2. EXISTING CONDITIONS

2.1 OVERVIEW

This update of the Pendleton Transportation System Plan (TSP) began with an assessment of the existing land use and transportation system, and a review of the relevant city, county, state, and federal policies. Transportation issues and community concerns were identified by the Project Management Team (PMT) and Technical Advisory Committee (TAC) and were supplemented with the results of interviews conducted with key stakeholders in the community. In addition, an inventory of the existing transportation system was conducted to develop an understanding of the physical, operational, traffic safety, and travel characteristics of all of the major roadways and the existing bicycle and pedestrian systems in the study area, as well as the existing public transportation system. This chapter focuses on the transportation system inventory and analysis of existing conditions.

2.2 EXISTING ROADWAY FACILITIES

The study area consists of the entire Pendleton urban growth boundary (UGB) and includes both incorporated and unincorporated areas. Development of the existing roadway system in the Pendleton urban area has been significantly influenced by the constraints created by the surrounding topography. Furthermore, the state highway system comprises a large part of the major arterial streets serving the urban area. Within the study area, roadways are classified as freeway, arterial, collector, or minor street/roadway.

Functional Classification

Functional classification provides a systematic basis for determining future right-of-way and improvement needs, and can also be used to provide general guidance to appropriate or desired vehicular street design characteristics. Street functional classification is based on the relative priority of traffic mobility and access functions that are served by the street. At one end of the spectrum of mobility and access are freeways, which emphasize moving high volumes of traffic, allowing only highly controlled access points. At the other end of the spectrum are residential cul-de-sacs, which provide access only to parcels with direct frontage and allow no through traffic. These two roadway types form the ends of a spectrum relating access and traffic flow. Between the ends of this spectrum are state highways, arterials, collectors and local streets, each with an increasingly less emphasis on mobility and more emphasis on land access. The four major street classifications are further described below.

State Highways

One federal interstate facility and four state highway facilities provide the primary access to the study area, including:

- Interstate 84 (I-84) (Old Oregon Trail);
- US 395 (Pendleton-John Day Highway);
- US 30 (Pendleton Highway);
- Oregon 11 (Oregon-Washington Highway); and
- Oregon 37 (Pendleton-Cold Springs Highway).

Interstate 84 Also known as the Old Oregon Trail, I-84 is the major east-west highway in Oregon, linking many of the communities in northeastern Oregon, and providing connections west to Portland and Seattle and east to Idaho and Utah. A total of 5 miles of the highway lie within the study area. Access from the freeway to the surface street system is provided at four interchanges: West Pendleton, US 395, Oregon 11, and East Pendleton. Throughout the study area, 1-84 is a four-lane freeway that carries in excess of 14,000 vehicles per day.

US 395 This highway, regionally known as the Pendleton-John Day Highway, currently provides a continuous link between the Oregon cities of Pendleton, John Day, Burns, and Lakeview as well as to California and Washington. To the north, US 395 also provides access to Hermiston and Umatilla, Oregon. US 395 is classified by the Oregon Highway Plan (OHP) as having statewide significance. Within the Pendleton urban area, US 395/Southgate serves the neighborhoods and retail areas in the southern portion of the city. In downtown Pendleton, US 395 becomes the Emigrant Avenue - Frazer Avenue one-way couplet that terminates at its intersection with US 30. Currently, the US 395 interchanges with I-84 are unsignalized. Within the Pendleton urban area, US 395 carries between 4,000 and 27,000 vehicles per day.

US 30 Referred to locally as the Pendleton Highway, US 30 serves as one of the primary east-west arterials within the Pendleton urban area. The western terminus of US 30 occurs at a full interchange with I-84 while the eastern terminus is located at a partial interchange with I-84. Within the Pendleton urban area, US 30 (West Gate and East Gate) is a two-lane roadway to the east and west of the downtown. In downtown Pendleton, it becomes a one-way couplet with 2 to 3 travel lanes in each direction (Court Avenue westbound and Dorion Avenue eastbound). Throughout Pendleton, US 30 provides immediate access to several office, industrial, and retail businesses as well as connection to local city collector and arterial streets. Within the study area, US 30 carries between 6,000 and 15,000 vehicles per day and is classified as having district level of importance by the OHP.

Oregon 11 Also called the Oregon-Washington Highway, Oregon 11 connects Pendleton to the state of Washington via the community of Milton-Freewater. The southern terminus is located at a diamond interchange at exit 210 on I-84. Oregon 11 proceeds northward from I-84 along a limited access facility over the Union Pacific Railroad rail tracks and intersects US 30 at SE 10th Street. US 30 and Oregon 11 share the same facility for approximately 0.50 mile at which point Oregon 11 branches to the north towards Washington. Access along Oregon 11 is provided to some commercial and industrial users and primarily to city streets. Within the UGB, Oregon 11 is classified as a statewide highway by the OHP and carries in excess of 11,000 vehicles per day.

Oregon 37 Also called the Pendleton-Cold Springs Highway, Oregon 37 provides access between Pendleton and Highway 730 via the Cold Springs junction. In the study area, its southern terminus occurs at a full interchange with I-84 at exit 209. Oregon 37 is classified as having district significance and carries approximately 7,000 vehicles per day. In the approximately 2 miles it runs through Pendleton, Oregon 37 primarily provides access to city streets.

Other Roadways

In addition to the state-maintained facilities, several arterial and collector streets within the Pendleton urban area also serve as key access routes for automobile, pedestrian and bicycle traffic. These facilities are primarily owned and maintained by the City of Pendleton and Umatilla County. Table 2-1 shows the inventory of non-state highway facilities in Pendleton, categorized by functional classification.

Table 2-1. Streets in Pendleton by Functional Classification

Functional Classification	Total Sections	Total Lane Miles	Total Center Miles
Arterial	6	1.63	3.68
Collector	59	11.43	25.16
Residential/Local	543	57.12	114.23

Figure 2-1 displays the functional classification as used in the 1996 TSP. The City of Pendleton outlines the construction standards for the roadways that are under the jurisdiction of the city, before any amendments adopted in association with the TSP update of 2007. The standards, shown in Table 2-2, were established in order to accommodate the functional utilization of the roadway.

Table 2-2. Street Standards by Classification

Functional Classification	Right-of-Way (Width in Feet)	Pavement (Width)	Travel Lanes (# - Width)	Parking (# - Width)	Sidewalk (w/Plantings and Utilities) Each Side
Arterial	60	44	2-12	2-10	8
	80	44	2-12	2-10	18
	80	56	4-12	1-8	18
	80	64	4-11	2-10	8
	100	80	5-12	2-10	10
Collector	60	36	2-10	2-8	12
	60	44	2-12	2-10	8
	80	44	2-12	2-10	18
Minor	60	24	2-12	None	18
	60	36	2-10	2-8	12
	60	44	2-12	2-10	8

Arterial Streets

Arterial streets provide for high volume travel between or within communities or, to and from collectors and other arterials. Standard design requirements for two-way arterials shall include two or four travel lanes and a fifth lane at all intersections where turns are allowed. Facilities for two-way bicycle travel and pedestrians are included. The design of arterials may also be subject to regulation and control of on-street parking, turning movements, and access. Individual residential driveway access for new development shall not be permitted on an arterial if other means of access are available.

Collector Streets

Collector streets service lower order streets and conduct traffic between arterials. Standard design requirements for a collector shall include two travel lanes and a center turn lane when necessary. Facilities for two-way bicycle travel and pedestrians are included. The design of collectors may be subject to regulation and control of on-street parking, turning movements, and access. Individual residential driveway access for new development shall not be permitted on a collector street if other reasonable means of access are available.

Minor Streets

Minor residential streets have the sole function of providing access to immediately adjacent land upon which a maximum number of units which take access from the street. On-street parking may be permitted on both sides.

Developers can also make requests to the planning commission to improve roadways to standards less than the maximum standards. These deviations are generally allowed if traffic can be accommodated on the requested standard. According to the Pendleton Comprehensive Plan, roadways can be improved by developers, federal grants or revenue sharing, bonds, or the formation of local improvement districts (LIDs).

Roadway Inventory

As part of the existing conditions inventory, the project team will ensure that the existing street system is accurately reflected in digital formats. The City recently completed a Pavement Conditions database and analysis. This was a multi-year effort which produced abundant data including number of lanes, lane widths, and more. This TSP update will not replicate that data gathering, but instead will be checking recently completed projects to make sure that the data is accurate. Additionally, the traffic operations analysis is dependent on the EMME2 transportation demand model operated by TPAU, and a Synchro model operated by Parametrix. The street and other transportation systems that are represented in these models will be checked for consistency with existing conditions. Data from the City's inventory is available from Tim Simons, City Engineer. The data from both models will be made available through Parametrix and also delivered to the City.

Access Management

The term "access management" refers to the process of balancing the need for access to parcels of land adjacent to roadways with the need for safe and efficient through movement of vehicular traffic on the roadway. Access management can be implemented by a variety of means. These include: median controls (e.g., raised concrete medians), driveway spacing and/or driveway consolidation (so that there are fewer driveways serving one parcel or multiple parcels), requiring that driveways be placed on lower order streets where a parcel abuts both higher- and lower-order streets, and intersection spacing to reduce the number of conflict points or signal-controlled locations along a street. The frequency of these conflict points can reduce the benefits of effective signal timing progression.

Access management is closely related to street functional classification. Typically, when access controls are in place, the frequency of driveways and intersecting streets is more restrictive along state highways and major arterials where the movement of traffic takes a higher priority. Access controls are less restrictive along collector streets where there is greater balance between access and mobility. Access controls are restricted only by safety considerations along local streets where property access is the primary function of the street.

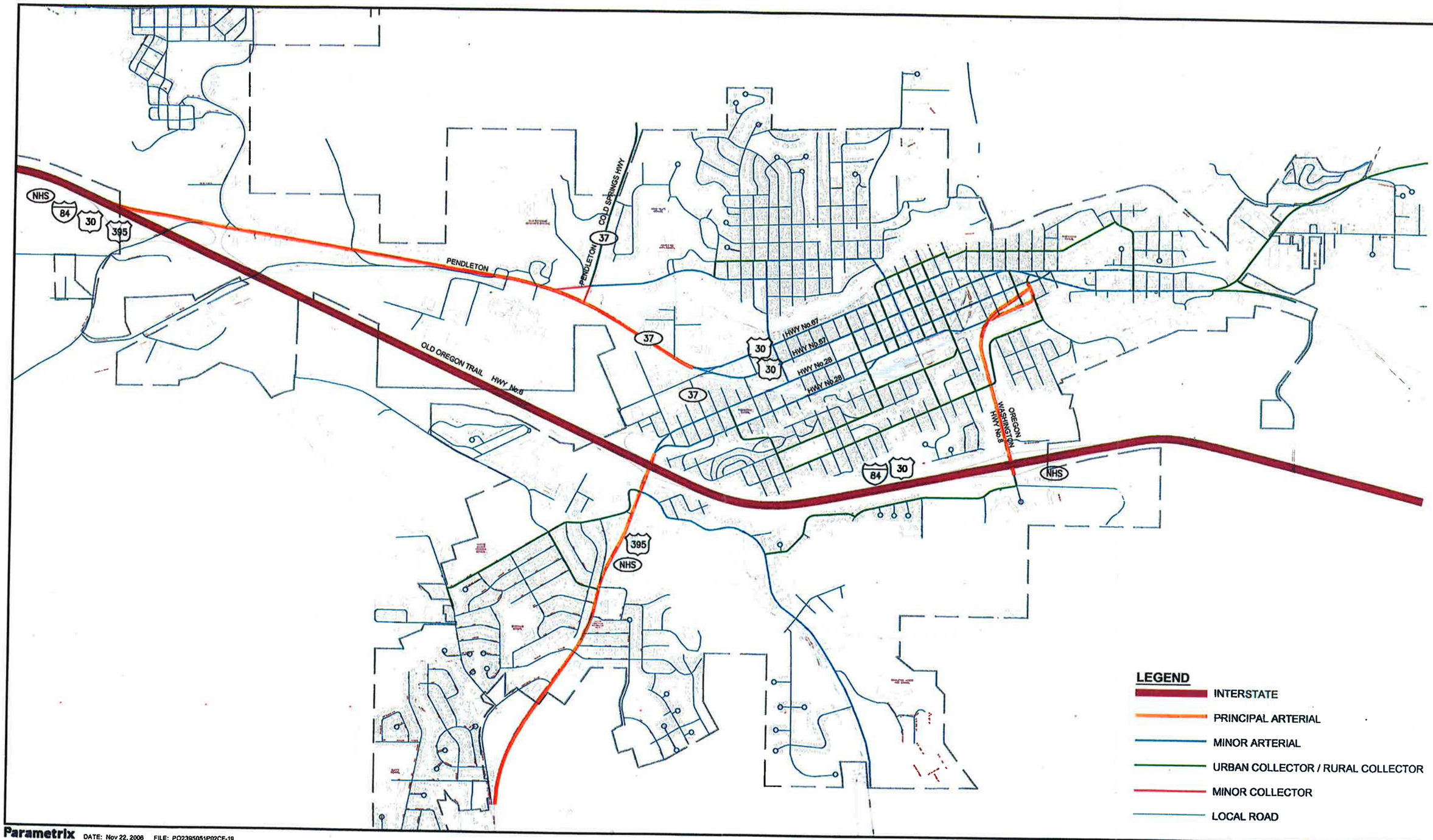

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Figure 2-1
Functional Classification Arterial and Collector Streets

Frequent driveway and cross-street access can significantly degrade traffic operations along major streets as motorists must contend with people slowing to turn into adjacent property or attempting to get back onto the major street from a side access location. Not only do frequent driveways adversely affect the operational capacity of a road, they also affect safety in that each driveway or intersecting street represents a potential conflict point for through-moving vehicles. The strip development that often occurs as a result of the lack of access control can also be inhospitable to pedestrians and can be difficult to adequately serve by transit due to the spread out nature of destinations.

Access management can be most effectively implemented during the land development process when access locations and localized street improvements can be adapted to ensure that adjacent street traffic-carrying functions are not degraded. Access management controls are more difficult to implement along streets with developed property due to possible right-of-way limitations and/or the concerns of property owners about business or on-site circulation impacts. In these cases, access controls can be incorporated into a roadway improvement project.

Access Management Standards

Along state highways, access is commonly controlled by the ODOT through the purchase of access rights. New access to/from a state highway is provided consistent with the standards adopted in the Oregon Highway Plan (OHP) for each highway classification, its location within an urban or rural area, and its posted speed. Access management guidelines for the state highways are published in OAR 734-051. Within the Pendleton area, the access management standards along state highways shown in Table 2-3.

Table 2-3. Access Management Spacing Standards for Approaches on Pendleton Area State Highways

Highway	Area Type	Posted Speed (mph)	Public and Private Approach Spacing[a]
Interstate Highways			
• I-84	Urban	≥ 55	3 miles
Statewide Highways			In STA – existing block spacing or minimum of 175 feet/mid-block if <350 feet and access allowed.
• US 395	Urban-STA	N/A	
• Oregon 11	Urban-STA	N/A	
District Highway			In STA – existing block spacing or minimum of 175 feet/mid-block if <350-feet and access allowed.
• Oregon 37	Urban-STA	N/A	

Source: OAR 734-051-00115, Tables 2 and 4.
[a] Measurement of the approach road spacing is from center to center on the same side of road.

Existing Driveway Spacing

Following the completion of the 1996 TSP, the City of Pendleton has been implementing access management through site plan review. Evidence of this can be seen along US 395/Southgate. Older developments along the highway gained access for each parcel, sometimes with more than one access per parcel. Some parcels have even less-safe ingress ands egress with continual curb-breaks along their frontage. However, newer development is

not being provided with direct access to the highway. A good example of this is the medical office building at SW Perkins Avenue, which gain access from Perkins. Figure 2-2 illustrates the number and location of existing private and public access points along US 395 through the Pendleton study area.

Existing Traffic Control

The locations of all of the signalized intersections within the Pendleton UGB can be seen on Figure 2-3 through Figure 2-6. All of the traffic signals are located on state maintained facilities with the exception of the traffic signal at the Court Place/SW 20th Street and the Main Street/Byers Avenue intersections. Recently, ODOT completed a traffic study which indicated that the two traffic signals on 4th Street at Court and Dorion do not presently meet signal warrants. ODOT previously forwarded recommendations to modify these two signals to flashing amber (Court/Dorion) and flashing red (4th Street). The remaining major street intersections in the urban area are controlled with stop signs.

Bridge Conditions

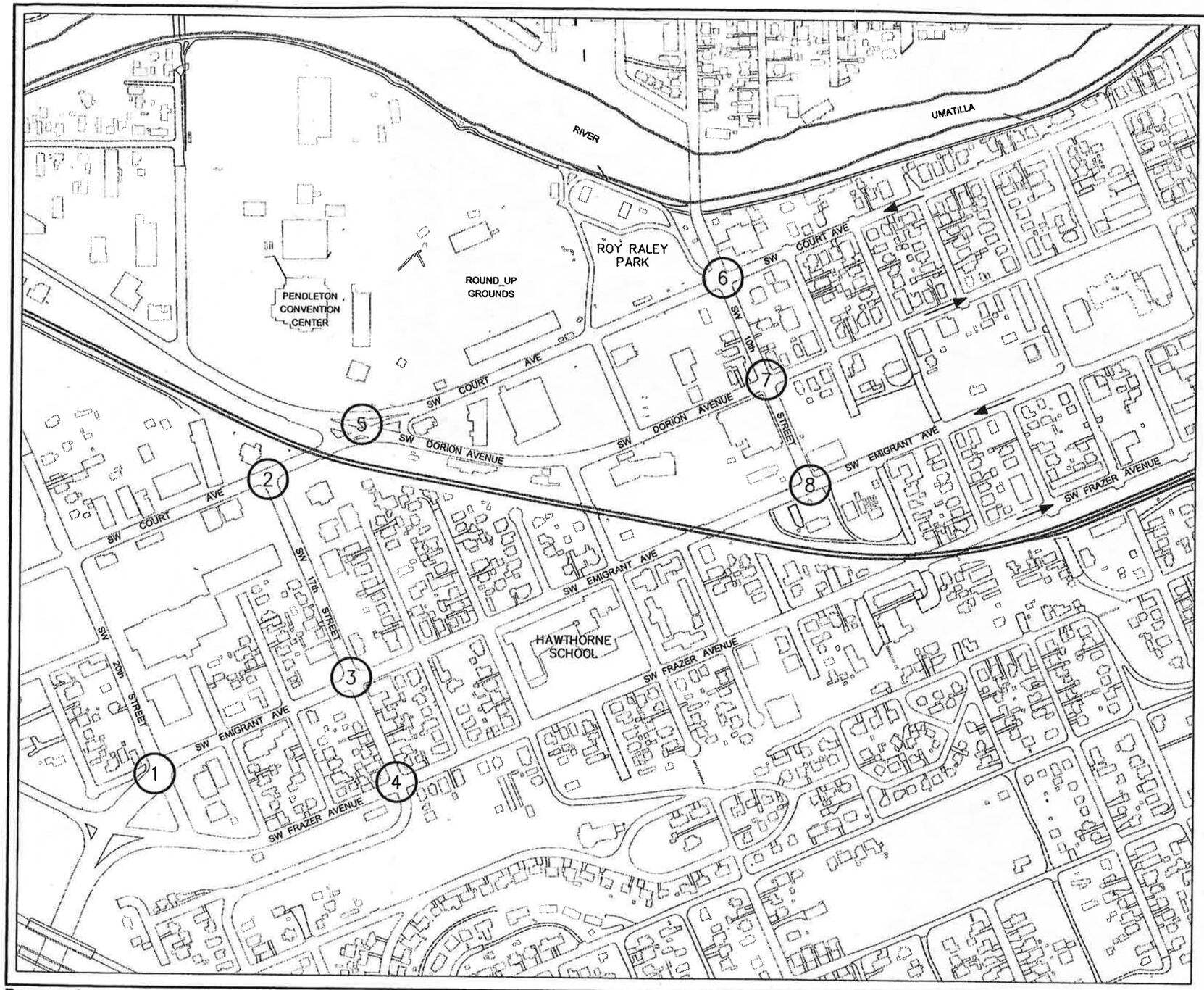
The Umatilla River has played a significant role in shaping the existing transportation and land use system in Pendleton. Within the Pendleton urban area, there are 28 existing bridges, five of which are on the federal bridge inventory, including:

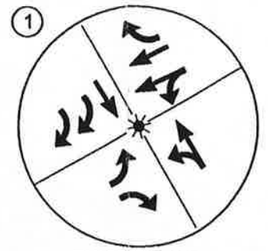
- SE 8th Street Bridge (at the Umatilla River);
- Main Street Bridge (at the Umatilla River);
- SW 10th Street Bridge (at the Umatilla River);
- SE Court Place Bridge (over a former millrace); and
- Quinney Avenue Bridge (at McKay Creek).

The SE 8th Street Bridge is scheduled for replacement in 1997. Other crossings of the Umatilla River include: I-84, US 30, Oregon 37, and Oregon 11. In addition, the SE Court Place Bridge is not currently used as a bridge; however, the existing structure is listed on the Oregon Statewide Inventory of Historic Structures.

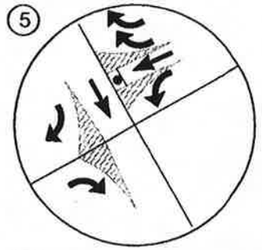
Existing Street Pavement Conditions

The City of Pendleton recently conducted an inventory of the existing pavement conditions and hired a firm to develop an Engineering Information Services Report on the arterial, collector, and local street system. Based on the results of this inventory, the City developed a pavement management system consistent with the development of the TSP to fund and complete improvement projects over the next 20 years.

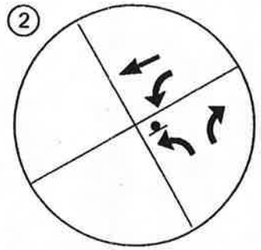




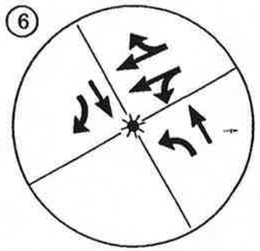
EMIGRANT AND SW 20th ST



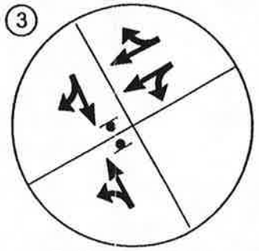
COURT AVE / SW DORION AVE AND WESTGATE



COURT AVE AND SW 17th ST



COURT AVE AND SW 10th ST



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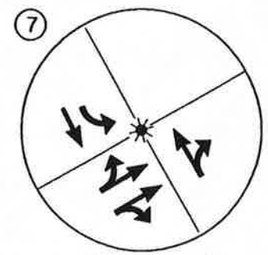
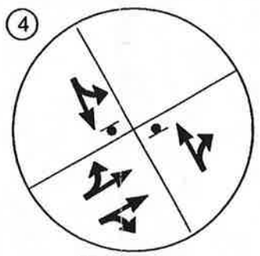
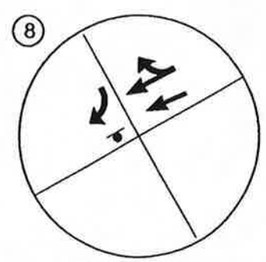


DORION AVE AND SW 10th ST



FRAZER AVE AND SW 17th ST



EMIGRANT AVE AND SW 10th ST

Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-08

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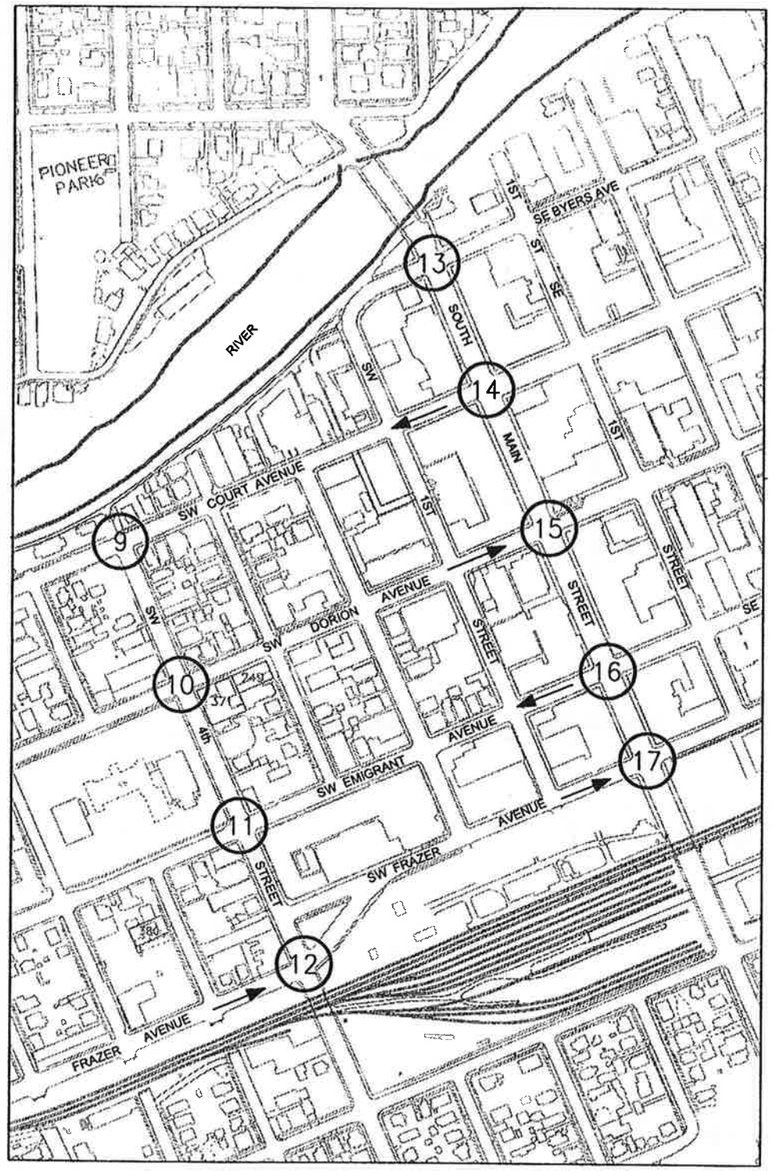
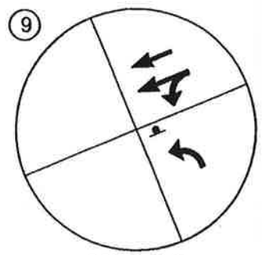
LEGEND

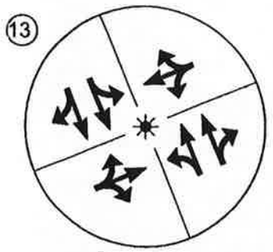
- STOP SIGN
- SIGNAL

Figure 2-3
Intersection Map
(1-8)

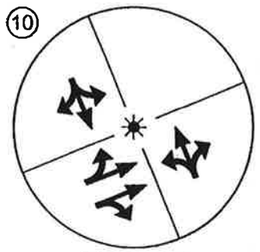




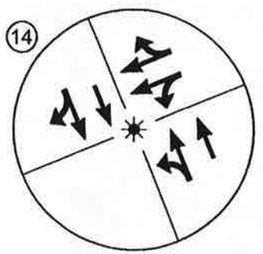
COURT AVE
AND SW 4th ST



BYERS AVE
AND SOUTH MAIN ST



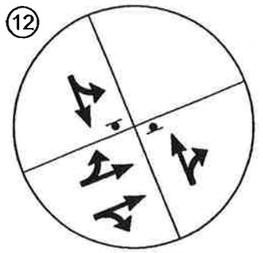
DORION AVE
AND SW 4th ST



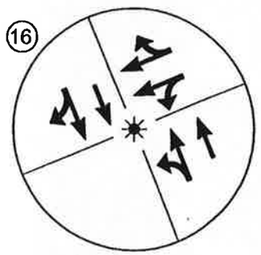
COURT AVE
AND SOUTH MAIN ST

EMIGRANT AVE
AND SW 4th ST

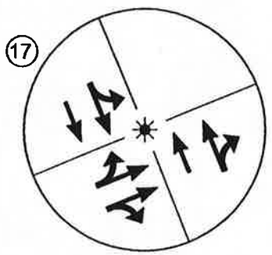
DORION AVE
AND SOUTH MAIN ST



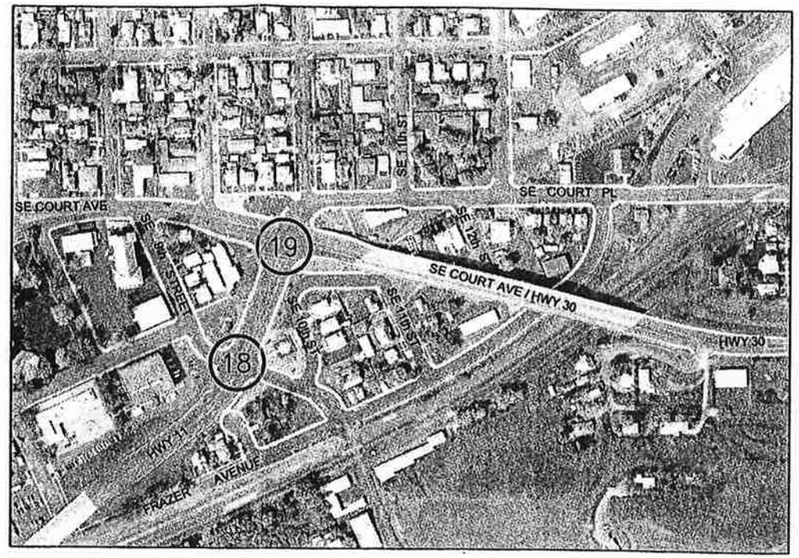
FRAZER AVE
AND SW 4th ST

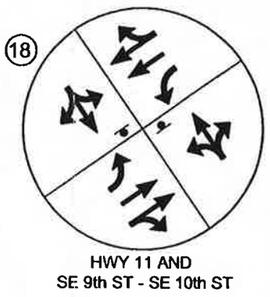


EMIGRANT AVE
AND SOUTH MAIN ST

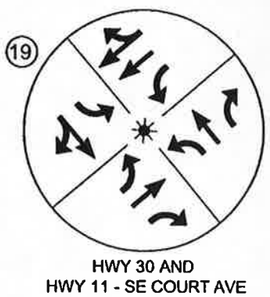


FRAZER AVE
AND SOUTH MAIN ST





HWY 11 AND
SE 9th ST - SE 10th ST



HWY 30 AND
HWY 11 - SE COURT AVE

Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-09

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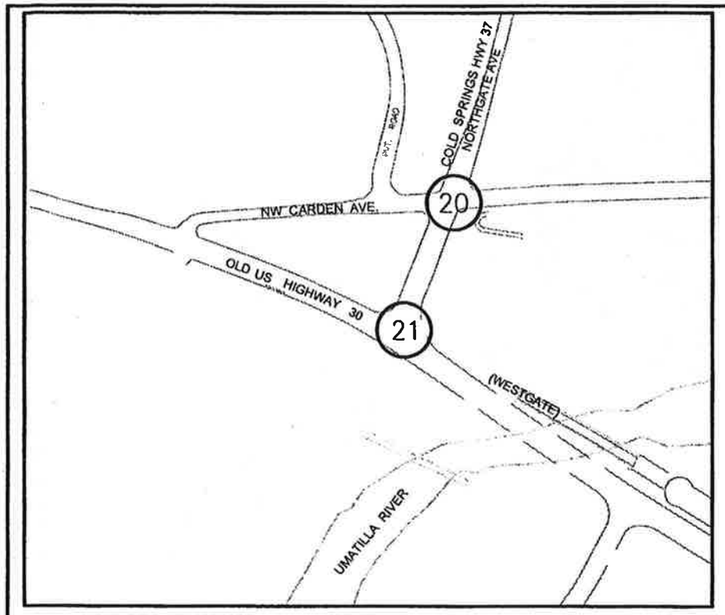
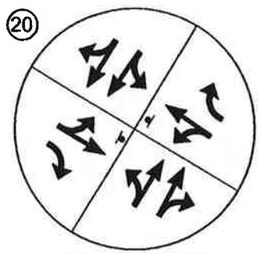
LEGEND

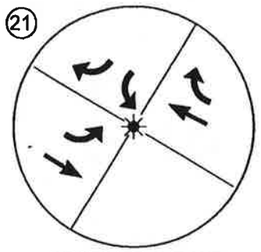
- STOP SIGN
- SIGNAL

Figure 2-4
Intersection Map
(9-19)

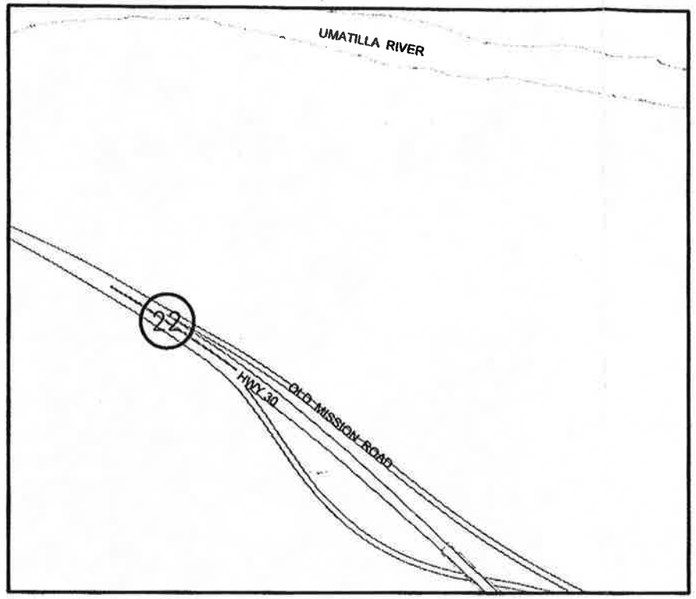


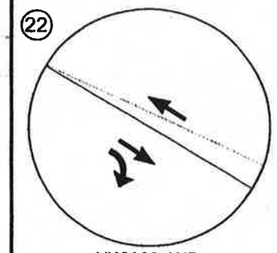


CARDEN AVE AND
NORTHGATE AVE

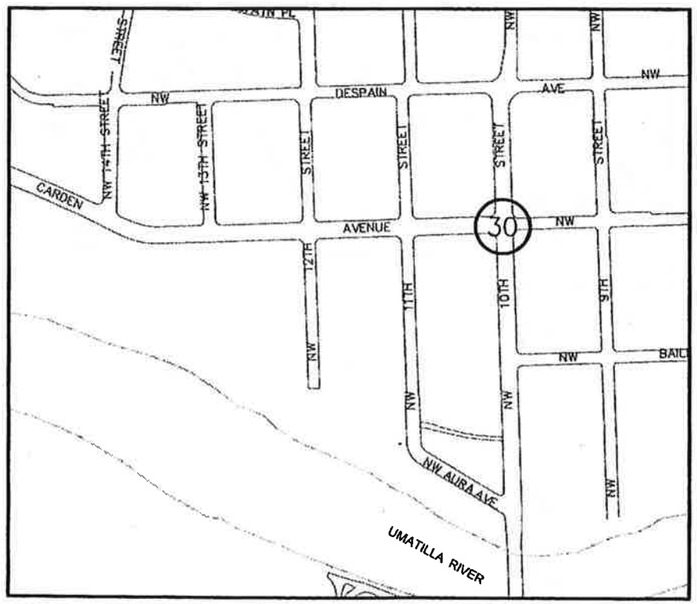


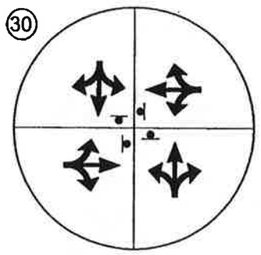
WESTGATE AVE AND
NORTHGATE AVE



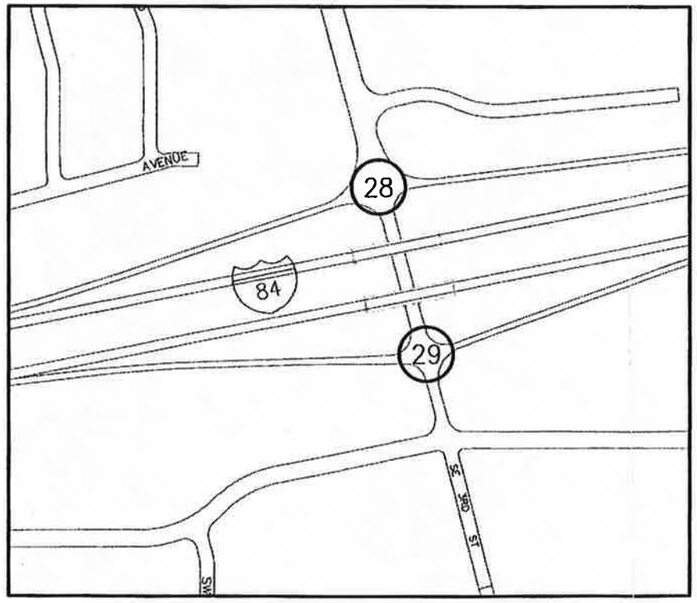


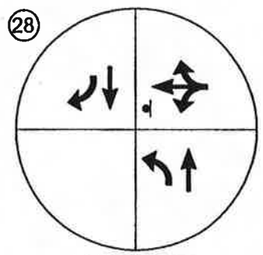
HWY 30 AND
OLD MISSION ROAD



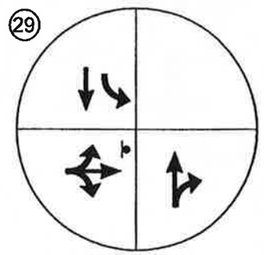


CARDEN AVE AND
NW10th ST





I-84 WB RAMPS
AND HWY 11



I-84 EB RAMPS
AND HWY 11

Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-05

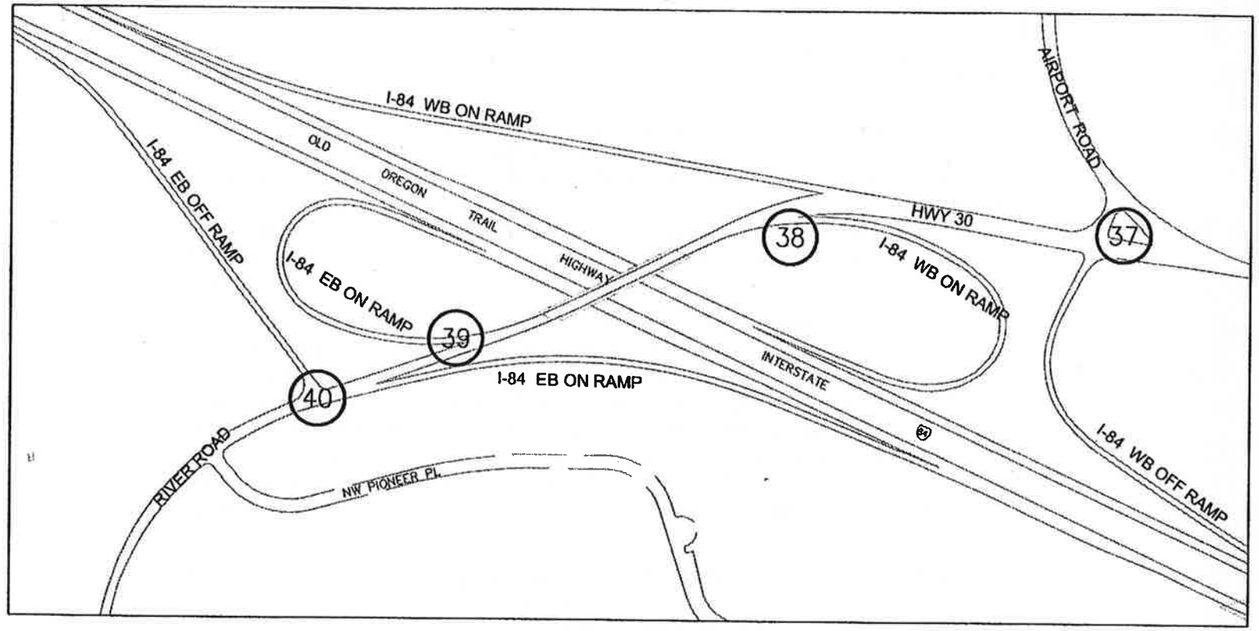
N

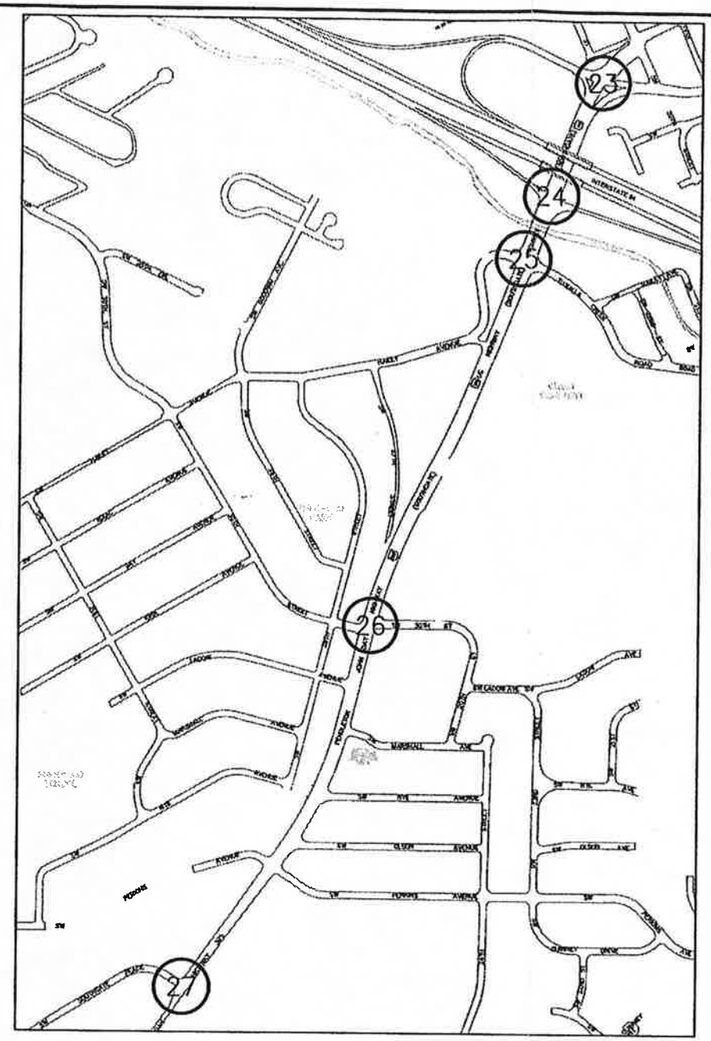
LEGEND

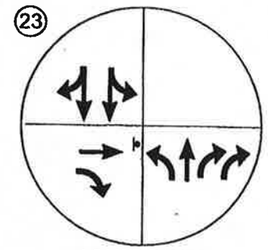
STOP SIGN

SIGNAL

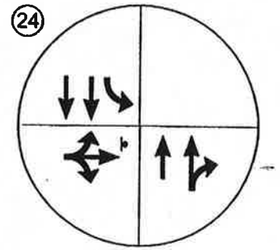
Figure 2-5
Intersection Map
(20-22; 28-30)



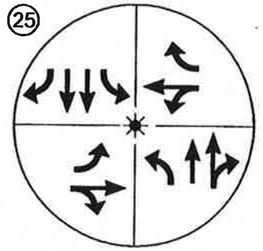




I-84 WB RAMPS
AND HWY 395

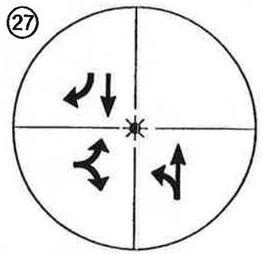


I-84 EB RAMPS
AND HWY 395

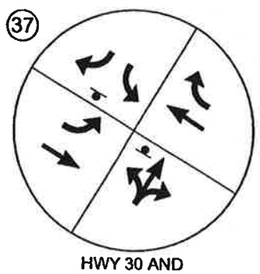


HAILEY AVE/ TUTUILLA CRK DR
AND HWY 395

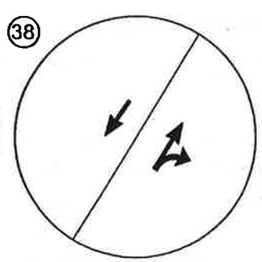
30th STREET AND
HWY 395



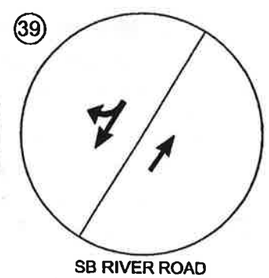
SOUTH GATE AVE
AND HWY 395



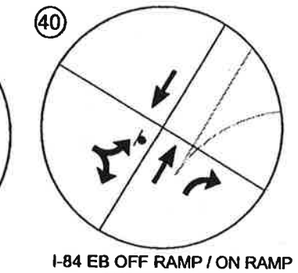
HWY 30 AND
AIRPORT ROAD



RIVER ROAD AND
I-84 WB ON RAMP



SB RIVER ROAD
AND I-84 EB ON RAMP



I-84 EB OFF RAMP / ON RAMP
AND RIVER ROAD

Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-03

N

LEGEND

STOP SIGN

SIGNAL

Figure 2-6
Intersection Map
(23-27; 37-40)

In 2005, city staff provided an overview of the findings of the Engineering Information Services (EIS) report and requested feedback from the City Council in regards to establishing the City's goal for maintaining a pavement condition for city streets. The City's consultants completed their assessment of the pavement condition for the street network consisting of about 70 centerline miles of paved streets. This assessment did not take into account the condition and replacement cost of curb/gutter or underground utility infrastructure. Below is the Executive Summary from their report:

"Engineering Information Services, Inc. of Salem, Oregon was contracted by the City of Pendleton to provide pavement management technical services for the City of Pendleton to 1) Conduct a visual pavement assessment of each City street and, 2) Determine the impact of funding levels on the network pavement condition. The Metropolitan Transportation Commission (MTC) Pavement Management Program (PMP) was used for this evaluation. This system strives to develop a maintenance strategy that first, will improve the overall condition of the street network to an optimal Pavement Condition Index (PCI) in the low to mid 80's and second, maintain it at that level.

A detailed visual inspection of the City of Pendleton streets resulted in a calculated average PCI of 64. Using a 0 to 100 PCI scale, with 100 being most favorable, a rating of 64 places the City's street network in the mid range of the 'satisfactory' condition category. In order to determine GASP 34 Statement asset valuation and funding levels to maintain current infrastructure, the City's street network replacement value is estimated at $67.1 million. Using this estimate and the MTC program, an unrestricted funding level of $12.8 million over the next six-year period is needed to achieve a PCI in the low to mid 80's. Of this total, approximately $5.4 million is needed in the first year alone, primarily to repair streets in the 'fair' to "poor" range, those streets with a PCI of 0 to 49, which is about 28 percent of Pendleton's total network. This amount exceeds Pendleton's current funding level by $11.9 million, thus creating a backlog in deferred maintenance.

In order to achieve and sustain the current PCI of 64 over a six-year period, an annual investment level of $350,000 would need to be allocated over the next six years. Using this budget amount, the cost of deferred maintenance backlog in 2011 would be approximately $11.9 million. Utilizing the same analysis period of six years with Pendleton's current maintenance and rehabilitation funding of $900,000 over six-years shows a PCI decrease to 58 in 2011-with deferred maintenance reaching $12.7 million. Current funding allocation of $900,000 is not sufficient to address all of the City of Pendleton's future street maintenance needs.

Additionally, long-term surface management planning at an investment level totaling $6.0 million over a ten (10) year period shows that the PCI will gradually increase reaching 67 over the analysis period. This allows for 84.7% of the street network to be in the 'good' condition category with deferred maintenance in excess of $11.8 million in the year 2015.

Although the PCI currently is in the low 60's. The PCI is not the only critical indicator of the over all health of the paved street network. Based on the current funding levels the deferred maintenance backlog will continue to increase, which will place additional financial burden on funding requirements to maintain the street system in future years. A surface management plan should be developed that will address the projected deferred maintenance back-log to avoid future exponential cost in providing an acceptable service level of the City's paved street system."

At this time, the City has insufficient revenue to construct new roadways or to fund the appropriate maintenance of the existing system. New and improved roads are constructed either as part of the State's capital projects or as part of land divisions and private development. The City collects system development charges (SDCs) and uses them to contribute to road improvement projects. Please refer to the financing report for more details on the capital improvement projections for the city and state.

2.3 EXISTING TRAFFIC OPERATIONS

This section addresses existing traffic operations at key intersections along city streets and on state highways within the within the UGB. The inventory and analysis described in this section will serve as a basic framework for evaluation of existing system improvement needs and the development of future traffic forecasts and deficiency need.

Thirty-three intersections were evaluated as part of the analysis of the existing operations including:

- I-84 Interchange at MP 207
- I-84 Interchange at MP 209
- I-84 Interchange at MP 211
- 11 City/Highway unsignalized intersections
- 15 City/Highway signalized intersections

Existing lane configurations and traffic control for the seven study area intersections are shown on Figure 2-3 through Figure 2-6.

Intersection Operational Standards

Within Oregon, traffic operations are evaluated based on two sets of criteria or standards. For state highways, the operative standard is expressed in terms of a ratio between traffic volumes and the roadway or intersection capacity. For many local communities, the quality of traffic performance is assessed in terms of intersection or roadway levels of service (LOS). These two operational standards are described below.

Volume-to-Capacity Standard

For state highways, the operating standard is expressed in terms of a volume-to-capacity (V/C) ratio between traffic volumes and the roadway or intersection capacity. Various V/C thresholds are applied to roadways based on the functional classification of the facility. Several highways of both district and statewide highway classification cross the City of Pendleton with additional overlay designations for some segments. The segment classification and designations are illustrated in the OHP (see Figure 2-7). The peak hour, maximum V/C, standards for the various designations are also contained in the OHP, the applicable mobility standards are summarized in Table 2-4.

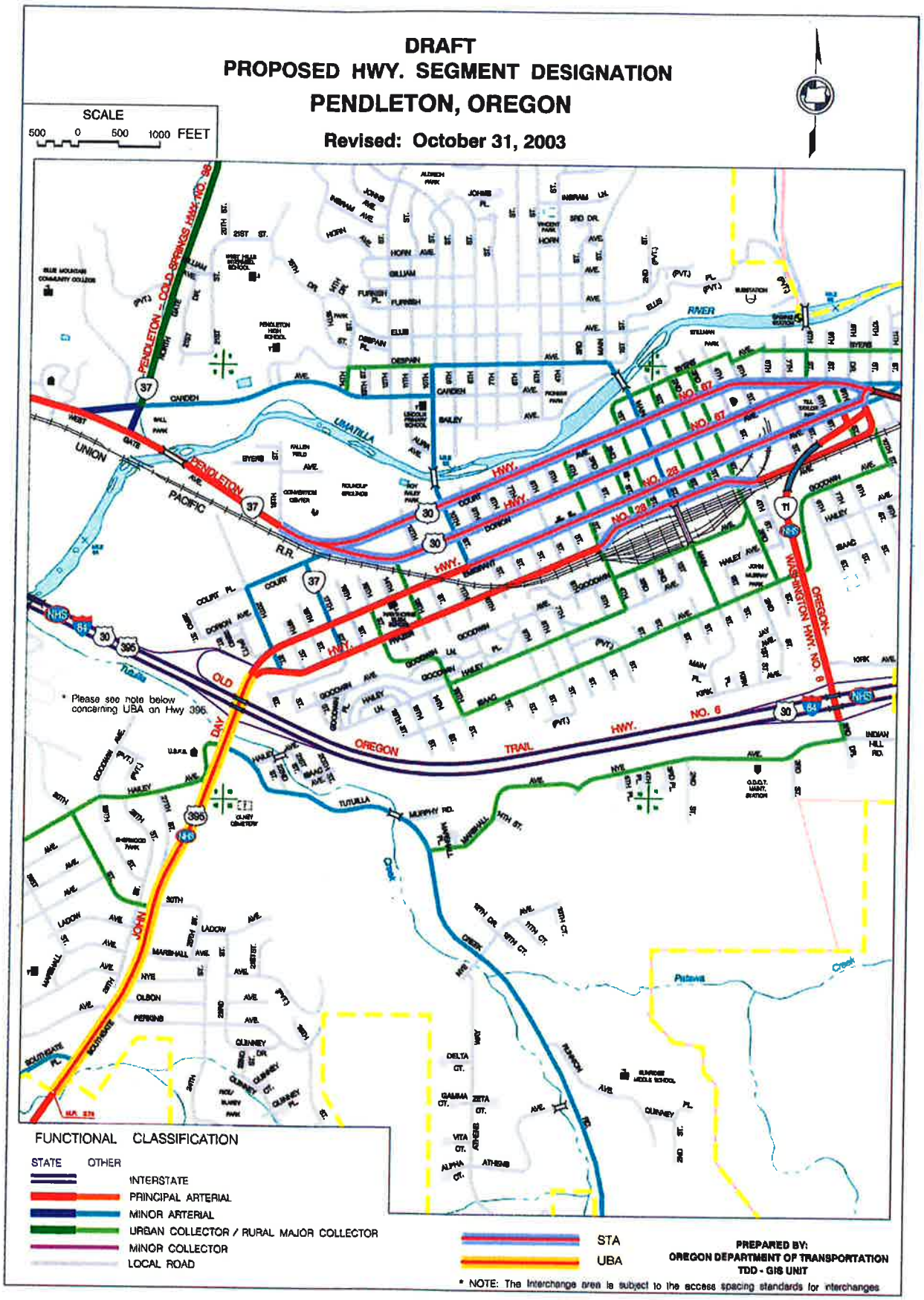


Figure 2-7
Proposed HWY. Segment Designation
Pendleton, Oregon

Table 2-4. Maximum Volume-to-Capacity for Peak Hour Operating Conditions

Highway Category	Highway Designation	Applicable Highway	Maximum V/C Ratio
Inside UGB and Non-MPO			
Statewide Freight Route	Posted speed <= 35 mph or Designated UBA	US 395	0.80
	STA or Commercial Center		0.90
Statewide Non-Freight Route	Posted speed <= 35 mph or Designated UBA	I-84 US 30	0.90
	Posted speed > 35 mph or Designated UBA	Oregon 11	0.80
District	Posted speed <= 35 mph or Designated UBA	Oregon 37	0.90

Source: Oregon Highway Plan, Policy 1F Mobility Standards, Table 6.
Note: See Figure 2-9 for an explanation of the standards that are applicable to each state highway segment in the Pendleton area.

Levels of Service Standard

Intersection traffic volumes are evaluated to determine the level of operating performance that occurs within peak travel periods. Operating performance is based on an assessment of average control delay per vehicle entering the intersection. This delay is calculated using equations that take into account turning movement volumes, intersection lane geometry and traffic signal features, as well as characteristics of the traffic stream passing through the intersection, including time required to slow, stop, wait, and accelerate to move through the intersection. Various levels of delay are then expressed in terms of LOS for either signalized or unsignalized intersections. The various levels of service range from LOS A (which reflects free-flow conditions) through LOS F (which reflects operational breakdown). Between LOS A and LOS F, progressively higher LOS grades reflect increasingly worse intersection performance, with higher levels of control delay and increased congestion and queues. Characteristics of each LOS are briefly described in Table 2-5.

Table 2-5. Level of Service Definitions

	Average Delay/Vehicle (sec)		
Level of Service	**Signalized**	**Unsignalized**	**Description**
A (Desirable)	<10 seconds	<10 seconds	Very low delay; most vehicles do not stop.
B (Desirable)	>10 and <20 seconds	>10 and <15 seconds	Low delay resulting from good progression, short cycle lengths, or both.
C (Desirable)	>20 and <35 seconds	>15 and <25 seconds	Higher delays with fair progression, longer cycle lengths, or both.
D (Acceptable)	>35 and <55 seconds	>25 and <35 seconds	Noticeable congestion with many vehicles stopping. Individual cycle failures occur.
E (Unsatisfactory)	>55 and <80 seconds	>35 and <50 seconds	High delay with poor progression, long cycle lengths, high V/C ratios, and frequent cycle failures.

Level of Service	Average Delay/Vehicle (sec) Signalized	Unsignalized	Description
F (Unsatisfactory)	>80 seconds	>50 seconds	Very long delays, considered unacceptable by most drivers. Often results from over-saturated conditions or poor signal timing.

Source: 2000 Highway Capacity Manual, Transportation Research Board.

Traffic Volumes

Manual turning movement counts were conducted at key city intersections and interchange ramps during the weekday p.m. peak hour in August 2006. The p.m. peak hour traffic counts were examined for reasonableness and were also compared to previous traffic counts conducted in the area as gleaned from previous traffic studies. The new traffic count data collected is provided in Appendix A. These counts were supplemented with counts provided by ODOT resulting in a total of 33 locations examined.

Traffic volumes vary with the seasons and adjustments are required for the counts taken outside of the peak season to ensure that they reflect appropriate conditions for use in assessing design/improvement options. An adjustment is also required to translate counts from previous years to current year volumes. Annual and/or seasonal growth adjustments of the Pendleton count data were required to represent 30th highest hourly traffic volumes for 2006. Additionally, some balancing of traffic volumes between intersections in close proximity was also conducted to best represent a uniform set of data. The methodology and assumptions used in making these adjustments is summarized in Appendix B.

Figure 2-8 through Figure 2-11 illustrate the existing (2006) p.m. 30th highest volumes on key intersections in the study area. Using these volumes, an operational analysis was conducted at each study area intersection to determine existing operating performance.

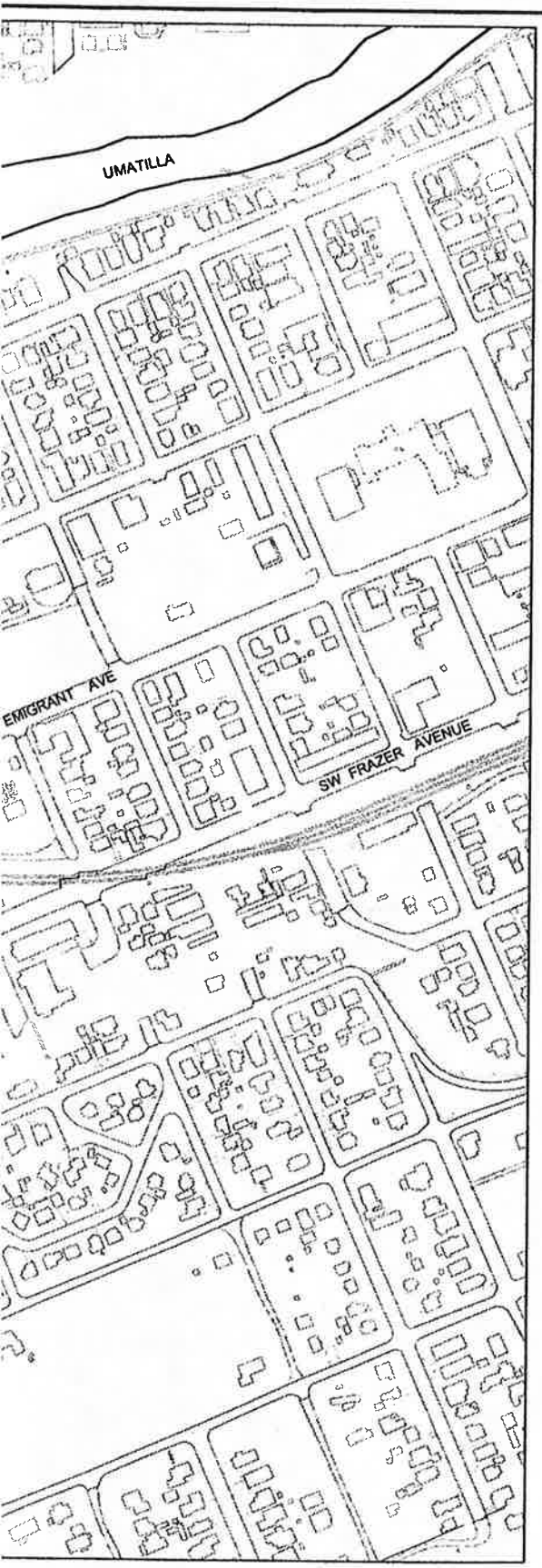
Traffic Operations

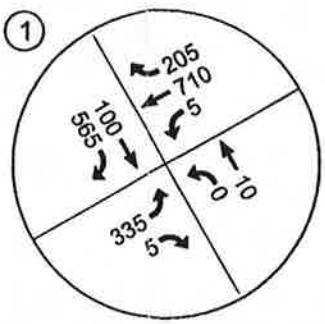
The analysis of existing traffic operations was conducted using a Synchro traffic simulation model which was developed specifically for Pendleton. These models include the field-verified geometrics and other relevant physical data for each intersection. Analysis procedures follow the ODOT TPAU guidelines.

Signalized Intersections

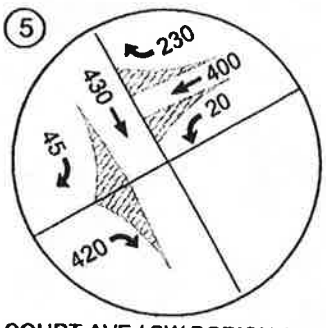
Table 2-6 summarizes existing (2006) traffic operations for peak volumes at signalized intersections in Pendleton. Data in these tables includes average intersection delay, the overall intersection V/C ratios, and intersection levels of service. Signalized intersection analysis worksheets are included in Appendix A.

According to the information presented in Table 2-6, the intersection of Emigrant Avenue with 20th Street (US 395) currently exceeds ODOT's V/C standards. All other signalized intersections are operating at an acceptable V/C ratio or LOS.

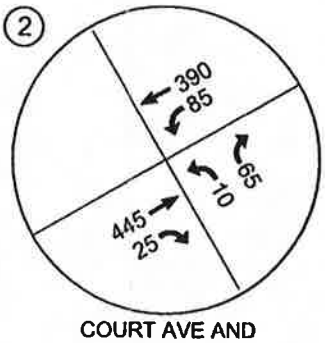




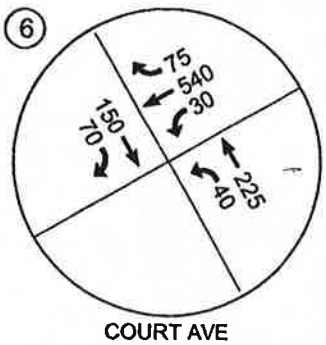
EMIGRANT AND
SW 20th ST



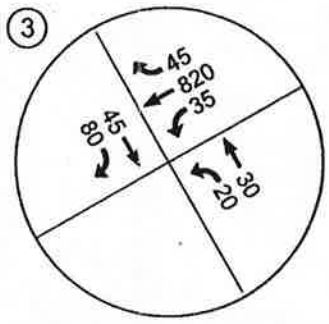
COURT AVE / SW DORION AVE
AND WESTGATE



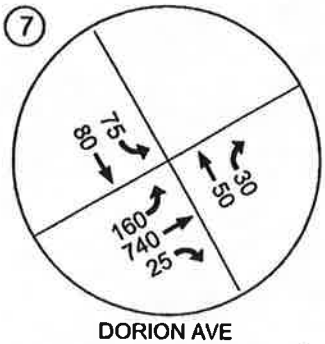
COURT AVE AND
SW 17th ST



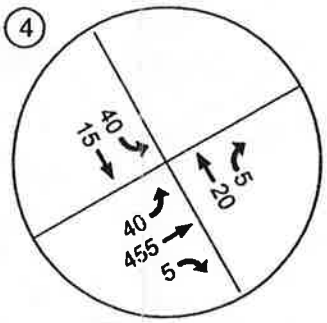
COURT AVE
AND SW 10th ST



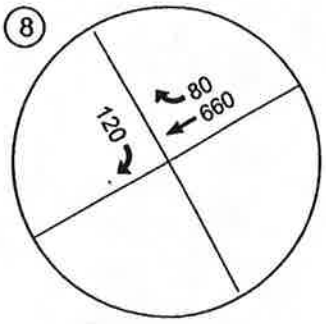
EMIGRANT AVE AND
SW 17th ST



DORION AVE
AND SW 10th ST



FRAZER AVE
AND SW 17th ST

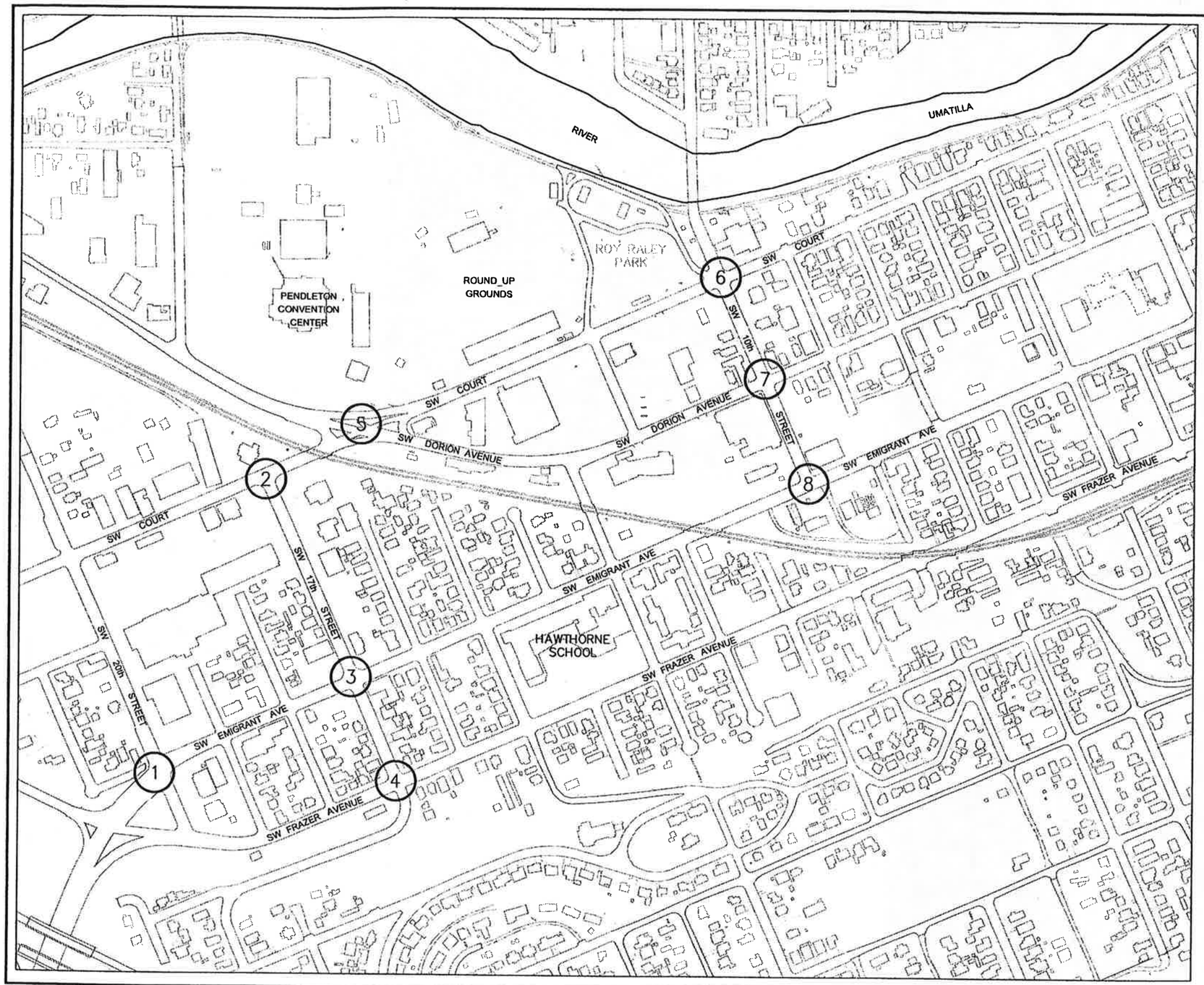


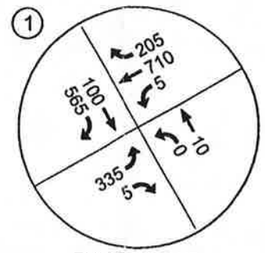
EMIGRANT AVE
AND SW 10th ST

LEGEND

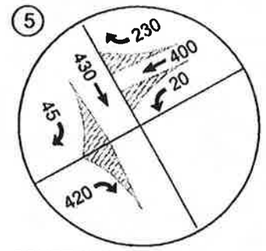
XXX VOLUME BY MOVEMENT

Figure 2-8
2006 Existing
30th Highest Hour
Balanced Volumes (1-8)

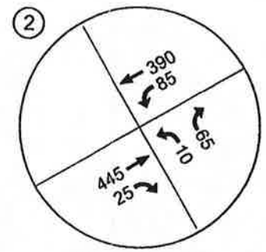




EMIGRANT AND SW 20th ST

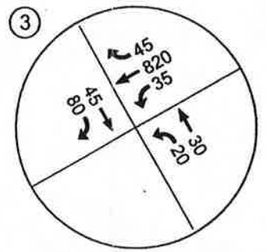


COURT AVE / SW DORION AVE AND WESTGATE

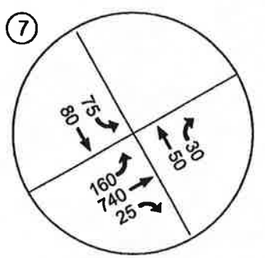


COURT AVE AND SW 17th ST

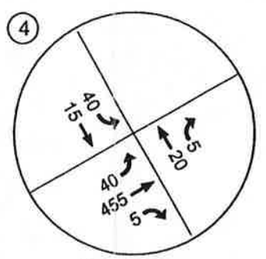
COURT AVE AND SW 10th ST



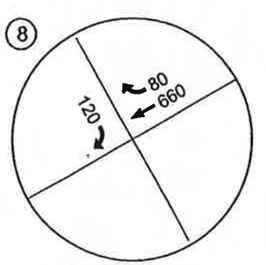
EMIGRANT AVE AND SW 17th ST



DORION AVE AND SW 10th ST



FRAZER AVE AND SW 17th ST



EMIGRANT AVE AND SW 10th ST

Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-10

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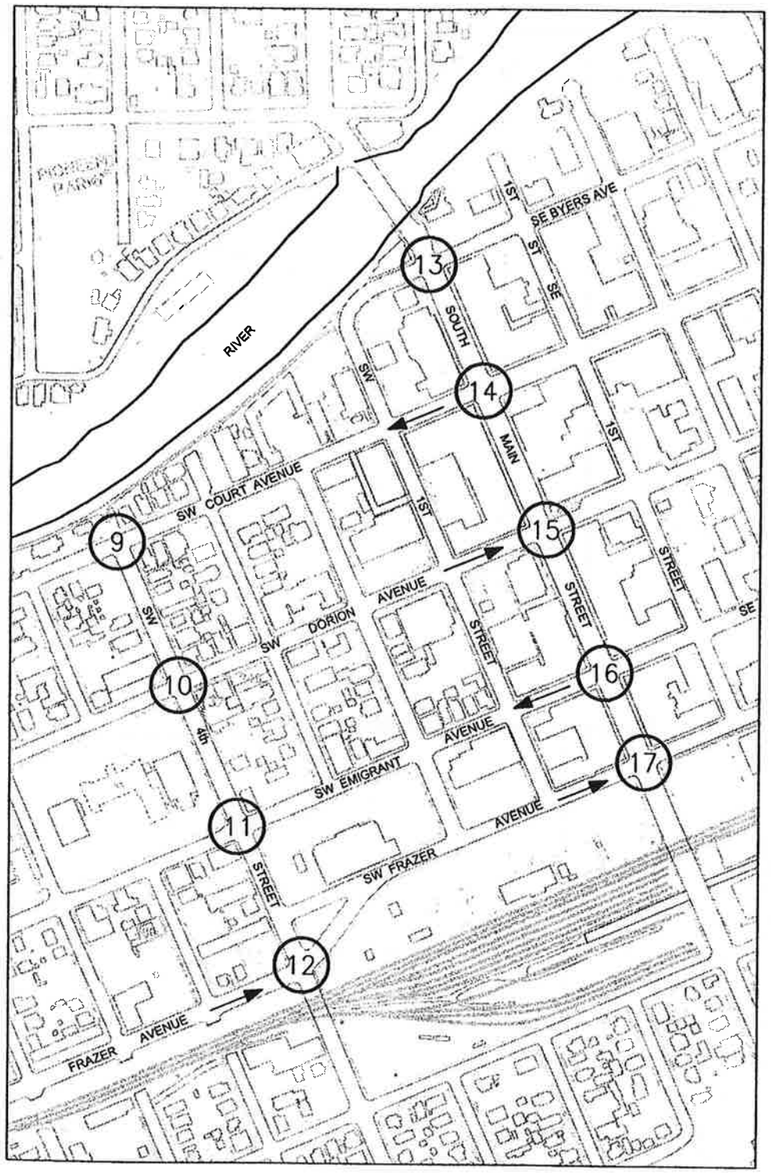
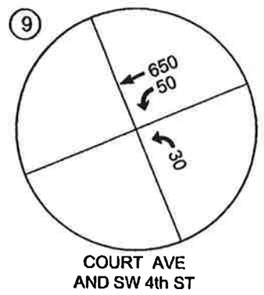
LEGEND

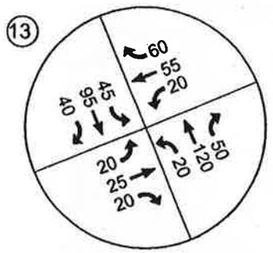
XXX VOLUME BY MOVEMENT

Figure 2-8
2006 Existing
30th Highest Hour
Balanced Volumes (1-8)

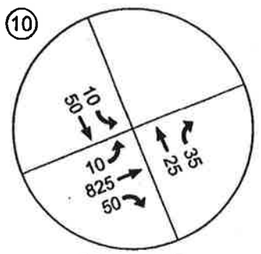




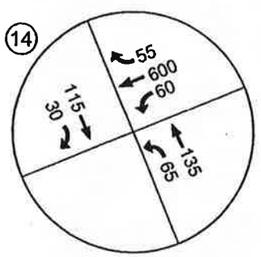
COURT AVE
AND SW 4th ST



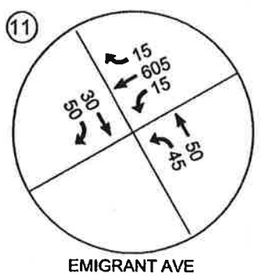
BYERS AVE
AND SOUTH MAIN ST



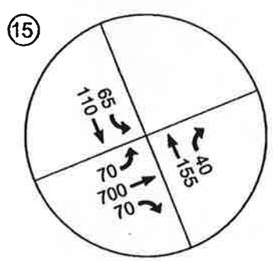
DORION AVE
AND SW 4th ST



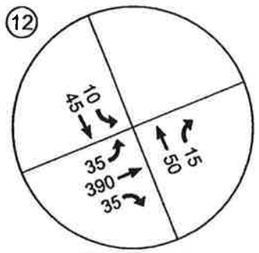
COURT AVE
AND SOUTH MAIN ST



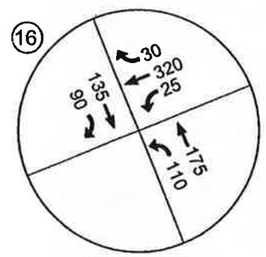
EMIGRANT AVE
AND SW 4th ST



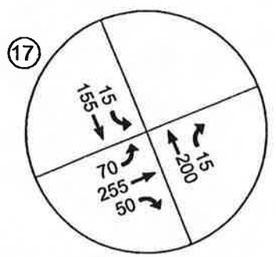
DORION AVE
AND SOUTH MAIN ST



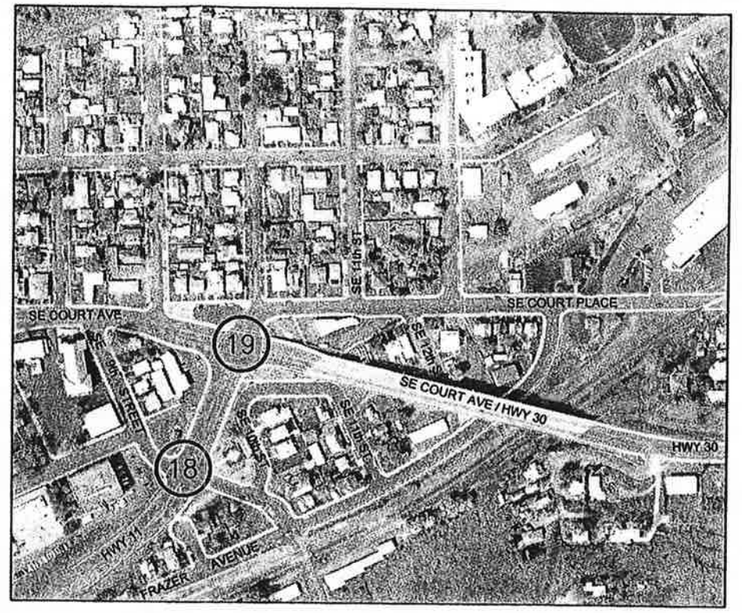
FRAZER AVE
AND SW 4th ST

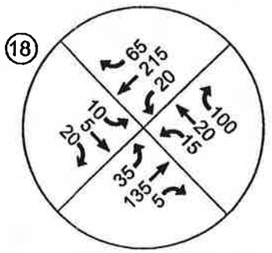


EMIGRANT AVE
AND SOUTH MAIN ST

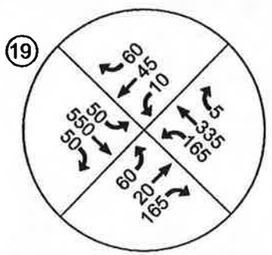


FRAZER AVE
AND SOUTH MAIN ST





HWY 11 AND
SE 9th ST - SE 10th ST



HWY 30 AND
HWY 11 - SE COURT AVE

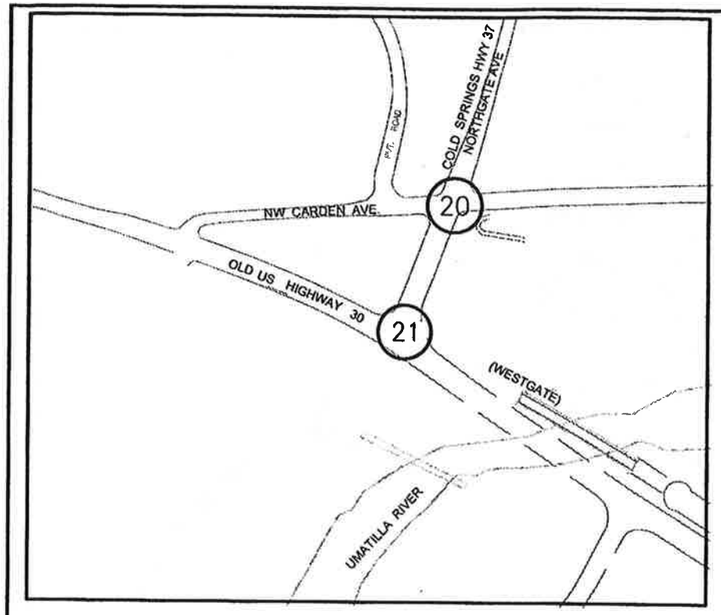
Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-11

N

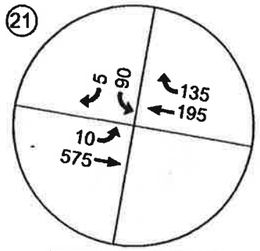
LEGEND

XXX VOLUME BY MOVEMENT

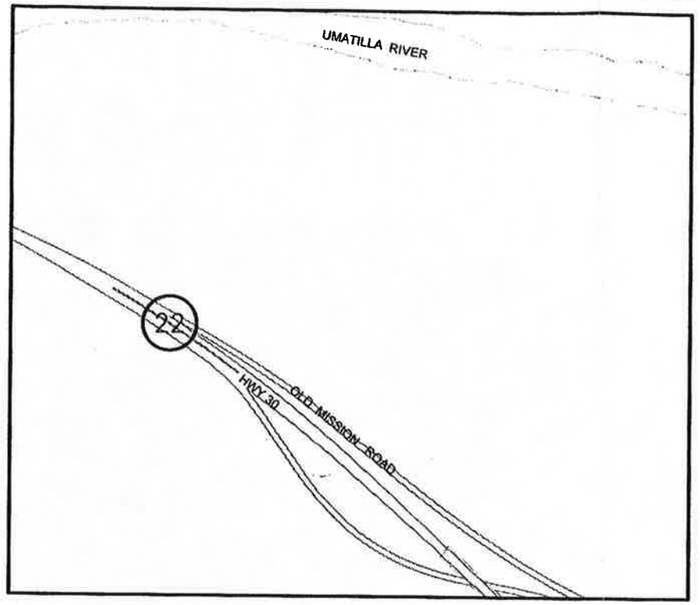
Figure 2-9
2006 Existing
30th Highest Hour
Balanced Volumes (9-19)

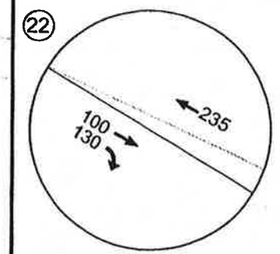


CARDEN AVE AND
NORTHGATE AVE

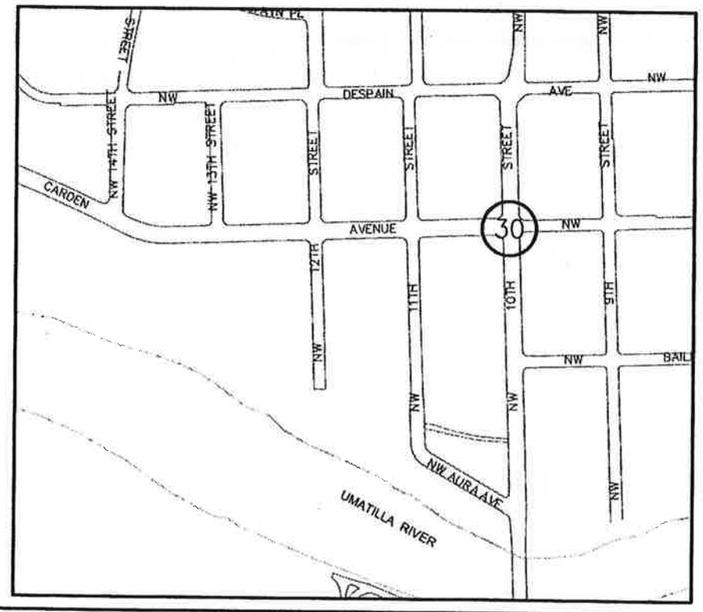


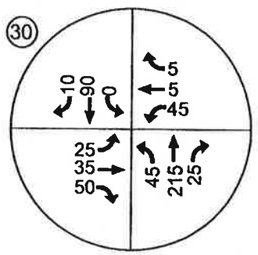
WESTGATE AVE AND
NORTHGATE AVE



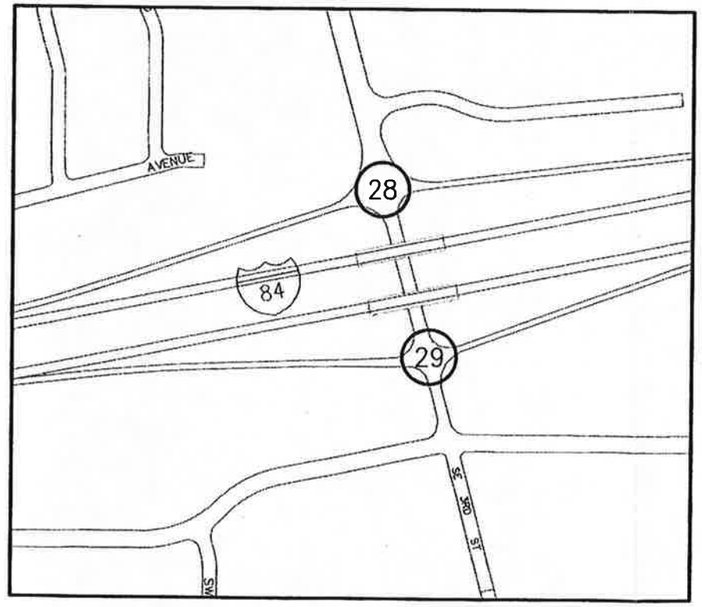


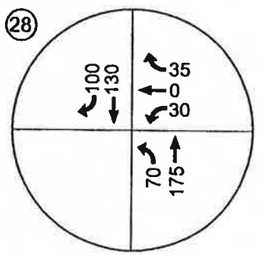
HWY 30 AND
OLD MISSION ROAD



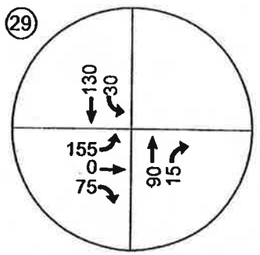


CARDEN AVE AND
NW10th ST





I-84 WB RAMPS
AND HWY 11



I-84 EB RAMPS
AND HWY 11

Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-12

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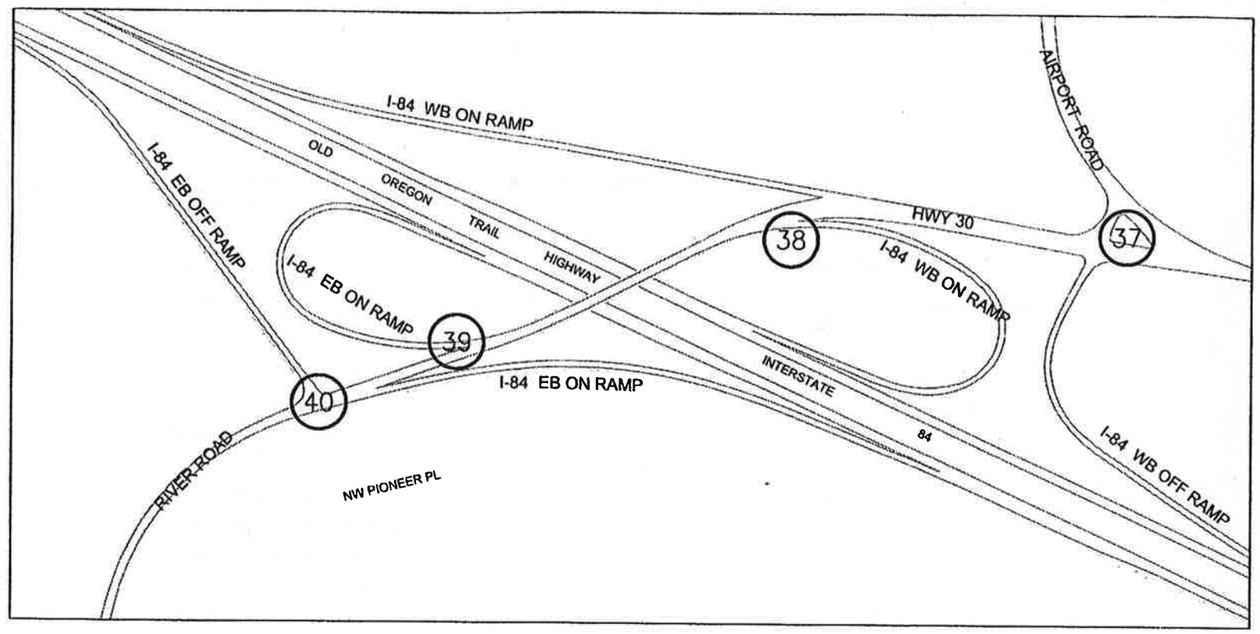
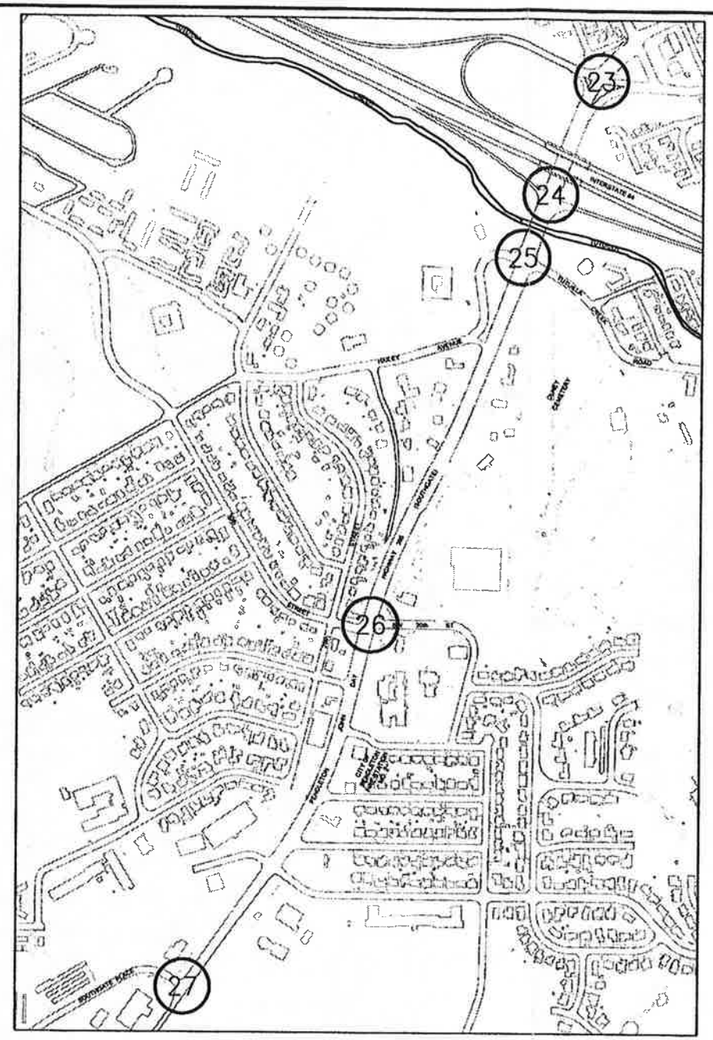
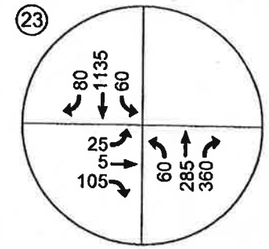
LEGEND

XXX VOLUME BY MOVEMENT

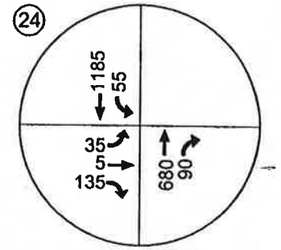
Figure 2-10
2006 Existing
30th Highest Hour
Balanced Volumes (20-22; 28-30)



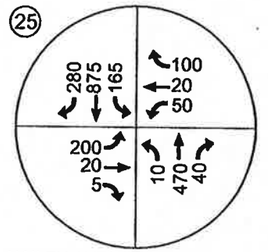




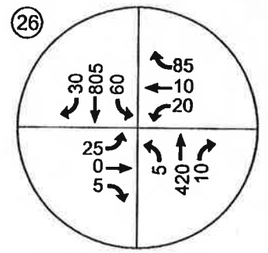
I-84 WB RAMPS
AND HWY 395



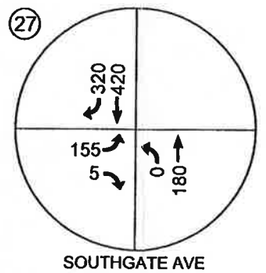
I-84 EB RAMPS
AND HWY 395



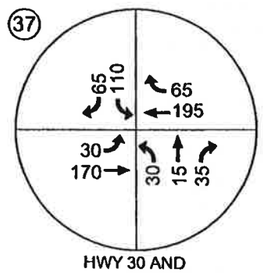
HAILEY AVE/ TUTUILLA CRK DR
AND HWY 395



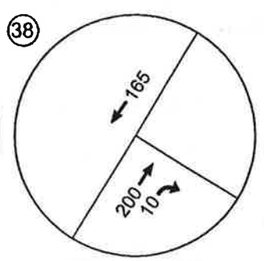
30th STREET AND
HWY 395



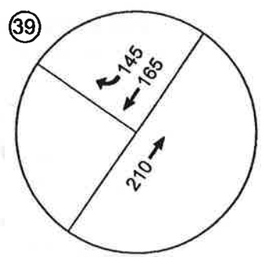
SOUTHGATE AVE
AND HWY 395



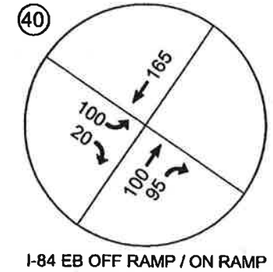
HWY 30 AND
AIRPORT ROAD



RIVER ROAD AND
I-84 WB ON RAMP



SB RIVER ROAD
AND I-84 EB ON RAMP



I-84 EB OFF RAMP / ON RAMP
AND RIVER ROAD

Parametrix DATE: Nov 22, 2006 FILE: PO2395051P02CF-13

N

LEGEND

XXX VOLUME BY MOVEMENT

Figure 2-11
2006
30th Highest Hour
Balanced Volumes (23-27; 37-40)

Table 2-6. 2006 Peak Hour Traffic Operations at Key Signalized Intersections

Signalized Intersections	2006 (Existing) Operations		
	Maximum V/C Ratio	Average Delay (sec/vehicle)	LOS
Emigrant Avenue & US 395 (20th Street)	**>1.00**	**>80**	**F**
Dorion Avenue & SW 10th Street	0.44	13.0	B
Court Avenue & SW 10th Street	0.42	8.0	A
Court Avenue & SW 4th Street	0.30	15.5	B
Byers Avenue & Main Street	0.20	9.5	A
Dorion Avenue & SW 4th Street	0.39	17.3	B
Dorion Avenue & Main Street	0.36	20.9	C
Emigrant Avenue & Main Street	0.29	9.9	A
Frazer Avenue & Main Street	0.24	9.7	A
Hailey Avenue & US 395	0.61	18.9	B
30th Street & US 395	0.68	10.8	B
South Gate Avenue & US 395	0.43	6.5	A
US 30 & Oregon 11	0.70	16.5	B
West Gate Avenue & North Gate Avenue	0.46	7.1	A
Court Avenue & Main Street	0.37	12.2	B

Unsignalized Intersections

Currently, three unsignalized intersections exceed the 0.80 V/C standard for the type of highway facility, the ramps to I-84 at US 395 and the intersection of Court Avenue/Dorion Avenue with West Gate Avenue.

Table 2-7 summarizes the existing (2006) traffic operations for the peak traffic volumes at unsignalized intersections in Pendleton. Data in these tables includes delay, V/C ratios, and LOS for the critical movement. Intersection analysis worksheets are included in Appendix A

Currently, three unsignalized intersections exceed the 0.80 V/C standard for the type of highway facility, the ramps to I-84 at US 395 and the intersection of Court Avenue/Dorion Avenue with West Gate Avenue.

Table 2-7. 2006 Peak Hour Traffic Operations at Key Unsignalized Intersections

Unsignalized Intersections and Critical Movement	2006 (Existing) Conditions		
	V/C Ratio	Critical Delay (sec/vehicle)	Critical LOS
Court Avenue & SW 17th Street			
Northbound Left	0.05	23.6	C
Emigrant Avenue & SW 17th Street			
Southbound	*0.38*	*21*	*C*
Northbound	*0.24*	*25.5*	*D*
Frazer Avenue & SW 17th Street			

Unsignalized Intersections and Critical Movement	2006 (Existing) Conditions		
	V/C Ratio	Critical Delay (sec/vehicle)	Critical LOS
Northbound	*0.06*	*13.7*	*B*
Emigrant Avenue & SW 10th Street			
Southbound	*0.23*	*12.9*	*B*
Carden Avenue & SW 10th Street			
All-way		*8.1*	*A*
Court Avenue & SW 4th Street			
Northbound	*0.07*	*12.7*	*B*
Emigrant Avenue & SW 4th Street			
Northbound	*0.28*	*18.1*	*C*
Frazer Avenue & SW 4th Street			
Northbound	*0.15*	*13.6*	*B*
Southbound	*0.14*	*14.4*	*B*
I-84 WB Ramps & US 395			
Eastbound Left	*>1.00*	*>80*	*F*
I-84 EB On-Ramp & US 395			
Eastbound	*>1.00*	*>80*	*F*
I-84 WB On-Ramp & Oregon 11			
Westbound	*0.12*	*11.7*	*B*
I-84 EB Off-Ramp & Oregon 11			
Eastbound	*0.37*	*13.3*	*B*
SE 10th Street & SE 9th Street			
Westbound	*0.20*	*11.2*	*B*
Eastbound	*0.07*	*12.4*	*B*
Carden Avenue & North Gate Avenue			
Westbound Left	*0.22*	*13.3*	*B*
Eastbound Left	*0.11*	*12.5*	*B*
US 30 & Airport Road			
Southbound Left	*0.29*	*17.1*	*B*
Northbound	*0.17*	*13.2*	*B*
River Road & I-84 EB Off-Ramp			
Eastbound Left	*0.17*	*11.7*	*B*
Court/Dorion Avenue & West Gate Avenue			
Southbound Thru	*0.91*	*51.4*	*F*

Traffic Queuing

Turn lane storage and queuing was also examined for signalized and unsignalized intersections and at freeway ramps. Table 2-8 summarizes the 95th percentile queue lengths for critical movements for signalized intersections. Estimates of available storage are based of measurements from aerial mapping; consequently, effective storage provided may differ from the measurements quoted in this table. Vehicle queue estimates were prepared using traffic analysis software. Estimated queues are rounded to the nearest 25 feet.

Table 2-8. Peak Traffic Queues at Key Signalized Intersections

Intersection		Available Storage (feet)[a]	2006 Queue (feet)
Emigrant Ave & US 395 (20th St)			
	Westbound Thru	200	250
	Eastbound Left	200	550
Dorion Ave & SW 10th St			
	Eastbound Thru	460	200
Court Ave & SW 10th St			
	Westbound Thru	230	125
Court Ave & SW 4th			
	Westbound Thru	270	200
Byers Ave & Main St			
	Westbound Thru	250	75
Dorion Ave & SW 4th			
	Eastbound Thru	530	250
Dorion Ave & Main St			
	Eastbound Thru	270	200
Emigrant Ave& Main St			
	Westbound Thru	270	75
Frazer Ave & Main St			
	Eastbound Thru	270	75
Hailey Avee & US 395			
	Eastbound Thru	630	250[b]
	Southbound Thru	650	250
30th St & US 395			
	Southbound Thru	2,075	450
South Gate Ave & US 395			
	Southbound Thru	1,350	125
	Eastbound Left	1,560	100
US 30 & Oregon 11			
	Eastbound Thru	180	425[c]
	Westbound Left	300	125
West Gate Ave & North Gate Ave			
	Eastbound Thru	500	175
Court Ave & Main St			
	Westbound Thru	270	125

Note: Queues are rounded to 25 foot increments.
[a] Available storage is the length of the turn lane, where one exists. Where a turn lane does not exist, it is the length of the lane to the nearest intersecting public street.
[b]. Exceeds queue capacity during computer simulation. However, does not frequently reach 630 feet in length.
[c]. Exceeds queue capacity.

Table 2-9 summarizes the 95th percentile queue lengths for critical movements for unsignalized intersections. As with the estimates of available storage for signalized intersections, estimates for the unsignalized intersections are based of measurements from aerial mapping and would have the same limitations as described above. Vehicle queue estimates were prepared using traffic analysis software. Estimated queues are rounded to the nearest 25 feet.

Table 2-9. Peak Traffic Queues at Key Unsignalized Intersection

Intersection	Available Storage (feet)	2006 Queue (feet)
Court Ave & SW 17th St		
Northbound Left	75	25
Emigrant Ave & SW 17th St		
Southbound	750	50
Northbound	350	25
Frazer Ave & SW 17th St		
Southbound	350	25
Northbound	350	25
Emigrant Ave & SW 10th St		
Southbound	350	25
Emigrant Ave & SW 4th St		
Northbound	400	25
Frazer Ave & SW 4th St		
Northbound	400	25
Southbound	150	25
I-84 WB Ramps & US 395		
Eastbound Left	2,000	100
I-84 EB Off-Ramp & US 395		
Eastbound	900	325
Westbound	2,000	25
I-84 EB Off-Ramp & Oregon 11		
Eastbound	1,150	50
SE 10th/SE 9th St & Oregon 11		
Westbound	250	25
Eastbound	130	25
Carden Ave & North Gate Ave		
Westbound Left	300	25
Eastbound Left	100	25
US 30 & Airport Road		
Southbound Left	200	50
Northbound	2,175	25
River Road & I-84 EB Off-Ramp		
Eastbound Left	1,450	25
Court/Dorion Ave & West Gate Avee		
Southbound Thru	200	275

Note: Queues are rounded to 25 feet increments

As indicated in the previous tables, traffic queuing problems are currently being experienced throughout the corridor. At several locations, existing traffic queues spill back beyond the available storage provided at an intersection affecting either through traffic movement (which could be blocked by spillback beyond turn lane capacities) and/or the progression of traffic between intersections. Of particular concern are the intersections of Court/Dorion Avenues with West Gate Avenue and Emigrant Avenue with SW 20th Street.

2.4 CRASHES

Crash data for study area intersections were provided by ODOT for the 4-year period from January 1, 2002 to December 31, 2005. Analysis of this data was conducted for the key intersections in the study area. For roadway segments, ODOT staff directed the use of Safety Priority Index System (SPIS) data rather than calculation of segment crash rates, as the latter was not practical based on available data and the nature of highway segments through the city.

Intersection Crash Analysis

Due to the number of potential conflicting traffic movements, intersections in a city's transportation network generally experience a higher crash rate when compared to roadway segments. For state highway intersections, the accident rate is given in terms of accidents per million entering vehicles (MEV) and is calculated by dividing the average number of accidents per year by the total entering volume for the year. An accident rate of less than 1.0/MEV generally indicates that there are no significant safety problems associated with the intersection. Analysis of crash rates provides more meaningful information than just the number of crashes alone, as it relates the incidence of crashes to the magnitude of exposure. For intersections with an accident rate more than 1.0/MEV, the causes of these accidents should be examined in more detail to determine if physical improvements are needed at the geometry of the intersections.

In the analysis underlying the 1996 TSP, both of the downtown couplets (Court/Dorion and Emigrant/Frazer) exceeded the average rates reported for similar facilities located throughout the state. In the downtown area, the state highways serve regional traffic, as well as access to local businesses. Therefore, the crashes may have been attributable to the turning movements associated with vehicles entering and exiting the commercial development along the highway.

Table 2-10 identifies crash rates and types and severity at study area intersections. None of the study intersections exceed the 1.0/MEV rate. Key intersections not shown in this table experienced no crashes during the time period indicated.

Table 2-10. 2002-2005 Study Area Intersection Crash History

Intersection	Crash Type				Crash Severity			Reported Crashes	Crash Rate/MEV
	Rear-end	Turn	Angle	Other	PDO	Injury	Fatal		
I-84 WB Off-Ramp & Oregon 11	0	0	0	1	1	0	0	1	0.18
I-84 EB Off-Ramp & Oregon 11	1	1	0	0	2	0	0	2	0.38
Emigrant Ave & Main St	0	0	2	0	1	1	0	2	0.21
Frazer Ave & Main S	0	3	2	1	4	2	0	6	0.74
Frazer Ave & SW 4th	1	0	1	0	2	0	0	2	0.33
Emigrant Ave & SW 10th St	1	0	0	0	0	1	0	1	0.11

Intersection	Crash Type				Crash Severity			Reported Crashes	Crash Rate/MEV
	Rear-end	Turn	Angle	Other	PDO	Injury	Fatal		
Frazer Ave & SW 17th St	0	0	0	1	1	0	0	1	0.16
I-84 WB Ramps & US 395	0	1	0	1	2	0	0	2	0.09
Emigrant Ave & US 395	1	1	0	2	4	0	0	4	0.19
I-84 EB On-Ramp & US 395	1	2	3	0	4	2	0	6	0.26
30th St & US 395	3	2	0	2	5	2	0	7	0.45
River Rd & I-84 EB On-Ramp	2	0	1	0	3	0	0	3	0.58
River Rd & I-84 EB Off-Ramp	2	0	1	0	3	0	0	3	0.58
US 30 & Airport Road	0	1	0	0	1	0	0	1	0.13
Court Ave & SW 10th St	0	1	8	0	7	2	0	9	0.75
Dorion Ave & SW 10th St	5	3	1	0	6	3	0	9	0.73
Court Ave & Main St	1	3	2	0	2	4	0	6	0.53
Dorion Ave & Main S	0	0	2	0	1	1	0	2	0.16
US 30 & Oregon 11	1	0	0	0	0	1	0	1	0.06
Court/Dorion & West Gate Ave	3	0	2	1	4	2	0	6	0.37

Source: ODOT, 2002-2005
Note: PDO means Property Damage Only and MEV means Million Entering Vehicles

The table indicates that the intersection of Court Avenue with SW 10th Street experienced the highest crash rate of any intersection evaluated. There were a number of reported angle crashes at this location that could be the result of through movements through the signalized intersection that disregarded the signal control. Enforcement may address some of the issue and a review of intersection visibility may indicate other contributing factors. No fatal crashes were reported at any of the evaluated intersections.

Safety Priority Index System

The State of Oregon identifies SPIS sites and ranks them to determine regional and statewide funding priorities. The SPIS system is a method of identifying locations where safety money may be spent to the highest benefit. The SPIS score is based on 3 years of crash data and considers crash frequency, crash rate, and crash severity. A roadway segment becomes a SPIS site if a location has three or more crashes, or one or more fatal crashes over the three year period. SPIS sites are based on the analysis of data over 0.10-mile sections on the state highway system. The priority index has three parameters and associated Indicator Values (IV):

- Crash frequency indicator value (IVFreq) 25% of SPIS score
- Crash rate indicator value (IVRate) 25% of SPIS score
- Crash severity indicator value (IVSeverity) 50% of SPIS score

The crash frequency indicator value, IVFreq, is a value between 0 and 25 determined using a logarithmic distribution based on total crashes in a 3-year period. The maximum indicator value of 25% is obtained when total number of crashes reaches 150 crashes on the same 0.10-mile segment over a 3-year period.

$$IV_{Freq} = \left[\frac{LOG(TotalCrashes+1)}{LOG(150+1)}\right](25)$$

The crash rate indicator, IVRate, is a value between 0 and 25, also determined by using a logarithmic distribution based on the following crash rate calculations. Again, the maximum indicator value of 25% is obtained when the crash rate reaches seven crashes per million entering vehicles.

$$IV_{Rate} = \left[\frac{LOG\left(\left(\frac{(TotalCrashes)(1{,}000{,}000)}{(3yr)(365days)(ADT)} \right) + 1 \right)}{LOG(7+1)} \right] (25)$$

The crash severity indicator, IVSeverity, is a value between 0 and 50, determined by using a linear distribution from the calculation below. The formula considers severity values between 0 and 300 only; therefore, severity products above 300 are assigned the maximum value, to match the maximum indicator value of 50%.

$$IV_{Severity} = \left[\frac{100(FATAL + INJ_A) + (10)(INJ_B + INJ_C) + (PDO)}{(300)} \right] (50)$$

Where: FATAL = the number of fatalities; INJA = the number of severe injuries (Class A); INJB = the number of moderate injuries (Class B); INJC = the number of minor injuries (Class C); PDO = the number of "property damage only" crashes. The SPIS value is the sum of the above indicator values (IVFreq + IVRate + IVSeverity) for 0.10-mile (0.16 km) sections of urban and rural roads, shifted by 0.01 mile for each new section.

There are three SPIS sites in Pendleton in the 2006 list. **These three sites are in the top 10 percent of high-crash sites in the state**. Since the SPIS sites are listed by segments of roadway, it happens that each of these sites encompasses more than one intersection. The SPIS sites are as follows:

- Pendleton-John Day Highway 28 (no route number on this segment), Milepoint 0.55 through 0.67. The intersection of Frazer and Main Streets, and the intersection of Frazer and SW 1st Streets.
- Pendleton-John Day Highway 28 (US 395), Milepoint 1.67 through 1.79. The intersection of Southgate with the I-84 eastbound on-/off-ramps, and the intersection of Southgate with SW Hailey Ave/Tutuilla Creek Road.
- Pendleton Highway 67 (US 30), Milepoint 3.28 through 3.46. The intersection of Court Avenue with SW 1st Street, the intersection of Court Avenue with Main Street, and the intersection of Court Avenue with SE 1st Street.

2.5 OTHER TRANSPORTATION SERVICES AND FACILITIES

Public Transportation

Elite Taxi Service operates door-to-door transportation services to the transportation disadvantaged on a voucher system. The expansion of a fixed-route system for the general public should continue to be evaluated and planned. Some intercity bus service is provided by Greyhound. However, Pendleton and nearby cities should continue to evaluate the feasibility of intercity service for employees, students, and the users of regional medical facilities. Local public transportation services and facilities were further discussed in the Transit Needs Assessment Technical Memorandum. Through Olympia Bus Lines, Amtrak offers one eastbound and one westbound trip per day to passengers connecting with rail service. Pendleton no longer has service through Amtrak's Pioneer line.

Peak demand on the transportation system occurs annually during the week of the Pendleton Round-Up. Shuttle services and other traffic management measures have been implemented by the City and provide access and mobility for the city's residents and visitors during this annual event.

Rail Inventory

Rail service was first provided to Pendleton in 1882 by Oregon Railway and Navigation Company (now Union Pacific) with a line between Pendleton and Portland. Today, Pendleton is served directly by a Class I line-haul freight railroad—the Union Pacific Railroad. The main line connects Portland and Boise. Union Pacific estimates that approximately 36 trains per day pass through Pendleton; this number is expected to increase to 53 trains per day by 1997. These vary in size up to 7,200 feet in length. Currently, maintenance of the Union Pacific lines in Pendleton is handled out of two offices: tracks in the western portion of Pendleton are maintained by the office at Hinkle Rail Yard in Hermiston while tracks in the eastern portion of Pendleton are maintained by the office in La Grande.

Currently, there are 12 public at-grade railroad crossings in the Pendleton urban area and three viaducts (two on Oregon 11 and one on US 30). In 1977, the number of public railroad crossings in the City of Pendleton was reduced from 16. Because of the significant number of at-grade crossings in the downtown area and the frequency of rail service, significant delays are experienced by autos, pedestrians, and bicycles several times throughout the day.

Bicycle Facilities

A Bicycle System Master Plan (Mitchell & Nelson Associates, 1981) was developed for the City of Pendleton that identifies a total of 45.1 miles of bicycle lanes, routes, and paths within the urban growth area. Over the years since this plan was adopted, the City has continued to place emphasis on the provision of bicycle and pedestrian facilities throughout the urban area. Several segments of River Parkway, an exclusive pedestrian/bicycle path along the Umatilla River, have been completed and additional segments are included in capital facilities plans. Additionally, although very few roadways throughout the city have on-street bicycle lanes, the City has been implementing recommendations from the Bicycle System Master Plan to provide on-street bicycle lanes and routes throughout the city.

As shown in Figure 2-12, exclusive bicycle lanes are currently provided on Southgate, Emigrant Avenue, Frazer Avenue, West Gate (between Northgate and Court Avenue), North Gate, South Gate Place, Quinney Avenue, SW 37th Street, Main Street, SW 2nd, SE 2nd, and Tutuilla Creek Road. Posted bicycle routes are signed on Isaac Avenue (between Intercourt Place and Main Street), Main Street, SW 10th Street, SE 8th Street, Court Avenue, Dorion Avenue, and Byers Avenue.

The Oregon Bicycle and Pedestrian Plan (ODOT 1995) does not include or endorse use of posted "bike routes" and specifies that all roads should be built to accommodate bicyclists. How the functional classification policy accommodates bicycles is, to a great degree, at the discretion of the City of Pendleton. Hence, the Pendleton TSP will differentiate where bicycle and mixed use traffic lanes are appropriate depending on street functional classification, volume, and other factors.

Later chapters of this TSP update will include project lists, maps, and financial analysis of needed improvements. The improvements related to the bicycle network will be highlighted. System deficiencies were analyzed and discussed in the November 15th Technical Advisory Committee meeting. The bike and pedestrian deficiencies and identified system improvements include:

1. Connecting West Hills and Pendleton High Schools.
2. Extending the River Parkway toward Mission (east).
3. Extending the River Parkway toward the west municipal boundary.
4. Sidewalk and bike facilities along roadways:

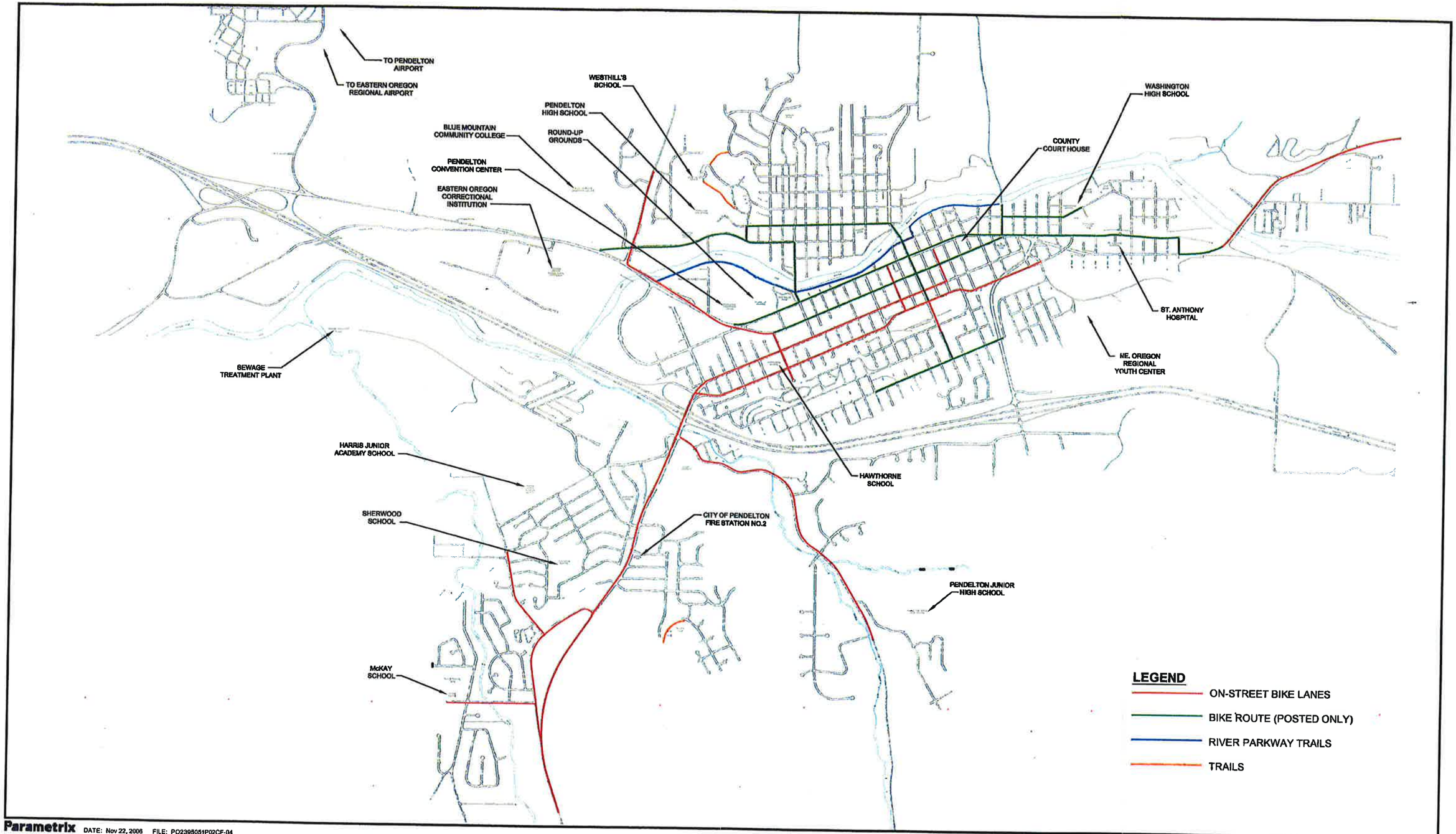
a. Connecting the sewer treatment plant south of McKennon Road to SW 37th Street (a proposed roadway).
b. Along SW Perkins Avenue (a partially-built roadway).
c. Along Westgate from Airport Road to the Aquatics Center (an existing roadway).
d. Along SW Hailey Avenue.

Pedestrian Facilities

The first sidewalks in Pendleton were constructed attached to buildings as boardwalks with wood awnings. In 1922, the City established the first standards for sidewalk construction and required 4-foot wooden sidewalks adjacent to the property line with a 6- to 10-foot planting strip constructed between the sidewalk and the curb. In 1960, the current standard for sidewalks was established with the following requirements:

- Sidewalks must be constructed between the curb and property line in commercial areas.
- In residential and industrial areas, 4-foot sidewalks must be constructed along collector and minor streets and 5-foot sidewalks must be constructed along arterial streets. Sidewalks must be constructed adjacent to the curb in industrial areas and within the right-of-way in residential areas.
- Sidewalks must be constructed on both sides of the street as part of new roadway construction, except where there are significant topographic constraints.
- Sidewalks must be maintained by the adjacent property owner.

Today, pedestrian facilities within the study area consist mainly of sidewalks along many of the collectors and arterials, as shown in Figure 2-13. In most cases, where sidewalks are present, they are located on both sides of the street. Figure 2-13 also illustrates footbridges and stairways that have been erected at various locations. Pedestrian signals and call buttons have been installed throughout nearly the entire downtown area and at all major intersections where improvements have been made. The City also constructed portions of River Parkway, an exclusive pedestrian/bicycle path along the Umatilla River. Project lists, maps, and financial analysis of needed improvements are presented in subsequent chapters and improvements related to the pedestrian network will be highlighted. System deficiencies were analyzed and discussed in the November 15th Technical Advisory Committee meeting. The deficiencies and identified system improvements are shown above.



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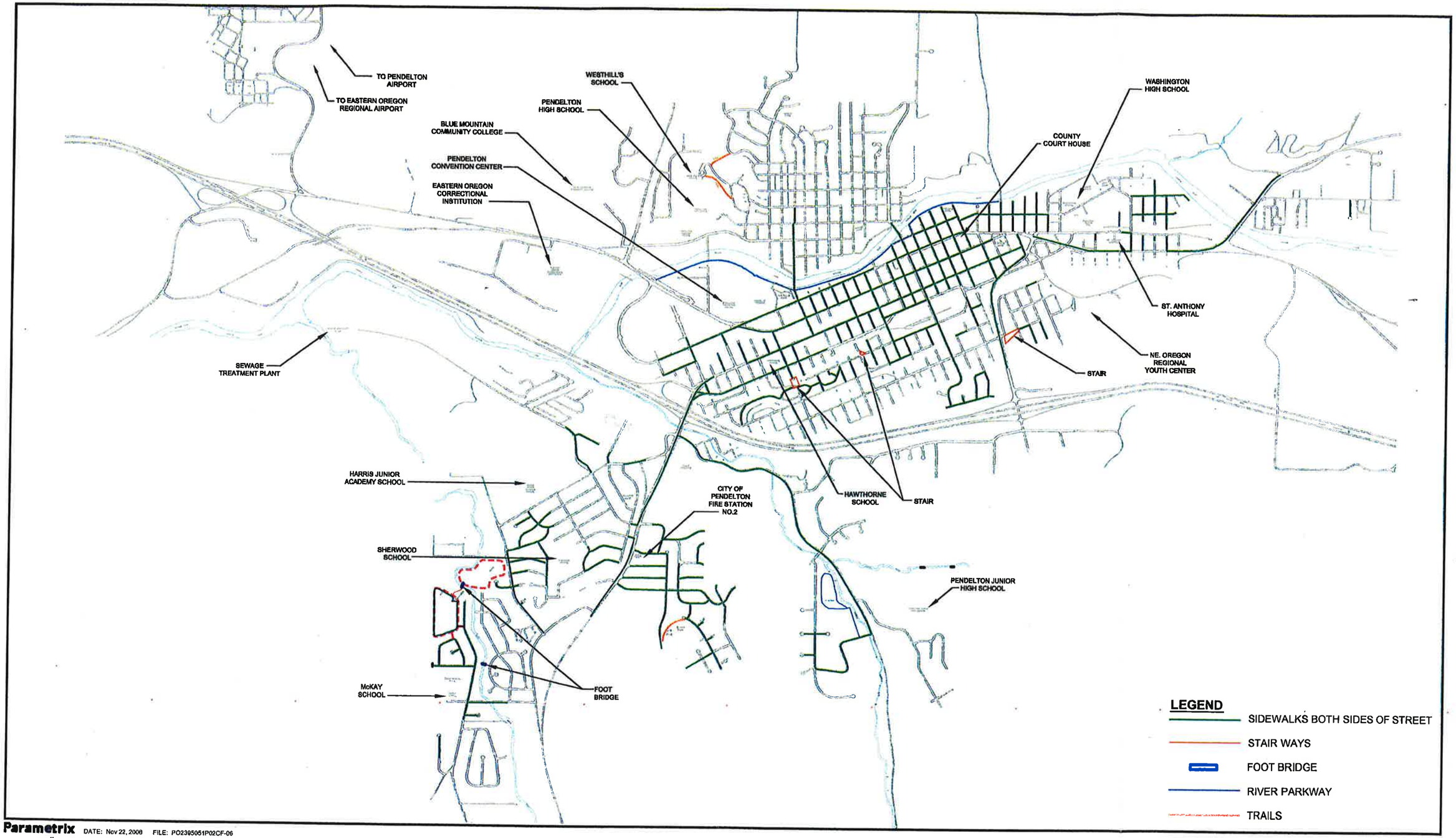
SCALE IN FEET

Figure 2-12
Existing Bicycle Facilities



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SCALE IN FEET

Figure 2-13
Existing Pedestrian Facilities

When the City of Pendleton was platted in 1868, the primary mode of transportation, in addition to walking, was the horse. As the city developed over the last 125 years, the horse continued to play an important role, especially as part of the Pendleton Round-Up. Although there are no designated bridle paths in the city, a citywide needs survey conducted in 1977 and 1978 indicated that nearly half of the people surveyed felt that bridle paths should be an integral part of the Umatilla River Parkway.

Committed Street Improvements

There are several committed projects that are expected to be built by ODOT with its State Transportation Improvement Program (STIP). The STIP projects will be listed in the TSP Summary, Capital Facilities Plan tables. The Barnhart Road project, connecting the airport/industrial area, with I-84 west of town, is the most significant project among these. The project has state and federal support.

As this time, there are insufficient resources for the City to maintain a capital improvement plan. As a result there is no adopted list of city-funded projects. There is, however, a project list associated with the System Development Charges (SDC) plan and ordinance. There is also a number of identified collector and minor streets that will be built in a manner that will further improve the city's circulation system. The SDC list, a new capital projects list (based on known funding limitations), and a map of the proposed circulation system have also been updated, integrated and adopted as a part of this TSP update.

Air Transportation

The Pendleton Municipal Airport has played an important role in the development of the city. In 1934, the Pendleton Airport was opened. In 1941, the airport was converted to an U.S. Army Air Base and was used by General Doolittle's Flight Wing as its training site prior to the Tokyo Raid. During the war, several structures were constructed at the airport for supplies, housing, maintenance, recreation, etc. The federal government returned control of the airport and all of the associated facilities back to the City of Pendleton in 1949, after the end of World War II with a reversionary clause in the time of war. Some of the buildings constructed during the war are still used today for storage, small businesses, and multi-family housing. Passenger service at the airport was first provided in 1946 by Empire Airlines. United Airlines served the city during World War II and continued service until 1981 when economic conditions caused the loss of this major carrier's service.

Today, commuter air service is provided at the Eastern Oregon Regional Airport by Horizon Airlines with seven flights daily between Pendleton, Portland, and Seattle. The airfield is also home to approximately 60 locally owned fixed-wing aircraft, locally owned rotor and CH-47 Chinook helicopters with the Oregon Army Air Guard. The City of Pendleton updated the Master Plan for the Eastern Oregon Regional Airport at Pendleton on October 2002. This Master Plan Update describes the current facilities and usage of the airport, predicts future demand, and determines the best development strategy to meet this demand.

Water Transportation

Although the Umatilla River flows through Pendleton, the river is generally too shallow to allow for effective water transportation. Water transportation is limited to recreational use of the river.

Pipelines

Pipeline transportation in and throughout the study area includes transmission lines for electricity (provided by Pacific Power & Light Company since 1918), cable television and telephone services, as well as pipeline transport of water, sanitary sewer, and a major north-south transmission line for natural gas. In addition, the region currently operates an infrastructure that provides links for electronic communication via telecommuting, satellite communication, etc.

2.6 SUMMARY OF EXISTING TRANSPORTATION SYSTEM, NEEDS, AND DEFICIENCIES

Within the urban growth area, an intricate network of bicycle and pedestrian facilities, public transportation service for the transportation disadvantaged, freight and passenger rail and air service, bridges and roadways provide mobility to residents and visitors. The historic development of these facilities and services has been shaped by the topography, the construction of I-84, and the values and vision of the residents of the city.

The City has continued to place emphasis on the provision of bicycle and pedestrian facilities throughout the urban area. Several segments of the River Parkway, an exclusive pedestrian/bicycle path along the Umatilla River, have been completed and additional segments are included in capital facilities plans. Additionally, although very few roadways throughout the city have on-street bicycle lanes, the City has been implementing recommendations from the Bicycle System Master Plan to provide on-street bicycle lanes and routes throughout the city.

Elite Taxi Service operates door-to-door transportation services to the transportation disadvantaged on a voucher system. The expansion of a fixed-route system for the general public should continue to be evaluated and planned. Some intercity bus service is provided by Greyhound. However, Pendleton and nearby cities should continue to evaluate the feasibility of intercity service for employees, students, and the users of regional medical facilities.

Because of topographic constraints and the construction of I-84, there are limited opportunities for access between the areas of Pendleton to the north and south of the freeway: The resulting level of cross-town traffic, especially in the vicinity of the I-84 interchange with US 395, makes it very difficult for motorists exiting the freeway to access the downtown and jeopardize the functionality of certain intersections.

Currently, one signalized and three unsignalized intersections exceed 0.80 V/C. The signalized intersection of Emigrant Avenue with 20th Street currently operates with a V/C greater than 1.00. The unsignalized intersections of US 395 with the east and westbound ramps to I-84 where the stop-controlled side street V/C exceeds 1.00 at both locations, and the intersection of Court/Dorion Avenues with West Gate Avenue where the V/C is 0.91. These deficiencies are addressed in later chapters of this TSP update. Chapter 5 of this report, details operational conditions in 2027 without any transportation improvements.

Lastly, the peak demand on the transportation system occurs annually during the week of the Pendleton Round-Up. Shuttle services and other traffic management measures have been implemented by the City and provide access and mobility for residents and visitors during this annual event.