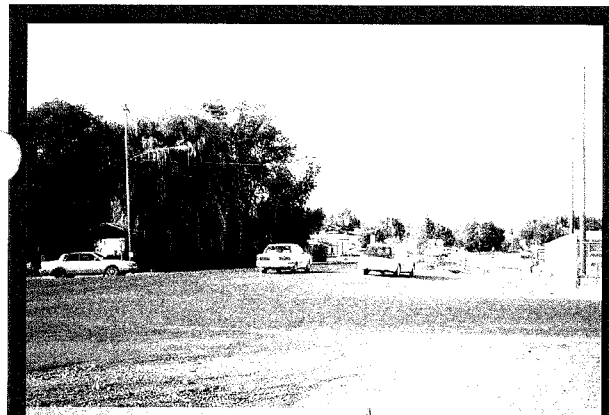

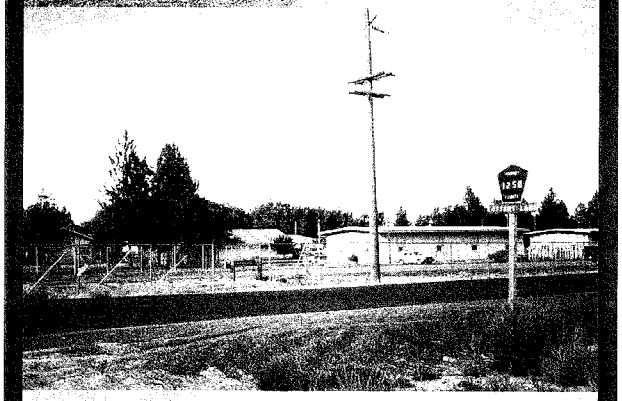

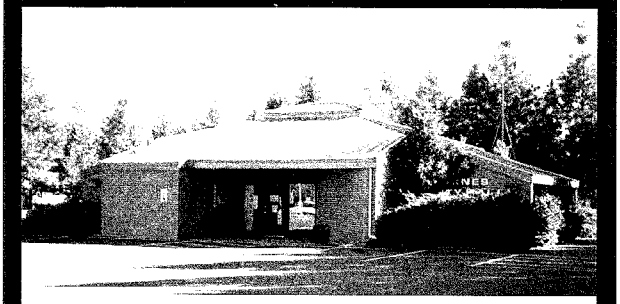

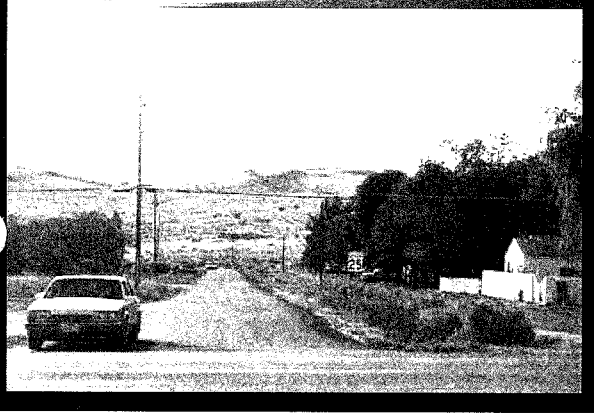

CITY OF HINES
TRANSPORTATION SYSTEM PLAN

Final Report
April 2001

DAVID EVANS AND ASSOCIATES, INC.

20010835

City of Hines
ORDINANCE #_253

AN ORDINANCE ADOPTING A TRANSPORTATION SYSTEM PLAN FOR THE CITY AND DECLARING AN EMERGENCY

The City of Hines hereby ordains:

LEGISLATIVE FINDINGS

1. The City has conducted a series of public workshops over the past year to develop a Transportation System Plan.

2. The Transportation System Plan has been the subject of three public hearings: two before the City Planning Commission on March 6 and 20, 2001, and one before the City Council on April 10, 2001.

3. In addition, the draft Transportation System Plan has been available for public review at City Hall since November of 2000.

ADOPTION

1. The Transportation System Plan, Final Report, dated January 2001, prepared by David Evans and Associates, attached as Exhibit 1, is hereby adopted.

INSTRUMENT # 20010835

EMERGENCY CLAUSE

The City of Hines does hereby find and declare that the immediate preservation of the public peace, health and safety of the City of Hines necessitates that this ordinance take effect without delay, and therefore this ordinance shall take effect immediately upon adoption by vote of two-thirds of the quorum present at the meeting wherein this ordinance is enacted.

READ, considered, and passed by vote of 5 FOR and 0 AGAINST, being at least the affirmative vote of two-thirds of the quorum present at the vote of the Common Council of the City of Hines, this 8th day of May, 2001

CITY OF HINES

Cristina M. Hill, Mayor

ATTEST:

Pamela L. Mather, City Recorder

STATE OF OREGON } ss
County of Harney

I certify that the within instrument was received for record on the 11 day of May, 20 01 at 10:26 o'clock A M. and recorded Microfilm number 20010835 Deed Records of said County.

Maria Iturriaga, County Clerk

By: Robinson Deputy

DAVID EVANS AND ASSOCIATES, INC.

2828 SW Corbett Avenue

Portland, Oregon 97201

Tel: 503.223.6663

Fax: 503.223.2701

TRANSMITTAL

TO: Larry French
DLCD
635 Capital Street, NE, Suite 150
Salem, OR 97301

DEPT OF
MAY 16 2001
LAND CONSERVATION
AND DEVELOPMENT

DATE: May 15, 2001

FROM: Thuy Tu

PROJECT: HINES TRANSPORTATION SYSTEM PLAN

PROJ. #: ODOT0000-0331.001.04.05

ITEM	COPIES	DATE	DESCRIPTION
1	1	4/01	City of Hines, Transportation System Plan

☐ AS YOU REQUESTED ☐ FOR YOUR APPROVAL ☐ RETURN REQUESTED ☐ RECORDS MANAGEMENT

☐ FOR YOUR INFORMATION ☒ FOR YOUR REVIEW ☐ _____

COMMENTS:

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CHAPTER 1: INTRODUCTION

The Hines Transportation System Plan (TSP) guides the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. This TSP constitutes the transportation element of the city's comprehensive plan and satisfies the requirements of the Oregon Transportation Planning Rule established by the Department of Land Conservation and Development. It identifies and prioritizes transportation projects for inclusion in the Oregon Department of Transportation's (ODOT's) Statewide Transportation Improvement Program.

PLANNING AREA

The Hines TSP planning area includes the City of Hines and the area within the city's urban growth boundary. The planning area is shown on Figure 1-1. Roadways included in this TSP fall under several jurisdictions: Hines, Harney County, and the State of Oregon.

Hines is the second largest urban area in Harney County, after Burns, with 1,535 residents (20 percent of the County's population in 1997). The city is located in southeastern Oregon about 290 miles southeast of Portland, 130 miles west of the Oregon/Idaho border, and 150 miles north of the Oregon/Nevada border.

Hines shares a common border with the City of Burns, and the two cities form a self-contained urban area providing a variety of residential, shopping, employment, and recreational opportunities within their combined urban growth boundaries.

The Hines economy has been based in forestry, manufacturing, and livestock. It has recently attracted several new employers and businesses to the area which are creating jobs and strengthening the economy. This growth includes a number of service businesses (motels, restaurants, gas stations, truck stops), addition of new industries (Safari Motor Coach, American Absorbants), and expansion of existing industries (Louisiana Pacific).

There are five industrial areas in or adjacent to the cities with almost 1,400 acres of available land. About 1,200 acres of the industrial areas already have water, sewer, and electric services. Hines has more than 40 acres of this industrial land with services inside it own city limits.

In addition to expanding industrial activities, agriculture, tourism, and forest products are key industries targeted to diversify the economy. The Ochoco National Forest lies to the north of the cities, with one of the largest supplies of ponderosa pine in the nation. Nearby Malheur Lake and Malheur National Wildlife Refuge provide an abundance of game, numerous campsites, and excellent fishing which have stimulated fast-growing recreational activities.

The comprehensive plan land use map of the Hines TSP planning area is shown on Figure 1-2.

US Highways 20 and 395 (on the same alignment) run through the center of town forming the primary arterial with which almost all other streets in the city connect. Circle Drive forms a loop surrounding a city park bisected by the state highway and Barnes Avenue. Other roadways echo the circular pattern formed by this central city design.

West of US Highway 20/395, the land is primarily zoned residential (single-family and multi-family), with some lots zoned for public uses (school, post office, City Hall, etc.). The tracts along the highway are primarily zoned for commercial and industrial uses. A large tract in the northeast quadrant of the city is zoned for industrial use,

and another large tract is zoned for public use (Valley Golf Club). The remaining city land is zoned single-family residential and public use.

PLANNING PROCESS

The Hines TSP was prepared as part of an overall effort in Harney County to prepare TSPs for the county and two municipalities: Hines and Burns. Each plan was developed through a series of technical analyses combined with systematic input and review by the city, the combined management team, the Transportation Advisory Committee (TAC), ODOT, and the public. The TAC consisted of staff, elected and appointed officials, residents, and business people from Harney County, and the cities of Hines and Burns. Key elements of the process include:

- Involving the Hines community (Chapter 1)
- Defining goals and objectives (Chapter 2)
- Reviewing existing plans and transportation conditions (Chapters 3 and 4; Appendices A and B)
- Developing population, employment, and travel forecasts (Chapter 5)
- 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)

Community Involvement

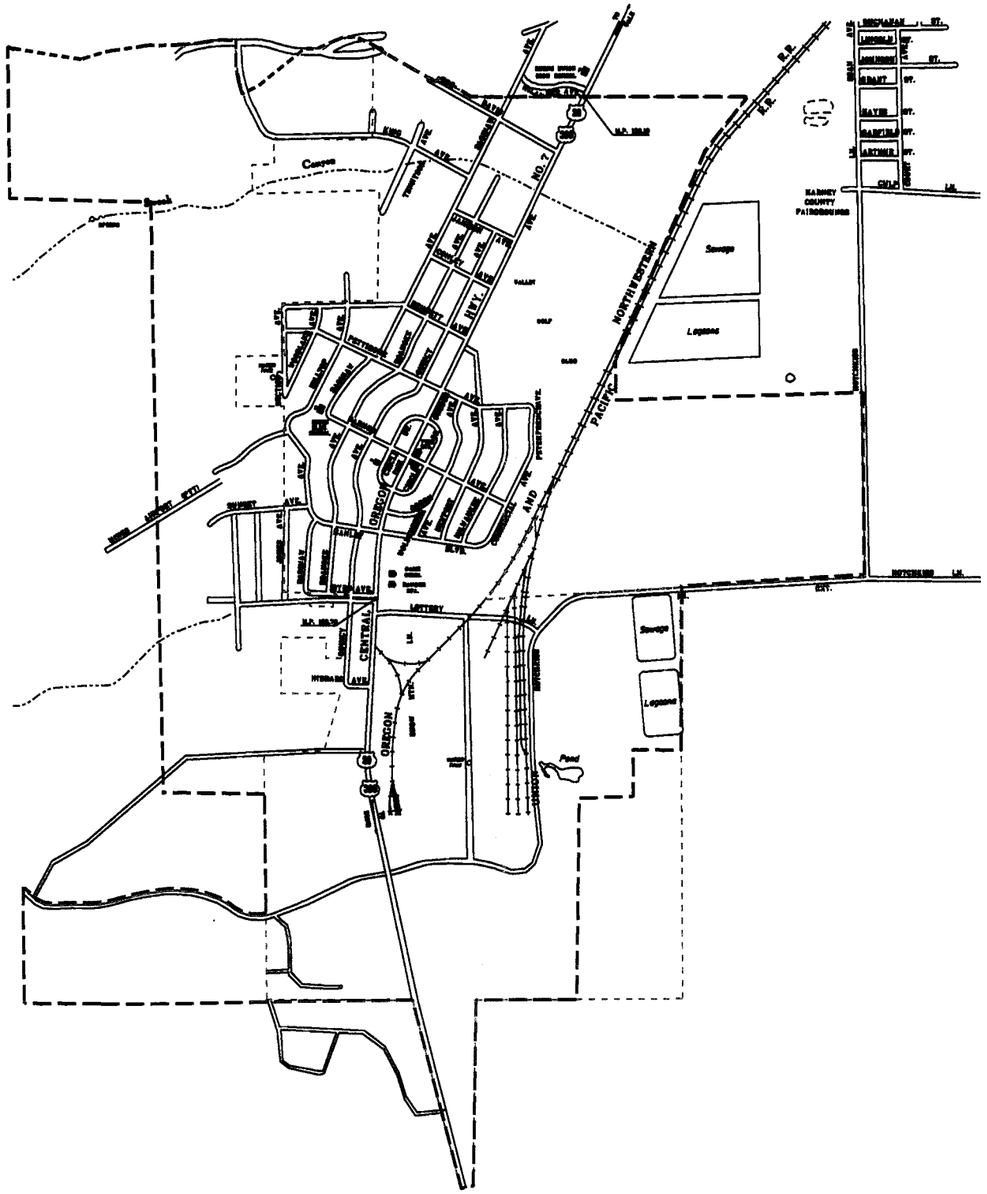
Community involvement is an integral component in the development of a TSP for the City of Burns, the City of Hines, and Harney County. Since each community needed to address similar transportation and land use issues, a public involvement program involving all the jurisdictions was used. Several different techniques were utilized to involve each local jurisdiction, ODOT, and the general public.

A combined management team and transportation advisory committee provided guidance on technical issues and direction regarding policy issues to the consultant team. Staff members from each local jurisdiction, ODOT, and a local resident from each community served on this committee. This group met five times during the course of the project.

The second part of the community involvement effort consisted of community meetings within Harney County. The first public meeting was held in August 1997 in Burns. The general public was invited to learn about this TSP planning process and provide input on transportation issues and concerns. A second public meeting was held in March 1998. The third public meeting was held in August 1998. The public was notified of the meetings through announcements in the local newspapers and on the local radio station.

Goals and Objectives

Based on input from the city, the management team/transportation advisory committee, and the community, a set of goals and objectives were defined for this TSP. These goals and objectives were used to make decisions about various potential improvement projects. They are described in Chapter 2.



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LEGEND: ----- URBAN GROWTH BOUNDARY

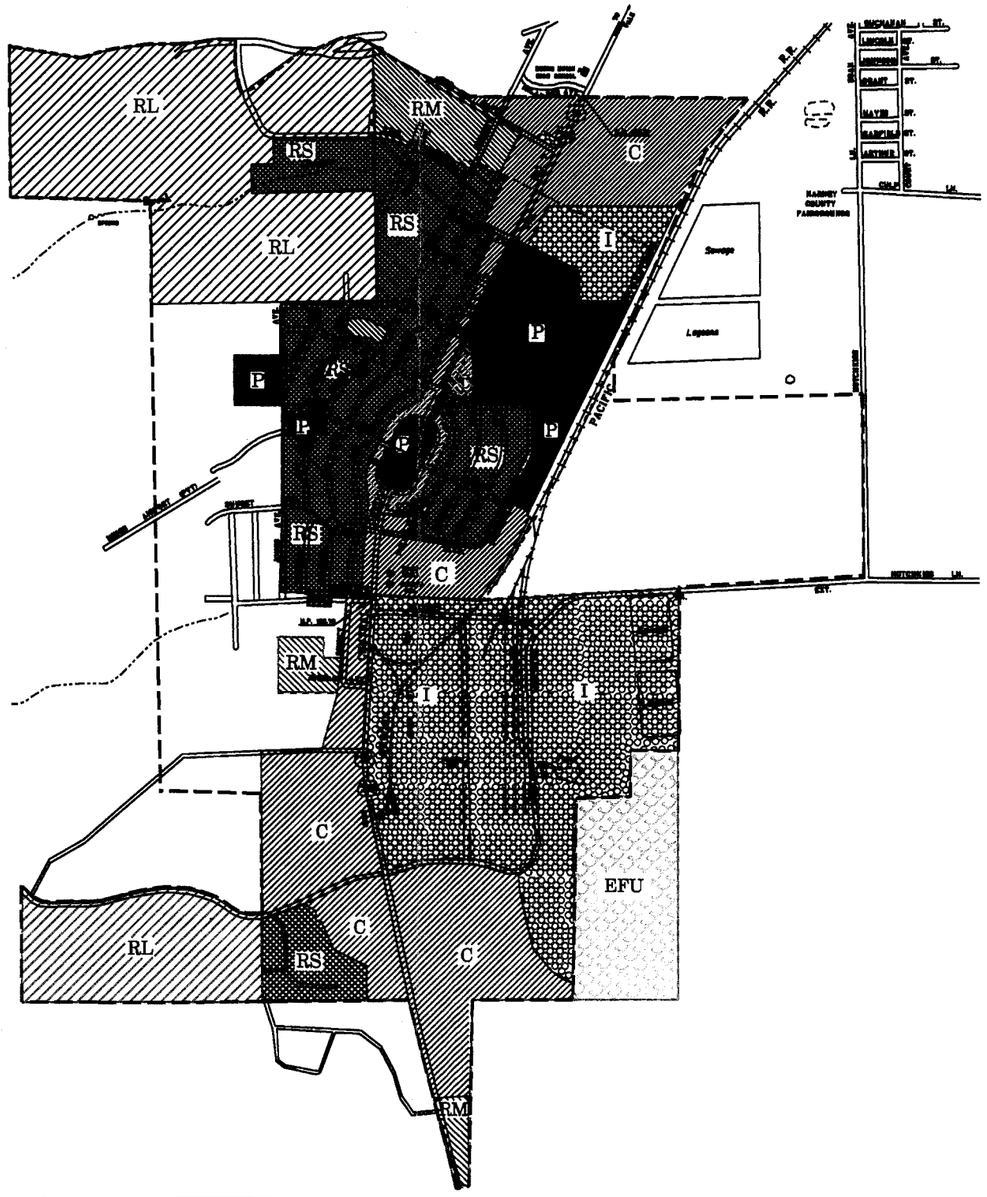
. . . . . CITY LIMITS

FIGURE 1-1

Hines Study Area

City of Hines TSP

HARN0001/HINE1-1.DGN/TNT/05-09-01



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0 1200 2400 3600
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LEGEND:
- U.G.B. LINE
- CITY LIMITS

RS	SINGLE-FAMILY RESIDENTIAL
RM	MULTIPLE-FAMILY RESIDENTIAL
C	COMMERCIAL
I	INDUSTRIAL
P	PUBLIC
EFU	EXCLUSIVE FARM USE
RL	RESIDENTIAL LARGE LOT
CD	COMMERCIAL DOWNTOWN

FIGURE 1-2

Land Use /Zoning

City of Hines TSP

HARN0001/HINE3-1.DGN/TNT/01-12-01

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

To begin the planning process, all applicable Hines and Harney 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 Hines 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 this TSP to address a 20-year forecasting period. Future traffic volumes for the existing plus committed transportation systems were projected using ODOT's *Level 2 -- Cumulative Analysis* methodology. The overall travel demand forecasting process is described in Chapter 5.

Transportation System Potential Improvements

Once the travel forecasts were developed, it was possible to evaluate a series of potential transportation system improvements. Transportation demand management measures and potential transportation improvements were developed and analyzed as part of the transportation system analysis. These improvements were developed with the help of the local working group, and they attempt to address the concerns specified in the goals and objectives (Chapter 2). After evaluating the results of the potential improvements analysis, a series of transportation system improvements were selected. These recommended improvements are described in Chapter 6.

Transportation System Plan

This TSP addresses each mode of transportation and provides an overall implementation program. The street system plan was developed from the forecasting and potential improvements evaluation described above. The bicycle and pedestrian plans were developed based on current usage, land use patterns, and the requirements set forth by the 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.

Funding Options

The City of Hines will need to work with Harney County and ODOT to finance new transportation projects over the 20-year planning period. An overview of funding and financing options that might be available to the community are described in Chapter 8.

Recommended Policies and Ordinances

Comprehensive plan policies and implementing zoning and subdivision ordinance amendments have been completed in concurrence with the TSP update. These policies and ordinances are intended to support the TSP and satisfy the requirements of the TPR as described in Chapter 9.

RELATED DOCUMENTS

The City of Hines TSP addresses the regional and rural transportation needs in the city. There are several other documents that address specific transportation elements or areas in Harney County.

Other Transportation System Plans

Two other TSPs have been prepared in Harney County. These documents are the Harney County TSP and the City of Burns TSP.

The county TSP addresses the needs of the community outside each city's UGB. It provides roadway standards, access management standards, and modal plans. In some cases, an improvement option may be identified in a city TSP that also needs to be addressed in the Harney County TSP as well.

The City of Burns TSP addresses the needs of the adjacent City of Burns.

County Inventories

Jean Cain has prepared two inventories have been prepared for Harney County. These documents are:

- Harney County Buildable Lands Inventory (1997)
- Harney County Housing Study (1996)

These reports were prepared as updates to the *Harney County Comprehensive Plan* and address housing, zoning and infrastructure issues.

Corridor Strategies

Generally, corridor planning is intended to implement the goals and policies set forth by the *1992 Oregon Transportation Plan*, the *1999 Oregon Highway Plan*, and the recent modal plans for rail, freight, bike/pedestrian, aviation, and public transportation plus the safety action plan. The corridor strategies have several purposes:

1. They translate the policies of the *Oregon Transportation Plan* into specific actions.

2. They describe the functions of each transportation mode, consider trade-offs, and show how they will be managed.

3. They identify and prioritize improvements for all modes of travel; indicate where improvements should be made.

4. They resolve any conflicts with local land use ordinances and plans; and establish guidelines for how transportation plans will be implemented.

In 1996, ODOT developed a *US 395 South Corridor Strategy* to identify projects for the Oregon State Transportation Improvement Program. In 1997, ODOT, in cooperation with the City of Hines and other jurisdictions along US 395 from Pendleton to California developed a corridor strategy that was endorsed by the Oregon Transportation Commission (OTC) and each jurisdiction along the corridor. The document set forth an overall corridor strategy and objectives that emphasizes enhancing travel safety, supporting economic development and preserving the corridor's unique environmental features. ODOT also embarked upon a process of developing a corridor strategy for US 20 that has since been incorporated into transportation system planning efforts for the cities and counties along the corridor.

Other State Plans

In addition to the ODOT corridor strategy, coordination with the following state plans is required:

- Oregon Transportation Plan
- Oregon Highway Plan
- Oregon Bicycle and Pedestrian Plan

CHAPTER 2: GOALS AND OBJECTIVES

The purpose of this TSP is to provide a guide for the City of Hines to meet its transportation goals and objectives. The following goals and objectives were developed from information contained in the city's comprehensive plan and public concerns as expressed during public meetings. An overall goal was drawn from the plan, along with more specific goals and objectives. Throughout the planning process, each element of the plan was evaluated against these parameters.

OVERALL TRANSPORTATION GOAL

To provide and encourage a safe, convenient, and economic transportation system to serve the needs of the citizens of Hines, the residents of the urban area, and Harney County.

Policies

A. Maintain and upgrade the overall transportation system within the city to meet present and future needs.

B. Provide, at a minimum, paved streets within the community.

C. Preserve and enhance natural and scenic resources in the design of new roads, streets and thoroughfares.

D. Support commercial bus service to areas outside of Harney County.

E. Complete a bike path from central Hines to central Burns.

F. All future improvements of existing streets shall comply with the standards set forth in the subdivision ordinance.

G. Encourage the State Highway Division to provide for a traffic signal, if warranted, near the elementary school.

H. Designation of any new truck route in the city limits shall be reviewed by the city.

I. Anytime a cul-de-sac is constructed in a new development, it shall remain in the private ownership of those who own the lands surrounding it and it shall not become a public street.

J. Seek a waiver from state and federal transportation regulations or policy when it is to the advantage of all involved, i.e., the bike path.

K. Prohibit any services, businesses, agencies, or development on or near any bypass that might be built around Hines and Burns.

Goal 1

Preserve the function, capacity, level of service, and safety of the city streets, county roads, and state highways.

Objectives

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

B. Develop alternative, parallel routes which can serve local traffic needs.

C. Promote alternative modes of transportation.

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

E. Promote transportation system management.

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

Goal 2

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

Objectives

A. Develop an efficient road network that would maintain a level of service C or better.

B. Improve and maintain existing roadways.

C. Ensure planning coordination between the city, the county, and the state.

D. Identify truck routes to reduce truck traffic in urban areas.

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

F. Identify local problem spots and recommend solutions.

Goal 3

Identify the 20-year roadway system needs to accommodate developing or undeveloped areas of the city.

Objectives

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

B. Integrate new arterial and collector routes into a grid system with an emphasis on reducing pressure on traditionally heavy traffic routes.

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

D. Improve the access onto and off of arterial roadways to encourage growth.

E. Inform the public of the access management policies.

Goal 4

Increase the use of alternative modes of transportation (walking, bicycling, rideshare/carpooling, and transit) through improved access, safety, and service.

Objectives

A. Provide sidewalks, bikeways, and safe crossings on arterial and collector streets.

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

C. Encourage new development which can utilize or improve the existing transportation system.

D. Plan for future transit service by seeking state support.

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

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

Goal 5

Ensure that the road system within the city and urban area is adequate to meet public needs, including the transportation disadvantaged.

Objectives

A. Develop a city transportation plan.

B. Meet identified maintenance and level of service standards on the city streets.

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

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

E. Develop an access management strategy for US Highways 20 and 395.

F. Evaluate warrants for traffic control devices, particularly along US Highways 20 and 395.

G. Request ODOT review of speed zones and encourage the ODOT Speed Control Review Board to consider modifying posted speeds based on the ODOT review.

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

Goal 6

Improve coordination among Harney County, ODOT, the US Forest Service, the US Bureau of Land Management, the Federal Highway Administration, and the city.

Objectives

A. Cooperate with ODOT in the implementation of the Statewide Transportation Improvement Program (STIP).

B. Encourage improvement of state highways.

C. Work with the county in establishing cooperative road improvement programs and schedules.

D. Work with the county in establishing the right-of-way needed for new roads identified in this TSP.

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

CHAPTER 3: TRANSPORTATION SYSTEM INVENTORY

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

STREET SYSTEM

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 nearly all American cities is the roadway system. This trend is clearly seen in the existing Hines transportation system, which consists almost entirely of roadway facilities for cars and trucks. Because of the rural nature of the area, 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 Hines, as well as those in Harney County that are included in this TSP planning area. Inventory elements include:

- Street classification and jurisdiction;
- Street width;
- Number of travel lanes;
- Presence of on-street parking, sidewalks, or bikeways;
- Speed limits; and
- General pavement conditions.

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

City Street Classification

Hines has classified its street system into three levels: arterials, collectors, and local streets. The classification system includes city, county, and state roadways.

Arterials

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

In Hines, the major arterial network consists of US Highway 20/395. This roadway, as described previously, serves as the focus for most of the commercial development in the city.

The Hines subdivision ordinance states that right-of-way for arterials shall be 80 feet and roadways shall be not less than 44 feet with parking or 36 feet with parking on one side only. All streets shall be fully improved with curbs, storm drains, and paving.

Collectors

Collectors connect local neighborhoods or districts to the arterial network. Hines has three designated collectors: Barnes Avenue, East Circle Drive, and West Circle Drive.

The Hines subdivision ordinance states that right-of-way for collectors shall be 60 feet and roadways shall be not less than 40 feet with parking or 36 feet with parking on one side only. All streets shall be fully improved with curbs, storm drains, and paving.

Local Streets

Local streets form the majority of the street system in Hines. They are designed to carry the very low traffic volumes associated with the local uses that abut them. They are not intended to function as alternate routes to the arterial or collector systems.

The Hines subdivision ordinance states that roadways for local streets shall be not less than 36 feet with parking or 30 feet with parking on one side only. The exception occurs in cases where topography or other physical conditions have brought about a right-of-way less than 50 feet in width, a smaller improved width may be approved.

Street Layout

The street layout in the City of Hines is somewhat different than most communities, and is one of curvilinear streets combined with rectangular blocks, as shown in Figure 3-1.

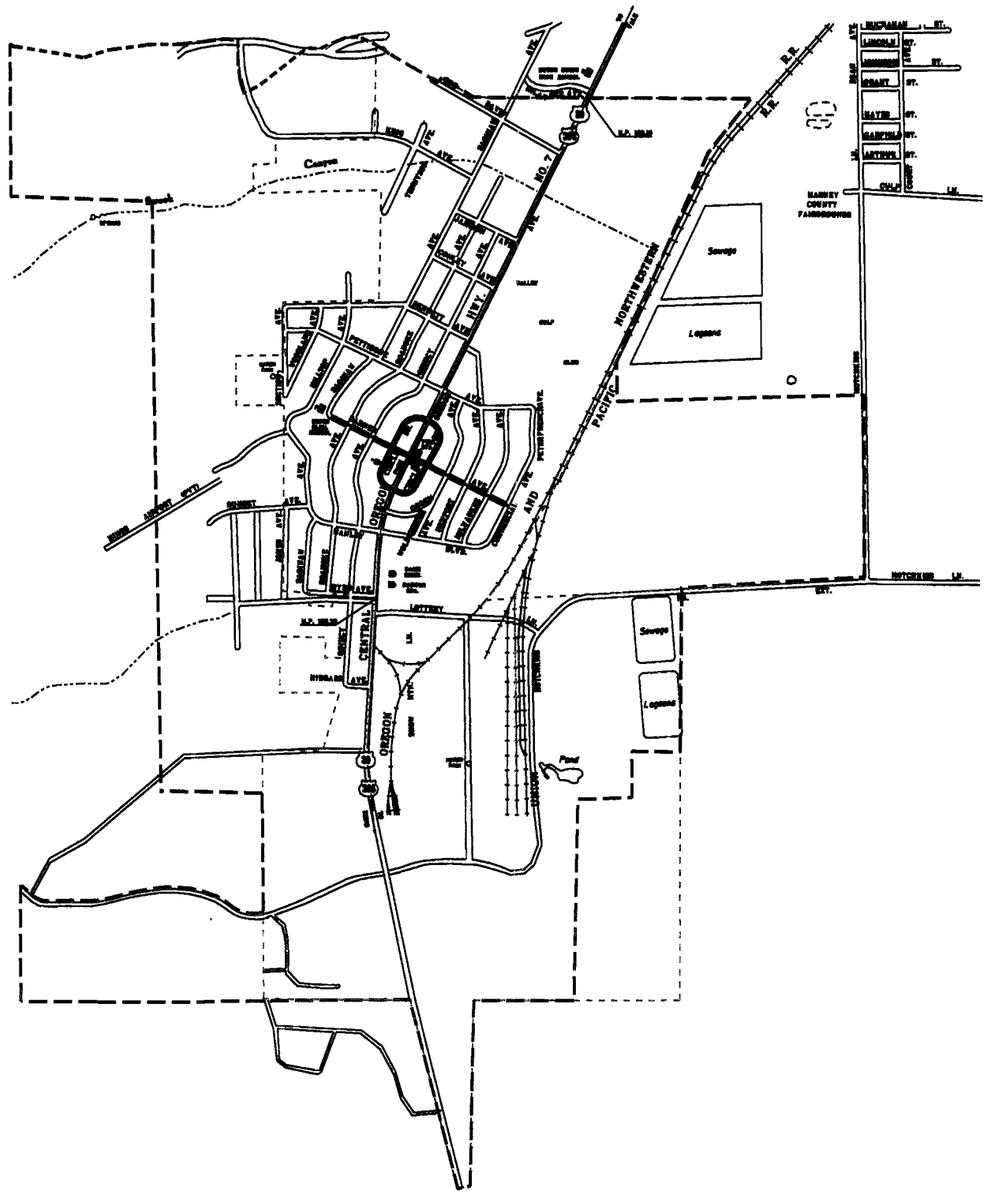
Existing City Street Design Standards

City of Hines ordinances currently require a basic minimum right-of-way of 60 feet for residential streets and 60 to 90 feet for collector and arterial streets. Currently, preliminary street standards exist for minimum pavement widths, shoulders, sidewalks, curbs and buffers as described below. No width specifications are given for alleys. There are no bikeway requirements.

- Residential Streets - Current standards provide a right-of-way of 50 feet and a pavement width of 30 to 36 feet, minimum paved width of 22 feet, and minimum gravel shoulder of two feet. The existing right-of-way on some residential streets is as much as 90 feet.

- Cul-de-sac Streets -- Current standards are the same as those for residential streets, with a minimum bulb radius of 75 feet required.

- Collector and Arterial Streets -- Current standards are for a minimum right-of-way of 60 to 90 feet, minimum paved width of 36 feet, and minimum sidewalk width of five feet with no required setback from



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LEGEND:
- URBAN GROWTH BOUNDARY
- CITY LIMITS
- MAJOR ARTERIAL
- COLLECTOR

FIGURE 3-1

Existing Street Classification System

City of Hines TSP

HARN0001/HINE3-1.DGN/TNT/01-12-01

the street. Curbs are specified for the collector and arterial streets. Many of the streets in the commercial areas exceed these minimums, with typical paved widths of 35 to 45 feet from curb to curb, and Main Street has a paved width of 60 feet from curb to curb. City officials would like to require a sidewalk width of 12 feet in commercial areas with a minimum acceptable width of six feet.

General Pavement Conditions

The ODOT Pavements Unit published a 1994 report entitled, *Pavement Rating Workshop, Non-National Highway System*. This report thoroughly defines the characteristics of different pavement conditions. The report also provides color photographs of roadways that display these characteristics, which aids in field investigation and rating of pavement condition. David Evans and Associates, Inc. used these guidelines to conduct a subjective evaluation of pavement condition for all collectors within the City of Hines.

The inventory, conducted in November 1997, indicated that the following streets are in fair condition: Circle Drive south of Barnes Avenue and west of US Highway 20, and Circle Drive north and south of Barnes Avenue and east of US Highway 20. The following streets are in good condition: Circle Drive north of Barnes Avenue and west of US Highway 20, and Barnes Avenue from Saginaw Avenue to Commercial Avenue. Since it was reconstructed in 1998, the segment of US Highway 20 in Hines is in very good condition.

State Highways

Discussion of the Hines street system must include the state highways that traverse the planning area. Although Hines has no direct control over the state highways, these facilities affect both adjacent development and local traffic patterns. Hines is served by one state highway: US Highway 20/395. This highway serves as the major route through town with commercial and industrial development focused along its corridor.

State Highway Classification

The *1999 Oregon Highway Plan* (OHP) classifies the state highway system into five categories: Interstate, Statewide, Regional, District, and Local Interest. ODOT has established primary and secondary functions for each type of highway and objectives for managing the operations for each one. .

Hines has one highway of statewide importance (US Highway 20/395). According to the OHP, statewide highways "provide connections to larger urban areas, ports, and major recreation areas that are not directly served by interstate highways." The management objective for statewide highways is to provide for safe and efficient high-speed, continuous-flow operation. . In constrained and urban areas, interruptions to flow should be minimal." This means that design factors such as controlling access and providing passing lanes are of primary importance.

State Highway Freight System

As part of the 1999 OHP, a new state highway freight system has been designated. US Highway 20 is one of two east-west freight corridors designated in Oregon. US Highway 20 was chosen because of its connectivity, its use as an alternative route to I-84, and its use in inclement weather. According to the OHP, "the state highway freight system is intended to facilitate through movement of trucks".

The freight system designation does not guarantee additional funding for this route. It does have three special management features that may be applied.

1. Highways included in this designation have higher levels of service that other statewide highways.

2. The highway's function as a freight route should be balanced with local accessibility in Special Transportation Areas.

3. Freight system routes may be treated as limited access highways outside of the urban growth boundaries and unincorporated communities.

US Highway 20/395 – General Description

US Highway 20 (Central Oregon Highway) and US Highway 395 share roadway alignment through the City of Hines. The speed limit decreases from 55 to 45 mph south of the city, in the urbanizing industrial areas, and decreases further to 35 mph within the city itself. In 1998, the highway was expanded from a two-lane roadway to a three-lane facility with bike lanes. The roadway is wide enough to accommodate four travel lanes if needed in the future. Concrete sidewalks on both sides of the roadway replaced a former asphalt pedestrian and bike path along the east side of the highway.

Adjacent Land Use

Land along the rural sections of the highway system is primarily zoned for agricultural, farming, and forestry uses with numerous county and forest service roads accessing the highway. In the urban center of Hines, development is denser with other land uses bordering the highways such as industrial, commercial, public, and residential.

General Pavement Conditions

The Oregon Department of Transportation's Pavement Unit surveys the State Highway System on an annual basis. Observed severity levels of certain distress types are used to determine a pavement condition rating score. These scores are used to classify pavement segments into five condition categories: (1) Very Good, (2) Good, (3) Fair, (4) Poor, and (5) Very Poor.

According to the 1999 ODOT *Pavement Condition Report*, the recently reconstructed section of US Highway 20 which runs through Hines was categorized as having very good pavement condition.

Bridges

The Oregon Department of Transportation maintains an up-to-date inventory and appraisal of Oregon bridges. Part of this inventory involves the evaluation of three mutually exclusive elements of bridges. One element identifies which bridges are structurally deficient. This is determined based on the condition rating for the deck, superstructure, substructure, or culvert and retaining walls. It may also be based on the appraisal rating of the structural condition or waterway adequacy. Another element identifies which bridges are functionally obsolete. This element is determined based on the appraisal rating for the deck geometry, underclearances, approach roadway alignment, structural condition, or waterway adequacy. The third element summarizes the sufficiency ratings for all bridges. The sufficiency rating is a complex formula which takes into account four separate factors to obtain a numeric value rating the ability of a bridge to service demand. The scale ranges from 0 to 100 with

higher ratings indicating optimal conditions and lower ratings indicating insufficiency. Bridges with ratings under 55 may be nearing a structurally deficient condition.

There are no bridges within the City of Hines listed on the state inventory.

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. Because pedestrian facilities are generally an afterthought, they are not planned as an essential component of the transportation system.

The relatively small size of Hines indicates that walking could be employed regularly, weather permitting, to reach a variety of destinations. Encouraging pedestrian activities may not only decrease the use of the personal automobile but may also provide benefits for retail businesses. Where people find it safe, convenient, and pleasant to walk, they may linger and take notice of shops overlooked before. They may also feel inclined to return to renew the pleasant experience time and again.

As part of the 1998 reconstruction of US Highway 20/395 through Hines, the former asphalt path that ran along the east side of the highway was replaced with sidewalks on both sides of the street. The only other dedicated pedestrian facility is the sidewalk that runs along the outside edge of Circle Drive, in the center of town. The existing pedestrian system is shown in Figure 3-2.

A multi-use path was recently constructed on former railroad beds that run through Hines and Burns as a key component of a larger project. The path extends from Lottery Lane, northward through Hines to Egan Avenue in Burns and includes limited landscaping. When completed, the facility will have parking lots at both ends. It will also connect to Pettibone Avenue. Landscaping, benches, and a raised observation platform will be features of the complete project. The project is not fully funded yet. Several grants have been acquired for the project as well as some other funding. Donations of materials and in-kind services are also contributing to the project.

BIKEWAY SYSTEM

Like pedestrians, bicyclists are often overlooked when considering transportation facilities. Bicycles are not often considered as a serious mode of transportation. However, cycling is a very efficient mode of travel. Bicycles take up little space on the road or when parked, do not contribute to air or noise pollution, and offer relatively higher speeds than walking. Because of the small size of Hines, 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 in order to reduce some of the negative aspects of urban growth. 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; on foot, the distance commonly walked is around one-half mile.

As part of the reconstruction of US Highway 20/395 through Hines, the former asphalt path that ran along the east side of the highway was replaced with bike lanes and sidewalks on each side of the road. Except on US Highway 20/395, bicyclists must share the roadways with motorized vehicles.

The multi-use path along the railroad beds is also be available to bicyclists.

On low-volume roadways, such as many of the local streets, bicyclists and automobiles can both safely and easily use the roadway. On higher volume roadways, particularly the arterial streets, safety for the bicyclists is an important issue.

PUBLIC TRANSPORTATION

Public transportation in Hines consists of the Harney County Senior Center Transportation and a dial-a-ride service for senior citizens and the disabled. The city has no local fixed-route transit or taxi service at this time. Amtrak Thruway Motorcoach provides long distance service with a scheduled stop in Burns and a stop in Hines if prior arrangement is made.

Local Service

The senior citizen and disabled dial-a-ride service is provided by the Harney County Senior Center Transportation based in the City of Burns. It operates a ten-passenger bus with space for two wheelchairs and a six-passenger van. The bus is used when someone in a wheelchair requests a ride, otherwise, the van, which is more economical, is used.

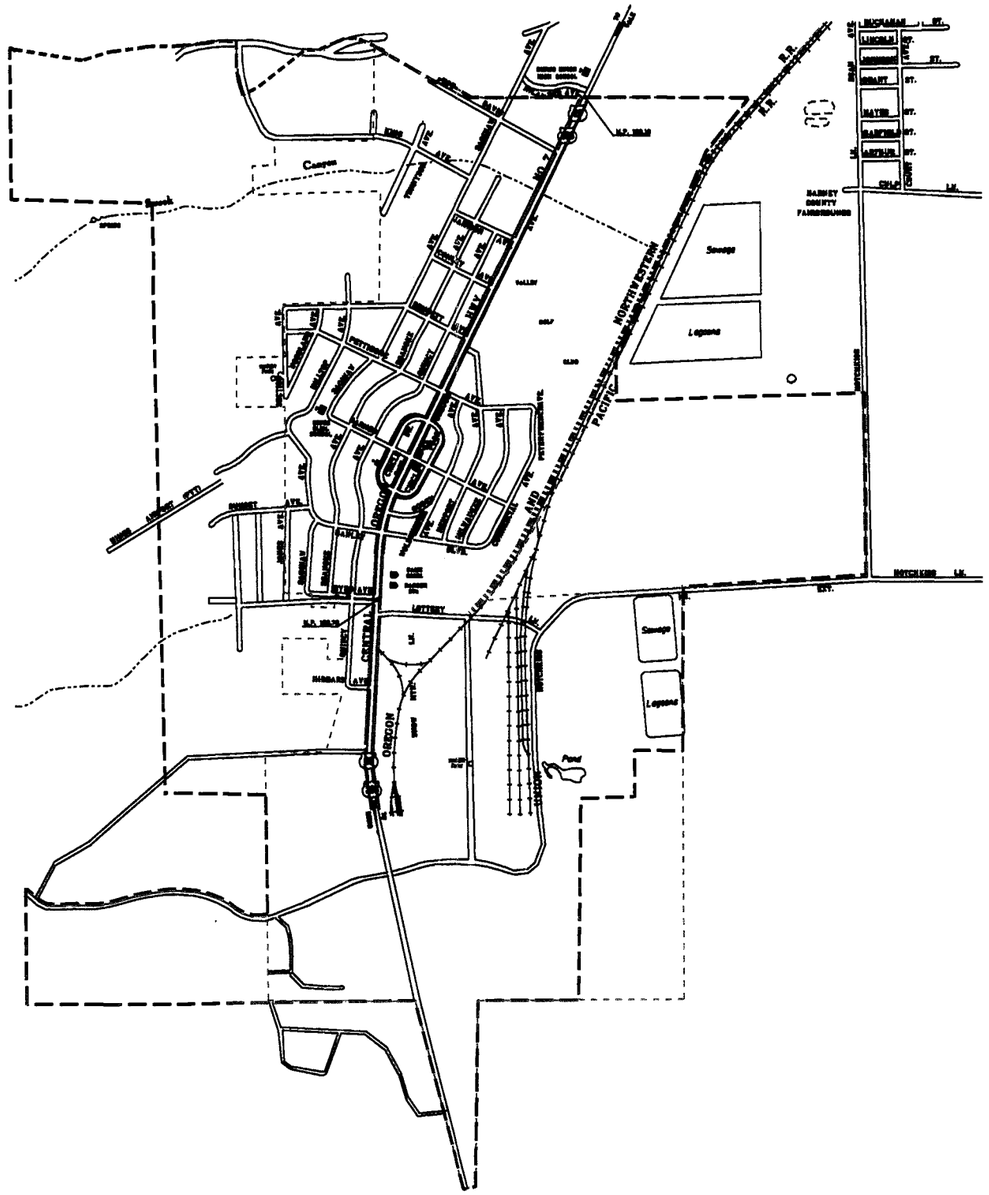
The small size and low traffic volumes on city streets indicate that mass transit is neither necessary nor economically feasible at this time. The TPR exempts cities of less than population 25,000 from developing a transit system plan or a transit feasibility study as part of their TSPs.

Long Distance Service

The Oregon Transportation Plan indicates that intercity passenger service should be available for an incorporated city or groups of cities within five miles of one another having a combined population of over 2,500 and located 20 miles or more from the nearest Oregon city with a larger population and economy. Services should allow a round trip to be made within a day.

In March 2000, an Amtrak Thruway Motorcoach began providing east-west intercity bus service between western Oregon and Boise, Idaho as a link to the existing Amtrak passenger rail system in the Pacific Northwest. The Eastern Oregon Amtrak Thruway Motorcoach route, which is part of the new Oregon Transportation Network, serves Harney County with a scheduled stop in Burns and additional pre-requested flag stops at other locations along US Highway 20. The City of Hines is located along this thruway route and a stop in Hines may be arranged prior to the regularly scheduled trip. Salem is the western terminus of the route, which crosses the Cascades via the Santiam Pass. The buses, privately operated motor coaches, make three round-trips each week. Motorcoaches operate eastbound on Monday, Thursday and Saturday and westbound on Tuesday, Friday and Sunday. Amtrak handles the reservation and ticketing service for the route. Initial funding for this service comes from the Oregon Passenger Rail Project which is financed from the State of Oregon's General Fund for the current biennium that ends June 30, 2001.

Harney County Senior Center Transportation provides long distance service to the City of Bend on the second and fourth Thursday of each month. The primary purpose for the service is to transport the elderly to Bend for doctor appointments; however, the service is available to anyone on a first-come, first-served basis. The Oregon Medical Assistance Program pays the fare for those passengers who receive Medicaid. The current service meets the demand and is somewhat underutilized since, at most, the service has transported seven people at one time.



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LEGEND:
- URBAN GROWTH BOUNDARY
- CITY LIMITS
- SIDEWALK
- MULTI-USE PATH

FIGURE 3-2

Pedestrian System Inventory

City of Hines TSP

HARN0001/HINE3-2.DGN/TNT/01-12-01

RAIL SERVICE

Hines has no passenger or freight rail service. However, the Eastern Oregon Amtrak Thruway Motorcoach provides direct service to the Amtrak passenger rail system through Harney County. The City of Hines is located along this thruway route and a stop in Hines may be arranged prior to the regularly scheduled trip.

AIR SERVICE

Local air service is available at the Burns Municipal Airport, which is under the jurisdiction of the City of Burns. Burns Municipal Airport is located on approximately 800 acres approximately five miles east of Burns. Vehicular access to the airport is provided from OR Highway 78, which connects to County Road 115, also referred to as Airport Road. The airport is at an elevation of 4,144 feet above mean sea level. The Airport Reference Point coordinates are Latitude 43°35'53" N, and Longitude 118°57'30'' W. The airport currently has 20 based aircraft and approximately 4,400 annual operations. The airport has two runways, both of which are 5,100 feet long and 75 feet wide. The existing runway lengths are adequate to accommodate approximately 93 percent of the general aviation fleet under most conditions.

Burns Municipal Airport is a Basic Utility I category airport providing service to the communities of Hines and Burns, in addition to a large portion of southeastern Oregon. Due to the low population density and the lack of comparable airports in the region, the service area for the airport extends beyond the typical 30 to 60 minute surface travel time.

Devco Engineering, Inc. prepared an *Airport Layout Plan* in April 1996. The plan lists over 20 recommendations for the airport and concludes that the Burns Municipal Airport is capable of being developed to meet the aviation needs of the local area well into the future. A staged 20-year capital improvement program is included with estimates of both local and federal costs for construction. The *Airport Layout Plan* for Burns Municipal Airport is, and will continue to be, the primary plan guiding the development of the airport.

The airport currently provides no commercial air service. Boise Airport, approximately 185 miles east of Burns, is the closest large, commercial airport. From there, scheduled air service and daily non-stop flights are available to Portland and throughout the western United States. Package service and other freight service are available as well.

Roberts Field Redmond Municipal Airport is located in Redmond, approximately 145 miles northwest of Hines. This airport also provides commercial passenger service and package service to Portland and Seattle on two carriers: Horizon Air and United Express. Air service operates every day of the week.

PIPELINE SERVICE

Although not often considered as transportation facilities, pipelines carry liquids and gases very efficiently. The use of pipelines can greatly reduce the number of trucks and rail cars carrying fluids such as natural gas, oil, and gasoline. There are currently no pipelines serving the City of Hines.

WATER SERVICE

Hines has no water transportation services.

CHAPTER 4: CURRENT TRANSPORTATION CONDITIONS

As part of the planning process, the current operating conditions for the transportation system were evaluated. This evaluation focused primarily on street system operating conditions since the automobile is by far the dominant mode of transportation in Hines. Census data were examined to determine travel mode distributions.

TRAFFIC VOLUMES

ODOT maintains historic 24-hour traffic volume counts for US Highway 20/395 in Hines. This information was supplemented by hourly traffic count data collected in 1996 and 1997 by the cities of Hines and Burns, David Evans and Associates, Inc., and ODOT.

Average Daily Traffic

The 1999 average daily traffic volumes along the shared alignment of US Highways 20 and 395 in Hines is shown in Table 4-1. Traffic volumes along the highway system increase sharply approaching the Burns city limits. Traffic volumes range from 2,400 vehicles per day (vpd) two miles south of Hines (MP 126.60), to 3,700 at the south city limits (MP 128.73) and 6,900 vpd at the Hines-Burns city limits (MP 130.10).

TABLE 4-1
1999 AVERAGE DAILY TRAFFIC VOLUMES

Milepost	Location	ADT Volume
126.60	2.13 miles south of Hines (Recorder 13-003)	2,4 00
128.73	Hines South City Limits	3,700
129.12	0.01 miles north of Barnes Avenue	5,800
129.61	0.01 miles north of Conley Avenue	6,700
130.10	Hines-Burns City Limits	6,900

Source: ODOT 1999 Transportation Volume Tables.

The traffic volumes shown on Table 4-1 and other volume figures are average volumes for the year. Summer is the season when volumes are highest. ODOT data on US Highway 20/395 north of Burns and south of Hines indicates that during the summer season, volumes are about 20 to 30 percent higher than average volumes.

Hourly Traffic Patterns

Evaluation of a roadway's capacity and level of service is usually based on an analysis of peak hour volumes. Peak hour volumes vary from about eight to 11 percent of the total daily traffic volumes.

Hourly turning movement counts were conducted at seven locations on US Highway 20/395 in Hines in 1996 and 1997: Burns-Izee Road; Allison's Truck Stop Driveway; Hibbard Avenue; Lottery Lane; Byrd Avenue; Barnes Avenue, and Roe Davis Avenue.

Hourly traffic patterns are shown in Figure 4-1 and Figure 4-2 for the Barnes Avenue and Roe Davis Avenue intersections with Highway 20/395. These traffic counts were conducted throughout the day by the cities of Hines

and Burns at different times during 1997. At both intersections, traffic volumes increase steadily through the morning. From about 11:00 a.m. to 5:00 p.m., traffic activity is very high. It drops off again dramatically after 7:00 p.m. each evening.

Turning movement volumes at four intersections during the PM peak hour are shown in Figure 4-3. Highway traffic volumes ranged from approximately 300 vehicles per hour (vph) at Burns-Izee Road to 700 vph at Barnes Avenue. Side street approach volumes were approximately 35 vph at Burns-Izee Road, approximately 150 vph at Lottery Lane and approximately 65 vph at Barnes Avenue.

Truck Volumes

Truck volumes are fairly high on Highway 20/395. At Barnes Avenue, they range from 5 to 9 percent during the day with volumes of 25 to 45 trucks per hour. The same holds true at Roe Davis Avenue, where truck volumes range from 45 to 65 per hour and comprise about 5 to 9 percent of the total traffic.

Although truck volumes are lower at night (after 10:00 p.m. and before 7:00 a.m.), they become a much larger percentage of the overall traffic on the roadway. Truck percentages range from about 10 to 12 percent before midnight and after 6:00 a.m. to about 25 to 35 percent in the very early hours of the morning.

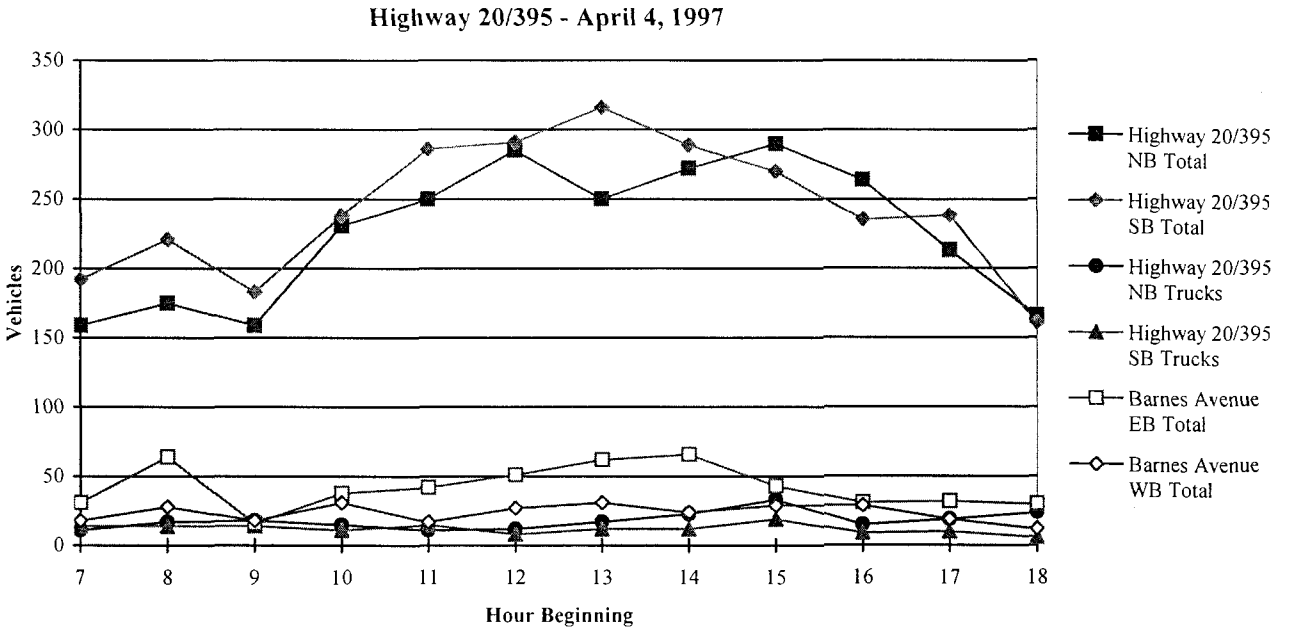
Through Traffic

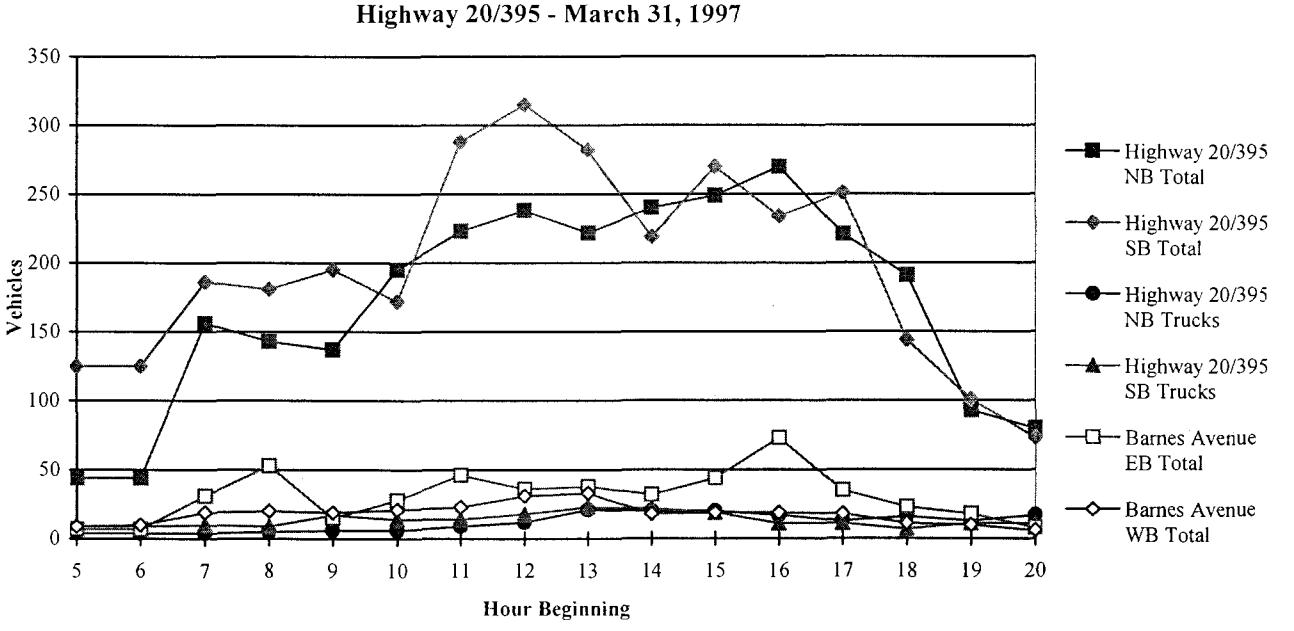
A license plate survey was conducted in October 1997. This survey was used to determine how much traffic on the state highways was "through trips" versus "local trips". Through trips have neither an origin nor a destination in the Cities of Hines or Burns, but travel through these cities as part of a long distance trip. Local trips have an origin, a destination, or both in the City of Hines or Burns. The survey was conducted at five "stations" located on state highways just outside the urban area of Hines and Burns, thereby recording nearly all trips in to or out of the urban area during the survey period. Traffic was surveyed in two directions at the following locations:

- US Highway 20/395 west of Hines
- US Highway 20 east of Burns
- US Highway 395 north of Burns
- OR Highway 78 east of Burns
- OR Highway 205 south of Burns

During the survey period, vehicle license plates were recorded as they passed each survey station. Vehicles that were recorded entering the urban area at one station and leaving the urban area at another station within 30 minutes comprised the "through trips." Vehicles which were recorded entering the urban area but which did not leave the urban area through one of the stations within 30 minutes were assumed to have the City of Hines or Burns as their destination and comprised the "local trips." Likewise, vehicles which were recorded leaving the urban area but were not recorded entering the urban area within the previous 30 minutes were assumed to have the City of Hines or Burns as their origin and also comprised the "local trips." Vehicles which entered and left the urban area through the same station, no matter how long they stayed in the urban area, were also counted as "local trips," assuming they made a trip to one of the cities to conduct personal or professional business.

The survey indicated that approximately 15 percent of the highway traffic on the fringes of the urban area consists of long-distance trips passing through Hines and Burns, stopping for less than 30 minutes if stopping at all. The remaining 85 percent of traffic surveyed had either an origin, destination, or both in the Hines/Burns urban area.





Source: City of Hines

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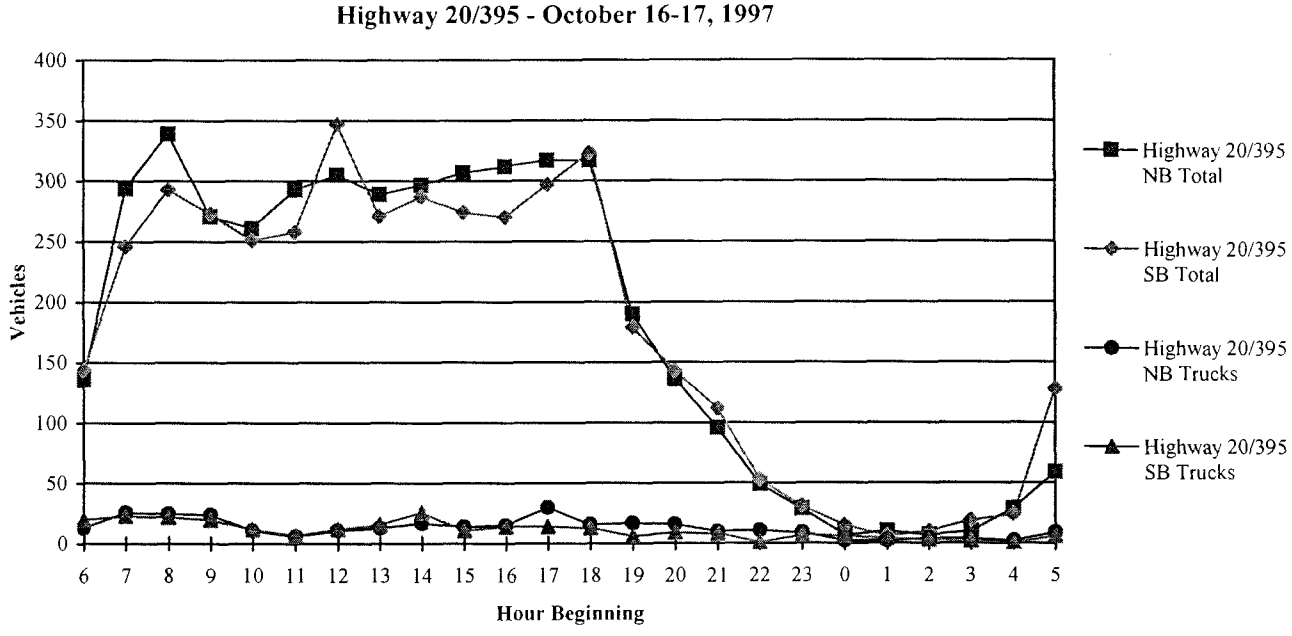
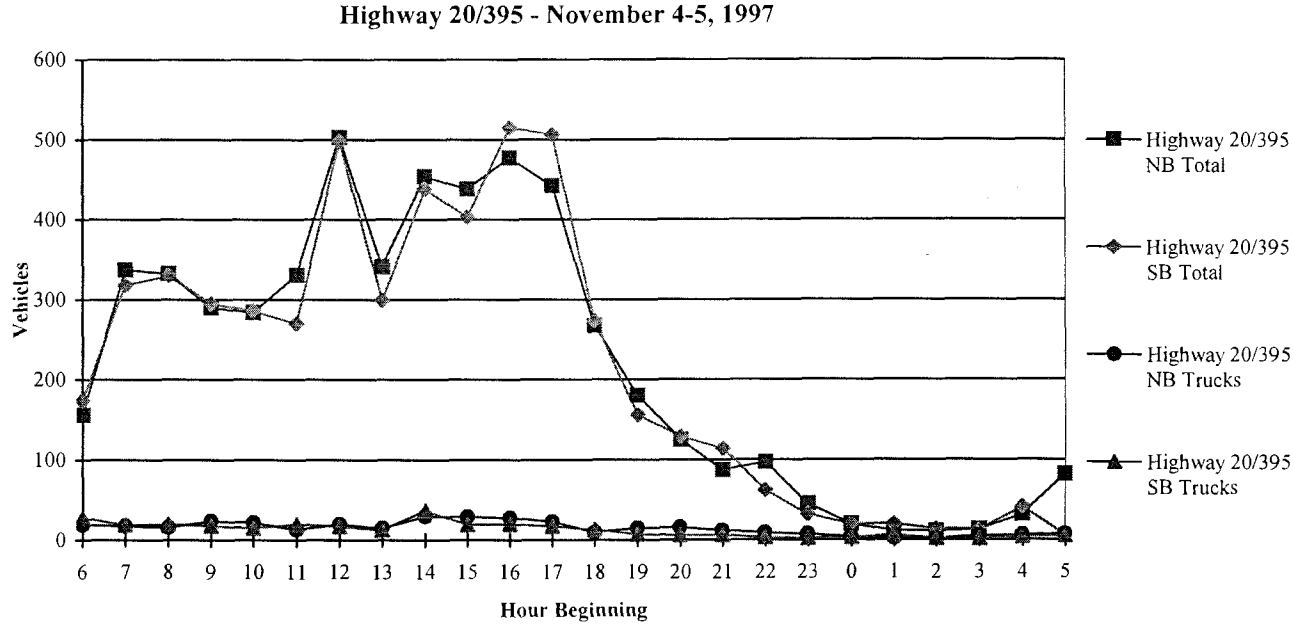
FIGURE 4-1

Hourly Traffic Patterns at Barnes Avenue and Highway 20/395





Source: City of Hines

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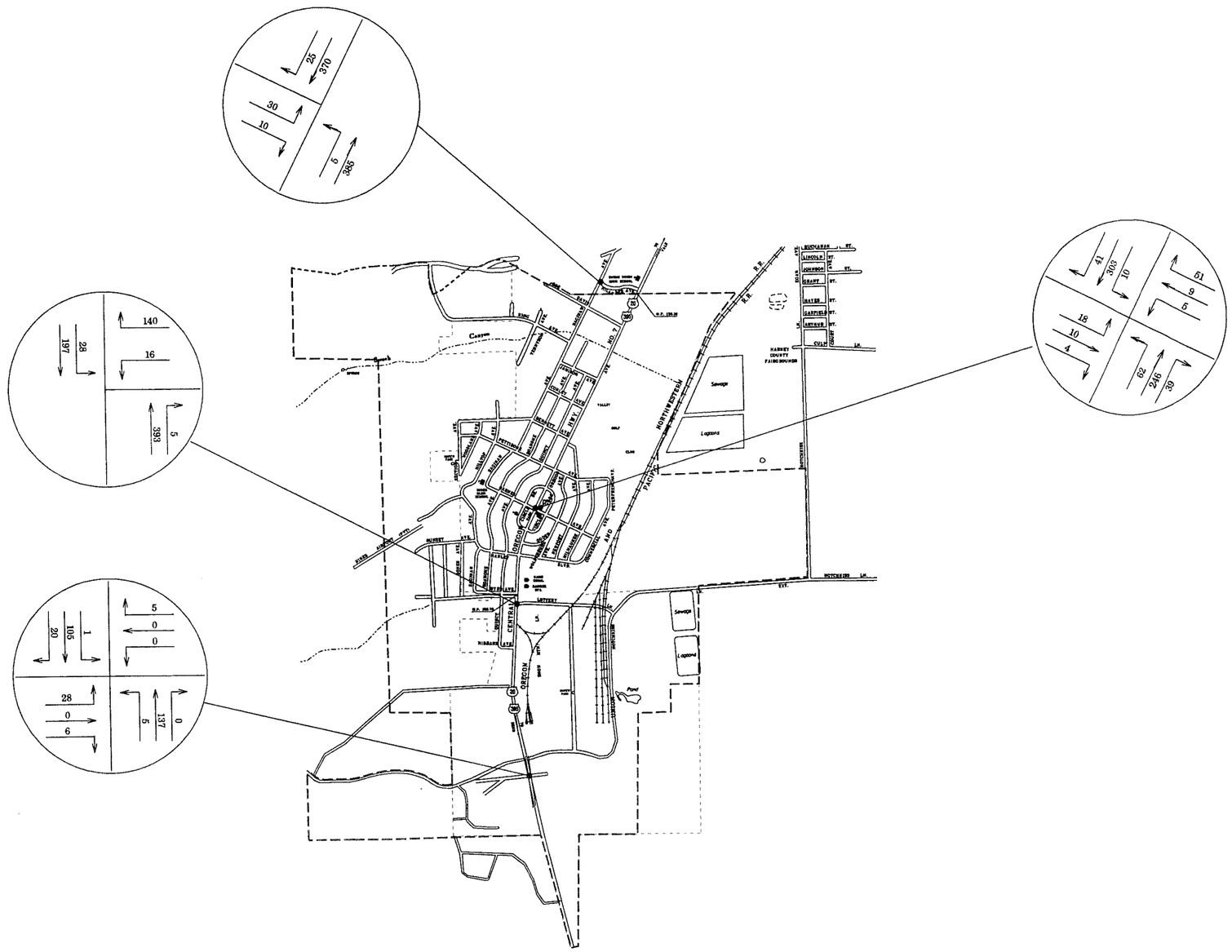
FIGURE 4-2

Hourly Traffic Patterns at Roe Davis Avenue and Highway 20/395



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LEGEND: ------ URBAN GROWTH BOUNDARY
..... CITY LIMITS

FIGURE 4-3

Existing PM Peak Hour Traffic Volumes

City of Hines TSP

HARN0001/HINE4-3.DGN/TNT/01-12-01

As local traffic volumes increase towards the center of Hines and Burns, the through traffic volume becomes a smaller portion of the overall traffic volumes.

STREET CAPACITY

Transportation engineers have established various standards for measuring traffic capacity of roadways or intersections. Each standard is associated with a particular level of service (LOS). The LOS concept requires consideration of factors that include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort and convenience, and operating cost. In the 1991 OHP, levels of service were defined by a letter grade from A-F, with each grade representing a range of volume to capacity (v/c) ratios. A volume to capacity ratio (v/c) is the peak hour traffic volume on a highway divided by the maximum volume that a highway can handle. If traffic volume entering a highway section exceeds the section's capacity then disruptions in traffic flow will occur, reducing the LOS. LOS A represents relatively free-flowing traffic and LOS F represents conditions where the street system is totally saturated with traffic and movement is very difficult. The 1999 OHP maintains a similar concept for measuring highway performance, but represents LOS by specific v/c to improve clarity and ease of implementation. Table 4-2 presents the level of service criteria and associated rang of v/c ratio for arterial roadways.

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

Service Level[1] (v/c Ratio)[2]	Typical Traffic Flow Conditions
A (0.00-0.48)	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 (0.49-0.59)	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 (0.60-0.69)	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 (0.74-0.83)	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 (0.84-0.87)	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 (>1.00)	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 (1)Transportation Research Board, Highway Capacity Manual, Special Report 209. National Research Council, 1985.
(2) ODOT, SIGCAP User Manual. ODOT, 1994.

The 1999 Oregon Highway Plan establishes mobility standards for the state highway system[1]. Highways of statewide importance, such as US Highway 20, should operate at LOS C(0.60-0.69 v/c) or better (i.e., average speeds between 20 and 25 mph) in urban and urbanizing areas.

[1] *1999 Oregon Highway Plan,* Appendix A, Table 1, Operating Level of Service Standards for the State Highway System.

The operations at the four critical intersections were analyzed again in 1997: Burns-Izee Road, Lottery Lane, Barnes Avenue, and Roe Davis Avenue (see Figure 4-4). These locations were selected because they were identified as some of the highest activity spots in the city. In general, the intersections still operate very well. Traffic on the highway operates at LOS A (0.00-0.48 v/c) and traffic on the side streets operates at LOS C (0.60-0.69 v/c) or better.

ACCIDENT ANALYSIS

ODOT collects detailed accident information on an annual basis along US Highway 20/395 in Hines. The accident information data show overall accident rates for the routes and accident locations. The accident rate for a stretch of roadway is typically calculated as the number of accidents per million vehicle miles traveled along that segment of roadway.

Historic

Table 4-3 Table 4-3 shows the accident rates for US Highway 20/395 in Hines as well as the Oregon statewide average for urban non-freeway primary state highways from January 1, 1997 to December 31, 1999. The accident rates for US Highway 20/395 during those three years are consistently well below the statewide average for similar highways.

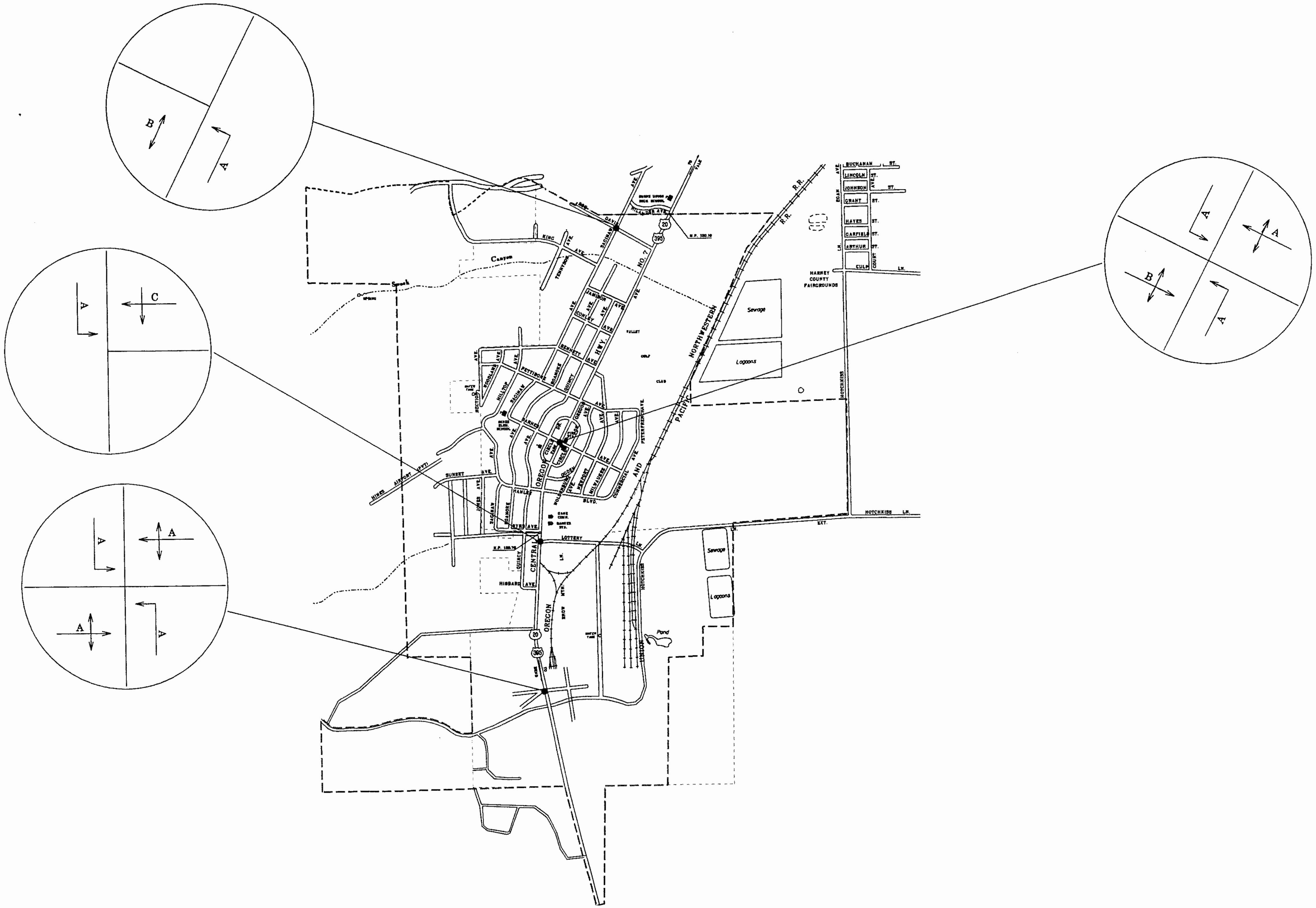
TABLE 4-3
HISTORIC ACCIDENT RATES FOR STATE HIGHWAYS
(Accidents Per Million Vehicle Miles Traveled)

Highway	1999	1998	1997
Highway 20/395 in Hines	0.72	1.08	1.47
Average for all Urban Non-freeway Primary State Highways	3.50	3.83	3.67

Source: Oregon Department of Transportation Accident Rate Tables.

Table 4-4 contains detailed accident information on US Highway 20/395 in Hines from January 1, 1997 to December 31, 1999. It shows the number of fatalities and injuries, property damage only accidents, the total number of accidents, and the overall accident frequencies and rates for this roadway segment in Hines.

During the three-year period, there were a total of ten accidents, seven of which were reported as property damage only. There were no fatalities and six injuries on this roadway segment during the period. Six of the accidents occurred at intersections and six occurred on icy and/or wet pavement. The accidents were scattered along the roadway segment and there were no particular locations which showed a consistent accident pattern. The accident rate on US Highway 20/395 in Hines is well below the statewide average for similar highways, indicating that this roadway segment does not have any safety problems. There is no evidence to suggest that intersection operations (signals, signing, striping, etc.) were a contributing factor in any of the accidents.



LEGEND: - - - - - - URBAN GROWTH BOUNDARY

. . . . CITY LIMITS

NORTH

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FIGURE 4-4

Existing PM Peak Hour Level of Service

City of Hines TSP

HARN0001/HINE4-4.DGN/TNT/01-12-01

TABLE 4-4
ACCIDENT SUMMARIES FOR HIGHWAY 20/395
(January 1, 1997 To December 31, 1999)

Location	Fatalities	Injuries	Property Damage Only	Total Accidents	Accident Frequency (acc/mi/yr)	Accident Rate (acc/mvm)
Highway 20/395						
MP 128.73 to 130.10	0	6	7	10	2.43	1.32

Source: Oregon Department of Transportation Accident Summary Database Investigative Report.

PEDESTRIANS

During the community meetings, members of the TAC identified a safety issue for pedestrians at the intersection of US Highway 20/395 and Barnes Avenue. The problem arises when school children attempt to cross the highway when going to and from Hines Elementary School, on Barnes Avenue. Pedestrian counts conducted by the City of Hines revealed that an average of 15 students, and as many as 30 students, cross the highway at this intersection in the 15 minutes before and after school hours. Pedestrian volumes during other times of the day are very low at this location.

The intersection already has a painted crosswalk on the south approach and an overhead flashing amber light to attract drivers' attention. Members of the community feel that more could be done to improve safety at this location, i.e., a traffic signal could be installed.

TRANSPORTATION DEMAND MANAGEMENT MEASURES

Transportation demand management measures consist of efforts taken to reduce the demand on an area's transportation system. They include such things as alternative work schedules, carpooling, and telecommuting.

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 US Census show the spread of departure to work times over a 24-hour period (see Table). Nearly 30 percent of the total employees depart for work between 7:00 and 8:00 a.m. Another 30 percent depart either the hour before or the hour after the peak.

TABLE 4-5
DEPARTURE TO WORK DISTRIBUTION

	1990 Census	
Departure Time	**Trip**	**Percent**
12:00 a.m. to 4:59 a.m.	17	2.8
5:00 a.m. to 5:59 a.m.	70	11.3
6:00 a.m. to 6:59 a.m.	114	18.4
7:00 a.m. to 7:59 a.m.	182	29.4
8:00 a.m. to 8:59 a.m.	85	13.7
9:00 a.m. to 9:59 a.m.	31	5.0
10:00 a.m. to 10:59 a.m.	14	2.3
11:00 a.m. to 11:59 a.m.	4	0.6
12:00 p.m. to 3:59 p.m.	59	9.5
4:00 p.m. to 11:59 p.m.	43	7.0
Total	**619**	**100.0**

Source: US Bureau of Census.

Assuming an average nine-hour work day, the corresponding afternoon peak can be determined for work trips. Using this methodology, the peak work travel hour would occur between 4:00 and 5:00 p.m. which, in many cases, corresponds with the peak hour of measured traffic volumes.

TRAVEL MODE DISTRIBUTION

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

Most Hines residents travel to work via a private vehicle. In 1990, 86 percent of all trips to work were in an auto, van, or truck. Trips in single-occupancy vehicles made up over 80 percent of all trips, and carpooling accounted for five percent.

Bicycle usage was low (approximately three percent of trips to work) in 1990. Since the census data do not include trips to school or other non-work activities, overall bicycle usage may be even greater. There are few roadways with dedicated bicycle lanes on them. In addition to bicycle lanes, bicycle parking, showers, and locker facilities can help to encourage bicycle commuting.

Pedestrian activity was high (approximately seven percent of trips to work) due to the fact that in a small city the size of Hines most of the city is within a few minutes walk of the city center. Again, census data do not include trips to school or other non-work activities.

Although the census data reflect the predominant use of the automobile, the growing population and employment opportunities, relatively short travel distances, and temperate climate 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	545	86.0
Drove Alone	*516*	*94.7*
Carpooled	*29*	*5.3*
Public Transportation	0	0.0
Motorcycle	2	0.3
Bicycle	20	3.1
Walk	45	7.1
Other	7	1.1
Work at Home	15	2.4
Total	**634**	**100.0**

Source: US Bureau of Census.

CHAPTER 5: TRAVEL FORECASTS

The traffic volume forecasts for the City of Hines are based on historic growth of the state highway system, historic and projected population growth, and existing and projected employment. Traffic projections were made following ODOT's *Level 2 - Cumulative Analysis* methodology.

LAND USE

Land use and population growth play an important part in projecting future traffic volumes. Historic trends and their relationship to historic traffic growth on state highways are the basis of those projections. Population forecasts were developed to determine future transportation needs. The amount of growth, and where it occurs, will affect traffic and transportation facilities in the study area. A detailed description of existing and future land use projections, including the methodology and data sources used, is contained in the Population and Employment Analysis located in Appendix C.

Historic

Population levels in most of Eastern Oregon are close to, or actually lower than, those experienced earlier in the century (see Table 5-1). Counties included in this phenomenon include Baker, Harney, Union, Grant, and Wallowa Counties. The population of Harney County and the Cities of Hines and Burns actually declined in the 1980s and early 1990s, reflecting a general slowdown in the state's economy.

TABLE 5-1
CITY OF HINES POPULATION TRENDS

Year	Population	Average Annual Growth Rate	Total Growth
1970	1,405	--	--
1980	1,630	1.5%	16.0%
1985	1,470	-2.0%	-9.8%
1990	1,450	-0.3%	-1.4%
1995	1,445	-0.1%	-0.3%
1997	1,505	2.1%	4.2%
2000	1,535	0.7%	2.0%

Sources: US Bureau of the Census and Center for Population Research and Census, Portland State University.

Projected

Projecting future population growth for the City of Hines is difficult because long-term historic growth has been very low but in the past few years, both Hines and Burns have been experiencing a period of strong economic growth. Two methodologies were employed in forecasting the future population of the City of Hines. One relies more heavily on long-term growth trends while the other tries to factor in the present economic strength. The results of both forecasts are shown in Table 5-2.

TABLE 5-2
CITY OF HINES POPULATION PROJECTIONS

Year	Population	Average Annual Growth Rate	Total Growth
Office of Economic Analysis Forecasts (1)			
1995	1,445	--	--
2000	1,535	1.2%	6.2%
2005	1,590	0.7%	3.6%
2010	1,610	0.3%	1.3%
2015	1,635	0.3%	1.6%
2017	1,640	0.2%	0.3%
Alternative Growth Scenario (2)			
1990	1,450	--	--
1997	1,505	0.5%	3.8%
2017	1,670	0.5%	11.0%
OEA 1997-2017	**135**	**1.0%**	**9.0%**
Alternative 1997-2017	**165**	**0.5%**	**11.0%**

Notes:
(1) 1995 and 2000 estimates developed by Portland State University Center for Population Research and Census; forecasts developed by State of Oregon Office of economic Analysis.
(2) 1990 data from the US Census Bureau; forecasts developed by David Evans and Associates, Inc.

Office of Economic Analysis Forecasts

Historical data were compiled as reported by the Census Bureau and official population estimates were acquired from Portland State University's Center for Population Research and Census. Based on the university estimates through 2000 and a state econometric model, the State of Oregon Office of Economic Analysis (OEA) provided long-term (through year 2040) state population forecasts, disaggregated by county, for state planning purposes. These annual population estimates for cities and counties are used for the purpose of allocating certain state tax revenues to cities and counties.

Using this methodology, the City of Hines is expected to experience a population gain of 135 people between 1997 and 2017. This represents an increase of 9.0 percent, from the 1997 estimate of 1,505 to an estimated 1,640 in year 2017.

Alternative Growth Scenario

Recently, Harney County has experienced strong economic growth with the location of several new employers in the Hines/Burns area. (Detailed discussions will follow this section.) This boom in the economy is reducing unemployment rates and bringing some people back to the area.

At the request of Harney County and its jurisdictions, David Evans and Associates, Inc., also prepared an alternative growth scenario for the purposes of this TSP. The alternative growth scenario applies the average 1990 to 1997 growth rate of Harney County and each of its jurisdictions to the 20-year planning horizon.

Using this alternative methodology, the City of Hines is expected to experience a population gain of 165 people between 1997 and 2017. This represents an increase of 11.0 percent, from the 1997 estimate of 1,505 to an estimated 1,670 in year 2017. The estimate for the year 2017 is higher than that made by the State Office of Economic Analysis by 30 people.

Summary

Factors that will affect the future growth rate of Hines include employment opportunities, available land area for development, and community efforts to manage growth. These two methodologies were employed to illustrate the range of population growth that may occur in the planning area. Planning efforts must respond carefully to actual growth rates, as recent population estimates have varied widely from forecasts previously developed. The population forecasts described in this report were developed to help determine future transportation needs. The amount of growth, and where it occurs, will affect traffic and transportation facilities in the study area.

TRAFFIC VOLUMES

Traffic volume projections are based on historic growth trends for highway volumes and land use and on the future land use projections.

Historic

Before projecting future traffic growth, it is important to examine past growth trends on the Hines roadway system. Historic data are only available for the state highway system in Hines; however, these roadways carry far more traffic than any other streets in the city. ODOT collects traffic count data on the state highways (rural and urban sections) every year at the same locations.

Historical growth trends on the state highways in and around Hines were established using the average annual daily traffic volume information presented in the ODOT Traffic Volume Tables for the years 1976 through 1996. The traffic volumes were obtained for each of these years at several locations along each highway. Using a linear regression analysis of the average traffic volumes between 1976 and 1996, an average annual growth rate was determined. Table 5-3 summarizes the historic average growth rate on each of these sections.

Over the past 20 years, growth on the rural sections of Highway 20 in Harney County has ranged between 1.2 and 2.6 percent per year. Traffic volumes on the rural sections of Highway 395 have been growing at a rate of 0.2 and 0.6 percent per year south of Riley (Lakeview-Burns Highway) and north of Burns (John Day-Burns Highway), respectively. South of Burns, the rural section of Highway 78 has had little to no growth in traffic over the past 20 years. The rural section of Highway 205 south of Burns has been growing at a rate of 2.9 percent per year.

In general, growth on the rural sections of the state highways exceeded the population growth in Harney County. This relationship reflects the modern trend toward an increase in per capita vehicle miles traveled and the increase in commercial and tourist traffic.

The decrease in traffic volumes on the urban sections of the state highways, such as Highway 20/395 through Hines and Burns, could be a result of the decrease in population in Harney County and the cities during this period.

TABLE 5-3
HISTORIC GROWTH RATES ON STATE HIGHWAYS

Highway Section	Average Annual Growth Rate 1976-1996	Total Growth 1976-1996
Highway 20		
Rural Section west of Hines	2.6%	68.4%
Urban Section through Hines and Burns	-0.5%	-9.8%
Rural Section east of Burns	1.2%	27.4%
Highway 395		
Rural Section south of Riley	0.2%	4.6%
Rural Section north of Burns	0.6%	13.6%
Highway 78		
Urban Section in Burns	-0.3%	-5.2%
Rural Section south of Burns	0.0%	0.5%
Highway 205		
Rural Section south of Burns	2.9%	76.9%

Source: ODOT 1976 through 1996 Transportation Volume Tables.

Forecasting Methodology

The forecasting methodology was based on available existing and historical traffic data and population growth trends. The traffic forecast for the state highway system in Hines followed the *Level 2 - Cumulative Analysis*[2] methodology. This type of forecast projects future traffic volumes based on one or more of the following growth rates: the historical growth on the state highway system, the historical population growth, and/or the projected population growth.

The highway traffic in Hines and Burns was separated into "through" and "local" components so that different growth rates could be applied to forecast future traffic volumes. Changes in "through" traffic are dependent on factors outside the Hines/Burns urban area; therefore the growth rate applied to the "through" traffic was 1.7 percent per year. This is the rate at which traffic on the rural sections of US Highways 20 and 395 is expected to grow during the next 20 years, based on the linear regression analysis. Changes in the amount of "local" traffic are dependent on land uses in the Hines/Burns urban area, therefore the growth rate applied to the "local" traffic was 0.5 percent per year, the rate at which the population of Hines is expected to grow during the next 20 years.

In addition to this "background" growth, additional trips were added to the roadway system to account for trips from special trip generators (e.g., a large business relocating to the area, a one-time increase in employment at an existing business, or a new recreational facility). Some special generators in Hines and Burns include:

- a gaming facility on the Burns Paiute Indian Reservation west of Burns
- the juvenile detention facility on Monroe Street in Burns
- the USFS/BLM ranger station located on Lottery Lane in Hines

[2] ODOT *Transportation System Planning Guidelines*, August 1995, p. 29.

Estimates of trips generated by these projects were developed in *the Burns Paiute Gaming Facility Traffic Impact Study* prepared by Tom Lancaster, PE and the *US Highway 20 Traffic Analysis* and *Hines Traffic Impact Study*, both prepared by David Evans and Associates, Inc.

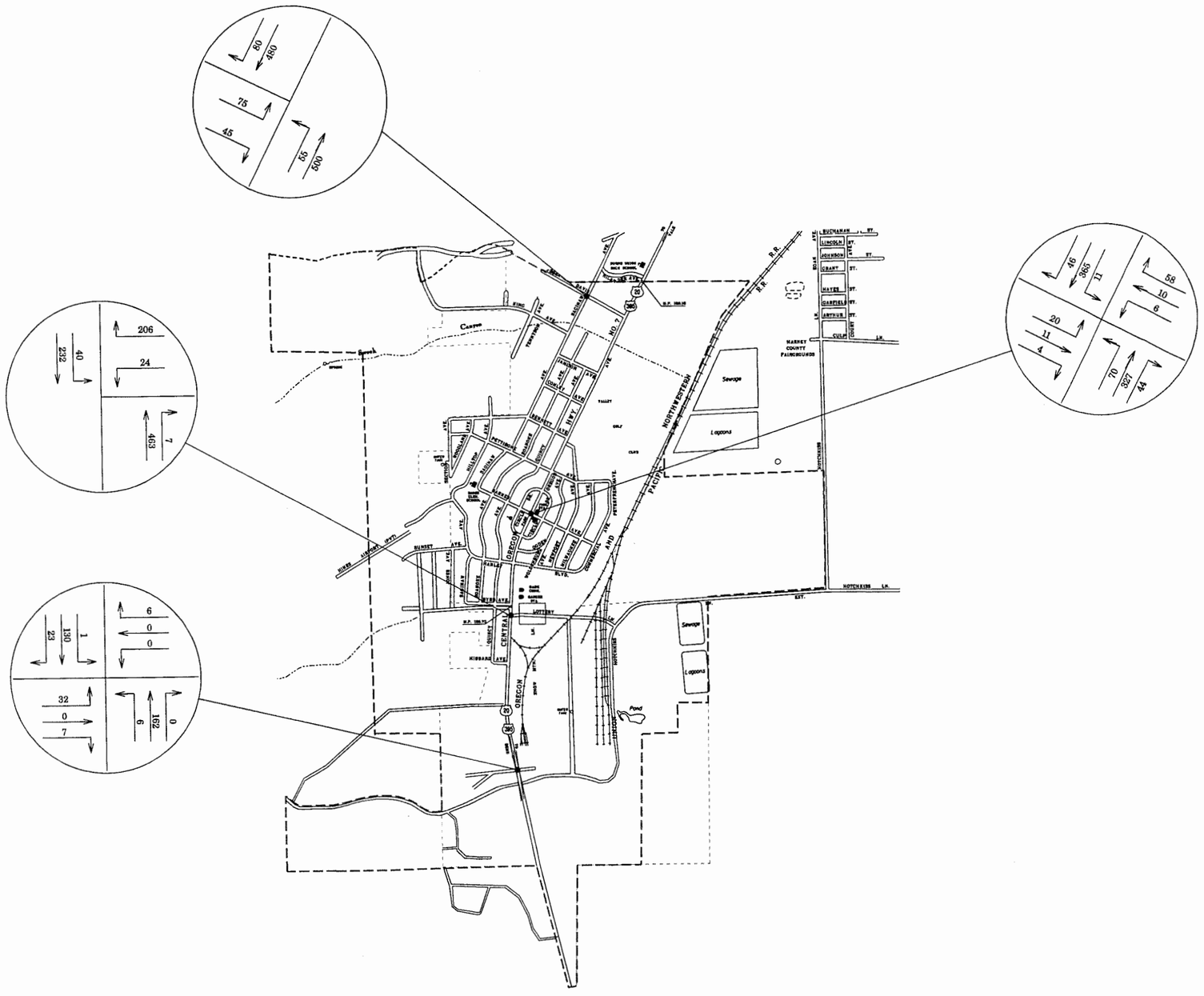
Future Traffic Volumes

The forecasting methodology described above results in future year traffic volumes on Highway 20/395 in the year 2018 that are 18 to 27 percent higher than existing volumes (traffic volumes would increase by 1,400 vpd from 6,300 vpd to 7,700 vpd in the vicinity of Barnes Avenue). Traffic volumes on the local street network would increase by approximately 13 percent during the same 20-year period. The resulting future traffic volumes in the p.m. peak hour are shown in Figure 5-1.

HIGHWAY SYSTEM CAPACITY

For the year 2017, PM peak hour intersection analyses were performed at the same intersections on Highway 20/395 in Hines for which the existing conditions were analyzed. The results of the intersection analyses are shown in Figure 5-2.

The analyses indicated that all three intersections are expected to meet ODOT level of service standards (LOS C (0.60-0.69 v/c) or better) over the 20-year forecast period. In general, the intersections still operate very well. Traffic on the highway operates at LOS A (<0.48 v/c) and traffic on the side streets operates at LOS C (0.60-0.69 v/c) or better.



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NORTH
0 1200 2400 3600
FEET

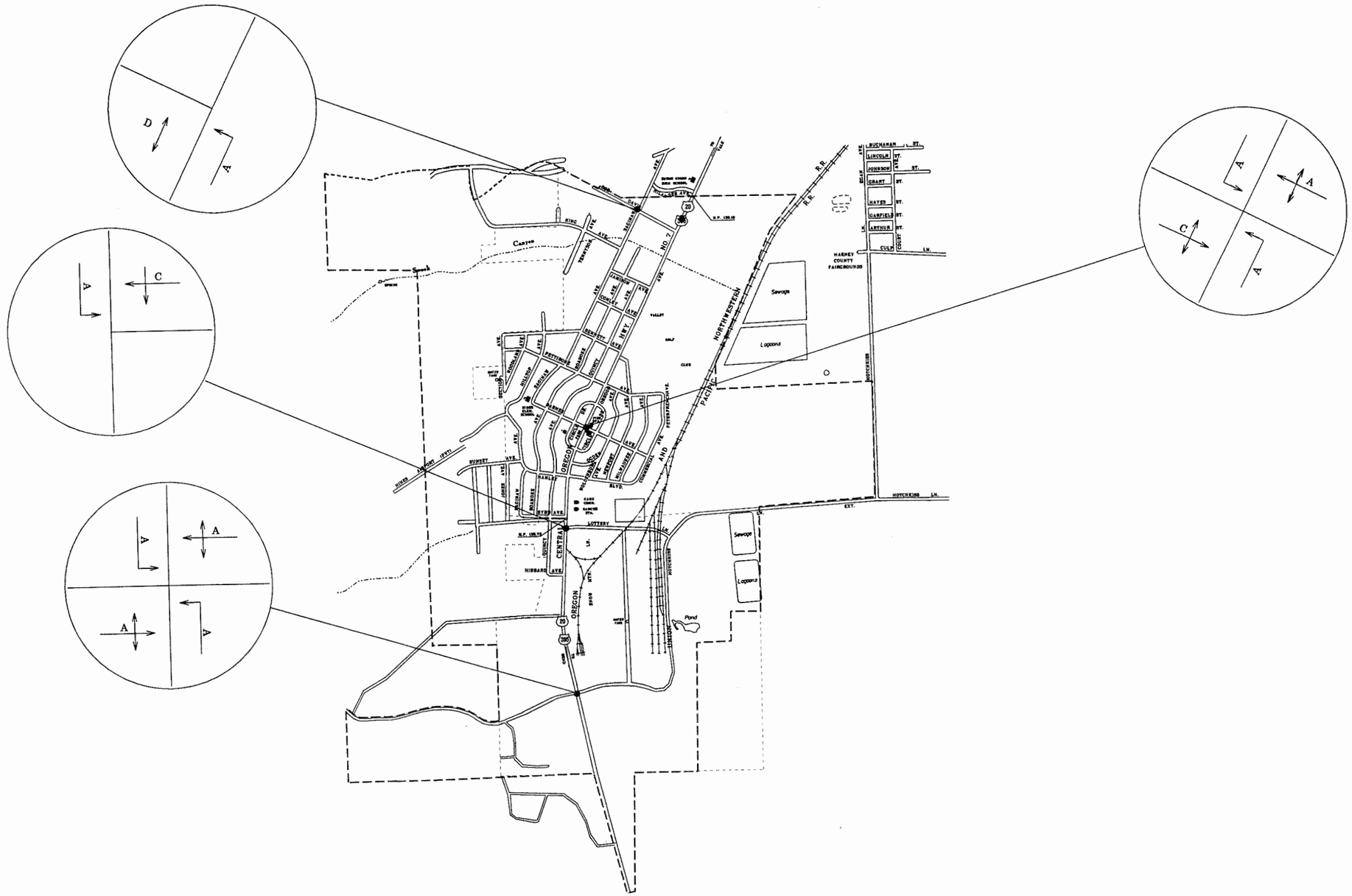
LEGEND: ------ URBAN GROWTH BOUNDARY
..... CITY LIMITS

FIGURE 5-1

Estimated 2018 PM Peak Hour Traffic Volumes

City of Hines TSP

HARN0001/HINE5-1.DGN/TNT/08-07-98



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NORTH

0 1200 2400 3600
FEET

LEGEND: ------- URBAN GROWTH BOUNDARY
. . . . . CITY LIMITS

FIGURE 5-2
Estimated 2018
PM Peak Hour
Level of Service
City of Hines TSP

HARN0001/HINE5-2.DGN/TNT/01-12-01

CHAPTER 6: IMPROVEMENT OPTIONS ANALYSIS

As required by the Oregon Transportation Planning Rule, transportation alternatives were formulated and evaluated for the Hines TSP. These potential improvements were developed with the help of the transportation advisory committee and the individual communities, and attempt to address the concerns specified in the goals and objectives (Chapter 2). The proposed transportation system improvements recommended for the Hines TSP include both state highway and local road projects. This section of this TSP describes the individual improvements and their associated costs.

Each of the transportation system improvement options was developed to address specific deficiencies, safety issues, or access concerns. The following list includes all of the potential transportation system improvements considered. Improvement options include:

1. Revise zoning code to allow and encourage mixed-use development and redevelopment.
2. Implement transportation demand management strategies.
3. Reconfigure the Lottery Lane/Byrd Avenue intersection on US Highway 20/395.
4. Realign the Golf Course Access with Bennett Avenue.
5. Construct a bypass around Hines and Burns.
6. Install an actuated signal at the intersection of Barnes Avenue and US Highway 20/395.

As discussed in the remaining sections of this chapter, not all of these considered improvements were recommended. The 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 an analysis of traffic projections, a qualitative review of safety, environmental, socioeconomic, and land use impacts, as well as estimated cost. The potential improvements were analyzed to determine if they could reduce congestion and delay, as well as vehicle miles traveled, because of the beneficial effects of those reductions.

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 1998 dollars based on preliminary alignments for each potential transportation system improvement.

IMPROVEMENT OPTIONS EVALUATION

Through the transportation analysis and input provided from the public involvement program, several improvement projects were identified. These options included reconstructing existing intersections and providing improved pedestrian and bicycle facilities.

Option 1. Revise Zoning Code to Allow and Encourage Mixed-Use Development and Redevelopment

Overview: One of the goals of the Oregon Transportation Planning Rule is to reduce reliance on the single-occupant automobile. One method of reducing reliance on automobiles is to amend zoning and development codes to allow mixed-use developments and increased density in certain areas. Specific amendments include allowing neighborhood commercial uses within residential zones and allowing residential uses within commercial zones. Such code amendments can result in shorter travel distances between land uses, thereby, encouraging residents to use alternative modes of transportation, such as walking and cycling throughout the community.

These code revisions are more effective in medium to large sized cities (with over 25,000 residents), than in cities such as Hines, where they may not be as appropriate. Because of the city's relatively small size, the decision of what mode of transportation to use when making a trip inside the city is not influenced by distance. The longest distance between city limit boundaries in Hines is around 1½ miles, a distance short enough to walk, ride a bike, or drive. Distances between different land uses, such as residential and commercial, are even shorter. Seven percent of the population already walks to work, which is higher than the statewide average.

Increasing density may have some effect on development in Hines. Projected population growth of 11 percent (165 additional residents) by year 2017 can be accommodated by infill development inside the city limits or by development of vacant land within the Urban Growth Boundary. Therefore, as city limits are expected to expand to include portions of the Urban Growth Boundary, the provision of commercial uses close to or within these areas could become more important in reducing the need for automobile trips.

Impacts: Although the primary goal of rezoning is to reduce the number of vehicle trips made within a jurisdiction, especially during peak periods, street capacity for automobiles and trucks is generally not an issue in Hines. Nevertheless, altering land use codes to encourage some level of mixed uses bringing compatible businesses and residents closer together can be beneficial for both. Retailers may gain more exposure from people walking by, rather than driving by, their shops. For residents, more walking and biking can enhance the sense of community, local vitality, and security. With more emphasis on walking or biking in the city, conditions such as air quality and noise levels would be improved as well.

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

Recommendation: Because of the small size of the city, the relationship between land uses is already similar to the mixed-use zoning patterns that are recommended in larger urban areas. It is desirable for this development pattern to continue as the city grows (the population is forecast to increase by about 11 percent). Hines development code already allows mixed uses in some zones. Further revisions to the code should continue to permit these uses.

Option 2. Implement Transportation Demand Management Strategies

Overview: Transportation demand management strategies change the demand on the transportation system by providing facilities for modes of transportation other than single-occupant passenger vehicles, such as implementing carpooling programs, altering work shift schedules, and applying other transportation measures within the community. The Transportation Planning Rule recommends that cities should evaluate transportation demand management measures as part of their TSPs.

Transportation demand management strategies are most effective in large, urban cities; however, some strategies can still be useful in small cities such as Hines. Although establishing a carpool program in Hines may not be appropriate because of the relatively short travel distances for most workers, provisions for alternative modes of

transportation, such as sidewalks and bike lanes, and staggered work shifts to spread the peak hour can be beneficial for residents of the city. In rural communities, these strategies include providing mobility options.

Hines can implement transportation demand management strategies by requiring all future street improvement projects to include the addition of some sort of pedestrian facility, such as new sidewalks or walkways, which will effectively separate pedestrians from motorized traffic. Connecting sidewalks that are not currently connected on some streets can increase the effectiveness of the pedestrian facilities. All new street improvement projects should consider bicycle lanes as well.

Allowing alternative work schedules includes 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.

Impacts: Although the primary goal of these measures is to reduce the number of vehicle trips made within the city, especially during peak periods, street capacity for automobiles and trucks is generally not an issue in Hines. However, improvements to connect sidewalks that are currently disconnected or the provision of new pedestrian and bicycle facilities increases the livability of a city, and improves traffic and pedestrian safety. With more emphasis on walking or biking in the city, conditions such as air quality and noise levels would be improved as well.

Cost: The costs for several types of facilities that promote walking and biking in the county are summarized below.

- *Concrete Sidewalks* - The estimated cost to install new sidewalks on one side of an existing street is around $25 per linear foot. This includes a five-foot-wide walkway composed of four inches of concrete and two inches of aggregate.

- *Bike Lanes* - The cost to install bike lanes on both sides of an existing road is around $45 per linear foot. This cost includes widening the roadway by five feet on both sides, installing curbs, using a fill composed of four inches of asphalt and nine inches of aggregate, and placement of a eight-inch painted stripe.

- *Multi-Use Paths* – A multi-use path ten feet in width would cost around $16 per linear foot. This includes two inches of asphalt and four inches of aggregate.

- *Paved Shoulders* – Shoulders constructed along both sides of a road that are four feet in width would cost around $25 per linear foot of roadway. This would include four inches of asphalt and nine inches of aggregate.

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

Large employers could look to establish alternative work schedules with relatively low costs for themselves and none for the city.

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

Option 3. Reconfigure the Lottery Lane/Byrd Avenue Intersection on US Highway 20/395

Lottery Lane approaches US Highway 20/395 from the east side while Byrd Avenue approaches US Highway 20 from the west side (see Figure 6-1, Section A). The two intersections are approximately 150 feet apart. To make the intersection even more confusing, a county road, Red Cinder Road, approaches US Highway 20/395 from the west side about 50 feet south of Byrd Avenue and the USFS driveway approaches US Highway 20/395 from the east about 100 feet north of the Lottery Lane approach.

One improvement is already planned for this intersection. The USFS driveway access will be closed and relocated with access onto Lottery Lane about 450 feet east of US Highway 20/395.

To provide a safely operating intersection, two other improvements need to be made:

- Either the Byrd Avenue intersection with US Highway 20/395 or the Red Cinder Road intersection with US Highway 20/395 needs to be closed.

- US Highway 20/395 should have only one side street approach from each direction and these approaches should be lined up opposite each other. To achieve this configuration, Byrd Avenue, Red Cinder Road, or Lottery Lane or some combination should be relocated where they intersect US Highway 20/395.

Three improvement alternatives have been considered, as shown in Figure 6-1, Sections B through D.

Alternative 1 - Realign Byrd Avenue

Overview: This option would realign Byrd Avenue opposite Lottery Lane and connect Red Cinder Road into Byrd Avenue between Roanoke and Quincy Avenues, as shown in Figure 6-1, Section B.

Impacts: This option has two advantages: 1) it would form a four-way intersection with Lottery Lane and 2) construction would occur on only one side of US Highway 20.

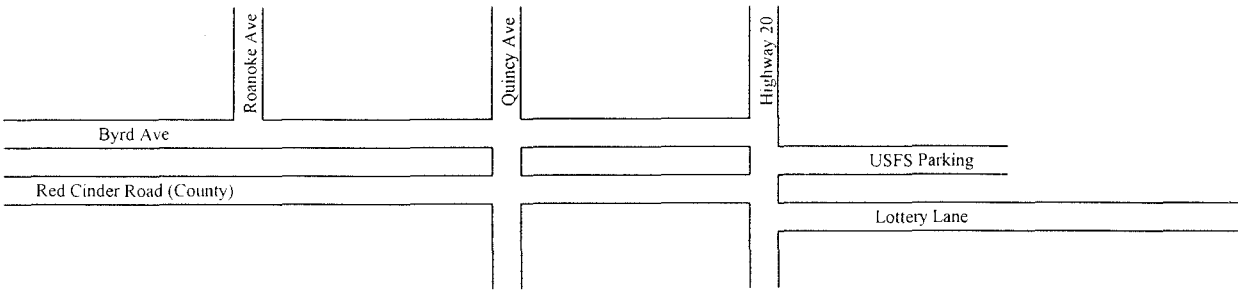
This option also has two disadvantages: 1) it would require installing culverts and fill to replace the existing drainage ditch between Byrd Avenue and Red Cinder Road and 2) it would impact the parking lot of the property (Virgils) just south of Red Cinder Road. The impacts to the parking lot would probably be minimal since it has no curbs or striping and field observations indicate that many vehicles travel over part of the parking lot now to make right turns or travel across to Lottery Lane.

Cost: The estimated cost of this improvement is $55,000 assuming that all roadways would be reconstructed to their present 24-foot width without curbs, gutters, or sidewalks. It would also involve two parallel 30-inch drainage culverts where Byrd Avenue would be routed over the existing drainage ditch.

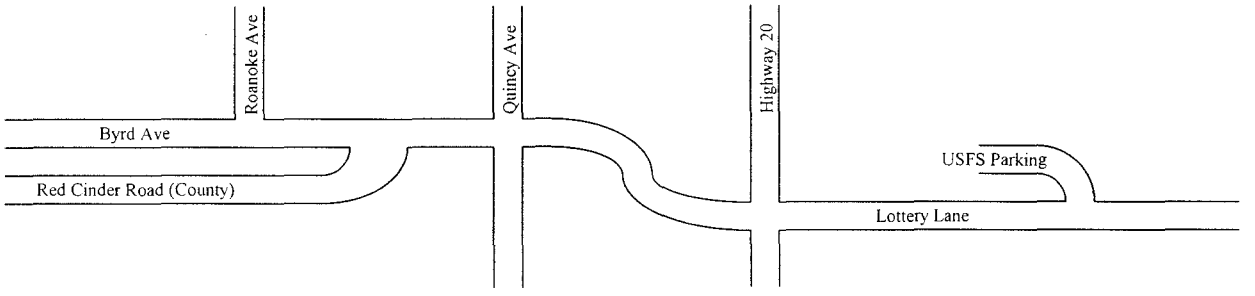
Alternative 2 - Realign Byrd Avenue and Lottery Lane

Overview: This option would realign both Byrd Avenue and Lottery Lane to be opposite each other. It would also connect Red Cinder Road into Byrd Avenue between Roanoke and Quincy Avenues (see Figure 6-1, Section C).

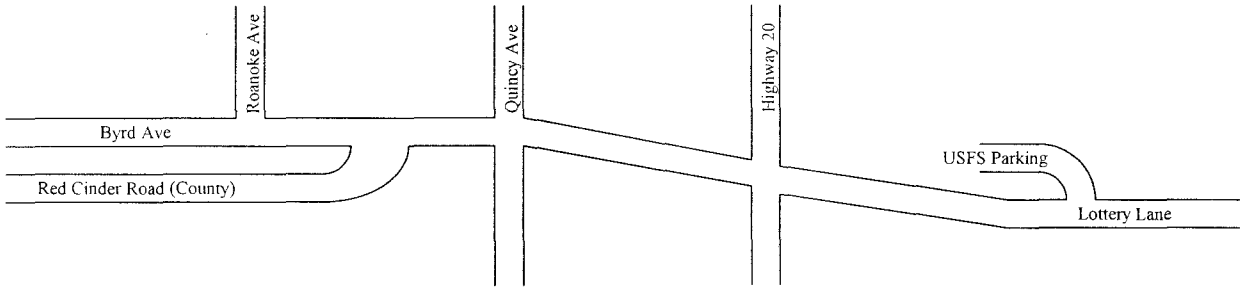
Impacts: This option would also form a four-way intersection with Lottery Lane slightly north of the Alternative 1 alignment.



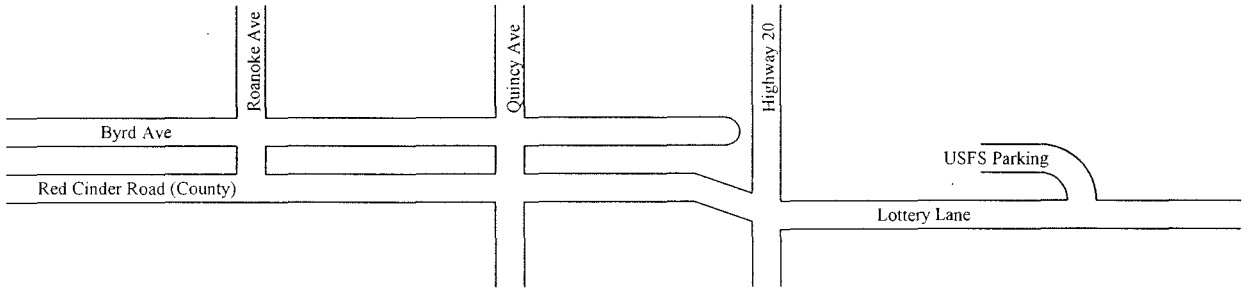
A. Existing Lottery Lane Byrd Avenue Configuration



B. Alternative 1 - Realign Byrd Avenue



C. Alternative 2 - Realign Byrd Avenue and Lottery Lane



D. Alternative 3 - Realign Red Cinder Road

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FIGURE 6-1

Lottery Lane/Byrd Avenue Intersection Improvement

City of Hines TSP

Right-of-way impacts would be lower west of the highway and higher east of the highway. On the west side of the highway, Byrd Avenue would line up approximately at the same location where Red Cinder Road currently intersects US Highway 20/395. This would result in only minimal right-of-way impacts to the property (Virgils) immediately south of the intersection. On the east side of the highway, Lottery Lane would cross into the right-of-way that is currently part of the access to the USFS parking lot. With the relocation of the parking lot driveway, this alignment may be feasible.

This option would also require installing culverts and fill to replace the existing drainage ditch between Byrd Avenue and Red Cinder Road.

Cost: The estimated cost of this improvement is $130,000 assuming that all roadways would be reconstructed to their present 24-foot width without curbs, gutters, or sidewalks. It would also involve two parallel 30-inch drainage culverts where Byrd Avenue would be routed over the existing drainage ditch.

Alternative 3 - Realign Red Cinder Road

Overview: This option would realign Red Cinder Road opposite Lottery Lane, create a new connection between Byrd Avenue and Red Cinder Road at Roanoke Avenue, and close Byrd Avenue access to Highway 20/395, as shown in Figure 6-1, Section D.

Impacts: This option has three advantages: 1) it would form a four-way intersection with Lottery Lane, 2) construction would occur on only one side of US Highway 20, and 3) it would require the least amount of construction.

Right-of-way impacts would be lower than both Alternatives 1 and 2. On the west side of the highway, Red Cinder Road would be realigned to the south to connect nearly directly opposite Lottery Lane. This would result in only minimal right-of-way impacts to the parking lot of the property (Virgils) immediately south of the intersection.

This option would also require installing culverts and fill to replace the existing drainage ditch where Roanoke Avenue would be extended to Red Cinder Road.

Cost: The estimated cost of this improvement is $38,000 assuming that all roadways would be reconstructed to their present 24-foot width without curbs, gutters, or sidewalks. It would also involve two parallel 30-inch drainage culverts where Roanoke Avenue would be routed over the existing drainage ditch.

Recommendations

Upon preliminary evaluation, the third option seems to have the greatest merits. It would have fewer right-of-way impacts while achieving the same goals; therefore, it is recommended for the street system plan.

Option 4. Realign the Golf Course Access with Bennett Avenue

Overview: The golf course access road approaches Highway 20/395 from the east side while Bennett Avenue approaches US Highway 20 from the west side (see Figure 6-2, Section A). The two intersections are approximately 150 feet apart.

With a continuous center left-turn lane on US Highway 20, there would be a head-to-head conflict between northbound vehicles turning left from US Highway 20 to Bennett Avenue and southbound vehicles turning left

from US Highway 20 to the golf course. To eliminate this conflict of left-turning vehicles, the golf course access road could be relocated opposite Bennett Avenue (see Figure 6-2, Section B).

Impacts: Traffic safety would improve with this realignment and there are no significant impacts anticipated. The construction would require about 250 feet of new pavement, base, and fill. Overhead power lines are not expected to be an obstacle.

Cost: The estimated cost of this improvement is $40,000 assuming that the golf course access road would be reconstructed without curbs, gutters, or sidewalks.

Recommendation: To improve the safety of these intersections, realignment of the golf course access is recommended for the street system plan.

Option 5. Construct a Bypass around Hines and Burns

Traffic on the rural section of Highways 20, 395, 78, and 205 has been increasing at a more rapid rate than traffic in the Cities of Hines and Burns. As a result, through traffic, particularly trucks, is becoming a more noticeable component of traffic within the cities. Currently, through traffic makes up about 15 percent of the total traffic entering the cities. Within the higher volume cores of the cities, through traffic makes up a smaller percentage of the total traffic volume.

To address residents' concerns about through traffic, four alternative bypass routes were developed and evaluated to provide an alternate route around the cities. These alternatives all seek to use existing roadways when possible with added connections where necessary (see Figure 6-3).

Alternative 1 - Fry Lane to Hotchkiss Lane

Overview: This first alternative, shown in Section A, would take through traffic along Fry Lane, Highway 205, Hotchkiss Lane, and Lottery Lane. Traffic would divert at the north US Highway 20/395 junction and reconnect with the Highway at Lottery Lane on the south side of Hines.

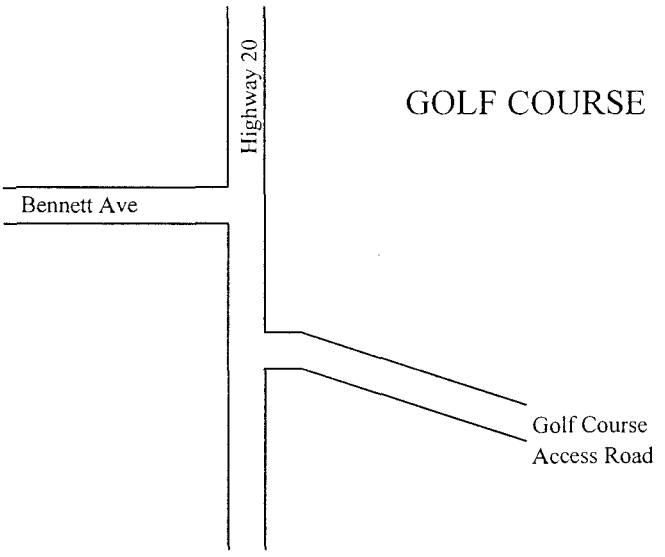
Impacts: This bypass route is the shortest of the four evaluated. It uses existing roadways for all of its length with minor pavement and shoulder improvements as well as several bridge and culvert replacements.

The major impact of this bypass would be to businesses that serve highway travelers. They would lose customers that would go around the cities and be serviced at the next town on the highway. However, because there are no nearby cities, some travelers may still choose to go into Hines and Burns for services.

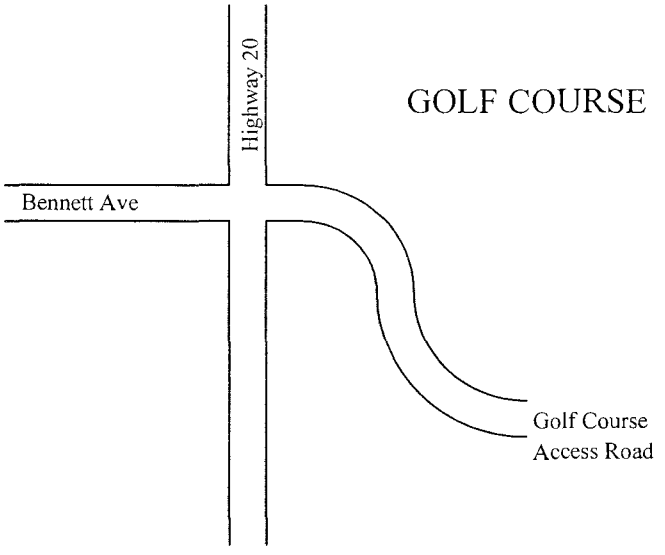
In 1998, the junction of US Highway 20/395 was reconstructed to form a simple three-leg intersection as part of the Silvies River Bridge to Highway 395 Junction project. This junction is aligned with Fry Lane, which means that no new construction will be required to improve the intersection.

Another impact would be the relocation of the weigh station to a site on US Highway 20 east of the north US Highway 20/395 junction.

A final concern would be the construction outside of the Burns UGB. Because this improvement does not require new construction through rural lands or add capacity to existing roadways, goal exceptions may not be needed. However, cooperation between the city and county will be critical.



A. Existing Bennett Avenue/Golf Course Access Road Configuration



B. Recommended Bennett Avenue/Golf Course Access Road Configuration

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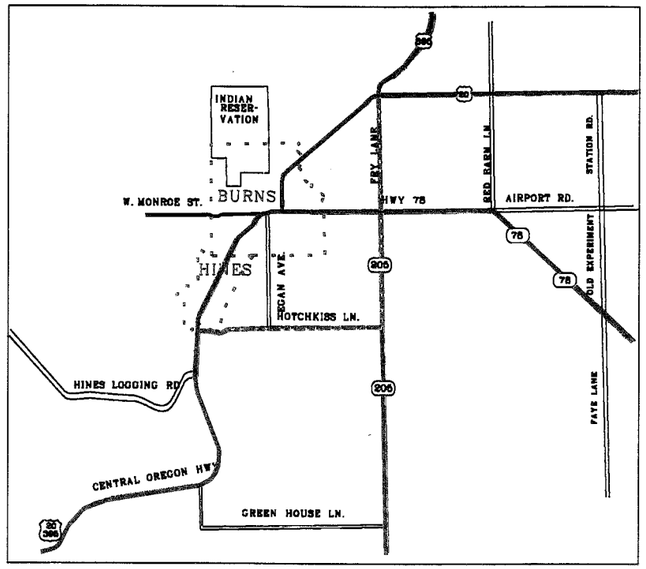
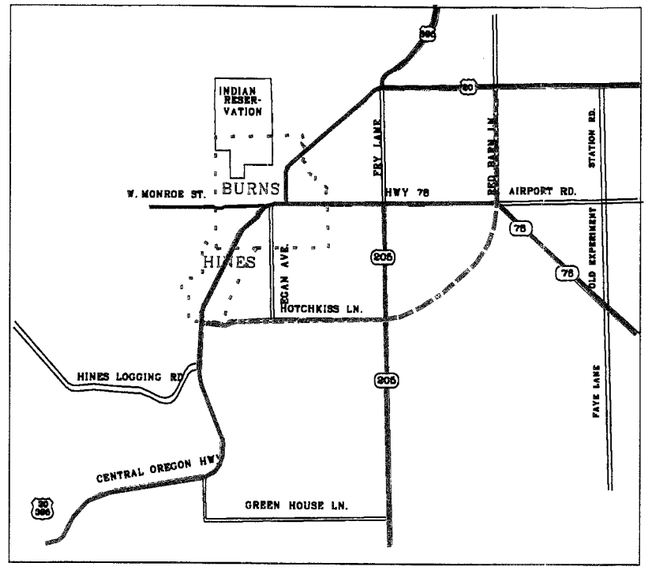
FIGURE 6-2

Golf Club Access Realignment

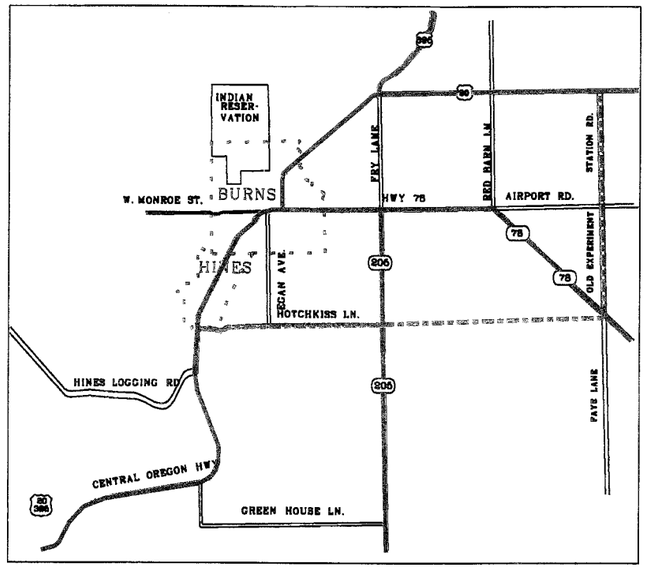
City of Hines TSP



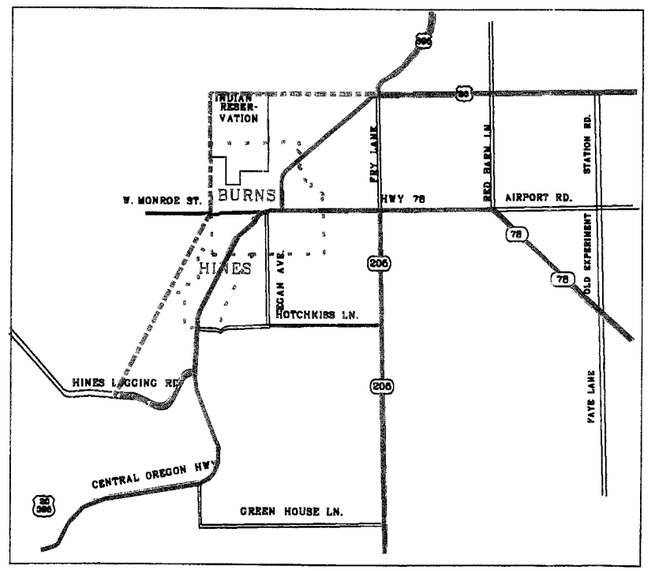
ALTERNATIVE 1: FRY LANE TO HOTCHKISS LANE



ALTERNATIVE 2: RED BARN LANE TO HOTCHKISS LANE



ALTERNATIVE 3: OLD EXPERIMENT STATION TO HOTCHKISS LANE



ALTERNATIVE 4: WEST SIDE ROUTE

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NORTH

SCHEMATIC
NOT TO SCALE

LEGEND: ——— STATE HIGHWAYS

BYPASS ROUTE

FIGURE 6-3

Bypass Route Alternatives

Cost: The estimated construction cost for this improvement is $1,231,000. It includes modifying approximately 10,300 feet of Fry Lane and 17,000 feet of Hotchkiss Lane/Lottery Lane. The cost includes some overlay, new shoulders and relocating the existing weigh station to a new location.

Alternative 2 - Red Barn Lane to Hotchkiss Lane

Overview: This alternative, shown in Section B, would use a combination of existing roadways and new connections. Red Barn Lane is a county road that runs between US Highway 20 and OR Highway 78. A new connection would extend from Red Barn Lane at OR Highway 78 to Hotchkiss Lane at OR Highway 205. Hotchkiss Lane and Lottery Lane would be used to reconnect with the highway.

Impacts: This bypass route is longer than Alternative 1 and would require some new roadway construction. Existing roadways would need minor pavement and shoulder improvements as well as several bridge and culvert replacements.

The new roadway would travel through seasonally inundated grasslands. Environmental impacts could arise from construction through these wet areas. Water run-off could also be an environmental factor.

This route would only serve through traffic traveling to and from the east on US Highway 20. The loss of this traffic would impact businesses that serve highway travelers. They would lose customers that would go around the cities and be serviced at the next town on the highway. However, because there are no nearby cities, some travelers may still choose to go into Hines and Burns for services.

Another impact would be the relocation of the weigh station to a site on US Highway 20 east of the north US Highway 20/395 junction.

A final concern would be construction outside of the Burns UGB. Because this improvement would require new construction through rural lands, exceptions to several statewide planning goals would be needed. Without strong justification for building outside of the UGB, securing goal exception may not be possible.

Cost: The estimated construction cost for this improvement is $3,395,000. It includes modifying approximately 10,300 feet of Red Barn Lane and 17,000 feet of Hotchkiss Lane/Lottery Lane as well as constructing 16,000 feet of new roadway. The cost includes some overlay and new shoulders on existing roadways. It also includes relocating the existing weigh station.

Alternative 3 - Old Experiment Station Road to Hotchkiss Lane

Overview: This alternative, shown in Section C, would use a combination of existing roadways and new connections. Old Experiment Station Road is a county road that runs between US Highways 20 and OR Highway 78. A new connection would extend from Old Experiment Station Road at OR Highway 78 to Hotchkiss Lane at OR Highway 205. Hotchkiss Lane and Lottery Lane would be used to reconnect with the highway.

Impacts: This bypass route is longer than other alternatives and would require some new roadway construction. Existing roadways would need minor pavement and shoulder improvements as well as several bridge and culvert replacements.

The new roadway would travel through seasonally inundated grasslands. Environmental impacts could arise from construction through these wet areas. Water run-off could also be an environmental factor.

This route would only serve through traffic traveling to and from the east on US Highway 20. The loss of this traffic would impact businesses that serve highway travelers. They would lose customers that would go around the cities and be serviced at the next town on the highway. However, because there are no nearby cities, some travelers may still choose to go into Hines and Burns for services.

Another impact would be the relocation of the weigh station to a site on US Highway 20 east of the north US Highway 20/395 junction.

A final concern would be construction outside of the Burns UBG. Because this improvement would require new construction through rural lands, exceptions to several statewide planning goals would be needed. Without strong justification for building outside of the UGB, securing goal exception may not be possible.

Cost: The estimated construction cost for this improvement is $4,004,000. It includes modifying approximately 21,000 feet of Old Experiment Station Road and 17,000 feet of Hotchkiss Lane/Lottery Lane as well as constructing 21,000 feet of new roadway. The cost includes some overlay and new shoulders on existing roadways. It also includes relocating the existing weigh station.

Alternative 4 - West Side Route

Overview: This alternative, shown in Section D, would run west of Hines and Burns using a combination of existing roadways and new connections. It would extend westward from Ebenray Road with a new connection to Radar Road through the Burns Paiute Indian Reservation. A new roadway would then be constructed through the west hills of Hines and Burns running from Radar Road to the Hines Logging Road. The Hines Logging Road would reconnect the bypass with the highway.

Impacts: This bypass route requires more new construction than other alternatives. Ebenray Road and Hines Logging Road would need minor pavement and shoulder improvements as well as several bridge and culvert replacements. Radar Road would need to be reconstructed. The new roadway would travel through the hillsides west of Hines and Burns.

This route would serve all through traffic but would be significantly longer than traveling through the cities. While some travelers may divert, most would choose the shorter travel route.

The new roadway would have to be coordinated with the Burns Paiute Indian Tribe since it would travel through part of the reservation. This would bring higher traffic volumes to the reservation through areas with very low volumes now. At the same time, however, it would provide a direct connection from the reservation into Hines and Burns.

Another impact would be the relocation of the weigh station to a site on US Highway 20 east of the north US Highway 20/395 junction.

A final concern would be construction outside of the Burns UBG. Because this improvement would require new construction through rural lands, exceptions to several statewide planning goals would be needed. Without strong justification for building outside of the UGB, securing goal exception may not be possible.

Cost: The estimated construction cost for this improvement is $4,878,000. It includes modifying approximately 2,000 feet of Ebenray Road, replacing 5,000 feet of Radar Road, widening 5,000 feet of Hines Logging Road, and constructing 35,000 feet of new roadway segments. The cost includes some overlay and new shoulders on existing roadways. It also includes relocating the existing weigh station.

Recommendation

Because through traffic is still a relatively small component of traffic in the core of Hines and Burns, the cost of constructing a bypass far outweighs the benefits. The Burns TSP recommended a truck route option which would bypass Broadway Avenue but keep the through traffic in town and allow the travel services in Hines to maintain their business. Therefore, none of the bypass alternatives are recommended for implementation.

Option 6. Install an Actuated Signal at the Intersection of Barnes Avenue and US Highway 20/395

Overview: Barnes Avenue is the main east/west route through the City of Hines. It is designated as a collector roadway serving residential and commercial development both east and west of US Highway 20/395. It also provides direct access to the parks surrounded by Circle Avenue and the Hines Elementary School on the west side of the city. The Barnes Avenue and Highway 20/395 intersection is currently unsignalized.

In addition to carrying some of the highest traffic volumes in Hines, Barnes Avenue also serves many pedestrians. Children and other residents living on the east side of Hines must cross US Highway 20/395 when they are going to school, the post office, or the park. Safety of these pedestrians has been a big concern for the community.

Both residents and officials at the city have requested that ODOT install a traffic signal at this intersection. Two options are available for installing an actuated traffic signal at this intersection:

- A *pedestrian-actuated* signal could be installed. This type of signal would only be triggered by pedestrians, thereby allowing them to cross while highway traffic is stopped. Vehicular traffic on Barnes Avenue would still be controlled with STOP signs.

- A *fully-actuated* signal could be installed. This type of signal would be triggered by both vehicles and pedestrians approaching on Barnes Avenue who wish to enter or cross the Highway 20/395 traffic stream.

Impacts: An analysis of traffic signal warrants indicates that neither pedestrian volumes nor traffic volumes currently trigger the need for a traffic signal at this location. Traffic volumes would need to be about 50 percent higher to begin meeting warrants.

If a pedestrian-actuated signal is installed, highway traffic would not be stopped very often. Most of the pedestrian activity would occur in the morning and afternoon when school begins and lets out. This has both advantages and disadvantages. There would be a minimal impact to highway traffic due to the stopped delay at the intersection. However, because the signal would not be triggered very frequently, drivers may come to expect a green light on the highway and may not observe the signal when it is triggered.

If a fully-actuated signal is installed, highway traffic would be stopped more often throughout the day. This would cause a slight increase in delay for highway drivers but would reduce the risk that the signal would be unobserved.

The closest traffic signal is located at the High School/Hilander Avenue intersection with US Highway 20/395 in the City of Burns. This is a distance of about a mile. Current access management standards for US Highway 20/395 require ½ mile between signals on a highway of statewide importance[3]. Therefore, installing a traffic signal at Barnes Avenue would not conflict with current standards.

[3] *1991 Oregon Highway Plan*, Appendix B, Table 1, Access Management Classification System

Cost: The estimated cost for installing a traffic signal is typically about $150,000. With the loops and other in-ground hardware installed as part of the highway reconstruction, the cost for installing the traffic signal is estimated at about $145,000.

Recommendation: There is strong community support for installing a traffic signal at the intersection of Barnes Avenue and US Highway 20/395; therefore, this TSP should reflect that desire. A fully-actuated signal is recommended because delays will be minimal to highway users but the signal will be triggered frequently enough that drivers will not become inured to it.

In the short term, a crossing guard during school hours would provide for a safer crossing environment.

SUMMARY

Table 6-1 summarizes the recommendations of the transportation improvement options based on the evaluation process described in this chapter. Chapter 7 describes how these improvement options fit into the modal plans for the Hines area.

TABLE 6-1
TRANSPORTATION IMPROVEMENT OPTIONS: RECOMMENDATION SUMMARY

Option	Recommendation
1. Revise Zoning Codes	• Implement
2. Implement TDM Strategies	• Implement
3. Reconfigure the Lottery Lane/Byrd Avenue intersection on Highway 20/395	
Alternative 1 - Realign Byrd Avenue	• Do Not Implement
Alternative 2 - Realign Byrd Avenue and Lottery Lane	• Do Not Implement
Alternative 3 - Realign Red Cinder Road	• Implement
4. Realign the Golf Course Access with Bennett Avenue	• Implement
5. Construct a bypass around Hines/Burns	
Alternative 1 - Fry Lane to Hotchkiss Lane	• Do Not Implement
Alternative 2 - Red Barn Lane to Hotchkiss Lane	• Do Not Implement
Alternative 3 - Old Experiment Station Road to Hotchkiss Lane	• Do Not Implement
Alternative 4 - West Side Route	• Do Not Implement
6. Install an actuated signal at the intersection of Barnes Avenue and Highway 20/395	• Implement

CHAPTER 7: TRANSPORTATION SYSTEM PLAN

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

STREET DESIGN STANDARDS

Street standards relate the design of a roadway to its function. The function is determined by operational characteristics such as traffic volume, operating speed, safety, and capacity. Street standards are necessary to provide a community with roadways that are relatively safe, aesthetic, and easy to administer when new roadways are planned or constructed. *They are based on experience, and policies and publications of the profession.*

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

TABLE 7-1
RECOMMENDED STREET DESIGN STANDARDS

Classification	Pavement Width	Right-of-Way Width	Landscape Strip	Sidewalks	Minimum Posted Speed
Residential	36 feet	50 feet	none	5 feet	15-25 mph
Cul-de-Sac	36 feet	50 feet	none	5 feet	15-25 mph
Alley	16-20 feet	16-20 feet	none	None	10 mph
Collector	36 feet	50 feet	none	5 feet	25-35 mph
Arterial	50-52 feet	100 feet	6-8 feet	6-12 feet	25-45 mph

Residential Streets

The design of a residential street affects its traffic operation, safety, and livability. The residential street should be designed to enhance the livability of the neighborhood as well as to accommodate less than 1,200 vehicles per day. Design speeds should be 15 to 25 mph. When traffic volumes exceed approximately 1,000 to 1,200 vehicles per day, the residents on that street will begin to notice the traffic as a noise and safety problem. To maintain neighborhoods, local residential streets should be designed to encourage low speed travel and to discourage through traffic.

The standard for a local residential street should be a 36-foot roadway surface within a 50-foot right-of-way. The cross section will accommodate passage of one lane of moving traffic in each direction, with curb parking on both sides of the street. Five-foot sidewalks should be provided on each side of the roadway adjacent to the curb.

Cul-de-Sac Streets

Cul-de-sac or "dead end" residential streets are intended to serve only the adjacent land in residential neighborhoods. Newly constructed cul-de-sacs should remain private streets, in the ownership of the adjacent property owners, so that the city and county are not burdened with the cost of maintaining streets that do not serve the general public. These streets should be short (less than 300 feet long) and serve a maximum of 20 single-family houses. Because cul-de-sac streets limit street and neighborhood connectivity, they should only be used where topographical or other environmental constraints prevent street connections. Where cul-de-sacs must be used, pedestrian and bicycle connections to adjacent cul-de-sacs or through streets should be included.

The standard for a cul-de-sac should be the same as the local residential street standard. It should be a 36-foot roadway surface within a 50-foot right-of-way. The cross section will accommodate passage of one lane of moving traffic in each direction, with curb parking on both sides of the street. Five-foot sidewalks should be provided on each side of the roadway adjacent to the curb.

Alleys

Alleys can be a useful way to diminish street width by providing rear access and parking to residential areas. Including alleys in a subdivision design allows homes to be placed closer to the street and eliminates the need for garages to be the dominant architectural feature. This pattern, once common, has been recently revived as a way to build better neighborhoods. In addition, alleys can be useful in commercial and industrial areas, allowing access by delivery trucks off of the main streets. Alleys should be encouraged in the urban area of Hines. They should be gravel, 16 to 20 feet wide, and lie within a 16- to 20-foot right-of-way (see Figure 7-1).

Collector Streets

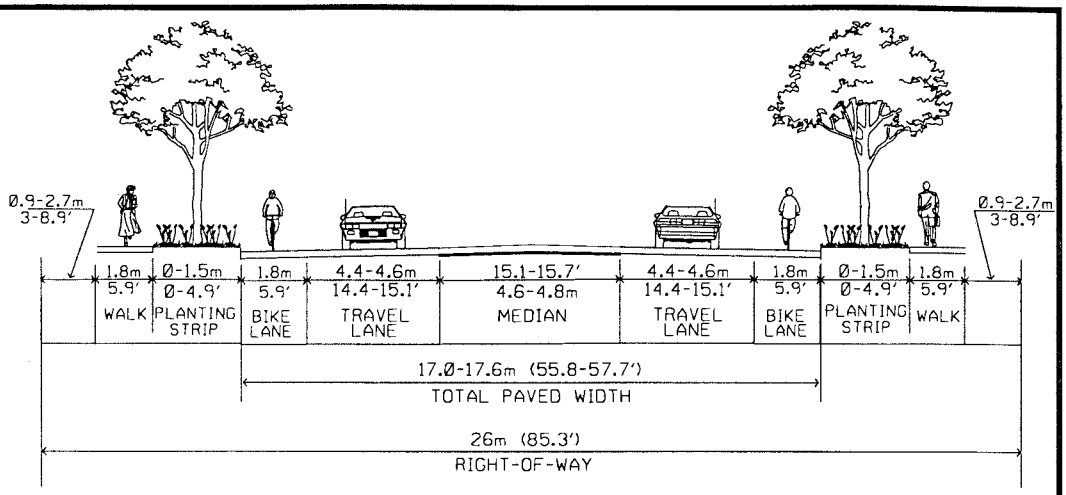
Collectors are intended to carry between 1,200 and 10,000 vehicles per day, including limited through traffic, at a design speed of 25 to 35 mph. A collector can serve residential, commercial, industrial, or mixed land uses. Collectors are primarily intended to serve local access needs of residential neighborhoods through connecting local streets to arterials. Bike lanes are typically not needed due to slower traffic speeds.

The collector street standard provides a 36-foot roadway surface within a 60-foot right-of-way. The cross section will accommodate passage of one lane of moving traffic in each direction, with curb parking on both sides of the street. Five-foot sidewalks should be provided on each side of the roadway adjacent to the curb.

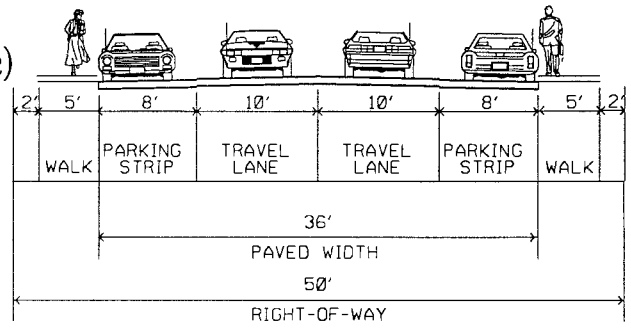
Arterial Streets

Arterial streets form the primary roadway network within and through a region. They provide a continuous roadway system that distributes traffic between different neighborhoods and districts. Generally, arterial streets are high capacity roadways that carry high traffic volumes with minimal localized activity. Design speeds should be between 25 and 45 mph. The only arterial street in Hines is US Highway 20/395.

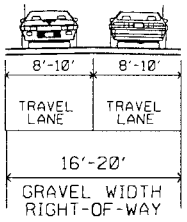
Arterial:



Local Residential:
(includes Cul-de-Sac)



Alley:



Collector:

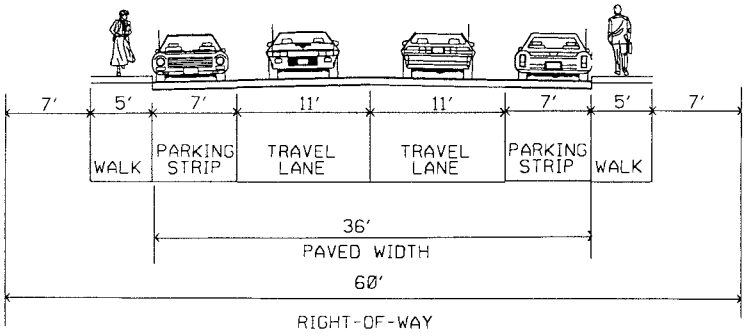


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FIGURE 7-1

Recommended Street Standards

The arterial street standard provides a 55.8-57.7-foot paved surface within an 85.3-foot right-of-way. This allows space for two 14.4-15.1-foot travel lanes, one 15.1-15.7-foot center median, two 5.9-foot bike lanes, and two 5.9-foot sidewalks. In addition, 0-4.9-foot planting strips are also possible. Design speeds should be between 25 and 45 mph (see Figure 7-1).

Bike Lanes

In cases where a bike lane is proposed within the street right-of-way, 10 to 12 feet of roadway pavement (between curbs) should be provided for a five- to six-foot bikeway on each side of the street. The striping should be done in conformance with the *Oregon Bicycle and Pedestrian Plan* (1995). In cases where curb parking will exist with a bike lane, the bike lane will be located between the parking and travel lanes. In some situations, curb parking may have to be removed to permit a bike lane.

In general, bike lanes should be added on arterial and collector streets when forecast traffic volumes exceed 2,500 to 3,000 vehicles per day. Otherwise shared roadway facilities should be adequate.

At this time, only US Highway 20/395 would have traffic volumes high enough to warrant bike lanes. These are currently part of ODOT's new highway layout.

Sidewalks

A complete pedestrian system should be implemented in the urban portion of Hines. Every urban street should have sidewalks on both sides of the roadway as shown on the cross sections in Figure 7-1. Sidewalks on both residential and collector streets should have a five-foot wide paved width. In addition, pedestrian and bicycle connections should be provided between any cul-de-sac or other dead-end streets.

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

Curb Parking Restrictions

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

Street Connectivity

Street connectivity is important because a well-connected street system provides more capacity than a disconnected one, provides alternate routes for local traffic, and is more pedestrian and bicycle-friendly. Ensuring that this grid is extended as development occurs is important to Hines' continued livability.

The City will allow cul-de-sac streets, by variance, where topographical or environmental constraints prevent standard streets to be constructed. The cul-de-sac streets, permitted by the City, will remain as private streets and the City will not be responsible for their maintenance.

ACCESS MANAGEMENT

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

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

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

Access Management Techniques

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

- Restricting spacing between access points (driveways) based on the type of development and the speed along the arterial.
- Sharing of access points between adjacent properties.
- Providing access via collector or local streets where possible.
- Constructing frontage roads to separate local traffic from through traffic.
- Providing service drives to prevent spill-over of vehicle queues onto the adjoining roadways.
- Providing acceleration, deceleration, and right-turn only lanes.
- Offsetting driveways to produce T-intersections 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 restrict access width to a minimum.

Recommended City of Hines Access Management Standards

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

TABLE 7-2
RECOMMENDED CITY ACCESS MANAGEMENT STANDARDS

Functional Classification	Intersections			
	Public Road		Private Drive	
	Type	Spacing	Type	Spacing
Arterial	See Access Management Spacing Standards, Appendix C of the 1999 Oregon Highway Plan			
Collector	at-grade	250 feet	L/R Turns	100 feet
Residential Street	at-grade	250 feet	L/R Turns	Access to Each Lot
Alley (Urban)	at-grade	100 feet	L/R Turns	Access to Each Lot

Application

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

To summarize, access management strategies consist of managing the number of access points and providing traffic and facility improvements. The solution is a balanced, comprehensive system that provides reasonable access while maintaining the safety and efficiency of traffic movement.

State Highways

Access management is important to promoting safe and efficient travel for both local and long distance users along State Highway 20/395 in Hines. The 1999 OHP specifies access management spacing standards and policies for State facilities.

In January 2001, David Evans and Associates, Inc. completed the *Burns and Hines Access Management Plan* for the state highway segments in the cities of Burns and Hines. The purpose of this report is to:

- Complete an inventory of existing spacing for public and private approaches to the highway segments
- Compare existing highway access spacing with the access spacing standards and access management provisions of the 1999 OHP
- Identify recommended access management strategies to be implemented as future development occurs along the highway segments in Burns and Hines that will be compatible with the 1999 OHP access management provisions

While Hines may designate the state highway as an arterial roadway within their transportation system, access management for this facility follows the Access Management Spacing Standards of the 1999 OHP. These spacing standards are based on highway classification, type of area and speed, which are shown in the appendix to this document. This section of the Transportation System Plan describes the state highway access management objectives and provides a summary of recommendations from the *Burns and Hines Access Management Plan*, including identification of a specific highway segment where special access spacing standards may apply.

General

Highway 20/395 through Hines is categorized as a Statewide Highway in the 1999 OHP. The primary function of Statewide Highways is to provide connections to major cities, regions of the state, and other states. A secondary function in urban areas is to provide connections for intra-urban and intra-regional trips. In urban areas, the management objective for Statewide Highways is to provide safe and efficient operation with minimal interruptions to flow.

To assist in implementing the state access management standards and policies, the 1999 OHP recognizes that state highways serve existing areas of commercial activity or future centers of commercial activity in urban areas, such as the central core of Hines. Shorter block lengths and a well-connected grid system are important to a central urban area, along with safe and convenient pedestrian facilities. In general, urban commercial arterial streets typically have blocks 200 to 400 feet long, driveway access sometimes as close as 100-foot intervals and occasionally, signals may be spaced as close as every 400 feet. In these areas, the need for local access may be greater than the need for highway mobility. The 1999 OHP recognizes such areas where vehicular accessibility is important to continued economic viability in urban segments with posted speeds of 35 mph or less through the designation of Urban Business Areas (UBAs).

In general, the *Burns and Hines Access Management Plan* recommendations support the continuing development of a connective street system with stronger access control further from the central area of Hines. To account for the existing grid system and still manage future access, it is recommended that specific access spacing standards be applied to different highway segments in Hines.

Urban Business Area

An Urban Business Area (UBA) is a designation that may be applied in an existing area of commercial activity or future center or node of commercial activity located on state highways within urban growth boundaries where speeds are 35 mph or less. The primary objective of a UBA is to maintain existing highway speeds while balancing the access needs of abutting properties with the need to move through traffic. Access spacing is 720 feet for UBAs on Statewide Highways with posted speeds of 30 or 35 mph.

The *Burns and Hines Access Management Plan* includes a recommendation that the City of Hines consider a UBA designation for the segment of Highway 20/395 between Bennett Avenue West and Hotchkiss Lane. Upon adoption of the TSP by the Hines City Council and a finding of 1999 OHP compliance by the Technical Services Manager designated by ODOT to review the TSP, the City of Hines could pursue ODOT designation of this segment as a UBA. A UBA designation will allow reduced mobility levels and associated opportunities to provide multi-modal access enhancements that are compatible with potential future development in this area.

MODAL PLANS

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

Street System Plan

The street system plan, shown in Figure 7-2, includes reclassification of some streets and several street improvements that are recommended for construction within the City of Hines during the next 20 years. In addition, Figure 7-2 shows conceptual locations of potential future streets. The City of Hines has identified these potential future streets as desired future connections between areas of planned development and the existing street network. Any new development should consider integrating the proposed future street system into their plans before submitting it to the City, which may require the future approximate street alignments as a condition of approval. At this time, no specific alignments, functional classification, cost estimates, funding source(s) or implementation schedule have been identified for any of the potential future streets shown on Figure 7-2.

Street Functional Classification

Street functional classification systems 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.

The current street functional classification includes US Highway 20/395 as the only arterial street in Hines and Barnes Avenue and Circle Drive as the only collector streets in the city.

The street system plan would include the addition of several new collector streets. Many of these roadways already collect and distribute traffic in Hines along a variety of local roadway and also allow local traffic to avoid the highway altogether for some travel. Some will be carrying higher traffic demands in the future as development occurs. New collector streets would include:

- Saginaw Avenue from Hanley Boulevard to Hilltop Avenue
- Saginaw Avenue from Barnes Avenue to Hines city limits
- Hanley Boulevard from Saginaw Avenue to Commercial Avenue
- Pettibone Avenue from Woodland Avenue to Peter French Avenue
- Jamison Avenue from Saginaw Avenue to Oregon Avenue (Highway 20/395)
- Roe Davis Avenue from Saginaw Avenue to Oregon Avenue (Highway 20/395)

Because it does not really serve as a collector roadway, Circle Drive should be reclassified as a local street.

Street Improvement Projects

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

- *Red Cinder Road, Byrd Avenue, Lottery Lane* - Realign Red Cinder Road opposite Lottery Lane, create a new connection between Byrd Avenue and Red Cinder road at Roanoke Avenue, and close Byrd Avenue access to Highway 20/395. (Estimated Cost = $38,000)

- *Golf Course Access* - Realign the golf course access road to connect with Highway 20/935 opposite Bennett Avenue. (Estimated Cost = $40,000)

- *Barnes Avenue and Highway 20/395* – If ODOT warrant is met, install a fully-actuated traffic signal at this intersection. (Estimated Cost = $145,000)

In addition to these improvements, ODOT completed reconstruction of US Highway 20/395 through the City of Hines in 1999. This improvement widened the street to provide a three-lane roadway with bike lanes and sidewalks on both sides of the street.

Statewide Transportation Improvement Program Projects

ODOT has a comprehensive transportation improvement and maintenance program encompassing the entire state highway system. The Statewide Transportation Improvement Program identifies all the highway improvement projects in Oregon. It lists specific projects, the counties in which they are located, and their construction year.

The final 2000-2003 STIP, published in May 2000, identified no major highway improvements scheduled within the City of Hines.

Pedestrian System Plan

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

The downtown core of Hines has sidewalks on both sides of US Highway 20/395 and sidewalks along the non-park sides of Circle Avenue. Except for intersections along US Highway 20/395, curb cuts for wheelchair access are generally lacking.

One pedestrian project has been identified for Hines, as shown in Figure 7-3.

- *Barnes Avenue* - Construct sidewalks along both sides of Barnes Avenue from Saginaw Avenue to Commercial Avenue. (Estimated Cost = $135,000)

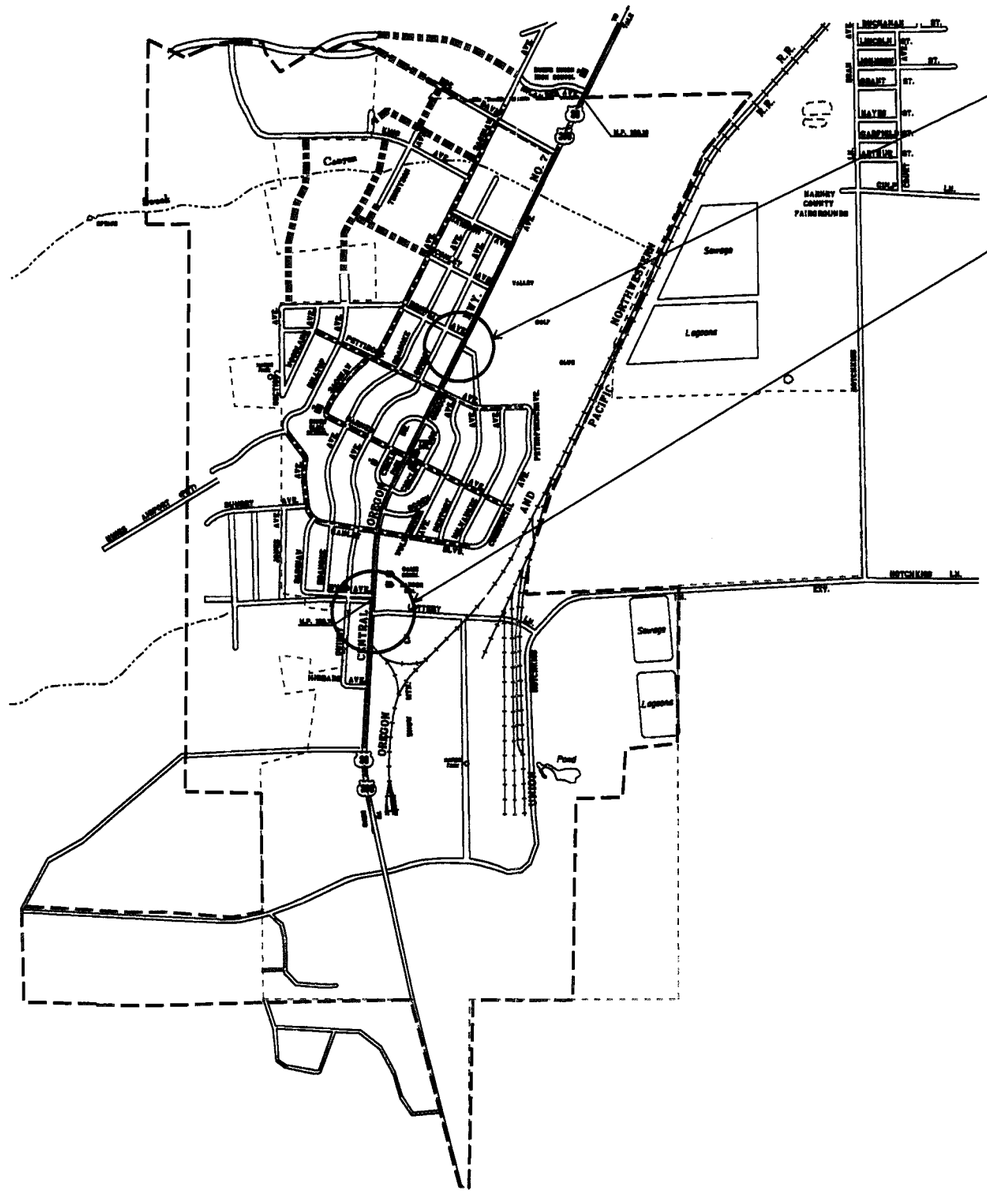
Over time, sidewalks should also be added to streets that currently lack them and are not programmed for improvements. Missing sidewalk segments should be added whenever an opportunity presents itself (such as infill development, special grants, etc.)

The cost to construct a concrete sidewalk facility is around $25 per linear foot. This assumes that the sidewalks are five feet wide and include curbs. The cost estimate also assumes the sidewalks are composed of four inches of concrete and six inches of aggregate. New sidewalks should be constructed with curb cuts for wheelchairs at every crosswalk to comply with the Americans with Disabilities Act.

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

Bicycle System Plan

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



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

NORTH

0 1200 2400 3600

FEET

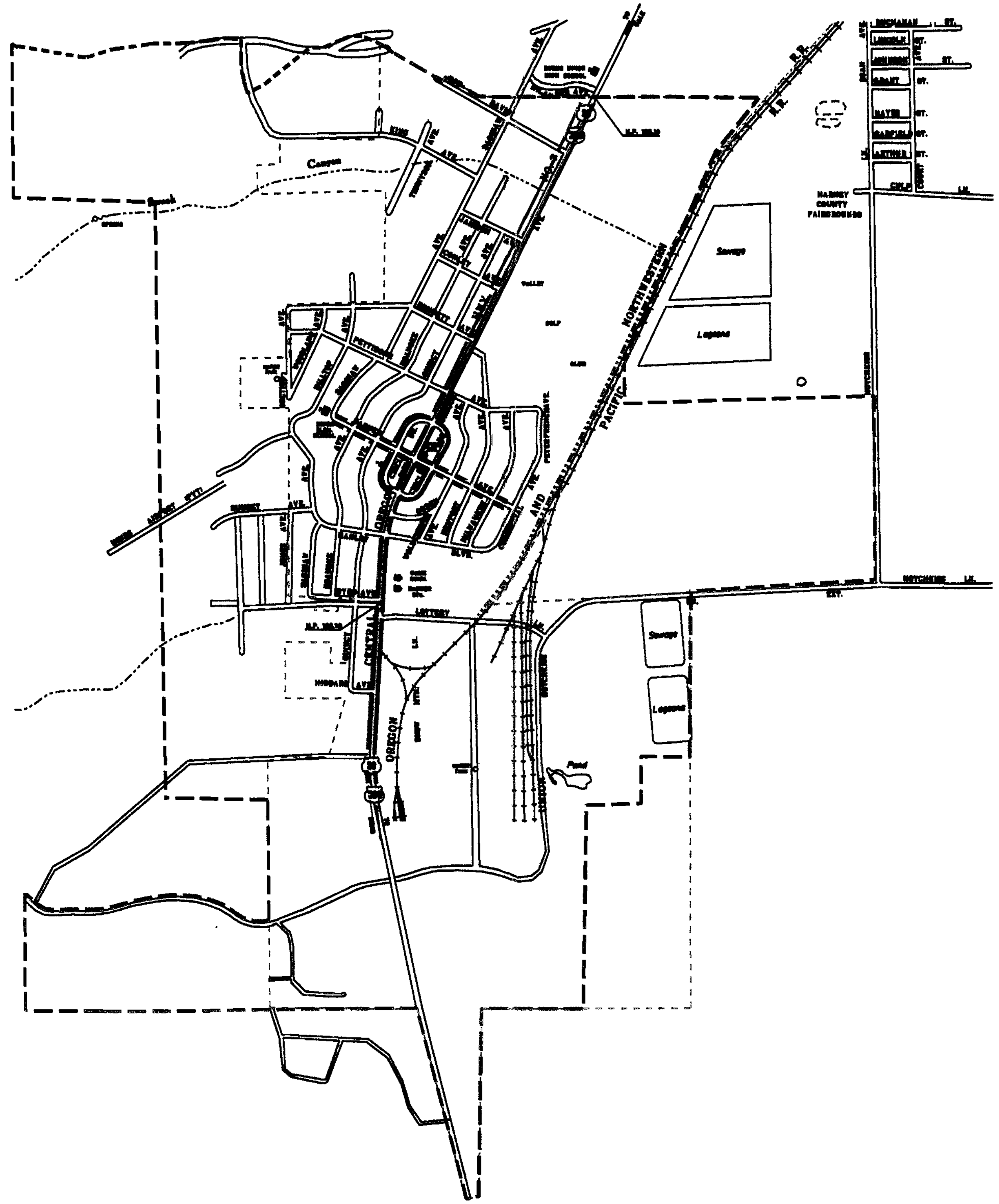
LEGEND:
- URBAN GROWTH BOUNDARY
- CITY LIMITS
- MAJOR ARTERIAL
- COLLECTOR
- POTENTIAL FUTURE STREET

FIGURE 7-2

Recommended Street System

City of Hines TSP

HARN0001/HINE7-2.DGN/TNT/01-12-01



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NORTH

0 1200 2400 3600
FEET

LEGEND:

- URBAN GROWTH BOUNDARY
- CITY LIMITS
- EXISTING SIDEWALK
- FUTURE SIDEWALK
- MULTI-USE PATH

FIGURE 7-3

Recommended Pedestrian System

HARN0001/HINE7-3.DGN/TNT/01-12-01

Shared roadways, where bicyclists share normal vehicle lanes with motorists, are generally acceptable if speeds and traffic volumes are relatively low. When future traffic volumes exceed 2,500 to 3,000 vehicles per day, bike lanes should be added to the existing roadway. In Hines, none of the collector or local streets are expected to exceed these volumes in the next 20 years.

Bicycle parking is generally lacking in Hines. Bike racks should be installed in front of downtown businesses and all public facilities (schools, post office, library, city hall, and parks). Typical rack designs cost about $50 per bike plus installation. An annual budget of approximately $1,500 to $2,000 should be established so that Hines can begin to place racks where needs are identified and to respond to requests for racks at specific locations. Bicycle parking requirements are further addressed in Chapter 9 (Policies and Ordinances).

Transportation Demand Management Plan

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

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

Alternative work schedules, such as flex-time and staggered work hours, should be encouraged at major employment centers. 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.

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

Public Transportation Plan

The City of Hines has limited existing local and long distance public transportation services available.

Local Service

Existing public transportation includes the senior citizen and disabled dial-a-ride service provided by the Harney County Senior Center Transportation.

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

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

Long Distance Service

Currently, the Harney County Senior Center provides long distance service to Bend twice a month. Senior center staff say they would like to expand their service. One problem staff cites in achieving this goal is competition with the volunteer services program that will pay people to drive others to Bend for certain services.

The Amtrak Thruway Motorcoach provides east-west intercity bus service between Salem Oregon and Boise, Idaho as a link to the existing Amtrak passenger rail system in the Pacific Northwest. The Eastern Oregon Amtrak Thruway Motorcoach route, which is part of the new Oregon Transportation Network, serves Harney County with a scheduled stop in Burns and additional pre-requested flag stops at other locations along US Highway 20. The City of Hines is located along this thruway route and a stop in Hines may be arranged prior to the regularly scheduled trip.

Initial funding for this service extension comes from the Oregon Passenger Rail Project which is financed from the State of Oregon's General Fund for the current biennium that ends June 30, 2001. The goal of this effort is to build a customer base that will support incremental expansion of motorcoach service to daily round-trip operation, and to develop a privately operated intercity passenger service along this Eastern Oregon route, which will reach a profitable status in the next few years, eliminating the need for government financial support. When these goals are achieved, the service in Harney County will meet the goals for intercity bus service developed in the Oregon Transportation Plan. The ODOT Rail Division is coordinating this project.

Rail Service Plan

The City of Hines has no current or planned rail service. However, the Eastern Oregon Amtrak Thruway Motorcoach provides direct service to the Amtrak passenger rail system through Harney County. The City of Hines is located along this thruway route and a stop in Hines may be arranged prior to the regularly scheduled trip. If this service can become more self-sufficient, incremental service expansion is possible.

Air Service Plan

The City of Hines is served locally by the Burns Municipal Airport, which is under the jurisdiction of the City of Burns. Devco Engineering, Inc. prepared an *Airport Layout Plan* was prepared in April 1996. The plan lists over 20 recommendations for the airport and concludes that the Burns Municipal Airport is capable of being developed to meet the aviation needs of the local area well into the future. A staged 20-year capital improvement program is included with estimates of both local and federal costs for construction. The *Airport Layout Plan* for Burns Municipal Airport is, and will continue to be, the primary plan guiding the development of the airport.

Commercial air service is available at the Boise Airport in Idaho, about 185 miles to the east, and the Redmond Municipal Airport, about 145 miles to the west.

Pipeline Service Plan

There are currently no pipelines serving the City of Hines.

Water Transportation Plan

The City of Hines has no waterborne transportation services.

TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM

Implementation of the Hines TSP will require both changes to the city comprehensive plan and zoning code and preparation of a 20-Year Capital Improvement Program. These actions will enable Hines to address both existing and emerging transportation issues throughout the urban area in a timely and cost effective manner.

The purpose of the 20-Year Capital Improvement Program is to detail what transportation system improvements will be needed as Hines grows and provide a process to fund and schedule the identified transportation system improvements. It is expected that this TSP program can be integrated into the existing city Capital Improvement Program and the ODOT Statewide Transportation Improvement Program. This integration is important since this TSP proposes that both governmental agencies will fund some of the transportation improvement projects.

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

20-Year Capital Improvement Program

The 20-Year Capital Improvement Program includes street and pedestrian projects, as shown in Table 7-3. The cost of each project listed in the CIP is shown in present day (1998) dollars by jurisdiction. These costs include design, construction, and some contingency costs. They are preliminary estimates and generally do not include right-of-way acquisition, water or sewer facilities, adding or relocating public utilities, or detailed intersection design.

Hines has identified a total of four projects in its CIP with a total cost of $358,000. Three street improvement projects have been identified with a cost of about $223,000. One pedestrian improvement project has been identified with a cost of about $135,000.

TABLE 7-3
CAPITAL IMPROVEMENT PROGRAM (1998) DOLLARS

Project Description	Estimated Cost			
	Local	County	State	Total
Street Improvement Projects				
Install a fully-actuated traffic signal at the intersection of Barnes Avenue and Highway 20/395 (1)	$0	$0	$145,000	$145,000
Realign the golf course access road to connect with Highway 20/935 opposite Bennett Avenue	$40,000	$0	$0	$40,000
Realign Red Cinder Road opposite Lottery Lane, create a new connection between Byrd Avenue and Red Cinder road at Roanoke Avenue, and close Byrd Avenue access to Highway 20/395 (2)	$38,000	$0	$0	$38,000
Pedestrian Improvement Projects				
Construct sidewalks along both sides of Barnes Avenue from Saginaw Avenue to Commercial Avenue	$135,000	$0	$0	$135,000
Subtotal Street Improvement Projects	**$78,000**	**$0**	**$145,000**	**$223,000**
Subtotal Pedestrian Improvement Projects	**$135,000**	**$0**	**$0**	**$135,000**
Total	**$213,000**	**$0**	**$145,000**	**$358,000**

Notes:
(1) The listing of the installation of a traffic signal at the Barnes Avenue/Highway 20/395 intersection in Phase 1 reflects the City of Hines' priorities and not ODOT's. The city may be able to expedite the process by contributing funds to the project.
(2) The Red Cinder Road/Byrd Avenue/Lottery Lane improvements affect city, county, and state roadway facilities. Although the funding has been shown under Hines' jurisdiction, contributions from the other jurisdictions may be possible.

CHAPTER 8: FUNDING OPTIONS AND FINANCIAL PLAN

The TPR requires TSPs to evaluate the funding environment for recommended improvements. This evaluation must include a listing of all recommended improvements, estimated costs to implement those improvements, a review of potential funding mechanisms, and an analysis of existing sources' ability to fund proposed transportation improvement projects. Hines' TSP identifies four specific projects costing approximately $358,000 to implement over the next 20 years. This section of this TSP provides an overview of Hines' revenue outlook and a review of some funding and financing options that may be available to the City of Hines to fund the improvements.

Pressures from increasing growth throughout much of Oregon have created an environment of estimated improvements that remain unfunded. Hines will need to work with Harney County and ODOT to finance the potential new transportation projects over the 20-year planning horizon. The actual timing of these projects will be determined by the rate of population and employment growth actually experienced by the community. This TSP assumes Hines will grow at an annual rate of between 0.5 and 0.6 percent. If population growth exceeds this rate, the improvements may need to be accelerated. Slower than expected growth will relax the improvement schedule.

HISTORICAL STREET IMPROVEMENT FUNDING SOURCES

In Oregon, state, county, and city jurisdictions work together to coordinate transportation improvements. Table 8-1 shows the distribution of road revenues for the different levels of government within the state by jurisdiction level. Although these numbers were collected and tallied in 1991, ODOT estimates that these figures accurately represent the current revenue structure for transportation-related needs.

TABLE 8-1
SOURCES OF ROAD REVENUES BY JURISDICTION LEVEL

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

Source: ODOT 1993 Oregon Road Finance Study.

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

As a state, Oregon generates 94 percent of its highway revenues from user fees, compared to an average of 78 percent among all states. This fee system, including fuel taxes, weight distance charges, and registration fees, is regarded as equitable because it places the greatest financial burden upon those who create the greatest need for road maintenance and improvements. Unlike many states that have indexed user fees to inflation, Oregon has

static road-revenue sources. For example, rather than assessing fuel taxes as a **percentage** of the price per gallon, Oregon's fuel tax is a fixed amount (currently 24 cents) per gallon.

Transportation Funding in Harney County

Historically, sources of road revenues for Harney County have included federal forest fees, state highway fund revenues, federal grants, earnings from the investment of the working fund balance, and other sources. Transportation revenues and expenditures for Harney County are shown in Table8-2 and Table 8-3.

TABLE 8-2
HARNEY COUNTY TRANSPORTATION-RELATED REVENUES

	1993-1994	1994-1995	1995-1996	1996-1997
Working Capital	$3,144,408	$1,889,278	$2,448,288	$2,261,392
Revenue				
Investment Earnings	$154,422	$145,518	$152,111	$73,148
75% Forest Fees	$2,845,940	$2,802,153	$2,425,531	$740,283
Federal Mineral Leases	$277,770	$19,419	$37,512	$6,866
Malheur Wildlife Refuge Payments	$28,157	$42,024		$75,050
Economic Development Grants				
Federal Aid Secondary Grants		$184,661		$414,260
5% Public Land Sales	$45,468	$17,232	$13,315	$43,671
Motor Vehicle License Fund	$412,411	$425,331	$432,638	$413,011
Misc. Receipts	$5,905	$17,519	$25,059	$58,948
Equipment Rental				$2,275
Children Grant		$17,581	$22,443	$23,116
Sale of Equipment/Supplies		$30,000		$26,135
Revenue Subtotal	**$3,770,072**	**$3,701,437**	**$3,108,608**	**$1,876,763**

Source: Harney County.

As shown in Table 8-2, revenues remained relatively stable (between a low of just under $3.1 million in 1995-1996 to a high of over $3.7 million in 1993-1994). A little over $400,000 of the annual revenues comes from the State Highway Fund, declining slightly from over $430,000 in 1995-1996 to approximately $413,000 in 1996-1997. A declining amount has come from Federal Forest receipts. Twenty-five percent of Federal Forest revenue (the 25 percent fund) is returned to the counties based on their share of the total acreage of Federal Forests. Westside National Forests in Oregon and Washington are subject to the Spotted Owl Guarantee, which limits the decline of revenues from these forests to three percent annually. Oregon Forests under the owl guarantee include the Deschutes, Mount Hood, Rogue River, Siskiyou, Siuslaw, Umpqua, and Willamette National Forests. Forest revenues distributed to Harney County are from the Malheur and Ochoco forests, not subject to the owl guarantee and, therefore, they are more difficult to predict. Although declining, the working capital balance has remained at a healthy level. The county has also been able to generate approximately $150,000 annually in interest on its invested funds between 1993-1994 and 1995-1996; in 1996-1997, this amount declined to $73,000.

TABLE 8-3
HARNEY COUNTY TRANSPORTATION-RELATED EXPENDITURES

	1993-1994	1994-1995	1995-1996	1996-1997
Expenses				
Personal Services	$1,118,514	$1,161,705	$1,141,236	$1,155,717
Materials and Services	$2,139,418	$1,641,670	$1,441,284	$1,514,034
Capital Outlay	$305,744	$121,266	$313,189	$358,920
Other	$1,211,526	$217,787	$432,682	$65,000
Expenditure Subtotal	**$4,775,201**	**$3,142,428**	**$3,328,391**	**$3,093,672**

Source: Harney County.

As shown in Table 8-3, Harney County has spent between $120,000 and $310,000 annually in capital improvements. The bulk of expenditures in the road fund are for personal services and materials and services relating to maintenance.

Historical Revenues and Expenditures in the City of Hines

Revenues and expenditures for the City of Hines' Street Fund are shown in Table 8-4 and Table 8-5. Sources of revenues available for street operations and maintenance include the state highway fund, interest from the working capital balance, and grants for specific projects.

TABLE 8-4
CITY OF HINES STREET FUND REVENUES

	1994-95 Actual	1995-96 Actual	1996-97 Budget	1997-98 Budget
Working Capital	$16,236	$90,468	$90,000	$90,000
Revenue				
State Tax Receipts	$65,637	$66,348	$70,837	$70,837
County Road Fund Apportionment	$95,000	$95,000		
Interest	$1,852	$4,219	$4,250	$4,250
Refunds			$50	$50
Special Allotment Grant			$25,000	$25,000
Total Revenue	**$162,489**	**$165,567**	**$100,137**	**$100,137**

Source: City of Hines.

As shown in Table 8-5, funds from the State Highway Fund provide a large proportion (about 40 percent in 1994-1995 and 1995-1996) of the revenues available to the City of Hines' Street Fund. The 1999 proposed budget anticipates a larger proportion of the budget attributable to specific grant funds.

TABLE 8-5
CITY OF HINES STREET FUND EXPENDITURES

	1994-95 Actual	1995-96 Actual	1996-97 Budget	1997-98 Budget
Expenditures				
Personal Services	$60,772	$61,703	$74,621	$74,621
Materials and Services	$15,657	$86,098	$108,400	$108,400
Other	$10,000		$5,000	$5,000
Total Expenditures	**$86,429**	**$147,802**	**$188,021**	**$188,021**

Source: City of Hines.

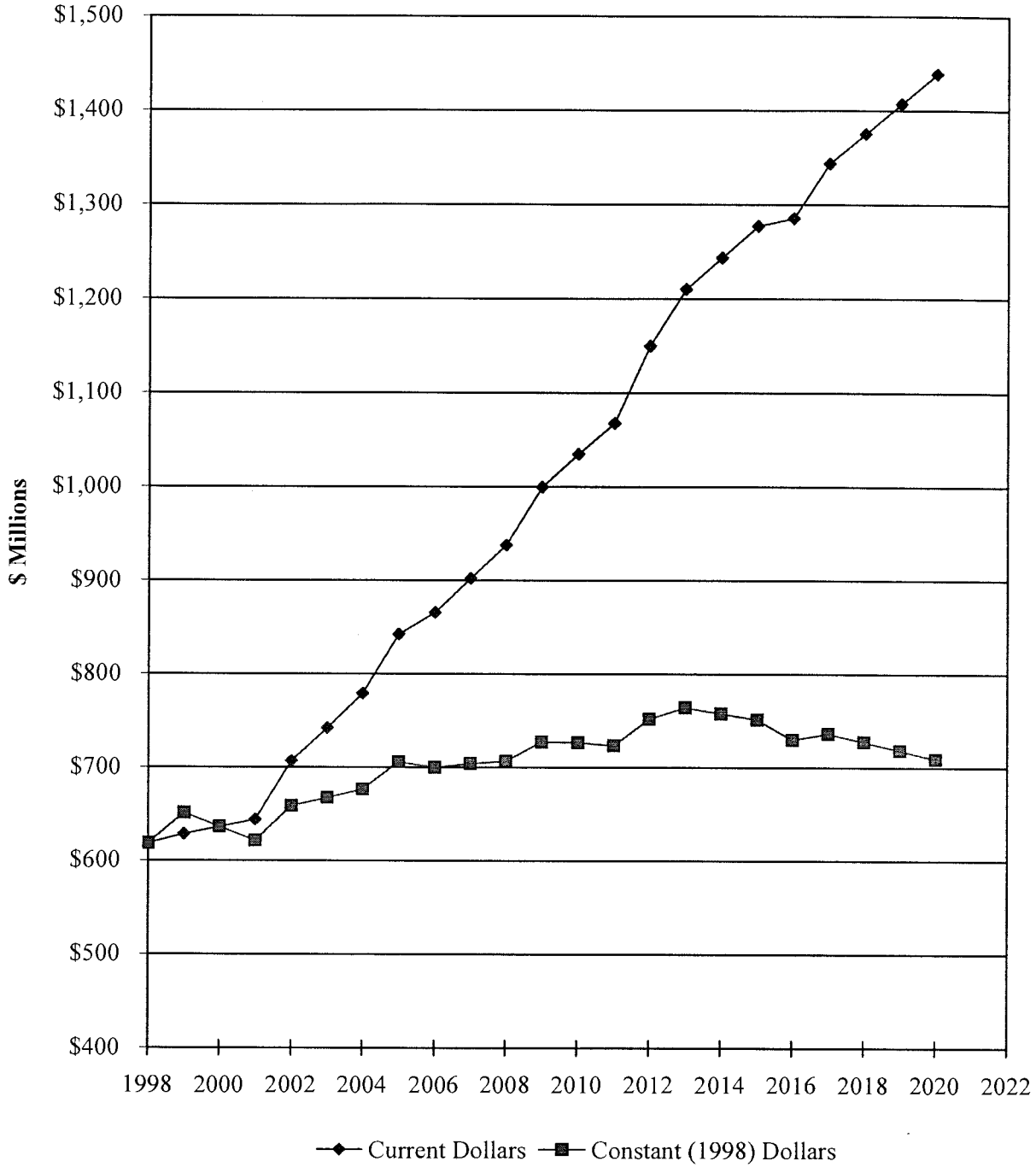
The City of Hines accounts for its street expenditures in three broad categories: personal services, materials, and services, and other. The materials and services category includes street lighting, supplies, equipment repair, patching, and maintenance, and street paving and overlays. The street paving and overlays category includes both operations and maintenance activities and capital improvements. A portion of the street paving and overlays line item is for capital improvements and the remainder for operations and maintenance.

Transportation Revenue Outlook in the City of Hines

ODOT's policy section recommends certain assumptions in the preparation of transportation plans. In its Financial Assumptions document prepared in May 1998, ODOT projected the revenue of the State Highway Fund through year 2020. The estimates are based on not only the political climate, but also the economic structure and conditions, population and demographics, and patterns of land use. The latter is particularly important for state-imposed fees because of the goals in place under Oregon's Transportation Planning Rule requiring a ten-percent reduction in per-capita vehicle miles of travel in Metropolitan Planning Organization areas by year 2015, and a 20-percent reduction by year 2025. This requirement will affect the 20-year revenue forecast from the fuel tax. ODOT recommends the following assumptions:

- Fuel tax increases of 1 cent per gallon per year (beginning in year 2002), with an additional 1 cent per gallon every fourth year
- Vehicle registration fees would be increased by $10 per year in 2002, and by $15 per year in year 2012
- Revenues will fall halfway between the revenue-level generated without TPR and the revenue level if TPR goals were fully met
- The revenues will be shared among the state, counties, and cities on a "50-30-20 percent" basis rather than the previous "60.05-24.38-15.17 percent" basis
- Inflation occurs at an average annual rate of 3.6 percent (as assumed by ODOT)

Figure 8-1 shows the forecast in both current-dollar and inflation-deflated constant (1998) dollars. As highlighted by the constant-dollar data, the highway fund is expected to grow slower than inflation early in the planning horizon until fuel-tax and vehicle-registration fee increases occur in year 2002. It will increase to a rate somewhat faster than inflation through year 2015 and then continue a slight decline through the remainder of the planning horizon.



Source: Oregon Department of Transportation

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FIGURE 8-1

State Highway Fund
(in Millions of Dollars)

As the State Highway Fund is expected to remain a significant source of funding for Hines, the city is highly susceptible to changes in the State Highway Fund. From 1994 to 1998, the State Highway Fund supplied over 85 percent of Hines' total street fund revenue.

In order to analyze the city's ability to fund the recommended improvements from current sources, David Evans and Associates, Inc., applied the following assumptions:

- The State Highway Fund will continue to account for the majority of the city's street fund
- The amount of revenue received from Federal Timber Receipts will continue decline, and will not be replaced with a reliable funding source
- Interest and other local sources continue to provide stable revenue streams
- The proportion of revenues available for capital expenditures for street improvements will remain at about 30 percent (as averaged for years 1994-1995 to 1996-1997) of all transportation-related resources for the City of Burns

Applying these assumptions to the estimated level of the State Highway Fund resources, as recommended by ODOT, resources available to the Hines for all operations, maintenance, and capital outlay purposes are estimated at approximately $66,000 to $82,000 annually (in current 1998 dollars), as shown in Table 8-6.

The amount actually received from the State Highway Fund will depend on a number of factors, including:

- The actual revenue generated by state gasoline taxes, vehicle registration fees, and other sources
- The population growth in Hines (since the distribution of state highway funds is based on an allocation formula which includes population)

Based on the revenue assumptions identified above, this analysis suggests that the City of Hines will have between $9,500 and $12,000 available annually for capital improvements.

TABLE 8-6
ESTIMATED RESOURCES AVAILABLE TO CITY OF HINES
FROM STATE HIGHWAY FUND, 1998 DOLLARS

Year	Total Estimated Resources from State Highway Fund	Estimated Funds Available for Capital Outlay
1999	$69,500	$10,000
2000	$67,900	$9,800
2001	$66,300	$9,500
2002	$70,300	$10,100
2003	$71,200	$10,200
2004	$72,200	$10,400
2005	$75,300	$10,800
2006	$74,700	$10,700
2007	$75,100	$10,800
2008	$75,400	$10,800
2009	$77,600	$11,100
2010	$77,500	$11,100
2011	$77,200	$11,100
2012	$80,300	$11,500
2013	$81,500	$11,700
2014	$80,900	$11,600
2015	$80,200	$11,500
2016	$77,900	$11,200
2017	$78,600	$11,300
2018	$77,600	$11,200

REVENUE SOURCES

In order to finance the recommended transportation system improvements requiring expenditure of capital resources, it will be important to consider a range of funding sources. Although the property tax has traditionally served as the primary revenue source for local governments, property tax revenue goes into general fund operations, and is typically not available for street improvements or maintenance. Despite this limitation, the use of alternative revenue funding has been a trend throughout Oregon as the full implementation of Measure 5 has significantly reduced property tax revenues. This trend is expected to continue with the recent passage of Measure 47. The alternative revenue sources described in this section may not all be appropriate in Hines however, this overview is being provided to illustrate the range of options currently available to finance transportation improvements during the next 20 years.

Property Taxes

Property taxes have historically been the primary revenue source for local governments. However, property tax revenue goes into general fund operations, and is not typically available for street improvements or maintenance. The dependence of local governments on this revenue source is due, in large part, to the fact that property taxes are easy to implement and enforce. Property taxes are based on real property (i.e., land and buildings) which have a predictable value and appreciation to base taxes upon. This is as opposed to income or sales taxes which can fluctuate with economic trends or unforeseen events.

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

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

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

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

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

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

System Development Charges

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

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

Typically, the fee is collected when new building permits are issued. The city would calculate the fee based on trip generation of the proposed development. Residential calculations would be based on the assumption that a typical household will generate a given number of vehicle trips per day. Nonresidential use calculations are based on employee ratios for the type of business or industrial uses. The SDC revenues would help fund the construction of transportation facilities necessitated by new development.

A key legislative requirement for charging system development charges is the link between the need for the improvements and the developments being charged. As the need for the recommended capital improvements in Hines does not result from new development or capacity constraints, system development charges could not be used to fund them.

State Highway Fund

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 revenue share to cities is divided among all incorporated cities based on population. Like other Oregon cities, the City of Hines uses its State Gas Tax allocation to fund street construction and maintenance.

Local Gas Taxes

The Oregon Constitution permits counties and incorporated cities to levy additional local gas taxes with the stipulation that the moneys generated from the taxes will be dedicated to street-related improvements and maintenance within the jurisdiction. At present, only a few local governments (including the cities of Woodburn and The Dalles and Multnomah and Washington Counties) which levy a local gas tax. The City of Hines may consider raising its local gas tax as a way to generate additional street improvement funds. However, with relatively few jurisdictions exercising this tax, an increase in the cost differential between gas purchased in Hines and gas purchased in neighboring communities may encourage drivers to seek less expensive fuel elsewhere. Any action will need to be supported by careful analysis to minimize the unintended consequences of such an action.

Vehicle Registration Fees

The Oregon Vehicle Registration Fee is allocated to the state, counties and cities for road funding. Oregon counties are granted authority to impose a vehicle registration fee covering the entire county. The Oregon Revised Statutes would allow Harney 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 Harney 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 to construct public improvements. Local Improvement Districts 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 Local Improvement Districts are required to have a local ordinance that provides a process for district formation and payback provisions. Through the process, the cost of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation. The types of allocation methods are only limited by the Local Improvement Ordinance. The cost of Local Improvement District participation is considered an assessment against the property which is a lien equivalent to a tax lien. Individual property owners typically have the option of paying the assessment in cash or applying for assessment financing through the city. Since the passage of Ballot Measure 5, cities have most often funded Local Improvement Districts through the sale of special assessment bonds.

Grants and Loans

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

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

Immediate Opportunity Grant Program

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

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

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

Oregon Special Public Works Fund

The Special Public Works Fund program was created by the 1995 State Legislature as one of 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 support commercial and industrial development that result 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. Special Public Works Fund awards can be used for improvement, expansion, and new construction of public sewage treatment plants, water supply works, public roads, and transportation facilities.

While Special Public Works Fund 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 Special Public Works Fund and the term and rate on direct loans can be structured to meet project needs. The maximum grant per project is $500,000, but may not exceed 85 percent of the total project cost.

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

Special Small City Allotment Program

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

ODOT Funding Options

The State of Oregon provides funding for all highway related transportation projects through the Statewide Transportation Improvement Program administered by the ODOT. The Statewide Transportation Improvement Program outlines the schedule for ODOT projects throughout the state. It is updated on an annual basis. In developing this funding program, ODOT must verify that the identified projects comply with the Oregon Transportation Plan, ODOT Modal Plans, Corridor Plans, local comprehensive plans, and the federal Transportation Equity Act for the 21st Century. The Statewide Transportation Improvement Program must fulfill federal planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on a review of the federal planning requirements and the different state plans. ODOT consults with local jurisdictions before highway related projects are added to the Statewide Transportation Improvement Program.

The highway-related projects identified in Hines' TSP will be considered for future inclusion on the Statewide Transportation Improvement Program. The timing of including specific projects will be determined by ODOT based on an analysis of all the project needs within Region 5. The City of Hines, Harney County, and ODOT will need to communicate on an annual basis to review the status of the Statewide Transportation Improvement Program and the prioritization of individual projects within the project area. Ongoing communication will be important for the city, county, and ODOT to coordinate the construction of both local and state transportation projects.

An ODOT funding technique that will likely have future application to Hines' TSP is the use of state and federal transportation dollars for off-system improvements. Until the passage and implementation of Intermodal Surface

Transportation Efficiency Act of 1991, 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.

FINANCING TOOLS

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

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

General Obligation Bonds

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

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

Limited Tax Bonds

Limited tax general obligation bonds 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, limited tax general obligation bonds do not require voter approval. However, since they are not secured by the full taxing power of the issuer, the limited tax bond

represents a higher borrowing cost than general obligation bonds. The municipality must pledge to levy the maximum amount under constitutional and statutory limits, but not the unlimited taxing authority pledged with GO bonds. Because limited tax general obligation bonds are not voter approved, they are subject to the limitations of Ballot Measures 5, 47, and 50.

Bancroft Bonds

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

FUNDING REQUIREMENTS

Hines' TSP identifies both capital improvements and strategic efforts recommended during the next 20 years to address safety and access problems and to expand the transportation system to support a growing population and economy. This TSP identifies four projects, totaling an estimated $358,000. Three of the projects, estimated to cost $213,000 have been identified as city-led projects. One project, the fully-actuated traffic signal at the intersection of Barnes Avenue and Highway 20/395, has been identified as an ODOT-led project. Estimated costs by financial leader are shown in Table 8-7.

TABLE 8-7
RECOMMENDED PROJECTS AND FINANCIAL RESPONSIBILITY

Financial Responsibility	Estimated Cost
Local	$213,000
County	$0
State	$145,000
Total	**$358,000**

Based on current revenue sources for the City of Hines, improvements identified in this TSP, and the assumptions employed in this analysis, the city is expected to be able to fully fund the local street improvement projects, as shown in Table 8-8.

TABLE 8-8
ESTIMATED CAPITAL FUNDING BALANCE

	Amount
Capital Available for Existing Revenue Sources	$226,600
Capital Needed to Fund Projects Identified as County-Funded Projects	$213,000
Surplus (Deficit)	**$13,600**

FUNDING OPTIONS CONCLUSIONS

This Transportation System Plan identifies four projects recommended for the City of Hines over the 20-year planning horizon. The cost of the projects is estimated at over $350,000 in current 1998 dollars. One of the projects identified is a state-funded effort to install a fully-actuated traffic signal at the intersection of Barnes Avenue and Highway 20/395. Installation of this signal is subject to meeting ODOT signal warrant and approval by the State Traffic Engineer. If this signal is warranted and approved by ODOT, it would be placed on a prioritized list. The city expects to take the financial lead on the remaining three projects. Given the current estimated resources, all planned projects can be funded through existing revenue sources, within the context of ongoing road maintenance activities.

CHAPTER 9: RECOMMENDED POLICIES AND ORDINANCES

In 1991, the Oregon Transportation Planning Rule was adopted to implement State Planning Goal 12 Ä *Transportation* (amended in May and September 1995). The Transportation Planning Rule requires counties and cities to complete a Transportation System Plan that includes policies and ordinances to implement that plan. The City of Hines' Comprehensive Plan and Zoning and Subdivision Ordinance were revised in 1986. Based on content, the discussion in these plans and ordinances have not been significantly updated since the implementation of the Transportation Planning Rule.

ELEMENTS REQUIRED BY THE TRANSPORTATION PLANNING RULE

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

- Amend land use regulations to reflect and implement the Transportation System Plan.

- Clearly identify which transportation facilities, services, and improvements are allowed outright, and which will be conditionally permitted or permitted through other procedures.

- Adopt land use or subdivision ordinance measures, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions, to include the following topics:

  ⇒ Access management and control;
  ⇒ Protection of public use airports;
  ⇒ Coordinated review of land use decisions potentially affecting transportation facilities;
  ⇒ Conditions to minimize development impacts to transportation facilities;
  ⇒ Regulations to provide notice to public agencies providing transportation facilities and services of land use applications that potentially affect transportation facilities; and
  ⇒ Regulations assuring that amendments to land use applications, densities, and design standards are consistent with the Transportation System Plan.

- Adopt land use or subdivision regulations for urban areas and rural communities to provide safe and convenient pedestrian and bicycle circulation, and to ensure that new development provides on-site roads and accessways that provide reasonably direct routes for pedestrian and bicycle travel.

- Establish road standards that minimize pavement width and total right-of-way.

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

APPROVAL PROCESSES FOR TRANSPORTATION FACILITIES

Section 660-12-045(1) of the 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 Policies for Approval Process

Policies should clarify the approval process for different types of projects. The following policies relating to approval processes are recommended for adoption in the Transportation Section of the *City of Hines Comprehensive Plan.*

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

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

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

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

Recommended Ordinances for Approval Process

Projects that are specifically identified in the 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 jurisdiction may not allow outright 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 the City of Hines review these transportation projects as regulated land use actions, using a conditional use process. This following process is recommended for inclusion in Section 6 (Procedures for Constructing Public Works), or as a new section within the development code.

Section 6.040.b Standards for Transportation Improvements

5. 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 approved consistent with the applicable land division ordinance.*

6. *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 site plan and/or conditional use review, 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. *The project includes provision for bicycle and pedestrian circulation as consistent with the comprehensive plan and other requirements of this ordinance.*

B. *Construction of rest areas, weigh stations, temporary storage, and processing sites.*

C. *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.*

7. *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

Harney County has policies and ordinances in place to protect the area's airports. The municipal airport is protected from the encroachment of incompatible land uses to ensure efficient aviation operations and to minimize the noise and safety problems for the general public through the use of an Airport Development Zone as well as an Airport Vicinity Overlay. In the event that the city annexes the "Choate" private airstrip or surrounding property

the city shall implement a similar Airport Development Zone and Airport Vicinity Overlay Zone. Additional 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.

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.

Recommended Policies for Protection of Transportation Facilities

Pursuant to these goals, the following policies are recommended for inclusion in the Transportation Section of the *City of Hines Comprehensive Plan*:

- *The City of Hines shall protect the function of existing and planned roadways as identified in the Transportation System Plan.*
- *The City of Hines shall include a consideration of a proposal's impact on existing or planned transportation facilities in all land use decisions.*
- *The City of Hines shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.*
- *The City of Hines shall consider the potential to establish or maintain accessways, paths, or trails prior to the vacation of any public easement or right-of-way.*
- *The City of Hines shall preserve right-of-way for planned transportation facilities through exactions, voluntary dedication, or setbacks.*
- *The function of airports shall be protected through the application of appropriate land use designations to assure future land uses are compatible with continued operation of the airport.*

Recommended Access Control Ordinances

The following ordinances are recommended to support access management standards. They would replace Article IV of the existing Zoning Ordinance.

Article IV. Access Management

A. General

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

B. Corner Clearance

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

C. Joint and Cross Access

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

6. *The city may modify or waive the requirements of this section where the characteristics or layout of abutting properties would make a development of a unified or shared access and circulation system impractical.*

D. *Access Connection and Driveway Design*

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

E. *Requirements for Phased Development Plans*

1. *In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and 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.*

F. *Nonconforming Access Features*

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

G. *Reverse Frontage*

1. *Lots that front on more than one road shall be required to locate motor vehicle accesses on the road 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 Hines and recorded with the deed. A berm or buffer yard may be required at the rear of through lots to*

buffer residences from traffic on the arterial. The berm or buffer yard shall not be located with the public right-of-way.

H. *Flag Lot Standards*

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

I. *Lot Width-to-Depth Ratios*

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

J. *Shared Access*

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

K. *Connectivity*

1. *The road system of proposed subdivisions shall be designed to connect with existing, proposed, and planned roads 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, road stubs shall be provided to provide access to abutting properties or to logically extend the road system into the surrounding area. All road stubs shall be provided with a temporary turn-around unless specifically exempted by the Public Works Director, and the restoration and extension of the road shall be the responsibility of any future developer of the abutting land.*

3. *Minor collector and local residential access roads shall connect with surrounding roads 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 roads. Appropriate design and traffic control such as four-way stops and traffic calming measures are the preferred means of discouraging through traffic.*

L. *Variances to Access Management Standards*

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

Recommended Ordinances to Protect Public Use Airports

The Oregon Airport Land Use Compatibility Guidelines (November 1994), which have been distributed to all county and city planning departments, provide examples for ordinance development. The following Airport Overlay Zone is an example of zoning that is appropriate to protect many smaller airports. Although the airport is not currently within the City of Hines' jurisdiction, this model ordinance is included for the City of Hines' reference if the Choate private airstrip or surrounding property are annexed in the future.

I. Airport Overlay Zone

A. *Purpose. In order to carry out the provisions of (this/these) overlay zone(s), there are hereby created and established certain zones which include all of the land lying beneath the Airport Imaginary Surfaces as they apply to the airport in the county. This overlay zone is intended to prevent the establishment of airspace obstructions in airport approaches and surrounding areas through height restrictions and other land use controls as deemed essential to protect the health, safety, and welfare of the people of the county.*

B. *Special Definitions*

1. *Airport Approach Safety Zone. The land that underlies the approach surface, excluding the RPZ.*
2. *Airport Hazard. Any structure, tree, or use of land which exceeds height limits established by the Airport Imaginary Surfaces.*
3. *Airport Imaginary Surfaces. Those imaginary areas in space which are defined by the Approach Surface, Transitional Surface, Horizontal Surface, and Conical Surface and in which any object extending above these imaginary surfaces is an obstruction.*
4. *Approach Surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the Primary Surface. The inner edge of the approach surface is the same width as the Primary Surface and extends to a width of: 1,250*

feet for utility runway having only visual approaches; 1,500 feet for a runway other than a utility runway having only visual approaches; 2,000 feet for a utility runway having a nonprecision instrument approach; 3,500 feet for a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile; 4,000 feet for a nonprecision instrument runway having visibility minimums as low as three-fourths statute mile; and 16,000 feet for precision instrument runways. The Approach Surface extends for a horizontal distance of 5,000 feet at a slope of 20 feet outward to each foot upward (20:1) for all utility and visual runways; 10,000 feet at a slope of 34 feet outward for each foot upward (34:10 for all nonprecision instrument runways other than utility; and for all precision instrument runways extends for a horizontal distance of 10,000 feet at a slope of 50 feet outward for each foot upward (50:1); thence slopes upward 40 feet outward for each foot upward (40:1) an additional distance of 40,000 feet.

5. *Conical Surface. Extends 20 feet outward for each one foot upward (20:1) for 4,000 feet beginning at the edge of the horizontal surface (5,000 feet from the center of each end of the Primary Surface of each visual and utility runway or 10,000 feet for all nonprecision instrument runways other than utility at 150 feet above and airport elevation) and upward extending to a height of 350 feet above the airport elevation.*
6. *Horizontal Surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging runways 5,000 feet from the center of each end of the Primary Surface of each visual or utility runway and 10,000 feet from the center of each end of the Primary Surface of all other runways and connecting the adjacent arcs by lines tangent to those arcs.*
7. *Noise Sensitive Area. Within 1,500 feet of an airport or within established noise contour boundaries exceeding 55 Ldn.*
8. *Place of Public Assembly. Structure of place which the public may enter for such purposes as deliberation, education, worship, shopping, entertainment, amusement, awaiting transportation, or similar activity.*
9. *Primary Surface. A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the Primary Surface extends 200 feet beyond each end of that runway. When the runway has no specially prepared hard surface, or planned hard surface, the Primary Surface ends at each end of that runway. The width of the primary Surface is 250 feet for utility runways having only visual approaches, 500 feet for utility runways having nonprecision instrument approaches, 500 feet for other than utility runways having only visual approaches or nonprecision instrument approaches with visibility minimums greater than three-fourths of a mile and 1,000 feet for nonprecision instrument runways with visibility minimums of three-fourths of a mile or less and for precision instrument runways.*
10. *Runway Protection Zone (RPZ). An area off the runway end (formerly the clear zone) used to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. It begins 200 feet (60 m) beyond the end of the arcs usable for takeoff or landing. The RPZ dimensions are functions of the type of aircraft and operations to be conducted on the runway.*
11. *Transitional Surface. Extend seven feet outward for each one foot upward (7:1) beginning on each side of the Primary Surface which point is the same elevation as the runway surface, and form the sides of the approach surfaces thence extending upward to a height of 150 feet above the airport elevation (Horizontal Surface).*
12. *Utility Runway. A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight or less.*
13. *Visual Runway. A runway that is intended solely for the operation of aircraft using visual approach procedures with no instrument approach procedures has been approved, or*

planned, or indicated on an FAA or state planning document or military service airport planning document.

C. *Permitted uses within the Runway Approach Zone (RPZ). While it is desirable to clear all objects from the RPZ, some uses are permitted, provided they do not attract wildlife, are below the approach surface and do not interfere with navigational aids.*

1. *Agricultural operations (other than forestry or livestock farms).*
2. *Golf courses (but not club houses).*
3. *Automobile parking facilities.*

D. *Permitted uses within the Airport Approach Safety Zone.*

1. *Farm use, excluding the raising and feeding of animals which would be adversely affected by aircraft passing overhead.*
2. *Landscape nursery, cemetery, or recreation areas which do not include buildings or structures.*
3. *Roadways, parking areas, and storage yards located in such a manner that vehicle lights will not make it difficult for pilots to distinguish between landing lights and vehicle lights or result in glare, or in any way impair visibility in the vicinity of the landing approach. Approach surfaces must clear these by a minimum of 15 feet.*
4. *Pipeline.*
5. *Underground utility wire.*

E. *Conditional uses within the Airport Approach Safety Zone.*

1. *A structure or building accessory to a permitted use.*
2. *Single family dwellings, mobile homes, duplexes, and multifamily dwellings, when allowed by the underlying zone, provided the landowner signs and records in the deed and mortgage records of county Hold Harmless Agreement and Aviation and Hazard Easement and submits them to the airport sponsor and the county planning departments.*
3. *Commercial and industrial uses, when allowed by the underlying zone, provided the use does not result in:*
   a) *Creating electrical interference with navigational signals or radio communication between the airport and aircraft.*
   b) *Making it difficult for pilots to distinguish between airport lights and lighting from nearby land uses.*
   c) *Impairing visibility.*
   d) *Creating bird strike or other wildlife hazards.*
   e) *Endangering or interfering with the landing, taking off or maneuvering of aircraft intending to use airport.*
   f) *Attracting a large number of people.*
4. *Buildings and uses of public works, public service, or public utility nature.*

F. *Procedures. An applicant seeking a conditional use shall include the following information:*

1. *Property boundary lines as they relate to the Airport Imaginary Surfaces.*
2. *Location and height of all existing and proposed buildings, structures, utility lines, and roads.*

II. In accordance with OAR Chapter 738 Division 100, city or county planning authority shall notify the owner of the airport and Aeronautics Section on land use permits or zone changes within 5,000 feet of a visual and 10,000 feet of instrument airport so as to provide Oregon Aeronautics Section an opportunity to review and comment.

A. Limitations.

1. *To meet the standards established in FAA Regulations, Part 77 and OAR Chapter 738 Division 70, no structure shall penetrate into the Airport Imaginary Surfaces as defined above.*
2. *No place of public assembly shall be permitted in the Airport Approach Safety Zone or RPZ.*
3. *No structure or building shall be allowed within the RPZ.*
4. *Whenever there is a conflict in height limitations prescribed by this overlay zone and the primary zoning district, the lowest height limitation fixed shall govern; provided, however, that the height limitations here imposed shall not apply to such structures customarily employed for aeronautical purposes.*
5. *No glare producing materials shall be used on the exterior of any structure located within the Airport Approach Safety Zone.*
6. *In noise sensitive areas (within 1,500 feet of an airport or within established noise contour boundaries of 55 Ldn and above for identified airports) where noise levels are a concern, a declaration of anticipated noise levels shall be attached to any building permit, land division appeal, deed, and mortgage records. In areas where the noise level is anticipated to be 55 Ldn and above, prior to issuance of a building permit for construction of noise sensitive land use (real property normally used for sleeping or normally used as schools, churches, hospitals, or public libraries) the permit applicant shall be required to demonstrate that a noise abatement strategy will be incorporated into the building design which will achieve an indoor noise level equal to or less than 55 Ldn. The planning and building department will review building permits or noise sensitive developments.*
7. *No development that attracts or sustains hazardous bird movements from feeding, watering, or roosting across the runways and/or approach and departure patterns of aircraft. Planning authority shall notify Oregon Aeronautics of such development (e.g., waste disposal sites and wetland enhancements) within the airport overlay zone so as to provide Oregon Aeronautics Section an opportunity to review and comment on the site in accordance with FAA AC 150/5200-33.*

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 policies are recommended for inclusion in the comprehensive plan to establish coordinated review.

Recommended Policies for Coordinated Review

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

- *The City of Hines shall provide notice to ODOT of land use applications and development permits for properties that have frontage or access onto a state highway.*

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

Recommended Process for Applying Conditions to Development Proposals

Section 660-12-045(2)(e) of the 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 is a useful tool for a small jurisdiction. The City of Hines may wish to implement a Site Plan review process that includes a requirement to provide data on the potential traffic impacts of a project through a traffic impact study or, at a minimum, an estimation of the number of trips expected to be generated. Recommended language to be included under Site Plan Criteria is as follows:

- *The proposed use shall not 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 road system. The developer shall be required to mitigate impacts attributable to the project.*

- *The determination of impact or effect and the scope of the impact study should be coordinated with the provider of the affected transportation facility.*

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

- *Dedication of land for roads, 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 roads that serve the proposed use where the existing transportation system may be burdened by the proposed use.*

Recommended Regulations to Provide Notice to Public Agencies

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

affecting a city street should provide notice to that jurisdiction, as a supplement to Section 2.030 (Notice of Public Hearings) in Article II of the Zoning Ordinance.

Information that should be conveyed to reviewers includes:

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

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

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

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

Section 660-12-045(2)(g) of the 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. This requirement can be addressed by adding a policy to the Comprehensive Plan, as follows:

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

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

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

The following statements should be added as Section 10.060 of the zoning ordinance governing zone changes and plan amendments:

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

1. *Changes the functional classification of an existing or planned transportation facility;*
2. *Changes standards implementing a functional classification system;*
3. *Allows types or levels of land use that would result in levels of travel or access what are inconsistent with the functional classification of a transportation facility; or*
4. *Would reduce the level of service of the facility below the minimum acceptable level identified in the Transportation System Plan.*

B. Amendments to the comprehensive plan and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:

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

SAFE AND CONVENIENT PEDESTRIAN AND BICYCLE CIRCULATION

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

The *City of Hines Comprehensive Plan* includes a policy supporting and encouraging bicycle transportation. The following ordinance language may be considered to assure a functional network of bicycle and pedestrian access throughout the community.

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 roads. 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 road 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 definitions should be added to those existing in Section VI- Standards Specifications for Public Works Construction of the subdivision ordinance:

Definitions

A. Accessway. A walkway that provides pedestrian and bicycle passage either between roads or from a road 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.

B. 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.

C. Bicycle Facilities. A general term denoting improvements and provisions made to accommodate or encourage bicycling, including parking facilities and all bikeways.

D. 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. (These are further defined in the City of Hines Bicycle and Pedestrian Plan).

E. Pedestrian Facilities (also Walkway). A general term denoting improvements and provisions made to accommodate or encourage walking, including sidewalks, accessways, crosswalks, ramps, paths, and trails.

F. 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.

G. 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.

H. Safe and convenient. Bicycle and pedestrian routes that are:

1. Reasonably free from hazards, and
2. Provides a reasonably direct route of travel between destinations, considering that the optimum travel distance is one-half mile or less for pedestrians and three miles or less for bicyclists.

I. Walkway. A hard-surfaced area intended and suitable for pedestrians, including sidewalks and the surfaced portions of accessways.

The Site Plan review process should include a requirement to show the design and location of bicycle parking and bicycle and pedestrian circulation elements such as accessways and walkways. The following language should be added as criteria for the site plan review:

A. Bicycle Parking.

1. The development shall include the number and type of bicycle parking facilities required in the Off-Road Parking and Loading section of this Title. The location and design of bicycle parking facilities shall be indicated on the site plan.

B. Pedestrian Access and Circulation.

1. 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.

C. Commercial Development Standards.

1. New commercial buildings, particularly retail shopping and offices, shall be oriented to the road, near or at the setback line. A main entrance shall be oriented to the road. For lots with more than two front yards, the building(s) shall be oriented to the two busiest roads.

2. Off-road motor vehicle parking for new commercial developments shall be located at the side or behind the building(s).

D. 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 Hines' Subdivision Ordinance should reflect the intent of the Transportation Planning Rule by adding the following provision to development requirements. They should be added to Section IV-3 (Information required on Tentative Plan) and Section V-5 (Information required on Final Plat):

- *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.*

Section VI of the City of Hines' Subdivision Ordinance should incorporate the following language into the existing requirements in Section 6.230 for cul-de-sac design.

A. Cul-de-Sacs and Accessways

1. Cul-de-sacs or permanent dead-end roads may be used as part of a development plan; however, through roads are encouraged except where topographical, environmental, or existing adjacent land use constraints make connecting roads infeasible. Where cul-de-sacs are planned, accessways shall be provided connecting the ends of cul-de-sacs to each other, to other roads, or to neighborhood activity centers.

2. Accessways for pedestrians and bicyclists shall be 10 feet wide and located within a 20-foot-wide right-of-way or easement. If the roads within the subdivision are lighted, the accessways shall also be lighted. Stairs or switchback paths may be used where grades are steep.

3. Accessways for pedestrians and bicyclists shall be provided at mid-block where the block is longer than 600 feet.

4. The Hearings Body 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:

a) Physical or topographic conditions make an accessway connection impractical. Such conditions include but are not limited to extremely steep slopes, wetlands, or other bodies of water where a connection cannot reasonable be provided.

b) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future, considering potential for redevelopment.

c) *Where accessways would violate provisions of leases, easements, covenants, restrictions, or other agreements existing as of May 1, 1995 that preclude a required accessway connection.*

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APPENDIX A

REVIEW OF EXISTING PLANS AND POLICIES

APPENDIX A
REVIEW OF EXISTING PLANS AND POLICIES
CITY OF HINES

Several planning documents were reviewed to establish the history of planning in the city and a comparison was made of the information in the existing plans with the requirements of the Oregon Transportation Planning Rule (TPR). These plans included the City of Hines Comprehensive Plan, a Hines Traffic Impact Study and a US Highway 20 Traffic Analysis. A description of the information in the plans is provided followed by comments in italics.

CITY OF HINES COMPREHENSIVE PLAN

The City of Hines Comprehensive Plan was prepared in 1978 by Morgan, Ryan & Associates and was revised in 1995 and 1996.

The plan was prepared to address the fourteen Statewide Goals and Guidelines developed by the Land Conservation and Development Commission (LCDC). The Comprehensive Plan is considered an official statement of the City of Hines. The document sets forth goals, objectives, and policies to guide the future physical development of the community.

The fourteen goals developed by the LCDC are as follows:

I. To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.

II. To establish a land use planning process and policy frame-work as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.

III. To preserve agricultural lands.

IV. To conserve forest lands for forest uses.

V. To conserve open space and protect natural and scenic resources.

VI. To maintain or improve the quality of air, water, and land resources of the county.

VII. To protect life and property from natural disasters and hazards.

VIII. To satisfy the recreational needs of the citizens of the county, state, and visitors.

IX. To diversify and improve the economy of the county.

X. To provide for the housing needs for the citizens of the county.

XI. To plan and develop a timely, orderly, and efficient arrangement of public facilities and services to serve as the framework for urban and rural development.

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

XIII. To conserve energy.

XIV. To provide for an orderly and efficient transition from rural to urban land use.

For each goal, the plan presents findings and policies. Only Goal XII specifically relates to transportation.

Transportation Goal

Goal

To provide and encourage a safe, convenient, and economic transportation system to serve the needs of the citizens of Hines, the residents of the urban area, and Harney County.

Policies

The following statements of policy are related to satisfying the above goal.

1. Maintain and upgrade the overall transportation system within the city to meet present and future needs.
2. To provide, at a minimum, paved streets within the community.
3. Design of new roads, streets, and thoroughfares should preserve and enhance natural and scenic resources.
4. Commercial bus service to areas outside of Harney County should be retained.
5. At a minimum, rail freight service to Harney County should be retained.
6. A bikepath should be completed from central Hines to central Burns.
7. An "Airport Master Plan" has been developed to assure the Burns/Hines area of adequate air service in the future.
8. All future improvements of existing streets shall comply with the standards set forth in the subdivision ordinance.
9. Shall encourage State Highway Division to improve Highway 20/395 and provide for a pedestrian overpass near the elementary school.
10. Designation of any new truck route in the city limits shall be reviewed by the city.

Hines City Staff would like to have the following changes made in the update of the transportation policies: The word "retained" should be changed to "acquired" in Policy 4. Policy 5 should be eliminated. The word "overpass" should be changed to "signal" in Policy 9.

The existing traffic volume data provided in the plan is from 1977; these data will have to be updated. No projections of future traffic demand were presented. No analysis of existing or future system operations was performed. No future improvements were recommended. All of these elements will need to be included to meet the requirements of the TPR.

The transportation section of the plan contains a street classification map and brief descriptions of several modes of transportation available in Harney County.

Population estimates were made for the period from 1978 to 2000. These forecasts will have to be updated for the next 20-year period.

HINES TRAFFIC IMPACT STUDY

The Hines Traffic Impact Study was prepared by David Evans and Associates (DEA) in September 1996.

This report presents the results of the combined traffic impacts of six proposed projects located in southern Hines, adjacent to US Highway 20/395. The proposed developments include Allison's Truck Stop, Amerigas Corporation, the Bureau of Land Management and US Forest Service Complex, Glerup's Bar and Restaurant, Glerup's Mini Storage, and Safari Motor Coach.

The study examined intersection operations, traffic signal warrants, left-turn lane requirements, right-turn deceleration or acceleration lane requirements, sight distance, queuing requirements, access management conformity, and geometry improvements and made recommendations for improvements.

Recommendations in the study included the following:

- Improvements to US Highway 20/395 should include plans for the future installation of a traffic signal at the Lottery Lane intersection.
- Additional data pertaining to pedestrians, school children, and the fire station should be collected before ruling out the possibility of a traffic signal at the intersection of Barnes Avenue and US Highway 20/395.
- Left-turn lanes should be provided at both the northbound and southbound approaches to the US Highway 20/395 intersections with Lottery Lane and Barnes Avenue.
- The impact of adding a driveway for Allison's Truck Stop could be minimized by relocating the proposed driveway approximately 75 feet further north to align with one of the existing mill driveways. Adding a driveway at this location would not change the total number of access points if the mill driveways are included in the count.
- If conformity with the recommended access guidelines is required with redevelopment of the Glerup property, the direct highway access could be closed, leaving the Glerup site with direct access onto the private road (or in the future, Byrd Avenue) which in turn intersects with US Highway 20/395.

The report contains information, such as historic traffic volumes and an inventory of roadway conditions, which will be useful in preparing the Hines TSP; however, because some of the proposed projects are complete and in operation (Allison's Truck Stop and Safari Motor Coach) while others have not even begun construction (Glerup Bar and Restaurant and Glerup Mini Storage) the report sections on trip generation and traffic forecasts are out of date.

NEW BEST WESTERN INN TRAFFIC IMPACT STUDY

The New Best Western Inn Traffic Impact Study was prepared by David Evans and Associates (DEA) in March 1997.

This report presents the results of the Traffic Impact Study of the proposed project on the New Best Western Inn site. The site is located in northern Hines, Oregon, adjacent to US Highway 20/395 and Roe Davis Avenue.

The study examined two conditions: the opening year of 1997 and a 20-year forecast condition for the year 2016. Traffic volumes for the forecast were estimated based on 1996 traffic counts, trips generated by the proposed businesses, and additional background traffic generation as indicated in the *Hines Traffic Impact Study*, September 1996. Impacts were analyzed at the unsignalized intersection of Highway 20/395 with Roe Davis Avenue and at the signalized intersection of Highway 20/395 with the High School/Shopping Center.

The study examined intersection operations, traffic signal warrants, left-turn lane requirements, right-turn deceleration or acceleration lane requirements, sight distance, queuing requirements, access management conformity, and geometry improvements and made recommendations for improvements.

Recommendations in the study included the following:

- Further study of how the current traffic signal at the High School can be better utilized by local traffic should be considered as part of the upcoming Harney County Transportation System Plan.

- ODOT should consider adding a southbound right-turn taper at Roe Davis Avenue as part of the reconstruction project on US Highway 20/395.

- Traffic circulation within the site would be optimized by relocating the proposed access point off of Highway 20/395 from approximately 500 feet south of Roe Davis Avenue to approximately 350 feet south of Roe Davis Avenue, between the proposed motel and restaurant.

- Acceptable access spacing compared with other properties both south of the site and on the opposite side of the highway from the site can be achieved with driveway consolidation. When ODOT reconstructs US Highway 20/395, access to nearby properties will probably be consolidated and/or relocated to improve access spacing through this corridor.

- Roe Davis Avenue at US Highway 20/395 should be widened to provide two eastbound lanes, one allowing left-turn movements onto US Highway 20/395, the other allowing right-turn movements, when the curbs and sidewalks are added to the northern portion of the proposed site.

The report contains information which will be useful in preparing the Hines TSP.

US HIGHWAY 20 TRAFFIC ANALYSIS (BURNS/HINES URBAN AREA SECTION)

The US Highway 20 Traffic Analysis was prepared by David Evans and Associates (DEA) in August 1996.

The purpose of this study was to conduct a traffic analysis of the Highway 20/395 corridor through the Burns and Hines urban areas. The results and recommendations of the analysis are intended to be used in the design of future highway improvement projects and to evaluate the transportation impact of new and expanding businesses within this transportation corridor. Concurrently with the Highway 20 Traffic Analysis, a traffic impact study for new businesses in the Hines area was prepared. It was expected that the information collected and analyzed in both the traffic analysis and the traffic impact study would be used in the development of the TSPs for the Cities of Burns and Hines.

The study examined intersection operations, traffic signal warrants, left-turn lane requirements, access management, and geometry improvements and made recommendations for improvements. Specifically, geometry improvements were studied at the following locations:

- Lottery Lane/Byrd Avenue
- Golf Club Access
- "S" curve on Monroe Street between Diamond Avenue and Fairview Avenue
- Monroe Street/Hines Boulevard/Grand Avenue
- Hines Boulevard/Jackson street/Harney Avenue
- Seneca Drive northeast of Park Avenue

Recommendations were made for roadway sections based on dimensions of the existing street, pedestrian and bikeway facilities and the future needs of the community as it develops over the next 20 years. Consensus was reached between ODOT and the local communities on the sections recommended in the report. Recommendations were also made for pedestrian facilities, bikeway facilities and access management guidelines.

In addition, the study includes 20-year forecasts of population, employment, and traffic volumes.

Much of the information contained in the report will be useful in preparing the TSPs for the Cities of Burns and Hines.

APPENDIX B

TABLE B-1. 1997 MAJOR STREETS INVENTORY

TABLE B-1
1997 MAJOR STREETS INVENTORY
Hines Transportation System Plan

Roadway Segment Location	Jurisdiction	Level of Importance	Speed Limit (mph)	Street Width (feet)	No. of Travel Lanes	Passing Lanes (direction)	Shoulders			On-Street Parking	Curbs	Sidewalks	Bikeway	1997 Pavement Condition*
							Width (feet)	Side	Paving					
Arterials														
US Hwy 20 (Lake Co. line to Malheur Co. line)														
MP 128.73 to MP 130.00	State	Statewide	35	24	2	No	4 - 6	Both	Partial	No	No	East side	East side	***Poor***
MP 130.00 to MP 130.06	State	Statewide	35	36	3	No	No	NA	NA	No	East side	East side	East side	***Poor***
MP 130.06 to MP 130.10 (Burns city limit)	State	Statewide	35	60	5	No	No	NA	NA	No	Both sides	Both sides	No	***Poor***
Collectors														
Barnes Avenue														
Saginaw Ave. to Woldenburg Ave.	City	NA	25	30	2	No	No	NA	NA	No	No	No	No	Good
Woldenburg Ave. to Commercial Ave.	City	NA	25	32	2	No	No	NA	NA	No	No	No	No	Good
Circle Drive														
US Hwy 20 to Barnes Ave. (S. of Barnes & W of US 20)	City	NA	25	47	2	No	No	NA	NA	West Side	West Side	West Side	No	Fair
US Hwy 20 to Barnes Ave. (N. of Barnes & W of US 20)	City	NA	25	47	2	No	No	NA	NA	West Side	West Side	West Side	No	Good
US Hwy 20 to Barnes Ave. (N. of Barnes & E of US 20)	City	NA	25	47	2	No	No	NA	NA	No	East Side	East Side	No	Fair
US Hwy 20 to Barnes Ave. (S. of Barnes & E of US 20)	City	NA	25	47	2	No	No	NA	NA	No	East Side	East Side	No	Fair

Note:

* Pavement condition information for arterials is from the 1997 ODOT Pavement Condition Report. Condition information for collectors is based on field survey conducted by David Evans and Associates, Inc., in November 1997.

APPENDIX C

HARNEY COUNTY POPULATION AND EMPLOYMENT ANALYSIS

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HARNEY COUNTY POPULATION AND EMPLOYMENT ANALYSIS

METHODOLOGY AND DATA SOURCES

Historical data were compiled as reported by the Census Bureau and official population estimates as estimated by Portland State University's (PSU's) Center for Population Research and Census. These annual population estimates for cities and counties are used for the purpose of allocating certain state tax revenues to cities and counties. Based on PSU's estimates through 1995 and a state econometric model, the State of Oregon Office of Economic Analysis (OEA) provided long-term (through year 2040) state population forecasts, disaggregated by county, for state planning purposes. OEA also developed county-level employment forecasts based on covered employment payrolls as reported by the Oregon Employment Department.

The Office of Economic Analysis used business-cycle trends (as reflected by the Employment Department's employment forecasts) as the primary driver of population and employment for the short term. For the long term, the forecasts shift to a population-driven model, which emphasizes demographics of the resident population, including age and gender of the population, with assumptions regarding life expectancy, fertility rate, and immigration.

Two methodologies were employed in forecasting the future population of Harney County. One methodology employs historical census data, official annual estimates, and official long-range forecasts. For this method, David Evans and Associates, Inc. (DEA) used a methodology based on OEA's county-distribution methodology in developing population and employment forecasts for each of the cities in Harney County. DEA calculated a weighted average growth rate for each jurisdiction (weighting recent growth more heavily than past growth) and combined this average growth rate with the projected county-wide growth rate. This methodology assumes convergence of growth rates because of the physical constraints of any area to sustain growth rates beyond the state or county average for long periods of time. These constraints include availability of land and housing, congestion, and other infrastructure limitations.

At the request of Harney County and its jurisdictions, David Evans and Associates, Inc., also prepared an alternative growth scenario for the purposes of this Transportation System Plan. The alternative growth scenario applies the average 1990 to 1997 growth rate of Harney County and each of its jurisdictions to the 20-year planning horizon.

These two methodologies were employed to illustrate the range of population growth that may occur in the planning area. Planning efforts must respond carefully to actual growth rates, as recent population estimates have varied widely from forecasts previously developed. The population and employment forecasts described in this report were developed to determine future transportation needs. The amount of growth, and where it occurs, will affect traffic and transportation facilities in the study area. This report is not intended to provide a complete economic forecast or housing analysis, and it should not be used for any purpose other than that for which it was designed.

HISTORICAL GROWTH

The population of Harney County actually declined in the 1980s, reflecting a general slowdown in the state's economy.

TABLE C-1
HARNEY COUNTY HISTORICAL POPULATION TREND

							1970-1990 Change	
	1970	1980	1985	1990	1995	1996	Number	CAARG*
Harney County	7,215	8,314	7,350	7,060	7,050	7,500	(155)	(0.11%)
Burns	3,293	3,579	2,830	2,913	2,890	2,935	(380)	(0.61%)
Hines	1,407	1,632	1,470	1,452	1,445	1,525	45	0.16%

* Compound Average Annual Rate of Growth

Source: U.S. Bureau of the Census

In the last 25 years, the number of persons per job has decreased. With 7,215 reported persons in 1970 and total employment estimated at 3,020, the population/employment ratio in 1970 was 2.39 persons per job. In 1996, there were 3,210 jobs for the estimated population of 7,500, for a population/employment ratio of 2.34 persons per job. One factor leading to this declining ratio is a rising rate of labor participation by women and older adults (of traditional retirement age).

Oregon Employment data suggests that fully one-quarter of all employment in Harney County is agriculture-based. This agriculture-based proportion, although higher than the state average, is typical for more rural counties in Oregon. The economy of Harney County has been wavering between an agriculture-based economy and a more diversified economy, struggling with a high unemployment rate, as shown in the table below.

TABLE C-2
EMPLOYMENT TREND
HARNEY COUNTY

	1970	1975	1980	1985	1990	1995	1996
Total Estimated Employment	3,020	3,310	3,220	3,490	3,370	3,150	3,210
Unemployment Rate	5.9%	10.5%	21.8%	11.0%	8.9%	11.3%	13.0%
Nonfarm Payroll Employment	2,150	2,440	2,280	2,180	2,430	2,310	2,410
Agricultural Proportion	29%	26%	29%	38%	28%	27%	25%

Source: Oregon Employment Department

CURRENT POPULATION AND EMPLOYMENT LEVEL

Estimated at 7,500 in 1997, the population of Harney County has grown moderately since the 1990 Census, with an average annual growth rate of just under one percent. However, the year-over-year estimates by PSU suggest growth since 1990 in Harney County occurred within the last year, as the 1995 population is estimated at 7,050, less than the 1990 census number of 7,060. The 1995 and 1996 estimates represent a growth rate of 6.4 percent between these two years; however, Howard Wineberg, Assistant Director of the PSU CPRC and chief demographer for the population estimates, cautions against analyzing the estimates in such an isolated manner, since the estimates are based on the 1990 census year, not the previous year's estimates. The following table shows the estimated change in population for Harney County and the jurisdictions of Burns and Hines for 1990, 1995, 1996, and 1997.

TABLE C-3
HARNEY COUNTY POPULATION LEVEL

	1990	1995	1996	1997	1990-1997 Change Number	1990-1997 Change CAARG*
Harney County	7,060	7,050	7,500	7,500	440	0.87%
Burns	2,913	2,890	2,935	2,975	62	0.30%
Hines	1,452	1,445	1,525	1,505	53	0.51%

* Compound Average Annual Rate of Growth

Source: Portland State University Center for Population Research and Census

Nearly 60 percent of Harney County's population lives within its two incorporated municipalities, Burns and Hines. Recent growth has been more concentrated in unincorporated parts of the county as these two cities have grown at a rate slower than Harney County as a whole.

Employment levels have decreased since 1990. The unemployment rate has increased as a result of two simultaneous factors: the population and labor force have grown while the number of jobs has declined. The loss of jobs and increase in unemployment rate are shown in the table below.

TABLE C-4
HARNEY COUNTY EMPLOYMENT

	1990	1996	1990-1996 Change Number	1990-1996 Change CAARG*
Total Employment	3,370	3,210	(160)	(0.81%)
Non-Agricultural Employment	2,430	2,410	(20)	(0.14%)
Unemployment Rate	8.9%	13.0%	N.A.	N.A.

Note: These figures are reported as place-of-work series, rather than place-of-residence. In other words, these estimated total jobs in Harney County may be held by residents of other counties. The impact of this difference is considered minimal for Harney County as the 1990 Census reports that over 97 percent of workers who live in Harney County also work in the County.

* Compound Average Annual Rate of Growth

Source: Oregon Employment Department.

The average unemployment rate in Harney County is significantly higher than the state average unemployment rate. The State of Oregon's unemployment rate has been at approximately 5 percent for several years, and has just begun creeping upward. As of October 1997, the statewide unemployment rate was 5.1 percent--still a historically low rate.

Populations with Specific Transportation Needs

Certain populations have been identified as having more intensive transportation needs than the general population. These populations include people under the legal driving age, those under the poverty level, and those with mobility limitations.

As stated above, Portland State University's Center for Population and Census estimates the Harney County's population as 7,500 in 1996. The Center further estimates that 1,919 of these people, or about 26 percent of the population, is under the age of 18. Because the purpose of this analysis is to determine the number of people with

specific transportation needs, DEA used PSU's age disaggregation to estimate that 1,678 people are under 16, the legal driving age in Harney County.

According to the 1990 Census, 10.6 percent of the 6,983 persons living in Harney County (for whom poverty status is determined) were below poverty level. Poverty statistics are based on a threshold of nutritionally-adequate food plans by the Department of Agriculture for the specific size of the family unit in question. The distribution of the population below poverty level shows that a larger proportion of younger persons than older populations are affected by this indicator, as shown in the following table.

TABLE C-5
POVERTY STATUS
HARNEY COUNTY--1990 CENSUS

	Below Poverty Level				
	Male	Female	Total Below Poverty Level	Total* Population	Percent of Total Population Below Poverty
11 and under	87	82	169	1,298	13.0%
12 to 17	42	23	65	658	9.9%
18 and over	185	319	504	5,027	10.0%
Total	**314**	**424**	**738**	**6,983**	**10.6%**

* For whom poverty status is determined

Source: U.S. Census Bureau

The Census Bureau reports that 3.5 percent of the population 16 and older had a mobility limitation in 1990. Persons were identified as having a mobility limitation if they had a health condition (physical and/or mental) that lasted for six or more months and which made it difficult to go outside the home alone. A temporary health problem, such as a broken bone that was expected to heal normally, was not considered a health condition.

Using the proportion of the population with mobility limitations and below the poverty level[1] in 1990, DEA estimated the number of people with specific transportation needs in 1996. The following table shows that an estimated 34.8 percent of the population may have specific transportation needs. (There is likely to be some overlap between the 3.5 percent of the population with mobility limitations and the 10.0 percent below the poverty level; therefore, the sum of the figures may overstate the proportion of the population with specific transportation needs.)

[1] DEA used the Census Bureau's age disaggregation to estimate that 10.0 percent of the population over the age of 16 was under the poverty level in 1990.

TABLE C-6
ESTIMATED POPULATION WITH SPECIFIC TRANSPORTATION NEEDS
1996, HARNEY COUNTY

	Percent of Total Population	Estimated Number
Persons between the ages of 5 and 15	22.4%	1,678
Persons 16 and older under Poverty Level	10.0%	750
Persons 16 and older with Mobility Limitation	3.5%	263
Total Specific Transportation Needs Population	**34.8%**	**2,691**

Planning for the overall transportation system will need to consider the special needs of these populations.

POPULATION AND EMPLOYMENT FORECASTS

Harney County is expected to experience small population gains for the next 20 years. Based on historical growth, the 1995 PSU estimates, and the state econometric model, the State Office of Economic Analysis prepared long-term population projections by county. These projections are not entirely consistent with the locally-prepared documents, the Harney County Housing Study and the Harney County Buildable Lands Inventory. Based on the 1996 estimate of 7,500, the Harney County Buildable Land Inventory forecasts the population of Harney County to reach an estimated 7,800 residents by year 2000, an increase of 10 percent over the 1990 level. Based on forecasts prepared in July of 1993, forecasts used in the housing study suggest a net loss of population in Harney County. These various forecasts are shown in the following table.

TABLE C-7
HARNEY COUNTY POPULATION FORECAST
OFFICE OF ECONOMIC ANALYSIS;
HARNEY COUNTY BUILDABLE LAND INVENTORY; AND
HARNEY COUNTY HOUSING ANALYSIS

	1990	1995	1996	1997	2000	2005	2010
Historic Data	7,060	7,050	7,500	7,500			
Office of Economic Analysis					7,528	7,603	7,649
Harney Co. Housing Study					6,642	6,417	6,185
Harney Co. Buildable Lands Inventory					7,800	N/A	N/A

Source: 1990 data from the U.S. Census Bureau; 1995, 1996, and 1997 estimates developed by Portland State University Center for Population Research and Census

As shown in the above table, the State Office of Economic Analysis expects the population of Harney County to grow at the rate of 0.4 percent over the 20-year planning horizon. As noted by the Buildable Land Inventory, this growth rate may need to be revisited as PSU has estimated significant population growth between 1995 and 1996. However, the 1997 estimate does not suggest that this rapid growth continued into 1997.

Based on the OEA projections, population forecasts for the jurisdictions of Burns and Hines are shown in five-year increments in the following table.

TABLE C-8
HARNEY COUNTY POPULATION FORECAST
OEA CONVERGENCE METHODOLOGY

	1995	2000	2005	2010	2015	2017	1995-2000 CAARG	1995-2017 CAARG
Harney County	7,050	7,528	7,603	7,649	7,691	7,711	1.32%	0.41%
Burns	2,890	3,000	3,040	3,080	3,110	3,120	0.72%	0.35%
Hines	1,445	1,560	1,590	1,610	1,635	1,640	1.56%	0.59%

Source: 1990 data from the U.S. Census Bureau; 1995 estimates developed by Portland State University Center for Population Research and Census; County forecasts developed by State of Oregon Office of Economic Analysis; and Jurisdiction forecasts developed by David Evans and Associates, Inc.

Using the alternative methodology of recent growth rates as requested by Harney County and its incorporated cities, an alternative growth scenario would yield higher population levels throughout Harney County, as shown in the following table.

TABLE C-9
HARNEY COUNTY POPULATION FORECAST
STRAIGHT GROWTH RATE METHODOLOGY

			1990-1997 Change		
	1990	1997	Number	CAARG*	2017
Harney County	7,060	7,500	440	0.87%	8,910
Burns	2,913	2,975	62	0.30%	3,160
Hines	1,452	1,505	53	0.51%	1,670

* Compound Average Annual Rate of Growth

Both of these methodologies yield growth rates lower than those proposed in the *Public Review Draft of the U.S. Highway 20 Corridor Strategy (Bend-Vale).* However, the Highway 20 Corridor Strategy was released in June 1996, prior to the January 1997 release of the Office of Economic Analysis' *Long-Range Population and Employment Forecast* and the December 1997 Governor's Executive Order to use those OEA population and employment forecasts.

One point of interest for county planning efforts should this alternative growth scenario occur is that the vast majority of the population growth would be in rural Harney County, as this scenario estimates that only 350 of the over 1,400 new residents in Harney County would live in one of its incorporated cities.

Like much of rural Oregon, the economy of Harney County remains largely seasonal, with fully one-quarter of all employment agriculture-based. Therefore, population increases are difficult to predict, and are not likely to be as stable as the forecasts appear to imply. Planning efforts must respond carefully to actual growth rates, as the most recent population estimates reflect some population losses followed by significant population growth.

The Office of Economic Analysis also developed forecasts of Non-Agricultural Employment by county. As noted earlier, an estimated 25 percent of all employment in Harney County was agriculture based in 1996. Although the economy has seen some movement recently, agricultural employment accounted for an estimated 26 percent of employment in 1975, only one percent greater than the 1996 estimated of 25 percent. Based on the 1996 estimated proportion, the following table shows non-agricultural and estimated total employment for Harney County to year 2017.

TABLE C-10
HARNEY COUNTY EMPLOYMENT FORECAST*

	1995	2000	2005	2010	2015	2017	1995-2000 CAARG	1995-2017 CAARG
Non-Agricultural Employment	2,310	2,580	2,620	2,650	2,670	2,670	2.20%	0.63%
Estimated Total Employment	3,150	3,430	3,495	3,535	3,550	3,560	1.72%	0.56%

* The Office of Economic Analysis inflated non-agricultural employment in 1995 to 2,317 to correct for Oregon jobs not attributed to any specific county.

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

Employment is expected to grow by nearly 11 percent over the next 20 years. The population/employment ratio will remain relatively stable (falling slightly from 2.34 persons per job in 1996 to 2.17 persons per job forecast for year 2017). Two factors affecting this ratio include an increasing number of working-age people moving into retirement age and a rising rate of labor participation by older adults, as evidenced by nationwide trends.

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