plan that will help to promote the goal and objectives set forth by the Hermiston community. The plan addresses all modes of transportation available in the Hermiston study area which include the street system, pedestrian and bicycle, and rail, air, and pipeline services. The plan also includes existing and recommended street classification standards, recommended access management measures, and transportation demand management measures.

EXISTING STREET CLASSIFICATION STANDARDS

Street classification 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 which are relatively safe, aesthetically pleasing to the eye, and easy to administer when new roadways are planned or constructed. They are based on experience, and policies and publications of the profession.

The City of Hermiston has jurisdiction for the design and construction of local streets within the city. Umatilla County is responsible for the roads located outside the city limits and within the Hermiston UGB. The Oregon Department of Transportation has jurisdiction for the design and construction of state highways within Hermiston and Umatilla County. Both the City of Hermiston and Umatilla County have street and road design standards at the current time. However, the existing standards are incomplete because they do not cover all street types. Umatilla County is in the process of revising their current road design standards.

The City of Hermiston has standards for local residential streets in the *City of Hermiston Standard Plans and Specifications, 1993.* The plans require local streets to have a minimum of 50 to 60 feet right of way with minimum street widths of 30 to 32 feet. Curb and gutter are also required on all new residential streets. The street specifications for local streets do not include sidewalks in the cross sectional figures. However, two types of sidewalk standards are included in a separate part of the plans, both of which require a minimum width of five feet. The city currently does not have design standards for either collector or arterial streets.

Umatilla County has road design standards for urban arterial, suburban arterial and rural roads. At the present time, the County Public Works Department is revising the existing road design standards. All roadways constructed in the county are required to have a 60-foot right-of-way. Urban arterial streets require a 36-foot roadway with five-foot sidewalks. Suburban arterial streets require a 32-foot street width which includes four-foot shoulders on each side. Rural streets require a 32-foot street width. Rural roads within Umatilla County are not required to have paved shoulders. The urban arterial road design standards apply to the urban areas designated areas within the Hermiston UGB. The rural road design standards apply to the urbanizable areas within the UGB.

RECOMMENDED STREET CLASSIFICATION STANDARDS

The development of the Hermiston Transportation System Plan provides the city and the county with an opportunity to review and revise their street design standards to more closely fit the functional street classification, and the goals and objectives of the Transportation System Plan. The proposed street classification

system for the Hermiston study area is illustrated on Figure 7-1. It includes all new roads and traffic signals recommended in this report.

The figure includes all existing and proposed future roadways on a collector and arterial street level. Urban collector and arterial street standards are recommended in all areas within the city limits and the urbanizable areas outside the city limits and within the UGB. The urbanizable areas have been determined by city and county officials as areas designated by the 1992 Hermiston Comprehensive Plan (Figure 2-2) where future residential, commercial, and industrial development are anticipated. Rural street standards are recommended in the remaining non-urbanizable areas and all areas outside the UGB.

The recommended urban and rural street design standards that correspond to the proposed street classification figure are listed in Table 7-1, illustrated in Figures 7-2 through 7-5, and summarized in the following pages. The street design standards also include provisions for local street standards as well.

TABLE 7-1
RECOMMENDED STREET STANDARDS
FOR THE CITY OF HERMISTON

Classification	Pavement Width	Right-of-Way Width	Minimum Posted Speed
Urban Streets			
Local Residential	28-32 ft	40-44 ft	15-25 mph
Minor Collector	36 ft	48 ft	25-35 mph
Major Collector	48 ft	60ft	25-35 mph
Minor Arterial	50-60 ft	62-70 ft	25-45 mph
Major Arterial	60 ft	88 ft	25-45 mph
Rural Streets			
Local Residential	24-40 ft	60 ft	25 mph
Collector	32-40 ft	60 ft	25-35 mph
Arterial	36-40 ft	60 ft	35-55 mph

URBAN STREET STANDARDS

All urban street standards include curbs, gutters, and sidewalks. The urban street standards will be applicable within the city limits of and in the urban designated areas within the Hermiston UGB.

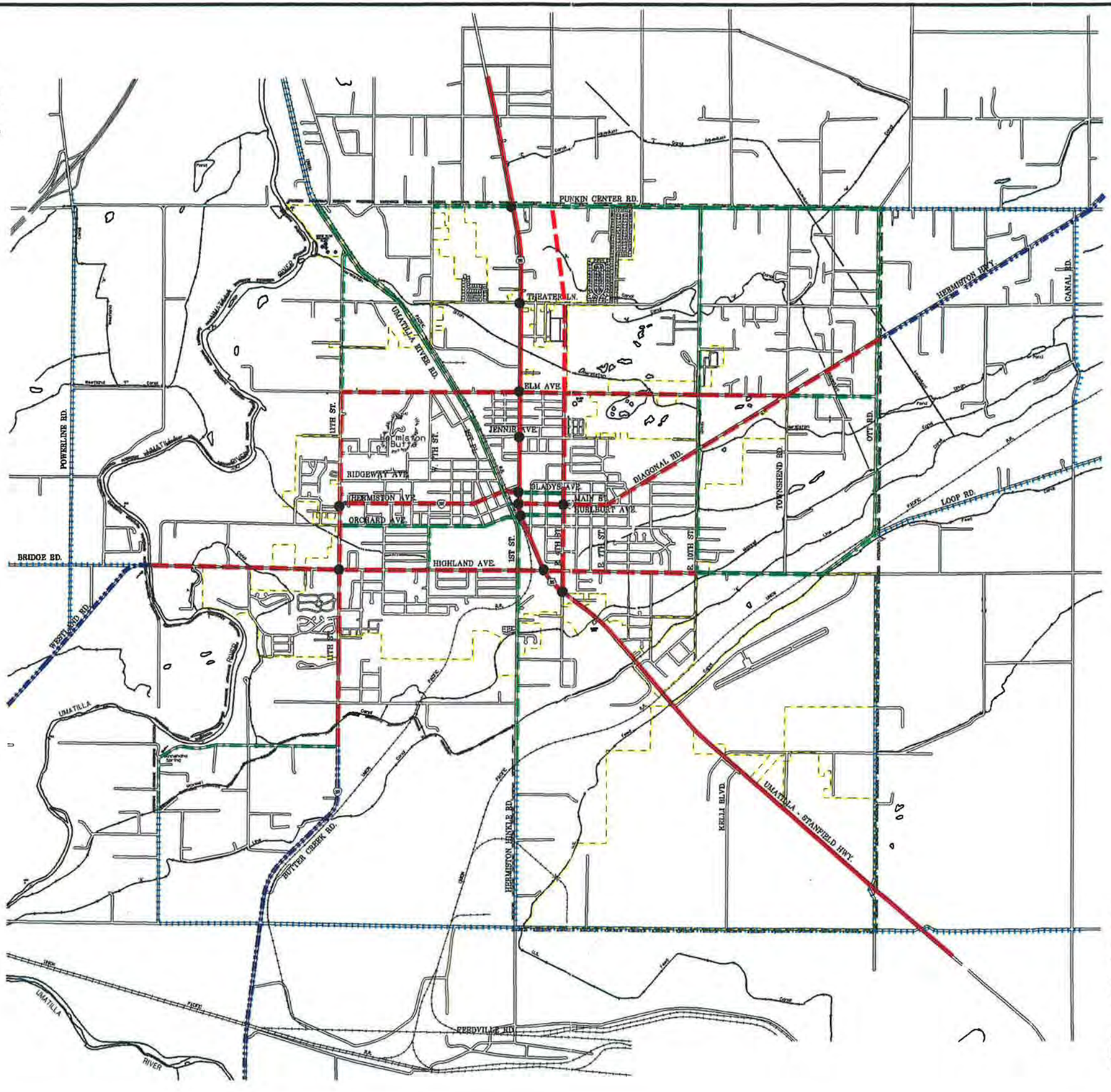
Local Residential Streets

The design of a local residential street affects its traffic operation, as well as the safety and livability of the area that road serves. Local streets should be designed to carry less than 1,200 vehicles per day with design speeds of 15 to 25 mph. As traffic volumes rise above 1,200 vehicles per day, residents begin to notice increased levels of traffic and noise. To maintain the livability of a neighborhood, the design of the roadway should encourage low speed travel and discourage through traffic.

The City of Hermiston has a well established grid system of local streets near the downtown area. A well-connected grid system of relatively short blocks can minimize excessive volumes of motor vehicles by providing

LEGEND

- URBAN MAJOR ARTERIAL
- URBAN MINOR ARTERIAL
- URBAN MAJOR COLLECTOR
- URBAN MINOR COLLECTOR
- RURAL ARTERIAL
- RURAL COLLECTOR STREET
- TRAFFIC SIGNAL
- CITY LIMITS
- UGB



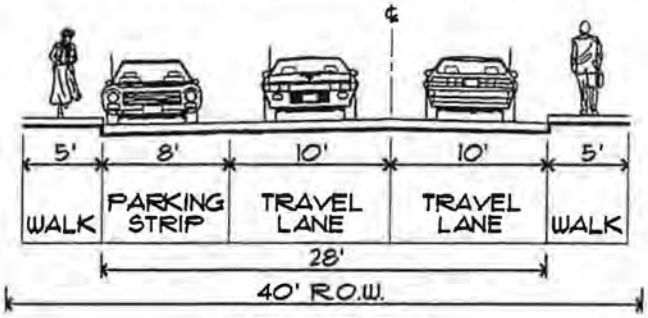
0 1600 3200 4800
FEET

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

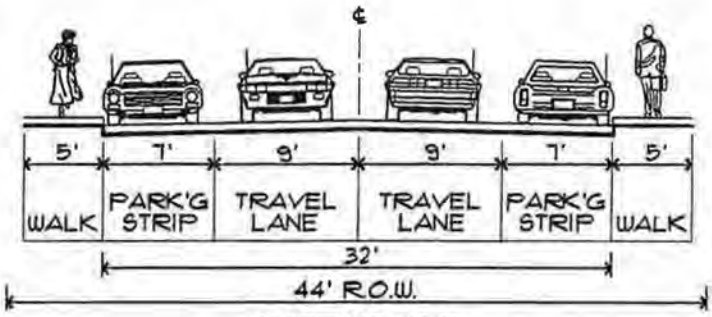
FIGURE 7-1
PROPOSED FUTURE STREET CLASSIFICATIONS AND TRAFFIC SIGNALS

DAVID EVANS
AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4890 (503) 228-6663

LOCAL RESIDENTIAL STREETS



ALTERNATIVE #1



ALTERNATIVE #2

LOCAL RESIDENTIAL CUL-DE-SACS

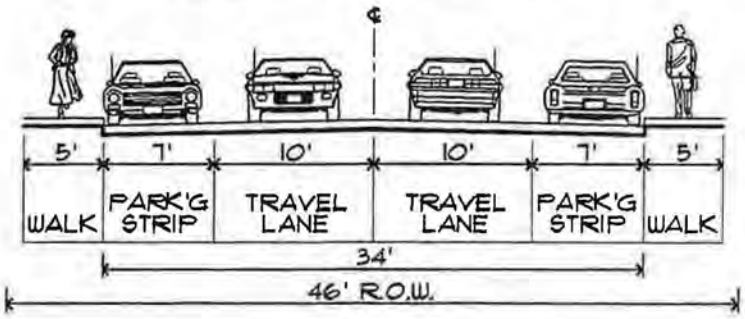
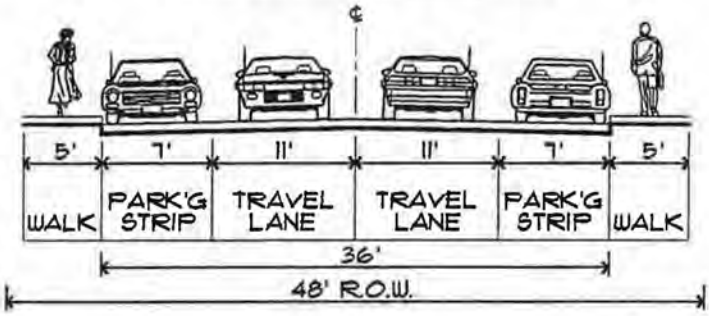


FIGURE 7-2
URBAN STREET DESIGN STANDARDS
LOCAL RESIDENTIAL STREETS

HERM-0001 .MK 04/25/97 10:17:43 MMK D:\WORK\HERM1-72

DAVID EVANS
AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR 97201-4830 (503) 223-6

MINOR COLLECTOR STREETS



MAJOR COLLECTOR STREETS

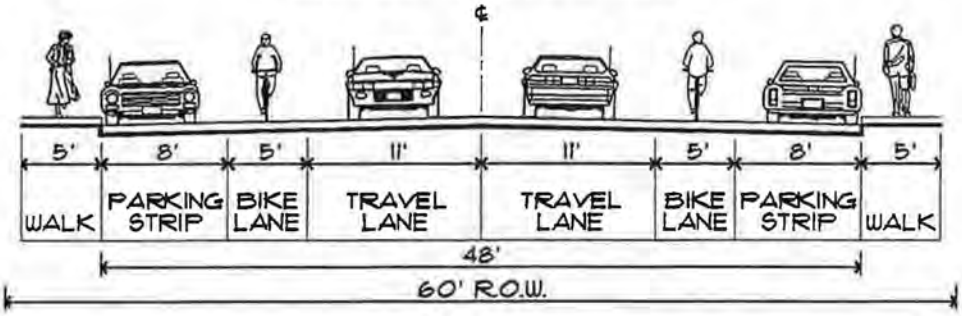


FIGURE 7-3
URBAN STREET
DESIGN STANDARDS
COLLECTOR STREETS

HERM-0001 MMK 04/25/97 10:15:02 MMK D:\WORK\HERM1-73

Alternative 5. Upgrade of East 10th Street

Two options were considered for East 10th Street: a) Upgrading it between Columbia Drive and Elm Avenue, and b) Upgrading it between Elm Avenue and Punkin Center Road.

Alternative 5A. From Columbia Drive to Elm Avenue

Overview: The portion of East 10th Street between Columbia Drive and Elm Avenue is in need of an urban upgrade. East 10th Street was designed according to county standards as a rural two-lane roadway with gravel shoulders. Travel demand has increased over the past years from residential developments in the vicinity as well as the educational facilities of the Sandstone Middle School and Highland Hills Elementary School. With this increased demand the need has arisen for a facility which is designed to handle vehicular traffic as well as alternative modes of transportation along East 10th Street.

An inventory was performed on this roadway to identify areas that are insufficient in handling the current demand. In one area, substandard street widths measuring 20 feet exist along East 10th Street from Ridgeway Avenue to Newport Avenue.

Most of East 10th Street is unfit for existing pedestrian and bicycle usage. There are no continuous sidewalks or bike lanes along 10th Street. A multi-use path exists on the east side, from Diagonal Road to the Sandstone Middle School. Sidewalks are present at only two locations: between Diagonal Road and Ridgeway Avenue on the east side, and between Newport Avenue and Highland Avenue on the west side. There are no striped bike lanes and the narrow street width from Ridgeway Avenue to Newport Avenue makes conditions unsafe for shared-lane bicycle usage.

Pavement conditions are fair along most of the East 10th Street alignment except from Highland Avenue to Columbia Drive which is partly a substandard pavement and partly gravel based. In this area two narrow bridges pass over the Maxwell and 'A' Line Canals. These bridges have weight limits for heavy trucks but the limits are occasionally ignored by drivers. Recently, traffic volumes have increased along this portion of East 10th Street from new or increased employment at businesses along Columbia Drive. As traffic volumes increase in the future, a safer, more convenient access to Columbia Drive will be needed.

Option A would involve updating East 10th Street, from Elm Avenue to Highland Avenue, to an urban collector street. This includes the widening and repaving of the street and the addition of curbs, sidewalks, and bike lanes in accordance with the street design standards adopted by the city. It would also include a new culvert crossing over the Hermiston Ditch.

This option would also involve upgrading East 10th Street, from Highland Avenue to Columbia Drive, to collector or local street standards. The classification of this section of East 10th Street needs to be decided by city and county officials. Improvements should include the replacement of the two bridges over the Maxwell and 'A' Line canals with culvert type crossings.

Traffic Projections: Traffic projections on the street system are not expected to change significantly as a result of this improvement.

Operations: Traffic operations will improve slightly as a result of this improvement. Paving and widening the roadway will improve traffic flow and reduce potential conflicts with wide vehicles on narrow sections of roadway.

Impacts: This upgrade will accommodate local traffic with a more efficient north/south roadway responsive to all modes of transportation. Widening the existing street width will increase circulation and allow traffic to flow more freely. Adding continuous sidewalks, bicycle lanes, and/or the extension of the multi-use path will provide safer conditions for alternative modes of transportation. It will also link together the east-west pedestrian and bicycle routes such as the multi-use path along Elm Avenue, the bike path along Diagonal Road, and the continuous sidewalks along Highland Avenue.

Costs: The estimated costs for this improvement are:

7,000 ft street @ $350/ft	$2,450,000
2 - 80 ft culvert cross @ $300/ft	$48,000
Pipe Extension	$20,000
Hermiston Ditch Crossing	$24,000
Total	$2,542,000

Costs for this alternative could be shared by: The City of Hermiston, which has recently accepted taking over the jurisdiction of East 10th Street from Diagonal Road to Highland Avenue from the county; Umatilla County, which will maintain jurisdiction of the remaining sections of East 10th Street including the two bridges which will be replaced with culvert crossings; ODOT, which will see traffic reduced on Highway 395, and a private developer in the process of planning the construction of 65 lot subdivision bordering the east side of East 10th Street between Ridgeway Avenue and Newport Avenue.

Recommendation: Because this project will improve the livability of the neighborhoods along East 10th Street and improve safety for pedestrians and bicyclists, this project is recommended. Implementation of this project should be considered in the next 5 to 10 years.

Alternative 5B. From Elm Avenue to Punkin Center Road

Overview: It is anticipated that the section of East 10th Street from Elm Avenue to Punkin Center Road will be in need of an urban upgrade in the future. The roadway was designed as a rural county road. It is a two-lane facility with a 24-foot street width and gravel shoulders. As the area becomes more urbanized and traffic increases in the future, a new facility will be needed to accommodate traffic demand and encourage alternative modes of transportation such as walking or biking.

Option B would involve two improvements. The 10th Street roadway, between Elm Street and Punkin Center Road, would be upgraded to an urban collector street with curbs, sidewalks, and bike lanes. To improve the overall safety and traffic flow, it is also recommended that a portion of Glemm Road approximately 1,500 feet north of Punkin Center Road be relocated and aligned with the intersection of Punkin Center Road and 10th Street as part of Option B.

directions between Theater Lane and Elm Avenue. This is equivalent to a reduction of about 600 to 1000 vehicles over a day assuming a peak hour factor of about 10 percent which is an average percentage for a city the size of Hermiston. The peak hour factor is defined as the average number of vehicles during the PM peak hour divided by the number of vehicles over a day. From Elm Avenue to 4th Street, traffic volumes along Highway 395 are expected to decrease between 20 and 40 vph or about 200 and 400 vpd.

Operations: It is anticipated that a majority of the traffic utilizing Theater Lane will access 4th Street to the south instead of using Highway 395. This shift in traffic will improve the future operations at the unsignalized intersection of Theater Lane and Highway 395, especially for the left-turning traffic approaching Highway 395. The existing level-of -service for the approach at this intersection is at LOS C and will deteriorate to LOS F by 2016 without any improvements. Although a traffic signal may be needed at this intersection in the future, the construction of the 4th Street extension may delay its installation.

Increased traffic along 4th Street due to the extension will increase the need for a traffic signal at the intersection of 4th Street and Main Street (Alternative 3C).

Impacts: Extending East 4th Street will increase the north/south traffic flow along 4th Street through the bordering neighborhoods as well as the downtown area.

Extending 4th Street will also provide additional access points to local businesses which border Highway 395 providing a safer travel routes and reducing travel distance.

Adding sidewalks and bike lanes along 4th Street will provide an additional north/south facility other than Highway 395 capable of handling alternative transportation modes.

Noise levels along 4th Street will increase along the entire length of 4th Street due to increased traffic. Residential livability may suffer in northeast Hermiston as traffic increases.

The extension of 4th Street, from Elm Avenue to Theater Lane, in conjunction with installation a traffic signal at Main Street and 4th Street will add a vital local street corridor to the Hermiston transportation system. . As detailed above under traffic projections, this street extension will reduce future traffic on Highway 395 and provide safe routes for both pedestrians and bicyclists. The 4th Street extension will enable ODOT to limit future expenditures on highway maintenance and improvements in the 395 corridor.

Cost: Cost estimates assumed a 50 foot wide street with curbs and sidewalks.

2,640 ft street @ $400/ft	$1,056,000
80 ft culvert cross @ $300/ft	$24,000
Acquire ROW @ $1/sf	$60,000
Total	$1,140,000

Alternative 4B. From Theater Lane to Punkin Center Road

Overview: This option would build on Option A with East 4th Street extended further to Punkin Center Road. The alignment of this extension would be the same as Option A to Theater Lane but would continue in a

northwesterly direction up to Punkin Center Road where it will connect opposite Sagebrush Road. This connection will create a common four-way intersection maintaining a consistent grid street network.

Construction would involve a canal crossing, right-of-way to be acquired, and the annexation of two residences which lie in the path of the proposed alignment. The canal crossing would consist of a culvert crossing over the eastern leg of the 'N' Canal, approximately 80 feet in length. The 'N' Canal is currently inactive but not abandoned and is located along an easement under the control of the Hermiston Irrigation District. Cooperation between the Irrigation District, the US Bureau of Reclamation, and the City of Hermiston could result in the abandonment of this section of the 'N' Canal, thereby avoiding the need for a new culvert crossing.

Traffic Projections: The QRS-II traffic model was used again to assess the changes in traffic patterns between the "No-Build" scenario and extending 4th Street further north to Punkin Center Road. The comparison showed that with this improvement, even more traffic is expected to shift from Highway 395 to East 4th Street. Between Punkin Center Road and Theater Lane, traffic is expected to be reduced by 50 to 80 vph or about 500 to 800 vpd along the highway. From Theater Lane to Elm Avenue, traffic is expected to decrease by 100 to 140 vph or about 1,000 to 1,400 vpd. Between Elm Avenue, and where Southeast 4th Street intersects Highway 395, traffic is expected to be reduced by 10 to 40 vph or about 100 to 400 vpd.

Operations: This extension is expected to further increase traffic volumes traversing the intersection of 4th Street and Main Street which increases the need for improved traffic control such as the installation of a traffic signal (Alternative 3C).

The shifting of traffic onto 4th Street indicates that the PM peak hour traffic operations at the signalized intersections along Highway 395 will be slightly better when compared to the "No-Build" condition. However, the reduction in Highway 395 traffic will not noticeably improve the operations at intersecting minor streets.

Impacts: Construction of this facility will link together East 4th Street and Sagebrush Road providing a fully continuous north-south route parallel to Highway 395. It will also improve the continuity of the city's grid street system and increase local traffic flow. Increased traffic flow also means increased noise levels along 4th Street as well.

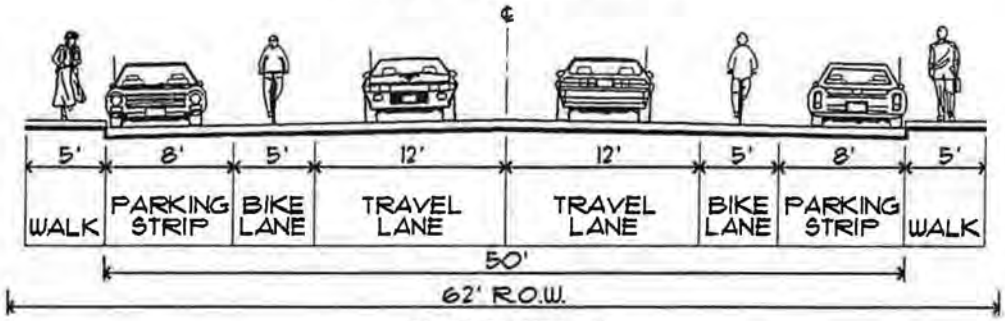
Cost: Cost estimates assumed a 50 foot wide street with curbs and sidewalks. It also included a culvert crossing which may be avoided.

2,640 ft street @ $400/ft	$1,056,000
80 ft culvert cross @ $300/ft	$24,000
ROW 2640 ft x 60 ft @ $1/sf	$158,400
Annexation of two residences	$121,520
Total	$1,359,920

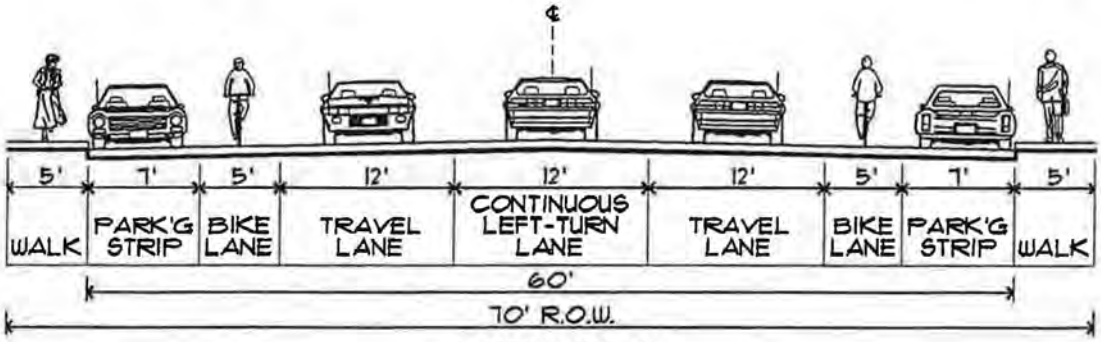
Recommendations: Because of the reduction in traffic along Highway 395 and the improved continuity in the grid system, both Option A and Option B are recommended for implementation. The East 4th Street extension could be constructed in two phases with Option A constructed as a high priority project in the next five years. The second phase would complete the extension in Option B as a medium priority project between five and ten years from now.

DAVID EVANS
AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

MINOR ARTERIAL STREETS



ALTERNATIVE #1



ALTERNATIVE #2

MAJOR ARTERIAL STREETS

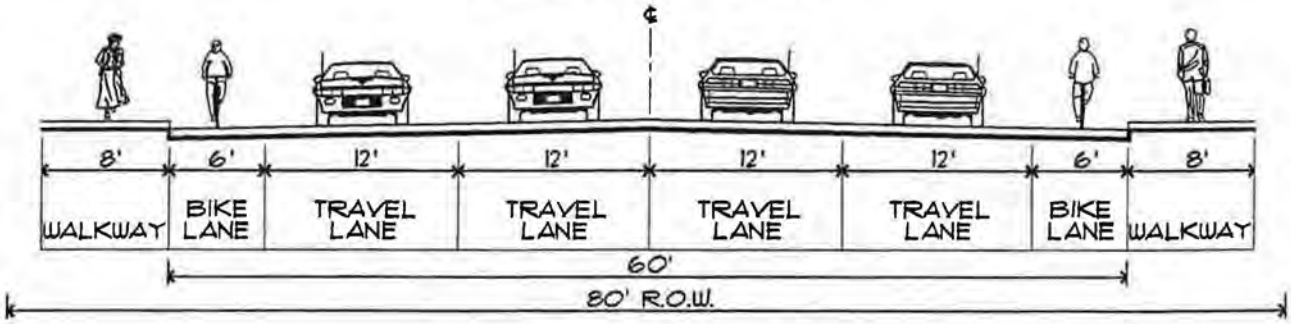
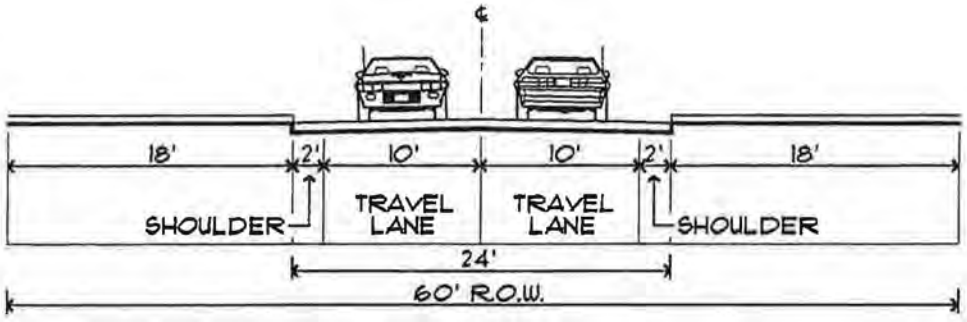


FIGURE 7-4
URBAN STREET DESIGN STANDARDS
ARTERIAL STREETS

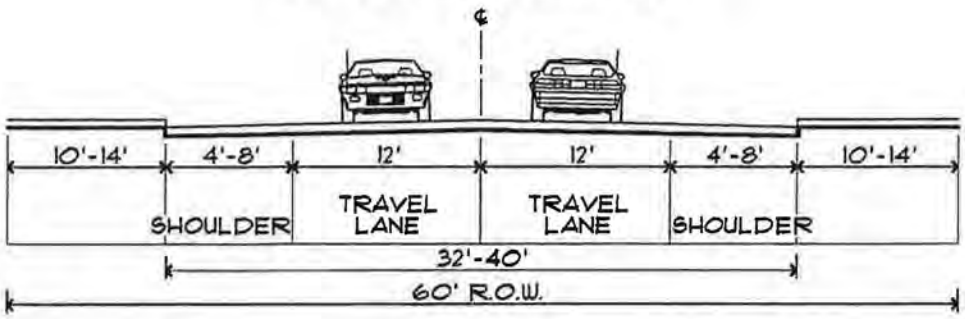
HERM-0001 MMK 04/25/97 10:11:56 MMK D:\WORK\HERM1-74

DAVID EVANS
AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-8

RURAL LOCAL STREETS



RURAL COLLECTOR STREETS



RURAL ARTERIAL STREETS

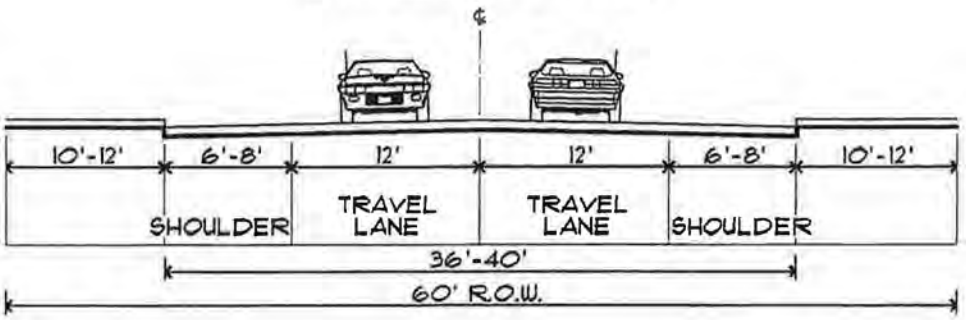


FIGURE 7-5
RURAL STREET
DESIGN STANDARDS

HERM-0001 MMK 04/25/97 10:08:57 MMK D:\WORK\HERM1-75

a series of equally attractive or restrictive travel options. This street pattern is also beneficial to pedestrians and bicyclists. This type of street development is encouraged as the vacant lands within Hermiston's urban growth boundary are developed.

The standard for a local residential street should be a 28- to 32-foot roadway, from curb face to curb face, within a 40- to 44-foot right-of-way. Local residential streets should include five-foot sidewalks with one-foot wide curb and gutter on both sides of the street.

The 28-foot cross section, labeled as Alternative 1 in Figure 7-1, will provide two 10-foot travel lanes with parking on one side. The 32-foot cross section, labeled as Alternative 2, will provide two nine-foot travel lanes with. Alternative 1 would provide a narrower street and improved neighborhood aesthetics. It also discourages speeding and through traffic. Alternative 2 provides parking on both sides of the street, and allows traffic to move freely but slowly. Both alternatives will also cut down on right-of-way needs, construction costs, stormwater run-off, and need to clear vegetation.

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 the streets are short and the traffic volumes relatively low, the street width can be narrower than a standard residential street, allowing for the passage of two lanes of traffic when no vehicles are parked at the curb or one lane of traffic when vehicles are parked at the curb.

The street width of a cul-de-sac street should be 34 feet, curb face-to-curb face within a 46-foot right-of-way, as shown in Figure 7-1. A five-foot-wide sidewalk should be located on each side of the roadway as well as the circular portion of the cul-de-sac. 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.

Collector Streets

Collector streets are intended to carry between 1,200 and 5,000 vehicles per day, including limited through traffic, at design speeds of 25 to 35 mph. A collector street can serve adjacent residential, commercial, industrial, or mixed land uses and connect arterials to local streets.

Table 7-3 shows the recommended cross sections for an urban minor and major collector street. Minor collector street standards could be implemented in neighborhood settings where traffic volumes are lower. The 11-foot travel lanes and on-street parking widths of seven feet provide a narrower road that will discourage speeding.

A major collector street standard could be used in a commercial or industrial setting where traffic volumes are higher and truck traffic is more frequent. The recommended street cross section is wider with 12-foot travel lanes, two five-foot bike lanes, and on-street parking areas which are eight feet wide.

Both collector street standards provide five-foot sidewalks on each side of the roadway. Collector streets can also be striped to provide two travel lanes plus left-turn lanes at intersections or driveways by removing parking for short distances. If traffic volume forecasts exceed 5,000 vehicles per day on either type of collector, then driveways serving single- or multi-family houses should not be permitted on that section.

The City of Hermiston will decide which cross section is best for a collector street.

Minor Arterial Streets

Minor arterial streets serve as a connector between local, major collector, and major arterial streets creating a moderate amount of through traffic. Like a collector street, it is also designed to provide access to residential, commercial, industrial, or mixed land uses that are adjacent to the roadway. These roadways tend to be higher volume roadways from the combination of local and through traffic. Traffic volumes range between 5,000 and 10,000 vehicles per day. Design speeds range between 25 and 45 mph.

Two alternative design standards are recommended for minor arterial streets. The first alternative utilizes a 50-foot cross section consisting of two travel lanes with bike lanes and parking on both sides of the road. The second alternative uses the same configuration but with a the addition of a 12-foot continuous, left-turn lane in the middle of the road. This design standard is recommended where left turn movements prevail along a street segment, where access to either local streets or driveways are abundant. The left-turn lane will provide a shelter for left-turning vehicles and will prevent the disruption of traffic flow. A five-foot sidewalk should be provided on both sides of the street in each alternative.

Major Arterial Streets

Major arterial streets, such as Highway 395 and 207, form the primary roadway network within and through a region. They provide a continuous roadway system that distributes traffic between different neighborhoods and districts. Major arterial streets are high 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 major arterial streets. Major arterial streets should consist of a 60 foot street width within an 88 foot right-of-way, as shown in Figure 7-2. The 60 foot paved width provides four 12-foot travel lanes and two six-foot bike lanes. Sidewalks along major arterial streets should be at least eight feet wide where possible.

RURAL STREET STANDARDS

The recommended rural street design standards apply to all roads outside the designated urbanizable areas in the Hermiston UGB. The rural street standards are based on the proposed functional classification of the roadway and the average amount of traffic that is expected. Three functional classes are recommended for rural roadways: local streets, collectors, and arterials. Recommended travel lane width for these types of roads ranges between 10 and 12 feet. Recommended shoulder widths are summarized in Table 7-2.

Local Residential Streets

Generally, the average weekday traffic volume on a rural local residential street averages less than 500 vehicles per day, and design speeds are 25 MPH. The recommended standard for a rural local residential street is a 24-foot roadway within a 60-foot right-of-way, as shown in Figure 7-3. There are two 10-foot travel lanes with paved shoulders, two feet in width, on both sides of the road.

TABLE 7-2
RECOMMENDED SHOULDER WIDTHS ON RURAL ROADS

Road Use	Rural Local Streets	Rural Collectors Streets	Rural Arterials Streets
ADT under 400	2 ft	2 ft	4 ft
ADT over 400 DHV* under 100	2 ft	4 ft	6 ft
DHV 100-200	4 ft	6 ft	6 ft
DHV 200-400	6 ft	8 ft	8 ft
DHV over 400	8 ft	8 ft	8 ft

*DHV (Design Hour Volume) is the expected traffic volume in the peak design hour (usually at commuter times), usually 13 to 25% of ADT.

The narrower streets and travel lanes generally improve the neighborhood aesthetics, and discourage speeding. They also reduce construction costs, stormwater run-off, and vegetation clearance. It is expected that on rural local streets, parking will be off-pavement.

The large right-of-way width reserves plenty of room for future expansion of the roadway to urban residential or collector street standards.

For the most part, rural streets will not include sidewalks. Pedestrians are generally accommodated on the shoulder of the road, as are bicyclists. However, in areas with high pedestrian or bicycle use, a pathway should be considered, preferably located on both sides of the roadway, separated from the roadway by at least five feet of greenbelt or drainage ditch.

Rural 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. Collectors can serve residential, commercial, industrial, and mixed land uses. Figure 7-3 shows a cross section with a 60-foot right-of-way and a 32 to 40 foot paved width. This width allows two twelve-foot travel lanes and four- to eight-foot shoulders. The width of the shoulder is determined by anticipated traffic volumes, as shown in Table 7-2. It is expected that on rural collector streets, parking will be off-pavement.

The recommended right-of-way allows for future expansion of the roadway to urban residential or collector street standards.

For the most part, rural collectors will not include sidewalks. Pedestrians are generally accommodated on the shoulder of the road, as are bicyclists. However, in areas with high pedestrian or bicycle use, a pathway should be

considered, preferably located on both sides of the roadway, separated from the roadway by at least five feet of greenbelt or drainage ditch.

If traffic volume forecasts exceed 5,000 vehicles per day, then driveways serving single-family houses, duplexes, or triplexes should not be permitted on that section.

Rural Arterial Streets

Arterial streets form the primary roadway network within and through a region. They provide a continuous roadway system which distributes traffic between different neighborhoods and districts. Generally, arterial streets are high capacity roadways which carry high traffic volumes with minimal localized activity. Access should be provided along an intersecting rural, local, or collector street. Direct assess to residential property along a rural arterial should be discouraged.

Figure 7-3 shows a cross section with a 60-foot right-of-way and a 36 to 40 foot paved width. This width allows two 12-foot travel lanes and six to eight-foot shoulders. The width of the shoulder is determined by anticipated traffic volumes, as shown in Table 7-2. No on-street parking should be allowed on arterial streets.

For the most part, rural arterial streets will not include sidewalks. Pedestrians are generally accommodated on the shoulder of the road, as are bicyclists. However, in areas with high pedestrian or bicycle use, a pathway should be considered, preferably located on both sides of the roadway, separated from the roadway by at least five feet of greenbelt or drainage ditch.

ACCESS MANAGEMENT

Access management is an important tool for maintaining a transportation system. An access management plan takes into consideration the number, spacing, type and location of accesses, intersection and traffic signals and their effects on capacity, speed, safety, and the general operational efficiency of a roadway. An effective management plan is necessary to operate a transportation system safely, at reasonable levels of service, and in a cost-efficient manner.

Access management addresses several areas of safety and efficiency concern on urban area transportation networks. A high number of driveways and other access points can limit the function of an arterial or collector by causing delay and safety hazards. Research has also shown a direct correlation between the number of access points and collision rates. Widening arterials and collectors to address traffic delays and safety hazards created by turning movements often leads to further increases in traffic and capital investments. Effective access management, therefore, is achieved by developing and implementing techniques and standards that maintain and enhance the capacity, safety, and level-of-service on an urban roadway system.

Access Management Techniques

The number of access points to a street can be restricted through the following techniques:

LEGEND

- NEAR-TERM PRIORITY
- MID-TERM PRIORITY
- LONG-TERM PRIORITY

(not to scale)

DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 7-6
PROPOSED PEDESTRIAN PROJECTS

- Restricting spacing between access points (driveways) based on the type of development and the speed along the street.
- Sharing of access points between adjacent properties.
- Providing access via other 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 streets.
- Providing acceleration, deceleration, and right turn only lanes.
- Stagger opposing driveways to minimize the number of conflict points between traffic using the driveways and through traffic.
- Installing median barriers to control conflicts associated with left turn movements.
- Installing side barriers to the property along the arterial to reduce access width to a minimum.

Access Management Standards

Access management standards can vary from total access control on freeways to the use of local and minor collector streets for access purposes, parking and loading. Table 7-3 describes recommended general access management guidelines by roadway functional classification.

TABLE 7-3
RECOMMENDED ACCESS MANAGEMENT STANDARDS

Functional Classification	Intersections				Signal Spacing[3]	Median Control[4]
	Public Road		Private Drive[2]			
	Type[1]	Spacing	Type	Spacing		
Arterial	at-grade	¼ mile	L/R Turns	300-500'	½ mile	Partial/None
Collector	at-grade	500 ft	L/R Turns	100'	¼-½ mile	None
Local Street	at-grade	200-400 ft	L/R Turns	Access to Each Lot	N/A	None
Downtown Commercial	at-grade	200-400 ft	L/R Turns	100'	400 ft	None
Alley	at-grade	200-400 ft	L/R Turns	Access to Each Lot	N/A	None

(1) For most roadways, at-grade crossings are appropriate.
(2) Generally, no signals are allowed at private access points on statewide and regional highways. If warrants are met, alternatives to signals include median closing. 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.
(3) Generally, signals should be spaced to minimize delay and disruptions to through traffic. Signals may be spaced at intervals closer than those shown to optimize capacity and safety. Pedestrian crossing is often benefited by a closer intervals of signal placing.
(4) Partial median control allows well-defined and channelized breaks in the physical median barrier between intersections. Use of physical median barriers can be interspersed with segments of continuous left-turn lane, or, if demand is light, no median at all. Medians can be beneficial to crossing pedestrians.

These access management standards are generally not intended to eliminate existing intersections or driveways. Future land use actions such as zone changes, plan amendments, redevelopment or new development should be required to address these guidelines. As these access management restrictions are applied over time, a street will

comply with the above mentioned standards. However, where there is a recognized safety problem, these standards can be utilized to retrofit existing roadways.

The *Oregon Highway Plan* specifies an access management classification system for State facilities. The 1991 *Oregon Highway Plan* delineates policies and strategies to guide the Oregon State Highway Division's operating and fiscal activities during the 1991-2010 period. The plan's mission is to design, build, and maintain quality highways and bridges that are safe, cost-effective, and that provide efficient access throughout the state. The plan includes a system to identify each facility's level of importance and access management classification to allow highway improvement needs and operational objectives to be prioritized throughout the state.

The Level of Importance (LOI) and Access Management Policies of the 1991 *Oregon Highway Plan* direct the specific operating characteristics of state highway facilities. The guidelines and classifications for access management along state highways that pertain to the Hermiston area are described as follows:

Level of Importance: Regional Highway

> *The primary function of highways in this level is to provide connections and links to areas within the regions of the state, between small urbanized areas and larger population centers, and to higher level facilities. A secondary function is to serve and users in the vicinity of these highways.*
>
> *The management objective of a regional highway is to provide for safe and efficient high-speed continuous-flow operation in rural areas, except where there are significant environmental constraints, and moderate to low-speed operation in urban and urbanizing areas with moderate interruptions to flow.*

Under the 1991 *Oregon Highway Plan*, a *Regional* LOI allows Highway 395 in Hermiston to be classified as either a *Category 4* or *5* highway. *Categories 4* and *5* are defined as follows:

Access Management Category 4

> *These highway segments provide for efficient and safe medium-to-high-speed and medium-to-high-volume traffic movements on higher function interregional and intercity highway segments. They may also carry significant volumes of longer distance intracity trips. They are appropriate for routes passing through areas that have moderate dependence on the highway to serve land access and where the financial and social costs of attaining full access control would substantially exceed benefits. This category includes a small part of the statewide facilities and most regional facilities.*

ODOT's *Category 4* policy states that the facility should maintain 500 feet between full-access private drives; 1/4 mile between public roads for urban/urbanizing sections of the highway; and traffic signal spacing of 1/2 mile or greater. Partial control of medians using barriers or raised curbs is provided.

LEGEND

- NEAR-TERM PRIORITY
- MID-TERM PRIORITY
- LONG-TERM PRIORITY

(not to scale)

TO THEATER LANE

TO UMATILLA RIVER

DAVID EVANS AND ASSOCIATES, INC
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 7-7
PROPOSED BICYCLE PROJECTS

Improvement 2:
Install Traffic Signal at Highway 395 and Theater Lane

Improvement 6:
Install Traffic Signal at Highway 395 and Punkin Center Road

Improvement 12:
Extend 4th Street from Theater Lane to Punkin Center Road

Improvement 13A:
Theater Lane Upgrade Highway 395 to 7th St. Alignment

Improvement 13B:
Theater Lane Upgrade 7th St. Alignment to East 10th St.

Improvement 7:
Option 1: Construct Bridge Across Umatilla River And Connect With Punkin Center Road

Improvement 10:
Improve and Relocate 10th Street from Elm Ave. to Punkin Center Rd.

Improvement 7:
Option 2: Construct Bridge Across Umatilla River and Connect With Elm Ave.

Improvement 15:
Elm Ave./Diagonal Rd. Intersection Improvements (Truck Route Evaluation)

Improvement 3:
Improve 11th Street/ Hermiston Ave. Intersection

Improvement 11:
Upgrade Umatilla River Road from Hermiston Ave. to Elm Ave.

Improvement 5:
Extend 4th Street from Elm Ave. to Theater Lane

Improvement 4:
Improve Highland Ave. and 11th St. Intersection

Improvement 9:
Widen and Improve 10th St. from Columbia Dr. to Elm Ave.

Improvement 1:
Install Traffic Signal at Main Street and 4th Street

Improvement 8:
Improve 1st Place/ Hermiston Ave. Intersection

0 1600 3200 4800
FEET

DAVID EVANS AND ASSOCIATES, INC.
2828 S.W. CORBETT AVENUE
PORTLAND, OR. 97201-4830 (503) 223-6663

FIGURE 7-8
STREET SYSTEM IMPROVEMENTS

Access Management Category 5

> *These highway segments provide for efficient and safe slower-to-medium-speed and low-to-high volume traffic movements on intercity and intercommunity routes. This category will be assigned only where there is little value in providing high speed travel. Providing for reasonable and safe access to abutting property is a major purpose of this access category*

The *Category 5* policy states that the facility should maintain 300 feet between full-access private drives; 1/4 mile between public roads for urban/urbanizing sections of highway; and 1/4 mile or greater spacing between traffic signals. Median control is limited. Table 7-4 shows the access management classification system guidelines for *Categories 4* and *5*.

TABLE 7-4
1991 OREGON HIGHWAY PLAN
ACCESS MANAGEMENT CLASSIFICATION SYSTEM

Category	Access Treatment	LOI	Urban-Rural	Intersection				Signal Spacing	Median Control
				Public Road Type	Spacing	Private Drive Type			
4	Limited Control	Statewide/ Regional	Urban	At grade/ Interchange	1/4 mile	Lt./Rt. Turns	500 ft	1/2 mile	Partial/None
5	Partial Control	Regional/District	Urban	At grade	1/4 mile	Lt./Rt. Turns	300 ft	1/4 mile	None

Special Access Management Areas in Hermiston

For the purposes of this Transportation System Plan, special access management areas have been designated in Hermiston along the Highway 395 corridor. In order to maintain and enhance the capacity, safety and level-of-service along Highway 395 in the Hermiston area, access management plans and policies have been developed in accordance with the 1991 *Oregon Highway Plan*. Although Umatilla County and the City of Hermiston may designate State highways as arterial roadways within their transportation systems, the access management categories for these facilities should generally follow the guidelines of the *Oregon Highway Plan*.

For the purposes of this Transportation Plan and in accordance with the *Hermiston-Umatilla Highway 395 Corridor Land Use/Transportation Plan*, Highway 395 in the Hermiston area has been divided into three management segments: (1) Joy Lane to Punkin Center Road; (2) Punkin Center Road to SE View Drive; and (3) SE View Drive to Feedville Road. The recommended access management categories for the section of Highway 395 between Joy Lane and Punkin Center Road is *Category 4*; between Punkin Center Road and SE View Drive *Category 5* ; and between SE View Drive and Feedville Road *Category 4*.

The recommended access management guidelines for these segments of Highway 395 in Hermiston are defined in Table 7-5.

TABLE 7-5
RECOMMENDED ACCESS MANAGEMENT GUIDELINES
FOR THE HIGHWAY 395 CORRIDOR

Begin Cross Street/End Cross Street	Spacing Between Driveways	Spacing Between Intersections	Spacing Between Signals
Joy Lane Road to Punkin Center Road	300 feet	500 feet	1/2 mile
Punkin Center Road to SE View Drive	150 feet	300 feet	1/4 mile
SE View Drive to Feedville Road	300 feet	500 feet	1/2 mile

According to the *Oregon Highway Plan*, *Category 4* segments of Highway 395 should maintain LOS "C" and *Category 5* segments of Highway 395 (downtown Hermiston) should maintain LOS "D".

A section of the access management segment between Punkin Center Road and SE View Drive goes through the downtown commercial center of Hermiston. This section of roadway is part of the City's grid system. Downtown commercial arterial streets typically have blocks 200-400 feet long, driveway access sometimes as close as 100-foot intervals, and signal spacing may be as close as every 400 feet. The streets in downtown areas must have sidewalks and crosswalks, along with on-street parking. The need to maintain these typical downtown characteristics must be carefully considered along with the need to maintain the safe and efficient movement of through traffic. Therefore, the *Oregon Highway Plan* guidelines may be too restrictive along the downtown corridor. Recommendations for the downtown corridor are summarized in Table 7-6 below.

TABLE 7-6
RECOMMENDED ACCESS MANAGEMENT GUIDELINES
FOR THE HIGHWAY 395 DOWNTOWN CORRIDOR

Begin Cross Street/End Cross Street	Spacing Between Driveways	Spacing Between Intersections	Spacing Between Signals
Joy Lane to Highland Avenue	150 feet	300 feet	400 feet ?

MODAL PLANS

Pedestrian System Plan

The pedestrian system should provide direct and safe access to all areas of the city and to every land use. Properly configured, the system encourages walking and enables neighbors to know each other and to enjoy their community. The system comprises sidewalks, paths, shoulders in rural areas, crosswalks, curb ramps, signals, signing, and supporting facilities.

Implementation

Every paved street should have sidewalks on both sides of the roadway meeting the requirements set forth in the street standards. Pedestrian facilities should be provided between all buildings and abutting streets and adjacent neighborhoods. (Ordinances specifying these requirements are included in Chapter 9.)

Sidewalks should be added as new streets are constructed and existing streets reconstructed. The implementation program (end of Chapter 7) identifies an approximate schedule for these improvements. Sidewalks and other pedestrian facilities may also be added as stand-alone projects as discussed in the next subsection.

Proposed Projects

Table 7-7 lists the specific improvements to be accomplished over the next 20 years and rates them to help the City determine implementation priorities. Priorities are merely a guide for pursuing projects by incorporation into the capital improvements list. The proposed pedestrian projects are shown Figure 7-4.

Note that shoulder projects, which serve cyclists and other road users as well as pedestrians, are included only under the bicycle system plan to avoid double counting.

Unit Costs

Cost estimates are based on the unit costs in Appendix E. The estimated cost represents what it would take to add the improvement to the existing road. Most projects can be accomplished at reduced cost by combining them with other work such as road widening. It has been noted in Table 7-7 if a proposed walkway project can be made part of an street improvement alternative stated in Chapter 5. Because costs vary over time, the figures provided are rough estimates intended to help set priorities and secure funding.

Other Streets

Spot projects along existing streets and intersections, where maintenance becomes a necessity, such as sidewalk infill, crosswalk striping, curb ramps, obstruction removal, and access, improvements should be completed incrementally until all identified needs are satisfied. Areas around schools and shopping areas generate the most pedestrian traffic and should be dealt with first, followed by outlying areas.

TABLE 7-7
PROPOSED PEDESTRIAN PROJECTS

Location	Project Description	Length (ft)	Priority	Cost ($)
Hwy 395 (Theater Lane to SE Port Drive)	Sidewalk repair, curb ramps, driveway management and refuge islands (4 lanes)	890	Near-Term	23,100
East 4th Street (Elm Avenue to Highland Avenue)	Sidewalk infill, 28 curb ramps	1,630	Near-Term	53,350
East Main Street (East 7th Street to East 10th Street)	Sidewalks	5,100	Near-Term	127,500
East 10th Street (Elm Avenue to Highland Avenue)	Sidewalk infill	7,455	Near-Term	186,375*
Near-Term Total				**390,325**
Highland Avenue (SW 11th Street to SE 5th Street)	Sidewalk infill	500	Mid-Term	12,500
Hermiston Ave. (West 11th St. to 1st Pl.)	Sidewalk infill, 36 curb ramps	1,400	Mid-Term	51,200
1st Street (Hermiston Avenue to Highland Avenue)	Sidewalk infill, 10 curb ramps	1,900	Mid-Term	52,000
Orchard Avenue (West 11th Street to Highway 395)	Sidewalk infill, 18 curb ramps	2,420	Mid-Term	68,600
Elm Avenue (West 7th Street to Highway 395)	Sidewalks	4,470	Mid-Term	111,750
Diagonal Road (Main Street to NE 10th Street)	Sidewalks	5,110	Mid-Term	127,750
West 11th Street (Linda Avenue to Joseph Avenue)	Sidewalk infill	6,500	Mid-Term	162,500
Mid-Term Total				**586,300**
1st Place (Elm Avenue to Hermiston Avnue)	Sidewalks	5,600	Long-Term	140,000*
Jennie Ave. (1st Place to NE 4th Street)	Sidewalks	4,700	Long-Term	117,500
1st Street (Highland Avenue to SE 4th Street Ext.)	Sidewalk infill with curbs, 18 curb ramps	3,900	Long-Term	125,100
Long-Term Total				**382,600**
	Near-Term	(2.85 mi)		390,325
	Mid-Term	(4.22 mi)		586,300
	Long-Term	(2.69 mi)		382,600
Total Pedestrian Projects				**1,359,225**

Notes: (1) All sidewalks assumed 5-foot-wide with curb ramps at intersections (including most T-intersections). Number of curb ramps is indicated. Total length of new sidewalk or infill on both sides of roadway.
*(2) *Project may be incorporated into street improvement alternative (Chapter 5).*
(3) Near-Term: next 5 years; Mid-Term: 5-10 years; Long-Term: 10-20 years.

Bicycle System Plan

The bicycle system plan aims to provide direct and safe access to all areas of the city. Properly configured, the system encourages bicycling and enables people of average skill to reach most destinations comfortably. The system comprises bike lanes, paths, shoulders on rural roads, shared roadways on low-traffic streets, signals, signing, pavement markings, and parking facilities.

Implementation

Every arterial and collector street should have a designated bikeway (typically bike lanes unless traffic volume is below 3,000 cars per day in which case a wide outside lane is usually adequate) meeting the requirements set forth in the street standards and in the Oregon Bicycle and Pedestrian Plan. For example, bike lanes should be one-way, marked in the same direction as the adjacent travel lane, five or six feet wide, and located against the curb except where there is curb parking or a right-turn lane in which case the bike lane is located between the travel lane and the parking or turn lane.

The Transportation Advisory Committee (TAC) made a determination that bicycle lanes along Highway 395 would not be designated because of the heavy truck traffic and narrow right-of-way. Instead the TAC recommended that bicyclists be encouraged to use the East 4th Street.

Bicycle access should be provided between adjacent neighborhoods in a direct manner, and bicycle parking should be provided at all major destinations.

Shared roadways, where bicyclists share normal travel lanes with motorists, are appropriate for local streets where speeds and volumes of motor vehicles are relatively low (less than 1,000 cars per day).

Shoulders of at least four feet are usually adequate on rural roads that lack a significant destination (school, park, residential subdivision, etc.). Wider shoulders are desirable on truck routes, where traffic volumes are over 1,000 cars per day, and near pedestrian destinations.

Functional bikeways depend on regular maintenance. Sweeping, surface repair, calibration of signal sensors, restriping, and control of vegetation are essential to useful, attractive and enduring facilities. Regular maintenance is often the easiest and most cost-effective means of enhancing the bikeway system. Construction projects should consider a long-term commitment to maintenance for bikeways.

Bikeways should be added as new streets are constructed and existing streets reconstructed. The implementation program (end of Chapter 7) identifies an approximate schedule for these improvements. Bikeways and other bicycle facilities may also be constructed as stand-alone projects where the cost is low or public support is high.

Proposed Projects

The recommended bicycle projects are illustrated in Figure 7-5. Table 7-8 lists the specific improvements that will be needed over the next 20 years and rates them to help the City determine implementation priorities. The most important attributes in rating a project are its potential use, barrier removal, connectivity, and cost effectiveness. Appropriate design to full standard is assumed unless otherwise stated; projects proposed to lesser

standards should be examined to determine if the compromise jeopardizes safety or functionality. Priorities are merely a guide for pursuing projects by incorporation into the capital improvements list. It is difficult to know exactly what developments will be proposed and what funding opportunities will be realized. Projects should be sequenced to take advantage of other road work being performed, and a project should not be overlooked simply because it is a low priority if conditions are favorable to proceed.

Unit Costs

Cost estimates are based on the unit costs in Appendix E. The estimated cost represents what it would take to add the improvement to the existing road. Most projects can be accomplished at reduced cost by combining them with other work such as an overlay. In many cases, the recommended work includes general roadway improvements, such as shoulders, that benefit all users and should be done as part of general roadway upgrades. It has been noted in Table 7-8 if a proposed bicycle improvement project can be part of a street improvement alternative stated in Chapter 5. Because costs vary over time, the figures provided are rough estimates intended to help set priorities and secure funding.

Other Streets

Spot projects, such as grate improvements, pavement patching, bike racks and access improvements, shall be completed incrementally until all identified needs are satisfied. Areas radiating from schools, shopping areas and major employers generate the most bicycle traffic and should be dealt with first, followed by outlying areas.

Railroad Crossings

Railroad crossings should be upgraded to concrete aprons to eliminate hazards posed to narrow wheels such as those on wheelchairs and bicycles. A joint agreement with Union Pacific Railroad should be pursued to provide concrete rail approaches.

Bicycle Parking

Bicycle racks should be installed in front of downtown businesses, large employers, and all public facilities (schools, post office, library, city hall, and parks). Typical rack designs cost about $50 per bicycle plus installation. An annual budget of about $2,000 should be established to place racks where needed.

DEA INC.

TABLE 7-8
PROPOSED BICYCLE PROJECTS

Location	Project Description	Length (ft)	Priority	Cost ($)
West 11th Street (Elm Avenue to Highland Avenue)	Stripe bike lanes (6B-11-11-6B north of Linda Ave., 7P-6B-12-12-6B south of Linda Ave.)	5,200	Near-Term	4,160
Near-Term Total				**4,160**
Hurlburt Avenue (Highway 395 to East 4th Street)	Stripe bike lanes (5B-11-11-5B-8P)	1,400	Mid-Term	1,120
East 4th Street (Main Street to Highway 395)	Stripe bike lanes (6P-4.5B-10-10-4.5B) north of Highland Ave., (7P-4.5B-10-10-4.5B-7P) south of Highland Ave.	2,600	Mid-Term	2,080
Orchard Avenue (SW 11th Street to SW 7th Avenue)	Stripe bike lanes (7P-5B-10-10-5B)	2,600	Mid-Term	2,080
Orchard Avenue (SW 7th Street to Highway 395)	Stripe bike lanes (7P-5B-12-12-6B)	2,600	Mid-Term	2,080
East 4th Street (Elm Avenue to Main Street)	Stripe bike lanes (6B-11-11-6B)	3,250	Mid-Term	2,600
Elm Avenue (West 7th Street to Highway 395)	Stripe bike lanes (Street width varies; widen west of RR tracks for 800 ft from 24 to at least 34 ft) (6B-11-11-6B)	2,540	Mid-Term	26,032
1st Place (Elm Avenue to Hermiston Avenue)	Widen from 24 to 34 ft with 6-ft shoulders, repave, and stripe for shoulders (6Sh-11-11-6Sh)	3,235	Mid-Term	155,280* **
East 10th Street (Elm Avenue to Highland Avenue)	Widen to 34 ft (from 26, 20 and 32-ft segments) and stripe 6-ft bike lanes (6B-11-11-6B)	5,210	Mid-Term	197,100**
Mid-Term Total				**388,372**
Diagonal Road (NE 7th Street to NE 10th Street)	Stripe bike lanes (7P-5B-12-12-6B west of 8th St.; 5.5B-11-11-5.5B)	3,100	Long-Term	2,480
Hermiston Avenue (West 11th Street to 1st Place)	Stripe bike lanes (7P-6B-12-12-6B west of 3rd St.; 7P-6B-12-12-6B-7P)	4,750	Long-Term	3,800
Elm Avenue (West 11th Street to West 7th Avenue)	Widen from 24 to 34 ft with 6-ft shoulders and striping (6Sh-11-11-6Sh)	2,620	Long-Term	78,600*
NE 10th Street (Theater Lane to Elm Avenue)	Widen from 22 to 32 ft with 5-ft shoulders (wider if >2000 ADT), and stripe for shoulders (5Sh-11-11-5Sh)	3,310	Long-Term	99,300* **
Theater Lane (NW Geer Road to NE 7th Street Alignment)	Widen from 22 to 32 ft with 5-ft shoulders (wider if >2000 ADT), and stripe for shoulders (5Sh-11-11-5Sh)	5,300	Long-Term	159,000*
Highland Avenue (Umatilla River to SW 11th Avenue)	Widen from 28 to 34 ft with 6-ft shoulders, repave, and stripe for bike lanes (5B-12-12-5B) Shoulder/Bile Lanes	5,500	Long-Term	202,400
Long-Term Totals				**545,580**
	Near-Term	(2.7 mi)		4,160
	Mid-Term	(7..3 mi)		388,372
	Long-Term	(10.0 mi)		545,580
Total Bicycle Projects				**938,112**

Notes: *(1) Lane configurations are presented as a number series, in feet, from curb-to-curb (or edge-to-edge). For example, 7P-5B-11-12C-11-6B (52) is a 7-foot parking lane, 5-foot bike lane, two 11-foot travel lanes with a 12-foot center turn lane, and a 6-foot bike lane for a total roadway width of 52 feet. Lanes are normally listed from west-to-east or north-to-south.*

(2) Length given is one-way, but cost estimate includes both sides of roadway.

(3) Costs associated with repaving: a layer of asphalt 2 inches thick at $18/linear foot for a 34-foot roadway.

*(4) *Project includes pedestrian usage*

*(5) **Project may be incorporated into street improvement alternative (Chapter 5).*

(6) Near-Term: next 5 years, Mid-Term: 5-10 years; Long-Term: 10-20 years.

Street System Plan

The street system plan outlines a series of improvement options that are recommended for construction within the Hermiston area during the next 20 years. Each of these options have been discussed in Chapter 6 (Improvement Options Analysis). The proposed street system options are summarized on Table 7-9 and shown on Figure 7-6 through Figure 7-8.

The Transportation Advisory Committee (TAC) evaluated and ranked the transportation alternatives detailed in Chapter 6 dealing with the street system. A total of 15 improvements were selected and prioritized. The ranking was based on their local knowledge of the Hermiston area, traffic circulation and traffic safety concerns, and cost of the improvements.

TABLE 7-9
TRANSPORTATION IMPROVEMENT PROJECTS[1]

Project Title	Cost	Notes
Improvement 1: Signalize the Intersection of Main Street and East 4th Street	$200,000	
Improvement 2: Signalize the Intersection of Highway 395 and Theater Lane	$200,000	
Improvement 3: Improve the 11th Street and Hermiston Avenue Intersection	($2,500) Option 1- Geometrical Imp. ($220,000) Option 2- Traffic Signal	
Improvement 4: Improvements at Highland Avenue and 11th Street Intersection Reshaping	$208,480	
Improvement 5: East 4th Street Extension From Elm Avenue to Theater Lane	$1,140,000	
Improvement 6: Signalize the Intersection of Highway 395 and Punkin Center Road	$250,000	
Improvement 7: Construction of the Umatilla River Bridge[2]	Option 1 - Along Elm Ave. ($15,941,800) Option 2 - Along Punkin Center Rd. ($14,804,400)	
Improvement 8: Improve 1st Place and Hermiston Avenue Intersection	Vacate Hermiston Avenue/Tum-a-Lum Road and extend Ridgeway Avenue to Highway 396. $868,750	
Improvement 9: East 10th Street Upgrade From Columbia Drive to Elm Avenue	$2,542,000	
Improvement 10: East 10th Street Upgrade From Elm Avenue to Punkin Center Road	$2,654,000	
Improvement 11: Upgrade Umatilla River Road Between Elm Avenue and Hermiston Avenue	$1,155,000	
Improvement 12: East 4th Street Extension From Theater Lane to Punkin Center Road	$1,359,920	
Improvement 13a: Upgrade Theater Lane from Highway 395 east to 7th Street Alignment	$988,000	
Improvement 13b: Upgrade and Realign Theater Lane from 7th Street Alignment east to 10th Street	$1,195,000	
Improvement 14: Upgrade Local Unpaved Roads	$2.00/sq ft.	
Improvement 15: Improve Elm Ave./Diagonal Rd. Intersection (Truck Route Evaluation)	$540,000 ($200/ea)- For new truck route signs	
Total Cost		**$29,462,950**

Notes: *1) Individual Bike and Pedestrian Projects are not included in this prioritized list.*

2) Implementation of this improvement would require coordinating between city and county officials, and would also require a goal exception and/or an extension of the UGB line.

3) Projects not included in total project cost:

- Improvement 3: Option 1 - Geometrical Improvement

- Improvement 7: Option 2 - Punkin Center Road Route

- Improvement 14: Unpaved Roads

- Improvement 15: Truck Route Signs

Transportation Demand Management Plan

Transportation Demand Management is a technique applied to peak travel times to help reduce the use of the transportation network system. A variety of methods are utilized in combination to yield a more efficient transportation system that does not rely upon building new or wider roads to accommodate traffic growth. Successful techniques and methods include carpooling and vanpooling, alternative work schedules, bicycle and pedestrian facilities, and programs focused on high density employment areas.

Alternative Work Schedules

Alternative work schedules include such techniques as flex-time and staggered work hours. These flexible work schedules are principally effective with large employers. Peak period traffic volumes can be diffused over longer time intervals to provide more efficient service from a fixed capacity roadway. Several major employers in the Hermiston area already offer flexible arrival and departure times for their employees. Alternative work schedules should be an encouraged policy for any new or expanding business or industry in the area.

Carpooling and Vanpooling

Carpooling and vanpooling programs help to reduce travel and parking requirements as well as to alleviate traffic congestion and the associated air pollution on fixed roadway systems. Employers can encourage ridesharing through a variety of promotional incentives that include providing matching services subsidizing vanpools, establishing preferential car and vanpool parking, and by providing convenient drop-off sites. The City of Hermiston can encourage carpooling and vanpooling by establishing a ridesharing program that allows interested drivers to call a toll-free number to receive information about coordinating ridesharing with other interested parties.

Bicycle/Pedestrian Facilities

Bicycling and walking can be encouraged by implementing strategies discussed earlier in this plan. Providing bicycle parking, showers and locker facilities helps to encourage bicycle and pedestrian commuting.

Telecommuting

Telecommuting is a recent phenomenon that has granted persons the capability of performing their work duties at home. The use of telecommuting is likely to continue to grow over the next two decades. If telecommuting expands as anticipated, it will have a noticeable impact on reducing trips during peak hour travel times.

Public Transportation Plan

Public transportation in Hermiston consists primarily of a demand response system for local trips. This includes taxicab service and a senior citizen and special needs transport service. Public transportation for regional and

long distance trips is provided by commercial bus service. There are currently no plans to expand any of these transportation services. Increased usage of these services should be encouraged.

The existing public transportation services in Hermiston meet the requirements of the Oregon Transportation Plan. Convenient connections and service frequencies are provided to users. Growth should be guided to encourage future public transportation development.

Rail Service Plan

Freight rail service is available in Hermiston. Passenger service, provided by Amtrak was discontinued in 1997.

The City of Hermiston needs to recognize the importance of having passenger service and land support by promoting the service to Hermiston residents and outlying communities that have been served by the station at Hinkle Railyards for over 100 years.

Freight rail service in Hermiston is currently expanding as a result of the merger between Southern Pacific and Union Pacific Railroads. It is expected that freight rail activity at the Hinkle Railyards will increase by over 40 percent in the near future. In addition to the rail merger, the Hinkle Railyard was recently certified to receive Enterprise Zone benefits. A locomotive repair service is expected to begin operating at the railyards in the near future, adding close to 200 new jobs in the community. The city should continue to encourage and support the growth of freight rail service.

Air Service Plan

The Hermiston Municipal Airport is located 1.5 miles from downtown. No commercial air service is provided at the Hermiston Municipal Airport. The nearest commercial airport is located in Pendleton, approximately 25 miles south of Hermiston. The municipal airport is primarily used by some of the larger businesses and public agencies in the area. Because the airport has its own Master Plan, recommendations for future improvements are not within the scope of this Transportation Plan. The city should, however, consider the impacts of all future land use actions on the airport.

Pipeline Service Plan

There are future plans to expand the four-inch diesel line connection to the Hinkle Railyards. The line currently operates at 75 percent of capacity and is capable of handling future demand over the next 20 years.

Also, there are no future plans to expand the 42-inch regional water main which traverses the study area.

The planning area does have a number of surface irrigation water canals. These are operated by the Hermiston Irrigation District. The City of Hermiston and Umatilla County should coordinate road design plans with the water district for new streets and roads that cross over the existing irrigation canals.

CHAPTER 8: FUNDING OPTIONS AND FINANCIAL PLAN

The 1996-1997 Municipal Budget for the City of Hermiston acknowledges the Goals and Policies updated by Hermiston's Mayor and City Council. These goals and policies center around public safety, community development and transportation planning to ensure a high quality of life for the residents of Hermiston. This commitment tempered by fiscal reality will guide transportation investment decisions in Hermiston over the next 20 years.

The successful implementation of the Transportation System Plan will require that Hermiston work with ODOT and Umatilla County to secure adequate funding to finance new transportation projects during the next 20 years. The formulation of a comprehensive Capital Improvement Plan (CIP) will enable Hermiston to schedule the construction and funding of new improvements that address existing capacity and safety issues and those improvements that will be needed to accommodate future population and employment throughout the urban area. This chapter provides an analysis of available funding options that can be considered by Hermiston and provides a framework for a 20 year Capital Improvement Plan.

The Hermiston Transportation System Plan identifies approximately $30 million in potential transportation improvements requiring funding over the next 20 years. It is expected that transportation system improvements will be made to city streets, county roads, and state highways within the Hermiston Urban Growth Boundary. This Transportation System Plan cost estimate only covers the costs associated with constructing new transportation system improvements and does not cover any costs associated with maintaining the current or future system. This funding analysis assumes that there will be a cost sharing of future improvements by Hermiston, Umatilla County, and ODOT. Close coordination on scheduling and funding transportation improvements will be vital for the timely construction of the identified transportation system improvements.

Although this Transportation System Plan considers a 20-year planning horizon, the timing for specific transportation system improvements will be governed by the rate of population and employment growth within the urban area. In recent years, Hermiston has experienced stable to low growth. However, Hermiston is beginning to experience a growth spurt. If this higher growth rate continues, Hermiston, Umatilla County, and ODOT may need to consider constructing Transportation System Plan improvements at an accelerated rate. If, however, the growth rate levels off to its historic levels, then it is more likely the city and ODOT will be able to schedule future transportation system improvements over the entire 20 year Transportation System Plan life span.

At the present time, Hermiston is making necessary street, pedestrian, and bicycle improvements within the city on an annual basis. Projects that are funded are typically identified in the public facilities plan and have been identified and prioritized by the Public Works Department. This yearly capital outlay funding has been successful in financing a small number of projects each year, but the success of the program is limited due to inadequate city funding and does not address needed transportation system improvements within the study area outside the city limits. In order to implement the Transportation System Plan, Hermiston will need to work closely with ODOT and Umatilla County to increase funding for multimodal transportation projects and to consider needed improvements throughout the urban area.

This section of the Transportation System Plan discusses the various funding and financing options that may be available to Hermiston to meet its 20 year transportation funding needs. This chapter includes a review of historic street improvement funding sources, potential new revenue sources, a review of transportation system funding requirements, and general recommendations for financing future transportation system improvements. In addition, a

brief analysis of how Umatilla County and ODOT finance transportation system improvements is included to provide context on the ways different governmental agencies can work together in the future.

HERMISTON STREET IMPROVEMENT FUNDING SOURCES

Hermiston accounts for transportation related revenues and expenditures in three main funds. Each fund is accounted for separately in the annual fiscal year budget. These funds include:

- The General Fund;
- The State Street Tax Fund;
- The Reserve Fund; and
- The Wal-Mart Infrastructure Fund.

In addition to these funds, Hermiston has historically employed Local Improvement Districts to fund localized transportation improvements. The city has also historically obtained a variety of state and federal transportation grants.

General Fund

The General Fund provides for salaries and benefits of city workers and funds the operations of several city transportation projects and amenities including the senior and disabled transit program and the municipal airport as well as transferring monies to the Street Fund. The general fund receives money from approximately 49 different sources. Some of the major sources include property taxes, franchise income and state liquor and cigarette prorations. A summary of the General Fund over the last four years is detailed in Tables 8-1 and 8-2.

Senior and disabled transit program provides dial-a-ride mobility services for the elderly and handicapped in Hermiston. This program was originally funded through the Federal Revenue Sharing program in the early 1970s and has since been funded through the general fund and grants. In the current fiscal year, the city of Hermiston will contribute $79,500 to the senior and disabled transit service.

The municipal airport is the largest transportation related expense of the general fund. The general fund released about $150,000 per year over the last four years for the operations and maintenance of the airport.

The General Fund also transfers money to the Street Tax Fund on a per-project basis. Over the last four years, the General Fund has transferred between $17,875 to $212,840 to the Street Tax Fund. In the 1996-97 fiscal year, $175,100 in General Fund moneys are to be transferred to the Street Tax Fund.

TABLE 8-1
HERMISTON GENERAL FUND: HISTORICAL REVENUES (BY CATEGORY)

Description	1993/1994	1994/1995	1995/1996	1996/1997 (adopted)
Property Taxes	$1,489,136	$1,937,962	$1,813,145	$1,922,265
Licenses & Franchises	416,761	419,872	364,090	369,050
Fines and Penalties	104,063	112,018	90,000	90,000
Use of City Money	123,956	222,027	130,500	155,500
From Other Agencies	528,337	545,090	649,800	654,000
Service Charges	258,323	388,263	253,350	281,800
Non-Revenue Receipts	8,397	22,059	3,500	3,500
Miscellaneous Revenues	412,106	514,681	370,000	500,000
Cash Forward	149,230	324,425	695,465	50,685
General	3,490,309	4,486,397	4,369,850	4,026,800
Total Revenues	**$6,980,618.00**	**$8,972,794.00**	**$8,739,700.00**	**$8,053,600.00**

TABLE 8-2
HERMISTON GENERAL FUND: HISTORICAL EXPENDITURES (BY CATEGORY)

Description	1993/1994	1994/1995	1995/1996	1996/1997 (adopted)
Personal Services	$2,026,945	$2,189,448	$2,528,885	$2,664,205
Materials and Services	663,209	596,036	820,210	900,645
Capital Outlay	91,059	317,377	120,975	117,100
Transfers:				
Reserve Fund	89,460	55,840	213,840	144,750
Street Fund	64,300	17,875	212,840	175,100
Community Center		263,725	298,100	
Bonded Debt			150,000	
Unapplied Balance			25,000	25,000
Totals	**$2,934,973**	**$3,440,301**	**$4,369,850**	**$4,026,800**

STREET TAX FUND

The purpose of the Hermiston State Street Tax Fund is to protect, maintain and improve the roads, curbs, gutters sidewalks and storm drains of the city. A summary of the State Street Tax Fund over the last four years is detailed in Tables 8-3 and 8-4.

Revenues received from the State of Oregon, such as gas taxes and vehicle registration fees, will provide about 38 percent of the State Street Fund revenues in the 1995/1996 budget year. This is down from previous years that have had over 40 percent of the fund coming from these sources. The primary reason for this decline is the large beginning fund balance left over from 1994/1995. The other significant revenue source is provided by a transportation serial levy. The Hermiston State Street Fund is used for both new construction and maintenance of the local street system.

TABLE 8-3
HERMISTON STREET TAX FUND: HISTORICAL REVENUES

Description	1993/1994	1994/1995	1995/1996	1996/1997
State Highway Allocation	$457,844	$468,420	$447,500	$447,500
Transfer from General Fund	64,300	17,874	212,840	175,100
Total Revenues	**$522,144**	**$486,294**	**$660,340**	**$622,600**

TABLE 8-4
HERMISTON STREET TAX FUND: HISTORICAL EXPENDITURES

Description	1993/1994	1994/1995	1995/1996	1996/1997
Personal Services	$229,563	$195,914	$243,085	$252,500
Materials and Services	$144,281	$185,696	162,255	195,200
Capital Outlay	0	0	30,000	$0
Transfer for Reserve	148,300	104,684	225,000	174,900
Totals	**$522,144**	**$486,294**	**$660,340**	**$622,600**

Reserve Fund

The Hermiston Reserve Fund accounts for long term appropriations for the city. Several of these are transportation related including transportation planning, airport facilities, streets and bicycle facilities. This TSP will define several other projects that will be included in future Reserve Fund allocations. The Reserve Fund receives resources through transfers from other city funds. Tables 8-5 and 8-6 detail the resources and expenditures for this fund over the last four fiscal years.

TABLE 8-5
HERMISTON RESERVE FUND: HISTORICAL REVENUES

Description	1993/1994	1994/1995	1995/1996	1996/1997
Transient Room Tax	$	$	$13,600	$14,400
Miscellaneous Income:	$44,102	$57,080		
Transfers From:				
General Fund	89,460	55,840	213,840	144,750
Street Fund	148,300	104,684	225,000	174,900
Transient Room Tax	8,000	10,000		
Utility Fund	233,200	298,765	504,250	65,000
Cash Forward	862,515	743,811	1,320,445	1,628,965
Total Revenues	**$1,385,577**	**$1,270,180**	**$2,277,135**	**$2,028,015**

TABLE 8-6
HERMISTON RESERVE FUND: HISTORICAL EXPENDITURES

Description	1993/1994	1994/1995	1995/1996	1996/1997
Materials and Services	$32,884	$21,906	$68,670	$66,385
Capital Outlay	202,636	441,060	2,098,265	1,961,630
Transfers:				
Sewer Improvement	120,000			
Groundwater Recharge	65,000	178,800	78,200	
Wal-Mart Infrastructure			32,000	
Total Expenditures	**$420,520**	**$641,766**	**$2,277,015**	**$2,028,015**

WAL-MART INFRASTRUCTURE FUND

The Wal-Mart Infrastructure Fund was created in the 1995-96 fiscal year as part of the City of Hermiston's policy to individually track large projects and capital investments. The fund was created to administer grants and loans to construct the needed improvements for the Wal-Mart distribution center. The fund has had $820,000 in resources over the last two years from state and local sources, including $288,000 per year from ODOT. A total of $320,000 will be spent on transportion-related expenses; roadway construction accounts for $290,000 of this amount.

ALTERNATIVE REVENUE SOURCES

In order to finance future transportation system improvements within the Hermiston urban area, it will be important to consider a range of alternative sources. The use of alternative revenue funding is a trend throughout Oregon as the full implementation of Measure 5 has significantly reduced property tax revenues and the as of yet unknown impacts of Measure 47 will create further revenue reductions. Not all of the alternative revenue sources covered in this chapter may not all be appropriate for Hermiston or Umatilla County. However, a full overview is being provided to enable the city and county to consider a range of options to finance future transportation improvements during the next 20 years.

MEASURE 47

Any new funding sources will need to be reconciled with Measure 47. 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 1997/1998 property taxes to the lesser of 1995/1996 tax minus 10 percent, or 1994/1995 tax, whichever is lower. It limits future annual property tax increases to three percent per year 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 League of Oregon Cities (LOC) estimated that direct revenue losses to local governments, including school districts, will total $467 million in fiscal year 1988, $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 1988, $27 million in 1999, and increasing thereafter because of increased personal and corporate tax receipts due to lower property tax deduction.

Measure 47 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 nonschools 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 Oregon State Legislature will be required to pass implementation statutes during the 1997 legislative session. It is expected that both legislative and judicial action will be necessary to clarify the implementation of Measure 47.

The implementation of Measure 47 will require that cities and counties protect and prioritize funding for public safety and public education. However, the measure provides no guidance or certainty on how local governments are to protect and prioritize funding or what can be classified as a public safety or public education program. Another major requirement of Measure 47 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.

It is not possible to predict what legislative or judicial actions will take place to implement Measure 47. The Governor's Office is in the process of preparing the new budget for the next biennium. Based 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 47. Instead, the new budget will focus on retaining and increasing support for basic school education programs. Again, the preliminary state budget will likely be modified during the next legislative session.

This will directly impact the ability of cities to pay for transportation improvements out of general funds or other funds created through property taxes. In addition, it may impact the ability of cities to create alternative funding sources if those sources are perceived to be in replacement of property tax revenue.

Property Taxes

Property taxes are the major revenue source for Oregon cities. Property taxes are levied through 1) tax base levies, 2) serial levies, and 3) bond levies. The most common method uses tax base levies which are continuous 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.

The historic dependence on property taxes is changing with the passage of Ballot Measure 5 in the early 1990s. With the 1995/1996 budget year, Ballot Measure 5 will be fully implemented. In brief, Ballot Measure 5 limits the property tax rate for purposes other than payment of certain voter approved general obligation indebtedness. With full implementation in the current budget year, 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. Excluded from the limitation is debt service used to retire voter approved general obligation bonds. 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 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. This proportional reduction in the taxing rate is commonly referred to as compression of the tax rate.

For the 1995/96 fiscal year, Hermiston had a taxing rate of 5.89 per thousand. Other taxing districts share the $10 non-school limitation. Historically, Hermiston has most commonly used property taxes (serial levies) to fund public works functions. The city has also relied on State of Oregon shared revenues, Federal ISTEA Grants, and Local Improvement Districts to fund both public works maintenance and new construction. The shared revenues are derived from the local allocation of state gas tax and vehicle registration fees.

DEBT FINANCING

There are a number of debt financing options available to the city. The use of debt to finance capital improvements must be balanced with the city's ability to make future debt service payments and to deal with the impact on its overall debt capacity and underlying credit rating. Debt financing should be viewed not as a source of funding, but as a time shifting of funds available to the city. Its use should be incorporated into the overall financing plan which may include some "pay-as-you-go" funding methods which utilize currently available revenues to meet a portion of the city's transportation needs.

While a wide variety of debt financing techniques exist, some of the primary financing tools used for transportation related projects are listed below. These include general obligation bonds, limited tax general obligation bonds, local improvement district bonds, and special tax revenue bonds.

General Obligation Bonds

General obligation bonds (GOs) are voter approved bond issues and 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. Since these bonds are voter approved, they may be acceptable for a financing option under Measure 47 given that they were previously employed for this purpose and, therefore, would not be a replacement of property tax generated funds. The levy does not terminate until all the debt is paid off. The property tax levy is distributed equally throughout the taxing jurisdiction according to assessed value of property. General obligation debt is 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 city's true cash value. Bonds issued for water, sewer, and other utility purposes are excluded from this limitation. Since general obligation bonds would be issued subsequent to voter approval, they would not be restricted to the limitations set forth in Ballot Measure 5 described earlier. However, Measure 47 requires that at least 50 percent voter turnout be achieved for a bond measure to pass. If less than 50 percent of the registered voters in the voting area turn out, the bond measure will fail, no matter how the votes are cast. In this event, the bond measure cannot come up again until the next even year general election. Measure 47 also exempts maintenance and repairs of existing infrastructure from the bonding process. Hermiston has used GOs fairly extensively over the last twenty years to fund water, sewer and airport improvements. The total bonded debt for the City of Hermiston for the 1996/1997 fiscal year is $708,285.

Limited Tax General Obligation 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, investors typically require a higher rate of return than they would from a more secure, tax-backed general obligation issue. Since LTGOs are not voter approved, they are subject to limitations under Ballot Measures 5 and 47.

Local Improvement District Bonds

Local Improvement Districts (LIDs) may be formed to construct local improvements including street and sidewalk repairs and improvements. They are formed either through petition by the benefited property owners who seek a set of public improvements or through the legislative process of the city council. After the district is formed, public improvements may be made and the costs of those improvements distributed among the properties within the LID according to their respective benefit. The benefit is set by formula by the city council when the district is formed. Once the benefit and cost have been set, an assessment is levied against the benefiting properties. The owners of the benefited properties may pay in one up-front assessment or apply for assessment financing. In Oregon, this means that the city will issue bonds and allow the property owners to pay their assessment over time. Since the security of special assessment bonds lies solely with the assessment payments, potential investors and rating agencies apply a much more rigorous credit evaluation than would they would for a general obligation issue backed by property taxes. As a result, it may be very difficult to sell special assessment bonds at reasonable rates for projects that have marginal credit quality.

In Oregon statute, municipalities are allowed to issue Bancroft bonds which pledge the city's full faith and credit to the assessment bonds. As a result, the bonds become general obligations of the city but are paid with the assessments. Historically, this provided a city with the ability to pledge its full faith and credit in order to obtain a lower borrowing cost without needing to receive 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 Measure 5 described above. As a result, since 1991, Bancroft bonds have been unused by municipalities who were required to compress their tax rates.

One of the challenges of utilizing a local improvement district is managing the risk of prepaid assessments. Property owners typically have the option to pre-pay assessments in order to forgo paying continued interest payments. However, when the city first issues bonds it commits to meeting a specific stream of debt service payments at certain rates to investors. When a prepayment occurs, the city loses expected interest payments in future years. As a result, the city must actively invest such prepayments in order to maintain previously expected cash flows. The challenge of investing numerous small streams of prepayments can be administratively daunting. More often than not prepayments are left in low interest earning accounts. As a result, when the city is required to make debt service payments, it is forced to make up the difference of a low savings rate and the higher borrowing cost of the issue. To counter this potential difficulty, a city can structure bonds to allow for early redemption. This helps to mitigate the risks posed by prepayments. However, since the predictability of debt service streams are less sure, the investor will require a higher rate of return, thus leaving the city, and ultimately the assessed property owners, with a higher cost of borrowing.

Hermiston has financed several projects using LIDs. However, the future of such bonds are questionable due to both Measure 47's voting restrictions and the level of debt that much be secured using City of Hermiston general funds.

Special Tax Revenue Bonds

Cities may issue revenue bonds based on the expected receipt of special taxes. Examples of such revenues are gas taxes, hotel-motel taxes, or system development charges. Generally, the more predictable the revenue source, the easier it is to support debt financing with the revenue. These types of bonds are more complicated to issue and usually restrict the other uses of the dedicated revenues so the bond holders can be assured timely payment.

A few cities in Oregon have secured revenue bond issues with State gas taxes or other special transportation revenues. In many cases, local governments have become accustomed to using state gas tax revenues solely for maintenance needs. Using gas tax revenues to pay debt service on bonds instead of funding maintenance would require an issuer to either reduce its maintenance budget or provide some other source of funding for maintenance needs.

SYSTEM DEVELOPMENT CHARGES

System Development Charges (SDCs) are becoming increasingly popular in funding public works infrastructure needed for new local development. Local governments have the legal authority to charge property owners and/or developers fees for improving the local public works infrastructure. 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 System Development Charges.

Hermiston could implement a System Development Charge dedicated solely to transportation or include it with SDCs for future water and sanitary sewer system improvements. The SDC fee is collected when new building permits are issued within the corporate city limits. The city would calculate the fee based on trip generation of the proposed development. The city calculates the rate based on the assumption that a typical household will generate a given number of vehicle trips per day. Non residential use calculations are based on employee ratios for the type of business or industrial uses. The SDC fees will help fund construction and maintenance of the transportation network throughout the city.

It may be appropriate for Hermiston and Umatilla County to consider a transportation SDC for the unincorporated urban area around Hermiston. The boundaries of the area to be included can coincide with the area covered by the Hermiston Transportation System Plan. SDCs generated from the area outside the city could be targeted towards maintaining and upgrading county roads. In order to put a SDC in place outside of Hermiston, Umatilla County would need to adopt a SDC Ordinance with a plan showing how the fees would be calculated and how revenues would be spent in the future. In addition, Hermiston and Umatilla County would need to amend the city/county Urban Growth Management Agreement (UGMA) to specify how SDC fees would be collected and what urban land areas would be included in the SDC zone.

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/mile taxes and returns a portion of the revenues to cities and counties through an allocation formula. The State retains approximately 60 percent while allocating 15.5 percent to cities

and 24.5 percent to counties. The actual revenue share to cities is divided among all incorporated cities based on population.

Like other Oregon cities, Hermiston uses their State Gas Tax allocation to fund street maintenance and some limited new construction. In recent years, this state allocation has accounted for about 45 percent of the total State Street Tax Fund. In the 1995/1996 budget year, gas tax revenues will account for 38 percent of the Hermiston State Street Tax Fund. The Hermiston Gas Tax allocation is combined with a variety of other revenues to fund both street maintenance and new construction.

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 (City of Woodburn, Multnomah and Washington Counties) levy a local gas tax.

VEHICLE REGISTRATION FEES

The Oregon Vehicle Registration Fee is currently $30 bi-annually for regular passenger vehicles and is allocated to the state, counties and cities for road funding. Cities receive 15.57 percent, counties 24.38 percent, while the state retains 60.05 percent. Oregon counties are granted such authority, which would allow Umatilla County to impose a vehicle registration fee that covered the entire county. The Oregon Revised Statutes would allow Umatilla 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. In order for a local vehicle registration fee program to be viable in Umatilla County, all the incorporated cities and the county would need to formulate an agreement which 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. Several LIDs have been successfully implemented in Hermiston. 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 cost of local improvements are generally spread out among a group of property owners along a public street or 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. Although the interest rate for these special assessment bonds are higher than General Obligation (GO) bonds, they are not subject to the limitation of Ballot Measure 5.

GRANTS AND LOANS

Hermiston has been very successful in obtaining a number of grants in recent years to assist with transportation related projects. Examples include the ISTEA grant being used to fund the Court Street Park project. Immediate Opportunities Growth Fund for Wal-Mart road improvements, and Petroleum Antitrust Settlement Grant to fund a dial-a-ride program. 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. The loan programs often require an equal match from the local jurisdiction as a condition of approval.

Although Hermiston should continue to pursue public works related grant programs in the future, the city should not base their long term capital improvement funding on future grants or loan programs. Rather, the city should continue to pursue federal and state grants for site specific projects to retain and attract new businesses, and to assist with area specific improvements. Two common state grant/loan programs, the ODOT Immediate Opportunity Growth and the Oregon Special Public Works Fund, are described below.

ODOT Immediate Opportunity Grant Program

ODOT administers 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. ODOT officials use the following as primary factors in determining eligible projects:

- Funding used to improve public roads;
- Used for an economic development related project of regional significance;
- Primary project must create primary employment; and
- Preference to grantee providing 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, the City of Hermiston, the 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 which 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, public water supply works, public roads, and public transportation.

While SPWF program assistance is provided in the form of 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.

Entities to date that have received SPWF funding for projects including some type of transportation related improvement are the Cities of Cornelius, Woodburn, Forest Grove, Portland, Reedsport, Wilsonville. Redmond. Bend, and Douglas County.

ODOT FUNDING OPTIONS

The State of Oregon provides funding for all highway related transportation projects through the Statewide Transportation Improvement Program (STIP) administered by the Oregon Department of Transportation. 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 4 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 Hermiston Transportation System Plan 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 Transportation System Plan will provide ODOT with a prioritized project list for the Hermiston Urban Area for the next 20 years. Hermiston, Umatilla 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 Highway 395 and 207 corridors. 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. The type of road construction projects that can be included within the ODOT maintenance program include intersection realignments, additional turn lanes, and striping for bike lanes. The addition of a left-turn lane on a state highway is the type of project that may be constructed through the ODOT maintenance program. 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 Hermiston Transportation System Plan 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 has 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.

UMATILLA COUNTY FUNDING OPTIONS

The Hermiston Transportation System Plan area includes roads that are under the maintenance jurisdiction of Umatilla County. The City/County Urban Growth Management Agreement (UGMA) stipulates that Umatilla County retains jurisdiction of county roads within the Urban Growth Boundary until annexation and the roads are brought up to urban standards. At present, there are still a number of county roads within the corporate limits of Hermiston. Umatilla County provides maintenance on all the county roads within the Hermiston area while the city has maintenance responsibility for city streets and former county roads that have been annexed and upgraded to city standards.

Umatilla County allocates limited funding to Hermiston through a county-wide revenue sharing program. For the 1995/1996 budget year, the city's share will total $9,000. These funds are deposited directly into the city's general fund and are not dedicated specifically for either transportation system maintenance or new construction. In past years, Umatilla County has contributed funding for individual street projects based on allocations of a former five-year road plan. In recent years, the county has not provided funding to Hermiston for construction projects because the county has had to fund major road repair projects elsewhere in the county. After the county completes work on a new road inventory, it is expected that funding for transportation projects within incorporated cities will be made available.

Umatilla County does not have an updated Capital Improvement Plan (CIP) for transportation projects. The county is in the process of developing a comprehensive inventory of their road system. After the inventory has been completed, a classification will be applied based on the amount of service. A new CIP is expected to be prepared after the inventory and road classification phases are completed. The intent of the new CIP will be to plan transportation projects for the entire county and to coordinate construction funding with all the incorporated cities. The projects identified in the Umatilla County Transportation System Plan and the Hermiston Transportation System Plan can form the basis for a new county CIP.

The county does not have a Systems Development Charge (SDC) fee program in place at the present time. The funds generated from an SDC program would be used to finance County transportation projects in the future. Some of these funds could be used to upgrade county roads within the Hermiston Urban Area. At this point, Umatilla County has not yet determined the amount of revenue a transportation SDC would generate in the county.

Local Improvement Districts (LIDs) are a public works infrastructure funding option available to the county. Past LIDs have been used for road improvement projects.

A short term serial levy could be used by Umatilla County as a funding method to supplement limited property taxes and State revenue sharing funds for county transportation system improvements. The serial levy would likely be established to run from one to three years and would be used to finance specific transportation projects within the unincorporated areas of the county. Revenues generated from such a levy could be used to fund some county road projects in and around Hermiston. However, as with the consideration of a SDC fee, Umatilla County will not likely consider a special transportation serial levy until after work has been completed on the transportation road inventory and the application of uniform road classifications.

HERMISTON TRANSPORTATION SYSTEM PLAN FUNDING REQUIREMENTS

The Hermiston Transportation System Plan identifies a range of transportation improvements that will be needed during the next 20 years to provide for driver and pedestrian safety and expand the transportation system to support a growing population and economy. Overall, a total of 15 transportation system alternatives have been selected for funding as part of the Hermiston Transportation System Plan. These improvements, shown on Table 8-7, are for improvements along the State Highway system and improvements to the local street network within the Hermiston Urban Area. The preliminary estimated cost for the 15 street improvement transportation options is $29,462,950 Hermiston and Umatilla County will be the primary funding agencies for the local improvements within the city limits and the unincorporated urban area. The specific project alternatives recommended for funding are detailed below:

TABLE 8-7
RECOMMENDED STREET IMPROVEMENT PROJECTS

Location	Project Description	Priority	Cost ($)
Improvement 1 Main Street and East 4th Street	Signalization	Near-Term	$200,000
Improvement 2 Signalize the Intersection of Highway 395 and Theater Lane	Signalization	Near-Term	$200,000
Improvement 3 11th Street and Hermiston Avenue Intersection – Option 2	Signalization	Near-Term	$220,000
Improvement 4 Improvements at Highland Avenue and 11th Street	Street Intersection Reshaping	Near-Term	$208,480
Improvement 5 East 4th Street Extension from Elm Avenue to Theater Lane	Street Extension	Near -Term	$1,140,000
Improvement 6 Intersection of Highway 395 and Punkin Center Road	Signalization	Near-Term	$250,000
Improvement 7 Construction of the Umatilla River Bridge along Elm Ave.	Bridge Construction	Long-Term	$15,941,800
Improvement 8 1st Place and Hermiston Avenue Intersection	Intersection Improvements	Mid-Term	$868,750
Improvement 9 East 10th Street Upgrade from Columbia Drive to Elm Avenue	Street Upgrade	Mid-Term	$2,542,000
Improvement 10 East 10th Street Upgrade from Elm Avenue t Punkin Center Road	Street Upgrade	Mid-Term	$2,654,000
Improvement 11 Upgrade Umatilla River Road Between Elm Avenue and Hermiston Avenue	Street Upgrade	Mid-Term	$1,155,000
Improvement 12 East 4th Street Extension From Theater Lane to Punkin Center Road	Street Extension	Mid-Term	$1,359,920
Improvement 13a Upgrade Theater Lane from Highway 395 east to 7th Street Alignment	Street Upgrade	Mid-Term	$988,000
Improvement 13b Upgrade and Realign Theater Lane from 7th Street Alignment east to 10th Street	Street Upgrade	Mid-Term	$1,195,000
Improvement 14 Upgrade Local Unpaved Roads	Street Paving and Redesign	Near-Term	N/A.
Improvement 15 Improve Elm Ave./Diagonal Rd. Intersection (Truck Route Evaluation)	Truck Routing		$540,000
Total			**$29,462,950**

TABLE 8-8
RECOMMENDED PEDESTRIAN PROJECTS

Location	Project Description	Priority	Cost ($)
Hwy 395 (Theater Lane to SE Port Drive)	Sidewalk repair, curb ramps, driveway management and refuge islands (four lanes)	Near-Term	23,100
East 4th Street (Elm Avenue to Highland Avenue)	Sidewalk infill, 28 curb ramps	Near-Term	53,350
East Main Street (East 7th Street to East 10th Street)	Sidewalks	Near-Term	127,500
East 10th Street (Elm Avenue to Highland Avenue)	Sidewalk infill	Near-Term	186,375*
Highland Avenue (SW 11th Street to SE 5th Street)	Sidewalk infill	Mid-Term	12,500
Hermiston Ave. (West 11th Street to 1st Place)	Sidewalk infill, 36 curb ramps	Mid-Term	51,200
1st Street (Hermiston Avenue to Highland Avenue)	Sidewalk infill, 10 curb ramps	Mid-Term	52,000
Orchard Avenue (West 11th Street to Highway 395)	Sidewalk infill, 18 curb ramps	Mid-Term	68,600
Elm Avenue (West 7th Street to Highway 395)	Sidewalks	Mid-Term	111,750
Diagonal Road (Main Street to NE 10th Street)	Sidewalks	Mid-Term	127,750
West 11th Street (Linda Avenue to Joseph Avenue)	Sidewalk infill	Mid-Term	162,500
1st Place (Elm Avenue to Hermiston Avenue)	Sidewalks	Long-Term	140,000*
Jennie Avenue (1st Place to NE 4th Street)	Sidewalks	Long-Term	117,500
1st Street (Highland Avenue to SE 4th Street Ext.)	Sidewalk infill with curbs, 18 curb ramps	Long-Term	125,100
Total			**1,359,225**

Notes: (1) All sidewalks assumed 5-ft wide with curb ramps at intersections (including most T-intersections). Number of curb ramps is indicated. Total length of new sidewalk or infill on both sides of roadway.
*(2) *Project may be incorporated into street improvement alternative (Chapter 5).*

TABLE 8-9
RECOMMENDED BICYCLE PROJECTS

Location	Project Description	Priority	Cost ($)
West 11th Street (Elm Avenue to Highland Avenue)	Stripe bike lanes (6B-11-11-6B north of Linda Ave., 7P-6B-12-12-6B south of Linda Ave.)	Near-Term	4,160
Hurlburt Avenue (Highway 395 to East 4th Street)	Stripe bike lanes (5B-11-11-5B-8P)	Mid-Term	1,120
East 4th Street (Main Street to Highway 395)	Stripe bike lanes (6P-4.5B-10-10-4.5B) north of Highland Ave., (7P-4.5B-10-10-4.5B-7P) south of Highland Ave.	Mid-Term	2,080
Orchard Avenue (SW 11th Street to SW 7th Avenue)	Stripe bike lanes (7P-5B-10-10-5B)	Mid-Term	2,080
Orchard Ave. (SW 7th Street to Highway 395)	Stripe bike lanes (7P-5B-12-12-6B)	Mid-Term	2,080
East 4th Street (Elm Avenue to Main Street)	Stripe bike lanes (6B-11-11-6B)	Mid-Term	2,600
Elm Avenue (West 7th Street to Highway 395)	Stripe bike lanes (Street width varies; widen west of RR tracks for 800 ft from 24 to at least 34 ft) (6B-11-11-6B)	Mid-Term	26,032
1st Place (Elm Avenue to Hermiston Avenue)	Widen from 24 to 34 ft with 6-ft shoulders, repave, and stripe for shoulders (6Sh-11-11-6Sh)	Mid-Term	155,280* **
East 10th Street (Elm Avenue to Highland Avenue)	Widen to 34 ft (from 26, 20 and 32-ft segments) and stripe 6-ft bike lanes (6B-11-11-6B)	Mid-Term	197,100**
		Long-Term	2,480
Hermiston Avenue (West 11th Street to 1st Place)	Diagonal Road (NE 7th Street to NE 10th Street)	Stripe bike lanes (7P-5B-12-12-6B west of 8th St.; 5.5B-11-11 5.5B)	3,800
Elm Avenue (West 11th Street to West 7th Avenue)	Widen from 24 to 34 ft with 6-ft shoulders and striping (6Sh-11-11-6Sh)	Long-Term	78,600*
NE 10th Street (Theater Lane to Elm Avenue)	Widen from 22 to 32 ft with 5-ft shoulders (wider if >2000 ADT), and stripe for shoulders (5Sh-11-11-5Sh)	Long-Term	99,300* **
Theater Lane (NW Geer Road to NE 7th Street Alignment)	Widen from 22 to 32 ft with 5-ft shoulders (wider if >2000 ADT), and stripe for shoulders (5Sh-11-11-5Sh)	Long-Term	159,000*
Highland Ave. (Umatilla River to SW 11th Avenue)	Widen from 28 to 34 ft with 6-ft shoulders, repave, and stripe for bike lanes (5B-12-12-5B) Shoulder/Bike Lane	Long-Term	202,400
Total			**938,112**

*Notes: (1) Lane configurations are presented as a number series, in feet, from curb-to-curb (or edge-to-edge). For example, 7P-5B-11-12C-11-6B (52) is a 7-ft parking lane, 5-foot bike lane, two 11-foot travel lanes with a 12-foot center turn lane, and a 6-foot bike lane for a total roadway width of 52 feet. Lanes are normally listed from west-to-east or north-to-south. (2) Length given is one-way, but cost estimate includes both sides of roadway. (3) Costs associated with repaving; a layer of asphalt 2 inches thick at $18/linear foot for a 34-foot roadway. (4) *Project includes pedestrian usage. (5) **Project may be incorporated into street improvement alternative (Chapter 5).*

Oregon Department of Transportation Projects

ODOT will need to be the primary funding source for future improvements that impact the operation of or reduce the amount of local traffic on the state highways within the urban area. The ODOT related transportation improvement projects include new traffic signals at Highway 395 and Punkin Center and Theater Lane. In addition, ODOT should help with funding the new traffic signal at Main Street and 4th Street. the 4th Street extension, and the improvement and extension of 10th Street. These improvements will reduce future ODOT maintenance and construction costs associated with Highway 395 by improving the local street grid.

Local Projects

Walkway and Bikeway Improvements

Hermiston's Transportation System Plan identifies several pedestrian and bikeway improvements recommended for the Hermiston Urban Area during the next 20 years. The sidewalk related improvements to improve pedestrian access within the community are estimated to cost $1,359,225. The bikeway improvements are expected to cost an additional $938,112. Funding for these improvements would be expected to come primarily from local sources with some assistance from ODOT. Local funds can be generated through LIDs along local streets within Hermiston. ODOT would be expected to fund the pedestrian and bikeway improvements along state highways within the planning area.

Basic Street Grid Improvements

An extensive list of local street improvements has been identified in the Transportation System Plan. The purpose of these improvements will be to continue to improve the street grid pattern throughout the city and the urban area. Funding for these improvements would come from Hermiston, Umatilla County, and ODOT. Some of the basic street grid improvements that would reduce reliance on the state highways could be funded by ODOT in the future. The locally generated funds would include revenues generated by GO bond sales, SDC fees for new developments, and LIDs.

HERMISTON TRANSPORTATION SYSTEM PLAN FUNDING STRATEGY

Hermiston, Umatilla County, and ODOT will need to coordinate and cooperate on a funding strategy to fund the Capital Improvement Plan. It is recommended that ODOT continue as the lead agency in funding the transportation related improvements along Highway 395 and Highway 207 corridors. Hermiston will need to continue as the lead local government in financing the local transportation system improvements. Umatilla County would be expected to assist in funding improvements to county roads within the Hermiston Urban Area. In order to increase funding to implement the Hermiston Transportation System Plan, the city, county, and ODOT will all need to consider a range of possible funding sources during the next 20 years. The recommended funding strategy for the Hermiston Transportation System Plan is detailed below.

Hermiston

The Hermiston Capital Improvement Program of the future should concentrate on funding improvements to the basic street grid and pedestrian and bikeway systems. The adoption of the Transportation System Plan will provide an extensive list of local transportation related projects that should be constructed over the next 20 years. Hermiston will need to increase funding to construct the identified projects. Likely funding sources include adopting a transportation SDC program and increasing the use of LIDs for local pedestrian and bikeway projects. The city will need to work closely with Umatilla County and ODOT on developing funding strategies for non-city urban roads and state highway improvements.

Local Improvement District

Hermiston has a strong Local Improvement District (LID) Ordinance which permits the formation of districts for transportation related projects. The city has actively used LIDs in the past to fund local street projects. It is recommended that Hermiston implement a program to target future LIDs for pedestrian and bikeway improvements within the residential areas of the city. As part of such an LID program, the city should consider funding a portion of the LIDs to make them affordable to property owners.

County And ODOT Coordination

Umatilla County will need to be the lead funding agency for the improvement of county roads within the Hermiston Urban Growth Boundary. Both the city and county should consider formulating a joint Capital Improvement Plan for the Hermiston Urban Area. Such a CIP would be a refinement of the Hermiston and Umatilla County Transportation System Plans. This refined CIP should include all the street, pedestrian, and bikeway projects that have been identified for the Hermiston Urban Area. As part of the process of formulating a joint Urban Growth Area CIP, Umatilla County should be encouraged to adopt a transportation SDC fee and join the discussions on adoption of a local gas tax. Umatilla County and the Hermiston will need to work closely together on funding techniques that will finance the transportation system improvements.

All transportation related improvements on Highway 395 and Highway 207 are assumed to be funded by ODOT. With the adoption of the Transportation System Plan, ODOT will consult Hermiston before any highway related projects are added to the State Transportation Improvement Program (STIP) plan. In the future, ODOT may have the ability to assist in funding some of the basic street grid projects that reduce dependence on the state highways. As Hermiston plans local street improvement projects, ODOT should be consulted to determine whether state transportation funds can be used for specific local transportation projects.

Umatilla County

Umatilla County has jurisdiction of all the local roads within the Hermiston Urban Growth Area. As the urban area is developed, it is expected that the county roads will be upgraded to city standards and turned over to city jurisdiction at the time of annexation. The county's contribution to the Hermiston Transportation System Plan should include funding the extension of the county roads detailed as part of the basic street grid improvement option. and to bring the non-city urban area roads up to city standards and expanding the pedestrian and bikeway systems throughout the urban area. Adoption of a countywide transportation SDC will likely be the best funding

technique to bring the non-city roads up to city standards. Another possible funding technique will be the consideration of a county gasoline tax.

Umatilla County will not likely be in a position to increase funding for transportation related projects in the Hermiston Urban Area until after work has been completed on a new county road inventory. As discussed earlier in this chapter, Umatilla County is currently involved with developing a detailed inventory of the entire county transportation system. Likewise, the county will then consider adopting a road classification for all arterial and collector roads under their jurisdiction. Until the inventory and road classification process is completed, it will be difficult to make projections on what are the most viable funding techniques to enable Umatilla County to bring the urban area roads up to city standards.

Transportation System Development Charges

Umatilla County should evaluate the feasibility of adopting a county-wide transportation SDC. If a transportation SDC is adopted by Umatilla County, the fees collected within the Hermiston Urban Area should be dedicated to bringing the county roads up to city standards. This funding strategy can also be used to help finance the needed basic street grid improvements and bring non-city streets up to city standards. As discussed above, Umatilla County will not likely be in a position to consider adopting a transportation SDC until after work has been completed on the county road inventory and road classification.

Oregon Department of Transportation

ODOT will be responsible for funding all highway related transportation projects within the Hermiston Transportation System Plan boundaries. Other than consulting with the city as part of the STIP process, ODOT has the authority to prioritize highway projects based on their own analysis and evaluation. The adoption of the Hermiston Transportation System Plan will provide ODOT with highway related transportation projects that are important to Hermiston and Umatilla County.

The one new ODOT funding technique that should be considered for the Hermiston Transportation System Plan is possible use of State money to fund off-system improvements that reduce reliance on the State highway system. A policy to enable ODOT to use this possible new funding technique is still being formulated as the Hermiston Transportation System Plan is being completed. It is recommended that Hermiston consult ODOT on a yearly basis regarding State funding options for local street improvements.

HERMISTON TRANSPORTATION FUNDING PLAN

Identified Street Improvement Projects

Approximately $30 million in transportation system improvements are projected to be required within the Hermiston Urban Area over the next 20 years. It is assumed that ODOT will fund improvement projects within state right-of-way. Hermiston would be responsible for funding the remaining transportation system costs over the next 20 years.

A review has been conducted of a range of alternative transportation funding mechanisms that are available to the city. This review was done in order to develop a list of options which are considered to be the most feasible methods

to fund the local projects. A funding package combining system development charge revenues, state gas tax revenues, Local Improvement Districts, as well as some type of debt financing mechanism backed by property taxes, represents the most feasible funding strategy available to the city to meet expected capital and maintenance funding needs.

Projects need to be assembled into packages for GOs. Packages present a set of projects to voters for funding, which makes the benefits of the transportation improvements more apparent and, therefore, easier to present and explain. Not all projects can be funded under GOs because the total indebtedness of the city would exceed its three percent limit. Figure 8-3 details two potential packages for GO funding: a short term and a mid-term. Depending on the structure of the bonds, both of these packages could go before the voters.

TABLE 8-10
POTENTIAL PROJECTS FOR GENERAL OBLIGATION BOND

Project Title	Cost
Short-Term Funding Package	**($)**
Improvement 1: Signalize the Intersection of Main Street and East 4th Street	200,000
Improvement 2: Signalize the Intersection of Highway 395 and Theater Lane	200,000
Improvement 3: Improve the 11th Street and Hermiston Avenue Intersection	220,000
Improvement 4: Improvements at Highland Avenue and 11th Street Intersection Reshaping	$208,480
Improvement 5: East 4th Street Extension From Elm Avenue to Theater Lane	1,140,000
Subtotal	**1,968,480**
Mid- to Long-Term Package	
Improvement 8: Improve 1st Place and Hermiston Avenue Intersection	868,750
Improvement 9: East 10th Street Upgrade From Columbia Drive to Elm Avenue	2,542,000
Improvement 10: East 10th Street Upgrade From Elm Avenue to Punkin Center Road	2,654,000
Improvement 11: Upgrade Umatilla River Road Between Elm Avenue and Hermiston Avenue	1,155,000
Improvement 12: East 4th Street Extension From Theater Lane to Punkin Center Road	1,359,920
Improvement 13a: Upgrade Theater Lane from Highway 395 east to 7th Street Alignment	988,000
Improvement 13b: Upgrade and Realign Theater Lane from 7th Street Alignment east to 10th Street	1,195,000
Subtotal	**10,762,670**
Total GO Bond	**12,731,150**

System Development Charges

Hermiston should consider the implementation of a transportation System Development Charge (SDC). A systems development charge (SDC) is a means of requiring that new developments pay an equitable portion of the capital costs of improvements needed to accommodate growth. State law allows the imposition of systems development charges for specified purposes. The requirements and limitations are found in the Oregon Revised Statutes (ORS)

223.297 to 223.314. This section of the report outlines the methodology for a transportation systems development charge. It identifies SDC funding options for projects to meet the long-range transportation needs of Hermiston.

The basic methodology used to assess transportation SDC fees was to compare employment, dwelling units, and forecasted trips with street improvement needs for year 2016. This section of the report describes the calculations upon which the charge per trip is based. The charge is calculated by dividing the eligible costs of transportation projects by the forecasted trips which cause and will benefit from the needed improvements. SDC-eligible projects increase capacity and service. An SDC fee levied against a development is derived by determining the number of trips the development will create and multiplying this by the per trip fee.

The growth assumptions for Hermiston are documented elsewhere, but are summarized in Table 8-11. Table 8-11 lists anticipated increases in both residential development and employment between 1996 and 2016. In addition to the number of dwelling units and employment increases, Table 8-11 lists the *average* number of trips created on a daily basis by these broad land use categories. These are the figures used in the computer-based transportation model used to assess Hermiston's long-range transportation system needs. As shown in Table 8-11, an increase of almost 37,000 daily trips is forecasted between 1996 and 2016.

TABLE 8-11
FORECASTED INCREASE IN TRIP GENERATION FROM NEW DEVELOPMENT: 1996-2016

Development Type	Forecasted Increase in Number of Units	Trips/Unit	Forecast Increase in Number of Trips
RESIDENTIAL USES			
Single-family Dwelling Units	1,098	9.551	10,486
Multi-family Dwelling Units	621	6.47	4,018
NON-RESIDENTIAL DEVELOPMENT			
Commercial Employees	1,238	17.5	13,458
Industrial Employees	769	1.06	1,312
Total Trips			**36,9842**

[1]/*ITE Trip Generation Manual, 5th Edition, 1991.*
[2]/*Assumes unincorporated land areas within UGB will be annexed to the city within 20-year plan life.*

The key assumption for the SDC program is that these trips directly cause the need for substantial improvements to the city's transportation system. The total cost of transportation projects under the city's jurisdiction are estimated to be approximately $31,000,000. The basic concept behind a project-based systems development charge is to divide the cost of needed projects by the number of trips expected to occur during the same time period. If Hermiston seeks to recover all costs for construction of street projects from new development through SDC fees, the calculation is as follows:

$30,000,000 / 36,984 = $ 838.20 per trip.

Note that certain other costs associated with annual monitoring and compliance are also eligible for recovery under the SDC program and are permitted under the ORS. Bookkeeping and documentation associated with these compliance activities may not make the option attractive to Hermiston. Typically, SDC's are levied on new developments and are collected at the time of issuance of a building permit or as otherwise provided for by the ordinance.

One potential change to Hermiston's SDC program is to change the basis upon which the fee is calculated. The amount of the transportation systems development charge levied against a development is most easily explained if it is based upon the average daily number of trips generated multiplied by the per trip fee calculated above. The trip rate for each use should be derived from the latest edition of the Institute of Transportation Engineers' Trip Generation.

Hermiston has the option of choosing the amount of funding it wants to recover from new development to pay for needed long-range transportation improvements. To recover 100 percent of the $30 million needed to fund all local projects, the SDC fee is calculated to be $838.20 per trip. If the city chooses to collect only one-fifth of the $10 million amount, the SDC fee could be lowered to approximately $167.64 per daily trip. The remaining 80 percent would come from existing or other new funding sources.

For residential uses, the fee is determined by multiplying the number of units by the per unit trip generation rate. For non-residential uses, the fee is determined by multiplying the gross floor area (measured in thousands of square feet) by the applicable trip generation rate. The city may also give the developer the option of submitting a detailed traffic study to establish a trip generation rate for a specific project. The traffic study must be prepared by a licensed traffic engineer in the State of Oregon and shall be prepared in accordance with the methodology contained in the Institute of Transportation Engineers' Trip Generation.

Cities or counties are sometimes concerned that their SDC fees will discourage desired development and choose to adjust the methodology as a matter of policy. In doing so, these agencies also accept the fact that by lowering SDC fees, they will need to find other funding sources to pay for needed transportation projects. Besides the option of choosing a lower recovery percentage, the city may consider other methods of reducing transportation SDC fees. Some of the options the city might consider are: adjustments to account for "passer by" trips, combining specific land uses into broader development categories, or placing "caps" or maximums on the trip generation rate.

An adjustment to account for "passer-by" trips has an impact on commercial developments. For some uses within the retail sector, a variety of studies indicate some trips are "passer-by" trips. That is, the trip to an individual business is merely an intermediate stop as part of a longer trip made by a motorist who is passing-by. The argument is that since the motorist was using the street anyway, a lesser impact on the street system occurs than would with a non-passer-by trip. The only employment sector for which a passer-by component has been identified is the retail sector. Furthermore, not all retail businesses have a passer-by component. Using a passer-by adjustment would have no impact on SDC fees for residential development.

Another possibility for reducing the SDC fees for some businesses involves combining some categories. Fast food restaurants generate approximately seven times as many trips per thousand square feet than do quality restaurants. In an effort to encourage fast food restaurants, some cities establish a single "restaurant" category and apply the lower trip generation rate from the "quality restaurant" category. In doing so, these cities forego much of the SDC revenue from the development and must find other funding sources to accommodate the transportation needs caused by that restaurant.

Yet another common approach used by cities is to establish a "cap" or maximum rate to be used in the calculation of trips. This is sometimes set at 200 or 300 trips per thousand square feet. This has the effect of limiting the fees collected from fast food restaurants and convenience markets. Like other adjustments, a cap on trip rates reduces SDC fee collections and forces the cities to find other funding sources.

Additional types of funding will need to be considered in order to reduce the SDC requirements. The city will need to make a determination on what levels of System Development Charges best fit the city's overall growth strategy and development policies.

Since SDCs are a less stable form of revenue than more secure forms such as property taxes, Hermiston will likely need to secure debt paid by the SDC program with additional forms of revenue such as gas tax receipts. In the event that future SDC inflows were not sufficient to pay required debt service, then investors would have claim on additional pledged city revenues. Even with the pledge of other revenues, the city would have a higher cost of borrowing than it would with general obligation debt in order to compensate investors for the additional perceived risk associated with purchasing the city's SDC-based bonds.

General Obligation Debt Secured By Property Taxes

General obligation bond financing secured by property tax revenues is a common method of financing road improvements. Due to the tax's strong security, general obligation bonds are the least costly debt financing tool available to local governments.

Oregon revised statutes provide that the total outstanding general obligation indebtedness of a city not exceed three percent of the city's true cash value. Bonds issued for water, sewer, and utility purposes are excluded from the three percent limitation. For example, based on Hermiston's 1996/1997 assessed valuation of $370 million and netting out legal deductions, the city's debt limit would be just over $4 million (Table 8-12). This is the remaining capacity that the city has available to issue additional general obligation debt for transportation or any other public improvements. Because the city is growing, it should be able to add more assessed value in future years to its tax roll and be able to increase the issuance limit for general obligation debt.

TABLE 8-12
HYPOTHETICAL CITY STREET FUND CALCULATION OF LEGAL DEBT LIMIT

Assessed Valuation (1996/1997)	
True Cash Value	$370,266,917
	x 3%
	$11,108,008
Current Bonded Debt (Less Legal Deductions)	
Industrial Park Bonds	
Phase I	-$500,000
Phase II	-$200,000
Sewer Bonds	-$1,650,000
Net Debt Subject to 3% Limitations	$0
Amount Available for Future Indebtedness	$11,108,008

Given the city's current debt limitation, bonds to cover the cost of some of the transportation improvement options can be issued up to $11,000,000. The role of the general obligation bond financing in the city's overall funding program will be dependent on the willingness of the council to dedicate some or all of the city's debt capacity to

street improvements. The city will have the ability to issue GO bonds, with repayment by SDC fees. Since these bonds will be secured by the full faith of the city, the bond rates will have a lower interest rate. In addition, this funding technique would not require an increase to the city property tax rate.

HERMISTON TRANSPORTATION SYSTEM PLAN FUNDING RECOMMENDATIONS

A total of $31.7 million in state and local transportation improvement projects was identified for the Hermiston TSP (Table 8-13). This includes street, pedestrian, and bikeway projects identified for the next 20 years. It is expected that ODOT will have primary responsibility for $3.4 million while the City of Hermiston will have responsibility for $12.3 million. The cost of a new bridge across the Umatilla River, estimated at $15.9 million, was not assigned to either local or state funding sources. The city has been seeking possible federal funding for the Umatilla River Bridge.

The $31.7 million in projects are phased over 20 years. In the next five years, the city will need to fund the near-term projects which amount to $1,409,865 in city responsibility. The mid-term projects will be constructed in 6 to 10 years and will require another $10,017,142 in city generated funds. The long-term city funded projects will be implemented between 2006 and 2016 and will require a final $928,180. Funding plans should be crafted to provide consistent funding that will provide for these projects over a 20-year implementation span as opposed to generating the $31.7 million up front.

The recommended funding techniques for the Hermiston Transportation System Plan have been detailed in the proceeding section. Based on an analysis of historic local funding techniques, it is expected that Hermiston will not be able to fund the Transportation System Plan improvement projects unless existing fees are increased and new funding sources are dedicated towards transportation. Even with Hermiston, Umatilla County, and ODOT adopting new funding techniques, it may be difficult to fund all the Transportation System Plan projects during the 20-year planning cycle. The city may want to consider a process to prioritize the local transportation system funding based on a further analysis of available funding.

TABLE 8-13
PRIORITIZED CAPITAL IMPROVEMENT PROGRAM
(1995) DOLLARS

Project Description	Local Cost ($)	State Cost ($)	Total Cost ($)
NEAR-TERM			
Street System Projects			
Improvement 1: Signalize the Intersection of Main Street and East 4th Street	$40,000	$160,000	$200,000
Improvement 2: Signalize the Intersection of Highway 395 and Theater Lane		$200,000	$200,000
Improvement 3: Improve the 11th Street and Hermiston Avenue Intersection	$220,000		$220,000
Improvement 4: Improvements at Highland Avenue and 11th Street Intersection Reshaping	$208,480		$208,480
Improvement 5: East 4th Street Extension from Elm Avenue to Theater Lane	$570,000	$570,000	$1,140,000
Improvement 6: Signalize the Intersection of Highway 395 and Punkin Center Road		$250,000	$250,000
Near-Term Street System Cost Subtotal	**$1,038,480**	**$1,180,000**	**$2,218,480**
Pedestrian Projects			
Hwy 395 (Theater Lane to SE Port Drive)		$23,100	$23,100
East 4th Street (Elm Avenue to Highland Avenue)	$53,350		$53,350
East Main Street (East 7th Street to East 10th Street)	$127,500		$127,500
East 10th Street (Elm Avenue to Highland Avenue)	$186,375		$186,375
Near-Term Pedestrian Projects Subtotal	**$367,225**	**$23,100**	**$390,325**
Bikeway Projects			
West 11th Street (Elm Avenue to Highland Avenue)	$4,160		$4,160
Near-Term Bikeway Projects Subtotal	**$4,160**		**$4,160**

TABLE 8-13
PRIORITIZED CAPITAL IMPROVEMENT PROGRAM (continued)
(1995) DOLLARS

Project Description	Local Cost ($)	State Cost ($)	Total Cost ($)
MID-TERM			
Street System Projects			
Improvement 8: Improve 1st Place and Hermiston Avenue Intersection	$868,750		$868,750
Improvement 9: East 10th Street Upgrade from Columbia Drive to Elm Avenue	$2,033,600	$508,400	$2,542,000
Improvement 10: East 10th Street Upgrade from Elm Avenue to Punkin Center Road	$2,123,200	$530,800	$2,654,000
Improvement 11: Upgrade Umatilla River Road Between Elm Avenue and Hermiston Avenue	$1,155,000		$1,155,000
Improvement 12: East 4th Street Extension from Theater Lane to Punkin Center Road	$679,960	679,960	$1,359,920
Improvement 13a: Upgrade Theater Lane from Highway 395 east to 7th Street Alignment	$988,000		$988,000
Improvement 13b: Upgrade and Realign Theater Lane from 7th Street Alignment east to 10th Street	$1,195,000		$1,195,000
Improvement 14: Upgrade Local Unpaved Roads	N/A		N/A
Improvement 15: Improve Elm Avenue/Diagonal Road Intersection (Truck Route Evaluation		$540,000	$540,000
Mid-Term Street System Project Subtotal	**$9,043,510**	**$2,259,160**	**$11,302,670**
Pedestrian Projects			
Highland Avenue (SW 11th Street to SE 5th Street)	$12,500		$12,500
Hermiston Avenue (West 11th Street to 1st Place)	$51,200		$51,200
1st Street (Hermiston Avenue to Highland Avenue)	$52,000		$52,000
Orchard Avenue (West 11th Street to Highway 395)	$68,600		$68,600
Elm Avenue (West 7th Street to Highway 395)	$111,750		$111,750

TABLE 8-13
PRIORITIZED CAPITAL IMPROVEMENT PROGRAM (continued)
(1995) DOLLARS

Project Description	Local Cost ($)	State Cost ($)	Total Cost ($)
MID-TERM			
Pedestrian Projects - continued			
Diagonal Road (Main Street to NE 10th Street)	$127,750		$127,750
West 11th Street (Linda Avenue to Joseph Avenue)	$162,500		$162,500
Mid-Term Pedestrian Project Subtotal	**$586,300**		**$586,300**
Bikeway Projects			
Hurlburt Avenue (Highway 395 to East 4th Street)	$1,120		$1,120
East 4th Street (Main Street to Highway 395)	$1,040	$1,040	$2,080
Orchard Avenue (SW 11th Street to SW 7th Ave.)	$2,080		$2,080
Orchard Avenue (SW 7th Street to Highway 395)	$2,080		$2,080
East 4th Street (Elm Avenue to Main Street)	$2,600		$2,600
Elm Avenue (West 7th Street to Highway 395)	$26,032		$26,032
1st Place (Elm Avenue to Hermiston Avenue)	$155,280		$155,280
East 10th Street (Elm Avenue to Highland Avenue)	$197,100		$197,100
Mid-Term Bikeway Project Subtotal	**$387,332**	**$1,040**	**$388,372**
LONG-TERM			
Street System Projects			
Improvement 7: Construction of the Umatilla River Bridge			
Long-Term Street System Project Subtotal			**$15,941,800**
Pedestrian Projects			
1st Place (Elm Avenue to Hermiston Avenue)	$140,000		$140,000
Jennie Avenue (1st Place to NE 4th Street.)	$117,500		$117,500
1st Street (Highland Avenue to SE 4th Street Ext.)	$125,100		$125,100
Long-Term Pedestrian Project Subtotal	**$382,600**		**$382,600**

TABLE 8-13
PRIORITIZED CAPITAL IMPROVEMENT PROGRAM (continued)
(1995) DOLLARS

Project Description	Local Cost ($)	State Cost ($)	Total Cost ($)
LONG-TERM			
Bikeway Projects			
Diagonal Road (NE 7th St. to NE 10th St.)	$2,480		$2,480
Hermiston Avenue (West 11th Street to 1st Place)	$3,800		$3,800
Elm Avenue (West 11 Street to West 7th Avenue)	$78,600		$78,600
NE 10th Street (Theater Lane to Elm Avenue)	$99,300		$99,300
Theater Lane (NW Geer Rd. to NE 7th St. Alignment)	$159,000		$159,000
Highland Ave. (Umatilla River to SW 11th Avenue)	$202,400		$202,400
Long-Term Bikeway Project Subtotal	**$545,580**		**$545,580**
Subtotal Near-Term (0-5 years)	$1,409,865	$1,203,100	2,612,965
Subtotal Mid-Term (6-10 years)	$10,017,142	$2,260,200	$12,277,342
Subtotal Long-Term (11-20 years)	$928,180	$0	$16,869,980*
Total	**$12,355,187**	**$3,463,300**	**$31,760,287**

Hermiston, Umatilla County, and ODOT should implement the following actions to fund the Transportation System Plan projects:

City of Hermiston

Adopt Transportation SDC Fee

It is recommended that the city implement a transportation SDC fee for new development This action will enable Hermiston to finance a portion of the local Transportation System Plan improvement projects.

Umatilla County Funding Request

It is recommended that the city request that Umatilla County provide future funding to improve all non-city urban roads within the Hermiston UGB to city standards. This funding would be used to upgrade existing county roads and to extend future roads to improve the local street grid system.

General Obligation Bond Financing

It is recommended that the city use a portion of the city's bonding debt authority to issue General Obligation bonds to fund a portion of the Transportation System Plan projects. The bonds should be secured with future SDC fee revenues to make the bonds attractive to investors. The funds obtained through a GO bond sale should be dedicated towards specific street local street improvement projects identified within the Transportation System Plan.

ODOT Off-System Funding

It is recommended that the city request ODOT to use Off-System funds to finance a portion of the local street improvements that specifically reduce traffic on either Highway 395 or 207 within the Transportation System Plan boundaries.

Street Improvement LIDs

It is recommended that Hermiston strengthen their comprehensive Local Improvement District program targeted towards walkway improvements along city streets.

Umatilla County

Systems Development Charges (SDC) Fee

It is recommended that Umatilla County consider a countywide transportation SDC. As part of the countywide SDC evaluation, SDC fees collected within the Hermiston TSP planning area should be dedicated to improving county roads within the Hermiston TSP. Fee revenues received from new development within the Hermiston Transportation System Plan area should be dedicated to the basic street grid improvements identified in the Transportation System Plan.

Street Design Standards

It is recommended that Umatilla County amend the City/County Urban Growth Management Agreement (UGMA) to require city street design standards for all new development within the Hermiston Urban Growth Area.

CHAPTER 9: IMPLEMENTATION

TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM

Implementation of the Hermiston Transportation System Plan 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 Hermiston to address both existing and emerging transportation issues throughout the urban area in a timely and cost-effective manner. This implementation program is geared towards providing Hermiston with the tools to amend the comprehensive plan and zoning ordinance to conform with the Oregon Transportation Planning Rule and to fund and schedule transportation system improvements.

It is recommended that the City of Hermiston take the following actions to adopt and implement the TSP.

1. Amend policies 33 through 36 of the Hermiston Comprehensive Plan as detailed in this chapter.
2. Amend the Hermiston Zoning Ordinance No. 1840 as detailed in this chapter.
3. Incorporate the prioritized capital improvement plan, detailed in Chapter 8 into the existing Hermiston Capital Improvement and Public Facilities Plans.

RECOMMENDED ADDITIONS TO HERMISTON COMPREHENSIVE PLAN, TRANSPORTATION ELEMENT (GOAL 12)

Policy 33: Transportation Project Approval

Section 660-12-045(1) of the Transportation Planning Rule requires that cities and counties amend their land use regulations to conform with the jurisdiction's adopted Transportation System Plan. This section of the Transportation Planning Rule is intended to clarify the approval process for transportation-related projects. The approval process for different types of projects should be clear.

The City of Hermiston will provide a clear and objective process for the approval of transportation projects.

Implementing Actions

- Recognizes the Transportation System Plan as an element of the City of Hermiston Comprehensive Plan identifies the general location of transportation improvements. Changes in the specific alignment of proposed public road and highway projects shall be permitted without plan amendment if the new alignment falls within a transportation corridor identified in the Transportation System Plan.

- Allows the operation, maintenance, repair, and preservation of existing transportation facilities without land use review, except where specifically regulated.

- Allows the 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 without land use review.

- Allows changes in the frequency of transit, rail and airport services that are consistent with the Transportation System Plan without land use review.

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

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

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

Policy 34: Protecting Existing and Future Operation of Facilities

Section 60-12-045(2) of the Transportation Planning Rule 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 small jurisdictions 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.

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 following implementing actions.

The City of Hermiston will protect the operation of existing and future transportation facilities.

Implementing Actions

- Requires the protection of the function of existing and planned roadways as identified in the Transportation System Plan.

- Requires the consideration of the impact of all land use decisions on existing or planned transportation facilities.

- Requires protection of the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.

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

- Requires the preservation of right-of-way for planned transportation facilities through exactions. voluntary dedication, or setbacks.

- Requires the City of Hermiston and the Oregon Aeronautics Section to work together in developing or updating an airport Master Plan for the airport.

- Requires that the land use element of the airport Master Plan become part of this comprehensive plan and guide land use decision making in the vicinity of these transportation facilities.

Policy 35: Coordinated Review of Land Use Decisions Affecting Transportation

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 Transportation Planning Rule requires that jurisdictions develop a process for the coordinated review of land use decisions affecting transportation facilities.

The City of Hermiston will provide coordinated review of land use decisions affecting transportation.

Implementing Actions

- Requires coordination 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.

- Suggests consideration of the findings of ODOT's draft Environmental Impact Statements and Environmental Assessments as integral parts of the land use decision-making procedures.

Policy 36: Safe and Convenient Pedestrian and Bicycle Circulation

Bicycling and walking are often the most appropriate mode for short trips. Especially in smaller 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 Transportation Planning Rule (660-12-045(3)) requires that urban areas plan for bicycling and walking as part of the overall transportation system.

The City of Hermiston shall provide safe and convenient pedestrian and bicycle circulation.

Implementing Actions

- Requiring the planning and development of a network of streets, accessways, and other improvements, including bikeways, sidewalks, and safe street crossings to promote safe and convenient bicycle and pedestrian circulation within the community.

- Requiring that streets and accessways be provided where appropriate to provide direct and convenient access to major activity centers, including downtown, schools, shopping areas, and community centers.

- Requiring that bikeways be included on all new arterials and major collectors within the Urban Growth Boundary.

- Recommending the retrofitting of existing arterials and major collectors with bike lanes on a prioritized schedule as appropriate and practical.

- Requiring that sidewalks be included on all new streets within the Urban Growth Boundary.

- Recommending the retrofitting of existing streets with sidewalks on a prioritized schedule.

- Requiring that priority be given to developing pedestrian and bicycle access to major activity centers within the Urban Growth Boundary, such as the downtown commercial center, schools, and community centers.

- Requiring that bikeways and walkways connect to local and regional travel routes.

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

- Requiring that bicycle parking facilities be provided at all new residential multifamily developments of four units or more, commercial, industrial, recreational, and institutional facilities.

- Recommending that a citizens advisory committee be established to protect and promote bicycle and pedestrian transportation within the Urban Growth Boundary.

RECOMMENDED ORDINANCES TO IMPLEMENTS

Approval Processes for Transportation Facilities

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

Recommended Ordinances for Approval Process

Projects that are specifically identified in the Transportation System Plan and for which the jurisdiction has made all the required land use and goal compliance finding are permitted outright, subject only to the standards established by the Plan.

However, a city or county may not allow outright a an improvement that is included in the Transportation System Plan but for which no site-specific decisions have been made. Therefore, it is recommended that small jurisdictions review these transportation projects within the Urban Growth Boundary as regulated land use actions, using a conditional use process.

It is recommended that the following ordinances be included in **Section 19ÄSupplementary Provisions** of the **Hermiston Zoning Ordinance No. 1840.**

__.__ *Standards for Transportation Improvements*

__.__.__ *Uses Permitted Outright. Except where otherwise specifically regulated by this ordinance, the following improvements are permitted outright:*

A. *Normal operation, maintenance, repair, and preservation activities of existing transportation facilities.*

B. *Installation of culverts, pathways, medians, fencing, guardrails, lighting, and similar types of improvements within the existing right-of-way.*

C. *Projects specifically identified in the Transportation System Plan as not requiring further land use regulation.*

D. *Landscaping as part of a transportation facility.*

E. *Emergency measures necessary for the safety and protection of property*

F. *Acquisition of right-of-way for public roads, highways, and other transportation improvements designated in the Transportation System Plan except for those that are located in exclusive farm use or forest zones.*

G. *Construction of a street or road as part of an approved subdivision or land partition consistent with the applicable land division ordinance.*

__.__.__ *Conditional Uses Permitted*

A. *Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are: (1) not improvements designated in the Transportation System Plan or (2) not designed and constructed as part of a subdivision or planned development subject to conditional use permit review, which shall comply with the Transportation System Plan and applicable standards, and shall address the following criteria. For State projects that require an Environmental Impact*

Statement (EIS) or EA (Environmental Assessment), the draft EIS or EA shall be reviewed and used as the basis for findings to comply with the following criteria:

1. *The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning.*

2. *The project is designed to minimize avoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.*

3. *The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.*

4. *Project includes provision for bicycle and pedestrian circulation as consistent with the comprehensive plan and other requirements of this ordinance.*

B. *If review under this Section indicates that the use or activity is inconsistent with the Transportation System Plan, the procedure for a plan amendment shall be undertaken prior to or in conjunction with the conditional permit review.*

__-__-__ Time Limitation on Transportation-Related Conditional Use Permits

A. *Authorization of a conditional use shall be void after a period specified by the applicant as reasonable and necessary based on season, right-of-way acquisition, and other pertinent factors. This period shall not exceed three years.*

PROTECTING EXISTING AND FUTURE OPERATION OF FACILITIES

Section 60-12-045(2) of the Transportation Planning Rule 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. 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.

It is recommended that the following ordinances be added to **Hermiston Ordinance No. 490**.

Recommended Access Control Ordinances

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

Section __. Intent and Purpose

The intent of this ordinance is to manage access to land development while preserving the flow of traffic in terms of safety, capacity, functional classification, and level of service. Major roadways, including highways, arterials, and collectors serve as the primary network for moving people and goods. These transportation corridors also provide access to businesses and homes and have served as the focus for commercial and residential

development. If access points are not properly designed, these roadways will be unable to accommodate the needs of development and retain their primary transportation function. This ordinance balances the right of reasonable access to private property with the right of the citizens of the City of Hermiston and the State of Oregon to safe and efficient travel.

To achieve this policy intent, state and local roadways have been categorized in the Transportation System Plan by function and classified for access purposes based upon their level of importance and function. Regulations have been applied to these roadways for the purpose of reducing traffic accidents, personal injury, and property damage attributable to poorly designed access systems, and to thereby improve the safety and operation of the roadway network. This will protect the substantial public investment in the existing transportation system and reduce the need for expensive remedial measures. These regulations also further the orderly layout and use of land, protect community character, and conserve natural resources by promoting well-designed road and access systems and discouraging the unplanned subdivision of land.

Section __. Applicability

This ordinance shall apply to all arterials and collectors within City of Hermiston and to all properties that abut these roadways.

Section __. Conformance with Plans, Regulations, and Statutes

This ordinance is adopted to implement the access management policies of the City of Hermiston as set forth in the Transportation System Plan.

Section __. Definitions

1. *Access. A way or means of approach to provide pedestrian, bicycle, or motor vehicular entrance or exit to a property.*

2. *Access Classification. A ranking system for roadways used to determine the appropriate degree of access management. Factors considered include functional classification, the appropriate local government's adopted plan for the roadway, subdivision of abutting properties, and existing level of access control.*

3. *Access Connection. Any driveway, street, turnout or other means of providing for the movement of vehicles to or from the public roadway system.*

4. *Access Management. The process of providing and managing access to land development while preserving the regional flow of traffic in terms of safety, capacity, and speed.*

5. *Accessway. A walkway that provides pedestrian and bicycle passage either between streets or from a street to a building or other destination such as a school, park, or transit stop. Accessways generally include a walkway and additional land on either side of the walkway, often in the form of an easement or right-of-way, to provide clearance and separation between the walkway and adjacent uses. Accessways through parking lots are generally physically separated from adjacent vehicle parking or parallel vehicle traffic by curbs or similar devices and include landscaping, trees, and*

lighting. Where accessways cross driveways, they are generally raised, paved, or marked in a manner that provides convenient access for pedestrians.

6. *Corner Clearance. The distance from a public or private road intersection to the nearest access connection, measured from the closest edge of the pavement of the intersecting road to the closest edge of the pavement of the connection along the traveled way.*

7. *Cross Access. A service drive providing vehicular access between two or more contiguous sites so the driver need not enter the public street system.*

8. *Easement. A grant of one or more property rights by a property owner to or for use by the public, or another person or entity.*

9. *Frontage Road. A public or private drive which generally parallels a public street between the right-of-way and the front building setback line. The frontage road provides access to private properties while separating them from the arterial street. (see also Service Roads)*

10. *Functional Area (Intersection). That area beyond the physical intersection of two roads that comprises decision and maneuver distance, plus any required vehicle storage length.*

11. *Functional Classification. A system used to group public roadways into classes according to their purpose in moving vehicles and providing access.*

12. *Joint Access (or Shared Access). A driveway connecting two or more contiguous sites to the public street system.*

13. *Lot. A parcel, tract, or area of land whose boundaries have been established by some legal instrument, which is recognized as a separate legal entity for purposes of transfer of title, has frontage upon a public or private street, and complies with the dimensional requirements of this code.*

14. *Lot, Corner. Any lot having at least two (2) contiguous sides abutting upon one or more streets, provided that the interior angle at the intersection of such two sides is less than one hundred thirty-five (135) degrees.*

15. *Lot Depth. The average distance measured from the front lot line to the rear lot line.*

16. *Lot, Flag. A lot not meeting minimum frontage requirements and where access to the public road is by a narrow, private right-of-way line.*

17. *Lot, Through. (or Double Frontage Lot). A lot that fronts upon two parallel streets or that fronts upon two streets that do not intersect at the boundaries of the lots.*

18. *Lot Frontage. That portion of a lot extending along a street right-of-way line.*

19. *Nonconforming Access Features. Features of the property access that existed prior to the date of ordinance adoption and do not conform with the requirements of this ordinance.*

20. *Parcel. A division of land comprised of one or more lots in contiguous ownership.*

21. *Plat. An exact and detailed map of the subdivision of land.*

22. *Private Road. Any roadway for vehicular travel which is privately owned and maintained and which provides the principal means of access to abutting properties.*

23. *Public Road. A road under the jurisdiction of a public body that provides the principal means of access to an abutting property.*

24. *Reasonable Access. The minimum number of access connections, direct or indirect, necessary to provide safe access to and from the roadway, as consistent with the purpose and intent of this ordinance and any applicable plans and policies of the City of Hermiston.*

25. *Right-of-Way. Land reserved, used, or to be used for a highway, street, alley, walkway, drainage facility, or other public purpose.*

26. *Significant Change in Trip Generation. A change in the use of the property, including land, structures or facilities, or an expansion of the size of the structures or facilities causing an increase in the trip generation of the property exceeding: (1) localÄ10 percent more trip generation (either peak or daily) and 100 vehicles per day more than the existing use for all roads under local jurisdiction; or (2) StateÄexceeding 25 percent more trip generation (either peak or daily) and 100 vehicles per day more than the existing use for all roads under state jurisdiction.*

27. *Stub-out (Stub-street). A portion of a street or cross access drive used as an extension to an abutting property that may be developed in the future.*

28. *Substantial Enlargements or Improvements. An increase in existing square footage or increase in assessed valuation of the structure as described in Section 20(4) of this ordinance.*

Section __. 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 (permitting department) 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.*

Section __. 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 22 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.* [Note: this requires a revision of Ord. 1840 Section 18(3.4) from "hours of operation" to "hours of peak demand."]

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 of Hermiston 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 of Hermiston 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 of Hermiston, 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 (permitting department) may modify or waive the requirements of this section where the characteristics or layout of abutting properties would make the development of a unified or shared access and circulation system impractical.*

Section __. 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 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.*

Section __. 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 comprised 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.*

Section __. 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.*

Section __. 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 Hermiston 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.*

Section __. 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.*

Section __. 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 such as a railroad line.*

Section __. 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 of a secondary street is possible, then access should not be allowed onto the state highway. If access off of a secondary street becomes available, then conversion to that access is encouraged, along with closing the state highway access.*

2. *New direct accesses to individual one and two family dwellings shall be prohibited on all but District-level State Highways.*

Section __. 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 City Engineer 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 streets shall connect with ~~surrounding~~ adjacent major collector and arterial streets at intervals of no less than 1,320 feet (¼ mile) 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, such as narrow local streets, ~~and~~ traffic control such as four-way stops and traffic calming measures are the preferred means of discouraging through traffic.*

Section __. Blocks.

1. *The maximum perimeter length for blocks shall be 1,800 feet.*

2. *The maximum length of any block shall be 660 feet.*

The following Section should be added to **Ordinance No. 858:**

Section __. Subdivisions

1. *A subdivision shall conform to the following standards:*

   a. *Each proposed lot must be buildable in conformance with the requirements of this ordinance and all other applicable regulations.*

b. *Each lot shall abut a public or private street for the required minimum lot frontage for the zoning district where the lots are located.2*

c. *If any lot abuts a street right-of-way that does not conform to the design specifications of this ordinance, the owner may be required to dedicate up to one-half of the total right-of-way width required by this ordinance.*

2. *Further subdivision of the property shall be prohibited unless the applicant submits a plat or development plan in accordance with requirements in this ordinance.*

3. *The City of Hermiston shall consider a proposed Subdivision upon the submittal of the following materials.*

   a. *An application form provided by the City of Hermiston;*

   b. *(_____) copies of the proposed Subdivision plat;3*

   c. *A statement indicating that water and/or sanitary sewer service is available to the property; and*

   d. *Land descriptions and acreage or square footage of the original and proposed lots and a scaled drawing showing the intended divisions and proposed street system shall be prepared by a professional land surveyor registered in the State of Oregon. In the event a lot contains any principal or accessory structures, a survey showing the structures on the lot shall accompany the application.*

4. *Review Procedure*

   a. *The Planning Commission and City Council shall transmit a copy of the proposed Subdivision to the appropriate departments or officials for review and comment.*

   b. *If the proposed Subdivision meets the conditions of this section and otherwise complies with all applicable laws and ordinances, the (approving official) shall approve the Subdivision by signing the application form.*

   c. *Upon approval of the Subdivision, the (approving official) shall record the plat on the appropriate maps and documents, and shall, at the applicant's expense, record the plat in the official county records.*

At present, the City of Hermiston has no Site Plan Review procedure. In the event that the city adopts such a procedure, the following ordinances should be included:

---

2 Communities are encouraged to consider reducing lot widths and front yard setbacks to create a more pedestrian friendly street environment. These steps expand development options and can help to slow traffic on residential streets.

3 The number of copies required should be based on number of entities that will review the plan under adopted procedures.

Section __. Site Plan Review Procedures for Access Management

1. *Applicants shall submit a preliminary site plan for review by (name of department responsible for conducting review). At a minimum, the site plan shall show:*

   a. *Location of existing and proposed access point(s) on both sides of the road where applicable;*

   b. *Distances to neighboring constructed access points, median openings (where applicable), traffic signals (where applicable), intersections, and other transportation features on both sides of the property;*

   c. *Number and direction of lanes to be constructed on the driveway plus striping plans;*

   d. *All planned transportation features (such as sidewalks, bikeways, auxiliary lanes, signals, etc.);*

   e. *Parking and internal circulation plans including walkways and bikeways;*

   f. *A detailed description of any requested variance and the reason the variance is requested.*

2. *Subdivision and site plan review shall address the following access criteria:*

   a. *All proposed roads shall follow the natural topography and preserve natural features of the site as much as possible. Alignments shall be planned to minimize grading.*

   b. *Access shall be properly placed in relation to sight distance, driveway spacing, and other related considerations, including opportunities for joint and cross access.*

   c. *The road system shall provide adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and garbage collection.*

   d. *An internal pedestrian system of sidewalks or paths shall provide connections to parking areas, entrances to the development, and open space, recreational, and other community facilities associated with the development. Streets shall have sidewalks on both sides. Pedestrian linkages shall also be provided to the peripheral street system.*

   e. *The access shall be consistent with the access management standards adopted in the Transportation System Plan.*

3. *Any application that involves access to the State Highway System shall be reviewed by the Oregon Department of Transportation for conformance with state access management standards.*

The following section should be intregrated into **Hermiston Ordinance 1840 Section 25ÄVariance.**

Section __. Variance Standards for City of Hermiston Facilities

1. *The granting of the variation shall be in harmony with 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 Transportation Planning Rule 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. Ordinance language for coordinated review is provided within the suggested ordinances for Access Management.

Recommended Process for Applying Conditions to Development Proposals

Section 660-12-045(2)(e) of the Transportation Planning Rule 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 of the small jurisdiction's codes should include 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. At present, the City of Hermiston has no Site Plan Review procedure. In the event that the City adopts such a procedure, the following ordinances should be included:

- *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.*

Conditions such as the following should be included in the Site Plan Review sections, to be applied in the event that a proposed project is demonstrated to potentially have an adverse affect 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 defined in **Section 27 of the Hermiston Ordinance No. 1840**. This Ordinance should be amended at **Subsection 27(3.2)** to include subdivisions and site plan review (should the City implement a site plan review ordinance) for Notice to ODOT regarding any land use action on or adjacent to a State facility, including subdivisions and site plan. Similarly, all actions by Hermiston or Umatilla County potentially affecting another jurisdiction's road should require notice to that jurisdiction's public works department.

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

Section 660-12-045(2)(g) of the Transportation Planning Rule requires that jurisdictions develop regulations to assure that all development proposals, plan amendments, or zone changes conform with the Transportation System Plan. The following wording should be added to the **Section 26ÄAmendments to the Zoning Ordinance of Hermiston Code No. 1840**:

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

a. *Changes the functional classification of an existing or planned transportation facility;*

b. *Changes standards implementing a functional classification system;*

c. *Allows types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or*

d. *Would reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.*

__. *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:*

(a) Limiting allowed land uses to be consistent with the planned function of the transportation facility;

(b) 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,

(c) 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 smaller 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 Transportation Planning Rule (660-12-045(3)) requires that urban areas plan for bicycling and walking as part of the overall transportation system.

Ordinances for Bicycle Parking

The lack of safe and convenient bicycle parking can waste resources and further discourage bicycling as a transportation mode. The following ordinances should be added to **Section 18ÄOff-Street Parking and Unloading of Hermiston Code No. 1840**:

__. *A minimum of 2 bicycle parking spaces per use (one sheltered and one unsheltered) shall be required.*

__. *The following Special Minimum Standards shall be considered as supplemental requirements for the number of required bicycle parking spaces.*

a. *Multi-Family Residences. Every residential use of four (4) or more dwelling units shall provide at least one sheltered bicycle parking space for each unit. Sheltered bicycle parking spaces may be located within a garage, storage shed, basement, utility room or similar area. In those instances in which the residential complex has no garage or other easily accessible storage unit, the required bicycle parking spaces shall be sheltered under an eave, overhang, an independent structure, or similar cover.*

b. *Parking Lots. All public and commercial parking lots and parking structures shall provide a minimum of one bicycle parking space for every 10 motor vehicle parking spaces.*

c. *Schools. Elementary and middle schools, both private and public, shall provide one bicycle parking space for every 10 students and employees. High schools shall provide one bicycle parking space for every 5 students and employees. All spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.*

d. *Colleges. Colleges, universities, and trade schools shall provide one bicycle parking space for every 10 motor vehicle spaces plus one space for every dormitory unit. Fifty percent of the bicycle parking spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.*

e. *Downtown Areas. In downtown areas with on-street parking, bicycle parking for customers shall be provided along the street at a rate of at least one space per use. Spaces may be clustered to serve up to six (6) bicycles; at least one cluster per block shall be provided. Bicycle parking spaces shall be located in front of the stores along the street, either on the sidewalks in specially constructed areas such as pedestrian curb extensions. Inverted "U" style racks are recommended. Bicycle parking shall not interfere with pedestrian passage, leaving a clear area of at least 5 feet. Customer spaces are not required to be sheltered. Sheltered parking (within a building, or under an eave, overhang, or similar structure) shall be provided at a rate of one space per 10 employees, with a minimum of one space per store.*

__. *The following formulas for Calculating the Number of Required Bicycle Parking Spaces are recommended.*

a. *Fractional numbers of spaces shall be rounded up to the next whole space.*

b. *For facilities with multiple uses (such as a commercial center), the bicycle parking requirements shall be calculated by using the total number of motor vehicle parking spaces required for the entire development.*

Recommended Ordinances for Bicycle and Pedestrian Circulation and Access

Sections 660-12-045(3)(b), (c), and (d) of the Transportation Planning Rule deals with providing facilities for safe and convenient pedestrian and bicycle circulation and access, both within new residential and commercial development, and on public streets. In order for walking and bicycling to be viable forms of transportation, especially in smaller cities where they can constitute a significant portion of local trips, the proper facilities must be supplied. In addition, certain development design patterns, such as orienting commercial uses to the street and placing parking behind the building, make a commercial district more accessible to non-motorized transportation and to existing or future transit.

The Transportation Planning Rule specifies that, at a minimum, sidewalks and bikeways be provided along arterials and collectors in urban areas. Separate bicycle and pedestrian facilities should be provided where these would safely minimize trips distances by providing a "short cut." Small cities should enhance existing ordinances by including the following recommended language, additions and recommendations. The recommendations should be placed within the appropriate section of the zoning or subdivision ordinance:

Definitions:

1. *Accessway. A walkway that provides pedestrian and bicycle passage either between streets or from a street to a building or other destination such s a school, park, or transit stop. Accessways generally include a walkway and additional land on either side of the walkway, often in the form of an easement or right-of-way, to provide clearance and separation between the walkway and adjacent uses. Accessways through parking lots are generally physically separated from adjacent vehicle parking or parallel vehicle traffic by curbs or similar devices and include landscaping, trees, and lighting. Where accessways cross driveways, they are generally raised, paved, or marked in a manner that provides convenient access for pedestrians.*

2. *Bicycle. A vehicle designed to operate on the ground on wheels, propelled solely by human power, upon which any person or persons may ride, and with two tandem wheels at least 14 inches in diameter. An adult tricycle is considered a bicycle.*

3. *Bicycle Facilities. A general term denoting improvements and provisions made to accommodate or encourage bicycling, including parking facilities and all bikeways.*

4. *Bikeway. Any road, path, or way that is some manner specifically open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are shared with other transportation modes. The five types of bikeways are:*

   a. *Multi-use Path. A paved 10 to 12-foot wide way that is physically separated from motorized vehicular traffic; typically shared with pedestrians, skaters, and other non-motorized users.*

   b. *Bike Lane. A 4 to 6-foot wide portion of the roadway that has been designated by permanent striping and pavement markings for the exclusive use of bicycles.*

   c. *Shoulder Bikeway. The paved shoulder of a roadway that is 4 feet or wider; typically shared with pedestrians in rural areas.*

   d. *Shared Roadway. A travel lane that is shared by bicyclists and motor vehicles.*

   e. *Multi-use Trail. An unpaved path that accommodates all-terrain bicycles; typically shared with pedestrians.*

5. *Pedestrian Facilities. A general term denoting improvements and provisions made to accommodate or encourage walking, including sidewalks, accessways, crosswalks, ramps, paths, and trails.*

6. *Neighborhood Activity Center. An attractor or destination for residents of surrounding residential areas. Includes, but is not limited to existing or planned schools, parks, shopping areas, transit stops, employment areas.*

7. *Reasonably direct. A route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.*

8. *Safe and convenient. Bicycle and pedestrian routes that are:*

   a. *Reasonably free from hazards, and*

   b. *Provides a reasonably direct route of travel between destinations, considering that the optimum travel distance is one-half mile for pedestrians and three miles for bicyclists.*

9. *Walkway. A hard-surfaced area intended and suitable for pedestrians, including sidewalks and the surfaced portions of accessways.*

At present, the City of Hermiston has no Site Plan Review procedure. In the event that the City adopts such a procedure, the following ordinances should be included:

__. *Bicycle Parking. The development shall include the number and type of bicycle parking facilities required in the Off-Street Parking and Loading section of this Title. The location and design of bicycle parking facilities shall be indicated on the site plan.*

__. *Pedestrian Access and Circulation.*

a) Internal pedestrian circulation shall be provided in new commercial, office, and multi-family residential developments through the clustering of buildings, construction of hard surface walkways, landscaping, accessways, or similar techniques.

__. *Commercial Development Standards.*

a) New commercial buildings, particularly retail shopping and offices, shall be oriented to the street, near or at the setback line. A main entrance shall be oriented to the street. For lots with more than two front yards, the building(s) shall be oriented to the two busiest streets.

b) Off-street motor vehicle parking for new commercial developments shall be located at the side or behind the building(s).

__. *All site plans (industrial and commercial) shall clearly show how the site's internal pedestrian and bicycle facilities connect with external existing or planned facilities or systems.*

The **City of Hermiston Subdivision Ordinance No. 858** should reflect the intent of the Transportation Planning Rule by adding the following provision to development requirements.

__. *Approval of Subdivision Tentative Plans and Final Plats. Information required shall include the location and design of all proposed pedestrian and bicycle facilities, including accessways.*

The City of Hermiston should upgrade its Public Works Standards to include a section such as the following:

__. *Pedestrian and Bicycle Circulation.*

a) On-site facilities shall be provided that accommodate safe and convenient pedestrian and bicycle access within new subdivisions, multi-family developments, planned development, shopping centers, and commercial districts, and connecting to adjacent residential areas and neighborhood activity centers within one-half mile of the development. Residential developments shall include streets with sidewalks and accessways. Pedestrian circulation through parking lots shall be provided in the form of accessways.

b) Bikeways shall be required along arterials and collectors with ADTs greater than 3,000. Sidewalks shall be required along arterials, collectors, and most local streets, except that sidewalks are not required along controlled access roadways (freeways).

The City of Hermiston Subdivision Ordinance No. 858 should incorporate the following language into the existing requirements for cul-de-sac design.

_ *Cul-de-Sacs and Accessways.*

a) 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.

b) 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.

c) Accessways for pedestrians and bicyclists shall be provided at mid-block where the block is longer than 600 feet.

d) The Hearings Body or Planning Director may determine, based upon evidence in the record, that an accessway is impracticable. Such evidence may include but is not limited to:

i) Physical or topographic conditions make an accessway connection impractical. Such conditions include but are not limited to freeways, railroads, extremely steep slopes, wetlands, or other bodies of water where a connection cannot reasonable be provided.

ii) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future, considering potential for redevelopment.

iii) 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.

Street Standards

Section 660-12-045(7) of the Transportation Planning Rule deals with establishing street standards. Cities must balance mobility, access, and liveability when specifying street standards. Cities have tended to establish street dimensions based on highway standards. Many cities have found it increasingly expensive to construct and maintain very wide streets. In many cases, liveability has been diminished because excessively wide streets make it difficult to walk, and community aesthetics decline as the landscape is dominated by roads and motor vehicles.

As understanding of roadway function has increased, it has become appropriate for local governments to establish standards for local streets and accessways that minimize pavement width and total right-of-way, while staying consistent with the operational needs of the facility. This reduces the costs of new construction, maintenance, and provides for more efficient use of urban land. The goal is to provide for emergency vehicle access while discouraging inappropriate traffic volumes and speeds, along with accommodating pedestrians and bicyclists. The following standards should be added to the **City of Hermiston Subdivision Ordiance No. 858**:

TABLE 9-1
RECOMMENDED STREET STANDARDS

Classification	Pavement Width (ft)	Sidewalk width (ft)	Bikeway Width (ft)	Parking	ROW (ft)	Design Speed (MPH)
Urban (inside UGB)						
Local Residential	28-32	5	None	1 side (28') 2 sides (32')	40-44	15-25
Local Residential Cul-de-Sac	34	5	None	2 sides	46	15-25
Minor Collector	36	5	None	2 sides	48	25-35
Major Collector	48	5	5	2 sides	60	35
Minor Arterial (Alt. 1)	50	5	5	2 sides	62	35
Minor Arterial (Alt. 2)	60	5	5	2 sides	70	45
Major Arterial	60	8	6	None	80	45-55
Rural (outside UGB)						
Local	24	none	none	none	60	15-25
Collector	32-40	4-8 shoulder		none	60	35
Arterial	36-40	6-8 shoulder		none	60	45-55

APPENDIX A

Existing Plans, Policies, and Guidelines

CITY OF HERMISTON TRANSPORTATION SYSTEM PLAN

SUMMARY OF CITY COMPREHENSIVE PLAN, ZONING CODE, MASTER PLANS, AND HIGHWAY 395 CORRIDOR STUDY

The following documents are summarized below: The 1984 City of Hermiston Comprehensive Plan (updated in 1992), City of Hermiston Zoning Ordinance No. 1840 (1994), City of Hermiston Bicycle Plan (1988), City of Hermiston Public Facilities Plan - Transportation Element (1990), Umatilla Comprehensive Plan - Transportation Element (1983), The City of Hermiston-Umatilla County Joint Management Agreement (Amended 1995), City of Hermiston Public Works Standard Plans and Specifications (1993), City of Hermiston Park Master Plan (1988), Municipal Airport Master Plan (1986), Highway 395 Corridor Study.

COMPREHENSIVE PLAN

The 1984 City of Hermiston Comprehensive Plan (updated in 1992) provides policies and implementing actions to guide the City's development patterns through 2004. The plan's transportation policies were adequate when written, but do not reflect the evolution of the state planning guidelines and principles over the past ten years. Consequently, although the Comprehensive Plan addresses many elements of the Transportation Planning Rule, it often does not go far enough.

The plan addresses the need to integrate different types of travel (multi-modalism) and to use the transportation system to maintain and enhance economic development, and increase overall livability. The Transportation Element briefly discusses the importance of decreasing dependence on single occupancy vehicle trips by increasing the viability of bicycle, pedestrian, and transit trips through actions such as development standards and land-use patterns. The plan also take steps to integrate the land-uses within Hermiston to promote more "neighborhood commercial" development. However, further actions should be taken to initiate mixed land-use zones.

Policy 31 identifies Hermiston's importance as a transportation hub by highlighting the Air and Rail facilities which serve the greater region. Union Pacific's Hinkle Yard is the largest yard west of Omaha, Nebraska and provides freight and passenger service to the industrial and agricultural communities. Rail service also connects to barge service at the Port of Umatilla. The General Utility Airport provides a vital link for agricultural and industrial business connections, as well. Emphasis is placed upon the efficiency of the these facilities and the transportation system in general.

Direct attempts at increasing multi-modalism and decreasing dependence on single occupancy vehicles are outlined in Policy 32. Implementing actions call for density bonuses to developers of PUD's that provide bicycle facilities, subsidizing taxi service to provide elderly and handicap transport, and recognizing the importance of sidewalks on major thoroughfares and commercial districts. It also encourages the development of bicycle paths along irrigation canals and the east bank of the Umatilla River.

Implementing actions integrate transportation and other concerns to protect and enhance Hermiston's livability. Policies on air quality; noise; energy conservation; and parks, recreation, and open space have been coordinated with policies on alternative transportation and transportation system integration. The resulting implementing actions focus on investigating the feasibility of pedestrian and bicycle facilities, planting trees along major thoroughfares, and zoning to promote neighborhood shops. Although these are positive steps, a more complete approach would call for a reduction in street widths, a reduction in vehicle miles traveled (VMT), and creation of more bicycle and pedestrian facilities.

The importance of a strong public/transportation facilities for the economic vitality of industry is reflected in the Policy 18: General Industrial Development. Developers are required to design sites to meet current and future industrial needs. Implementing action mandate that developers submit a master plan which include the provision of future arterial and collector streets. They are also required to "determine the appropriate location and timely extension of railroad spurs and water and sewer lines to support development." Implementing actions could go a step further by including incentives for transportation demand management techniques by employers such as staggering shifts, and creating carpools.

Appropriate land use for the reduction of congestion is promoted in Policies 19: Commercial Development and 21: Neighborhood Quality. These policies call for establishing neighborhood commercial centers, outlying commercial centers, improving the downtown commercial core as a community center, and connecting neighborhoods to destinations via local access streets as well as arterials and major collectors.

ZONING ORDINANCE NO. 1840 (1994)

The City of Hermiston Zoning Ordinance implements the Comprehensive Plan providing zoning for all land within the city and establishing requirements for each zone. Section One of the Ordinance expresses numerous purposes for writing the ordinance. Many of these are important to the development of a good transportation system including: lessening congestion; encouraging the orderly growth of the City; preventing undue concentration of population; facilitating adequate provisions for community utilities and facilities (i.e. transportation), and promoting public safety.

The transportation system is defined by the location of land uses as well transportation facilities. Residential development ordinances (Section 6-9) allow neighborhood commercial uses in all residential zones except R-1, Single Family Residential. Providing neighborhood commercial services, like corner grocery stores, in residential neighborhoods is a key strategy for reducing the length and number of automobile trips.

The Off-Street Parking and Loading Ordinances (Section 27) mandate minimum parking and loading spaces for residential, commercial, institutional, and industrial uses. The high number of parking spaces required reflect a recognition of the automobile as the dominant mode of transportation. Some standards may be excessive. For instance, each residential unit is required to provide two off-street parking spaces. There are no reductions in the number of required parking spaces granted for development that promotes alternative modes of travel.

Development Standards (Section 20) mandates the provision of public infrastructure (streets, drainage, sidewalks) for projects. If a new development abuts an existing curb and gutter, the applicant must install sidewalks. Developers are also required to either participate in a future improvement district, or to construct and dedicate facility improvements as a condition of development. If a new development requires the extension of public facilities, costs related to the extension are borne by the applicant.

Ordinances for the commercial core, light industrial, and heavy industrial zones (Sections 10, 11, and 12) create a framework in which essential economic activities can be performed, but do not prevent sprawl/strip development or provide standards to create a community identity. Section 14 (Airport Zone A) allows commercial and light industrial uses while protecting the land around the Airport. The City's "Airport Hazard Zoning Ordinance" governs development around the Airport, "so as to minimize the interference with the operations of said airport and reduce hazards to the public health, welfare, and safety."

Of all the ordinances, those on Planned Unit Developments (Section 17) address transportation issues most comprehensively. Section 17 mandates connectivity with arterial streets and future developments and retention of public rights-of-way for future expansion. Density bonuses are also offered for PUD's in general (15%) and additional bonuses (up to 5%) are offered for various criteria. Bonuses are not rewarded for bicycle facilities as is encouraged in the Comprehensive Plan.

1988 BICYCLE MASTER PLAN

This document reflects the City's first attempt at designing a comprehensive bicycle system within Hermiston. The objective of the plan was to create a bike plan in coordination with the State Plan. In doing so, the plan used the 1981 AASHTO guidelines to layout a system which met the utilitarian and recreational needs of the community. Two criteria for a bicycle system

were identified: (1) it should access major traffic generators (schools, government offices, businesses) and (2) be compatible with the existing transportation facilities.

The plan states that where practical the City "will provide" bike lanes. Separated paths were also considered where traffic volumes were considered to present a safety issue. Bike route signs were to be used to identify routes not designated by bike lanes. Bike lanes for a 44 foot roadway were recommended to be 4 feet with an 8 inch stripe on the outside of the lane and a 4 inch stripe along the curbside of the lane. Stencils would also mark the lanes.

The revised Oregon State Bike Plan calls for wider bike lanes (five foot minimum) and an emphasis on bike facility design, as opposed to signing. These changes should be reflected in any updates to the Hermiston Bicycle Master Plan.

1990 PUBLIC FACILITIES PLAN - TRANSPORTATION ELEMENT

The transportation element of the Public Facilities Plan provides a brief, but comprehensive analysis of the street system serving Hermiston. The plan does not address alternative facilities. Within the plan street standards were defined in the following manner:

Note: Bicycle accommodations were not provided.

- Major Collectors = 36' pavement with 50' ROW allowing for 2, 12' travel lanes, 6' sidewalks, and parking where traffic volumes permitted.

- Minor Arterials = 44' pavement with 60' ROW allowing for 2 travel lanes, sidewalks, and maybe parking where traffic volumes permitted.

- Major Arterials = 62' pavement with 80' ROW allowing for 4 travel lanes, center turn lane, sidewalks, no parking

According to the plan, a key aspect of the development and maintenance of transportation facilities was coordinating efforts between the State, County, and City, because all three governments have jurisdiction over roadways within the UGB and City limits.

The Public Facilities Plan allocates $27 million for construction and improvement of transportation facilities, primarily roadways, from fiscal year 1989 to 2009. $1 million was for airport improvements and an estimated $18 million was needed for 36 miles of roadway improvement. Funding was recognized to come from development and LID standards and requirements as well as local and state sources. The plan also indicated that the City was exploring implementing SDC's.

1983 (AMENDED 1987) UMATILLA COUNTY COMPREHENSIVE PLAN-TRANSPORTATION ELEMENT

The Transportation Element of the Umatilla County Comprehensive Plan identifies twenty-five separate issues that effect the transportation system of the County. It then provides specific policies to address each issue.

To address the need for an efficient transportation system throughout the County, policies require the development of a Transportation Master Plan to integrate city and regional systems. The Transportation Master Plan should coordinate urban and rural needs, integrate different modes of transportation, identify future road areas for rezoning to reflect the intended use, and determine bridge and transit needs.

Other policies in the element focus on maintaining and enhancing current facilities. For example, Policy 17 encourages preservation and expansion of existing rail lines and services and Policy 12 promotes expansion of the Port of Umatilla.

The land use/transportation connection is recognized in many of the policies. Policy 3 requires designation of the Hinkle-Feedville area south of Hermiston as an industrial and agribusiness zone in order to take advantage of its access to the railroad, I-84, the Hermiston Airport, and agricultural market roads. Also, Policy 10 requires that adequate access be provided to land locked lots. (Land use applications will be denied if this requirement is not met.)

Other findings and policies deal with hazardous materials, connectivity (to restrict landlocked parcels), transportation demand management, level of service, economic issues, environmental and wildlife issues, setbacks, and parking.

1993 PUBLIC WORKS STANDARD PLANS AND SPECIFICATIONS

The City of Hermiston has standards and specifications for sewer construction, street construction, and water construction. This document contains specific standards for manholes, pipe trenches and encasements, local streets, curbs and gutters, driveways, sidewalks, catch basins, irrigation outlets, fire hydrants, standard thrust and blowoff assemblies, and air vacuum valve assembly.

1996 CITY OF HERMISTON - UMATILLA COUNTY JOINT MANAGEMENT AGREEMENT AMENDMENT

The intergovernmental agreement between City of Hermiston and the Umatilla County clarifies the role that each agency will play in managing an integrated transportation system. This agreement helps insure that a coordinated and cooperative effort is made to manage systems, in particular roads, which have multi-jurisdictional importance.

1988 PARK MASTER PLAN

The City of Hermiston Park Master Plan identifies and inventories the existing park/school facilities within the City limits. The Plan discusses a methodology for determining needs, and points out the discrepancies between mathematically projected needs and community desires. Final analysis calls for more ball fields, a swimming pool, and larger community (versus neighborhood) parks to meet park and open space needs of a growing population. The plan briefly addresses bike paths, identifying two existing paths and the need for more to be developed. Specifics were deferred to the Bike Plan.

In regard to implementing the TPR, the plan does not address circulation to and from parks or fields, parking (or bicycle parking), linear park development, or parks as trip generators/destinations. Promoting regional parks, as opposed to smaller neighborhood parks, may be counter productive for reducing the reliance on auto trips.

1986 MUNICIPAL AIRPORT MASTER PLAN UPDATE

The Municipal Airport Master Plan Update provides a comprehensive analysis of the Hermiston Airport including an inventory of facilities, a discussion of use for a twenty year planning period (ending in 2006), and recommendations for facility improvements. The introduction of the plan also provides a good overview of all the major transportation facilities serving Hermiston and Northeast Oregon.

Although the plan does not address the need to control the surrounding land-uses, this may be attributable to the fact that the City and airport management acquired land around the airport during the planning process. This action was seen as successfully preventing conflicting land use and infringement upon airport facilities within the twenty year planning period.

According to the plan, the airport is a General Utility Facility serving itinerant and fixed base aircraft. It is showing signs of a reemerging trade in itinerant multiengined GUII aircraft, despite a decrease in use in the early 80's. This reflected the importance of the airport to large

agricultural and industrial companies as well as the Department of Army Depot (the largest in the Northwest). Estimated total operations were 23,100 for 1985 and projected to be 49,140 for 1995 and 76,020 for 2005.

To meet projected use the Plan recommended extending the runway and taxiway to 4500 feet, expanding tie-down and T-hanger facilities, improving the auto parking area and the access road from Highland Avenue, obtaining a weather reporting system or personnel (NAV Aids), and improving the approach to the runway for larger aircraft. Upgrading the facility to a Transport Category was not recommended, but keeping that option open was encouraged. Noise was not considered to be a concern within the planning period.

HERMISTON-UMATILLA HIGHWAY 395 CORRIDOR LAND-USE /TRANSPORTATION PLAN

This Land-Use\Transportation Plan was completed by Kittelson & Associates, Inc. in June 1995 as a TGM project. The Plan provides up-to-date inventory and analysis of the transportation system and land-use within the Highway 395 Corridor. The Hermiston TSP should incorporate the plan, when applicable, to coordinate transportation planning efforts within the City of Hermiston. The Corridor Study includes the greater Hermiston Area as it relates to access and land-use along Highway 395.

The goal of the Plan is to guide development of land-use and transportation within the corridor to meet the existing and future needs of the Hermiston-Umatilla area while maintaining the integrity of Highway 395. This goal was accomplished through a process of inventory, analysis, improvement recommendations, and policy recommendations.

To meet the land-use and transportation needs identified through the inventory process a corridor overlay zone was proposed to guide development. The implementing policies for the overlay zone include land-use and access management, design standards and functional classification for roadways, circulation plans, upgrading Highway 395 to a regional status roadway, and improving the bicycle and pedestrian system. Specific improvements to meet future traffic demands included developing a signal plan to work with the existing street grid system, implementing specific street improvements to provide an efficient supporting street network to Highway 395, extending Fourth Street to serve as a parallel north/south route east of Highway 395, and the realignment of Punkin Center Rd. to increase access and efficiency.

This Plan can serve as an up-to-date resource document for inventory work within the Hermiston UGB as well as provide valuable inventory for areas north and south of the Hermiston TSP study area. The Plan recommends that the Hermiston TSP examine the following:

- Extension of Fourth Street
- Alignment of 10th Street

- Upgrading public transit to a fixed-route system or a higher level of para-transit service
- East-West corridor for Highway 207 Truck Route
- Access management within city limits along 395
- Signals as Gladys, Main, and Hurlburt - relocate, remove, combine?
- Access spacing policies for parallel roadway network
- Funding mechanisms

APPENDIX B

Street System Inventory

1995 MAJOR STREETS INVENTORY

CITY OF HERMISTON TRANSPORTATION MASTER PLAN

Street	Zone	From	To	Jurisdict.	Class.'	Speed	ROW	Width	Lanes	Curbs	Parking	Walkways	Bikeways	Pavement Condition	Segment Length, ft
1st Pl	NW	Elm Ave	Jennie Ave	County	Collector	25	60	24	2	No	No	No	No	Poor	1545
1st Pl	NW	Jennie Ave	Hermiston Ave	City	Collector	25	50	24+	2	No	No	No	No	Poor	1545
1st St S	SW	Hermiston Ave	Locust Ave	City	Collector	25	50	38	2	Yes	Yes	West	Shared	Fair	400
1st St S	SW	Locust Ave	Highland Ave	City	Collector	25	50,55	42	2	Yes	Yes	West	Shared	Fair	2000
1st St S	SW	Highland Ave	4th St Ext S	City	Collector	25	50	24	2	Partial	No	Partial	No	Fair	2600
4th St E	NE	Elm Ave	Jennie Ave	City	Collector	25	60	35	2	Yes	Yes	Yes	No	Fair	1300
4th St E	NE	Jennie Ave	Ridgeway Ave	City	Collector	25	60	35	2	Yes	Yes	West	No	Good	1200
4th St E	NE	Ridgeway Ave	Main St	City	Collector	25	60	35	2	Yes	Yes	Yes	No	Good	750
4th St E	SE	Main St	US 395 S	City	Collector	25	60	43	2	Yes	Yes	Yes	Shared	Good	2600
7th St E	NE	Jennie Ave	Wilshire Ave	City	Local	25	60	35	2	No	Yes	No	No	Gravel	800
7th St E	NE	Wilshire Ave	Sunset Dr	City	Local	25	60	35	2	Yes	Yes	Yes	No	Good	200
7th St E	NE	Sunset Dr	Ridgeway Ave	City	Local	25	30	21	2	No	No	No	No	Fair	200
7th St E	NE	Ridgeway Ave	Main St	City	Local	25	60	35	2	Yes	Yes	Yes	No	Fair	700
7th St E	SE	Main St	Hurlbert Ave	City	Local	25	60	35	2	Yes	Yes	Yes	No	Fair	300
7th St E	SE	Hurlbert Ave	Highland Ave	City	Local	25	60,55	35	2	Yes	Yes	Yes	No	Good	1600
7th St W	NW	Elm Ave	Fulton Ave	City	Local	25	60	20	2	No	No	No	No	Fair	800
7th St W	NW	Fulton Ave	Standard Ave	City	Local	25	60	35	2	Yes	Yes	Yes	No	Good	1200
7th St W	NW	Standard Ave	Ridgeway Ave	City	Local	25	30,45	20	2	No	Yes	No	No	Dirt	650
7th St W	SW	Hermiston Ave	Highland Ave	City	Collector	25	60	46	2	Yes	Yes	Yes	Shared	Good	1950
10th St E	NE	Punkin Center	Diagonal Rd	County	Minor Art		66	24	2	No	No	No	No	Fair	7,130
10th St E	SE	Diagonal Rd	Ridgeway Ave	County	Collector	25	66	26	2	East	No	East	No	Fair	1000
10th St E	SE	Ridgeway Ave	Newport Ave	County	Collector	25	66	20	2	No	No	No	No	Fair	1300
10th St E	SE	Newport Ave	Highland Ave	County	Collector	25	66	32	2	West	West	West	No	Fair	1300
11th St	NW	Elm Ave	Linda Ave	County	Minor Art.	25	66	34	2	Yes	No	East	Shared	Good	1400
11th St	NW	Linda Ave	Hermiston Ave	City	Minor Art.	25	66	43	2	Yes	Yes	Yes	Shared	Good	1900
11th St	SW	Hermiston Ave	N of Highland Ave	State/City	Principle Art.	35	66	43	3	Partial-E	No	Partial-E	Shared	Fair	950
11th St	SW	N of Highland Ave	Highland Ave	State/City	Principle Art.	35	66	43	2	Partial-E	No	No	No	Fair	950
11th St	SW	Highland Ave	S City Limits	State/City	Principle Art.	35	66	45	2	Partial-W	No	No	Shoulder	Good	2250
Butter Creek Rd/11th St	NW	Umatilla River Rd	Elm Ave	County	Collector	35	66	20	2	No	No	No	No	Good	4276
Butter Creek Rd/11th St	SW	S City Limits	Feedville Rd	State	Minor Art.	50	66	31	2	No	No	No	Shoulder	Good	8650
Diagonal Rd	NE	7th St	8th St	State	Principle Art.	25	66	42	2	Yes	North	North	No	Good	700
Diagonal Rd	NE	8th St	10th St	State	Principle Art.	35	66	33	2	No	No	No	Shoulder	Good	2400
Diagonal Rd	NE	10th St	Reed Rd	State	Minor Art.	50	66	35	2	No	No	No	Shoulder	Good	9900
Diagonal Rd	NE	Reed Rd	Punkin Center Rd	State	Minor Art.	50	66	35	2	No	No	No	Shoulder	Good	3500
Elm Ave	NW	11th St	RR tracks	County	Minor Art.	45	66	24	2	Partial-N	No	Partial-N	No	Fair	3550
Elm Ave	NW	RR tracks	2nd St	City	Minor Art.	30	66	53	3	Yes	No	No	Lane	Good	950
Elm Ave	NW	2nd St	Spruce St	City	Minor Art.	25	66	60	3	Yes	No	No	Lane	Good	300
Elm Ave	NW	Spruce St	1st St N (US 395 N)	City	Minor Art.	25	66	55	3	Yes	No	Yes	Shared	Good	400
Elm Ave	NE	1st St N (US 395 N)	4th St	City	Minor Art.	25	66	51	3	Yes	South	Partial	Lane	Good	1300
Elm Ave	NE	4th St	10th St	County	Minor Art.	40	66	22	2	No	No	North	No	Fair	4000
Elm Ave	NE	10th St	Diagonal Rd	County	Minor Art.	40	66	22	2	No	No	No	No	Fair	2550
Feedville Rd	SW	Butler Creek Rd	US 395 S	County	Collector		66	23	2	No	No	No	No	Fair	19500
Gladys Ave	NE	1st St N (US 395 N)	4th St	City	Collector	25	70	48	2	Yes	Yes	Yes	Shared	Good	1750
Gladys Ave	NE	4th St	5th St	City	Local	25	70	48	2	Yes	Yes	Yes	Shared	Good	1750
Gladys Ave	NE	5th St	7th St	City	Local	25	70	35	2	Yes	Yes	Partial-N	No	Good	800
Hermiston Ave	NW	11th St	3rd St	State	Principle Art.	30	60,70	43	2	Yes	Yes	Yes	Shared	Fair	4250

s:\trans\project\herm0001\inventory\herm-inv.xls

Hermiston Ave	NW	3rd St	1st Pl	State	Principle Art.	30	70	51	2	Yes	Yes	Yes	Shared	Fair	500
Hermiston Ave.	NW	1st Pl	1st St N (US 395 N)	State	Principle Art.	30	70	48	3	Yes	No	Partial	No	Good	400
East Loop Rd	SE	Highland Ave	Ott Rd	County	Collector		60	22	2	No	No	No	No	Fair	1900
Hermiston-Hinkle Rd	SW	4th St Ext S	Experiment Station Rd	County	Collector	45	50	24	2	No	No	No	No	Good	4000
Hermiston-Hinkle Rd	SW	Experiment Station Rd	Feedville Rd	County	Collector	45	66	24	2	No	No	No	No	Good	3900
Highland Ave	SW	W UGB	13th Pl	County	Minor Art.	35	66	28	2	No	No	No	No	Poor	4500
Highland Ave	SW	13th Pl	11th St	County	Minor Art.	25	66	28	2	No	No	No	No	Poor	800
Highland Ave	SW	11th St	1st Pl	City	Minor Art.	25	66	50	2	Yes	Yes	Yes	Lane	Good	5300
Highland Ave	SW	1st Pl	RR tracks	City	Minor Art.	25	66	50	2	Yes	No	Yes	Lane	Good	350
Highland Ave	SW	RR tracks	US 395 S	City	Minor Art.	25	66	50	3	Yes	No	Yes	Shared	Good	350
Highland Ave	SE	US 395 S	10th St	City	Minor Art.	25	66	43	2	Yes	Yes	Yes	Shared	Good	4450
Highland Ave	SE	10th St	East Loop Rd	County	Collector		66	22	2	No	No	No	Shared	Fair	3600
Hurlburt Ave	SE	US 395 S	3rd St	City	Collector	25	70	40	2	Yes	Yes	Yes	No	Fair	750
Hurlburt Ave	SE	3rd St	4th St	City	Collector	25	70	35	2	Yes	Yes	Yes	No	Fair	1700
Hurlburt Ave	SE	4th St	7th St	City	Local	25	70	35	2	Yes	Yes	Yes	No	Fair	1700
Jennie Ave	NW	1st Pl	1st St N (US 395 N)	City	Local	25	55,60	42	2	Yes	Yes	No	Shared	Fair	1100
Jennie Ave	NE	1st St N (US 395 N)	4th St	City	Local	25	50,60	33	2	Yes	Yes	Partial-S	No	Fair	1250
Jennie Ave	NE	6th St	7th St	City	Local	25	60	33	2	No	Yes	No	No	Gravel	300
Jennie Ave	NE	4th St	6th St	City	Local	25	60	33	2	Yes	Yes	No	No	Fair	950
Kelli Blvd	SE	US 395 S	400' S	City	Collector		80	32	2	Yes	No	East	Shared	Poor	400
Kelli Blvd	SE	400' S	Feedville Rd	City	Collector		80,66	32	2	No	No	No	Shared	Good	4350
Main St	NE	1st St N (US 395 N)	7th St	State	Principle Art.	25	70	50	2	Yes	Yes	Yes	Shared	Good	2500
Orchard Ave	SW	11th St	7th St	City	Collector	25	60	37	2	Yes	Yes	Yes	No	Fair	2600
Orchard Ave	SW	7th St	1st St S	City	Collector	25	50,60	43	2	Yes	Yes	Yes	No	Good	2500
Orchard Ave	SW	1st St S	US 395 S	City	Collector	25		42	3	Yes	No	Yes	No	Good	100
Punkin Center Rd	NE	US 395 N	Ott Rd	County	Collector		66	22	2	No	No	No	No	Fair	10900
Punkin Center Rd	NE	Ott Rd	Diagonal Rd	County	Collector		66	22	2	No	No	No	No	Fair	6200
Ridgeway Ave	NW	11th St	1st Pl	City	Collector	25	60	33	2	Yes	Yes	No	No	Fair	4650
Umatilla River Rd	NW	Punkin Center Rd	Elm Ave	County	Collector	35	60	23	2	No	No	No	No	Good	6900
US 395 N (1st St N)	NW	Punkin Center Rd	Theater Ln	State	Principle Art.	35	100	58	5	Yes	No	No	No	Fair	2900
US 395 N (1st St N)	NW	Theater Ln	Elm Ave	State	Principle Art.	35	100	56	5	Yes	No	Yes	No	Fair	2600
US 395 N (1st St N)	NW	Elm Ave	Main St	State	Principle Art.	30	100	56	5	Yes	No	Yes	No	Fair	3200
US 395 N (1st St N)	NW	Main St	Hurlburt Ave	State	Principle Art.	30	100	66	5	Yes	No	Yes	No	Fair	350
US 395 S	SE	Hurlburt Ave	View Dr	State	Principle Art.	30	100	66	5	Yes	No	Yes	Shared	Fair	4100
US 395 S	SE	View Dr	Port Dr	State	Principle Art.	45	100	66	5	Yes	No	Yes	Shared	Fair	1700
US 395 S	SE	Port Dr	Feedville Rd	State	Principle Art.	55	130	66	5	No	No	No	Shoulder	Good	11300

APPENDIX C

Demographic Analysis

City of Hermiston

Transportation System Plan

Demographic Analysis

Prepared for:

City of Hermiston, Oregon

June 1996

TABLE OF CONTENTS

LIST OF TABLES

I. INTRODUCTION

This report summarizes the methods and assumptions used by David Evans and Associates, Inc. (DEA) to estimate current (1996) population, housing, and employment in Hermiston and to forecast these demographics for the year 2016. The demographic data, presented in Tables 1, 2, and 3, were prepared for use in a computer transportation model, QRS2, which uses housing, employment, and transportation data to determine future transportation needs. Identified needs then will be utilized to prepare the City of Hermiston's Transportation System Plan (TSP).

II. STUDY AREA

The study area for the TSP includes all of the land within the City's Urban Growth Boundary (UGB) plus land outside of the UGB. The map included with this report shows the study area boundary.

It is important to note that, because the study area boundary differs from Hermiston's city limits and UGB, the demographic data contained in this report should not be compared directly with existing data for the city, nor should the projections be used in other studies associated with the city limits or UGB.

III. BASE CASE ESTIMATES AND METHODOLOGY

To begin the demographic work, DEA divided the study area into 70 transportation analysis zones (TAZs). Dividing the area into zones enables the computer model to analyze traffic movements between localized areas. TAZ boundaries typically are based on land use, major streets, topography, natural constraints, and US Census blocks. All population and employment estimates for existing (base case) and forecasted conditions are divided according to the appropriate TAZs to enable the computer to track demographic change for different portions of the city.

1996 Population and Housing

DEA's calculations result in an estimated 1996 population of 15,181 for the study area. The number of dwelling units in the study area is estimated at 6,119, of which 3,286 (54 percent) are single-family homes and 2,833 (46 percent) are multi-family units and mobile homes. Mobile homes are included as multi-family units due to limitations of census data and

because mobile homes typically have smaller household sizes (persons per household) than other single-family dwellings. Household size affects trip generation rates. Population and housing figures are presented in Table 1.

To estimate current population and housing, DEA relied upon 1990 US Census data at the census block level. Block data were aggregated into study area TAZs to get the 1990 demographic information for each TAZ and the total study area. The 1996 estimates for dwelling units are based primarily on information provided by the City of Hermiston. New dwellings within the city were estimated by using records of residential sewer permits. The number of housing units outside the city were estimated by city employees familiar with recent growth in the area. The additional units thus identified were added to the 1990 census counts. To estimate population, DEA utilized the 1990 census average household size of nearly 2.5 persons per household. Single-family dwellings typically have larger households than multi-family dwellings. 1996 population was estimated using household sizes of 2.8 persons per single-family unit and 2.1 persons per multi-family unit. The resulting average household size is approximately the same as in 1990.

1996 Employment

According to DEA's estimates, Hermiston currently has an average of 7,163 non-agricultural jobs in the TSP study area. Employment estimates by type of work are shown in Table 2.

DEA obtained employment information through document research and telephone interviews. Primary sources included the Hermiston Chamber of Commerce and the Oregon Employment Department. These sources provided information on employment by workplace location, which DEA then allocated to the appropriate TAZ. DEA also utilized the local Yellow Pages and contacted a number of employers by phone to confirm employment and to get information on work shifts, etc.

The 1996 population-to-employment ratio in the study area is 2.1 to 1, indicating a strong employment base. In urban areas, the ratio usually falls between 2.1 and 3.0. Lower ratios occur where almost all employment is contained within an urban area and is based primarily in manufacturing, commercial, and service industries. Higher ratios occur where many jobs in an area are resource-based--agriculture, forestry, etc.; where a large number of employees commute to work in other areas; or where unemployment is high. Hermiston's lower ratio is consistent with its distribution of employment type. As shown in Table 2, jobs are concentrated in industrial/manufacturing (36.3 %), service (27.1 %), and retail (21.2 %) sectors. The low ratio may also be partially due to residents of nearby communities, such as Stanfield, commuting to jobs in Hermiston. It should be noted that there are large employers outside of the study area within commuting distance (Umatilla Army Depot, UPS). Including these in the study would result in an even lower population-to-employment ratio.

Table 1
Existing and Projected Housing and Population
Hermiston Study Area

TAZ	1990				1996 Estimate				2016 Projection			
	Total du	SF du	MF du	Pop.	Total du	SF du	MF du	Pop.	Total du	SF du	MF du	Pop.
10	123	73	50	339	130	80	50	329	149	99	50	382
11	71	41	30	181	76	46	30	192	76	46	30	192
12	23	4	19	66	33	14	19	79	33	14	19	79
13	35	19	16	98	40	24	16	101	40	24	16	101
14	85	29	56	244	95	39	56	227	114	58	56	280
15	18	14	4	64	18	14	4	48	23	19	4	62
16	16	6	10	41	20	10	10	49	136	126	10	374
17	23	13	10	52	23	13	10	57	23	13	10	57
18	35	16	19	82	35	16	19	85	206	187	19	564
19	30	16	14	96	65	51	14	172	185	171	14	507
20	36	24	12	114	40	28	12	104	69	57	12	183
21	27	15	12	74	27	15	12	67	27	15	12	67
22	5	5	0	8	5	5	0	14	5	5	0	14
23	48	36	12	100	52	40	12	137	110	40	70	259
24	109	3	106	224	109	3	106	231	114	8	106	245
25	248	57	191	702	263	72	191	603	273	82	191	631
26	103	52	51	275	103	52	51	253	108	57	51	267
27	252	88	164	608	289	91	198	633	345	137	208	819
28	115	103	12	356	130	118	12	356	201	189	12	555
29	68	11	57	170	68	11	57	151	68	11	57	151
30	66	47	19	148	67	48	19	174	67	48	19	174
31	166	74	92	457	167	75	92	403	175	77	98	421
32	150	5	145	263	151	6	145	321	166	6	160	353
33	0	0	0	0	0	0	0	0	0	0	0	0
34	190	98	92	401	190	98	92	468	226	98	128	543
35	83	59	24	191	83	59	24	216	83	59	24	216
36	98	56	42	256	98	56	42	245	98	56	42	245
37	19	19	0	55	19	19	0	53	19	19	0	53
38	60	16	44	105	60	16	44	137	60	16	44	137
39	49	41	8	110	57	49	8	154	57	49	8	154
40	198	182	16	549	204	184	20	557	204	184	20	557
41	43	43	0	98	43	43	0	120	43	43	0	120
42	135	99	36	379	136	100	36	356	237	153	84	605
43	104	60	44	257	114	70	44	288	124	80	44	316
44	226	80	146	571	226	80	146	531	226	80	146	531
45	75	61	14	160	76	62	14	203	76	62	14	203
46	20	20	0	47	20	20	0	56	20	20	0	56
47	32	30	2	77	32	30	2	88	32	30	2	88
48	75	63	12	200	75	63	12	202	75	63	12	202
49	25	13	12	51	25	13	12	62	25	13	12	62
50	46	37	9	109	46	37	9	123	46	37	9	123
51	122	108	14	347	139	125	14	379	184	170	14	504
52	29	23	6	79	29	23	6	77	123	57	66	299
53	333	172	161	778	333	172	161	820	373	172	201	860
54	9	9	0	24	9	9	0	25	9	9	0	25
55	0	0	0	0	0	0	0	0	0	0	0	0
56	69	31	38	169	72	31	41	173	84	31	53	198
57	127	49	78	311	131	51	80	311	181	51	130	416
58	161	159	2	515	167	165	2	466	187	185	2	522
59	327	46	281	707	485	81	404	1,105	663	115	548	1,473
60	191	170	21	521	197	176	21	577	217	196	21	593
61	230	228	2	621	239	237	2	668	242	240	2	676
62	104	9	95	175	104	9	95	225	119	9	110	256
63	68	68	0	198	69	69	0	193	193	193	0	539
64	6	6	0	13	6	6	0	17	6	6	0	17
65	115	34	81	355	121	34	87	278	172	85	87	419
66	11	11	0	31	14	14	0	39	34	34	0	95
67	199	36	163	356	222	48	174	500	336	91	245	769
68	27	26	1	79	27	26	1	74	59	42	17	152
69	4	1	0	3	1	1	0	3	1	1	0	3
70	39	24	15	93	39	24	15	99	43	28	15	110
71	111	73	38	251	121	83	38	312	126	88	38	326
72	5	4	1	12	5	4	1	13	5	4	1	13
73	1	0	1	2	1	0	1	2	1	0	1	2
74	4	3	1	5	4	3	1	11	4	3	1	11
75	21	15	6	65	61	15	46	139	101	15	86	223
76	0	0	0	0	0	0	0	0	0	0	0	0
77	13	10	3	28	13	10	3	34	13	10	3	34
78	0	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0	0
Total	5,655	3,042	2,610	14,115	6,119	3,286	2,833	15,181	7,838	4,384	3,454	19,483

du = dwelling unit SF = single-family
Pop = population MF = multi-family (includes mobile homes)

12/19/96

Table 2
1996 Estimated Employment
Hermiston Study Area

TAZ	Total	Industrial	Retail	Services	Education	Government	Temps.	Other
10	49	18		31				
11	42		26	16				
12	0							
13	0							
14	4					4		
15	0							
16	16			16				
17	65		40	25				
18	11		11					
19	0							
20	7				7			
21	7		7					
22	203	3	94	101		5		
23	475		466	9				
24	13			13				
25	18			18				
26	0							
27	51	3	4	44				
28	468	3		390		75		
29	66	5		11	50			
30	534	475	27	32				
31	98		65	15		4		14
32	3			3				
33	0							
34	12		9	3				
35	16		4	12				
36	9		6	3				
37	152	76	47	29				
38	180	66	83	31				
39	228	1	54	108	65			
40	9			9				
41	25	1		24				
42	54				54			
43	0							
44	52		8	36	8			
45	59			59				
46	228	110	58	19		41		
47	271	15	60	111	29	26		30
48	40	6	3	31				
49	473		137	94			242	
50	99	4	3	27	55	10		
51	46			46				
52	66		42	24				
53	134	1		133				
54	214	1		45	161	7		
55	71	60	11					
56	240		48	49		56	87	
57	25		22	3				
58	63	4	9	3	47			
59	44	5		39				
60	2			2				
61	2			2				
62	318		141	171		6		
63	28	18	4	6				
64	0							
65	1			1				
66	0							
67	2			2				
68	12			2	10			
69	113	16	21	21		55		
70	55	55						
71	65	65						
72	65	65						
73	3			3				
74	37	6	5	17		9		
75	0							
76	270	270						
77	0							
78	1,250	1,241	1			8		
79	0							
Totals	7,163	2,593	1,516	1,889	486	306	329	44

Total Employment within Study Area = 7,163

12/19/96

IV. FORECAST

2016 Population and Housing

Population and housing counts were forecast to the year 2016 to meet the 20-year planning outlook of the TSP. Portland State University's Center for Population Research publishes population forecasts for Oregon's counties. For the year 2010 (2016 was not available), PSU projected Umatilla County's population at 72,786, reflecting average annual growth of just over 1 percent from the county's 1990 population of 59,249. The City anticipates growing at a faster rate than the overall county. For purposes of this TSP, DEA used an average annual growth rate of 1.25 percent over the next 20 years.

Once housing and population were estimated for the entire study area, DEA estimated the amount and type (single- or multi-family) of residential development in each TAZ. Typically, forecasts are based on an inventory of vacant lands, with housing assigned to vacant areas in accordance with zoning regulations, such as allowed lot sizes. However, an accurate inventory was not available for vacant residential land. Therefore, housing was assigned based on information provided by the City about recently platted lots and vacant areas zoned for residential use with development potential. Population and housing growth will be concentrated in the TAZs most able to accommodate it; growth was not assigned to TAZs that are currently built out. Housing was allocated primarily within the UGB, except for a few exception areas (e.g., TAZs 10 and 14) where development has been occurring in recent years and where that trend is expected to continue.

Additional dwelling units were then added to 1995 estimated dwelling units to determine 2016 totals. Under these assumptions, the study area would contain a total of 7,838 dwelling units. Of these, 4,384 (56 percent) would be single-family dwellings, and 3,454 (44 percent) would be multi-family dwelling units and mobile homes.

Population for each TAZ was estimated using the same average household sizes as were used in the 1996 estimates. Single-family units were assumed to contain 2.8 persons per household, and multi-family units will have 2.1 persons per household. The resulting projected total population is 19,483, reflecting 1.25 percent average annual growth between 1990 and 2016. Table 1 indicates the housing units and population projected for each TAZ.

2016 Employment

The employment forecast for the TSP is not intended to be a full-sector (agricultural and non-agricultural) forecast. The projections do not include agricultural jobs because the TSP is for facilities and improvements within the study area, and agricultural-related trips have only

minor impacts on traffic patterns in the study area. The 2016 employment forecast, with a total employment of 9,169, is shown in Table 3.

Future employment is based on several assumptions. Overall employment is forecast to grow in proportion to the population, an increase of 28 percent over 20 years, or 2,006 new jobs. Also, the proportion of employment by type was assumed to remain the same. This is based on the fact that Hermiston's relatively large industrial/manufacturing sector (36.3 percent of all jobs in Hermiston, compared to 26.4 percent of jobs in the entire county) is concentrated in stable industries like food manufacturing and mobile home production, instead of shrinking sectors like lumber and wood products industries. Furthermore, unlike other parts of eastern Oregon, Hermiston does not appear to be shifting to a tourism-related economy.

It was also assumed that nearly all growth in employment will occur within the urban growth boundary (UGB) and within appropriately zoned locations. This includes zones that currently allow the type of employment and zones that will allow it in the future (e.g. future commercial zones). The only growth projected to occur outside the UGB is in areas that already have employment. Such TAZs were assumed to have a 5 percent expansion of existing employment. Also, the four future Neighborhood Commercial nodes identified in the City's Comprehensive Plan and located in residential zones (TAZs 21, 25, 42, and 52) were each assumed to gain 10 retail and 5 service jobs. Sources of employment information included the city's inventory of commercially zoned lands, a draft inventory and assessments of industrial lands prepared by Elesco, ltd., and the City's Comprehensive Plan.

Since temporary jobs can include any type of employment, anticipated temporary jobs were distributed to other employment types based on the percent of overall employment. For example, 38 percent of the non-temporary jobs were industrial, so 38 percent of the temporary jobs were counted as industrial.

Commercial growth (retail and service jobs) were anticipated to occur primarily in vacant C-1 and C-2 zoned lands. Using a rate of nine employees per vacant acre, DEA assigned anticipated jobs to the appropriately zoned TAZs. (Vacant lands with commercial zoning were identified in an inventory prepared by the City.) The remaining commercial employment was assigned to TAZs with neighborhood commercial nodes and to TAZs with vacant, mixed-use zones identified as prime for development in Elesco's draft analysis of industrial lands.

The majority of industrial jobs were distributed to TAZ 76, because Wal-Mart is building a major distribution facility in that zone. The rest were distributed to TAZs that contained sites with vacant land deemed prime for development. These sites have advantages of large parcel size, flat topography, access to utilities, and proximity to major transportation systems. TAZs that had prime vacant lands were located primarily in the southeastern corner of the UGB along Highway 395. This area was also identified by the Chamber of Commerce as a high growth area.

Table 3
2016 Employment Estimates
Hermiston Study Area

TAZ	Total	Industrial	Retail	Services	Education	Government	Temps	Other
10	52	19	0	33	0	0	0	0
11	44	0	27	17	0	0	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	5	0	0	0	0	5	0	0
15	0	0	0	0	0	0	0	0
16	16	0	0	16	0	0	0	0
17	65	0	40	25	0	0	0	0
18	11	0	11	0	0	0	0	0
19	0	0	0	0	0	0	0	0
20	7	0	0	0	7	0	0	0
21	346	0	157	189	0	0	0	0
22	211	3	97	104	0	7	0	0
23	485	0	470	15	0	0	0	0
24	17	0	2	15	0	0	0	0
25	33	0	10	23	0	0	0	0
26	0	0	0	0	0	0	0	0
27	92	3	23	66	0	0	0	0
28	489	3	0	390	0	96	0	0
29	69	5	0	11	53	0	0	0
30	549	473	35	41	0	0	0	0
31	99	0	65	15	0	5	0	14
32	3	0	0	3	0	0	0	0
33	0	0	0	0	0	0	0	0
34	12	0	9	3	0	0	0	0
35	16	0	4	12	0	0	0	0
36	9	0	6	3	0	0	0	0
37	152	76	47	29	0	0	0	0
38	190	65	88	37	0	0	0	0
39	288	1	54	108	125	0	0	0
40	9	0	0	9	0	0	0	0
41	25	1	0	24	0	0	0	0
42	73	0	10	5	58	0	0	0
43	0	0	0	0	0	0	0	0
44	52	0	8	36	8	0	0	0
45	61	0	1	60	0	0	0	0
46	241	110	58	20	0	53	0	0
47	281	15	60	111	31	34	0	30
48	42	6	4	32	0	0	0	0
49	473	0	137	94	0	0	242	0
50	108	4	4	28	59	13	0	0
51	46	0	0	46	0	0	0	0
52	135	0	75	60	0	0	0	0
53	134	1	0	133	0	0	0	0
54	228	1	0	45	172	10	0	0
55	84	60	16	8	0	0	0	0
56	270	0	54	56	0	73	87	0
57	25	0	22	3	0	0	0	0
58	67	4	9	3	51	0	0	0
59	44	5	0	39	0	0	0	0
60	2	0	0	2	0	0	0	0
61	2	0	0	2	0	0	0	0
62	321	0	141	171	0	9	0	0
63	28	18	4	6	0	0	0	0
64	0	0	0	0	0	0	0	0
65	300	0	104	141	55	0	0	0
66	41	0	20	21	0	0	0	0
67	2	0	0	2	0	0	0	0
68	13	0	0	2	11	0	0	0
69	129	16	21	21	0	71	0	0
70	58	58	0	0	0	0	0	0
71	65	65	0	0	0	0	0	0
72	65	65	0	0	0	0	0	0
73	3	0	0	3	0	0	0	0
74	220	108	38	62	0	12	0	0
75	52	4	20	28	0	0	0	0
76	896	870	10	16	0	0	0	0
77	0	0	0	0	0	0	0	0
78	1,315	1,303	1	0	0	11	0	0
79	0	0	0	0	0	0	0	0
Totals	9,170	3,362	1,962	2,444	630	399	329	44
Total Employment within Study Area =					9,170			

12/19/96

Additional education jobs were distributed to two new school sites and current employment sites. Sandstone Middle School, located in TAZ 42, is anticipated to open next year with 55 employees. Also, a new grade school is anticipated in one of the potential school sites identified in the Hermiston Comprehensive Plan. The new school was assumed to be located at the potential school site in TAZ 65, because the school district has acquired a site and intends to construct a school in that TAZ. The rest of the education jobs were distributed to current job locations based on the proportion of education employment already located there. Government jobs were assumed to occur in current locations, and were distributed based on proportions, as well.

V. LIMITATIONS OF THE DATA

This study was prepared to estimate current conditions and expected growth patterns which will be used in a computer model to determine future transportation needs. The amount of growth, and where it occurs, will affect traffic and transportation facilities in the study area. It should be noted that the study area was defined specifically for use with the computer model and that this demographic analysis was designed specifically for use in developing a TSP for the Hermiston study area. This report is not intended to provide an accurate economic forecast or housing analysis, and it should not be used for any purpose other than that for which it was designed.

HERM0001\hermdemo.doc

APPENDIX D

Public Involvement

HERMISTON TSP

January 1996

TRANSPORTATION SYSTEM PLAN NEWSLETTER

The Transportation Study is Underway!

Public meeting on Thurs., Jan. 25 at 7:00 p.m.

We have all noticed Hermiston's recent growth. The area's central location and healthy economy attract more people each year. Friendly Hermiston is becoming home for more families seeking a quiet lifestyle and the richness of a smaller community.

The City of Hermiston, Umatilla County, and the Oregon Department of Transportation (ODOT) are working together to ensure that the quality of life in Hermiston is maintained and enhanced. By developing a Transportation System Plan (TSP) to carry the community into the 21st century, many of the problems associated with growth can be avoided. We're focusing on improving the road system to increase access and safety.

Are you worried about dangerous or difficult intersections, high traffic speeds through neighborhoods, increasing congestion, road maintenance, or the need to improve safety within Hermiston? For the last several months, we've been identifying, inventorying, and analyzing the existing conditions within Hermiston. Problems and possible solutions have begun to be identified, but we need to hear from you, the residents of the community.

A public meeting has been scheduled for 7:00 p.m. on January 25, 1996 at the Hermiston Community Center. This is a chance for you to learn more about transportation issues in Hermiston and to share your own ideas and concerns.

Who's Doing the Study?

Two teams are working together on the Transportation System Plan: a management team and a citizens advisory team. The management team is made up of technical staff from the City of Hermiston, Umatilla County, and ODOT. The citizens advisory team consists of ten Hermiston area residents chosen by the City Council. These teams are assisted by David Evans and Associates, Inc., a professional engineering and planning firm.

- Hermiston School District
- Hermiston Police Department
- Hermiston Fire & Emergency Services
- Umatilla County Sheriff's Department
- Union Pacific Railroad
- The Port of Umatilla
- Greater Hermiston Chamber
- Hermiston Irrigation District
- Hermiston 2000
- Rotary Club
- Altrusa Club
- Kiwanis Club
- School Bus Services., Inc.

In order for the TSP to reflect the needs and desires of Hermiston's residents, it is important to hear your concerns. Come and join the participating businesses and community groups in planning your City's future. Some of the organizations that have been invited to the first meeting are shown at left.

Study Goals

The TSP develops a transportation system for the next 20 years. The goal is a transportation system to enhance the livability of Hermiston as well as accommodate growth through careful management of transportation facilities. To accomplish this broad goal, we will need to:

- Identify a list of projects for both local transportation needs and the needs of people who are passing through the area to another destination.
- Develop realistic funding strategies for the Plan.

Steps in the Study

The Hermiston Transportation System Plan has four steps:

1 Gather Technical and Community Information

A catalogue of existing conditions is critical to good planning. Identifying problems and possible solutions requires us to verify the following:

- existing transportation problem areas,
- traffic counts,
- land use plans, and
- population and employment growth projections.

Specific issues already identified by the study team focus on the need for a better truck route, safer railroad crossings, increased turning radii at key intersections, and better interstate access. Are these a concern of yours as well?

2 Develop Improvement Alternatives

Based on deficiencies identified in existing conditions and on our growth projections, transportation improvement alternatives will be developed. These alternatives will specifically address:

- improvements in east-west and north-south circulation,
- the need for new streets to accommodate future growth,
- the potential for changes in land-use patterns, transportation demand strategies, and increased use of transit, walking, and bicycling to reduce or delay the need for new streets, and
- the transportation needs of the disabled, the elderly, and children.

3 Evaluate the Alternatives

The Study Team will look at how each project:

- can meet the transportation needs of local and through traffic,
- might impact neighborhoods and the natural environment, and
- could affect the community's pocketbook.

4 Recommend an Implementation Strategy

After refining and comparing the alternatives, the Study Team will recommend an alternative and an implementation strategy to the City of Hermiston and ODOT. These recommendations will include:

- a prioritized list of roadway improvements,
- any land use or planning changes that might be required, and
- what rights-of-way might need to be acquired.

What are the Decisions Based On?

The Study Team has drafted a list of criteria to be considered in evaluating the alternatives:

- Overall cost (state and local).
- Community and business support.
- Compatibility with current and planned land uses, and policies.
- Environmental impacts.
- Traffic circulation and community access.
- Other modes of transportation (public transit, bicycle travel, pedestrian travel).
- Traffic capacity and congestion.

Information Sources

Newsletters and study updates will be available at the Hermiston City Hall.

Look for announcements in *The Hermiston Herald* and the *East Oregon*

If you have questions or comments, please call:

Aaron Henson, City of Hermiston Assistant Planner
541-567-5521
or
John Stutesman, Project Manager
503-223-6663

If you aren't able to attend the Transportation Meeting on Jan. 25 at 7:00 p.m. in the Hermiston Community Center, but have comments that you'd like to make, please write them down and mail or fax them to:

Aaron Henson
City Hall
180 NE 2nd St.
Hermiston, OR 97838
FAX 541-567-5530
or
John Stutesman
David Evans and Associates, I
2828 SW Corbett Ave.
Portland, OR 97201
FAX 503-223-2701

HERMISTON TSP FIRST PUBLIC MEETING - STAKEHOLDERS INVITATION LIST

Jer Pratton, Superintendent
Hermiston School District
341 NE 3rd St.
Hermiston, OR 97838

Phillip Houk
Union Pacific Railroad
125 SE Court Ave.
Pendleton, OR 97801

Steve Eldrige
Umatilla Electric Co-Op
PO Box 1148
Hermiston, OR 97838

Kim Puzey
The Port of Umatilla
PO Box 879
Umatilla, OR 97882

Scott Cimmiyiotti
Scott's Cycle & Sports
252 E. Main St.
Hermiston, OR 97838

Dennis Burke, Administrator
Good Shepard Community Hospital
610 NW 11th Street
Hermiston, OR 97838

Bob McFaul
Pacific Power
PO Box 1150
Hermiston, OR 97838

Doug Flatt
Mid Columbia Bus Co.
Rt. 1 Box 117
Pendleton, OR 97801

John Nordby
Pendleton Grain Growers, Inc.
PO Box 10
Hermiston, OR 97838

Keith Wilson
School Bus Services, Inc.
905 Diagonal Blvd.
Hermiston, OR 97838

George Hash, Mayor
City of Umatilla
Box 130
Umatilla, OR 97882

Allen Piquet
Cascade Natural Gas Corp.
PO Box 866
Hermiston, OR 97838

Scott Hutchinson
Oregon Wheat Growers League
202 SE Dorion Ave.
Pendleton, OR 97801

Mike Jewett
Sanitary Disposal, Inc.
PO Box 316
Hermiston, OR 97838

Candyce Briley
Betah Enterprises
PO Box 1164
Hermiston, OR 97838

Tom McCann, Mayor
City of Stanfield
PO Box 369
Stanfield, OR 97875

Cheryl Humphrey
Greater Hermiston Chamber
PO Box 185
Hermiston, OR 97838

Dale Brown
JB's Taxi Service
1180 SW 17th St.
Hermiston, OR 97838

Tom Bates
Marlette Homes, Inc.
400 W. Elm Ave.
Hermiston, OR 97838

John Miller
Hermiston Irrigation District
PO Box 208
Hermiston, OR 97838

Jim Stearns
Hermiston Fire/Ambulance Department
330 S. 1st. St.
Hermiston, OR 97838

Larry Rawe
Hermiston Aviation Inc.
Hermiston Airport
PO Box 1285
Hermiston, OR 97838

Don Armstrong
Hermiston 2000
PO Box 129
Hermiston, OR 97838

Roe Gardner
Downtown Merchants Assoc.
Roemark's Mens & Western Wear
201 E. Main St.
Hermiston, OR 97838

Phil Hawman
Blue Mtn. Potato Growers Assoc.
Rt. 3, Box 3740
Hermiston, OR 97838

Mike Driscoll
TCB Transportation
675 N. 1st. St.
Hermiston, OR 97838

Mike Boise
Umatilla County Sheriff's Department
305 SE 4th
Hermiston, OR 97838

Phil Konty
Wal-Mart
1350 North 1st. St.
Hermiston, OR 97838

Dave Umbarger, President
Oregon Cattlemen's Assoc.
Rt. 3, Box 170
Pendleton, OR 97801

Karen Smith
Altrusa Club
PO Box 213
Hermiston, OR 97838

Phillip Houk
Rotary Club
PO Box 142
Hermiston, OR 97838

Phyllis Shovelski
Kiwanis Club
PO Box 726
Hermiston, OR 97838

Lee Shaw
Hermiston Senior Center
435 W. Orchard Ave.
Hermiston, OR 97838

Calvin Keys, Field Manager
Lamb-Weston, Inc.
PO Box 705
Hermiston, OR 97838

Andy Anderson
Hermiston Police Department
330 South 1st. St.
Hermiston, OR 97838

Patsy Keimig
Schroth Realty, Inc.
411 E. Main St.
Hermiston, OR 97838

Bill Earl, President
Columbia Basin Board of Realtors
C. Holt Real Estate
305 Highway 395 South
Hermiston, OR 97838

Charlotte Dack
ERA Universal Realty, Inc.
985 N. 1st. St.
Hermiston, OR 97838

Coy Petross
J.R. Simplot
PO Box 850
Herminston, OR 97838

Greg Turner
Hermiston Plaza Merchants
Greg's Sleep Center
864 Highway 395 South
Hermiston, OR 97838

Roy Stephen
Hermiston Foods
2250 Highway 395 South
Hermiston, OR 97838

APPENDIX E

Typical Facility Unit Costs

Typical Facility Unit Costs

Facility	Description	Cost
Pedestrian		
Sidewalk	5-ft wide (4-in concrete/2-in aggregate) without curb	$25/linear ft
Shoulder	4-ft wide on both sides to highway standards (4-in asphalt/9-in aggregate) with 4-in stripe	$24/linear ft
Striping	Crosswalk	$3.00/linear ft
Pedestrian signal	Crosswalk	$2500/unit
Pedestrian/ bicycle bridge	10-ft wide	$560/linear ft
Curb cut	Cut and ramp per ADA	$450/unit
Curb extension	15-ft radius with 2 ramps	$2500/unit
Median Refuge	Raised island	$2000/unit
Repair	10-ft wide path, seal every 5 years	$0.70/linear ft
Repair	10-ft wide path, resurface every 10 years	$5/linear ft
Multi-use path	10-ft wide (2-in asphalt/4-in aggregate) with clearing and preparation, no fences	$16/linear ft (see note)
Multi-use path	10-ft wide (3-in asphalt/6-in aggregate) with clearing and preparation, no fences	$22/linear ft (see note)
Multi-use path	12-ft wide (3-in asphalt/6-in aggregate) with clearing and preparation, no fences	$28/linear ft (see note)
Multi-use path	10-ft wide (4-in concrete/3-in aggregate) with clearing and preparation, no fences	$55/linear ft (see note)
Bicycle		
Bike lane	5-ft wide on both sides to highway standards (4-in asphalt/9-in aggregate) with curbs and 8-in stripe	$45/linear ft
Striping	8-in. stripe on clean surface	$0.40/linear ft
Stencil	Bike symbol after every intersection	$30 each
Sign	Typical sign	$100 each
Parking	Short-term	$50/bike
Parking	Long-term and sheltered for 10 bikes	$300/bike

NOTES: Cost does not include special engineering problems such as steep grades, retaining walls and drainage that increase costs. Because these design features are usually present, costs for paths are frequently 3 to 4 times the amount given here. Land acquisition not included.

City of Hermiston

1999 Transportation System Plan Update

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 S.W. ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

HERMISTON TSP IMPLEMENTATION STUDY
TRANSPORTATION PLAN & PROGRAM MODIFICATIONS-Revised

Date: December 1, 1999 **Project #:** 3337

To: Steve Sokolowski, City of Hermiston
From: Alan Danaher, Kittelson & Associates, Inc.

cc: Teresa Penninger, ODOT Region 5

INTRODUCTION

This memorandum summarizes the identified changes to the various plan maps, street standards, and improvement projects and priorities in the Hermiston Transportation System Plan (TSP), from the 1997 TSP prepared by David Evans & Associates, Inc. The plan and program modifications reflect an updated 20-year needs assessment for seven critical intersections in Hermiston (documented in a separate technical memorandum), modifications to the street functional classification map pedestrian/bicycle facility improvements maps, the development of a truck routing plan, and preparation of modified cross section standards for different street classifications. This memo also identifies updated project priorities and costs.

The identified modifications to the Hermiston TSP contained in this memo were reviewed with the City of Hermiston and ODOT Region 5 staff, and then presented to the Hermiston Planning Commission and City Council in a joint work session on August 19, 1999. This memo also reflects changes which surfaced in the Planning Commission review and approval of the TSP in its October 13, 1999 meeting. Separate from this document, the consultant team has developed specific language modifications to the Hermiston Comprehensive Plan, and Zoning and Subdivision Ordinances, to actually implement the recommendations in the TSP.

CHANGES TO MODAL PLANS

Roadway

Figure 1 identifies the updated street functional classification plan for Hermiston. The plan keeps the different street classifications identified in the 1997 Plan for arterials and collectors,

namely:

- Urban Major Arterial,
- Urban Minor Arterial,
- Urban Major Collector,
- Urban Minor Collector,
- Rural Arterial, and
- Rural Collector.

The differences in the current plan from the 1997 plan are the following:

1. With the recent redesignation of the 11th Street/Elm Avenue corridor as Highway 207 through Hermiston, these two streets were upgraded to minor arterial status.

2. Theater Lane is upgraded to a collector from the local street designation in the 1997 TSP, given the emerging residential development along this roadway, and the collector function it plays. This roadway is shown as an urban minor collector east to East 10th Street, and a rural collector between 10th Street and Ott Road.

3. Port Avenue is designated as a minor collector to connect East 10th Street to Highway 395 at the south end of Hermiston. This would also allow for an improved connection to serve the industrial park off Highway 395, with a future traffic signal at Highway 395 and Port Avenue.

4. Ott Road becomes a rural collector instead of the urban collector designation in the 1997 TSP, as this roadway is outside of the Hermiston Urban Growth Boundary.

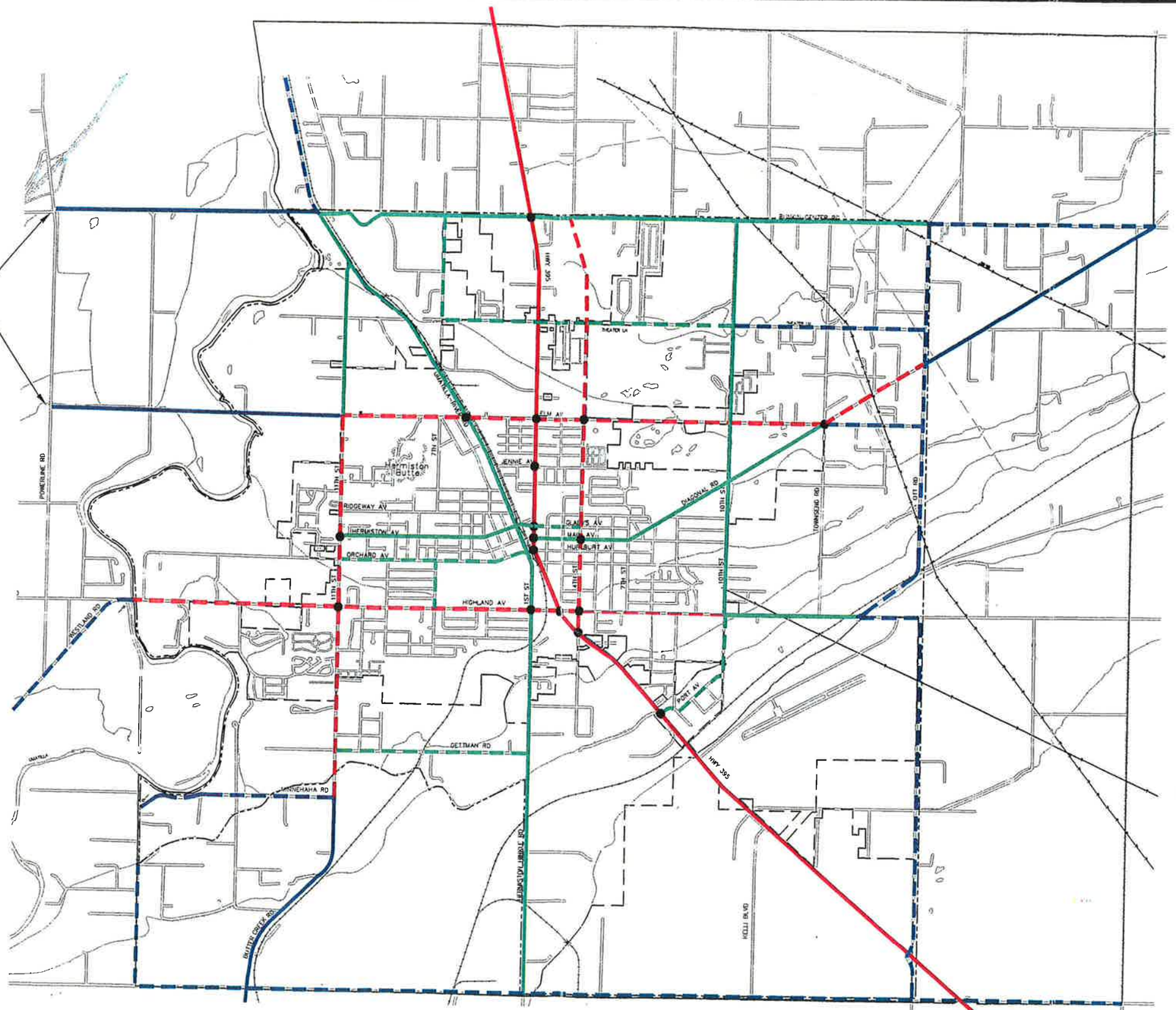
5. Gettman Road is designated as an urban minor collector instead of the local road designation in the 1997 TSP.

6. Minnehaha Road is designated as a rural collector instead of the urban minor collector designation in the 1997 TSP, as this roadway is outside of the Hermiston Urban Growth Boundary.

7. If Punkin Center Road is eventually chosen as the preferred alignment for the new Umatilla River bridge crossing, and if that project proceeds, this roadway within the City of Hermiston should be upgraded to a major collector from the minor collector designation in the 1997 TSP. Outside of the City, the Punkin Center Road corridor (Country Lane) should then become a rural arterial designation, given the direct connection to I-82. In the 1997 TSP, both Punkin Center Road and Elm Avenue were

NOTE: NEW UMATILLA RIVER BRIDGE CROSSING ON EITHER PUNKIN CENTER RD. OR ELM AVE.

NORTH
(NOT TO SCALE)



LEGEND

- URBAN MAJOR ARTERIAL
- URBAN MINOR ARTERIAL
- URBAN MAJOR COLLECTOR
- URBAN MINOR COLLECTOR
- RURAL ARTERIAL
- RURAL COLLECTOR
- TRAFFIC SIGNAL
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS

REFINED FUTURE STREET CLASSIFICATIONS AND TRAFFIC SIGNALS

HERMISTON TSP IMPLEMENTATION STUDY HERMISTON, OREGON REVISED–NOVEMBER 1999	FIGURE 1

shown as optional corridors for the crossing, and that has not changed at this time. The upcoming Umatilla River Bridge Crossing Study sponsored by the City of Hermiston will further evaluate both alignment alternatives, and make a final recommendation on a crossing location which will incorporated into the updated TSP.

If the Punkin Center Road alignment is not chosen for the new Umatilla River bridge crossing, then the section of this roadway between Theater Lane and Umatilla River Road should be upgraded to a minor collector, from the local street designation in the 1997 TSP.

Truck Routing Plan

Figure 2 shows the proposed truck routing plan through Hermiston. Such a plan was not included in the 1997 TSP. The plan shows the two state highways through Hermiston - Highway 395 and Highway 207 (on the new 11th Street/Elm Avenue route), as designated truck routes, consistent with their function as major through traffic facilities. These routes should have adequate pavement sections to accommodate heavier truck loadings.

Pedestrian Facility Improvement Plan

Figure 3 shows a revised set of pedestrian facility improvements in Hermiston. The map shows those arterial and collector street segments that currently do not have a sidewalk on either side of the street. The State Transportation Planning Rule encourages the provision of sidewalks along such streets. This is a more extensive set of sidewalk improvements than that identified in the 1997 TSP, that just focused on a few street segments.

The plan also shows existing and proposed off-street pathways of use to bicycles. This includes a new trail on the east side of the Umatilla River between Elm and Highland Avenues (identified in the City's newly adopted Parks and Recreation Plan), as well as a pathway along Hermiston Ditch. No off-street pathways were included in the 1997 TSP.

Bicycle Facility Improvement Plan

Figure 4 shows a bicycle facility plan for Hermiston, which reflects bike lanes or routes designated on all arterial and collector streets in the City. The State Transportation Planning Rule encourages the provision of these facilities on these types of streets. The intent would be to develop bike lanes in the future (where not currently present) on all new and reconstructed streets, where adequate right-of-way is available and costs are reasonable, and if not possible, then designated as bike routes.

CHANGES TO STANDARDS

Street Standards

Roadway Cross Section

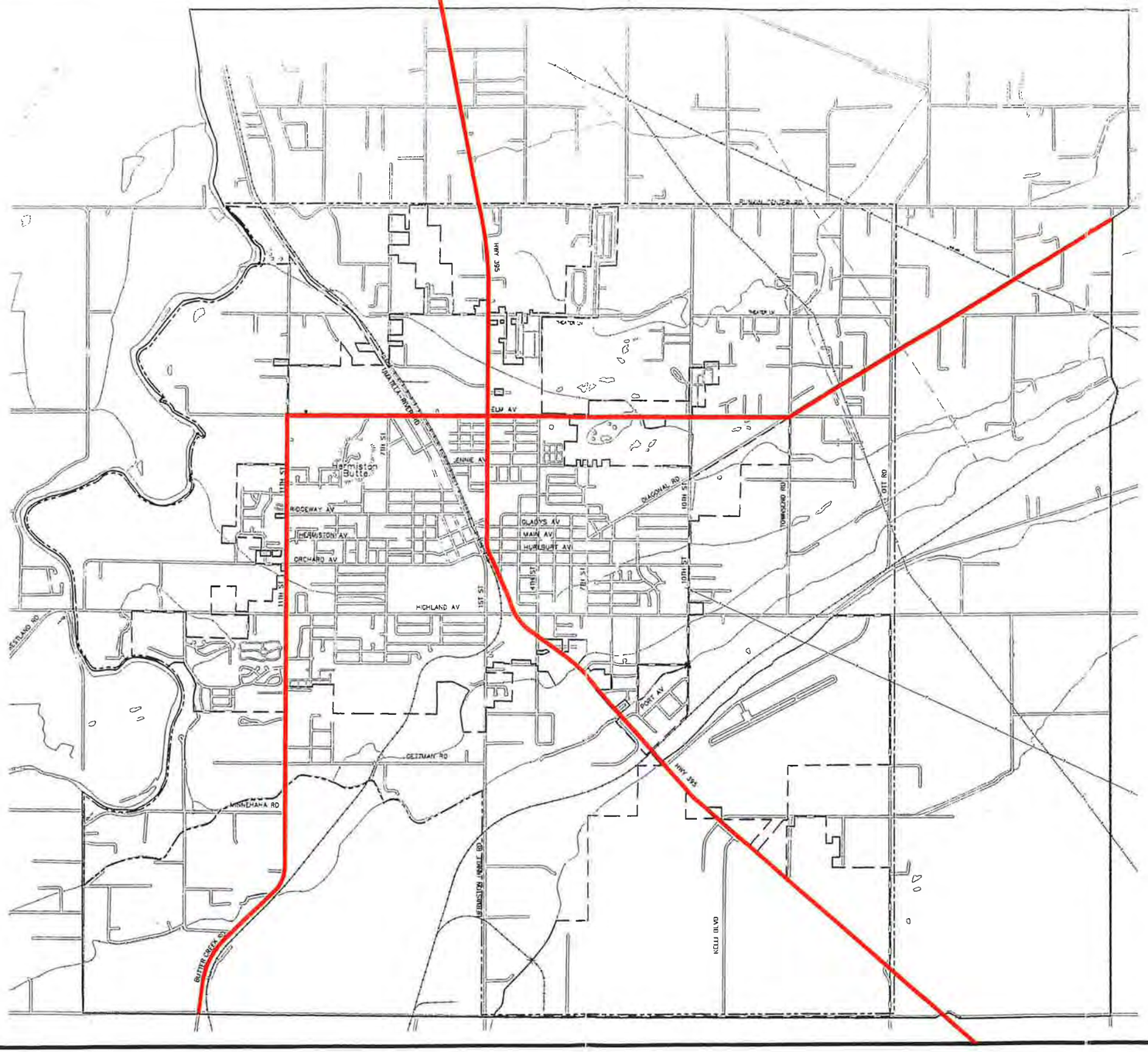
The cross section standards for the different street classifications in the Hermiston TSP were modified from those in the 1997 TSP to reflect the possible provision of parkway strips with detached sidewalks on streets, as well as some minor modifications in travel and bike lane widths. Tables 1 through 4 identify the proposed standards for urban arterials, urban collectors, urban local streets, rural arterials, rural collectors, and rural local roads. Changes from the 1997 TSP are as follows:

Urban Major Arterial - Different street and right-of-way widths are identified for major arterials (currently only Highway 395 is a designated major arterial in Hermiston) within the Central Business District (CBD) vs. outside of the CBD. The street width reflects a proposed five lane section, with attached eight foot sidewalks in the CBD, and six foot sidewalks outside the CBD. Outside the CBD, sidewalks are shown to be detached from the curb, with a parkway strip in between. The 1997 TSP identified only ne cross section standard for major arterials, with eight foot attached sidewalks

Urban Minor Arterial - Different street and right-of-way widths are identified whether or or not parking is provided. A minor arterial would only have three lane section, with six foot sidewalks. Either attached or detached sidewalks are allowed, though detached sidewalks (with panting strip) are preferred. The 1997 TSP identified optional cross sections with and without a center left turn lane.

Urban Major Collector - Different street and right-of-way widths are identified with vs. without parking being provided. Only one street cross section for major collectors was in the 1997 TSP. The major collector cross section identifies a center left turn lane being provided, as well as the option for parkway strips (with the strips preferred), both of which were not proposed in the 1997 TSP. Sidewalks are also shown to be six feet wide, vs. five feet in the 1997 TSP.

NORTH
(NOT TO SCALE)



LEGEND
- DESIGNATED TRUCK ROUTE
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS

PROPOSED TRUCK ROUTES

HERMISTON TSP IMPLEMENTATION STUDY HERMISTON, OREGON REVISED–NOVEMBER 1999	FIGURE 2

TECHM3\333

Table 1
Urban Arterial Cross Sections

DESIGN SPEED = 35-45 M.P.H.

Road Classification	Criteria	Right-of-Way (Feet)	Paved Width (Feet)	# of Lanes	Side-walk (Feet)	Planting Strip (Feet)	Parking Lane (Feet)	Bike Lane (Feet)	Curb Travel Lane (Feet)	Travel Lane(s) (Feet)	Median or Center Turn Lane	Travel Lane(s) (Feet)	Curb Travel Lane (Feet)	Bike Lane (Feet)	Parking Lane (Feet)	Planting Strip (Feet)	Side-walk (Feet)
		A	B		C	D		E	F	G	H	G	F	E		D	C
Major Arterial	In CBD	90	74	5	8	0	0	6	12	12	14	12	12	6	0	0	8
	Outside CBD	86-98	74	5	6	0-6*	0	6	12	12	14	12	12	6	0	0-6*	6
Minor Arterial	With Parking	74-86	62	3	6	0-6	8	5	12	-	12	-	12	5	8	0-6	5-8
	Without Parking	58-70	46	3	6	0-6*	0	5	12	-	12	-	12	5	0	0-6*	6

* Planting strip preferred

Table 2
Urban Collector Cross Sections

DESIGN SPEED = 35 M.P.H.

Road Classification	Criteria	Right-of-Way (Feet)	Paved Width (Feet)	# of Lanes	Side-walk (Feet)	Planting Strip (Feet)	Parking Lane (Feet)	Bike Lane (Feet)	Travel Lane(s) (Feet)	Center Turn Lane	Travel Lane(s) (Feet)	Bike Lane (Feet)	Parking Lane (Feet)	Planting Strip (Feet)	Side-walk (Feet)
		A	B		C	D	E		F	G	F		E	D	C
Major Collector	With Parking	68-80	58	3	6	0-5	7	5	11	12	11	5	7	0-5	6
	Without Parking	54-66	44	3	6	0-5*	0	5	11	12	11	5	0	0-5*	6
Minor Collector	With Bike Lanes	56-66	46	2	5	0-5*	7	5	11	0	11	5	7	0-5*	5
	Without Bike Lanes	48-58	38	2	5	0-5*	8	0	11	0	11	0	8	0-5*	5

* Planting strip preferred

Table 3
Urban Local Street Cross Sections

DESIGN SPEED = 25 M.P.H.

Road Classification	Criteria	Right-of-Way (Feet)	Paved Width (Feet)	Sidewalk (Feet)	Planting Strip (Feet)	Parking Lane (Feet)	Travel Way (Feet)	Parking Lane (Feet)	Planting Strip (Feet)	Sidewalk (Feet)
		A	B	C	D	E	F	E	D	C
Local Residential	Traditional/ Parking Both Sides	42-50	32	5	0-4*	8	16	8	0-4*	5
	Traditional/ Parking One Side	34-42	24	5	0-4*	8	16	-	0-4*	5
Local Commercial & Residential		54-62	44	5	0-4*	10	24	10	0-4*	5

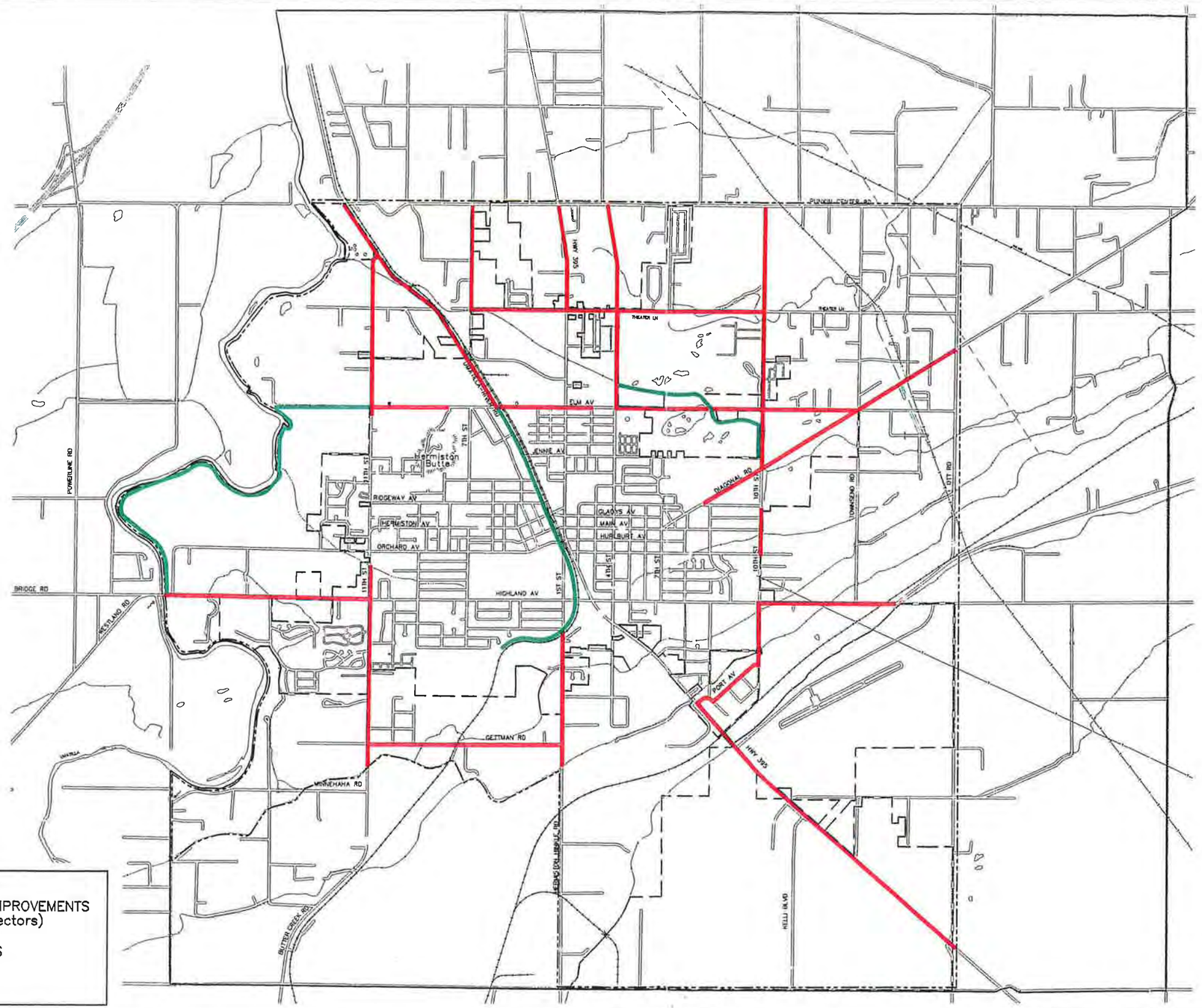
* Planting strip preferred

Table 4
Rural Arterial/Collector/Local Road Cross Sections

DESIGN SPEED = 25-45 M.P.H.

Road Classification	Criteria	Right-of-Way (Feet)	Paved Width (Feet)	# of Lanes	Shoulder (Feet)	Travel Lane(s) (Feet)	Travel Lane(s) (Feet)	Shoulder (Feet)
		A	B		C	E	E	C
Arterial	Without Parking	50-70	36-52	2-3	8	12	12	8
Collector	Without Parking	50-65	32-48	2-3	4-6	12	12	4-6
Local	Without Parking	50	24-28	2	2-4	20	-	2-4

Notes: 1. Left turn lanes allowed at major intersections.
2. Bike lanes to be provided on shoulders for arterials and collectors

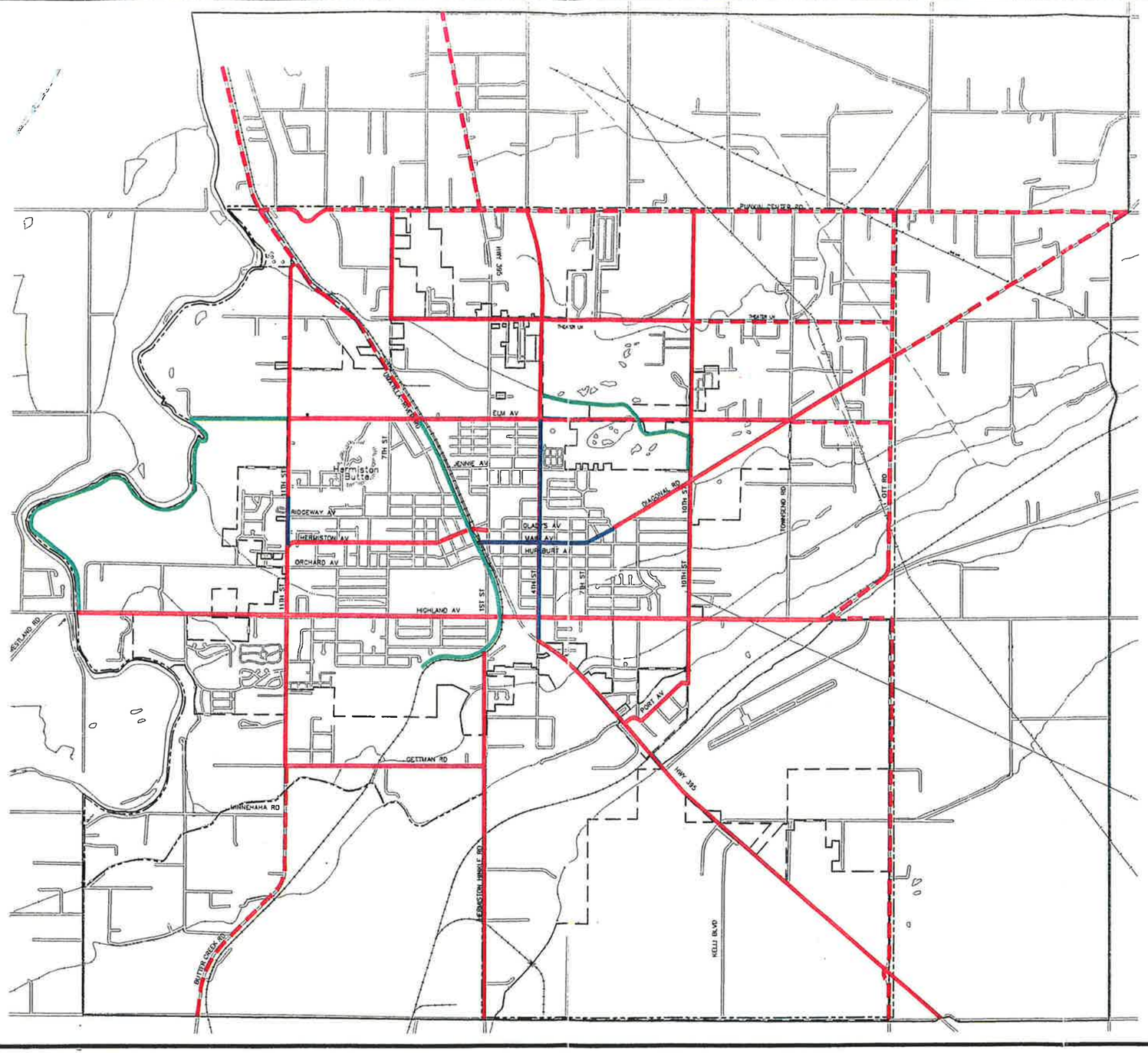


PROPOSED SIDEWALK IMPROVEMENTS ON ARTERIALS & COLLECTORS

HERMISTON TSP IMPLEMENTATION STUDY HERMISTON, OREGON REVISED–NOVEMBER 1999	FIGURE 3

TECHM3\3337F03

NORTH
(NOT TO SCALE)

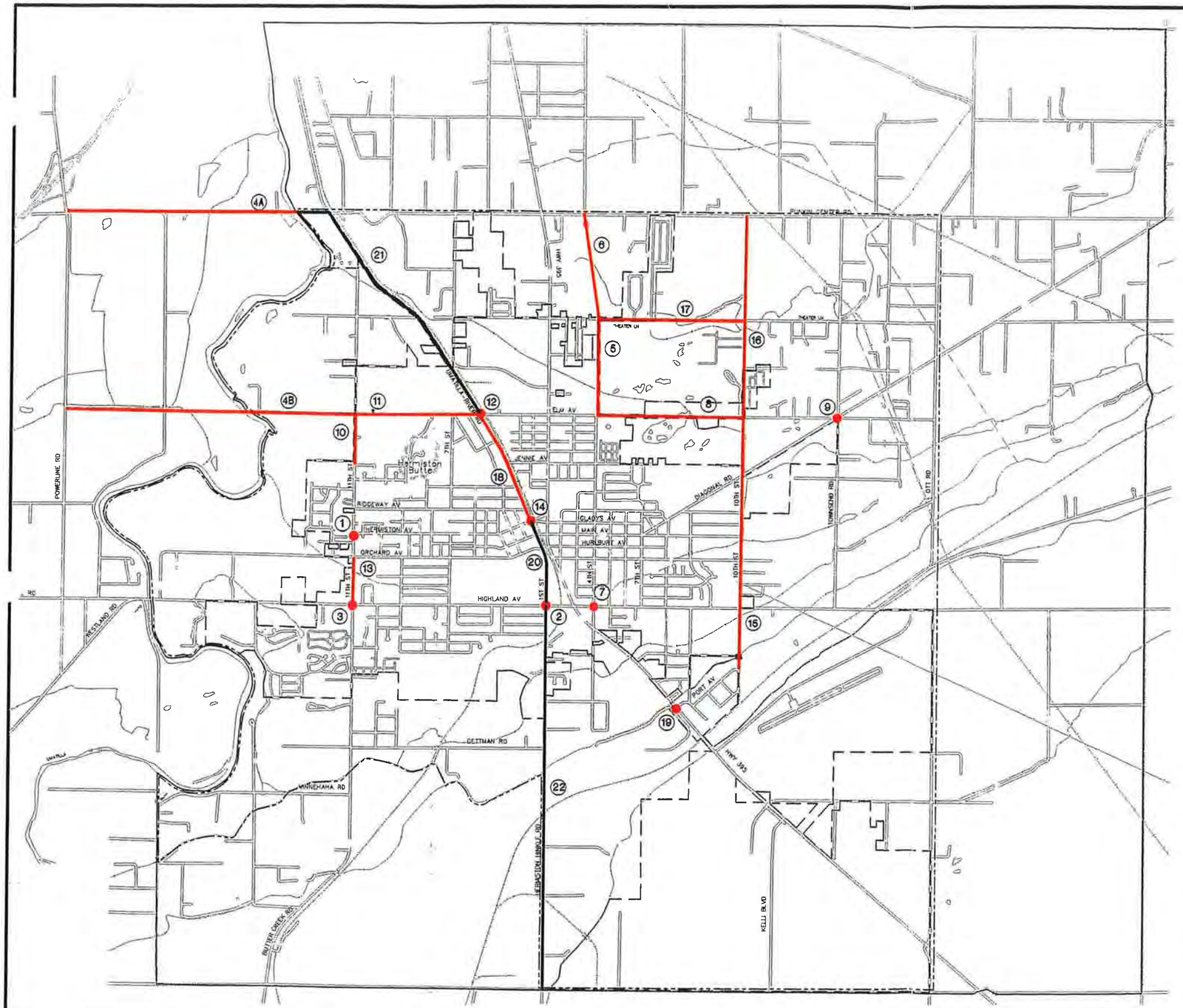


LEGEND
- ON-STREET BIKE LANE
- SHOULDER BIKEWAYS
- ON-STREET BIKE ROUTE
- OFF-STREET PATHWAY
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS

PROPOSED BICYCLE FACILITIES

HERMISTON TSP IMPLEMENTATION STUDY HERMISTON, OREGON REVISED-NOVEMBER 1999	FIGURE 4

\TECHM3\3337F04



1. Improve West 11th St./Hermiston Ave. Intersection (New Traffic Signal, Intersection Rechannelization)
2. Improve West 1st St./Highland Ave. Intersection (New Traffic Signal)
3. Improve Highland Ave./West 11th St. Intersection (Reconfigure Turn Lanes)
4A. Option 1: Construct Bridge Across Umatilla River and Connect with Punkin Center Rd.
4B. Option 2: Construct Bridge Across Umatilla River and Connect with Elm Ave.
5. Extend 4th St. from Elm Ave to Punkin Center Rd. (Include New Signal at Elm Ave.)
6. Extend 4th St. from Theater Lane to Punkin Center Rd.
7. Improve West 4th St./Highland Ave. Intersection (New Traffic Signal)
8. Improve Elm Ave. from East 4th St. to Diagonal Rd (Widen to 3 Lanes)
9. Elm Ave./Diagonal Rd. Intersection Improvements
10. Improve West 11th St. Adjacent to Good Samaritan Hospital (Widen to 3 Lanes)
11. Improve Elm Ave. from West 11th St. to Umatilla River Rd.
12. Improve Elm Ave./Umatilla River Rd. Intersection (Signal Modified, Add Left Turn Lanes)
13. Improve West 11th St., north of Highland Ave. (Widen to 3 Lanes)
14. Improve 1st Place/Hermiston Ave. Intersection (Add Traffic Signal, Intersection Rechannelization)
15. Improve 10th St. from Columbia Dr. to Elm Ave.
16. Improve and Relocate 10th St. from Elm Ave. to Punkin Center Rd.
17. Theater Lane Upgrade from Highway 395 to East 10th St.
18. Upgrade Umatilla River Rd from Hermiston Ave. to Elm Ave.
19. Improve Highway 395/Port Ave. Intersection (New Traffic Signal)
20. Upgrade 1st St. from Hermiston Ave. to Highland Ave.
21. Upgrade Umatilla River Road from Elm Ave. to Punkin Center Rd.
22. Upgrade Umatilla River Road from Highland Ave. to Feedville Rd.

NORTH
(NOT TO SCALE)

LEGEND
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS

REFINED STREET SYSTEM IMPROVEMENTS

HERMISTON TSP IMPLEMENTATION STUDY
HERMISTON, OREGON
REVISED–NOVEMBER 1999

FIGURE 5

K

\TECHM3\3337F05

Urban Minor Collector - Different street and right-of-way widths are identified with vs. without bike lanes, assuming parking on both sides of the street would be allowed. In the 1997 TSP, bike lanes were not identified on minor collectors. Only one cross section for minor collectors was in the 1997 TSP. The minor collector cross section includes the option for parkway strips (with the strips preferred), as well as six foot sidewalks (five-foot sidewalks were identified in the 1997 TSP).

Urban Local Street - The proposed new cross section standards for urban local residential streets only address "traditional" width sections. The development of a narrower street width option for local streets, though consistent with the State Transportation Planning Rule's intent to have street right-of-way as consolidated as possible, was not adopted by the Hermiston Planning Commission when it adopted the TSP. It was felt that narrow streets would not be compatible with the larger number of pickups and sport utility vehicles used by Hermiston residents. The traditional width sections are identified for parking on one or both sides of the street, and are similar in width to the local street standards in the 1997 TSP (32 foot pavement width with parking on both sides, and 24 feet with parking on one side). Unlike the 1997 TSP standards, the "traditional" standards incorporate a parkway strip, which is really preferred given the frequency of driveways along local streets, and the difficulty of meeting ADA (Americans for Disabilities Act) maximum grade requirements with attached sidewalks at driveways. The local street standards also include a standard for commercial/industrial streets, with a wider pavement section provided given the higher number of trucks being accommodated on such streets. The 1997 TSP did not distinguish between local residential and commercial/industrial street standards.

Rural Arterial - The proposed rural arterial cross section is similar to that in the 1997 TSP, except that eight foot shoulders are identified as the standard as opposed to 6-8 feet.

Rural Collector - The proposed rural collector cross section is the same as that in the 1997 TSP.

Rural Local Road - The proposed rural local road cross section is similar to that in the 1997 TSP, except that a possible shoulder widening up to four feet (as opposed to two feet) is identified.

Intersection Curb Returns

One street standard not addressed in the 1997 Hermiston TSP is the required size of curb returns at urban street intersections. This is critical so as to provide for adequate turning movements for certain vehicles, yet at the same time not make intersections too large such that pedestrian crossings can be facilitated. Table 5 identifies a minimum curb return radius for the lowest

street classification of two intersecting streets. Minimum curb returns vary from 15 feet for local street intersections, to 30 feet for major arterial intersections.

Table 5
Minimum Curb Return Radii (Feet)
Edge of Pavement/Curb

Lowest Street Classification of Two Intersecting Streets	Minimum Curb Return Radius
Major Arterial	30 feet
Minor Arterial	30 feet
Major Collector	25 feet
Minor Collector	25 feet
Local Residential Street	15 feet
Local Commercial/Industrial Street	30 feet

Access Management Standards

Access management standards are needed to ensure both the safety and efficiency of traffic flow for vehicles traveling on the roadway system. Managing the access of roadways benefits the overall roadway system by increasing safety, increasing capacity, and reducing travel times. Controlling access must not become too restrictive, however, as to prohibit local businesses and home owners deserved access to the roadway system. Overall, access management must balance the needs of through traffic, local traffic, and pedestrians/bicycles on a particular roadway. By the nature of Hermiston's proposed roadway functional classification system, arterials require the highest access management standards, while collectors and local street require less restrictive access management standards.

Table 6 identifies the minimum access spacing standards for different street classifications in Hermiston. For the two state highways through the City (Highways 395 and 207), the access spacing standards included in the new 1999 Oregon Highway Plan apply. Still at issue which should be addressed as part of the development of the final Highway 395 North Access Management Plan is if sections of Highway 395 and 207 would qualify as a designated Special Transportation Area (Highway 395) or Urban Business Area (Highway 207) where reduced access spacing standards could be applied. There is also an access standard variation process

identified in the State Highway Plan that the City of Hermiston could pursue if the identified spacing standards on these two facilities are considered to be excessive, and STA and/or UBA classifications are not approved. For the other arterial, collector, and local streets in the City, a graduating reduced set of spacing standards are proposed.

Table 6
Proposed Access Spacing Standards

Roadway Functional Classification	Area[1]	Minimum Spacing			
		Traffic Signals (miles)	Public Intersections (feet)	Private Driveways (feet)	Median Opening (feet)
Major Arterial - State Highway (Highway 395)	Urban STA	½ 1/4	990 (40-45 mph) 770 (30-35 mph) 300	990 (40-45 mph) 770 (30-35 mph) 175	990 770 300
Minor Arterial- State Highway (Highway 207)	Urban UBA	½ 1/4	750 (40/45 mph) 600 (30/35 mph) 630 (40/45 mph) 425 (30/35 mph) 350 (≤ 25 mph)	750 (40/45 mph) 600 (30/35 mph) 630 (40/45 mph) 425 (30/35 mph) 350 (≤ 25 mph)	750 600 630 425 350
Other Minor Arterial	All	1/4	400	250	NA
Major Collector	All	1/4	300	150	NA
Minor Collector	All	1/4	200	100	NA
Local Residential Street	All	NA	150	50	NA
Local Commercial/Industrial Street	All	NA	150	50	NA

Notes: 1. "Urban" refers to "Urban Other" category in the 1999 Oregon Highway Plan.
"STA" refers to inside a designated Special Transportation Area, per the 1999 Oregon Highway Plan (assumed to be if established the Hermiston central business district area).
"UBA" refers to "Urban Business Area" category in the 1999 Oregon Highway Plan.
"All" refers to all street segments inside the Hermiston urban growth boundary.
NA - Not applicable

SPECIFIC PROJECTS

Roadway

Figure 5 and Table 7 identify 18 different road improvement projects over the next 20 years in the Hermiston area. The projects include roadway widening and intersection channelization and

traffic control improvements. The projects are identified into short-term, mid-term, and long-term need, similar to how road improvements were prioritized in the 1997 TSP. An alternate prioritization scheme would be 0-5 years for short-term, 6-10 years for mid-term, and 11-20 years for long-term, pending estimated funding availability (the subject of a separate technical memorandum). Most of the identified roadway projects were in the 1997 TSP, and for these, the costs have been increased from those presented in the TSP document by 10% to reflect existing (1999) dollars. The estimated total cost of the roadway improvements is $26.464 million in existing dollars.

Pedestrian/Bicycle

Tables 8 and 9 identify the updated cost for different pedestrian and bicycle facility improvements. The project list is similar to that identified in the 1997 TSP, with the addition of off-street pathways identified in the Hermiston Parks and Recreation Plan, which were not addressed in the 1997 TSP. The pedestrian facility improvements - adding sidewalks to at least one side of all arterial and collector streets, and the new off-street pathways along the Umatilla River, the Union Pacific Railroad, and Hermiston Ditch, are estimated to cost $2.743 million in existing dollars. The bicycle facility improvements - adding bike lanes on streets that are not shown to be widened in the roadway improvements are estimated to cost $946,000 in existing dollars. Both the pedestrian and bicycle project costs were increased by 10% from the cost estimates in the 1997 TSP to reflect 1999 conditions.

Table 7
Recommended 20-Year Street Improvement Projects

Location	Project Description	Priority	Cost (Existing $)	Potential Funding Source
Improvement 1 11th Street and Hermiston Avenue	Signalization/intersection rechannelization	Near-term	$240,000	STIP
Improvement 2 1st Street Highland Avenue Intersection	Signalization	Near-term	$200,000	GF, STIP
Improvement 3 11th Street at Highland Avenue Intersection	Add left turn lanes	Near-term	$230,000	STIP
Improvement 4 Construction of the Umatilla River Bridge along Punkin Center Road	Bridge construction and street upgrade	Near-term	$6,300,000	Special
Improvement 5 East 4th Street Extension from Elm Avenue to Theater Lane	Street extension/signal at Elm Avenue	Near-term	$1,254,000	STIP, SDC
Improvement 6 East 4th Street Extension from Theater Lane to Punkin Center Road	Street extension	Mid-term	$1,495,000	STIP, SDC
Improvement 7 East 4th Street/Highland Avenue Intersection	Signalization	Mid-term	$200,000	STIP
Improvement 8 Upgrade Elm Ave from East 4th Street to Diagonal Road	Widening to ODOT standard	Mid-term	$1,000,000	STIP
Improvement 9 Improvement Elm Avenue/Diagonal Road Intersection	Intersection reconfiguration/signal or roundabout	Mid-term	$1,320,000	STIP, County
Improvement 10 Improve West 11th Street adjacent to hospital	Widening to ODOT standard	Mid-tem	$120,000	STIP
Improvement 11 Improve Elm Avenue near hospital	Widening	Mid-term	$210,000	STIP

Table 7 (continued)
Recommended 20-Year Street Improvement Projects

Location	Project Description	Priority	Cost (Existing $)	Potential Funding Source
Improvement 12 Improve Elm Avenue/ Umatilla River Road Intersection	Turn lanes/signal modification	Mid-term	$300,000	STIP
Improvement 13 Improve West 11th Street north of Highland Avenue	Widening to ODOT standard	Mid-term	$250,000	STIP
Improvement 14 1st Place and Hermiston Avenue intersection	Intersection rechannelization/new signal	Mid-term	$950,000	STIP
Improvement 15 East 10th Street upgrade from Columbia Drive to Elm Avenue	Widening	Long-term	$2,800,000	STIP
Improvement 16 East 10th Street upgrade form Elm Avenue to Punkin Center Road	Widening	Long-term	$2,800,000	STIP
Improvement 17 Upgrade Theater Lane from Highway 395 east to 10th Street	Widening	Long-term	$2,400,000	STIP
Improvement 18 Upgrade Umatilla River Road between Elm Avenue and Hermiston Avenue	Widening	Long-term	$1,495,000	STIP
Improvement 19 Improve Hwy. 395/ Port Drive intersection	New signal	Long-term	$150,000	STIP
Improvement 20 Upgrade 1st Street from Hermiston Avenue to Highland Avenue	Widening	Long-term	$750,000	STIP
Improvement 21 Upgrade Umatilla River Road from Elm Avenue to Punkin Center Road	Widening	Long-term	$1,000,000	STIP
Improvement 22 Upgrade 1st Street/Hermiston-Hinkle Road from Highland Avenue to Feedville Road	Widening	Long-term	$1,000,000	STIP
Total			$26,464,000	

Note: Potential funding sources include the following:
STIP - State Transportation Improvement Program (ODOT)
GF - City of Hermiston General Fund
SDC - City of Hermiston Transportation System Development Charge
Special - Special funding authorization from U.S. Government
TEP - Transportation Enhancement Program
LID - Local Improvement District
County - Umatilla County

Table 8
Recommended 20-Year Pedestrian Projects

Location	Project Description	Priority	Cost (Existing $)	Potential Funding Source
Hwy. 395 (Theater Lane to SE Port Drive)	Sidewalk repair, curb ramps, driveway management and refuge islands (four lanes)	Near-term	$25,000	STIP, TEP
East 4th Street (Elm Avenue to Highland Avenue)	Sidewalk infill, 28 curb ramps	Near-term	$59,000	GF, SDC, LID
East Main Street (East 7th Street to East 10th Street)	Sidewalks	Near-term	$140,000	GF, SDC, LID
East 10th Street (Elm Avenue to Highland Avenue)	Sidewalk infill	Near-term	$205,000	GF, SDC, LID
Umatilla River Trail (Elm to Highland Avenues)	Off-street pathway on east side of river for pedestrians and bicycles	Near-term	$650,000	TEP
Highland Avenue (SW 11th Street to SE 5th Street)	Sidewalk infill	Mid-term	$14,000	GF, SDC, LID
Hermiston Avenue (West 11th Street to 1st Place)	Sidewalk infill, 36 curb ramps	Mid-term	$56,000	GF, SDC, LID
1st Street (Hermiston Avenue to Highland Avenue)	Sidewalk infill, 10 curb ramps	Mid-term	$57,000	GF, SDC, LID
Orchard Avenue (West 11th Street to Highway 395)	Sidewalk infill, 18 curb ramps	Mid-term	$75,000	STIP
Elm Avenue (West 7th Street to Highway 395)	Sidewalks	Mid-term	$123,000	GF, SDC, LID
Diagonal Road (Main Street to NE 10th Street)	Sidewalks	Mid-term	$140,000	GF, SDC, LID
West 11th Street (Linda Avenue to Joseph Avenue)	Sidewalk infill	Mid-term	$179,000	GF, SDC, LID
1st Place (Elm Avenue to Hermiston Avenue)	Sidewalks	Long-term	$154,000	GF, SDC LID
Jennie Avenue (1st Place to NE 4th Street)	Sidewalks	Long-term	$129,000	GF,SDC, LID,
1st Street (Highland Avenue to SE 4th Street Ext.)	Sidewalk infill with curbs, 18 curb ramps	Long-term	$137,000	GF, SDC, LID

Table 8 (continued)
Recommended 20-Year Pedestrian Projects

Location	Project Description	Priority	Cost (Existing $)	Potential Funding Source
Pathway Along Union Pacific Railroad (Elm Ave. To south of Highland Ave.)	Off-street pathway for pedestrians and bicycles	Long-term	$400,000	TEP, GF
Hermiston Ditch Pathway (E. 4th Street to E. 10th Street)	Off-street pathway for pedestrians and bicycles	Long-term	$200,000	TEP, GF
Total			$2,743,000	

Note: Potential funding sources include the following:
STIP - State Transportation Improvement Program (ODOT)
TEP - Transportation Enhancement Program (ODOT)
GF - City of Hermiston General Fund
SDC - City of Hermiston Transportation System Development Charge
LID - Local Improvement District

Table 9
Recommended 20-Year Bicycle Projects

Location	Project Description	Priority	Cost (Existing $)	Potential Funding Source
West 11th Street (Elm Avenue to Highland Avenue)	Stripe bike lanes (6B-11-11-6B north of Linda Ave., 7P-6B-12-12-6B south of Linda Ave.)	Near-term	$4,600	STIP
Hurlbur Avenue (Highway 395 to East 4th Street)	Stripe bike lanes (5B-11-11-5B-8P)	Mid-term	$1,200	GF,SDC
East 4th Street (Main Street to Highway 395)	Stripe bike lanes (6P-4.5B-10-10-4.5B north of Highland Ave., 7P-4.5B-10-10-4.5B-7P) south of Highland Ave.	Mid-term	$2,300	STIP
Orchard Avenue (SW 11th Street to SW 7th Avenue)	Stripe bike lanes (7P-5B-10-10-5B)	Mid-term	$2,300	GF,SDC
Orchard Avenue (SW 7th Street to Highway 395)	Stripe bike lanes (7P-5B-12-12-6B)	Mid-term	$2,300	GF, SDC
East 4th Street (Elm Avenue to Main Street)	Stripe bike lanes (6B-11-11-6B)	Mid-term	$2,900	STIP,GF, SDC
Elm Avenue (West 7th Street to Highway 395)	Stripe bike lanes (street width varies; widen west of RR tracks for 800 ft from 21 to at least 34 ft) (6B-11-11-6B)	Mid-term	$28,600	STIP,GF, SDC
1st Place (Elm Avenue to Hermiston Avenue)	Widen from 24 to 34 ft with 6-ft shoulders, repave, and stripe for shoulders (6Sh-11-11-6Sh)	Mid-term	$171,000	GF, SDC
East 10th Street (Elm Avenue to Highland Avenue)	Widen 34 ft (from 26, 20 and 32-ft segments) and stripe 6-ft bike lanes (6B-11-11-6B)	Mid-term	$217,000	GF, SDC
Hermiston Avenue (West 11th Street to 1st Place)	Stripe bike lanes (7P-5B-12-12-6B) west of 8th St.	Long-term	$4,200	GF, SDC
Diagonal Road (NE 7th Street to NE 10th Street)	Stripe bike lanes (5.5B-11-11-5.5B)	Long-term	$2,700	GF, SDC
NE 10th Street (Theater Lane to Elm Avenue)	Widen from 22 to 32 ft with 5-ft shoulder (wider if >2000 ADT), and stripe for shoulders (5Sh-11-11-5Sh)	Long-term	$99,300	GF, SDC

Table 9 (continued)
Recommended 20-Year Bicycle Projects

Location	Project Description	Priority	Cost (Existing $)	Potential Funding Source
Theater Lane (NW Geer Road to NE 7th Street Alignment)	Widen from 22 to 32 ft with 5-ft shoulders (wider if >2000 ADT), and stripe for shoulders (5Sh-11-11-5Sh)	Long-term	$175,000	GF, SDC
Highland Avenue (Umatilla River to SW 11th Avenue)	Widen from 28 to 34 ft with 6-ft shoulders, repave, and stripe for bike lanes (5B-12-12-5B) Shoulder/Bike Lane	Long-term	$223,000	GF, SDC
Total			$946,000	

Note: Potential funding sources include the following:
STIP - State Transportation Improvement Program (ODOT)
TEP - Transportation Enhancement Program (ODOT)
GF - City of Hermiston General Fund
SDC - City of Hermiston Transportation System Development Charge
LID - Local Improvement District

4-B 1-8

CITY OF HERMISTON *Incorporated 1907*

Planning Department
180 NE 2nd Street
Hermiston, OR 97838
Phone: (541) 567-5521
Fax: (541) 567-5530
E-Mail: planning@hermiston.or.us

To: Mayor and City Council
From: Steven E. Sokolowski, City Planner SS
Subject: Amendment to the Hermiston Transportation System Plan - South Hermiston Local Access and Circulation Plan
Date: July 17, 2000

HERMISTON TRANSPORTATION SYSTEM PLAN AMENDMENT

INTRODUCTION

This memorandum summarizes the proposed amendment to the City of Hermiston Transportation System Plan that implements the recently completed South Hermiston Local Access and Circulation Plan. The proposed amendment was developed to supplement the various plan maps, street standards, and improvement projects previously identified in the December 1999 Hermiston TSP Implementation Study prepared by Kittelson and Associates, Inc., which resulted in an updated transportation system plan for the City of Hermiston.

South Hermiston Access and Circulation Plan

The South Hermiston Access and Circulation Plan was a joint planning effort undertaken by the City of Hermiston and ODOT in December of 1999. Through a series of technical correspondence and meetings, future access connections and roadway alignments were identified to provide for the safe and efficient movement of vehicles, pedestrians, and bicyclists within the area bounded by SE Hinkle Road, SE 9th Street, SE Highland Avenue, and SE Airport Way.

PROPOSED TSP AMENDMENT/CHANGES TO MODAL PLANS

The most recent changes to the City of Hermiston's Transportation System Plan were adopted in December of 1999. At that time, the South Hermiston Access and Circulation Plan was not yet completed and so was not included in the amendments. Now that the access and circulation plan has been agreed to by the City and ODOT, it is imperative that the material be incorporated into the City's TSP to ensure that it is fully implemented as local development activities continue.

To fully implement the access and circulation plan, it will be necessary to supplement the City TSP's Roadway Functional Classification and Traffic Signal Plan, Pedestrian Facility Plan, and Bicycle Facility Plan. The following changes to the City's Transportation System Plan are recommended to ensure the South Hermiston Access and Circulation Plan is properly developed.

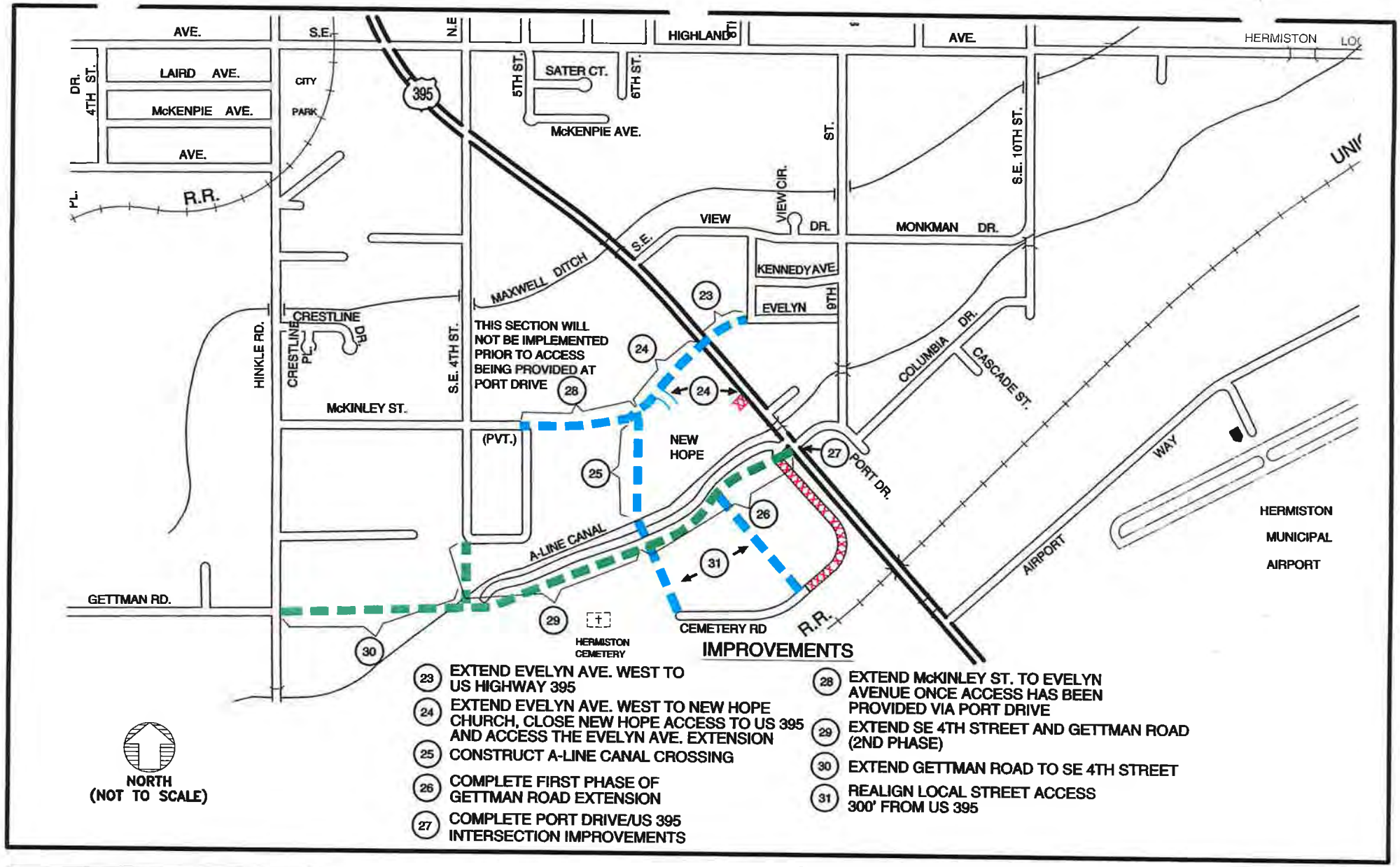
Functional Classification and Traffic Signal Plan

Figure 1 illustrates the updated Functional Classification Plan and Traffic Signal Plan for the City of Hermiston. With two exceptions identified in the Area of Special Concern, Figure 1 is identical to the plan identified in the December 1999 TSP update (Figure 1 of the December 1999 Update Memorandum prepared by Kittelson and Associates, Inc.). The two changes to the currently adopted Functional Classification Plan are:

1. Classification of the Gettman Road Extension as an Urban Minor Collector between U.S. Highway 395 and SE Hermiston-Hinkle Road.
2. Classification of the SE 4th Street as an Urban Minor Collector between U.S. Highway 395 and the Gettman Road Extension.

The new Gettman Road Extension and SE 4th Street are expected to enhance local access and roadway connectivity in the area that they serve. Gettman Road (west of Hermiston-Hinkle Road) and Port Avenue are both currently classified as Urban Minor Collectors in the City's TSP. It is thus appropriate to provide continuity in road function and design by classifying the new roadway segment as an Urban Minor Collector as well. Similarly, SE 4th Street provides connectivity between an Urban Major Arterial (U.S. Highway 395) and an Urban Minor Collector (Gettman Road) and thus serves a collector role.

The enhanced connectivity opportunities offered by the expanded roadway network should also address more regional needs by reducing congestion at the intersection of Highway 395/SE 4th Street. Both SE Fourth Street and Hermiston-Hinkle Road provide north-south access into Hermiston and offer attractive routes to and from the downtown area. However, there is not an available east-west connection south of Highland Avenue, requiring significant out-of-direction travel. As an example, vehicles at Highway 395/Port Drive have to travel north to Highland Avenue and then south on SE 4th Street or SE Hermiston-Hinkle Road. The proposed circulation system addresses this issue by developing a network of east-west roadways that provides critical links.



LEGEND

- NEW MINOR COLLECTOR
- NEW LOCAL STREET
- xxx – STREET CLOSURE

SOUTH HERMISTON STUDY AREA ACCESS AND CIRCULATION IMPROVEMENT PLAN MAY 2000 TSP UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGEON MAY 2000	FIGURE 5

TSP_UPD\3957F005

Pedestrian Facility Plan
The proposed Pedestrian Facility Plan, which illustrates those arterial and collector street segments that currently do not have a sidewalk on either side of a given street, is shown in Figure 2. With two exceptions, this figure is identical to the plan identified in the December 1999 TSP update (Figure 3 of the December 1999 Update Memorandum prepared by Kittelson and Associates, Inc.). The two changes to the currently adopted Pedestrian Facility Improvement plan are:

1. Provision of sidewalk facilities on the Gettman Road Extension between U.S. Highway 395 and SE Hinkle Road as per the Urban Minor Collector Road Standards identified in the TSP.
2. Provision of sidewalk facilities on SE 4th Street between Highway 395 and the Gettman Road Extension as per the Urban Minor Collector Road Standards identified in the TSP.

Bicycle Facility Plan
The proposed Bicycle Facility Plan, which illustrates all the designated bike lanes or routes in the City, is shown in Figure 3. This figure is identical to the plan identified in the December 1999 TSP update (Figure 4 of the December 1999 Update Memorandum prepared by Kittelson and Associates, Inc.), with two exceptions. The two changes to the currently adopted Bicycle Facility Improvement Plan are:

1. Provision of on-street bike lanes on the Gettman Road Extension between U.S. Highway 395 and SE Hinkle Road as per the Urban Minor Collector Road Standards identified in the TSP.
2. Provision of an on-street bike route along SE 4th Street between U.S. Highway 395 and the Gettman Road Extension as per the Urban Minor Collector Road Standards identified in the TSP.

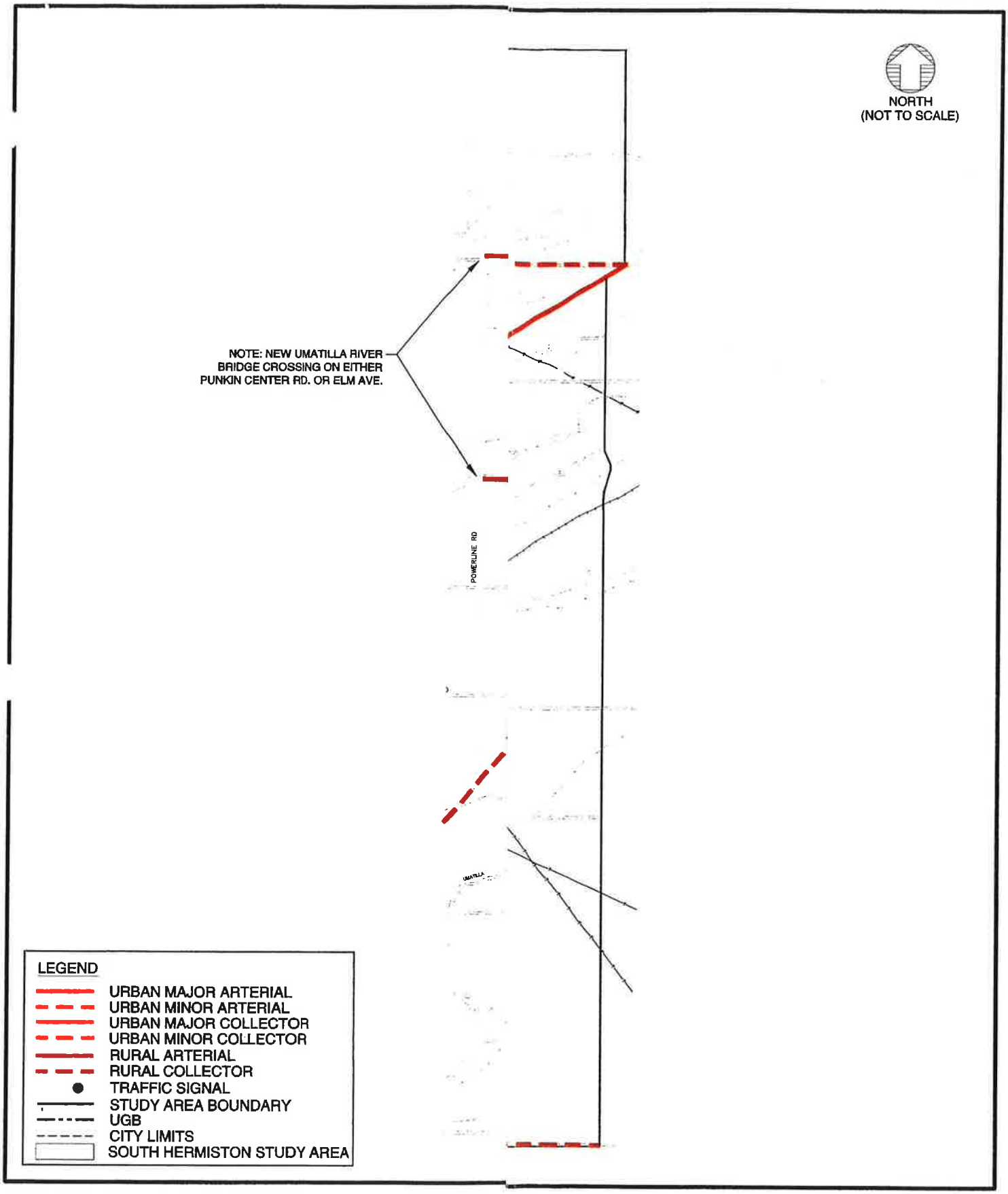
South Hermiston Study Area
Recognizing the unique transportation needs of the sub-area identified in the South Hermiston Access and Circulation Study, system changes were developed to serve the local access needs of existing developments while also providing network connections that support future growth. Each of the identified system treatments is intended to further promote connectivity in south Hermiston while ensuring safe and efficient operations on the existing facilities and preserving the integrity of the U.S. Highway 395 corridor.

Transportation Improvement Projects

The December 1999 TSP update identified a refined list of 22 street system improvements for the 20-year planning horizon. As a result of the consensus achieved through the South Hermiston Access and Circulation Plan, nine additional roadway improvement projects have been identified.

All of these additional improvements are contained within the South Hermiston Study Area and are summarized in Figures 4 and 5 as well as in Table 1. The projects listed in Table 1 and the corresponding figures include construction of new roadways and extension of existing facilities to provide better connectivity, implementation of access management measures, and traffic control improvements. It should be noted that the order of projects in Figure 4 does not reflect a prioritized ranking, though Figure 5 presents the South Hermiston Study Area projects in the order that they should be implemented. Scheduling of the South Hermiston Study Area projects is discussed in detail later in this letter.

The additional projects are expected to be implemented gradually over a 20-year planning horizon in conjunction with local development activities and so have been categorized as short-term, mid-term, and long-term needs. The City of Hermiston and ODOT have developed an implementation order for the projects to ensure that they are constructed such that the Evelyn Avenue/Highway 395 intersection does not become overburdened prior to the initial development of the westside circulation system (which will allow traffic from the Evelyn Avenue Extension to access the Port Drive/Highway 395 intersection via the "A" Line Canal crossing and the initial extension of Gettman Road).



T CLASSIFICATIONS AND
'C SIGNAL PLAN
00 UPDATE

)N TSP AMENDMENT
)N, OREGON

FIGURE
1

TSP_UPD\3957F01

NORTH
(NOT TO SCALE)

LEGEND

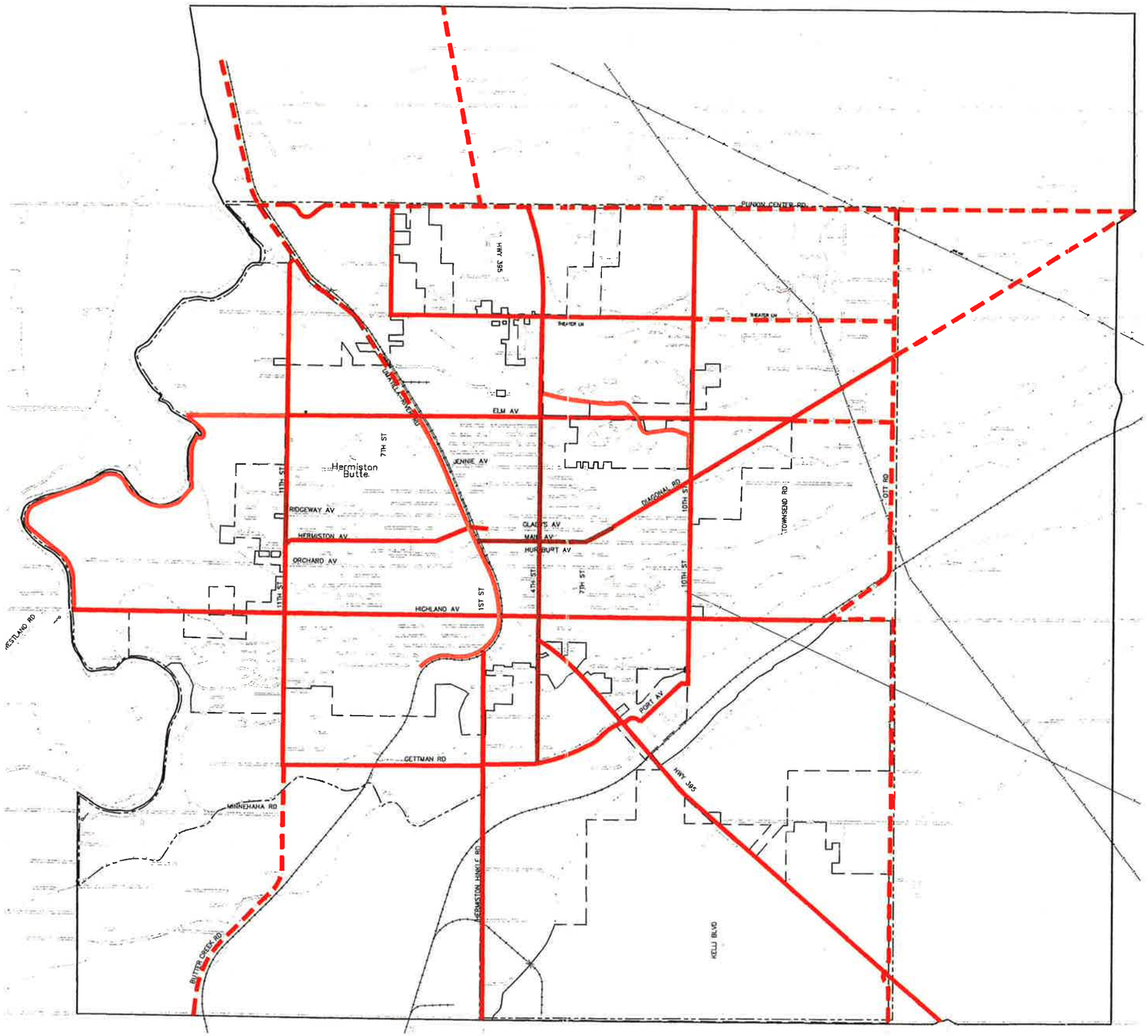
- PROPOSED SIDEWALK IMPROVEMENTS (Urban Arterials & Collectors)
- PROPOSED OFF-STREET PATHWAY IMPROVEMENTS
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS

TRIAN FACILITY PLAN
00 UPDATE

N TSP AMENDMENT
N, OREGON

FIGURE
2

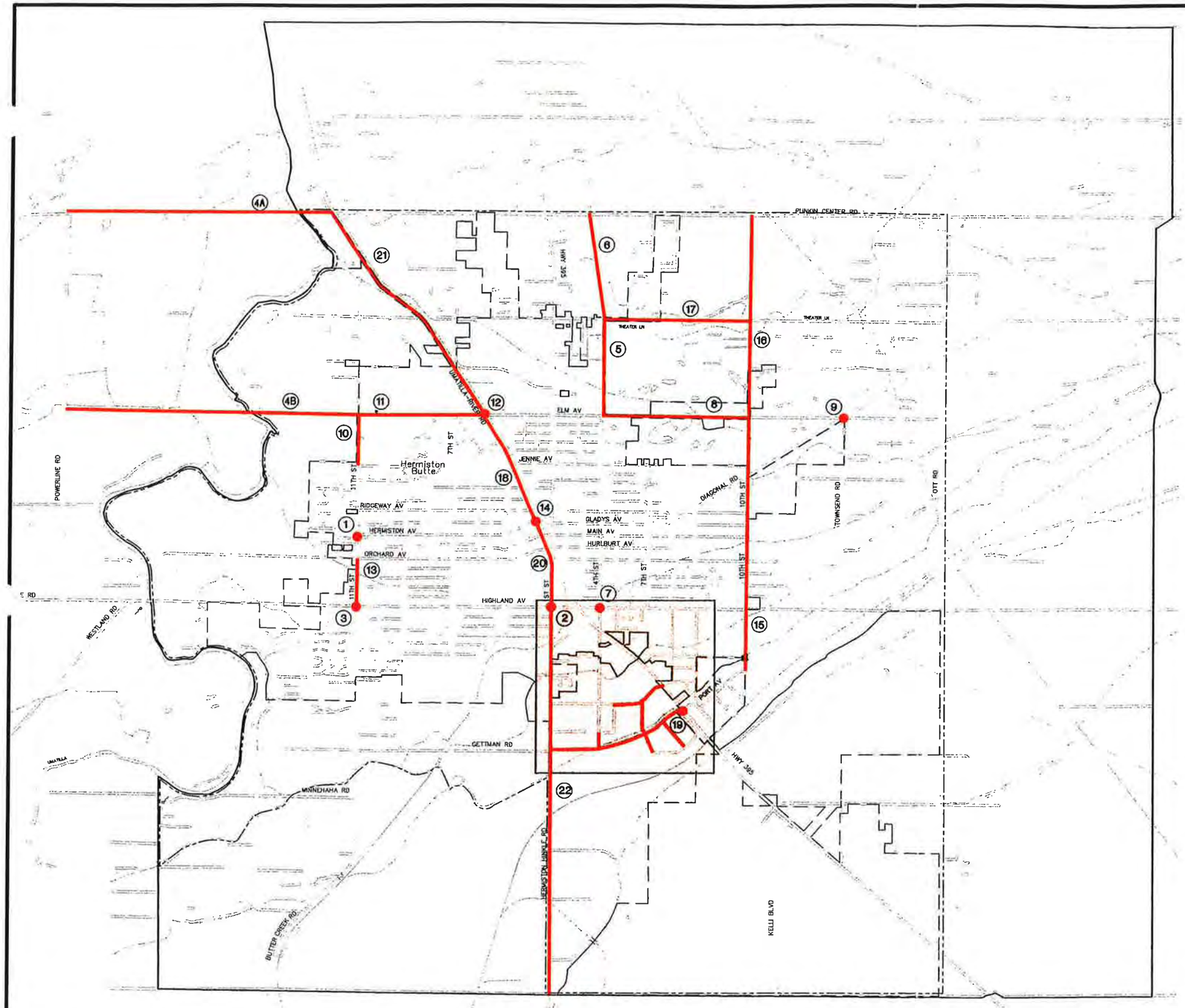
TSP_UPD\3957F02



BICYCLE FACILITY PLAN
MAY 2000 UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGON	FIGURE 3
MAY 2000	

\TSP_UPD\3957F03



NORTH
(NOT TO SCALE)

①	Improve West 11th St./Hermiston Ave. Intersection (New Traffic Signal, Intersection Rechannelization)
②	Improve West 1st St./Highland Ave. Intersection (New Traffic Signal)
③	Improve Highland Ave./West 11th St. Intersection (Reconfigure Turn Lanes)
4A	Option 1: Construct Bridge Across Umatilla River and Connect with Punkin Center Rd.
4B	Option 2: Construct Bridge Across Umatilla River and Connect with Elm Ave.
⑤	Extend 4th St. from Elm Ave to Punkin Center Rd. (Include New Signal at Elm Ave.)
⑥	Extend 4th St. from Theater Lane to Punkin Center Rd.
⑦	Improve West 4th St./Highland Ave. Intersection (New Traffic Signal)
⑧	Improve Elm Ave. from East 4th St. to Diagonal Rd (Widen to 3 Lanes)
⑨	Elm Ave./Diagonal Rd. Intersection Improvements
⑩	Improve West 11th St. Adjacent to Good Samaritan Hospital (Widen to 3 Lanes)
⑪	Improve Elm Ave. from West 11th St. to Umatilla River Rd.
⑫	Improve Elm Ave./Umatilla River Rd. Intersection (Signal Modified, Add Left Turn Lanes)
⑬	Improve West 11th St., north of Highland Ave. (Widen to 3 Lanes)
⑭	Improve 1st Place/Hermision Ave. Intersection (Add Traffic Signal, Intersection Rechannelization)
⑮	Improve 10th St. from Columbia Dr. to Elm Ave.
⑯	Improve and Relocate 10th St. from Elm Ave. to Punkin Center Rd.
⑰	Theater Lane Upgrade from Highway 395 to East 10th St.
⑱	Upgrade Umatilla River Rd from Hermiston Ave. to Elm Ave.
⑲	Improve Highway 395/Port Ave. Intersection (New Traffic Signal)
⑳	Upgrade 1st St. from Hermiston Ave. to Highland Ave.
㉑	Upgrade Umatilla River Road from Elm Ave. to Punkin Center Rd.
㉒	Upgrade 1st St./Hermiston-Hinkle Rd. from Highland Ave. to Feedville Rd.
23-32	See Figure 5, Area of Special Concern

LEGEND
- IMPROVEMENT LOCATIONS
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS
- SOUTH HERMISTON STUDY AREA

REFINED STREET SYSTEM IMPROVEMENTS MAY 2000 UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGON MAY 2000	FIGURE 4	K

\TSP_UPD\3957F04

Table 1

Recommended 20-Year Street Improvement Projects
South Hermiston Study Area

Improvement	Project Description	Priority	Cost (Yr. 2000 $)	Potential Funding Source
23	Extend Evelyn Avenue west to US Highway 395.	Near-term	$55,000	GF, SDC, TEP, LID, AMG, LSN, PDF
24	Extend Evelyn Avenue from US Highway 395 to the westerly property line of the New Hope Church, close the existing New Hope Church site-access driveway on US 395, and provide access to the church via the Evelyn Avenue extension.	Near-term	$150,000	PDF
25	Construct the north-south "A" Line Canal crossing along the westerly property line of New Hope Church.	Near-term	$280,000	GF, SDC, TEP, LID, AMG, LSN, PDF
26	Construct the Gettman Road extension (Phase 1) between the "A" Line Canal crossing and US Highway 395.	Near-term	$395,000	GF, SDC, TEP, LID, AMG, LSN, PDF
27	Complete necessary geometric improvements at the Port Drive/Highway 395 intersection to accommodate full turning movements (i.e., horizontal and vertical alignment modifications).	Near-term	$200,000	GF, SDC, TEP, LID, AMG, LSN, PDF

28	Extend McKinley Street to Evelyn Avenue following the completion of Phases "23" through "27".	Mid-term	$200,000	PDF
29	Relocate the local access connection to Cemetery Road approximately 300 feet or more west of US Highway 395.	Mid-term	$380,000	GF, SDC, TEP, LID, AMG, LSN, PDF
30	Extend SE 4th Street to Gettman Road and construct Gettman Road (Phase 2) between SE 4th Street and the north-south "A" Line Canal crossing.	Mid-term	$245,000	LSN, GF, LID
31	Extend Gettman Road from Hinkle Road to SE 4th Street (Phase 3).	Long-term	$215,000	LSN

Note: Potential funding sources include the following:
- STIP – State Transportation Improvement Program (ODOT)
- AMG – Access Management Grant
- GF – City of Hermiston General Fund
- LID – Local Improvement District
- SDC – City of Hermiston Transportation System Development Charge
- County – Umatilla County
- TEP – Transportation Enhancement Program
- LSN – Local Street Network
- PDF – Private Development Funds

Special - Special funding authorization from U.S. Government

As indicated in Table 1, the estimated total cost of the additional roadway improvements is approximately $2.1 million in existing (year 2000) dollars. The total cost of the entire roadway improvement program is estimated at $29.4 million with these improvements (assuming three percent inflation between the 1999 cost estimates and the year 2000 cost estimates).

It should be noted that the cost estimate provided in Table 1 includes the recommended bicycle and pedestrian system improvements on the southern portion of SE 4th Street and SE Gettman Road (between US Highway 395 and SW 1st Street) as the pedestrian and bicycle amenities are assumed to be included in the estimated

roadway construction costs. The additional cost to infill sidewalks along SE 4th Street between US Highway 395 and the existing southern terminus of the road is $56,000. This project brings the total cost for recommended 20-year pedestrian improvement projects to approximately $2.9 million (again assuming three percent inflation between the 1999 cost estimates and the year 2000 cost estimates).

The order of implementing the South Hermiston Study Area projects #23 through #31 and conditions surrounding that implementation were developed jointly by the City of Hermiston and ODOT to ensure the integrity of the Highway 395 corridor as well as local access and circulation and is outlined in the following bullet points.

Implementation Requirements

The eastside Evelyn Avenue connection can be constructed now upon agreement with the City of Hermiston of all conditions and the issuance of a permit.

The westside Evelyn Avenue connection can be constructed upon agreement with the City of Hermiston on all conditions on a phased basis. This phasing is shown graphically in Figure 5 and is listed below:

55,000 1. (Improvement #23) Extension of Evelyn Avenue west to the New Hope Church westerly property line.

150,000 2. (Improvement #24) Closure of the New Hope Church access to Highway 395 with new access developed to the west of Evelyn Avenue extension identified in #1 above.

280,000 3. (Improvement #25) North-South crossing of the "A" Line Canal westerly of the New Hope Church property connection to #1 above.

395,000 4. (Improvement #26) Connection between #3 above and the Port Drive intersection requiring approximately 300 feet of new street along the "A" Line Canal.

200,000 5. (Improvement #27) Improvements to the Port Drive intersection allowing the westerly movement of traffic along the "A" Line Canal to the west property line of the New Hope Church, then north to the westerly extension of Evelyn Avenue.

200,000 6. (Improvement #28) Extension of the West Evelyn Avenue Extension (#1 above) to a connection with McKinley Street.

200,000 to 300,000 7. (Improvement #19) Signalization of the Port Drive/Highway 395 intersection when traffic signal warrants merit installation.

380,000 8. (Improvement #29) Westerly extension of a new roadway along the canal from the New Hope Church west property line to the extension of SE 4th Street, including connection to SE 4th Street.

245,000 9. (Improvement #30) Easterly extension of Gettman Road from Hinkle Road to SE 4th Street.

215,000 10. (Improvement #31) Local access to Cemetery Road realigned 300 feet or more from U.S. Highway 395.

The reservations of access along Highway 395 between Highland Avenue and Port Drive that currently serve undeveloped properties should be closed. All access to these properties should be via an off-system street. Once agreement is reached on these closures, the actual closure will occur when properties are developed.

The reservations of access that currently serve developed properties will be allowed until the times these properties redevelop.

For the church property being developed at this time on the west side of Highway 395, as soon as the westerly extension of Evelyn Avenue is completed to the west property line of the church, the church's access will be reconnected to this street. Their highway access will then be closed.

The next signalized intersection on U.S. Highway 395 south of 4th Street will be the Port/Cemetery Road intersection.

Potential traffic conflict conditions at the Evelyn Street and 395 intersection will be alleviated by improvements to the Port Drive and Highway 395 intersection. These improvements together with street extensions from Port Drive to the westerly extension of Evelyn Avenue at the northwest corner of the church, prior to connection of west Evelyn Avenue with McKinley Street, will ensure intersection modifications will be implemented at Port Drive.

DRAFT FINDINGS

Subject to the comments and considerations of the public hearing, the following findings are presented:

Goal 1 and Policy 1. Citizen Involvement. The City will insure that citizens have an adequate opportunity to be involved in all phases of the planning process.

1. Public notice requirements have been met by publication in the local newspaper. No objections were received as a result of those publications.

Goal 2 and Policy 3. Intergovernmental Coordination. The City of Hermiston will facilitate intergovernmental coordination so that decisions affecting local, state, and federal planning and development actions in the Hermiston area are rendered in an efficient and consistent manner.

2. The notice of proposed amendment was sent to the Department of Land Conservation and Development on May 24, 2000, more than 45 days prior to the first evidentiary hearing in accord with Oregon Administrative Rules, Chapter 660, Division 18. The notice to DLCD listed Umatilla County and the Oregon Department of Transportation as affected agencies. To date, no comments or objections have been received as a result of that mailing.

3. The South Hermiston Access and Circulation Plan was a joint planning effort undertaken by the City of Hermiston and ODOT in December of 1999. Through a series of technical correspondence and meetings, future access connections and roadway alignments were identified to provide for the safe and efficient movement of vehicles, pedestrians, and bicyclists within the area bounded by SE Hinkle Road, SE 9th Street, SE Highland Avenue, and SE Airport Way. Now that the access and circulation plan has been agreed to by the City and ODOT, it is imperative that the material be incorporated into the City's TSP to ensure that it is fully implemented as local development activities continue.

Goal 12 and Policy 30. Transportation. The City of Hermiston will promote a balanced well -integrated local transportation system which provides safe, convenient and energy-efficient access, and facilitates the movement of commodities.

4. The City of Hermiston is required to adopt a Transportation System Plan (TSP) and related amendments to the Hermiston Comprehensive Plan and implementing ordinances to comply with the requirements of the Transportation Planning Rule (OAR 660, Division 12).

5. The 1997 Hermiston Transportation System Plan (TSP), the 1999 TSP Update, and the 2000 TSP Amendment (proposed South Hermiston Local Access and Circulation Plan amendment) will guide transportation planning within Hermiston's urban growth boundary (UGB) for the next 20 years. The 2000 TSP Amendment will be incorporated into the City of Hermiston TSP. The City of Hermiston TSP serves as the transportation element of the Hermiston Comprehensive Plan and the City will base its transportation policies, actions and investments on the adopted TSP.

6. To fully implement the access and circulation plan, it will be necessary to supplement the City TSP's Roadway Functional Classification and Traffic Signal Plan, Pedestrian Facility Plan, and Bicycle Facility Plan. The following changes to the City's Transportation System Plan are recommended to ensure the South Hermiston Access and Circulation Plan is properly developed.

7. The new Gettman Road Extension and SE 4th Street are expected to enhance local access and roadway connectivity in the area that they serve. The enhanced connectivity opportunities offered by the expanded roadway network should also address more regional needs by reducing congestion at the intersection of Highway 395/SE 4th Street.

PLANNING COMMISSION ACTION

Following a public hearing on July 12, 2000, the planning commission recommended that the city council adopt the 2000 amendment to the Transportation System Plan through the implementation of the South Hermiston Local Access and Circulation Plan.

RECOMMENDED CITY COUNCIL ACTION

Staff recommends that the city council accept the planning commission recommendation and adopt the 2000 amendment to the Transportation System Plan based on the findings of fact. Staff also recommends that the city council adopt Ordinance No. 2019 which amends the TSP through the implementation of the South Hermiston Local Access and Circulation Plan.

ORDINANCE NO. 2019

AN ORDINANCE AMENDING THE HERMISTON TRANSPORTATION SYSTEM PLAN THROUGH THE ADOPTION OF THE SOUTH HERMISTON LOCAL ACCESS AND CIRCULATION PLAN AND DECLARING AN EMERGENCY.

WHEREAS, the Hermiston Planning Commission held a public hearing on July 12, 2000 to receive public testimony and consider an amendment to the Hermiston Transportation System Plan, and

WHEREAS, the Hermiston City Council held a public hearing on July 24, 2000 to receive public testimony and consider an amendment to the Hermiston Transportation System Plan, and

WHEREAS, notice of the Planning Commission and City Council hearings was provided to the Department of Land Conservation and Development and published in a newspaper of general circulation in accordance with statutory requirements and local ordinance requirements for notice of legislative amendments, now therefore

THE CITY OF HERMISTON DOES ORDAIN AS FOLLOWS:

SECTION 1. The 1999 Hermiston Transportation System Plan is hereby amended to include the South Hermiston Local Access and Circulation Plan (SHLACP).

SECTION 2. The May 23, 2000 Hermiston Transportation System Plan Amendment submitted by Kittelson & Associates Inc. is attached as Exhibit A and is incorporated herein by reference.

SECTION 3. Inasmuch as it is necessary for the health, safety, comfort and convenience of the people of the City of Hermiston that the SHLACP for Evelyn Avenue east of HWY 395 have immediate effect, an emergency is hereby declared to exist, and that portion of SHLACP for Evelyn Avenue east of HWY 395 as adopted by this ordinance shall be in full force and effect from and after passage and approval of this ordinance.

SECTION 4. That portion of SHLACP inside the Urban and Urbanizable area of the UGB shall be referred to Umatilla County for co-adoption.

PASSED by the Common Council this 24th day of July, 2000.
SIGNED by the Mayor this 24th day of July, 2000.

_____
MAYOR

ATTEST:

_____
CITY RECORDER

I:\PLANNING\TSP\TSP Implem SHLACP\Amending Ordinance.wpd

AFFIDAVIT OF POSTING

STATE OF OREGON)
) ss.
County of Umatilla)

I, Robert D. Irby, being first duly sworn, depose and say that I am the duly appointed and acting City Recorder for the City of Hermiston, Umatilla County, Oregon.

That at least two business days before the first reading of Ordinance No. 2019, I posted a written notice at Hermiston City Hall, 180 N.E. 2nd Street, Hermiston, Oregon, that a copy of Ordinance No. 2019 was then and there available for public inspection in the office of the City Recorder.

That I provided each Council member with a copy of said ordinance before the first reading of said ordinance.

_____
Robert D. Irby, City Recorder

Subscribed and sworn to or affirmed before me this 24th day of July, 2000.

_____
Notary Public for Oregon
My Commission Expires:_____

ORDINANCE NO. 2070

AN ORDINANCE AMENDING THE HERMISTON TRANSPORTATION SYSTEM PLAN THROUGH THE ADOPTION OF THE US 395 CORRIDOR REFINEMENT PLAN.

WHEREAS, the City of Hermiston adopted a Transportation System Plan (TSP) and related amendments to the Hermiston Comprehensive Plan and implementing ordinances to comply with the Transportation Planning Rule (OAR 660, Division 12) in December, 1999; and

WHEREAS, the City of Hermiston adopted an amendment to the TSP to implement the South Hermiston Local Access and Circulation Plan in July, 2000; and

WHEREAS, the factual base for the Hermiston TSP is contained in the text of the TSP and will not be repeated here; and

WHEREAS, the Oregon Department of Transportation has proposed to construct a planted median barrier on Highway 395 from SE Kelli Blvd to E Feedville Road; and

WHEREAS, to mitigate the effects of the proposed planted median, a circulation plan is needed for future roadways to the east and west of Highway 395 south of SE Port Drive; and

WHEREAS, four public workshops were conducted to solicit on the proposed access and circulation plan for the south Hermiston area; and

WHEREAS, the Hermiston Planning Commission held public hearings on March 12, 2003 and May 14, 2003 to receive public testimony and consider amendments to the Hermiston TSP; and

WHEREAS, the Hermiston City Council held a public hearing on May 19, 2003 to receive public testimony and consider amendments to the Hermiston TSP; and

WHEREAS, notice of the Planning Commission and City Council hearings was provided to the Department of Land Conservation and Development and published in a newspaper of general circulation in accordance with statutory requirements and local ordinance requirements for notice of legislative amendments; now therefore

THE CITY OF HERMISTON DOES ORDAIN AS FOLLOWS:

SECTION 1. The 1999 Hermiston Transportation System Plan is hereby amended to include the US 395 Corridor Refinement Plan.

SECTION 2. The January 17, 2003 Hermiston Transportation System Plan Amendment submitted by Kittelson & Associates is attached as Exhibit A and is incorporated herein by reference.

SECTION 3. That portion of the amendment areas inside the Urban and Urbanizable areas of the UGB shall be referred to Umatilla County for co-adoption.

SECTION 4. The effective date of this ordinance shall be the thirtieth day after enactment.

First reading in full on the 19th day of May, 2003.

PASSED by the Common Council this 9th day of June 2003.
SIGNED by the Mayor this 9th day of June, 2003.

Bob Severson
MAYOR

ATTEST:

Robert D. Darby
CITY RECORDER

EXHIBIT "A"
TO
ORDINANCE NO.2070

Section 1

Proposed
Transportation
System Plan
Amendments

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING
610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

MEMORANDUM

Date: January 17, 2003 **Project #:** 5504

To: Ed Brookshier, City of Hermiston
Teresa Penninger, ODOT Region 5

cc: Planning Project Team Members

From: Marc Butorac, P.E., P.T.O.E.
Matt Hughart, AICP

Project: US 395 (Port Drive to Feedville Road) Corridor Refinement Plan

Subject: Hermiston Transportation System Plan and US 395 North Corridor Plan Amendment

INTRODUCTION

In July 2000, the Oregon Department of Transportation's (ODOT) *US 395 North Corridor Plan* was adopted by the Oregon Transportation Commission. As part of this plan, a raised median was recommended along a portion of US 395 (Kelli Boulevard to Rosalyn Drive) to enhance the long-term travel safety and provide better access management. Thus, the *US 395: Kelli Blvd. (Hermiston) – Rosalynn Dr. (Stanfield) Sec.* median project was placed on the Statewide Transportation Improvement Plan (STIP) and funded for the 2002-2003 fiscal year.

While the *US 395: Kelli Blvd. (Hermiston) – Rosalynn Dr. (Stanfield) Sec.* STIP median project meets the objective of the *US 395 North Corridor Plan*, the City of Hermiston Transportation System Plan (TSP) has not been expanded to address the local access and circulation needs within the City of Hermiston's Urban Growth Boundary south of Port Drive. As a result, this area does not have an established or planned street network capable of supporting a highly access-controlled corridor. Based on this concern and the aesthetics of the raised median on US 395, the City of Hermiston requested that a refinement study be completed prior to the implementation of the median project. This project became known as the *US 395 (Port Drive to Feedville Road) Corridor Refinement Plan.* The overall goal of the refinement study is to develop a long-term circulation and corridor preservation strategy that will allow economic development based on quality development principles within the City of Hermiston Urban Growth Boundary, while maintaining the integrity and safety of the US 395 corridor.

This memorandum contains proposed amendments to the City of Hermiston Transportation System Plan that implements the work completed as part of the *US 395 (Port Drive to Feedville Road) Corridor Refinement Plan.* The proposed amendment was developed to directly

supplement the various plan maps, street standards, and improvement projects previously identified in the May 2000 Transportation System Plan amendment that resulted in an updated transportation system plan for the City of Hermiston. The information in this memorandum is also intended to supplement and update ODOT's July 2000 *US 395 North Corridor Plan*. These plans will either be referred to or directly incorporated into the next published update of this plan.

US 395 (PORT DRIVE TO FEEDVILLE ROAD) CORRIDOR REFINEMENT PLAN

The US 395 (Port Drive to Feedville Road) Corridor Refinement Plan has been funded jointly by the City of Hermiston and the Oregon Department of Transportation to address the overall management direction established by the *US 395 North Corridor Plan* and the short- and long-term access and circulation issues raised as part of the ongoing *US 395: Kelli Blvd. (Hermiston) – Rosalynn Dr. (Stanfield) Sec.* STIP median project. Through a series of technical correspondence and meetings, future highway access and roadway alignments were identified to provide for the safe and efficient movement of vehicles, pedestrians, and bicyclists within the area bounded by Port Drive, Hermiston-Hinkle Road, Feedville Road, and Ott Road.

PROPOSED TSP AMENDMENT/CHANGES TO MODAL PLANS

The last major update/modification to the City of Hermiston's Transportation System Plan was completed in May 2000. At that time, TSP amendments were adopted to implement elements of a sub-area plan known as the South Hermiston Access and Circulation Plan. Similar to this last update, an expanded set of access, circulation, pedestrian, and bicycle plans have been developed by the City, ODOT, and interested citizen stakeholders throughout the duration of the *US 395 (Port Drive to Feedville Road) Corridor Refinement Plan*. To ensure the elements of these plans are carried out, the material will need to be incorporated into the City's Transportation System Plan, the US 395 North Corridor Plan, and the Umatilla County Transportation System Plan.

To fully implement the modified access and circulation plans, it will be necessary to supplement the following elements to the City of Hermiston's Transportation System Plan:

- Street Classifications and Traffic Signal Plan,
- Pedestrian Facility Plan,
- Bicycle Facility Plan, and
- Project Implementation Plan.

The following sections highlight the proposed changes to the City's TSP. The transportation components presented in these sections were developed to address the requirements of Oregon's Transportation Planning Rule (TPR). These recommendations have been developed in accordance with the findings presented in Technical Memorandums #1, #2, and #3, the interests of local citizen stakeholders and business owners, and City of Hermiston/ODOT staff.

Functional Classification and Traffic Signal Plan

The Hermiston Functional Classification and Traffic Signal Plan reflects the anticipated operational and circulation needs of the City and provides guidance on how to best facilitate that

travel through the TSP horizon year. Figure 1 illustrates the proposed updated Street Classifications and Traffic Signal Plan for the City of Hermiston. This plan is identical to the plan identified in the May 2000 TSP update (Figure 1 of the May 2000 Proposed Transportation System Plan Amendment prepared by Kittelson & Associates, Inc.), with the exception of the additional roadway alignments and traffic signals developed as part of the *US 395 (Port Drive to Feedville Road) Corridor Refinement Plan.* A detailed description of these functional classification and signal components as they relate to the Functional Classification and Traffic Signal Plan are provided in the separate section of this memorandum titled "US 395 Corridor Refinement Plan Study Area."

Pedestrian Facility Plan

Providing connections between major activity centers is a key objective of the Hermiston Pedestrian Facility Plan. For the US 395 Corridor Refinement study area, this network of pedestrian connections is important for the following reasons:

- serving shorter pedestrian trips between adjacent activity centers such as businesses, commercial establishments, and existing/future transit services;
- meeting the City of Hermiston's recreational needs; and
- providing non-motorized transportation alternatives.

Figure 2 illustrates the proposed Pedestrian Facility Plan. This plan illustrates those existing urban arterial and collector street segments that currently do not have a sidewalk on either side of a given street, as well as future roadway alignments that will be developed with sidewalk facilities. It should be noted that this plan is identical to the plan identified in the May 2000 TSP update (Figure 2 of the May 2000 Proposed Transportation System Plan Amendment prepared by Kittelson & Associates, Inc.), with the exception of the additional pedestrian elements created as part of the *US 395 (Port Drive to Feedville Road) Corridor Refinement Plan.*

The City of Hermiston's current street standards call for sidewalks to be provided along all new urban arterial, collector, and local streets. As development and redevelopment occurs, and as City funding permits, sidewalk gaps in the existing roadway system will be filled.

The desire to develop a multi-use pathway system carries forward into this TSP amendment. Of particular interest is a multi-use path along the west side of US 395 that could potentially link to the existing multi-use path in the City of Stanfield. To link this path to the remainder of the City of Hermiston, a multi-use path bridge crossing of the irrigation canal and railroad tracks running along the north side of the study area will be required. A further description of this pedestrian plan component as it relates to the Pedestrian Facility Plan is provided in the separate section of this report titled "US 395 Corridor Refinement Plan Study Area."

Bicycle Facility Plan

The bicycle plan establishes a network of bicycle lanes and routes that are designed to connect the City's bicycle trip generators. Figure 3 illustrates the proposed updated Bicycle Facility Plan for the city of Hermiston. This plan is also identical to the plan identified in the May 2000 TSP update (Figure 3 of the May 2000 Proposed Transportation System Plan Amendment prepared by

Kittelson & Associates, Inc.), with the exception of the additional elements created as part of the *US 395 (Port Drive to Feedville Road) Corridor Refinement Plan*. A detailed description of these bicycle components as they relate to the Bicycle Facility Plan are provided in the separate section of this report titled "US 395 Corridor Refinement Plan Study Area."

US 395 CORRIDOR REFINEMENT PLAN STUDY AREA

Recognizing the unique transportation needs of the study area defined in the US 395 Corridor Refinement Plan, transportation elements were developed to serve the local access needs of existing development while also providing future transportation (roadway, bicycle, and pedestrian) connections that support future growth. Each of the identified system treatments are intended to promote connectivity and efficient operations on the existing facilities while preserving the access integrity and safety of the US 395 corridor.

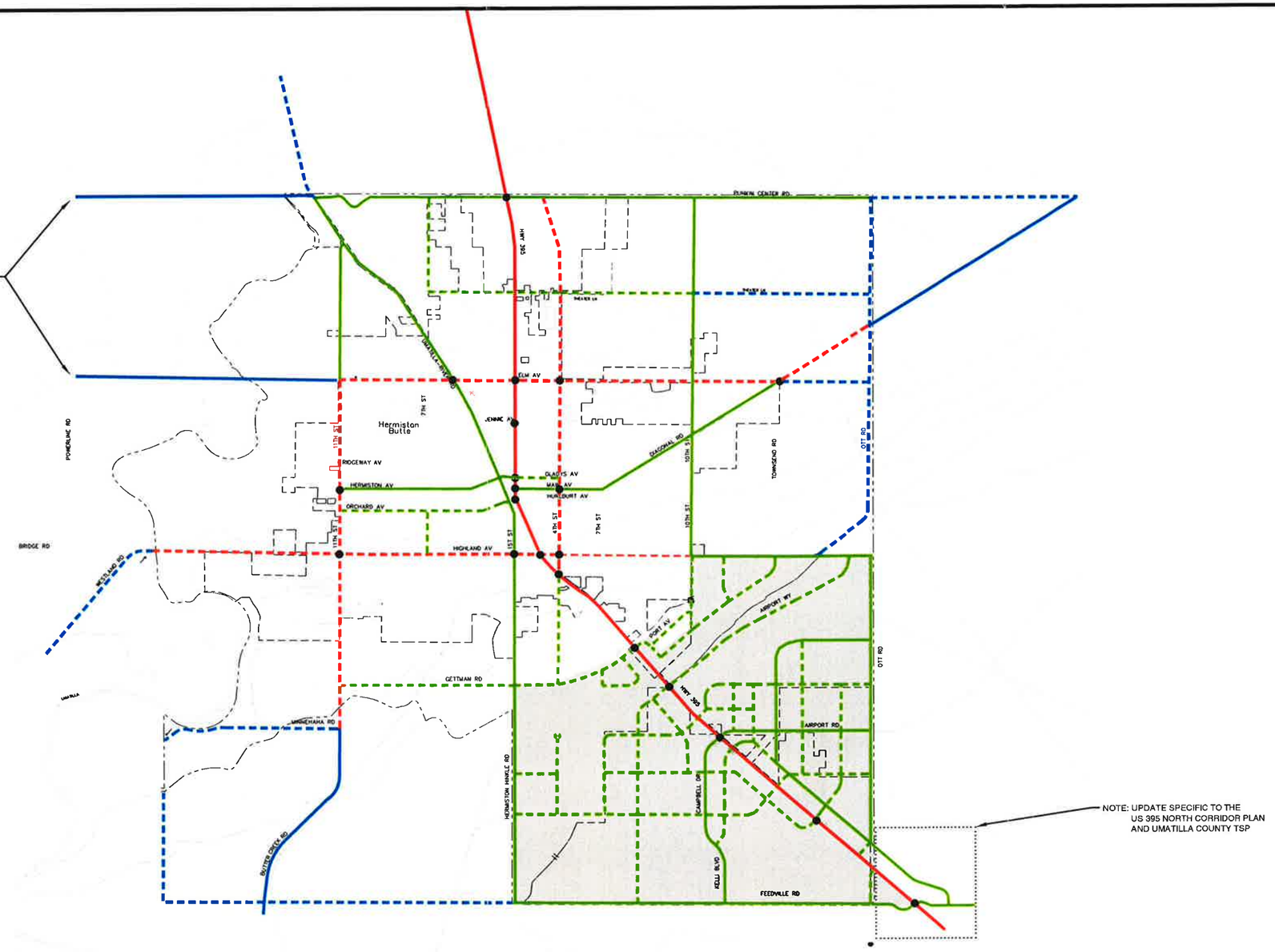
Transportation Improvement Projects

The May 2000 Transportation System Plan update identified nine additional roadway improvement projects for the 20-year planning horizon. These projects are summarized in Figures 4 and 5. As a result of consensus achieved through the *US 395 (Port Drive to Feedville Road) Corridor Refinement* planning efforts, twenty-two additional transportation improvement projects have been identified. These new improvements from the US 395 Corridor Refinement Plan are summarized in Figure 6 and Table 1. These projects include construction of new roadways and intersections, the extension of existing roadway corridors to provide better connectivity, implementation of access management measures as a result of the US 395 median project, and traffic control improvements. It should be noted that the order of projects listed in Table 1 do not reflect a prioritized ranking. Scheduling of the US 395 Corridor Refinement Study area projects is discussed in greater detail later in this memorandum.

The additional projects are expected to be implemented gradually over the planning horizon in conjunction with local development activities and so have been categorized as short-term, mid-term, and long-term needs.

NORTH
(NOT TO SCALE)

NOTE: NEW UMATILLA RIVER BRIDGE CROSSING ON EITHER PUNKIN CENTER RD. OR ELM AVE.



LEGEND

- URBAN MAJOR ARTERIAL
- URBAN MINOR ARTERIAL
- URBAN MAJOR COLLECTOR
- URBAN MINOR COLLECTOR
- RURAL ARTERIAL
- RURAL COLLECTOR
- TRAFFIC SIGNAL
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS
- US 395 CORRIDOR REFINEMENT STUDY AREA

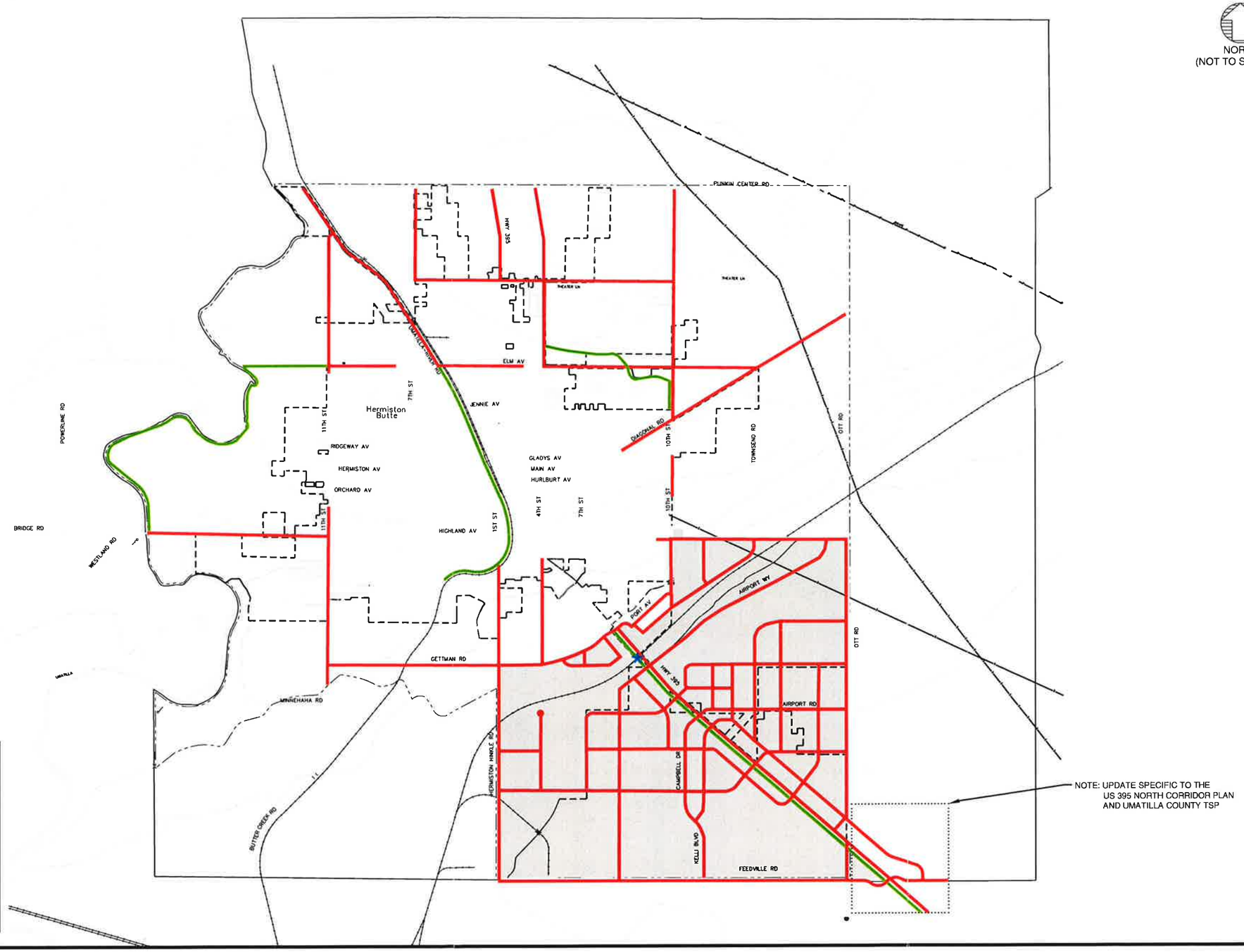
NOTE: THE ALIGNMENT FOR FUTURE STREETS SHOULD BE CONSIDERED CONCEPTUAL. THE INTERSECTIONS AND THE STREET ALIGNMENTS MAY VARY DEPENDING ON RIGHT-OF-WAY AND TOPOGRAPHIC CONSTRAINTS.

STREET CLASSIFICATIONS AND TRAFFIC SIGNAL PLAN JANUARY 2003 UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGON JANUARY 2003	FIGURE *1*

TSP_UPD\APRIL_2003_UPDATE\5504F01

NORTH
(NOT TO SCALE)



LEGEND

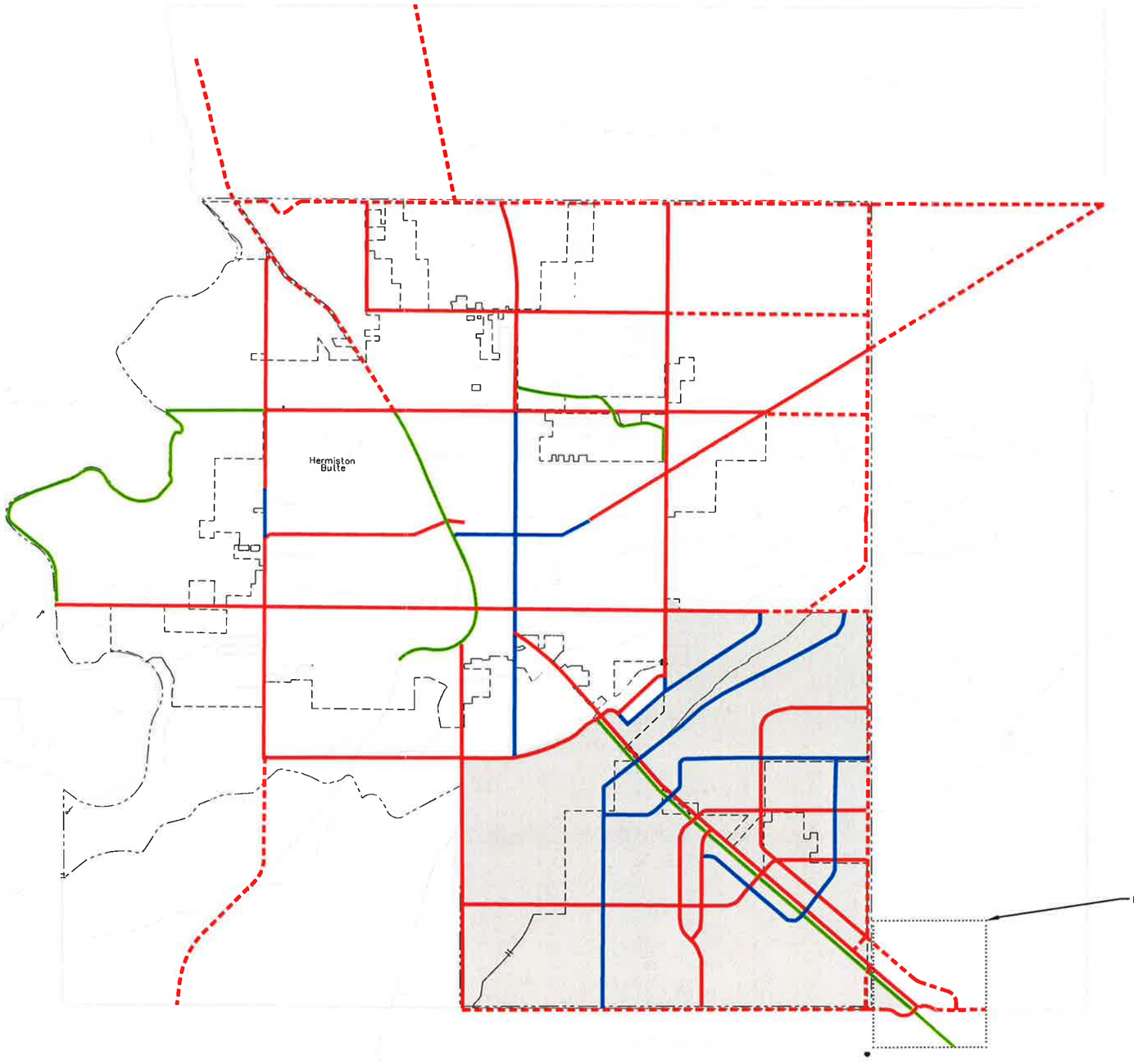
- PROPOSED SIDEWALK IMPROVEMENTS (Urban Arterials & Collectors)
- PROPOSED OFF-STREET (MULTI-USE) PATHWAY IMPROVEMENTS
- ★ FUTURE OFF-STREET (MULTI-USE) PATHWAY BRIDGE
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS
- US 395 CORRIDOR REFINEMENT STUDY AREA

PEDESTRIAN FACILITY PLAN
JANUARY 2003 UPDATE

HERMISTON TSP AMENDMENT PROJECT LOCATION HERMISTON, OREGON	FIGURE *2*

TSP_UPD\APRIL_2003_UPDATE\5504F02

NORTH
(NOT TO SCALE)

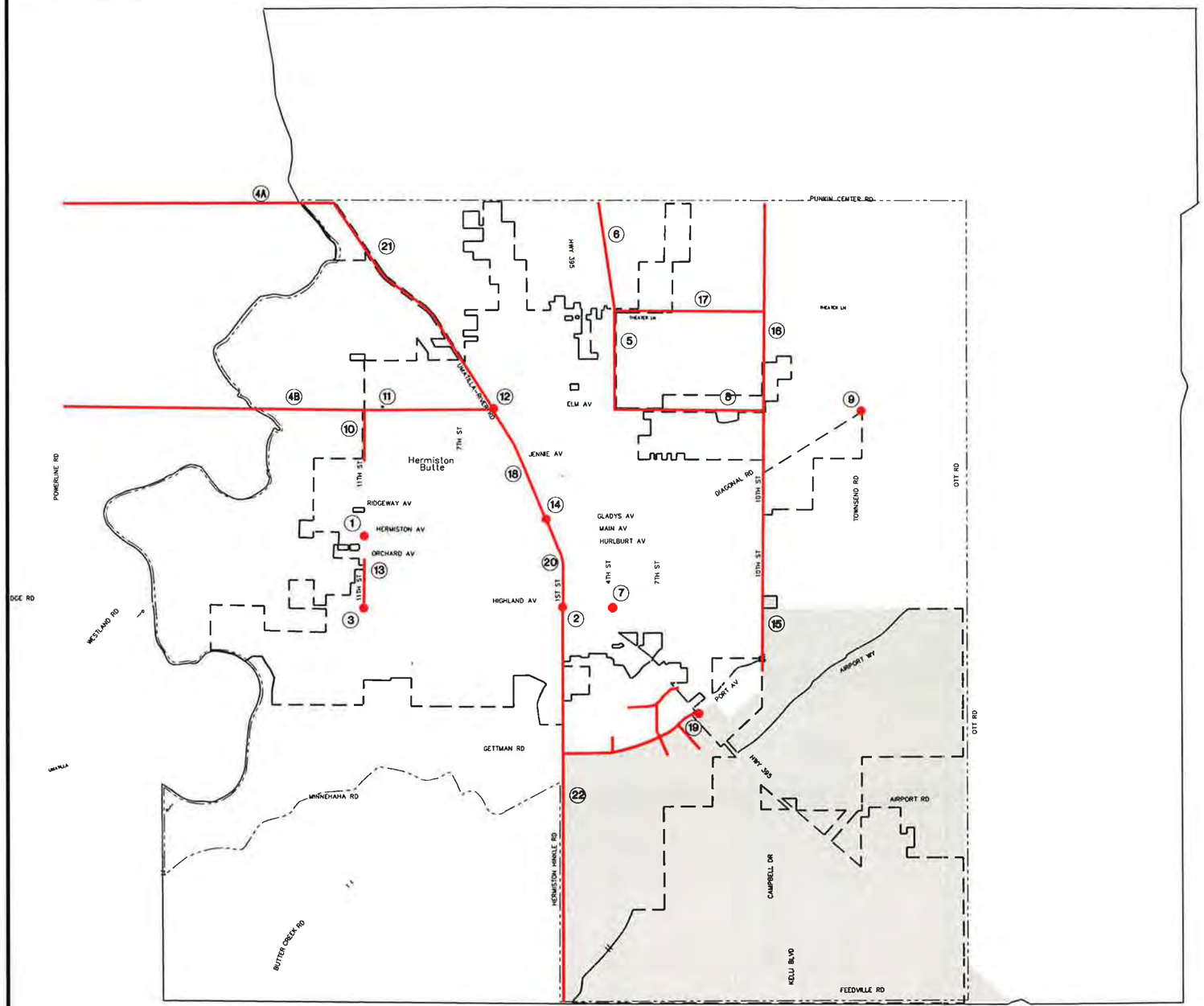


LEGEND
- ON-STREET BIKE LANE
- SHOULDER BIKEWAYS
- ON-STREET BIKE ROUTE
- OFF-STREET (MULTI-USE) PATHWAY
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS
- US 395 CORRIDOR REFINEMENT STUDY AREA

BICYCLE FACILITY PLAN
JANUARY 2003 UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGON JANUARY 2003	FIGURE 3

\TSP_UPD\APRIL_2003_UPDATE\3957F03



1. Improve West 11th St./Hermiston Ave. Intersection (New Traffic Signal, Intersection Rechannelization)
2. Improve West 1st St./Highland Ave. Intersection (New Traffic Signal)
3. Improve Highland Ave./West 11th St. Intersection (Reconfigure Turn Lanes)
4A. Option 1: Construct Bridge Across Umatilla River and Connect with Punkin Center Rd.
4B. Option 2: Construct Bridge Across Umatilla River and Connect with Elm Ave.
5. Extend 4th St. from Elm Ave to Punkin Center Rd. (Include New Signal at Elm Ave.)
6. Extend 4th St. from Theater Lane to Punkin Center Rd.
7. Improve West 4th St./Highland Ave. Intersection (New Traffic Signal)
8. Improve Elm Ave. from East 4th St. to Diagonal Rd (Widen to 3 Lanes)
9. Elm Ave./Diagonal Rd. Intersection Improvements
10. Improve West 11th St. Adjacent to Good Samaritan Hospital (Widen to 3 Lanes)
11. Improve Elm Ave. from West 11th St. to Umatilla River Rd.
12. Improve Elm Ave./Umatilla River Rd. Intersection (Signal Modified, Add Left Turn Lanes)
13. Improve West 11th St., north of Highland Ave. (Widen to 3 Lanes)
14. Improve 1st Place/Hermiston Ave. Intersection (Add Traffic Signal, Intersection Rechannelization)
15. Improve 10th St. from Columbia Dr. to Elm Ave.
16. Improve and Relocate 10th St. from Elm Ave. to Punkin Center Rd.
17. Theater Lane Upgrade from Highway 395 to East 10th St.
18. Upgrade Umatilla River Rd from Hermiston Ave. to Elm Ave.
19. Improve Highway 395/Port Ave. Intersection (New Traffic Signal)
20. Upgrade 1st St. from Hermiston Ave. to Highland Ave.
21. Upgrade Umatilla River Road from Elm Ave. to Punkin Center Rd.
22. Upgrade 1st St./Hermiston-Hinkle Rd. from Highland Ave. to Feedville Rd.

23-32. See Figure 5, South Hermiston Study Area

33-55. See Figure 6, US 395 Corridor Street System Improvements

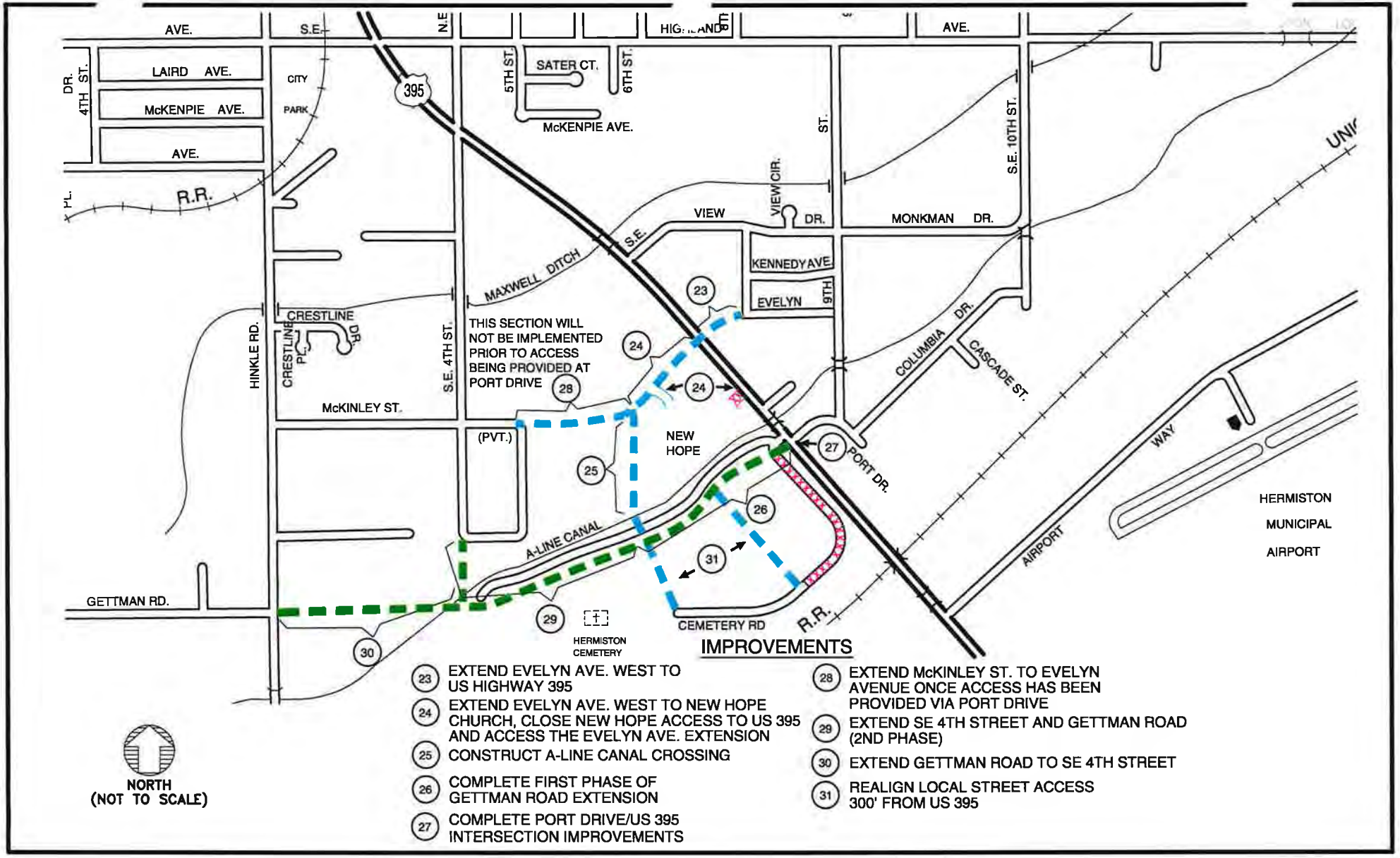
NORTH
(NOT TO SCALE)

LEGEND
- IMPROVEMENT LOCATIONS
- STUDY AREA BOUNDARY
- UGB
- CITY LIMITS
- US 395 CORRIDOR REFINEMENT STUDY AREA

REFINED STREET SYSTEM IMPROVEMENTS JANUARY 2003 UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGON JANUARY 2003	FIGURE 4

\TSP_UPD\APRIL_2003_UPDATE\5504F04



IMPROVEMENTS

23. EXTEND EVELYN AVE. WEST TO US HIGHWAY 395
24. EXTEND EVELYN AVE. WEST TO NEW HOPE CHURCH, CLOSE NEW HOPE ACCESS TO US 395 AND ACCESS THE EVELYN AVE. EXTENSION
25. CONSTRUCT A-LINE CANAL CROSSING
26. COMPLETE FIRST PHASE OF GETTMAN ROAD EXTENSION
27. COMPLETE PORT DRIVE/US 395 INTERSECTION IMPROVEMENTS
28. EXTEND McKINLEY ST. TO EVELYN AVENUE ONCE ACCESS HAS BEEN PROVIDED VIA PORT DRIVE
29. EXTEND SE 4TH STREET AND GETTMAN ROAD (2ND PHASE)
30. EXTEND GETTMAN ROAD TO SE 4TH STREET
31. REALIGN LOCAL STREET ACCESS 300' FROM US 395

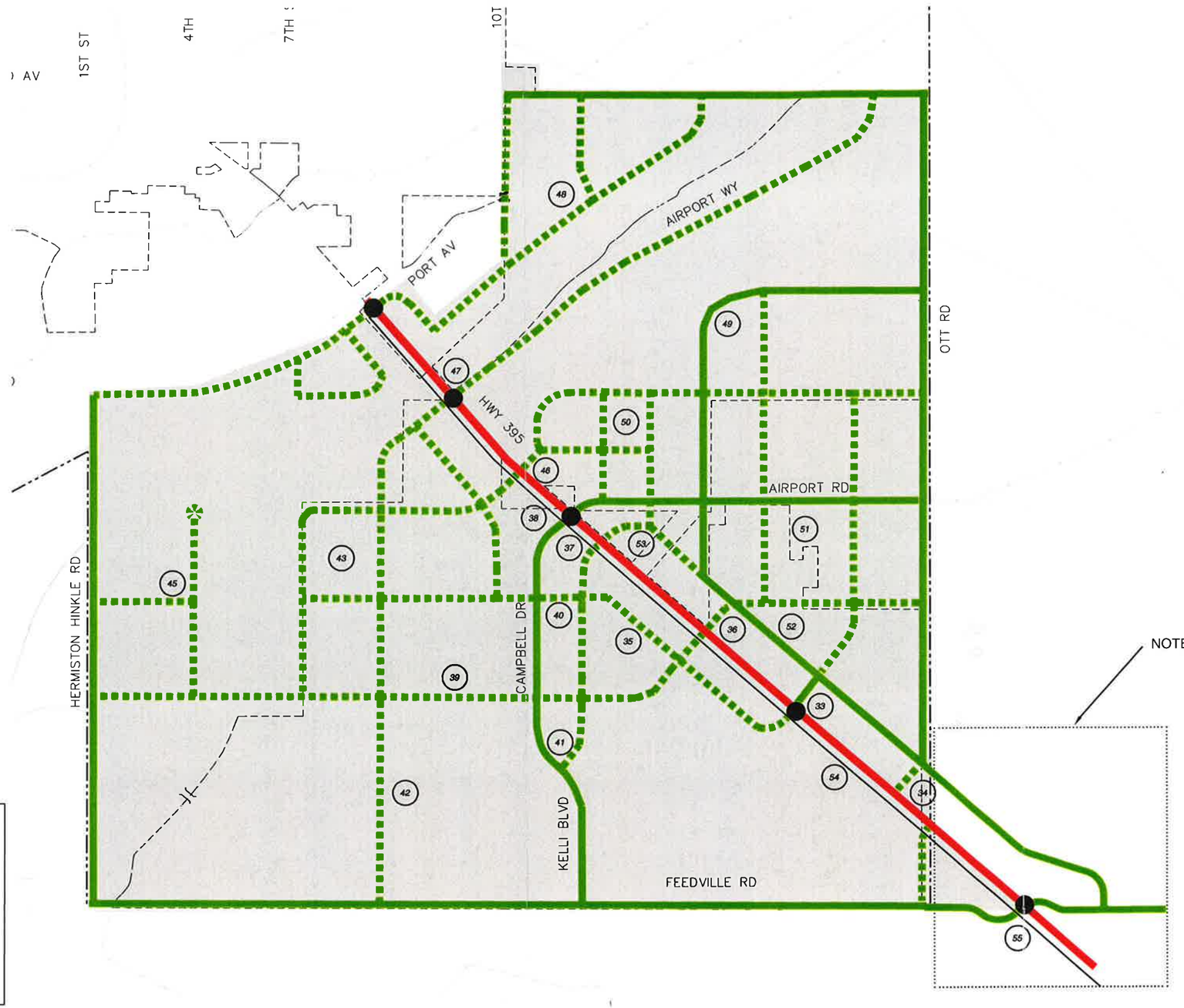
LEGEND

- NEW MINOR COLLECTOR
- NEW LOCAL STREET
- xxx – STREET CLOSURE

SOUTH HERMISTON STUDY AREA ACCESS AND CIRCULATION IMPROVEMENT PLAN MAY 2000 TSP UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGEON JANUARY 2003	FIGURE 5

TSP_UPD\APRIL_2003_UPDATE\5504F05



(##) *CORRESPONDS TO IMPROVEMENTS LISTED IN TABLE 1*

US 395 CORRIDOR STREET SYSTEM IMPROVEMENTS JANUARY 2003 UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGON JANUARY 2003	FIGURE 6

TSP_UPD\APRIL_2003_UPDATE\5504F01

Table 1
Recommended 20-Year Street Improvement Projects
US 395 Corridor Refinement Study Area

Fig 6 Id #	Project Description	Priority	Estimated Cost (Yr. 2002 $)	Potential Funding Source(s)
33	Provide a signalized access portal to US 395 (when warranted by a traffic engineering study) at the current Wal-Mart Distribution Center access to be served by a major collector roadway east of US 395 and a minor collector west of US 395.	Near-term	$225,000	AMG, PDF, TEP, SDC, GF
34	Realign the north and south approaches to Ott Road such that they intersect US 395 at a complete 90-degree angle. The future intersections should be limited to right-in/right-out driveways to help preserve access management along the highway.	Mid-term, but not before improvements #33 and #52	$550,000	AMG, PDF, TEP, SDC, GF
35	Develop a minor collector backage road that runs parallel to US 395 between Kelli Boulevard and the Wal-Mart Distribution Center truck access road.	Near-term, but not before improvements #33.	$1,750,000	PDF, LID, GF
36	Re-construct a limited access right-in/right-out driveway to US 395 near the current Hermiston Foods driveway to be served by minor collector roadways on both sides of the highway.	Mid-term, following improvements #33, #35, & #52	$25,000	AMG, TEP, SDC, PDF, STIP
37	Re-construct a limited access intersection (left-in/right-in/right-out) at the US 395/Kelli Boulevard Intersection.	Mid-term, following the completion of improvements #33, #35, #38 & #40	$25,000	AMG, TEP, SDC, PDF, STIP
38	Signalize the US 395/Campbell Drive/Airport Road intersection when warranted by a traffic engineering study.	Mid-term	$225,000	STIP, PDF, LID, GF
39	Develop a minor collector roadway to facilitate east/west travel between Hermiston-Hinkle Road and US 395.	Long-term	$5,375,000	PDF, LID, GF
40	Upon redevelopment of adjacent land parcels, develop a minor collector connection between Campbell Drive and Kelli Boulevard.	Mid-term	$275,000	PDF, GF, LID
41	Extend Campbell Drive at major collector standards south and east to Kelli Boulevard (1st Phase). Realign a portion of Kelli Boulevard so that it intersects the extension of Campbell Drive (2nd Phase).	Long-term	$1,075,000	GF, LID, TEP
42	Develop a minor collector roadway to facilitate north/south travel between US 395 and Feedville Road.	Long-term	$3,700,000	PDF, LID, GF
43	Develop a series of minor collector roadways to ensure circulation and connectivity upon redevelopment of the large agriculture plots within the western study area.	Long-term	$5,825,000	PDF, LID, GF

Fig 6 Id #	Project Description	Priority	Estimated Cost (Yr. 2002 $)	Potential Funding Source(s)
44	*#44 not used*	-	-	-
45	Upon the redevelopment of the Hermiston Agriculture Experiment Station, provide a new minor collector roadway along the SE 4th Street alignment. Upgrade and extend Experiment Station Road to this 4th Street alignment.	Long-term	$1,575,000	PDF, LID
46	Develop a full access intersection at US 395 to be served by a future extension of Able Drive. This intersection should be limited to a right-in/right-out/left-in access when warranted by a traffic engineering study.	Long-term, following the completion of improvements #43 & #47	$225,000	STIP, AMG, PDF
47	Develop a signalized access intersection at the US 395/Airport Way intersection when warranted by a traffic engineering study.	Long-term, following completion of elements of improvement #43	$225,000	GF, SDC, TEP, PDF, STIP
48	Complete a minor collector roadway system upon redevelopment of the vacant land north of the airport, irrigation canal, and rail line.	Mid-term	$3,150,000	PDF, SDC, LID, TEP
49	Develop a major collector roadway to facilitate north/south travel within the northeast quadrant of the US 395 Refinement Plan study area.	Mid-term	$3,300,000	PDF, SDC, LID, TEP
50	Develop a series of minor collector roadways to facilitate circulation south of the Hermiston Airport.	Mid-term	$3,375,000	PDF, SDC, LID, TEP
51	Develop a series of minor collector roadways to facilitate circulation within the northeast quadrant of the US 395 Refinement Plan study area.	Long-term	$7,125,000	PDF, SDC, LID, TEP
52	Develop a major collector backage road between Kelli Boulevard and Ott Road.	Near-term	$2,875,000	PDF, SDC, LID, TEP
53	Extend Kelli Boulevard east of US 395 to connect into a minor collector roadway network.	Near-term	$1,100,000	PDF, SDC, LID
54	Develop a multi-use path along the west side of US 395. This path will require a bridge crossing over the feed canal and rail line.	Mid-term	$450,000	GF, STIP, TEP
55	Signalize the US 395/Feedville Road intersection when warranted by a traffic engineering study. (Improvement specific to the US 395 North Corridor Plan)	Long-term	$225,000	STIP

Note: Potential Funding Sources include the Following:

STIP – State Transportation Improvement Program (ODOT)
GF – City of Hermiston General Fund
SDC – City of Hermiston Transportation System Development Charge
TEP – Transportation Enhancement Program
PDF – Private Development Funds
AMG – Access Management Grant
LID – Local Improvement District
County – Umatilla County
LSN – Local Street Network

Implementation Requirements

The order of implementing the US 395 (Port Drive to Feedville Road) Corridor Refinement Plan projects were developed jointly by the City of Hermiston and ODOT to ensure the integrity of the US 395 corridor as well as local access and circulation. This implementation strategy is outlined in the following bullet points.

- Access improvements to US 395 will need to occur on an incremental basis depending upon the rate and location of new development.
    - The signalization of the US 395/Campbell Drive/Airport Road intersection (*Improvement #38*) in the near to mid-term will begin to shape future circulation patterns within the US 395 study area.
    - The signalization of the US 395/Wal-Mart Distribution Center driveway (*Improvement #33*) should occur when traffic signal warrants merit installation. The need for signalization will likely be facilitated by roadway *Improvements #35 and #52*.
    - *Improvement #36* will occur upon redevelopment of adjacent land parcels and the completion of *Improvements #35 and #52*.
    - The signalization of the US 395/Airport Way intersection (*Improvement #47*) will occur when upon the completion of future roadways associated with *Improvement #43* and when traffic signal warrants merit installation.
    - The future extension of Able Drive (*Improvement #46*) and its future intersection with US 395 should be limited to a right-in/right-out/left-in access upon the completion of *Improvements #43 and #47*.
    - The limited access modifications to the US 395/Kelli Boulevard (*Improvement #37*) should occur after completion of Improvements #33, #35, #38, and #40.
    - The limited access modifications to the US 395/Ott Road (*Improvement #34*) should occur after the completion of *Improvement #33 and #52*.
    - The signalization of US 395/Feedville Road (*Improvement #55*) should occur when traffic signal warrants merit installation. This is likely to be a long-term improvement that will be required upon the redevelopment of the large agricultural plots of the western US 395 study area. This improvement project is specific to the US 395 North Corridor Plan.
- The majority of the circulation roadways and necessary right-of-way can begin to be acquired and constructed upon the redevelopment of individual land parcels. Specific projects that should occur on a phased basis include the following:
    - To facilitate future circulation and access patterns, right-of-way and roadways associated with *Improvement #53* should begin to be acquired and constructed in the near term.
    - Future circulation roadways such as Improvements #35 and #52 should occur upon the redevelopment of adjacent land parcels. These roadways will serve as

parallel roads to US 395 and will need to be planned in conjunction with future access opportunities to US 395 (*Improvements #33, #34, #36, #37 and #53*).

- *Improvement #40* should occur upon the redevelopment of adjacent land parcels to help facilitate access *Improvement #37*.
- *Improvement #41* should occur after signalization of the US 395/Campbell Drive intersection (*Improvement #38*) and the redevelopment of adjacent land parcels.

We trust that this memorandum adequately outlines the material proposed to be amended to the City of Hermiston's TSP and the *US 395 North Corridor Plan*. Should you have any questions or comments with respect to this information, please call us.

JRH
Transportation
Engineering

TRANSPORTATION SYSTEM PLAN UPDATE

HERMISTON, OREGON

June 9, 2014

VOICE 541.687.1081 FAX 541.345.6599 WEB JRHWEB.COM
4765 VILLAGE PLAZA LOOP SUITE 201 EUGENE OREGON 97401

HERMISTON
TRANSPORTATION SYSTEM PLAN
UPDATE

HERMISTON, OREGON

JUNE 9, 2014

JRH TRANSPORTATION ENGINEERING
4765 VILLAGE PLAZA LOOP, SUITE 201, EUGENE, OREGON 97401 541.687.1081 FAX 541.345.6599 WEB: WWW.JRHWEB.COM

1.0 OBJECTIVE

The objective of this document is to update the project list in the 2003 Hermiston Transportation System Plan (TSP). Three principal factors lead to the need for this update:

1. Ten of the top twenty-two projects in the 2003 TSP are complete and are no longer needed in the plan,
2. Land use changes and traffic growth years since plan adoption need to be reflected in the TSP, and
3. The TSP should reflect projected growth to the horizon year which is now 2033.

This report makes no changes in the goals, policies, standards, or modal plans in the 2003 TSP. This document identifies those projects which will be needed by the year 2034 to achieve the previously adopted policies. The 2003 Bicycle and Pedestrian Facility Plans remain fully in place. Also, the requirement to consider bicycle, pedestrian and transit improvements in all transportation projects is unchanged. This document is a supplement to, not a replacement of the 2003 TSP.

2.0 OVERVIEW

In developing recommendations, JRH Transportation Engineering (JRH) investigated all of the intersections of arterial–arterial, arterial–collector, and collector-collector streets in the City of Hermiston. Future volumes at each of these locations have been calculated using historical growth trends and likely development trip generation through the year 2033. The 2033 traffic volumes were then analyzed at each location to determine if they meet the mobility standards established in the 2003 TSP. Mitigation was proposed at all locations where the adopted mobility standard was not shown to be met. The mitigated intersections were then reexamined to see if they met mobility standards. If they did not, additional mitigation was added until the intersection would meet the mobility standards in 2033.

Crash histories at all locations were investigated to locate areas of safety concern. Locations where the crash rate exceeded one per million vehicles entering the intersection per year were identified for safety improvements.

3.0 BACKGROUND

This memorandum provides existing conditions and future year conditions for major roadways and intersections within Hermiston. This analysis evaluates roadways and intersections to determine which locations are projected to operate below adopted mobility standards by the end of the planning horizon. This memo identifies locations that will not meet mobility standards by the end of the planning horizon, identifies intersections with high crash rates, and locations that the City of Hermiston identified as having operational issues; followed by recommendations for improvements.

4.0 TRAFFIC VOLUME CALCULATIONS

4.1 Existing Traffic Volumes

To determine baseline traffic volumes, turning movement traffic counts were taken for major intersections within Hermiston during the years 2011-2012 in July, August, and October. "Major intersections" are those which have intersecting roadways of collector or higher classification and locations that were identified by the City of Hermiston and Oregon Department of Transportation (ODOT) as having a significant effect on the transportation system. These intersections are identified in Table 1.

4.2 Traffic Counts

Vehicle counts were taken at all of the studied intersections during the weekday PM peak period of 3:30-5:30 pm during July, August, and October. Previously taken vehicle counts at intersections in the area illustrated peak hours within that time frame, therefore this timeframe is appropriate. The vehicle counts are included in Appendix A.

Table 1: Studied Intersections

Intersections	
City of Hermiston Intersections	ODOT Intersections
Punkin Center Road at NE 4th Street	Highway 395 at Punkin Center Road
NW 11th Street at NW 1st Place/Umatilla River Road	Highway 395 at Theater Lane
Theater Lane at NE 4th Street	Highway 395 at Elm Avenue
W Elm Avenue at NW 1st Place	Highway 395 at Jennie Avenue
E Elm Avenue at NE 4th Street	Highway 395 at Gladys Avenue
E Elm Avenue at Diagonal Boulevard	Highway 395 at Main Street
Jennie Avenue at NE 4th Street	Highway 395 at Hurlburt Avenue
Diagonal Boulevard at NE 10th Street	Highway 395 at Highland Avenue
W Hermiston Avenue at SW 7th Street	Highway 395 at SE 4th Street
E Gladys Avenue at NE 4th Street	Highway 395 at Kelli Boulevard
E Main Street at NE/SE 4th Street	Highway 207/Elm Avenue at SW 11th Street
E Main Street at NE/SE 7th Street	Highway 207 at Hermiston Avenue
W Orchard Avenue at SW 7th Street	Highway 207 at Orchard Avenue
W Orchard Avenue at N/S 1st Street	Highway 207 at Feedville Road
E Hurlburt Avenue at SE 4th Street	
W Highland Avenue at SW 11th Street	
W Highland Avenue at SW 7th Street	
W Highland Avenue at S 1st Street	
E Highland Avenue at SE 4th Street	
E Highland Avenue at SE 10th Street	

4.3 Seasonal Adjustment

Intersection/roadway traffic analyses typically evaluate conditions during the peak month of travel for the study area. Traffic counts taken outside of the peak month are adjusted by applying a "seasonal adjustment factor" to better represent peak season traffic volumes. On Highway 395 there is an Automatic Traffic Recorder (ATR, Stanfield 30-019), located at milepost 8.70 Umatilla-Stanfield Highway No. 54; 0.12 miles northwest of Feedville Road. An evaluation into the previous five years of historical traffic data shows that August has the highest volume of traffic traveling along Highway 395. Turning movement counts taken outside the month of August are adjusted with a factor calculated by comparing the count month ATR data to the August ATR data. The seasonal adjustment calculations are included in Appendix B and the factors are listed in Table 2.

Table 2: Seasonal Adjustment Factors

ATR and Count Month	Seasonal Adjustment Factor
ATR: 30-019 Stanfield	
July	1.0335
August	1.000*
October	1.0528

*August is peak month and therefore has no factor applied to it.

The 2012 PM peak hour-peak season traffic volumes are illustrated in Figure 1 and provided in Appendix B. The weekday PM peak hour is the time period usually representative of worst case traffic conditions.

5.0 FUTURE YEAR VOLUMES

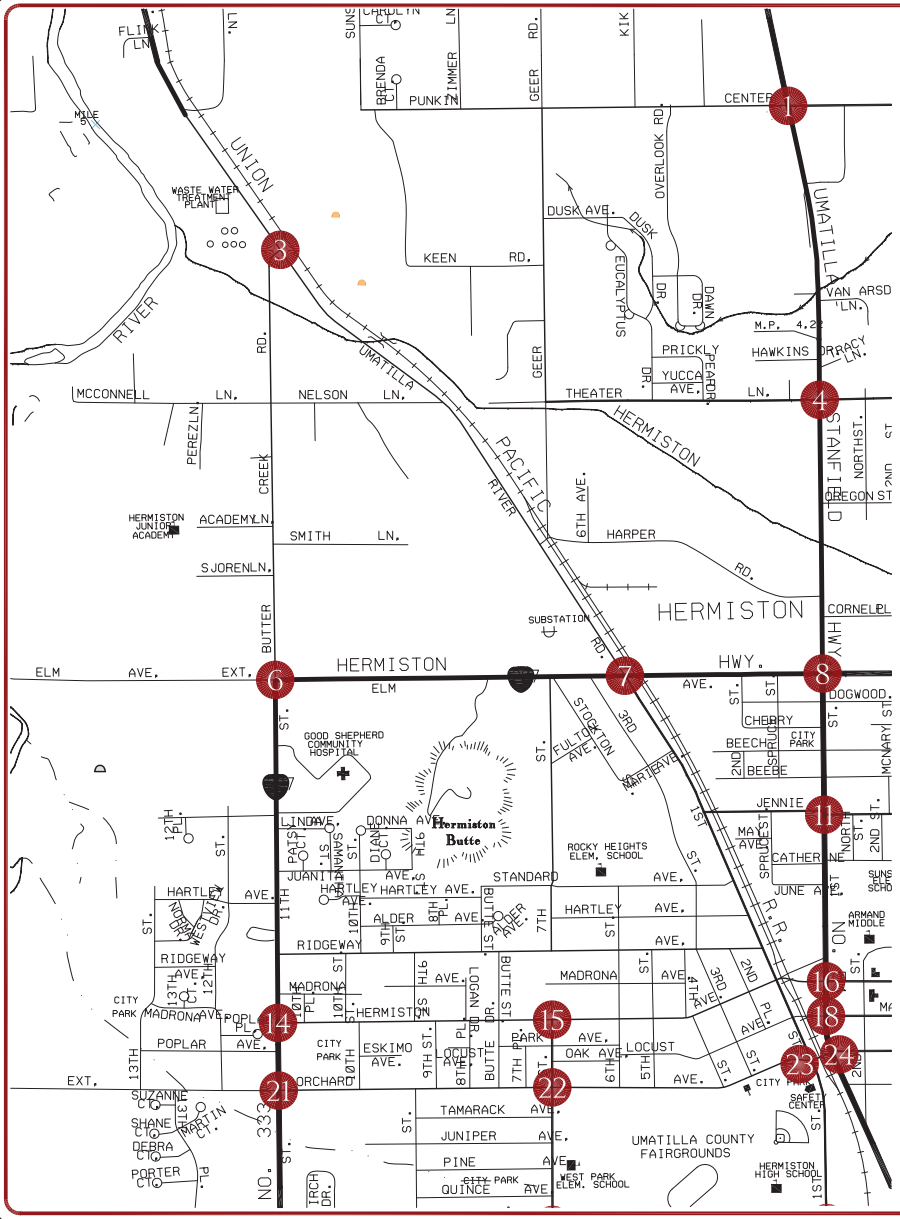
Traffic volumes projected at the end of the planning horizon, year 2033, are calculated by evaluating historical growth in the city, projected population growth trends, and build out of available buildable lands.

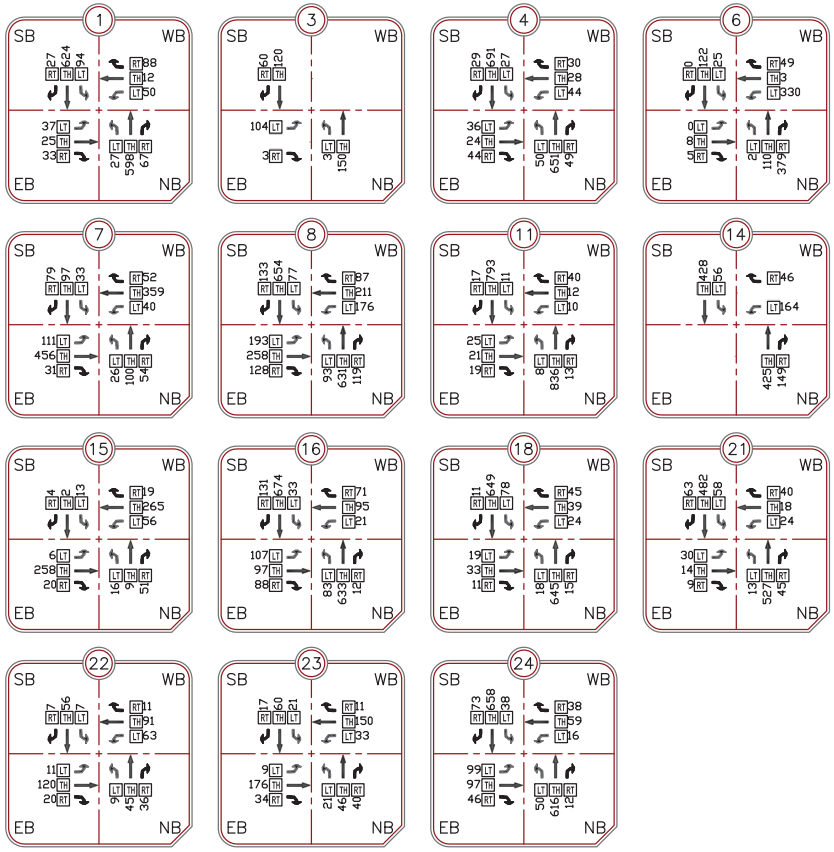
5.1 Highway 395 Growth

Projected background growth on Highway 395 due to factors external to Hermiston were calculated using the ODOT Future Volume Tables (FVT). The FVT were also examined to project the anticipated Highway 395 growth through the city. The ODOT FVT provide year 2009-2010 and projected year 2033 traffic volumes. An average yearly growth rate of 0.06% per year at the Stanfield recorder and 0.95% per year at MP 3.30 just north of the city was calculated using these values. The growth rate calculations are provided in Appendix C. The yearly growth rate of 1.0% was applied to the through movements on Highway 395 as background traffic growth entering the city.

5.2 Available Buildable Lands

An evaluation of the Hermiston Buildable Lands Inventory illustrates that there is a substantial amount of vacant commercial and industrially zoned land available within the Urban Growth Boundary (UGB). The current projected development trends do not support the assumption that all the buildable lands can be developed within the next 20 years. In coordination with the City of Hermiston, as a reasonable conservative estimate, approximately 30% of the commercial and industrial land capable of development is projected to be built out within the 20 year planning horizon.





HERMISTON TSP UPDATE

HERMISTON OREGON

FIGURE 1: YEAR 2012 PM PEAK HOUR TRAFFIC VOLUMES

STUDIED INTERSECTIONS

JRH TRANSPORTATION ENGINEERING
4765 VILLAGE PLAZA LOOP, SUITE 201
EUGENE, OREGON 97401 TEL 541.687.1083
WWW.JRHWEB.COM

The acreage of buildable land within the UGB within the 20-year planning horizon is estimated at:

- Commercial Retail: 205 acres
- Commercial Office/Medical Office: 40 acres
- Commercial/Industrial: 900 acres
- Industrial: 210 acres
- Residential: 1075 acres

Appendix C includes a map illustrating the buildable lands within the UGB.

Commercial and Industrial Zoned Lots

There are approximately 245 acres of commercially zoned lots (commercial retail, commercial office and medical office) available for development. Most of the buildable commercial land is in the north and west sides of the City. The major roadways serving the commercial lands are Highway 395, Elm Street and 11th Street. Given land development code requirements for commercially zoned lots and the buildable potential of the lots, it is estimated that on average the commercial lots would generate 33 PM peak hour trips per acre of land. There will, of course, be some developments that generate more traffic per acre (fast food restaurants) and developments that generate less (specialty retail stores). The 33 trips per acre is a reasonable average number for this area.

There are approximately 210 acres of buildable industrial land and 900 acres of buildable commercial/industrial land. Most of the buildable commercial/industrial and industrial land is found within the southeast area of the city. These lots are accessible by Highway 395 and S. First Street. Traffic generated to these lots can be estimated using an ITE trip generation rate for the number of trips per acre at a typical rate of 7.96 trip/acre for industrial and 8.84 trips per acre for commercial.

Traffic estimated to be generated to the industrial and commercial lots during the PM peak hour are illustrated in Table 3.

Residentially Zoned Lots

The City Buildable Lands Inventory indicates that there are approximately 1075 vacant and developable residential acres which by code can allow up to 6000 single family and multiple family residential housing units. This estimation includes vacant parcels currently zoned for residential, uses which have not been platted, and those which have been platted and approved but not yet built. The City of Hermiston's buildable land inventory indicates that there is a need to

provide 2,354 homes within the city by the end of the planning horizon. The traffic analysis assumes that all 1075 buildable acres are built out by the end of the planning horizon to provide a conservative estimate of potential future traffic conditions.

The number of vehicle trips to these sites is estimated using the ITE Trip Generation rates for single family and multifamily homes. The number of trips to be generated by the residences during the PM peak hour is illustrated in Table 3.

Table 3: Trips From Built-Out of Buildable Vacant Lots

Land Use	Size	Trip Rate	PM Peak Hour Trips
Industrial	210 acres	7.96 trips/acre	2280
Commercial/Industrial	900 acres	8.84 trips/acre	7950
Commercial	245 acres	33 trips/acre	9265
Residential			
Single Family	2175 homes	1.01	2200
Multi Family	3830 homes	0.62	2375

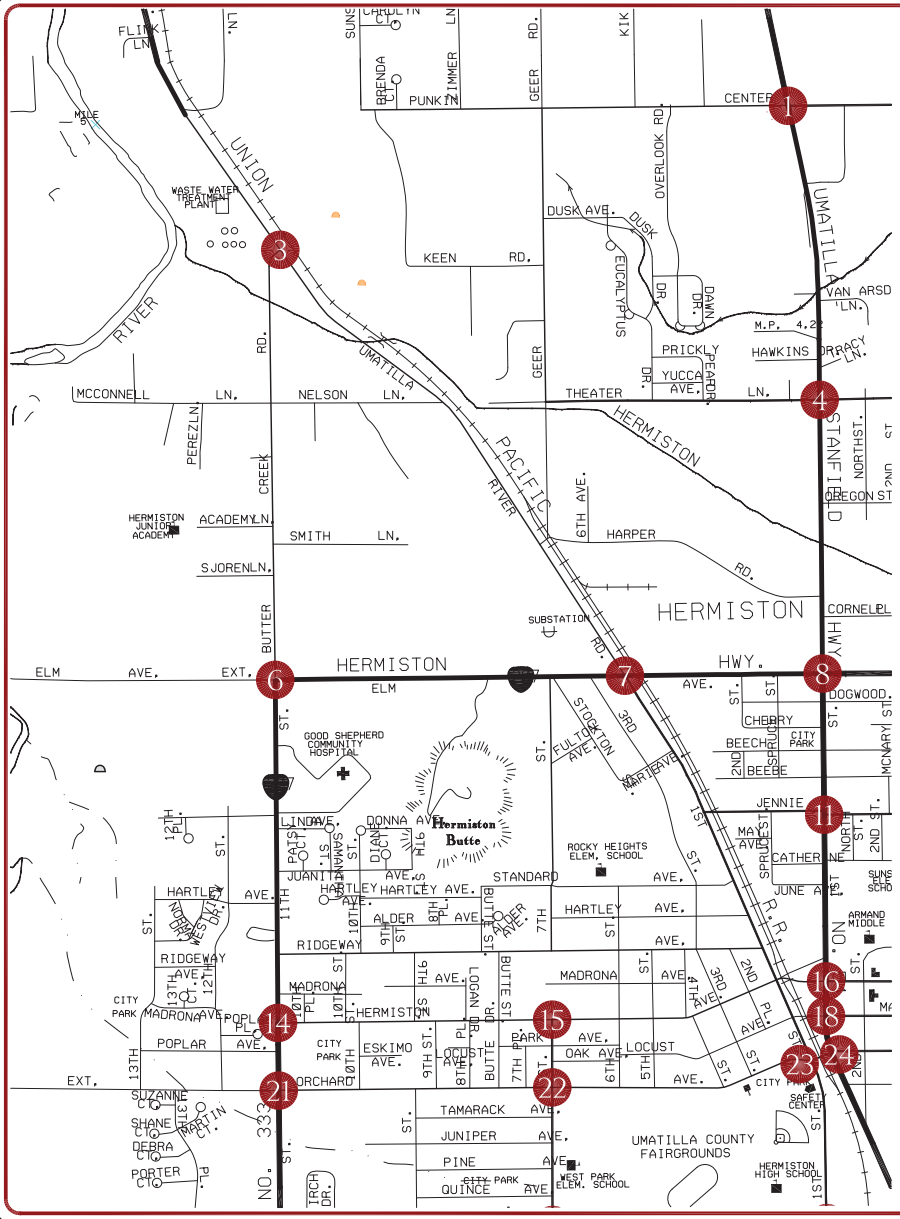
The trips illustrated in Table 3 are distributed throughout the city based on their origins and destinations (i.e. industrial lots to residential lots) using the existing roadway network.

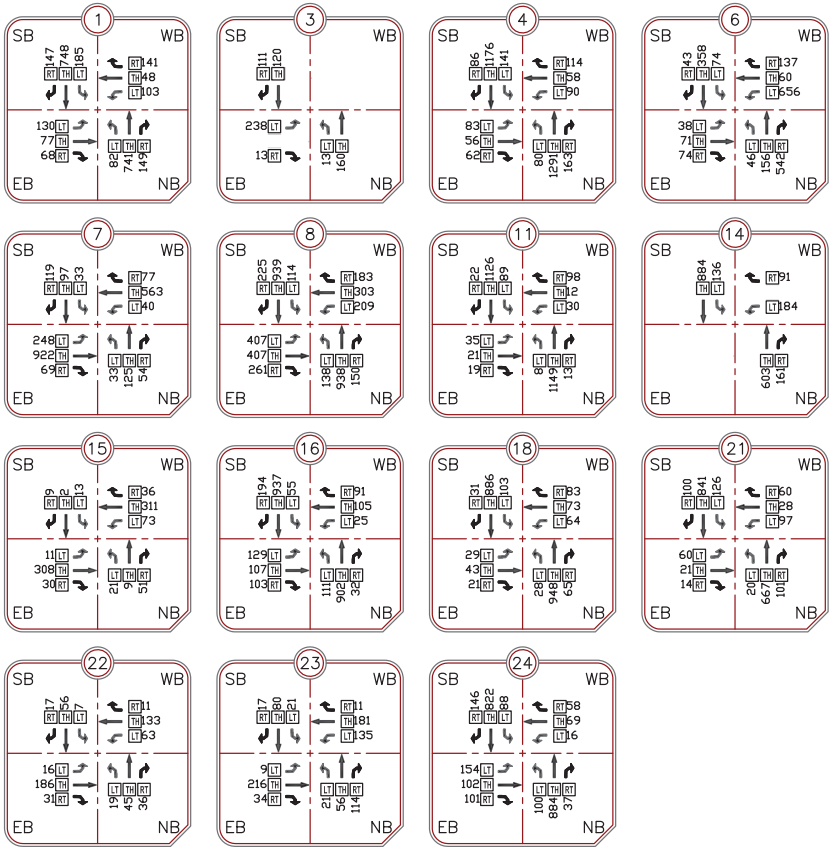
The total of the background trips and developable lots trips are the basis for the Year 2033 Intersection Analysis to determine impacts and necessary mitigation. The year 2033 traffic volumes are illustrated in Figure 2.

6.0 EXISTING CONDITIONS AND FUTURE DEFICIENCIES

6.1 Intersection Levels of Service and V/C Ratios

Intersections along Highway 395 and Highway 207 are evaluated against mobility standards found in the Oregon Highway Plan (Policy 1F). ODOT uses this to measure the operation of state facilities. Highway 395 is identified as a Statewide Highway and a truck route; and one section is identified as a Special Transportation Area (STA). Highway 207 is a Regional Highway and a truck route. Mobility Standards are based upon the roadway designation, posted speed, and intersection control. ODOT uses a volume to capacity ratio (v/c) as a measure of operation. The v/c is a measure of the peak hour traffic volume using a facility to the maximum vehicles that can use the facility.





HERMISTON TSP UPDATE

HERMISTON OREGON

FIGURE 2: YEAR 2033 PM PEAK HOUR TRAFFIC VOLUMES

STUDIED INTERSECTIONS

JRH TRANSPORTATION ENGINEERING
4765 VILLAGE PLAZA LOOP, SUITE 201
EUGENE, OREGON 97401 TEL 541.687.1081
WWW.JRHWEB.COM

The City of Hermiston uses a Level of Service (LOS) rather than v/c to evaluate intersection operations. LOS is a measure of delay per vehicle per hour and is typically evaluated for peak-hour conditions. Delay is equated to a letter grade 'A' through 'F' with 'A' indicating the most desirable operation conditions and 'F' indicating a failing condition. The procedures for determining intersection LOS are defined in the Highway Capacity Manual and summarized below in Tables 4 and 5.

The mobility standard for the studied intersections is included in Table 6 for ODOT intersections and Table 7 for the City of Hermiston intersections. The existing and Year 2033 intersection operations are compared to the applicable mobility standard to determine if there is the potential for future deficiencies in the transportation system.

Table 4: HCM Level of Service Criteria for Unsignalized Intersections

Level of Service	Stopped Delay Per Vehicle (Seconds per Vehicle)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

Table 5: HCM Level of Service Criteria for Signalized Intersections

Level of Service	Average Delay per Vehicle Per Hour (Seconds)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Table 6: Intersection Mobility Standard-ODOT Intersections

Intersections ODOT Intersections	Mile Post	Segment Designation	Speed	Control	Mobilty Standard (v/c)
Highway 395 at Punkin Center Road	3.79	NHS,FR,TR	45	Signal	0.75
Highway 395 at Theater Lane	4.33	NHS,FR,TR	45	Signal	0.75
Highway 395 at Elm Avenue	4.83	NHS,FR,TR	45	Signal	0.80
Highway 395 at Jennie Avenue	5.09	NHS,FR,TR	30	Signal	0.80
Highway 395 at Gladys Avenue	5.40	NHS,FR,TR	30	Signal	0.80
Highway 395 at Main Street	5.46	NHS,FR,TR	30	Signal	0.80
Highway 395 at Hurlburt Avenue	5.53	NHS,FR,TR	30	Signal	0.80
Highway 395 at Highland Avenue	5.87	NHS,FR,TR	30	Signal	0.80
Highway 395 at SE 4th Street	6.03	NHS,FR,TR	30	Signal	0.80
Highway 395 at Kelli Boulevard	7.45	NHS,FR,TR	30	Signal	0.80
Highway 207/Elm Avenue at SW 11th Street	7.95	TR	30	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90
Highway 207 at Hermiston Avenue	8.58	TR	30	Signal	0.85
Highway 207 at Orchard Avenue	8.70	TR	30	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90
Highway 207 at Highland Avenue	8.95	TR	30	Signal	0.85
Highway 207 at Feedville Road	10.82	TR	30	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90

NHS=National Highway System
FR=State Freight Route
TR=Federally Designated Truck Route

Table 7: Intersection Mobility Standards-Hermiston Intersections

Hermiston Intersections	Intersection Control	Mobility Standard (LOS)
Punkin Center Road at NE 4th Street	Stop	D
NW 11th Street at NW 1st Place/Umatilla River Road	Stop	D
Theater Lane at NE 4th Street	Stop	D
W Elm Avenue at NW 1st Place	Signal	D
E Elm Avenue at NE 4th Street	Signal	D
E Elm Avenue at Diagonal Boulevard	Stop	D
Jennie Avenue at NE 4th Street	Stop	D
Diagonal Boulevard at NE 10th Street	Stop	D
W Hermiston Avenue at SW 7th Street	Stop	D
E Gladys Avenue at NE 4th Street	Stop	D
E Main Street at NE/SE 4th Street	Signal	D
E Main Street at NE/SE 7th Street	Stop	D
W Orchard Avenue at SW 7th Street	Stop	D
W Orchard Avenue at N/S 1st Street	Stop	D
E Hurlburt Avenue at SE 4th Street	Stop	D
W Highland Avenue at SW 7th Street	Stop	D
W Highland Avenue at S 1st Street	Stop	D
E Highland Avenue at SE 4th Street	Stop	D
E Highland Avenue at SE 10th Street	Stop	D

EXISTING CONDITIONS, YEAR 2012

An intersection analysis was performed for all of the studied intersections for present day operating conditions. The analysis was performed using SYNCHRO software. The results of the analysis are provided in Tables 8 and 9 below. The Synchro outputs are provided in Appendix D.

Table 8: Intersection Operation Year 2012-ODOT Intersections

Intersections ODOT Intersections	Control	Mobilty Standard (v/c)	Year 2012 Intersection Operation (v/c)
Highway 395 at Punkin Center Road	Signal	0.75	0.42
Highway 395 at Theater Lane	Signal	0.75	0.40
Highway 395 at Elm Avenue	Signal	0.80	0.74
Highway 395 at Jennie Avenue	Signal	0.80	0.48
Highway 395 at Gladys Avenue	Signal	0.80	0.55
Highway 395 at Main Street	Signal	0.80	0.47
Highway 395 at Hurlburt Avenue	Signal	0.80	0.48
Highway 395 at Highland Avenue	Signal	0.80	0.55
Highway 395 at SE 4th Street	Signal	0.80	0.41
Highway 395 at Kelli Boulevard	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90	eastbound approach (stopped) 0.22 southbound approach (uncontrolled) 0.16
Highway 207/Elm Avenue at SW 11th Street	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90	southbound approach (stopped) 0.80 westbound approach (uncontrolled) 0.24
Highway 207 at Hermiston Avenue	Signal	0.85	0.54
Highway 207 at Orchard Avenue	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90	westbound approach (stopped) 0.22 southbound approach (uncontrolled) 0.34
Highway 207 at Highland Avenue	Signal	0.85	0.54
Highway 207 at Feedville Road	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90	westbound approach (stopped) 0.26 southbound approach (uncontrolled) 0.13

Table 9: Intersection Operation Year 2012-Hermiston Intersections

Hermiston Intersections	Intersection Control*	Mobility Standard (LOS)	Year 2012 Intersection Operation (LOS)
Punkin Center Road at NE 4th Street	Stop	D	B
NW 11th Street at NW 1st Place/Umatilla River Road	Stop	D	B
Theater Lane at NE 4th Street	Stop	D	A
W Elm Avenue at NW 1st Place	Signal	D	B
E Elm Avenue at NE 4th Street	Signal	D	A
E Elm Avenue at Diagonal Boulevard	Stop	D	C
Jennie Avenue at NE 4th Street	Stop	D	A
Diagonal Boulevard at NE 10th Street	Stop	D	B
W Hermiston Avenue at SW 7th Street	Stop	D	C
E Gladys Avenue at NE 4th Street	Stop	D	C
E Main Street at NE/SE 4th Street	Signal	D	B
E Main Street at NE/SE 7th Street/Diagonal Blvd	Stop	D	C
W Orchard Avenue at SW 7th Street	Stop	D	A
W Orchard Avenue at N/S 1st Street	Stop	D	C
E Hurlburt Avenue at SE 4th Street	Stop	D	C
W Highland Avenue at SW 7th Street	Stop	D	B
W Highland Avenue at S 1st Street	Stop	D	B
E Highland Avenue at SE 4th Street	Stop	D	B
E Highland Avenue at SE 10th Street	Stop	D	B

***results reported for critical movement only**

FUTURE YEAR CONDITIONS, YEAR 2033

An intersection analysis was performed for all of the studied intersections for the future year operating conditions, Year 2033. The analysis was performed using SYNCHRO software. The results of the analysis are provided in Tables 10 and 11 below. The Synchro outputs are provided in Appendix E.

Table 10: Intersection Operation Year 2033-ODOT Intersections

Intersections ODOT Intersections	Control	Mobilty Standard (v/c)	Year 2033 Intersection Operation (v/c)
Highway 395 at Punkin Center Road	Signal	0.75	0.67
Highway 395 at Theater Lane	Signal	0.75	0.80
Highway 395 at Elm Avenue	Signal	0.80	1.27
Highway 395 at Jennie Avenue	Signal	0.80	0.65
Highway 395 at Gladys Avenue	Signal	0.80	0.76
Highway 395 at Main Street	Signal	0.80	0.69
Highway 395 at Hurlburt Avenue	Signal	0.80	0.63
Highway 395 at Highland Avenue	Signal	0.80	0.72
Highway 395 at SE 4th Street	Signal	0.80	0.62
Highway 395 at Kelli Boulevard	Signal	Uncontrolled Approach 0.85 Stopped Approach 0.90	eastbound approach (stopped) >2.0 southbound approach (uncontrolled) 0.23
Highway 207/Elm Avenue at SW 11th Street	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90	southbound and northbound approach (stopped) >2.0 westbound approach (uncontrolled) 0.54
Highway 207 at Hermiston Avenue	Signal	0.85	0.76
Highway 207 at Orchard Avenue	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90	westbound approach (stopped) 1.08 southbound approach (uncontrolled) 0.58
Highway 207 at Highland Avenue	Signal	0.85	0.80
Highway 207 at Feedville Road	Stop	Uncontrolled Approach 0.85 Stopped Approach 0.90	westbound approach (stopped) 0.47 northbound approach (uncontrolled) 0.23

Table 11: Intersection Operation Year 2033-Hermiston Intersections

Hermiston Intersections	Intersection Control	Mobility Standard (LOS)	Year 2033 Intersection Operation (LOS)
Punkin Center Road at NE 4th Street	Stop	D	C
NW 11th Street at NW 1st Place/Umatilla River Road	Stop	D	C
Theater Lane at NE 4th Street	Stop	D	C
W Elm Avenue at NW 1st Place	Signal	D	D
E Elm Avenue at NE 4th Street	Signal	D	B
E Elm Avenue at Diagonal Boulevard	Stop	D	C
Jennie Avenue at NE 4th Street	Stop	D	C
Diagonal Boulevard at NE 10th Street	Stop	D	F
W Hermiston Avenue at SW 7th Street	Stop	D	C
E Gladys Avenue at NE 4th Street	Stop	D	D
E Main Street at NE/SE 4th Street	Signal	D	B
E Main Street at NE/SE 7th Street/Diagonal Blvd	Stop	D	F
W Orchard Avenue at SW 7th Street	Stop	D	A
W Orchard Avenue at N/S 1st Street	Stop	D	D
E Hurlburt Avenue at SE 4th Street	Stop	D	D
W Highland Avenue at SW 7th Street	Stop	D	C
W Highland Avenue at S 1st Street	Stop	D	D
E Highland Avenue at SE 4th Street	Stop	D	C
E Highland Avenue at SE 10th Street	Stop	D	C

The following intersections are failing to operate at the mobility standard by the end of the planning horizon.

- Highway 395 at Theater Lane
- Highway 395 at Elm Avenue
- Highway 395 at Kelli Boulevard
- Highway 207/Elm Avenue at SW 11th Street
- Highway 207 at Orchard Avenue
- Diagonal Boulevard at NE 10th Street
- E Main Street at NE/SE 7th Street/Diagonal Blvd

Vehicle Crash Evaluation

Oregon Department of Motor Vehicles (DMV) provided crash data for the period from year 2007 through year 2011, shown in Table 12. The crash data represents only the crashes that were reported to the DMV.

Table 12: Crash Data 2007 to 2011

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE INJURED	TRUCKS	DRY SURFACE	WET SURFACE	DAY	DARK	INTER-SECTION
YEAR: 2011											
ANGLE	0	15	10	25	21	0	23	2	21	4	22
BACKING	0	0	7	7	0	0	7	0	7	0	2
FIXED / OTHER OBJECT	0	1	5	6	1	0	6	0	2	4	2
HEAD-ON	0	2	0	2	3	0	2	0	0	2	0
MISCELLANEOUS	0	1	0	1	1	0	0	1	1	0	1
PARKING MOVEMENTS	0	0	1	1	0	0	1	0	0	1	0
PEDESTRIAN	0	2	0	2	2	0	1	1	0	2	1
REAR-END	0	29	31	60	37	2	56	3	48	12	19
SIDESWIPE - MEETING	0	0	3	3	0	1	3	0	1	2	1
SIDESWIPE - OVERTAKING	0	1	7	8	4	1	7	1	4	4	0
TURNING MOVEMENTS	0	23	23	46	36	0	41	5	40	6	24
YEAR 2011 TOTAL	**0**	**74**	**87**	**161**	**105**	**4**	**147**	**13**	**124**	**37**	**72**
YEAR: 2010											
ANGLE	0	20	8	28	26	0	21	7	23	5	26
BACKING	0	0	2	2	0	0	2	0	2	0	1
FIXED / OTHER OBJECT	0	3	7	10	3	0	5	5	4	6	2
HEAD-ON	0	1	1	2	2	0	2	0	0	2	0
MISCELLANEOUS	0	0	1	1	0	0	1	0	0	1	1
NON-COLLISION	0	1	0	1	1	0	1	0	1	0	0
PARKING MOVEMENTS	0	1	0	1	3	0	1	0	1	0	0
PEDESTRIAN	0	2	0	2	2	0	2	0	0	2	2
REAR-END	0	24	30	54	35	3	48	6	47	7	34
SIDESWIPE - MEETING	0	0	5	5	0	0	4	1	3	2	3
SIDESWIPE - OVERTAKING	0	1	6	7	1	1	6	1	5	2	1

TURNING MOVEMENTS	0	10	31	41	11	1	35	6	33	8	23
YEAR 2010 TOTAL	**0**	**63**	**91**	**154**	**84**	**5**	**128**	**26**	**119**	**35**	**93**

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE INJURED	TRUCKS	DRY SURFACE	WET SURFACE	DAY	DARK	INTER-SECTION
YEAR: 2009											
ANGLE	0	6	2	8	9	0	4	4	3	5	8
BACKING	0	2	5	7	3	1	7	0	5	2	3
FIXED / OTHER OBJECT	0	2	8	10	2	0	6	4	4	6	5
HEAD-ON	0	2	1	3	4	0	3	0	2	1	0
MISCELLANEOUS	0	1	1	2	1	0	2	0	0	2	0
PARKING MOVEMENTS	0	0	2	2	0	0	2	0	2	0	0
PEDESTRIAN	1	4	0	5	5	1	5	0	2	3	4
REAR-END	0	17	22	39	25	4	36	3	33	6	15
SIDESWIPE - MEETING	0	2	0	2	4	0	2	0	1	1	0
SIDESWIPE - OVERTAKING	0	0	5	5	0	1	4	1	3	2	0
TURNING MOVEMENTS	0	11	19	30	13	5	22	8	24	6	10
YEAR 2009 TOTAL	**1**	**47**	**65**	**113**	**66**	**12**	**93**	**20**	**79**	**34**	**45**
YEAR: 2008											
ANGLE	0	10	17	27	12	1	21	6	21	6	26
BACKING	0	0	4	4	0	0	3	1	3	1	1
FIXED / OTHER OBJECT	0	4	3	7	6	1	6	1	4	3	4
HEAD-ON	0	1	0	1	2	0	0	1	0	1	0
PARKING MOVEMENTS	0	0	2	2	0	0	2	0	1	1	0
PEDESTRIAN	1	2	0	3	2	1	2	1	2	1	1
REAR-END	0	24	25	49	29	3	38	11	35	14	17
SIDESWIPE - MEETING	0	1	0	1	2	0	1	0	1	0	0
SIDESWIPE - OVERTAKING	0	1	3	4	1	1	3	1	4	0	0
TURNING MOVEMENTS	0	14	24	38	20	1	36	2	32	6	25
YEAR 2008 TOTAL	**1**	**57**	**78**	**136**	**74**	**8**	**112**	**24**	**103**	**33**	**74**

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE INJURED	TRUCKS	DRY SURFACE	WET SURFACE	DAY	DARK	INTER-SECTION
YEAR: 2007											
ANGLE	0	6	10	16	7	0	12	4	13	3	15
BACKING	0	1	2	3	1	0	3	0	2	1	0
FIXED / OTHER OBJECT	0	4	2	6	7	1	5	1	2	4	2
HEAD-ON	0	1	0	1	1	0	1	0	1	0	0
MISCELLANEOUS	0	0	1	1	0	0	0	1	0	1	0
NON-COLLISION	0	1	0	1	1	0	0	1	1	0	0
PARKING MOVEMENTS	0	0	3	3	0	1	3	0	1	2	0
REAR-END	0	24	24	48	38	2	42	5	37	11	19
SIDESWIPE - MEETING	0	0	1	1	0	0	1	0	1	0	1
SIDESWIPE - OVERTAKING	0	2	8	10	7	1	10	0	7	3	0
TURNING MOVEMENTS	0	22	27	49	33	4	42	6	44	5	24
YEAR 2007 TOTAL	**0**	**61**	**78**	**139**	**95**	**9**	**119**	**18**	**109**	**30**	**61**
FINAL TOTAL	**2**	**302**	**399**	**703**	**424**	**38**	**599**	**101**	**534**	**169**	**345**

Crash data from year 2007 to year 2011 for each of the studied intersections were evaluated to determine locations where the crash rates are high and would warrant safety improvements. Intersection crash rates are illustrated in Table 13. The crash data is included in Appendix F. Crash data is compared to a threshold rate of 1.0 crashes per million entering vehicles. Intersection crash rates nearing this threshold should be evaluated for safety improvements.

Table 13. Intersection Crash Rates

INTERSECTION	CRASH RATE*
Punkin Center Rd.@ Hwy 395/N. 1st St.	0.43
Nw 11th St. @ Nw 1st Pl./Umatilla River Rd.	0.25
Theater Ln. @ Hwy 395/N. 1st St.	0.26
Theater Ln. @ Ne 4th St.	0.16
W. Elm Ave. @ Nw 11th Ave.	0.62
W. Elm Ave. @ Nw 1st Pl	0.44
E./W. Elm Ave. @ Hwy 395/N. 1st St.	1.11
E. Elm Ave. @ Ne 4th St.	0.40
E. Elm Ave. @ Diagonal Blvd.	0.61
Jennie Ave. @ Ne 4th St.	0.10
Jennie Ave. @ Hwy 395/N. 1st St.	0.37
W. Hermiston Ave. @ Nw/Sw 11th Ave.	0.22
W. Hermiston Ave. @ Sw 7th Ave.	0.31
W. Hermiston Ave./E. Gladys Ave. @ Hwy 395/N. 1st St.	0.59
E. Gladys Ave. @ Ne 4th St.	0.70
E. Main St. @ Hwy 395/N 1st St.	0.92
E. Main St. @ Ne/Se 4th St.	0.23
E. Main St. @ Ne/Se 7th St.	0.35
W. Orchard Ave. @ Sw 11th Ave.	0.75
W. Orchard Ave. Ave. @ Sw 7th St.	0.23
W. Orchard Ave. @ N./S. 1st Pl.	0.35
W. Orchard Ave./W. Hurlburt Ave. @ Hwy 395/ N. 1st St.	0.46
E. Hurlburt Ave. @ Se 4th St.	0.38
W. Highland Ave. @ Sw 11th St.	0.48
W. Highland Ave. @ Sw 7th St.	0.29
W. Highland Ave. @ S. 1st St.	0.56
W. Highland Ave. @ Hwy 395/Umatilla-Stanfield Hwy	1.07
E. Highland Ave. @ Se 4th St.	0.35
E. Highland Ave. @ Se 10th St.	0.17
Se 4th St. @ Hwy 395/Umatilla-Stanfield Hwy	0.91
Kelli Blvd. @ Hwy 395/Umatilla-Stanfield Hwy	0.46
Feedville Rd. @ Hwy 207/Sw Butter Creek Rd.	0.49

* Crash rate=crashes per million entering vehicles per year

IMPROVEMENT PROJECTS

Intersections that will not meet mobility standards through the year 2033 are:

- Highway 395 at Theater Lane
- Highway 395 at Elm Avenue
- Highway 207/Elm Avenue at SW 11th Street
- Diagonal at NE 10th Street
- Highway 207 at 11th Avenue
- Main Street at NE/SE 7th Street/Diagonal Street
- Highway 207 at Orchard Street
- Highway 395 at Kelli Boulevard.

Intersections with a high crash rate (rate approaching or exceeding 1.0) between the year 2007 and 2011 are:

- Highway 395 at Elm Avenue
- Highway 395 at Main Street
- Highway 395 at Highland Avenue
- Highway 395 at 4th Street

Additionally the following intersections were identified as having pedestrian safety issues or other operational issues that the City would like to be addressed:

- Highway 207/Elm Avenue at SW 11th Street
- Highland Avenue at 1st Street
- Highway 207/Elm Avenue at SW 11th Street
- Orchard at 1st Street
- W Harper Road at NW Geer Road

IMPROVEMENTS FOR END OF PLANNING HORIZON-YEAR 2033

Those locations having safety, mobility or operations issues were examined more closely to determine appropriate measures needed to solve them. Table 14 identifies the improvements needed to address the issues uncovered.

Table 14: Year 2033 Recommended Improvements

Intersection	Type of Improvement	Recommended Improvement
Highway 395 at Theater Lane	Mobility	Add right turn pockets Revise signal timing to protective/permissive left turns
Highway 395 at Elm Avenue	Mobility Safety	Add right turn pockets, Second Eastbound Left, Second Eastbound Through Improve timing and pedestrian treatments
Highway 395 at Main Street	Safety	Improve timing along the downtown area, improve pedestrian treatments
Highway 395 at Highland Avenue	Safety	Improve timing along the downtown area, improve pedestrian treatments
Highway 395 at SE 4th Street	Safety	Improve timing along the downtown area, improve pedestrian treatments
Highway 395 at Kelli Boulevard	Mobility	Signalize Improve traffic flow by creating parallel roadways and other access points in the southeast area
Highway 207/Elm Avenue at SW 11th Street	Mobility Safety	Signalize Add left turn pockets
Highway 207 at Orchard Avenue	Mobility	Signalize
Diagonal Boulevard at NE 10th Street	Mobility	Signalize
E Main Street at NE/SE 7th Street	Mobility	Signalize or install a roundabout
W Orchard Avenue at N/S 1st Street	Operational	Possible signalization Improve traffic flow between 1st Street and Highway 395 Improve pedestrian treatments
W Highland Avenue at S 1st Street	Operational	Improve pedestrian safety, improve traffic flow Possible signalization
W Harper Road at W Geer Road	Operational	Realign Geer Road and Harper Road intersection to improve safety and traffic flow between this intersection and 1st Street

Table 14a: Long Term Projects Recommended for 2033 or Later

No.	Project Description
4A	Option 1: Construct Bridge Access Umatilla River and Connect with Punkin Center Rd.
4B	Option 2: Construct Bridge Across Umatilla River and Connect with Elm Ave.

Update of 2003 TSP Project List

The January 2003 TSP Update listed twenty-two projects projected to be needed during the 20-year planning horizon. Since that time, ten projects were completed and two were dropped. Table 15 and Figure 3 indicate the current status of the projects adopted in the 2003 plan.

Table 15: Update of Projects Recommended in January 2003 TSP

No.	Project Description	Status
1	Improve West 11th St./Hermiston Ave. Intersection (New Traffic Signal, Intersection Rechannelization)	Done
2	Improve West 1st St./Highland Ave. Intersection (New Traffic Signal)	New Priority List 5
3	Improve Highland Ave./West 11th St. Intersection (Reconfigure Turn Lanes)	Done
4A	Option 1: Construct Bridge Access Umatilla River and Connect with Punkin Center Rd.	Moved to Long Term Improvement
4B	Option 2: Construct Bridge Across Umatilla River and Connect with Elm Ave.	Moved to Long Term Improvement
5	Extend 4th St. from Elm Ave. to Punkin Center Rd. (Include New Signal at Elm Ave.)	Done
6	Extend 4th St. from Theater Lane to Punkin Center Rd.	Done
7	Improve West 4th St./Highland Ave. Intersection (New Traffic Signal)	Unprioritized List 23
8	Improve Elm Ave. from East 4th St. to Diagonal Rd. (Widen to 3 Lanes)	Done
9	Elm Ave./Diagonal Rd. Intersection Improvements	Done
10	Improve West 11th St. Adjacent to the Hospital (Widen to 3 Lanes)	Unprioritized List 24
11	Improve Elm Ave. from West 11th St. to Umatilla River Rd.	Done
12	Improve Elm Ave./Umatilla River Rd. Intersection (Signal Modified, Add Left Turn Lane)	Done
13	Improve West 11th St., north of Highland Ave. (Widen to 3 Lanes)	Done
14	Improve 1st Place/Hermiston Ave. Intersection (Add Traffic Signal, Intersection Rechannelization).	Done
15	Improve 10th St. from Columbia Dr. to Elm Ave.	Unprioritized List 15
16	Improve and Relocate 10th St. from Elm Ave. to Punkin Center Rd.	Unprioritized List 16
17	Theater Lane Upgrade from Highway 395 to East 10th St.	Unprioritized List 17

18	Upgrade Umatilla River Rd. from Hermiston Ave. to Elm Ave.	Unprioritized List 18
19	Improve Highway 395/Port Ave. Intersection (New Traffic Signal)	Unprioritized List 19
20	Upgrade 1st St. from Hermiston Ave. to Highland Ave.	Unprioritized List 20
21	Upgrade Umatilla River Road from Elm Ave. to Punkin Center Rd.	Unprioritized List 21
22	Upgrade 1st St./Hermiston-Hinkle Rd. from Highland Ave. to Feedville Rd.	Unprioritized List 22

Project Priority List

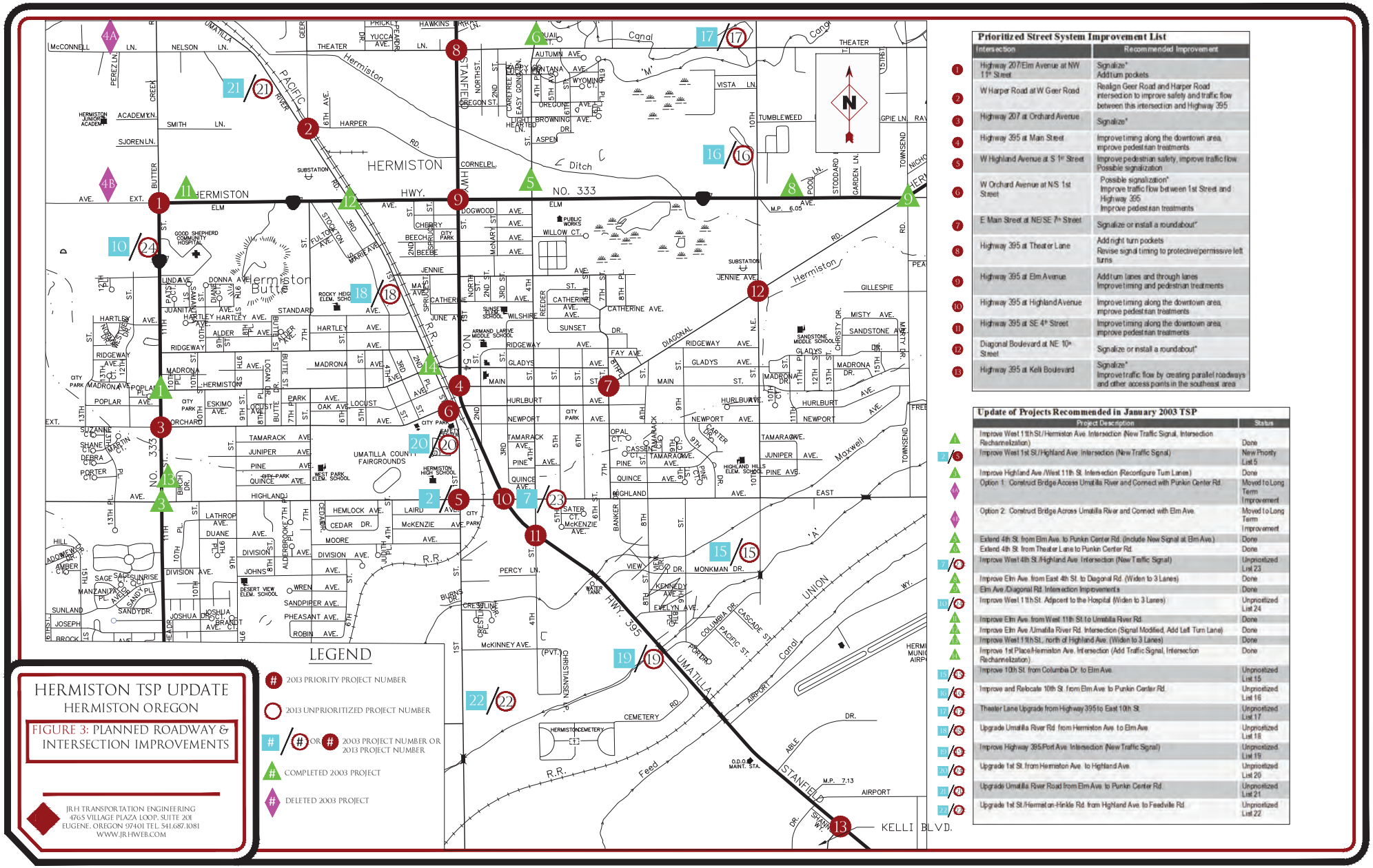
The remaining projects from the 2003 TSP and those identified by this study were reviewed by the City staff and by the Planning Commission. This review led to thirteen projects being placed in priority order. The remaining projects are listed numerically for identification purposes; however, they are not ranked relatively to each other.

The priority listing does not limit the sequence of project development. Transportation needs within a city change with the passage of time, as does the availability of funds to pay for them. This can result in projects appropriately being built out of the numerical list in the update.

A word about project cost and sources to pay for it

Cost:

Table 16 lists the thirteen prioritized projects recommended for completion during the 20-year planning horizon along with their estimated 2014 costs. Table 17 provides the same information for the projects not yet prioritized. These estimates are order-of-magnitude costs and should be used with extreme caution. They have not been engineered so there are factors which can significantly impact project cost which are completely unknown. These include such topics as soil conditions, topography, hydraulics and environmental. The thirteen prioritized projects are estimated to cost $5,288,000 in 2014 dollars, while the unprioritized projects will cost approximately an additional $26,314,000.



Prioritized Street System Improvement List

	Intersection	Recommended Improvement
1	Highway 207/Elm Avenue at NW 11th Street	Signalize* Add turn pockets
2	W Harper Road at W Geer Road	Realign Geer Road and Harper Road intersection to improve safety and traffic flow between this intersection and Highway 395
3	Highway 207 at Orchard Avenue	Signalize*
4	Highway 395 at Main Street	Improve timing along the downtown area, improve pedestrian treatments
5	W Highland Avenue at S 1st Street	Improve pedestrian safety, improve traffic flow. Possible signalization
6	W Orchard Avenue at N/S 1st Street	Possible signalization* Improve traffic flow between 1st Street and Highway 395 Improve pedestrian treatments
7	E Main Street at NE/SE 7th Street	Signalize or install a roundabout*
8	Highway 395 at Theater Lane	Add right turn pockets Revise signal timing to protective/permissive left turns
9	Highway 395 at Elm Avenue	Add turn lanes and through lanes Improve timing and pedestrian treatments
10	Highway 395 at Highland Avenue	Improve timing along the downtown area, improve pedestrian treatments
11	Highway 395 at SE 4th Street	Improve timing along the downtown area, improve pedestrian treatments
12	Diagonal Boulevard at NE 10th Street	Signalize or install a roundabout*
13	Highway 395 at Kelli Boulevard	Signalize* Improve traffic flow by creating parallel roadways and other access points in the southeast area

Update of Projects Recommended in January 2003 TSP

	Project Description	Status
▲	Improve West 11th St./Hermiston Ave. Intersection (New Traffic Signal, Intersection Recharnelization)	Done
2 / 5	Improve West 1st St./Highland Ave. Intersection (New Traffic Signal)	New Priority List 5
▲	Improve Highland Ave./West 11th St. Intersection (Reconfigure Turn Lanes)	Done
(A)	Option 1: Construct Bridge Access Umatilla River and Connect with Punkin Center Rd.	Moved to Long Term Improvement
(B)	Option 2: Construct Bridge Across Umatilla River and Connect with Elm Ave.	Moved to Long Term Improvement
▲	Extend 4th St. from Elm Ave. to Punkin Center Rd. (Include New Signal at Elm Ave.)	Done
▲	Extend 4th St. from Theater Lane to Punkin Center Rd.	Done
7 / 23	Improve West 4th St./Highland Ave. Intersection (New Traffic Signal)	Unprioritized List 23
▲	Improve Elm Ave. from East 4th St. to Diagonal Rd. (Widen to 3 Lanes)	Done
▲	Elm Ave./Diagonal Rd. Intersection Improvements	Done
10 / 24	Improve West 11th St. Adjacent to the Hospital (Widen to 3 Lanes)	Unprioritized List 24
▲	Improve Elm Ave. from West 11th St. to Umatilla River Rd.	Done
▲	Improve Elm Ave./Umatilla River Rd. Intersection (Signal Modified, Add Left Turn Lane)	Done
▲	Improve West 11th St., north of Highland Ave. (Widen to 3 Lanes)	Done
▲	Improve 1st Place/Hermiston Ave. Intersection (Add Traffic Signal, Intersection Recharnelization)	Done
15 / 15	Improve 10th St. from Columbia Dr. to Elm Ave.	Unprioritized List 15
16 / 16	Improve and Relocate 10th St. from Elm Ave. to Punkin Center Rd.	Unprioritized List 16
17 / 17	Theater Lane Upgrade from Highway 395 to East 10th St.	Unprioritized List 17
18 / 18	Upgrade Umatilla River Rd. from Hermiston Ave. to Elm Ave.	Unprioritized List 18
19 / 19	Improve Highway 395/Port Ave. Intersection (New Traffic Signal)	Unprioritized List 19
20 / 20	Upgrade 1st St. from Hermiston Ave. to Highland Ave.	Unprioritized List 20
21 / 21	Upgrade Umatilla River Road from Elm Ave. to Punkin Center Rd.	Unprioritized List 21
22 / 22	Upgrade 1st St./Hermiston-Hinkle Rd. from Highland Ave. to Feedville Rd.	Unprioritized List 22

Table 16: Prioritized Street System Improvement List

No.	Intersection	Recommended Improvement	Cost
1	Highway 207/Elm Avenue at SW 11th Street	Signalize* Add left and/or right turn pockets	778,000
2	W Harper Road at W Geer Road	Realign Geer Road and Harper Road intersection to improve safety and traffic flow between this intersection and Highway 395	940,000
3	Highway 207 at Orchard Avenue	Signalize*	300,000
4	Highway 395 at Main Street	Improve timing along the downtown area, improve pedestrian treatments	50,000
5	W Highland Avenue at S 1st Street	Improve pedestrian safety, improve traffic flow Possible signalization	300,000
6	W Orchard Avenue at N/S 1st Street	Possible signalization* Improve traffic flow between 1st Street and Highway 395 Improve pedestrian treatments	300,000
7	E Main Street at NE/SE 7th Street	Signalize or install a roundabout*	300,000
8	Highway 395 at Theater Lane	Add right turn pockets Revise signal timing to protective/permissive left turns	478,000
9	Highway 395 at Elm Avenue	Add turn lanes and through lanes Improve timing and pedestrian treatments	1,442,000
10	Highway 395 at Highland Avenue	Improve timing along the downtown area, improve pedestrian treatments	50,000
11	Highway 395 at SE 4th Street	Improve timing along the downtown area, improve pedestrian treatments	
12	Diagonal Boulevard at NE 10th Street	Signalize or install a roundabout*	50,000
13	Highway 395 at Kelli Boulevard	Signalize* Improve traffic flow by creating parallel roadways and other access points in the southeast area	300,000
		TOTAL:	**5,288,000**

*Signalization improvements must meet signal warrants and those on State Highways must also obtain state traffic/roadway engineer approval.

Table 17: Unprioritized Street System Improvement List

No.	Project Description	Status	Cost
14	Not Used		0
15	10th St. from Columbia Dr. to Elm Ave.	Widening	5,820,000
16	10th St. from Elm Ave. to Punkin Center Rd.	Widening	5,820,000
17	Theater Lane from Highway 395 to East 10th St.	Widening	4,989,000
18	Umatilla River Rd. from Hermiston Ave. to Elm Ave.	Upgrade	3,108,000
19	Highway 395/Port Ave. Intersection	New Traffic Signal	312,000
20	1st St. from Hermiston Ave. to Highland Ave.	Widening	1,559,000
21	Umatilla River Road from Elm Ave. to Punkin Center Rd.	Widening	2,078,000
22	1st St./Hermiston-Hinkle Rd. from Highland Ave. to Feedville Rd.	Widening	2,078,000
23	West 4th St./Highland Ave. Intersection	New Traffic Signal	300,000
24	West 11th St. Adjacent to The Hospital	Widen to 3 Lanes	250,000
		TOTAL:	**26,314,000**

Tables 18 and 19 list the projects and projected costs for the South Hermiston Study Area and the US 395 Refinement Study Area. The South Area 2014 Project Costs are estimated at $4,196,986 while the US 395 Refinement Area costs are estimate at $84,494,000. Costs were calculated by using the original cost estimates and increasing them by an inflation rate of five percent per year. This is based on a judgment based weighted average of ODOT cost experience in Region 5. As with the 24 projects above, these are order of magnitude costs and should be used with caution.

Note: Projects 23 and 24 in Table 17 above, "Unprioritized Street System Improvement List" are not the same projects as Projects 23 and 24 in Table 18 below, "South Hermiston Study Area."

Table 18: South Hermiston Study Area Access and Circulation Improvement Plan - May 2000 TSP Update – See Figure 4

No.	Project Description	Cost
23	Extend Evelyn Ave. west to US Highway 395.	109,000
24	Extend Evelyn Ave. west to New Hope Church, close New Hope access to US 395 and access the Evelyn Ave. Extension	296,986
25	Construct A-Line Canal Crossing	554,000
26	Complete 1First Phase of Gettman Road Extension	782,000
27	Complete Port Drive/US 395 Intersection improvements	396,000
28	Extend McKinley St. to Evelyn Avenue once access has been provided via Port Drive	396,000
29	Extend SE 4th Street and Gettman Road (2nd Phase)	752,000

30	Extend Gettman Road to SE 4th Street	485,000
31	Realign local street access 300' from US 395	426,000
	TOTAL	**4,196,986**

As of the preparation of this update in 2014, none of the improvements listed in Table 18 above or Table 19 below have been constructed. As with most transportation improvements, construction begins when developments which place greater demands on the transportation infrastructure occur. Future development in the south Hermiston area will determine the appropriate timing for construction of these improvements. Inclusion in the plan is not a guarantee of funding.

Table 19: Recommended 20-Year Street Improvement Projects
US 395 Corridor Refinement Study Area – See Figure 5

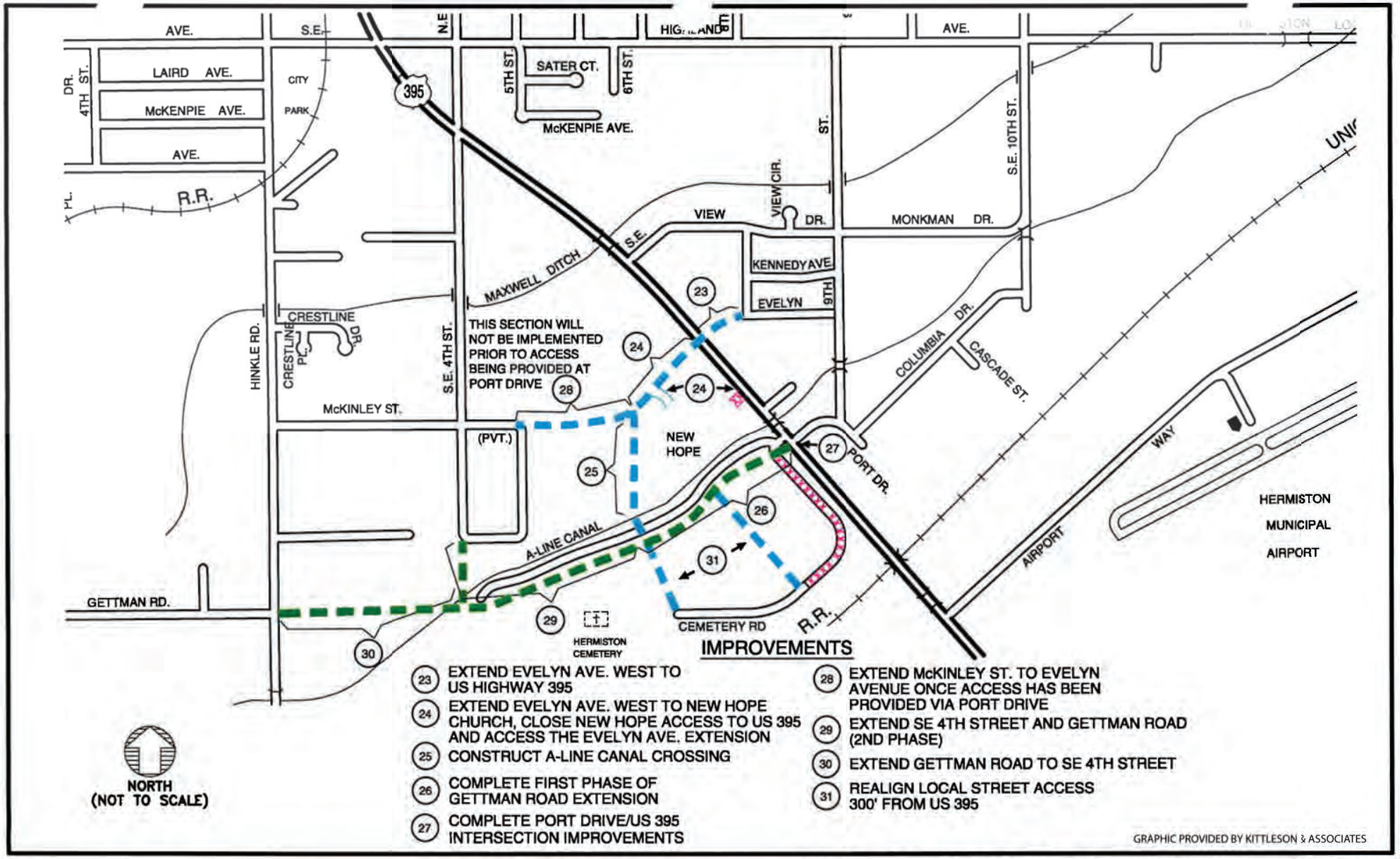
No.	Project Description	Cost
33	Provide a signalized access portal to US 395 (when warranted by a traffic engineering study) at the current Wal-Mart Distribution Center access to be served by a major collector roadway east of US 395 and a minor collector west of US 395.	445,000
34	Realign the north and south approaches to Ott Road such that they intersect US 395 at a complete 90-degree angle. The future intersections should be limited to right-in/right-out driveways to help preserve access management along the Highway.	1,089,000
35	Develop a minor collector backage road that runs parallel to US 395 between Kelli Boulevard and the Wal-Mart Distribution Center truck access road.	3,465,000
36	Re-construct a limited access right-in/right-out driveway to US 395 near the current Hermiston Foods driveway to be served by minor collector roadways on both sides of the highway.	50,000
37	Re-construct a limited access intersection (left-in/right-in/right-out) at the US 395/Kelli Boulevard Intersection.	50,000
38	Signalize the US 395/Campbell Drive/Airport Road Intersection when warranted by a traffic engineering study.	446,000
39	Develop a minor collector roadway to facilitate east/west travel between Hermiston-Hinkle Road and US 395.	10,642,000
40	Upon redevelopment of adjacent land parcels, develop a minor collector connection between Campbell Drive and Kelli Boulevard.	545,000
41	Extend Campbell Drive at major collector standards south and east to Kelli Boulevard (1st Phase). Realign a portion of Kelli Boulevard so that it Intersects the extension of Campbell Drive (2nd Phase).	2,128,000
42	Develop a minor collector roadway to facilitate north/south travel between US 395 and Feedville Road.	7,326,000
43	Develop a series of minor collector roadways to ensure circulation and connectivity upon redevelopment of the large agriculture plots within the western study area.	11,533,000
44	#44 not used.	0
45	Upon the redevelopment of the Hermiston Agriculture Experiment Station, provide a new	

	minor collector roadway along the SE 4th Street alignment. Upgrade and extend Experiment Station Road to this 4th Street alignment.	3,118,000
46	Develop a full access Intersection at US 395 to be served by a future extension of Able Drive. This Intersection should be limited to a right-in/right-out/left-in access when warranted by a traffic engineering study.	445,500
47	Develop a signalized access Intersection at the US 395 Airport Way Intersection when warranted by a traffic engineering study.	445,500
48	Develop a major collector roadway system upon redevelopment of the vacant land north of the airport, Irrigation canal, and rail line.	6,237,000
49	Develop a major collector roadway to facilitate north/south travel within the northeast quadrant of the US 395 Refinement Plan study area.	6,534,000
50	Develop a series of minor collector roadways to facilitate circulation south of the Hermiston Airport.	6,682,000
51	Develop a series of minor collector roadways to facilitate circulation within the northeast quadrant of the US 395 Refinement Plan study area.	14,107,000
52	Develop a major collector backage road between Kelli Boulevard and Ott Road.	5,692,000
53	Extend Kelli Boulevard east of US 395 to connect into a minor collector roadway network.	2,178,000
54	Develop a multi-use path along the west side of US 395. This path will require a bridge crossing over the feed canal and rail line.	891,000
55	Signalize the US 395/Feedville Road Intersection when warranted by a traffic engineering study. (Improvement specific to the US 395 North Corridor Plan)	445,000
	TOTAL:	**84,494,000**

Revenue sources:
Finding the means for paying for public projects is often a difficult job. There are a number of potential sources which might be considered. These include the State Transportation Improvement Program (STIP). This is primarily generated by fuel taxes, weight, mile fees and vehicle registration fees. The money in the STIP is allocated by the State Transportation Commission with input from regional Area Transportation Commissions (ACTs), city and county governments and the general public.

- **Fuel Tax and Vehicle Registration Fees:**
  A portion of all state gasoline and vehicle registration fees is sent directly to local jurisdictions. Although this amount at current tax levels is not large, it can be used for roadway improvements. Many jurisdictions have added a local tax to increase this revenue.

- **Ear-Marked Federal Funds:**
  Although this source is subject to large fluctuations, having a good relationship with local members of Congress can help develop this source.



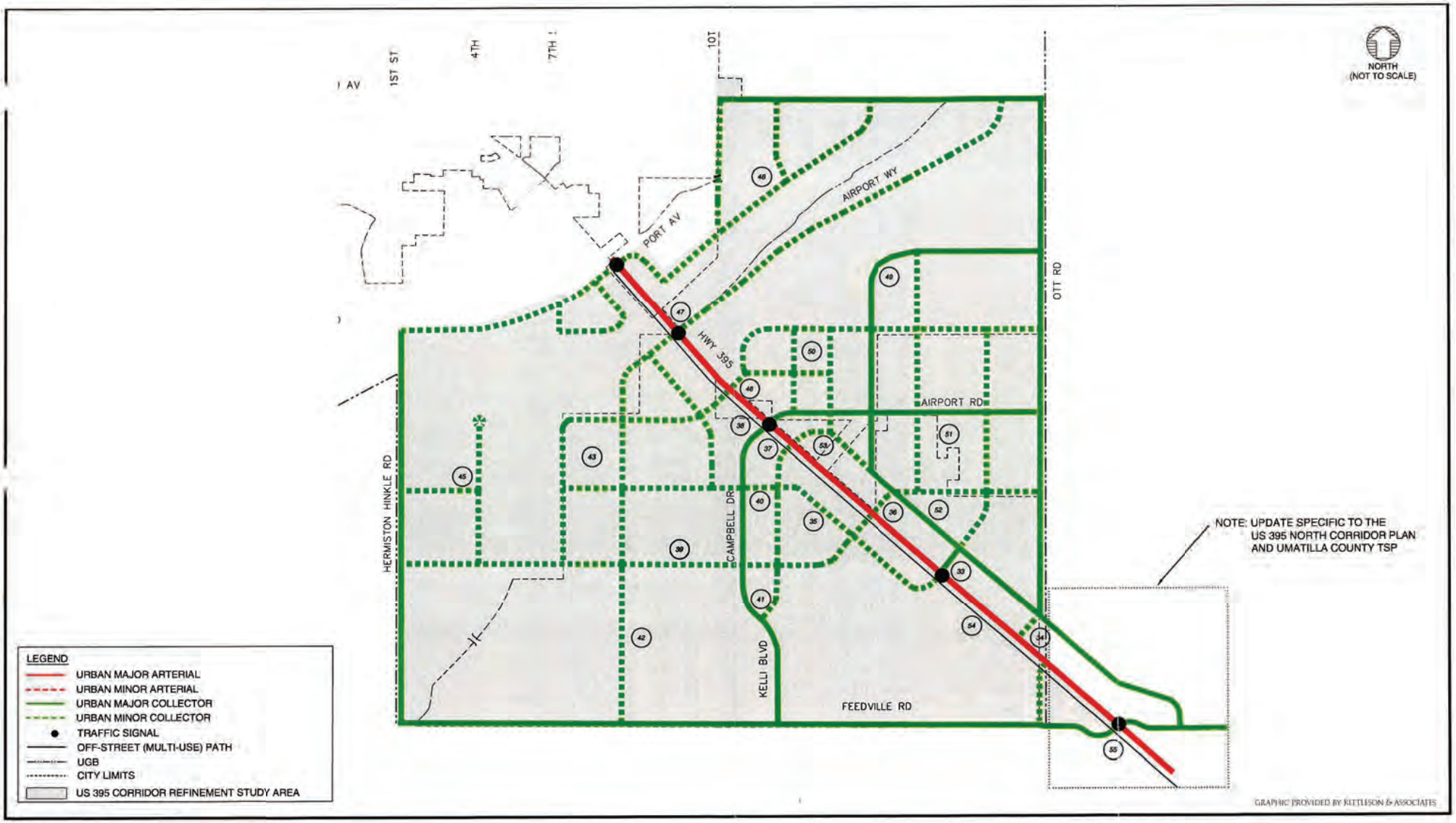
LEGEND

- NEW MINOR COLLECTOR
- NEW LOCAL STREET
- xxx – STREET CLOSURE

SOUTH HERMISTON STUDY AREA ACCESS AND CIRCULATION IMPROVEMENT PLAN MAY 2000 TSP UPDATE

FIGURE 4

JRH TRANSPORTATION ENGINEERING
4765 Village Plaza Loop, Suite 201
Eugene, Oregon 97401 (TEL.) 541.687.1081
www.jrhweb.com



(##) *CORRESPONDS TO IMPROVEMENTS LISTED IN TABLE 1*

US 395 CORRIDOR STREET SYSTEM IMPROVEMENTS JANUARY 2003 UPDATE

FIGURE 5

JRH TRANSPORTATION ENGINEERING
4765 Village Plaza Loop, Suite 201
Eugene, Oregon 97401 (TEL) 541.687.1081
www.jrhweb.com

- **Safety Funds (SF):**
  ODOT has a separate safety fund which can be used to fund projects at high accident locations for projects to reduce accident potential.

- **System Development Charges (SDC):**
  System Development Charges can be used to pay for projects needed to accommodate growth. These are usually based on the trip generation expected from a particular development. These are often favored by developers who need road projects to ensure the success of their land use development. These are generally paid at the same time as a building permit is issued, as the new owner of a piece of property pays and not the developer.

- **Local Improvement Districts (LID):**
  These are districts that assess themselves for the cost of improvements. They tend to be favored by developers who intend to own property rather than sell it. LIDs are generally paid as a property tax assessment by the owners over 10 or 20 years. As a tax, the annual amount can usually be deducted from income taxes each year. This contrasts with SDCs which usually affect the basis of building improvement. These can usually be deducted as depreciation over a 30-year period. LIDs can be created for areas that are fully developed, while SDSs are usually paid as building permit fees.

- **Developer Financed:**
  Individual projects may have impacts on the transportation system. That must be mitigated. Under both state and city rules, mitigation can often be required before development.

Project Opportunities

In addition to the studied intersection and roadway improvements listed in Tables 14 through 19, the city has identified several long term priorities which will enhance the overall transportation system both locally and regionally. These projects are not necessarily location specific or may be projects presently being developed in conjunction with other agencies. However, it is prudent to include these projects in the plan for support for future transportation improvements.

Table 20: Project Opportunities – Future Transportation Improvements

Project	Recommended Improvement
US 395/Orchard Avenue Area	Improve existing lane configurations, multi-modal access, traffic control and geometric characteristics to accommodate growth patterns and needs within the area.
Hermiston Downtown Urban Renewal Area	Implement urban renewal planned street improvements, features could include wider sidewalks, enhanced pedestrian crossing, landscaping and other measures.
Hermiston Loop and Oxbow Trail/Enhance Trail Crossings of Highway 207	Network of bicycle and pedestrian trails, including highway crossing treatments which connect and extend trail facilities.
Transit Amenities	Transit stop improvements, including but not limited to, more visible transit stop signs, kiosks with regional route information, benches, shelters and lighting.
Implement Transportation Demand Management Measures (TDM)	Implement TDM measures, including supporting carpools, vanpools to major employers through education and provision of park and ride facilities.
Eastern Oregon Trade and Event Center (Ott Road)	Develop and extend local streets to accommodate active transportation modes and other improvements to support events.

JRH TRANSPORTATION ENGINEERING

www.jrhweb.com

EUGENE

4765 Village Plaza Loop, Suite 201
Eugene, Oregon 97401
541-687-1081

HDJ DESIGN GROUP
engineers | landscape architects | planners | surveyors

Date: December 4, 2015

To: Clinton Spencer

From: John Manix, PE

Re: City of Hermiston Transportation System Plan Update – Ranch and Home Development

Introduction:

This memo is intended as an update to the *City of Hermiston Transportation System Plan* (TSP) based on the proposed modifications associated with the Ranch and Home commercial development. *See Figure 1 for a vicinity map and Appendix A for excerpt from the 2003 updated TSP project map.*

The current TSP proposes a "backage road" (Project Number 35) through and conflicting with the Ranch and Home site, and the *Ranch and Home's Traffic Impact Analysis* (TIA) Report recommends a traffic signal at the shared Ranch and Home/Hermiston Foods driveway intersection with US 395. The current TSP was updated in 2005 based on the *US 395 Corridor Refinement Plan*.[1] This memo also addresses the October 6, 2015 letter from Oregon Department of Transportation (ODOT) commenting on Ranch and Home Development and the TIA.

Recommendations:

Revise City of Hermiston's Transportation System Plan project listed as follows and illustrated in Figure 2:

1. Modify Project 35 to shorten proposed minor collector backage road, parallel to US 395, between Kelli Boulevard to the proposed minor arterial listed as Project 39 (Hermiston Foods driveway).
2. Modify project 36 to include a full access traffic signal at the proposed minor arterial intersection with US 395, near the Hermiston Foods driveway. With the proposed traffic signal for the Ranch and Home Development and the Hermiston Foods driveway, include an advance warning sign assembly "PREPARE TO STOP WHEN FLASHING" and advance vehicle detection system.

Background:

The *US 395 Corridor Refinement Plan* was jointly funded by the City of Hermiston and ODOT to address the overall management direction established by the July 2000, *US 395 North Corridor Plan. This plan was developed* by ODOT and called for an access management plan with raised medians on US 395 from Kelli Boulevard to Rosalynn Drive. The *US 395 Corridor Refinement Plan* called for a series of projects, including a network of minor arterials and collectors near US 395, between Port Avenue and Feedville Road that included a series of proposed signalized intersections with access restrictions, such as right-in and right-out. To provide access to the abutting properties, the *US 395 Corridor Refinement Plan* called for a "backage road" that would collect and distribute traffic from the adjacent property to the proposed signals. A backage road is similar to a frontage road as it parallels a highway

[1] Kittelson and Associates, *US 395 Corridor Refinement Plan (Port Drive to Feedville Road), January 2003.*

but it runs along the back of the abutting properties. This separation positions intersections approximately a city block from the signalized intersection which minimizes conflicts and provides room for queueing at the signal for the cross street to US 395. The plan intended the backage roads to follow property lines so to minimize conflicts with abutting properties. The preferred alternative project list from the *US 395 Corridor Refinement Plan* was adopted by the City in January 2003 as a TSP update.

In 2012, the City of Hermiston processed land use rezoning to relocate the Eastern Oregon Trade and Event Center (EOTEC) to a new location north of Airport Road, contiguous to the southern boundary of the Hermiston Municipal Airport, and west of Ott Road. The 2012 *Fairgrounds Overlay Zone District Transportation Impact Analysis Report* prepared by Group Mackenzie estimated that the EOTEC would generate upwards of 1,000 PM peak hour trips for events. These trips are currently anticipated to enter and exit the site from US 395 via Airport Road or a possibly an extension of Able Drive.

In 2015, the Ranch and Home Company proposed a larger commercial development between Hermiston Foods and the Walmart Distribution Center. *See Figure 1 for a vicinity map from the projects TIA.* This large scale retail development on 17.59 acres site estimates to generate 4,426 trips per day and is the type of development the City of Hermiston envisioned for the *US 395 Corridor Refinement Plan*. The TSP Project 35 directs the backage road through the Ranch and Home site and significantly limits the commercial development plans. The Ranch and Home development was conditioned by the City to prepare a TIA plan which would identify traffic impacts and mitigation of the proposed project. The TIA concluded a traffic signal was needed on US 395 at the entrance between the existing Hermiston Foods driveway and the proposed Ranch and Home, often referred to as the "Hermiston Foods driveway."

ODOT submitted a letter to the City of Hermiston on October 6, 2015. This letter noted inconsistencies with the City's TSP and recommended that other safety concerns be addressed. These concerns and comments brought up by ODOT are summarized as follows:

- The proposed signal at the Hermiston Foods driveway may compromise the other proposed signals in the TSP. The applicant should verify that the proposed signal does not impact the traffic signals identified in the TSP.
- The TSP calls for the backage road to extend to the Walmart Distribution Center driveway at US 395 and a traffic signal at this location. The City should consider if this is still necessary in light of the proposed event center (EOTEC) on Airport Road.
- A roundabout should be considered as an alternative to a traffic signal due to safety concerns of traffic stopping from 55 MPH rural highway approach. If a roundabout is not used traffic calming should be considered.

Based on these comments, the City has directed the applicant to process a TSP update in the form of a technical memo. After discussing the TSP update with both ODOT and City staff, it was agreed that the scope of work would address the following questions:

1. What is the impact on signal spacing standards and the possible impact of the proposed signal at the Hermiston driveway?

2. What are the impacts of the proposed Ranch and Home signal on the proposed signal at Airport Way?
3. What are the impacts on the projects listed in the 2003 Hermiston TSP Amendment?
4. What is the interaction between passenger vehicles from the Ranch and Home Development, and the Hermiston Food and Walmart Distribution Center trucks?
5. Is a roundabout a viable alternative to a signal and if not what other traffic calming measures can be used as a safety enhancement to a traffic signal?
6. What are the impact of a signal on the off-set intersection at the US 395/Hermiston Foods entrance/E-Z Storage entrance?
7. Does the proposed or current TSP projects impact industrial development?

Evaluation:

The following section addresses the questions above:

What are the impacts on signal spacing standards and the possible impact of the proposed signal at the Hermiston driveway?

In this case, the primary issue with signal spacing is related to possible impacts to signal system coordination. No specific standard was found for signal spacing. The MUTCD cites that signals should be coordinated with spacing under a half mile.[2] The MUTCD also cites that signals may meet warrants based on signal coordination, based on engineering study, but not if the spacing is under 1,000 feet. With spacing greater than a half mile the platoon will disperse and coordination will be less effective. With spacing less than 1,000 feet, the queue at upstream signals may interfere with progression of the platoon through the signal system. Figure 3 shows the spacing of the signal and it is likely that with the proposed signal at Ranch and Homes development driveway (existing Hermiston Foods driveway) it will improve coordinated signal operation by making the spacing more uniform from Port Avenue to Walmart Distribution Center Driveway. Thus, the proposed signal at Ranch and Home/Hermiston Foods/US 395 will have a positive impact on signal system operation associated with signal spacing.

What are the impacts of the proposed Ranch and Home signal on the proposed signal at Airport Way?

Beyond the impacts on signal system coordination addressed above, the possible impacts of the proposed signal at Ranch and Home development is related to traffic diversion. This is challenging to quantify due to the uncertainty of the land development and the supporting land uses. Based on careful review of the *US 395 Corridor Refinement Plan* and the *Fairgrounds Overlay Zone District Transportation Impact Analysis Report*; a traffic signal at Ranch and Home entrance will better distribute the trips to the adjacent property to US 395 between Airport Road and the Walmart Distribution Center.

The *US 395 Corridor Refinement Plan* estimates a 4,000 PM peak hour trips entering and exiting US 395 between Airport Road and the Walmart Distribution Center. With the current TSP, most of those trips that need to make a left turn across US 395 will need to use the signals proposed at either the Airport Road or the Walmart Distribution Center signals. With most of the egress trips destined for Hermiston, the Airport Road intersection is likely to take the largest share of these trips on the west side of US 395. Thus, the proposed signal at Ranch and Home should reduce the traffic impacts on the future Airport

[2] FHWA, *Manual on Uniform Traffic Control Devices, 2009 Edition.*

Road/Campbell Drive/US 395 signal by providing an additional egress opportunity for left turning vehicles.

The backage road was proposed as supporting development by improving the access. In this case, it severely restricts development by sub-dividing a large retail site into smaller lots, restricting land-use options. Assuming the backage road through the Ranch and Home site is not built, future trips need a signal to access US 395. The proposed signal at the Walmart Distribution Center driveway will not be accessible from the west side of US 395. Thus, the proposed traffic signal will provide another access point to US 395 other than the future Airport Road/Campbell Drive/US 395 traffic signal.

What are the impacts on the projects listed in the 2003 Hermiston TSP Amendment?
The most significant impacts are on Project 35, the backage road on the west side of US 395. The Ranch and Home development proposes to eliminate a portion from the Hermiston Foods driveway to the Walmart Distribution Center driveway. With the proposed signal at Ranch and Home/Hermiston Foods/US 395 intersection, the surrounding area still will be served.

Project 33, the signal at the Walmart Distribution Center Driveway/US 395 intersection, may be impacted without the connection to west side backing road (Project 35). Without the traffic from the west side of US 395 connected to the Walmart Distribution Center driveway at US 395, it may not meet warrants in the future. For this update, it is not recommended that this project be removed from the project list because future development on the east side of US 395 may produce enough trips to meet signal warrants.

The project list from 2003 Hermiston TSP Amendment is based on the *US 395 Corridor Refinement Plan.* After careful review of the series of technical memos that make up the *US 395 Corridor Refinement Plan,* it is clear that this planning process involves extensive analysis and public involvement, including a project team of technical stakeholders. Thus the Ranch and Home modifications to the TSP project list should be kept to a minimum. The *US 395 Corridor Refinement Plan* acknowledged that the plan would need refinement as land adjacent to US 395 is developed but at this early stage the update should only recommend minor refinements.

What is the interaction between passenger vehicles from the Ranch and Home Development, and the Hermiston Food and Walmart Distribution Center trucks?
At the Hermiston Food driveway (the location of the proposed Ranch and Home traffic signal), the interaction is minor due to time of day that truck ingress and egress the site verses passenger vehicles. The traffic counts from both the *US 395 Corridor Refinement Plan* and the Ranch and Home TIA counted few if any trucks turning into or out of the site in the AM, Mid-day or PM peak hours. At the Walmart Distribution Center driveway, the truck volume is moderately high for truck volume, with 7 exiting and 18 entering in the AM, 29 exiting and 18 entering in the mid-day, and 13 exiting and 20 entering in the PM peak hours. The Walmart Distribution Center staff are reported to have expressed reservations about mixing passenger vehicles with truck traffic associated with the proposed backage road in the current TSP. The length of left turn lane on the Walmart Distribution Center driveway will be constrained due to the backage road driveway intersection with the Walmart Distribution Center driveway. If the Ranch and Home development traffic destine for northbound US 395 was directed through this intersection, per the existing TSP (Project 35), the queue with trucks added is a concern. With a double left turn, it will require upwards of 225 feet of left turn storage for Ranch and Home development traffic. This long queue would be very disruptive to the Walmart Distribution Center

operation. Thus, due to the moderately high truck traffic and the constrained roadway geometry at the Walmart Distribution Center, the backage road should not be terminated at Walmart Distribution Center driveway intersection with US 395.

Is a roundabout a viable alternative to a signal and if not what other traffic calming measures can be used as a safety enhancement to a traffic signal?

Signals on the State Highway system are a significant safety concern to the Department of Transportation staff in both Oregon and Washington. With a high speed approach to a traffic signal, red light running and rear-end collisions can result in fatal or serious injury collisions. Based on their safety record, ODOT and WSDOT encourage roundabouts as an alternative,. In this case, ODOT has traffic safety concerns with rural locations where traffic has traveled long distances prior to encountering a traffic signal.

As this relates to the Hermiston TSP, the first proposed signalized intersection on the US 395 corridor, at US 395 and Feedville Road (Project 55) is a much better location of a proposed roundabout to address the ODOT safety concerns. This will be the location where traffic will first encounter a traffic signal, as northbound rural traffic enters an urban area. While this intersection may take some time to receive upgraded traffic controls. , it is still not recommended that the City of Hermiston or ODOT use roundabouts in place of traffic signals at any other intersection of US 395, from Port Avenue to the Walmart Distribution Center driveway, for the following reasons:

- The US 395 corridor is an ideal candidate for signal coordination based on signal spacing. The signals are between 0.3 to 0.47 mile spacing from Port Avenue to the Walmart distribution center driveway. A roundabout at the Ranch and Home development would compromise the future signal coordination by dispersing the platoon as it moves through the roundabout.
- The US 395 corridor with the signals, 4 lanes, and a center median has the capacity to meet the forecast volumes. The *2012 Fairgrounds Overlay Zone District Transportation Impact Analysis Report* recommended a revised annual growth rate of less than 1%.
- Traffic signals are much more cost effective under these conditions. Roundabouts tend to cost approximately $1,000,000, depending on the enhancements and right-of-way. At about one third the cost or $300,000 a traffic signal is a much better value.
- Assuming a double lane roundabout, substantial right-of-way will be needed from adjacent property owners, can be very challenging to purchase by a developer.

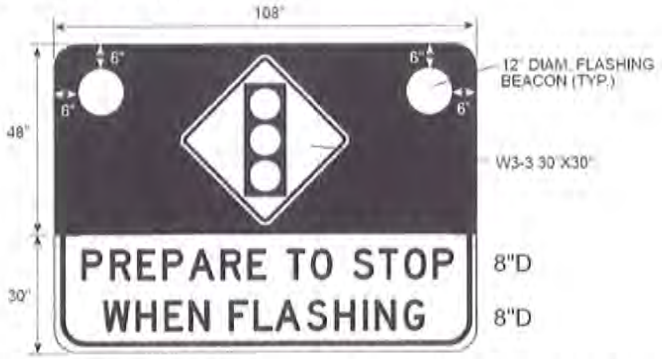
A roundabout has one significant benefit for the Ranch and Home main entrance, the queue length on the west leg is significantly shorter compared to a traffic signal. The 2015 Ranch and Home Transportation Impact Analysis report recommends a 225 long, double left turn lane for the traffic signal between Ranch and Home and Hermiston Foods. With the same 2025 design hourly volumes, a roundabout is estimated to generate a 50 foot queue length for a single lane approach on the Hermiston Foods and Ranch and Home approach.

It is worth noting that both the trucking industry and ODOT maintenance staff have expressed reservation with roundabouts. Truck drivers frequently comment that use of truck apron or using both circulating lanes to make a turn is a safety concern. Roundabouts will become more acceptable to both these users and stakeholders with added familiarity but this location should not be a test case based on the close proximity to Hermiston Foods and the Walmart Distribution Center truck traffic.

ODOT recommended that "traffic calming" be considered as a traffic safety enhancement to a traffic signal. The intent is to slow traffic approaching the proposed traffic signal to minimize the risk of collisions with high speed, rural, highway traffic. The median can be modified to reduce the design speed of approaching traffic by creating horizontal deflection but takes substantial median modification. Similar to the high speed approach to a roundabout, widening to added horizontal curves for a serpentine alignment to the roadway for 500 feet prior to the intersection would likely be necessary to bring traffic down to urban speeds prior to the signal. Unless US 395 is reduced to one lane, some drivers may resort to risky behavior of using unsafe lane changes to maintain speed on the approach. There are a lot of other traffic calming techniques, some that are not appropriate at this location, such as speed humps, and others with very limited success in changing behavior such as speed bars or rumble strips.

As a safety enhancement for the proposed traffic signal, the following alternative is recommended:

- Install traffic activated warning signs on the northbound approach to the signal 400-500 feet in advance. WSDOT used advance warning signs in very similar circumstances on southbound on SR 503 as traffic approaches the first signal in the City Battle Ground, WA at NE 244th Ave-NE 25 St. *See Appendix B for WSDOT white paper on the use of PREPARE TO STOP WHEN FLASHING sign assembly.*



The key to success is to provide a message that commands attention, provides adequate reaction time, provides a clear and simple message, and fulfills a need. The use of traffic or signal activated flashing lights are effective at command attention of approaching traffic. Another benefit of this method is that it can be further enhanced with additional advanced traffic control if necessary. For example, use of radar signs (speed limit signs with radar feedback messages) can provide additional traffic calming. The proposed signal should also use a robust vehicle detection system that addresses dilemma zone consideration of approaching high speed traffic.

What is the impact on the off-set intersection at the US 395/Hermiston Foods entrance/E-Z Storage entrance?
The traffic to and from the E-Z Storage has been counted as low as 1 or 2 vehicles in the peak hours. The Hermiston Foods Driveway is offset 85 feet from the access of E-Z Storage. With the signal, the median should be extended on US 395 south to restrict left turn movements from US 395 to the E-Z Storage driveway. Access from Hermiston can be maintained via the proposed signal by making a U-turn in the short term. In the long term, TSP project 51 will eliminate the need for a U-turn.

Does proposed or current TSP projects impact industrial development?
The zoning in the vicinity of the project is a combination of commercial, light and heavy industrial (C-2, M-1 and M-2). With the opportunity to receive grant funding for transportation projects related to

industrial land use, the scope of the study included review of the impact on truck access by the proposed updated and current TSP.

Hermiston Foods is the current industrial land use, just north of the Ranch and Home development Presently Hermiston Foods trucks either ingress or egress late at night or rely on the Kelli Blvd. intersection for access. The proposed signal by the Ranch and Home development will improve truck access during hours with higher traffic volumes and reduce out of direction travel of only using the Kellie Blvd intersection. The traffic signal will provide better gaps in traffic than the current two-way STOP sign control intersections at both the driveway and the Kelli Blvd. The current TSP would further limit access to Hermiston Food by directing all truck traffic to the Airport Rd/Campbell Dr/US 395 and Wall Mart Distribution Center/US 395 future signals. Hermiston Foods future access in the current TSP is highly dependent on the backing road that will take some time to implement and appears to be conflicting with the existing Hermiston Food facilities. Thus, the new signal between Ranch and Home and Hermiston Foods may eliminate the need for the backing road on the west side of US 395 (Project 35).

The proposed traffic signal opens access to large tracks of property zoned Commercial/Industrial (C-2/M-1) on the east and west side of US 395. Thus, the current TSP will delay and prevent industrial/commercial development with the restriction of access as proposed in Project 36. Projects 40 and 52, the backing roadways east and west of US 395, will delay development waiting for their completion. There is approximately 42 acres of property zoned Industrial (M-1) in close proximity to the proposed signal that can gain access to US 395 with the signal. *See Figure 4 for the industrial zoning in the vicinity of the proposed signal.*

Thus, the proposed signal at the Ranch and Home/Hermiston Foods access roadway will not compromise access to the adjacent commercial and industrial property but will significantly improve access compared to the existing TSP projects. This signal should be a good candidate for grant funding targeting industrial land use development.

Conclusions:

The following conclusions are based on the review of background material and evaluation of the possible impacts of the proposed changes to the TSP.

- This update is a refinement to the current TSP based on the *US 395 Corridor Refinement Plan* but kept changes to a minimum to honor past process. Thus, the proposed signal at the Ranch and Home/Hermiston Foods /US 395 intersection should be added to the plan and not replace the proposed signal at the Walmart Distribution Center as recommended in the Ranch and Home TIA report. The backage road proposed through the Ranch and Home site should be curtailed but the remainder should remain in the TSP.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will have a positive impact on the TSP signal system from the Walmart Distribution Center to Port Ave US 395 by creating more consistent spacing.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will have a positive impact on TSP Project 37, the signal at Airport Road/Campbell Rd/US 395, by diverting traffic to away and reducing impacts.
- The proposed Ranch and Home development and recommended transportation projects have the most impact on TSP Project 33, the traffic signal at the Walmart Distribution

Center/US 395. It may not meet warrants in the future without the connection to the backage road. The TSP backage road, Project 35, will be shorter but not significantly impacted.

- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection and the reduction in the backage road will have a positive impact on truck access on US 395. The trucks destine to Hermiston Foods will have a signal for their late-night and early-morning access to US 395. If the Ranch and Home development distributed its trips to Walmart Distribution Center Driveway as proposed in TSP Project 35, the queue would interfere with truck traffic at their driveway.
- Traffic signals on rural highways after a long distance of uninterrupted traffic flow are a safety concern. A roundabout was considered and has significant benefits, such as reduced queuing at the Ranch and Home approach. It also has negative impacts, such as platoon dispersion on US 395 in the middle of signal system. A better location is at the Feedville/US 395 intersection, TSP Project 55, to address safety concerns associated with the first signal encountered by rural highway traffic. As an alternative to a roundabout that will address the safety concern, a PREPARE TO STOP WHEN FLASHING sign assembly is proposed to alert drivers that they are approaching a signal. This can be further enhanced with additional advanced vehicle detection to address dilemma zones for high speed traffic, a speed limit reduction and the use of radar signs.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will require extending the median to eliminate the left turn from US 395 to EZ Storage. But access will be maintained by a U-turn that will meet the very low traffic volume in and out of the facility during the peak traffic hours.
- The proposed signal at the Ranch and Home/Hermiston Foods/US 395 intersection will have a positive impact on industrial development in the vicinity. With approximately 42 acres of land zoned Commercial/Industrial (C-2/M-1), tributary to the proposed signal, improving access to US 395 will enhance development by lowering infrastructure improvement costs.

Recommendations

Revise City of Hermiston's Transportation System Plan listed as follows and illustrated in Figure 1:

1. Modify Project 35--Shorten the proposed minor collector backage road, parallel to US 395, between Kelli Boulevard to the proposed minor arterial listed as Project 39 (Hermiston Foods driveway).
2. Modify Project 36-- Include a full access traffic signal at the proposed minor arterial intersection with US 395, near the Hermiston Foods driveway. With the proposed traffic signal for the Ranch and Home Development and the Hermiston Foods driveway, include an advance warning sign assembly "PREPARE TO STOP WHEN FLASHING" and advance vehicle detection system.

Appendix A – 2003 City of Hermiston TSP Amendments

Appendix B – 2006 WSDOT White Paper – Prepare to Stop When Flashing (PTSWF) System Pilot Project Interim Guidelines.

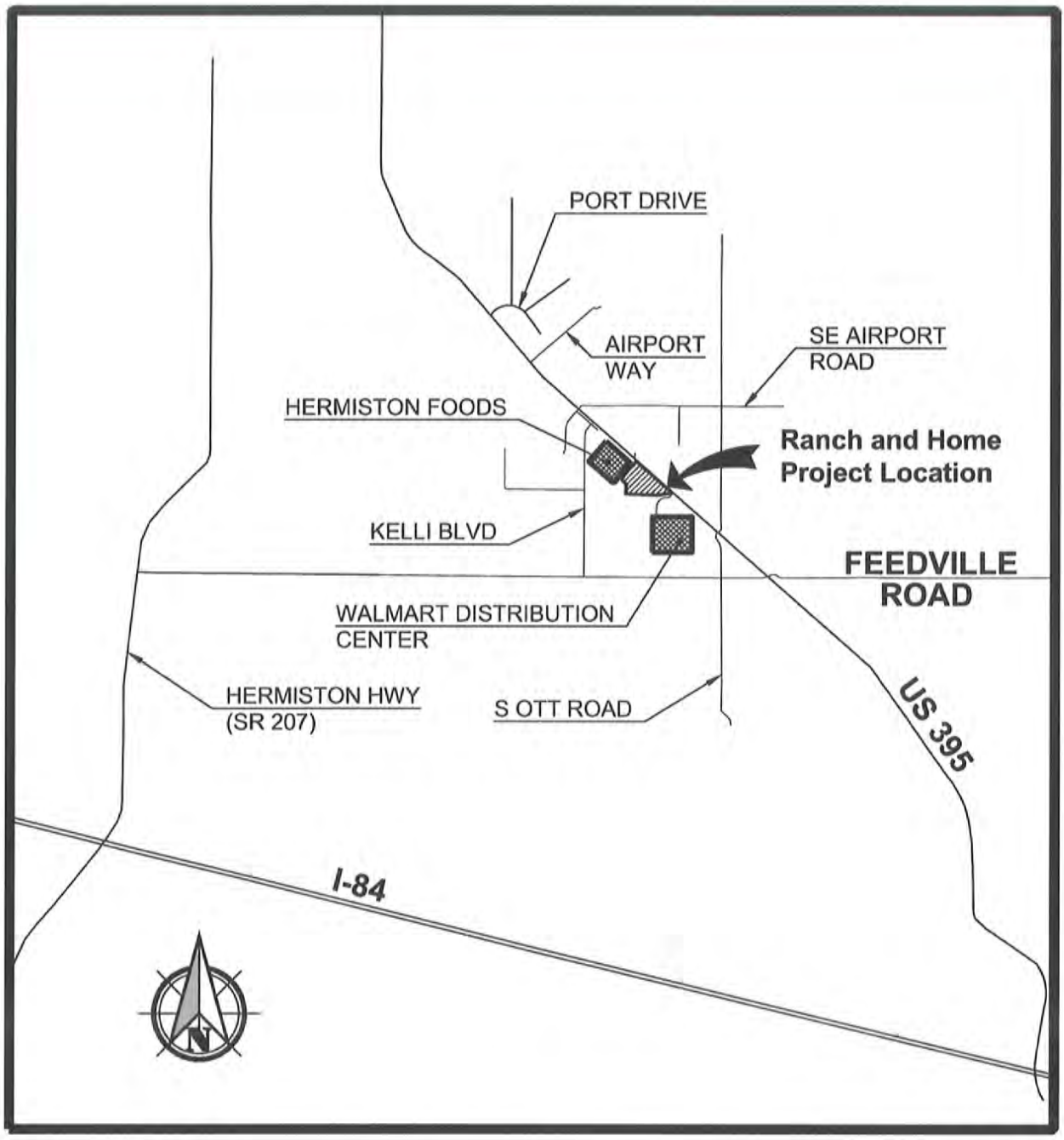


FIGURE 1

HDJ DESIGN GROUP
engineers | landscape architects | planners | surveyors
6115 Burden Blvd, Suite E
Pasco, WA 99301-6930
509/547-5119
360/695-3488
509/547-5129 fax
Internet: www.hdjdg.com

Vicinity Map

Hermiston TSP Update - Ranch & Home

1 REVISE PROJECT TO SHORTEN 35.

2 REVISE PROJECT 36 TO INCLUDE FULL ACCESS SIGNAL WITH "PREPARE TO STOP WHEN FLASHING" SIGN.

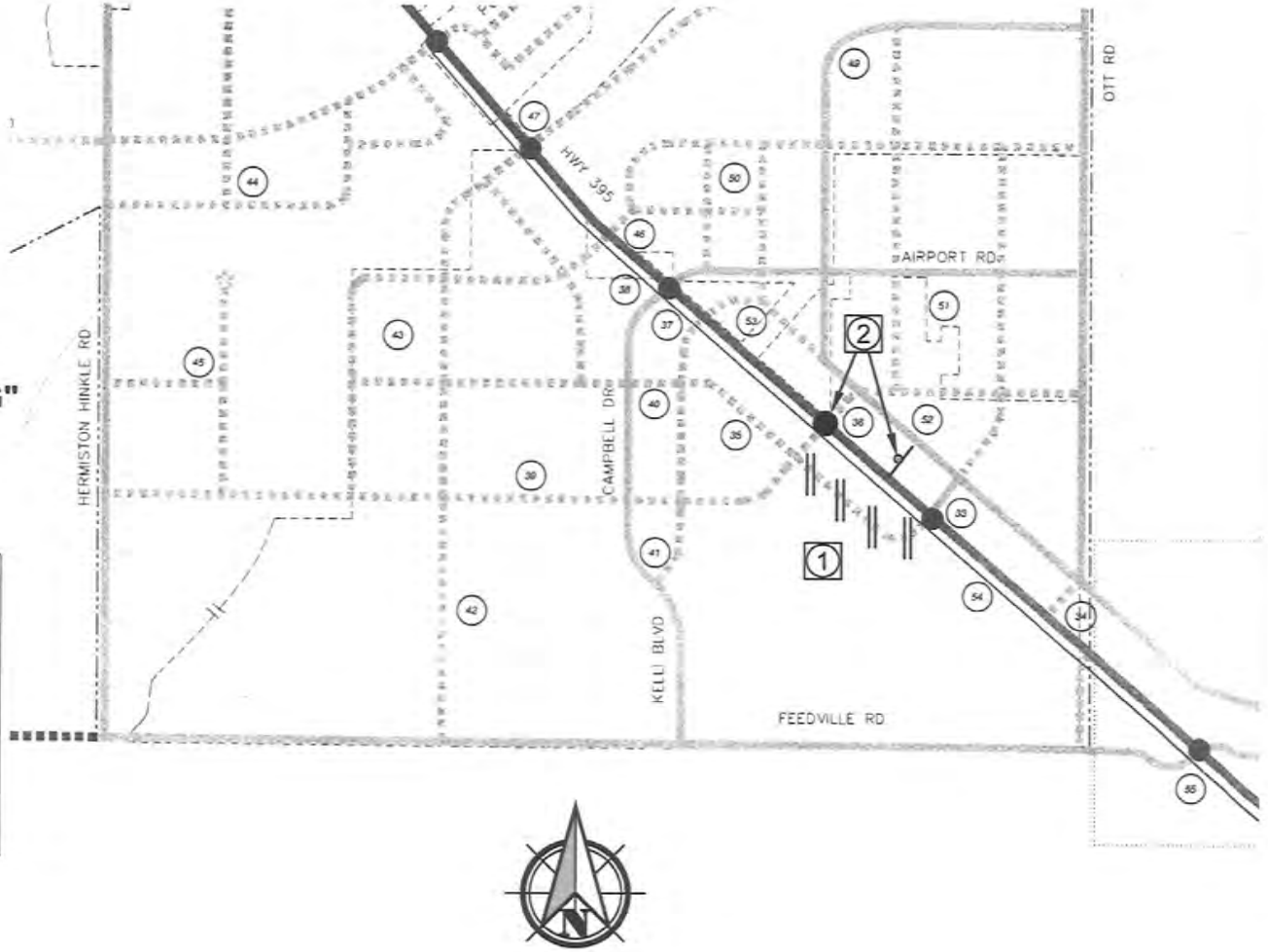
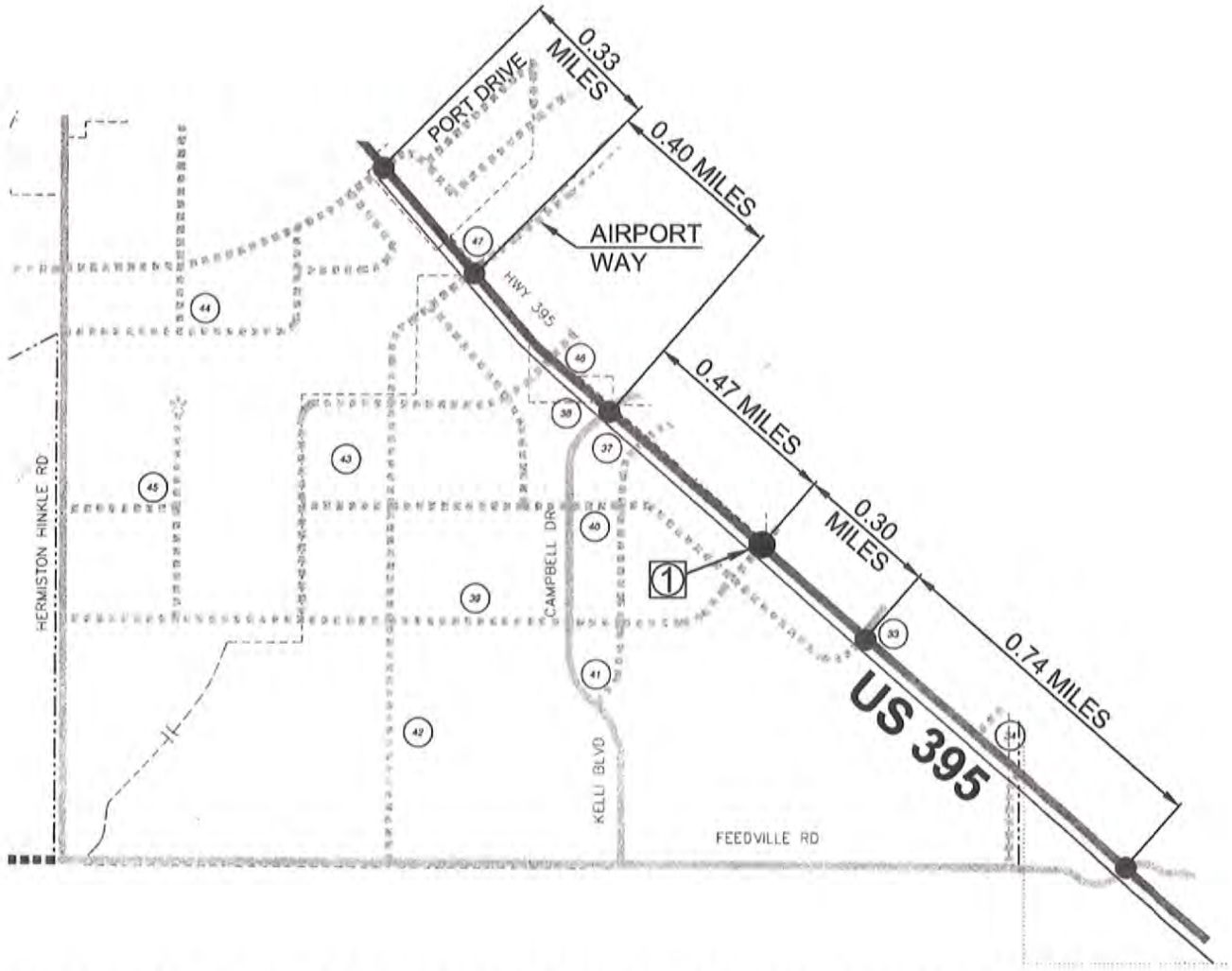


FIGURE 2

HDJ DESIGN GROUP PLLC
engineers | landscape architects | planners | surveyors
6115 Burden Blvd, Suite E
Pasco, WA 99301-8930
509/547-5119
360/695-3488
509/547-5129 fax
Internet: www.hdjdg.com

TSP Project Recommendations
Hermiston TSP Update - Ranch & Home



HERMISTON 2003 AMENDED TRANSPORTATION SYSTEM PLAN

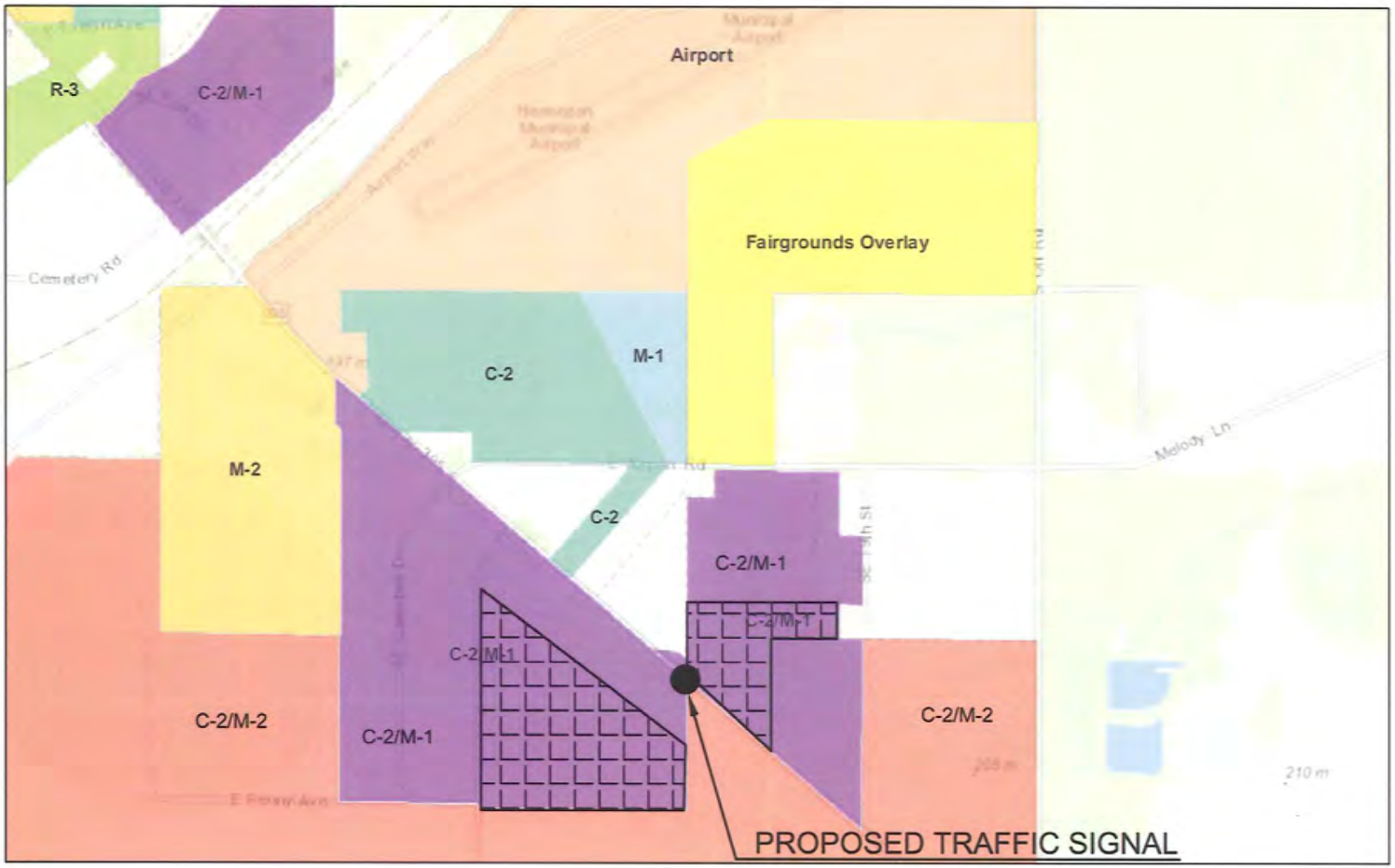
(1) New traffic signal at Hermiston Foods entrance.

FIGURE 3

HDJ DESIGN GROUP
engineers | landscape architects | planners | surveyors
6115 Burden Blvd, Suite E
Pasco, WA 99301-8930
509/547-5119
360/695-3488
509/547-5129 fax
Internet: www.hdjdg.com

Signal Spacing
Hermiston TSP Update - Ranch & Home

Hermiston Zoning



INDUSTRIAL LAND CLOSE TO PROPOSED SIGNAL

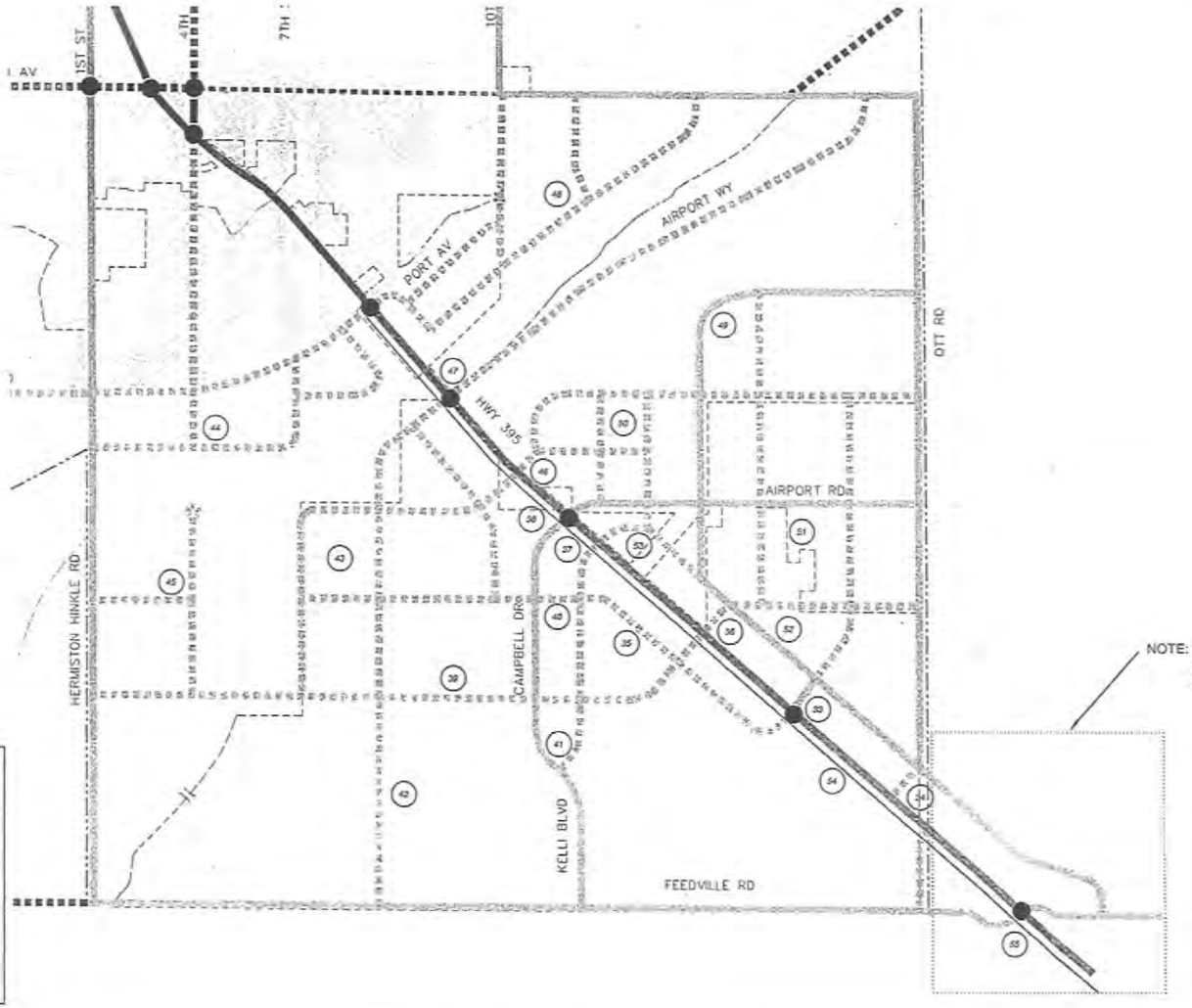
FIGURE 4

HDJ DESIGN GROUP
engineers | landscape architects | planners | surveyors
6115 Burden Blvd, Suite E
Pasco, WA 99301-8930
509/547-5119
360/695-3488
509/547-5129 fax
Internet: www.hdjdg.com

Industrial Land

Hermiston TSP Update - Ranch & Home

Appendix A



(##) *CORRESPONDS TO IMPROVEMENTS LISTED IN TABLE 1*

US 395 CORRIDOR STREET SYSTEM IMPROVEMENTS JANUARY 2003 UPDATE

HERMISTON TSP AMENDMENT HERMISTON, OREGON JANUARY 2003	FIGURE 6

TSP_UPD3502F01

Table 1
Recommended 20-Year Street Improvement Projects
US 395 Corridor Refinement Study Area

Fig 6 id #	Project Description	Priority	Estimated Cost (Yr. 2002 $)	Potential Funding Source(s)
33	Provide a signalized access portal to US 395 (when warranted by a traffic engineering study) at the current Wal-Mart Distribution Center access to be served by a major collector roadway east of US 395 and a minor collector west of US 395.	Near-term	$225,000	AMG, PDF, TEP, SDC, GF
34	Realign the north and south approaches to Ott Road such that they intersect US 395 at a complete 90-degree angle. The future intersections should be limited to right-in/right-out driveways to help preserve access management along the highway.	Mid-term, but not before improvements #33 and #52	$550,000	AMG, PDF, TEP, SDC, GF
35	Develop a minor collector backage road that runs parallel to US 395 between Kelli Boulevard and the Wal-Mart Distribution Center truck access road.	Near-term, but not before improvements #33.	$1,750,000	PDF, LID, GF
36	Re-construct a limited access right-in/right-out driveway to US 395 near the current Hermiston Foods driveway to be served by minor collector roadways on both sides of the highway.	Mid-term, following improvements #33, #35, & #52	$25,000	AMG, TEP, SDC, PDF, STIP
37	Re-construct a limited access intersection (left-in/right-in/right-out) at the US 395/Kelli Boulevard intersection.	Mid-term, following the completion of improvements #33, #35, #38 & #40	$25,000	AMG, TEP, SDC, PDF, STIP
38	Signalize the US 395/Campbell Drive/Airport Road intersection when warranted by a traffic engineering study.	Mid-term	$225,000	STIP, PDF, LID, GF
39	Develop a minor collector roadway to facilitate east/west travel between Hermiston-Hinkle Road and US 395.	Long-term	$5,375,000	PDF, LID, GF
40	Upon redevelopment of adjacent land parcels, develop a minor collector connection between Campbell Drive and Kelli Boulevard.	Mid-term	$275,000	PDF, GF, LID
41	Extend Campbell Drive at major collector standards south and east to Kelli Boulevard (1st Phase). Realign a portion of Kelli Boulevard so that it intersects the extension of Campbell Drive (2nd Phase).	Long-term	$1,075,000	GF, LID, TEP
42	Develop a minor collector roadway to facilitate north/south travel between US 395 and Feedville Road.	Long-term	$3,700,000	PDF, LID, GF
43	Develop a series of minor collector roadways to ensure circulation and connectivity upon redevelopment of the large agriculture plots within the western study area.	Long-term	$5,825,000	PDF, LID, GF

Fig 6 Id #	Project Description	Priority	Estimated Cost (Yr. 2002 $)	Potential Funding Source(s)
44	Extend SE 4th Street along the western boundary of the Hermiston Cemetery to a new east/west minor collector facility that would run parallel to the Gettman Road extension.	Mid-term	$2,075,000	PDF, LID, GF
45	Upon the redevelopment of the Hermiston Agriculture Experiment Station, provide a new minor collector roadway along the SE 4th Street alignment. Upgrade and extend Experiment Station Road to this 4th Street alignment.	Long-term	$1,575,000	PDF, LID
46	Develop a full access intersection at US 395 to be served by a future extension of Able Drive. This intersection should be limited to a right-in/right-out/left-in access when warranted by a traffic engineering study.	Long-term, following the completion of improvements #43 & #47	$225,000	STIP, AMG, PDF
47	Develop a signalized access intersection at the US 395/Airport Way intersection when warranted by a traffic engineering study.	Long-term, following completion of elements of improvement #43	$225,000	GF, SDC, TEP, PDF, STIP
48	Complete a minor collector roadway system upon redevelopment of the vacant land north of the airport, irrigation canal, and rail line.	Mid-term	$3,150,000	PDF, SDC, LID, TEP
49	Develop a major collector roadway to facilitate north/south travel within the northeast quadrant of the US 395 Refinement Plan study area.	Mid-term	$3,300,000	PDF, SDC, LID, TEP
50	Develop a series of minor collector roadways to facilitate circulation south of the Hermiston Airport.	Mid-term	$3,375,000	PDF, SDC, LID, TEP
51	Develop a series of minor collector roadways to facilitate circulation within the northeast quadrant of the US 395 Refinement Plan study area.	Long-term	$7,125,000	PDF, SDC, LID, TEP
52	Develop a major collector backage road between Kelli Boulevard and Ott Road.	Near-term	$2,875,000	PDF, SDC, LID, TEP
53	Extend Kelli Boulevard east of US 395 to connect into a minor collector roadway network.	Near-term	$1,100,000	PDF, SDC, LID
54	Develop a multi-use path along the west side of US 395. This path will require a bridge crossing over the feed canal and rail line.	Mid-term	$450,000	GF, STIP, TEP
55	Signalize the US 395/Feedville Road intersection when warranted by a traffic engineering study. (Improvement specific to the US 395 North Corridor Plan)	Long-term	$225,000	STIP

Note: Potential Funding Sources include the Following:

STIP – State Transportation Improvement Program (ODOT)
GF – City of Hermiston General Fund
SDC – City of Hermiston Transportation System Development Charge
TEP – Transportation Enhancement Program
PDF – Private Development Funds
AMG – Access Management Grant
LID – Local Improvement District
County – Umatilla County
LSN – Local Street Network

Implementation Requirements

The order of implementing the US 395 (Port Drive to Feedville Road) Corridor Refinement Plan projects were developed jointly by the City of Hermiston and ODOT to ensure the integrity of the US 395 corridor as well as local access and circulation. This implementation strategy is outlined in the following bullet points.

- Access improvements to US 395 will need to occur on an incremental basis depending upon the rate and location of new development.
    - The signalization of the US 395/Campbell Drive/Airport Road intersection (*Improvement #38*) in the near to mid-term will begin to shape future circulation patterns within the US 395 study area.
    - The signalization of the US 395/Wal-Mart Distribution Center driveway (*Improvement #33*) should occur when traffic signal warrants merit installation. The need for signalization will likely be facilitated by roadway *Improvements #35 and #52*.
    - *Improvement #36* will occur upon redevelopment of adjacent land parcels and the completion of *Improvements #35 and #52*.
    - The signalization of the US 395/Airport Way intersection (*Improvement #47*) will occur when upon the completion of future roadways associated with *Improvement #43* and when traffic signal warrants merit installation.
    - The future extension of Able Drive (*Improvement #46*) and its future intersection with US 395 should be limited to a right-in/right-out/left-in access upon the completion of *Improvements #43 and #47*.
    - The limited access modifications to the US 395/Kelli Boulevard (*Improvement #37*) should occur after completion of Improvements #33, #35, #38, and #40.
    - The limited access modifications to the US 395/Ott Road (*Improvement #34*) should occur after the completion of *Improvement #33 and #52*.
    - The signalization of US 395/Feedville Road (*Improvement #55*) should occur when traffic signal warrants merit installation. This is likely to be a long-term improvement that will be required upon the redevelopment of the large agricultural plots of the western US 395 study area. This improvement project is specific to the US 395 North Corridor Plan.
- The majority of the circulation roadways and necessary right-of-way can begin to be acquired and constructed upon the redevelopment of individual land parcels. Specific projects that should occur on a phased basis include the following:
    - To facilitate future circulation and access patterns, right-of-way and roadways associated with *Improvement #53* should begin to be acquired and constructed in the near term.
    - Future circulation roadways such as Improvements #35 and #52 should occur upon the redevelopment of adjacent land parcels. These roadways will serve as

Appendix B

Washington State
Department of Transportation

White Paper

Ted Trepanier
State Traffic Engineer

Effective Date: **August 10, 2006**

Prepare to Stop When Flashing (PTSWF) Systems Pilot Project Interim Guidelines

I. Introduction

A. Purpose

To provide guidance to WSDOT personnel in the design, operation, and study of Prepare To Stop When Flashing (PTSWF) systems.

B. References

Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), FHWA, June 2001 Millennium Edition, including the *Washington State Modifications to the MUTCD*, M 24-01, 2003

Design Manual, M 22-01

A Policy On Geometric Design of Highways and Streets 2004, 5th Edition AASHTO

ITE Traffic Engineering Handbook, 4th Edition

C. Background

WSDOT is continuously looking for ways to operate our highway facilities in the most efficient and safe way possible. With this goal in mind, WSDOT collected collision data and performed statistical analysis on this information at existing PTSWF operated systems on state highways. Also, research was conducted by reviewing many public records on the subject. Furthermore, State Traffic Departments throughout the country were contacted to poll their experiences with these systems. After completing this analysis, WSDOT concluded that there are potential safety benefits in operating this type of installation at select locations.

D. Discussion

It is the goal of WSDOT to allow PTSWF systems to be installed throughout the state by following the attached PTSWF Pilot Project Interim Guidelines. When a region decides to install a PTSWF system they shall contact the State Traffic Engineer as a means of documenting when the study period begins. The Region Traffic office shall submit a copy of all final drawings and calculations for the PTSWF system to the State Traffic Engineer prior to project implementation. The drawing includes flashing beacon locations, sign locations and mounting details consistent with the pilot study guidelines.

II. Instructions

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION PREPARE TO STOP WHEN FLASHING (PTSWF) SYSTEM PILOT PROJECT INTERIM GUIDELINES

PURPOSE

The purpose of this document is to provide WSDOT Traffic personnel with uniform guidelines to design, operate and study prepare to stop when flashing (PTSWF) systems. These technical guidelines shall be effective on the date of this White Paper.

IMPLEMENTATION

These guidelines are to be implemented for new PTSWF System installations. For existing systems, flasher timing adjustments should be implemented within six months of the effective date in order to provide consistency of operations with new systems.

INTRODUCTION

The PTSWF System is a sign/flasher combination that at certain high-speed locations may provide additional information to the motorist describing the operation of the traffic signal. It has been found that the installation of a PTSWF System may assist the driver in making safer and more efficient driving decisions. This additional information is to get the driver's attention, and inform the driver that he or she must prepare to stop for a red light signal indication. The PTSWF System described above is what WSDOT currently uses in select situations to convey this information.

The PTSWF sign may be placed on main line approaches to applicable high-speed signalized intersections. The PTSWF sign is connected to the traffic signal in such a way that prior to the main line green phase changing to yellow, the flasher is turned on to warn the approaching drivers of the impending change. Specific timing intervals will be determined on a case-by-case basis for each signalized intersection.

Some objectives of an optimally designed combination of traffic signal and PTSWF system are:

- to inform the driver that a signal indication will change to yellow or red in advance of a required decision to stop
- to minimize the number of drivers that are required to make that decision in the dilemma zone; and
- to reduce red-light running, particularly by heavy commercial vehicles.

GENERAL GUIDELINES

PTSWF system implementation is appropriate only at high-speed locations where the posted speed is 45 mph or greater. In addition, it should be considered that the operation of a PTSWF system has the potential to cause increased delay to side street traffic.

Guidelines for a PTSWF system are as follows:

Any one of these categories or other considerations may justify the installation of PTSWF system.

Table 1
PTSWF Guidelines

CATEGORY	CRITERIA	COMMENT
1. Isolated or unexpected signalized intersection.	Where there is a long distance from the last intersection at which the main line is controlled, or the intersection is unexpected.	This guideline may be applicable where the distance from the last intersection is greater than 10 miles, or a freeway terminus, or at other locations where the inter-section is unexpected
2. Limited sight distance	Where the distance to the stop bar, D, with two signal heads visible is insufficient: $D \leq 1.47Vt + \frac{V^2}{0.93(a + 32.2(G/100))}$ Where: D = distance to stop bar in (ft) V = posted speed (mph) t = reaction time, 2.5 seconds a = deceleration rate 10 ft/s^2 (all traffic)* 8 ft/s^2 (Trucks)** G = Grade %	* *Traffic Engineering Handbook,* 5th Edition, page 481 ** A deceleration rate of 8 ft/s^2 may be used when the Criteria from the Category *Grade and Truck Volume* is met. See Category 3
3. Grade/Truck Volume	Where the roadway has a grade of 3% or greater and truck volume exceeds 15%.	
4. Accidents	If an approach has a collision history that is not correctible with other countermeasures.	If no sight distance or dilemma zone problems exist, PTSWF may not be an appropriate countermeasure to accident problems.
5. Engineering Judgment	Approval of Region Traffic Engineer	Approval shall be based on an Engineering Study.

APPLICATION / PROCEDURE

Due to the complex nature of traffic flow characteristics and the various intersection geometric layouts, the following guidelines shall be applied using an engineering study coupled with engineering judgment. Engineering judgment should be based in part on data such as complaints, violations, conformity of practice, and traffic conflicts. Documentation shall be prepared that discusses why decisions were made and how the following countermeasures have been considered prior to installation of a PTSWF system. Although not all inclusive, examples of countermeasures include:

- improving dilemma zone detection
- adjusting existing signal timing parameters such as; yellow clearance time, red interval, passage time, max green time(s) etc.
- installing and enhancing advanced warning signing
- sight distance improvements
- modification of the signal system such as adding additional signal heads
- adjusting speed limits.

The State Traffic Engineer shall review the proposed installation documentation, with final written approval granted by the Region Traffic Engineer. For study purposes, notice of the installation date shall be forwarded to the State Traffic Engineer.

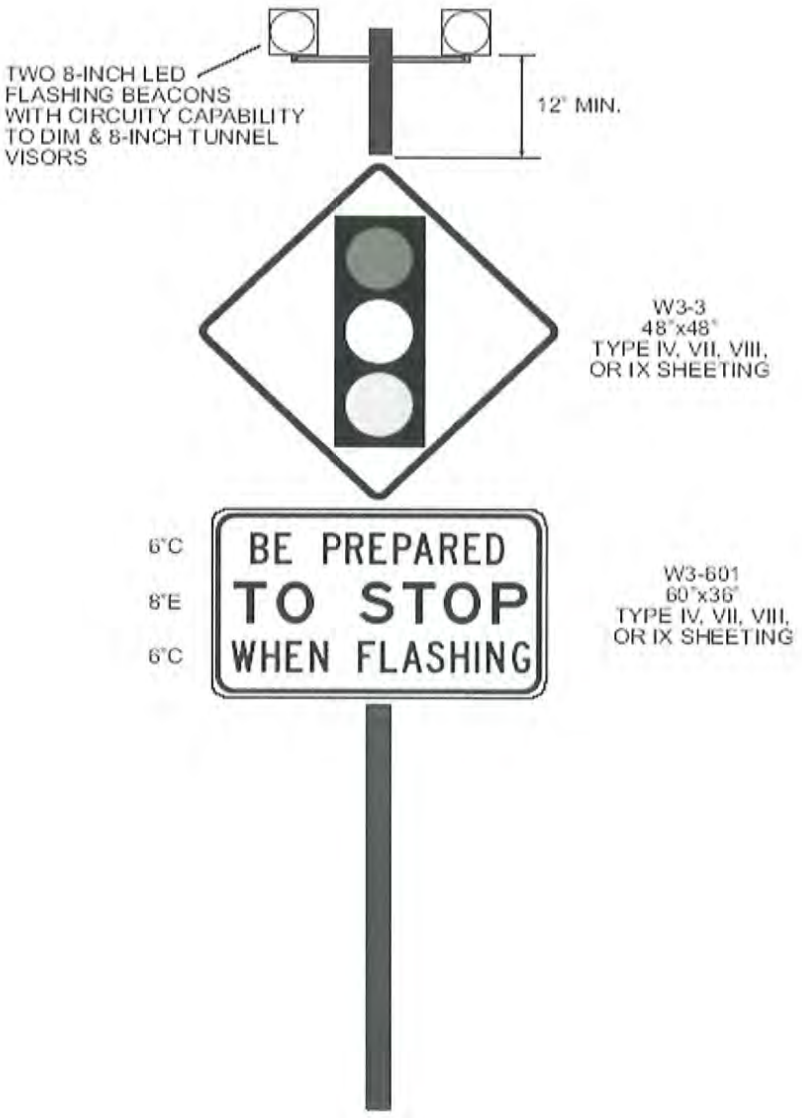
DESIGN / INSTALLATION

1. **Details** - Figures 1 and 2 show conceptual drawings of the PTSWF sign/flashing beacon combination for median, shoulder and overhead mounting installation locations. Contact the Headquarters Traffic Design office for special design details. Prior to the termination of the green phase (Advanced Green) and during the yellow and red clearance intervals, the flasher shall flash yellow either alternately or simultaneously (see MUTCD section 4K.03). In addition, consideration should be given to extending the flash while the queue of vehicles begins to move on the following initial green indication. A general rule of thumb for this movement is approximately 4 seconds. The flasher will also flash if the signal goes into flashing operation. In addition, power shall be supplied to the PTSWF System from the signal control cabinet. A backup uninterrupted power supply (UPS) should be considered at each location. For any questions concerning the design of the PTSWF System contact the Headquarters Traffic Design office.

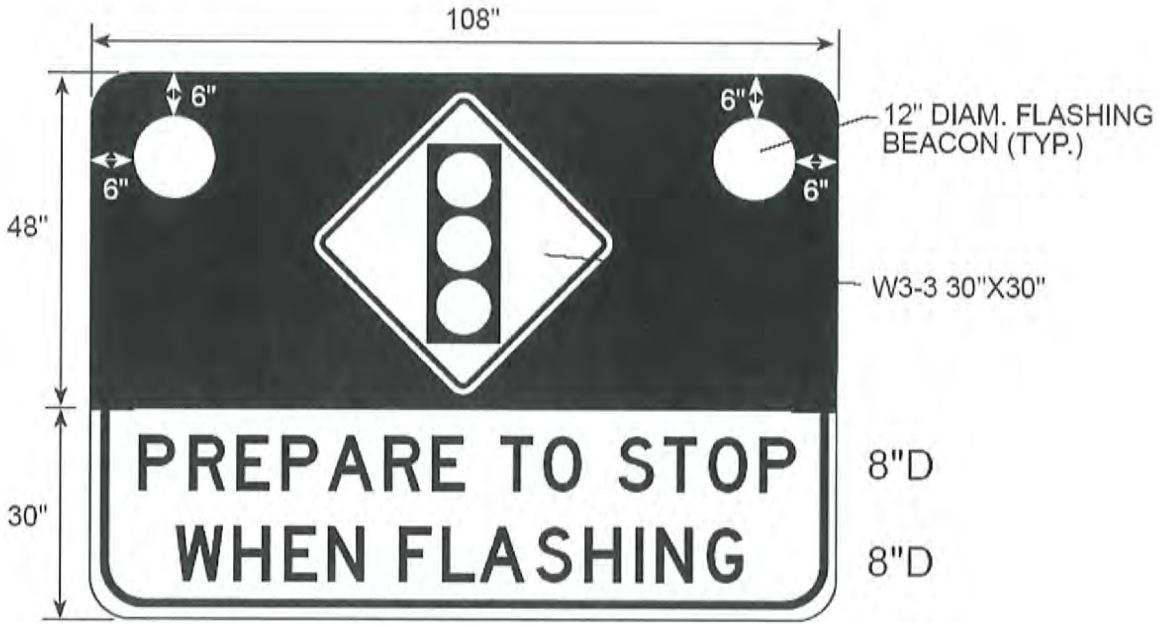
2. **Placement** - Considering the roadway environment, the PTSWF sign should generally be set back from the intersection in accordance with Table 1. At locations on multilane divided roadways, the PTSWF sign shall be placed on both sides of the approach or mounted overhead.

3. **Advanced Green** The Advanced Green is the amount of time; prior to the signal turning yellow that, the flashing beacons on the PTSWF sign flash. The Advanced Green time(s) is shown in Table 1.

4. **Detector Placement** - Consider WSDOT *Design Manual* guidelines when installing signal detection.



Installation at Median or Shoulder Barrier Locations
Figure 1



COLORS

TOP
STANDARD COLORS FOR W3-3
BACKGROUND - BLACK (NON REFL)

BOTTOM
LEGEND - BLACK (NON REFL)
BACKGROUND - YELLOW (REFL)

Overhead or Shoulder Mount Installation
Figure 2

Table 2
Advanced Warning Flasher Sign Placement

Sign Placement Distance											
	GRADE	45 mph		50 mph		55 mph		60 mph		65 mph	
		D (ft)	Advance Green (sec)	D (ft)	Advance Green (sec)	D (ft)	Advance Green (sec)	D (ft)	Advance Green (sec)	D (ft)	Advance Green (sec)
Downhill	-8%	392	7.0	472	7.4	559	7.8	653	8.2	754	8.6
	-7%	380	6.8	457	7.2	540	7.6	631	7.9	729	8.4
	-6%	369	6.6	443	7.0	524	7.3	611	7.7	705	8.1
	-5%	358	6.5	430	6.8	508	7.2	593	7.5	684	7.9
	-4%	349	6.3	418	6.6	494	7.0	576	7.3	664	7.7
	-3%	340	6.2	407	6.5	481	6.8	560	7.1	645	7.5
	-2%	332	6.1	397	6.4	468	6.7	545	7.0	628	7.3
	-1%	324	6.0	388	6.2	457	6.5	532	6.8	612	7.1
	0%	317	5.9	379	6.1	446	6.4	519	6.7	597	7.0
Uphill	1%	310	5.8	370	6.0	436	6.3	507	6.5	583	6.8
	2%	303	5.7	362	5.9	426	6.1	495	6.4	569	6.7
	3%	297	5.6	355	5.8	417	6.0	485	6.3	557	6.6
	4%	292	5.5	348	5.7	409	5.9	475	6.2	545	6.4
	5%	286	5.4	341	5.6	401	5.8	465	6.1	534	6.3
	6%	281	5.3	335	5.5	393	5.7	456	6.0	523	6.2
	7%	277	5.2	329	5.4	386	5.6	448	5.9	513	6.1
	8%	272	5.2	324	5.4	379	5.6	440	5.8	504	6.0

For situations other than those listed in Table 2, Sign Distance and the Advanced Green Time can be computed by the following equations:

Distance From Stop-bar to PTSWF Sign

$$D = 1.47Vt + \frac{V^2}{30\left[\left(\frac{a}{32.2}\right) \pm \frac{G}{100}\right]}$$

Where :

$D = Sign\ placement\ distance$

$V = Posted\ speed\ (mph)$

$t = Perception / reaction\ time\ (1.5\ s)$

$a = Deceleration\ rate\ (10\ ft / \sec^2)$

$G = Grade\ (\%)$

Advanced Green Time

$$AG = \frac{D + Dp}{V * 1.47}$$

Where:

AG = *Advance Green Time (s)*

D = *Distance from stop bar to PTSWF sign (ft)*

Dp = *Minimum distance that flashers can be perceived (70 ft)*

V = *Posted speed (mph)*