CITY HALL COPY

City of Burns

Transportation System Plan

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REVISED FINAL DRAFT
June 2001

City of Burns

Transportation System Plan

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Chapter 1

1 Introduction

The Burns 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 Transportation System Plan 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.

1.1 Planning Area

The Burns TSP planning area includes the City of Burns 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: Burns, Harney County, and the State of Oregon.

Figure 1-1, Burns Study Area

Burns is the county seat and the largest urban area in Harney County with 2,935 residents (nearly 40 percent of Harney County's population in 2000). The city is located in southeastern Oregon about 290 miles southeast of Portland, 130 miles west of the Oregon/Idaho border, and 100 miles north of the Oregon/Nevada border.

Burns shares a common border with the City of Hines, 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 Burns 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. Some of these new additions include the juvenile detention facility, the Burns Paiute Indian Gaming Casino, and the lottery data processing center. The latter will include the installation of fiber-optic lines that could attract other businesses as well.

The City of Hines has also attracted a number of new businesses including service providers (motels, restaurants, gas stations, truck stops) and new industries (Safari Motor Coach, American Absorbents).

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. Burns has more than 200 acres of this industrial land with services inside its own city limits.

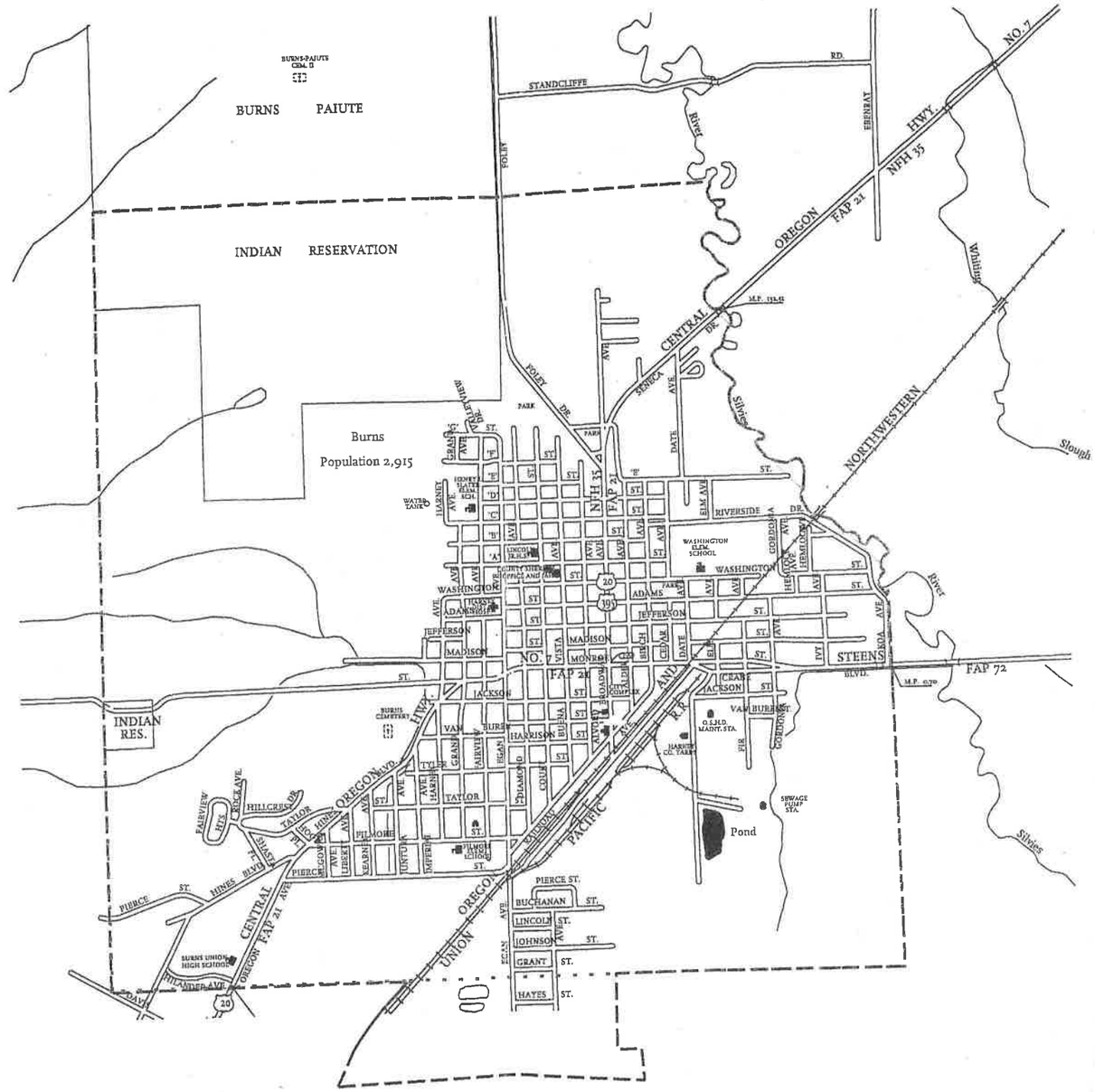
In addition to expanding industrial activities, forest products, agriculture, and tourism have also been targeted as key industries that could help diversify the community. The Ochoco National Forest lies to the north of the cities, with one of the largest supplies of ponderosa pine in the nation. Nearby 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 Burns TSP planning area is shown on Figure 1-2.

Figure 1-2, Land Use/Zoning

The core of the city and the tracts along US Highway 20/395 are zoned for commercial uses, with some lots zoned for public uses (schools, post office, City Hall, libraries, etc.). Two large tracts zoned for open space are located in the southeast and northwest parts of the city. A large area southeast of downtown, and along the railroad tracks, is zoned industrial; the remaining city land is zoned single-family and multifamily residential.

US Highways 20 and 395 (on the same alignment) run through the center of town along Hines Boulevard, Monroe Street, and Broadway Avenue. A continuous street grid pattern has been maintained in Burns as it has developed over the years. Oregon Highway 78 also runs along Monroe Street, extending the grid system on the east side of the city.



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NORTH

0 1200 2400 3600

FEET

LEGEND: ----- URBAN GROWTH BOUNDARY

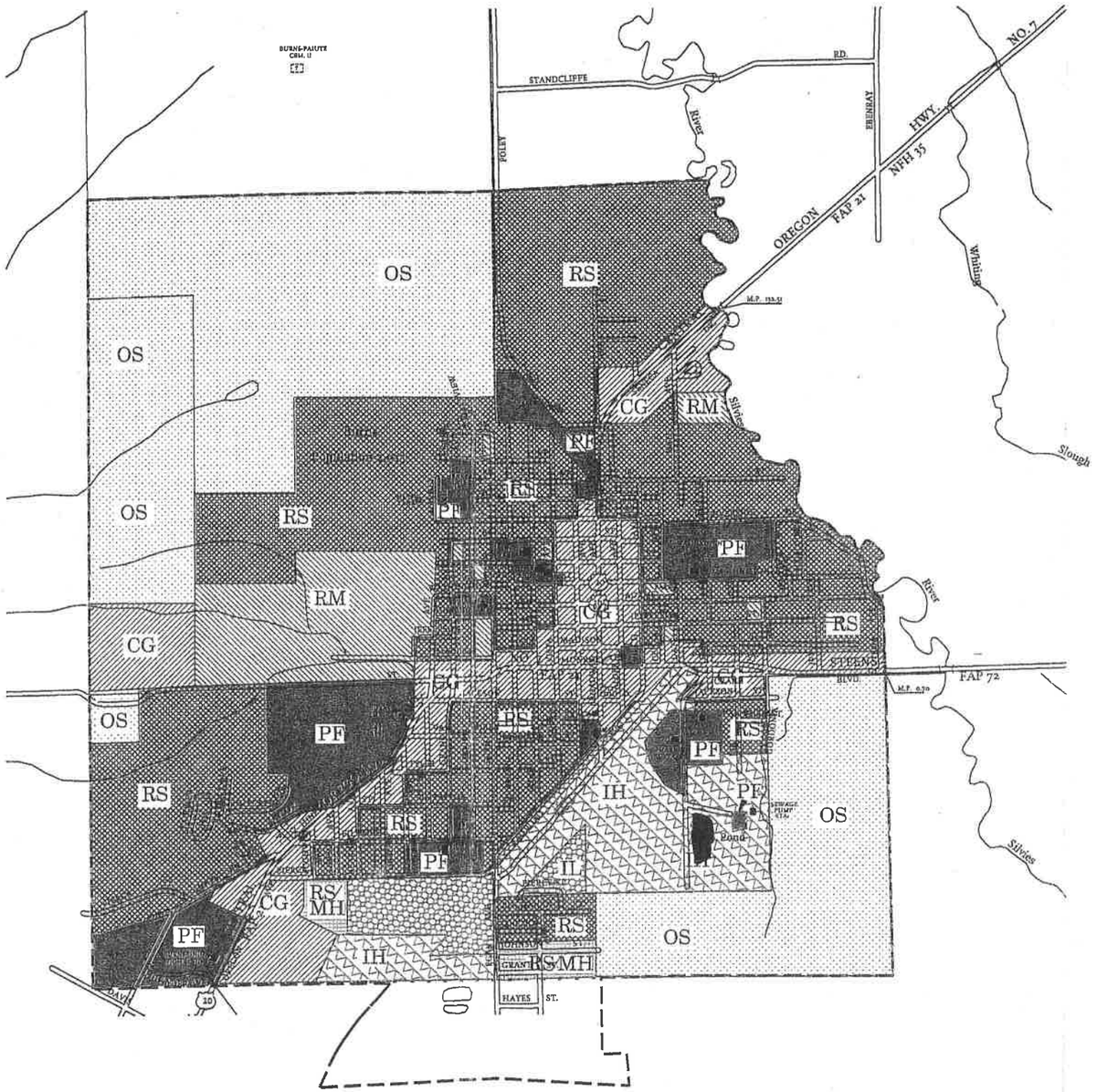
..... CITY LIMITS

FIGURE 1-1

Burns Study Area

City of Burns TSP

HARN0001/BURNI-1.DGN/TNT/03-20-01



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LEGEND:

- U.G.B. LINE
- CITY LIMITS
- RS SINGLE-FAMILY RESIDENTIAL
- RS/MH SINGLE-FAMILY RESIDENTIAL /MOBILE HOME
- RM MULTIPLE-FAMILY RESIDENTIAL
- CG GENERAL COMMERCIAL
- IL LIGHT INDUSTRIAL
- IH HEAVY INDUSTRIAL
- PF PUBLIC FACILITY
- OS OPEN SPACE

FIGURE 1-2

Land Use /Zoning

City of Burns TSP

HARN0001/BURN1-2.DGN/TNT/03-20-01

1.2 Planning Process

The Burns TSP was prepared as part of an overall effort in Harney County to prepare TSPs for the county and two municipalities: the City of Burns and the City of Hines. 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 Burns and Hines. Key elements of the process include:

- Involving the Burns 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)

1.2.1 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 the 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 public meetings through announcements in the local newspapers and on the local radio station.

1.2.2 Goals and Objectives Derived from Citizen Involvement

Based on input from the city, the management team/TAC, 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.

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

To begin the planning process, all applicable Burns 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 Burns 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.

1.2.4 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.

1.2.5 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.

1.2.6 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 TPR. 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.

1.2.7 Funding Options

The City of Burns 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.

1.3 Related Documents

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

1.3.1 Other Transportation System Plans

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

The Harney 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 Hines TSP addresses the needs of the adjacent City of Hines.

1.3.2 County Inventories

Jean Cain has prepared two inventories 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.

1.3.3 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. To translate the policies of the *Oregon Transportation Plan* into specific actions.
2. To describe the functions of each transportation mode, consider trade-offs, and show how they will be managed.
3. To identify and prioritize improvements for all modes of travel; indicate where improvements should be made.

4. To 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. Development of the *US 395 South Corridor Strategy* is the first step in the corridor planning process. It will be followed-up by a *US Highway 395 Corridor Plan* which will build upon objectives developed in the strategy to identify, refine, and facilitate the acceptance of specific decisions related to corridor transportation management, capital improvements and service improvements. The corridor plan will identify and discuss the decisions considered to meet each objective, technical analysis of alternatives, and recommendations for action.

ODOT is also in the process of developing a corridor strategy for US 20. The US 20 report is in draft form and has not been adopted at this time. These efforts may be affected by ODOT budget constraints; thus, future corridor efforts may be limited.

1.3.4 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
- Oregon Aviation Plan
- Oregon Public Transportation Plan

Chapter 2

2 Goals and Policies

2.1 Overall Transportation Goal and Policies

The purpose of the TPS is to provide a guide for the City of Burns 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.

2.1 Overall Transportation Goal and policies

Overall TSP Goal

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

Overall TSP Policies

1. The city shall encourage and support a safe, convenient, and economic transportation system for the community.
2. The city shall encourage all appropriate modes of transportation, including vehicle, pedestrian, bicycle, rail, air, and mass transit, wherever practical. Handicapped access shall be promoted in all transportation modes.
3. The city shall seek to avoid principal reliance upon any one mode of transportation, and to minimize adverse social, economic, environmental, or energy impacts resulting from transportation activities.
4. The city shall designate roadways as arterial, collector, or minor streets in accordance with the provisions of this ordinance, so as to provide a street network appropriate to surrounding land uses.
5. The city shall continue to improve streets to current city standards wherever needed and practical.
6. New direct access to arterials shall be granted during commercial zone site plan reviews, and particular consideration shall be given to the land

use and traffic patterns in the area of development, not just at the specific site. New direct access to US Highway 20/395 and OR Highway 78 should comply with guidelines of the Access Management Plan and will be subject to ODOT's Access Permit process. Frontage roads and access collection points along arterials shall be encouraged.

7. The city shall plan, improve, and designate streets such that through traffic in residential neighborhoods is minimized; and through traffic in commercial and industrial areas is disbursed, to the greatest extent practical.
8. 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.
9. Adequate off-street parking shall be provided to avoid street congestion and hazards.
10. The city shall continue to use the Airport Master Plan to guide future airport activities.
11. In the event the city annexes the airport and/or surrounding property, the city shall, at the time, implement airport hazard zoning measures to assure continued compatibility between aviation and surrounding uses. The city shall support county implementation of such measures in the interim.
12. The city shall continue to support and encourage the availability of bus, taxi, and motor freight services, recognizing their significant transportation and economic value to the community.
13. The city shall continue to support and encourage bicycle transportation and the use of bike paths and other appropriate rights-of-way for such activities, recognizing their significant transportation, energy, and social values to the community.

Goal 1

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

Goal 1 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.

Goal 2 Objectives

A. Develop an efficient road network that would maintain a level of service D or better.
B. Improve and maintain existing roadways.
C. Ensure planning coordination between the cities of Burns and Hines, 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.

Goal 3 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.

Goal 4 Objectives

A. Provide sidewalks, bikeways, and safe crossings on arterial and collector streets.
B. Develop a city bicycle plan.
C. Promote alternative modes and rideshare/carpool programs through community awareness and education.
D. Encourage new development, which can utilize or improve the existing transportation system.
E. Plan for future transit service by seeking state support.

F. Seek Transportation and Growth Management (TGM) and other funding for projects evaluating and improving the environment for alternative modes of transportation.
G. Periodically assess pedestrian and bicycle modes of transportation within the city and develop programs to meet demonstrated needs.

Goal 5

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

Goal 5 Objectives

A. Develop a city transportation plan.
B. Meet identified maintenance and level of service standards on the city streets.
C. Direct commercial development and use access onto major arterials by means of improved city streets.
D. Ensure that roads created in land division and development be designed to tie into existing and anticipated road circulation patterns.
E. Review and revise, if necessary, street cross section standards for local, collector, and arterial streets to enhance safety and mobility.
F. Develop an access management strategy for Highways 20, 395, and 78.
G. Evaluate warrants for traffic control devices, particularly along Highways 20 and 395.
H. Analyze the safety of traveling speeds and consider modifying posted speeds as necessary.
I. 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.

Goal 6 Objectives

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

3 Transportation System Inventory

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

3.1 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 Burns 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 Burns, 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.

3.2 City Street Classifications

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

3.2.1 Description

1. 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 Burns, the major arterial network consists of US Highway 20/395, which follows the alignment of Oregon Avenue, Hines Boulevard, Monroe Street, and Broadway Avenue. These roadways, as described previously, serve as the focus for most of the commercial development in the city.

2. Collectors

Collectors connect local neighborhoods or districts to the major arterial network. Burns has seven designated collectors: Filmore Street, Railroad Avenue, Egan Avenue, Adams Street, Washington Street, Riverside Drive, and D Street.

3. Minor Streets

Minor streets form the majority of the street system in Burns. They are designed to carry low traffic volumes associated with the local uses that abut them. In Burns, the minor streets help form part of the grid system; however, they are not intended to function as alternate routes to the arterial system.

3.2.2. Street Layout

The majority of the Burns streets are positioned in a grid pattern. Block sizes vary but are typically 240 feet square. The grid system loses its rigidity in the northeast and southwest edges of the urbanized area. The section of US Highway 20/395 along Oregon Avenue and Hines Boulevard, in the southwest quadrant of the city, runs southwest to northeast, forming several skewed intersections with the grid system.

3.3 Existing Street Standards

City of Burns ordinances currently require a basic minimum right-of-way of 60 feet for arterial or collector streets and 50 feet for other minor streets. Minimal right-of-way and pavement width requirements for all city streets are as follows:

- Arterial Streets - Current standards require a minimum paved width of 44 feet, when on-street parking is present on both sides. When parking is on side only, a minimum width of 38 feet is required. All streets shall be fully improved with curbs, storm drains, paving and sanitary sewers when required by the commission to the standards and specifications of the city.

- Collector Streets - Current standards require a minimum paved width of 40 feet when on-street parking is present on both sides or 36 feet when parking is on one side only. All streets shall be fully improved with curbs, storm drains, paving and sanitary sewers when required by the commission to the standards and specifications of the city.

- Minor Streets - Current standards require a minimum paved width of 36 feet except in cases where topography or other physical conditions have brought about a right-of-way less than 50 feet, a smaller improved width may be approved.

- Cul-de-sacs - A cul-de-sac street shall not exceed 800 feet in length and shall have, at its terminus or turn-around, a minimum right-of-way width of 45 feet and a minimum-paving radius of 35 feet. For a cul-de-sac with a length less than 200 feet, a minimum right-of-way width of 50 feet is required.

- Alleys - The minimum width of an alley in a residential block, when platted, shall be 20 feet. Alleys must be provided in commercial and industrial districts and shall also have a minimum width of 20 feet.

There are no pedestrian or bicycle requirements specified in the current street standards.

3.3.1 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. These guidelines were used to conduct a subjective evaluation of pavement condition for all collectors within the City of Burns.

The inventory, conducted in November 1997 and recently updated in the fall of 2000, indicated that the following streets are in good condition: Egan Avenue between Jackson and D Streets, D Street. The following streets are in fair condition: Riverside Drive, Filmore Street, Railroad Avenue, Washington Street from Elm Avenue to the road end, Adams Street from Egan to Alvord Avenues and from Elm to Koa Avenues, and Egan Avenue from Culp Lane to Jackson Street. The following streets are in poor condition: Washington Street between Egan and Elm Avenues, and Adams Street between Alvord and Elm Avenues.

Figure 3-1, Existing Street Classification System

3.4 State Highways

Discussion of the Burns street system must include the state highways that traverse the planning area. Although Burns has no direct control over the state highways, these facilities affect both adjacent development and local traffic patterns. Two state highways serve Burns: US Highway 20/395, and OR Highway 78. These highways serve as the major routes through town with commercial and industrial development focused along the corridors.

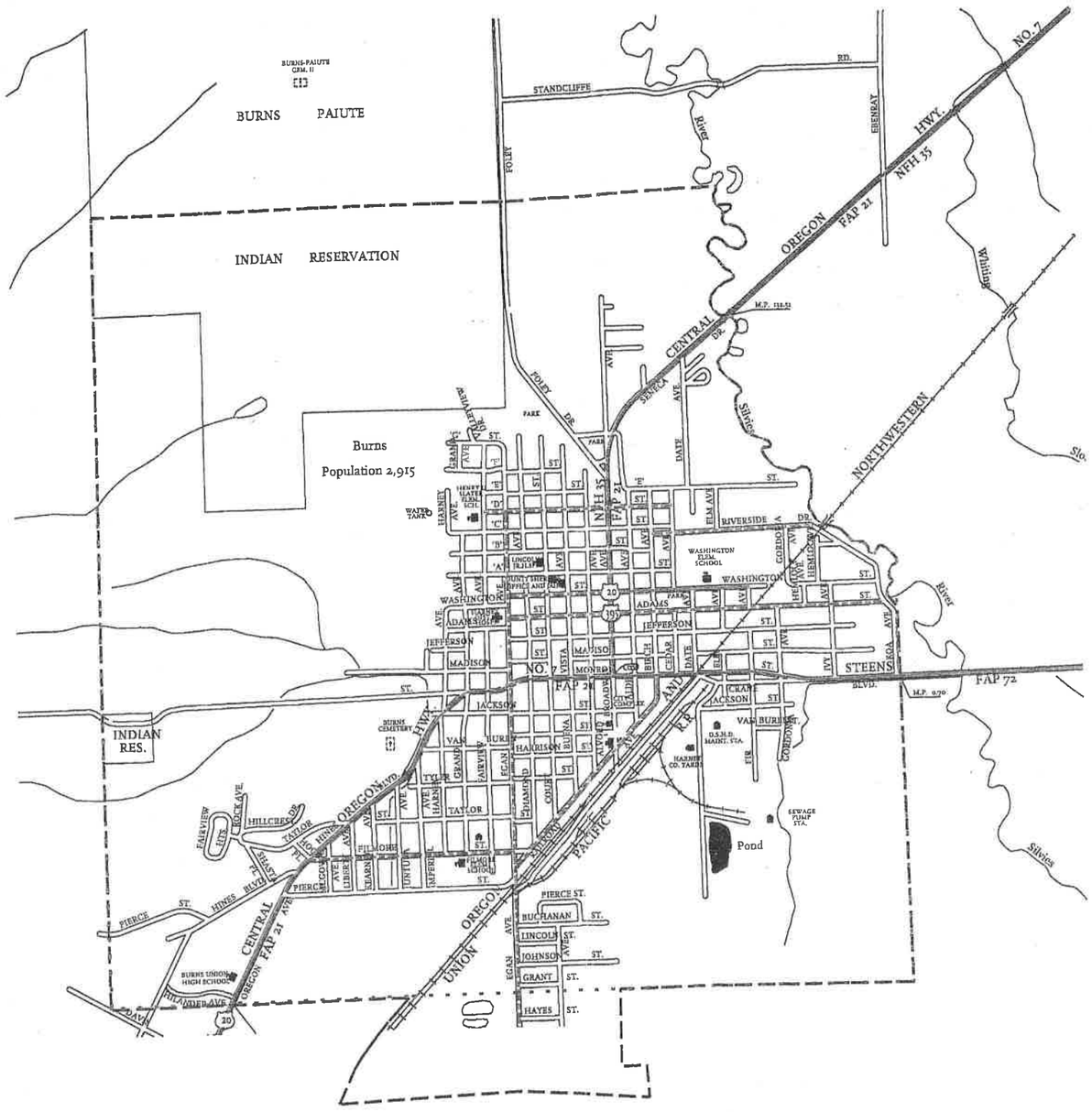
3.4.1 State Highway Levels of Importance

The *1999 Oregon Highway Plan* classifies the state highway system into five levels of importance: 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.

Burns has one highway of statewide importance (US Highway 20/395) and one highway of regional importance (OR Highway 78). According to the highway plan, the primary function of a statewide highway is to "provide connections and links 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 rural areas and high- to moderate-speed operations with limited interruptions of flow in urban and urbanizing areas. The primary function of a regional highway is to "provide connections and links to areas within regions of the state, between small urbanized areas and larger population centers, and to higher level facilities." The management objective for highways of regional importance is to "provide for safe and efficient high-speed, continuous-flow operation in rural areas, except where there are significant environmental constraints, and moderate- to low-speed operation in urban and urbanizing areas with moderate interruptions to flow." This means that design factors such as controlling access and providing passing lanes are of primary importance.

3.4.2 State Highway Freight System

As part of the *1999 Oregon Highway Plan*, 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 plan, "the state highway freight system is intended to facilitate through movement of trucks".



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

FIGURE 3-1

Existing Street Classification System

City of Burns TSP

HARN0001/BURN3-1.DGN/TNT/03-20-01

The impact of this new designation is not clear at this time. This 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.

3.4.3 US Highway 20 – General Description

US Highway 20 (Central Oregon Highway – No. 7) and US Highway 395 share roadway alignment as it runs through Burns. Within the Burns' city limits, the highway varies from two to five lanes with a speed limit ranging from 25 to 35 mph. Curbs and sidewalks border the highway except near the north city limits. Four- to six-foot roadway shoulders and on-street parking are accommodated for approximately one-half mile near the north city limits.

3.4.4 OR Highway 78 – General Description

OR Highway 78 (Steens Highway – No. 442) is a highway of regional importance. Beginning within the Burns' city limits, it extends southeast through Lawen, Crane, and New Princeton and then continues across the Harney/Malheur County line. Within the Burns' city limits, it is a two-lane roadway with a speed limit ranging from 25 to 40 mph. Roadway shoulders border the highway and are typically four to six feet wide and partially paved. The highway has no curbs, sidewalks, or bikeways within the city limits.

3.4.5 Adjacent Land Use

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

3.4.6 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 section of US Highway 20, which runs through Burns, is in Very Good pavement condition. Upgrades to this roadway were part of the Silvies River Bridge to US Highway 395 Junction project, which was in the *1998 – 2001 Statewide Transportation Improvement Program* and completed 1999.

3.4.7 State Highway 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, under-clearances, 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 two bridges within the City of Burns that are state-owned and maintained. The bridges are located along US Highway 20 and OR Highway 78 crossing the Silvies River at the north and east city limits. The bridges are NOT deficient. There are no scheduled bridge improvements within Burns under ODOT's final 2000 to 2003 STIP published in January 1999.

3.5 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 Burns 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 is typical of most towns the size of Burns, the sidewalk system in the older core of the city is relatively complete. Sidewalks exist along US Highway 20/395 (Oregon Avenue, Hines Boulevard, Monroe Street, and Broadway Avenue) from the Hines' city limits to D Street. Sidewalks also exist on a few blocks east and west of Broadway Avenue as shown in Figure 3-2. Sections of sidewalk along Egan Avenue and D Street are in very poor condition and are shown as "broken sidewalk" in Figure 3-2. Sidewalks are lacking outside of these areas. Curb cuts for wheelchair access are located at several intersections along Egan Avenue, but they are largely lacking elsewhere, even where sidewalks exist.

Figure 3-2, Pedestrian and Bikeway System Inventory

In addition to the sidewalks in Burns, a multi-use path has been constructed in the old railroad beds that run through Burns and Hines. This path extends from Egan Avenue in Burns, southward through Hines to Lottery Lane. The facility has parking lots at both ends. It also connects to Pettibone Avenue in Hines. Landscaping, benches, and a raised observation platform are features of the path. Some construction work has begun, but 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.

Burns currently has one other facility intended for use by both pedestrians and bicyclists. A lane has been striped on the western side of Broadway Avenue from D Street north to Foley Drive. It continues along one side of Foley Drive from Broadway Avenue, outside the city limits, to the Burns Paiute Indian Reservation. The lane switches from one side of the road to the other several times along Foley Drive.

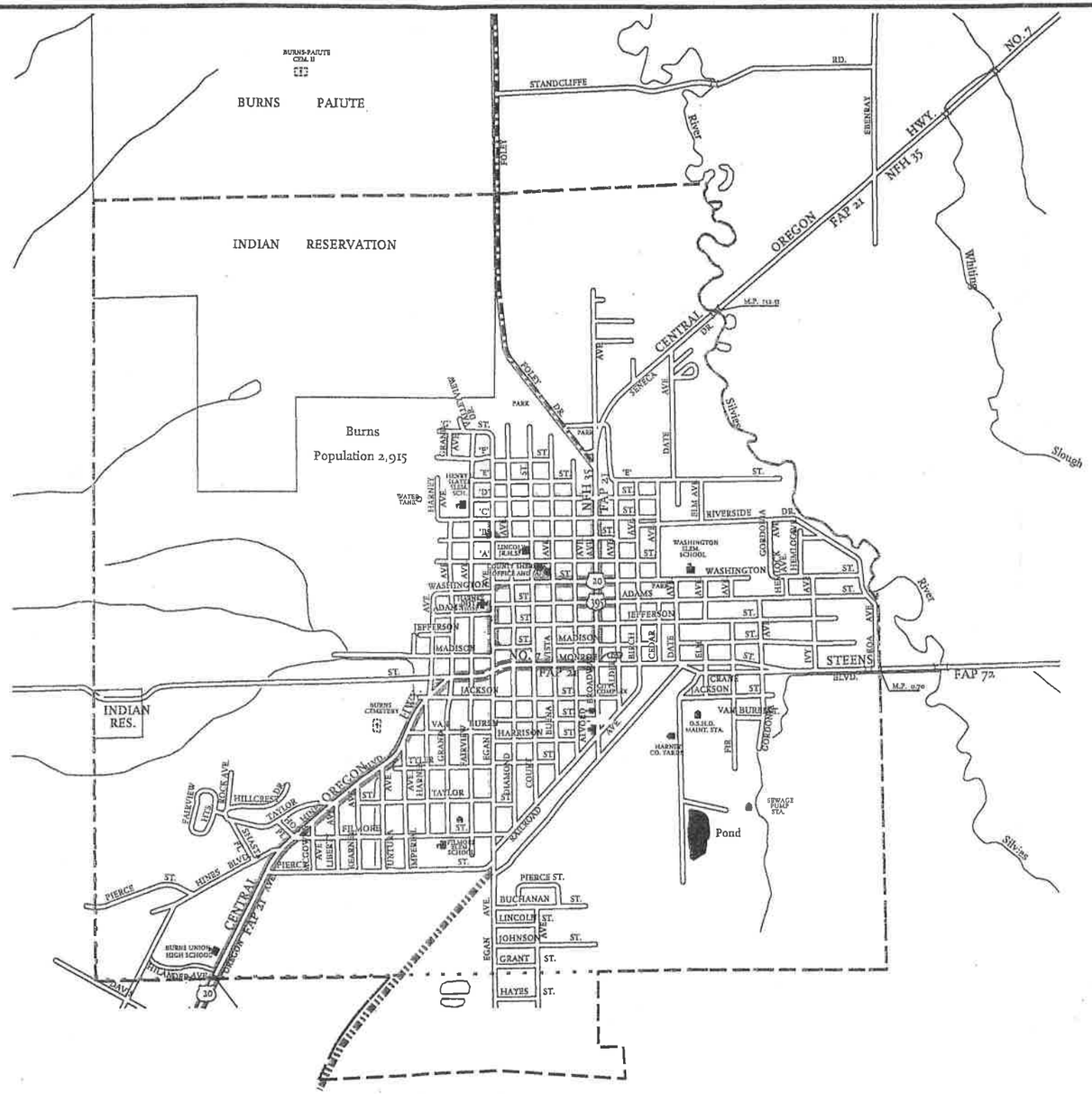
3.6 Bikeway System

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 Burns, 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.

Burns currently has one sanctioned bikeway: the striped bike lane on Foley Drive which continues along Foley Drive outside the city limits to the Burns Paiute Indian Reservation and which is intended for use by both bicyclists and pedestrians. On all other roadways, bicyclists must share the roadways with motorized vehicles.

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 bicyclist is an important issue.



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FEET

LEGEND:

- URBAN GROWTH BOUNDARY
- CITY LIMITS
- SIDEWALK
- BROKEN SIDEWALK
- CURB RAMP
- BIKE LANE
- FUTURE MULTI-USE PATH

FIGURE 3-2

Pedestrian and Bikeway System Inventory

City of Burns TSP

HARN0001/BURN3-2.DGN/TNT/03-20-01

3.7 Public Transportation

Public transportation in Burns consists of the Harney County Senior Center Transportation, a dial-a-ride service for senior citizens and the disabled, and limited taxi service. The city has no local fixed-route transit service at this time. Amtrak Thruway Motor Coach currently provides long distance access from Burns to western Oregon as well as to eastern Oregon and on to Boise, Idaho.

3.7.1 Local Service

The Harney County Senior Center Transportation based in the City of Burns provides the senior citizen and disabled dial-a-ride service. It operates a ten-passenger bus with space for two wheelchairs as well as 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 with a population of less than 25,000 from developing a transit system plan or a transit feasibility study as part of their TSPs.

3.7.2 Long Distance Service

The Oregon Transportation Plan indicates that inter-city 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 Motor Coach began providing east-west inter-city 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 Motor Coach 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. Portland is the temporary western terminus of the initial route, which crosses the Cascades via the Santiam Pass. The second Willamette Valley corridor Amtrak train began service from Portland to Eugene in July 2000; the western segment of the bus route was cut back to Salem. This change did not affect the bus route or service through Harney County.

The buses, privately operated motor coaches, make three round-trips each week. Motor coaches operate eastbound on Monday, Thursday and Saturday and westbound on Tuesday, Friday and Sunday. Amtrak will handle the reservation

and ticketing service for the new route with help from local businesses. 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 motor coach service to daily round-trip operation, and to develop a privately operated inter-city 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 inter-city bus service developed in the Oregon Transportation Plan. The ODOT Rail Division is coordinating this project.

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.

3.7.3 Rail Service

Burns has no passenger or freight rail service.

3.7.4 Air Service

Local air service is available at the Burns Municipal Airport, which is under the jurisdiction of the city. Burns Municipal Airport is located on approximately 800 acres about 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 Burns and Hines, 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 Layout Plan* strives to implement the provisions of the 2000 Oregon Aviation Plan.

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.

3.7.5 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 Burns.

3.7.6 Water Service

Burns has no water transportation services.

Chapter 4

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 Burns. Census data were examined to determine travel mode distributions.

4.1 Traffic Volumes

ODOT maintains historic 24-hour traffic volume counts for US Highways 20/395 and OR Highway 78 in Burns. This information was supplemented by hourly traffic count data collected in 1998 and 1999 by the city, the consultant, and ODOT.

4.1.1 Average Daily Traffic

The 1999 average daily traffic volumes along the state highways are summarized in Table 1. Traffic volumes along the highway system are highest in the center of town and drop off dramatically near the edges of the urbanized areas. Traffic volumes on US Highway 20/395 range from 6,900 vehicles per day (vpd) at the Burns/Hines' city limits to 8,300 vpd in the center of Burns, dropping to 5,300 vpd just north of Monroe Street and 2,600 vpd near the northern Burns' city limits. Volumes on OR Highway 78 range from 3,800 vpd just east of US Highway 20/395 to 1,600 vpd at the Burns' city limits.

1999 AVERAGE DAILY TRAFFIC VOLUMES

Milepost	Location	ADT Volumes
US Highway 20/395		
130.10	Burns-Hines' city limits	6,900
131.13	0.01 miles southwest of Monroe Street	7,900
131.34	0.01 miles west of Court Street	8,300
131.49	0.01 miles west of Broadway Street	6,600
131.51	0.01 miles north of Monroe Street	5,200
131.66	0.01 miles north of Adams Street	6,000
131.76	0.01 miles north of A Street	5,000
131.99	0.01 miles south of Foley Drive	4,000
132.01	0.01 miles north of Foley Drive	3,000
132.51	North city limits on Seneca Drive	2,600
OR Highway 78		
0.01	0.01 miles east of US Highway 20/395	3,8 00
0.06	0.01 miles east of Alder Avenue	2,800
0.17	0.01 miles east of Cedar Avenue	2,900
0.26	0.01 miles west of South Elm Avenue	2,600
0.48	0.01 miles west of Crane Boulevard	2,200
0.71	East city limits of Burns	1,600

Source: ODOT 1999 Transportation Volume Tables.
Table 1 - 1999 Average Daily Traffic Volumes

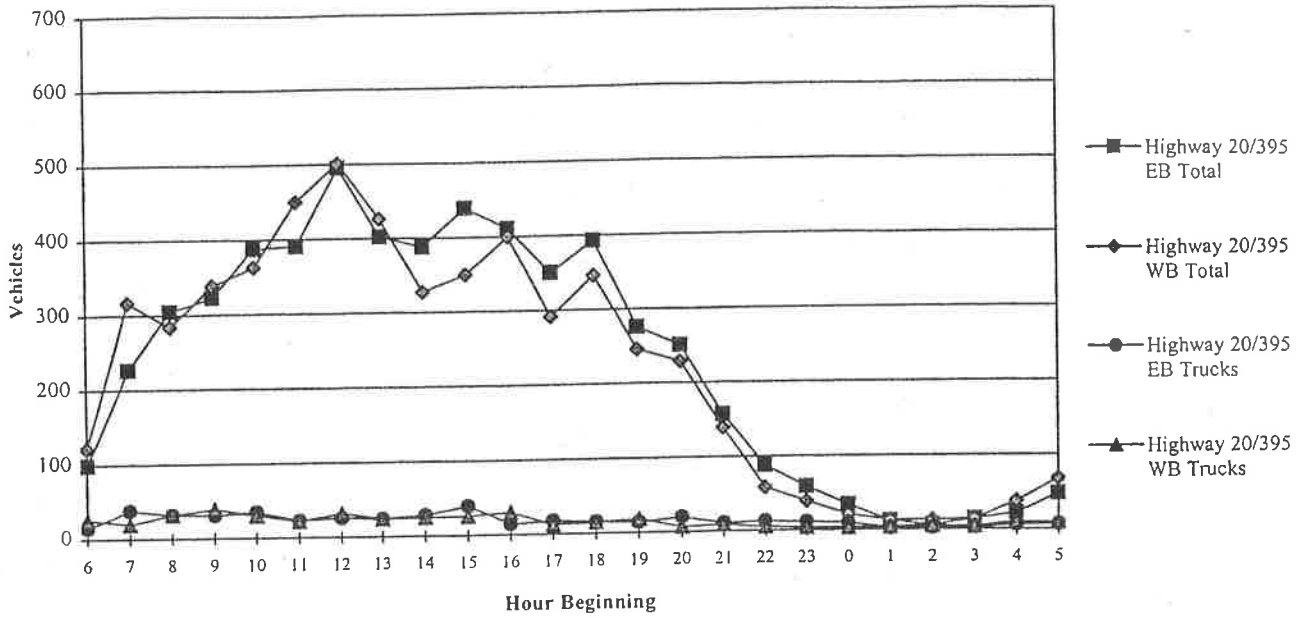
The traffic volumes shown in Table 1 and other volume figures are average volumes for the year. Summer is the season when volumes are highest. ODOT data on US Highway 20/395 north of Burns and south of Hines indicates that during the summer season, volumes are about 20 to 30 percent higher than average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

4.1.2 Hourly Traffic Patterns

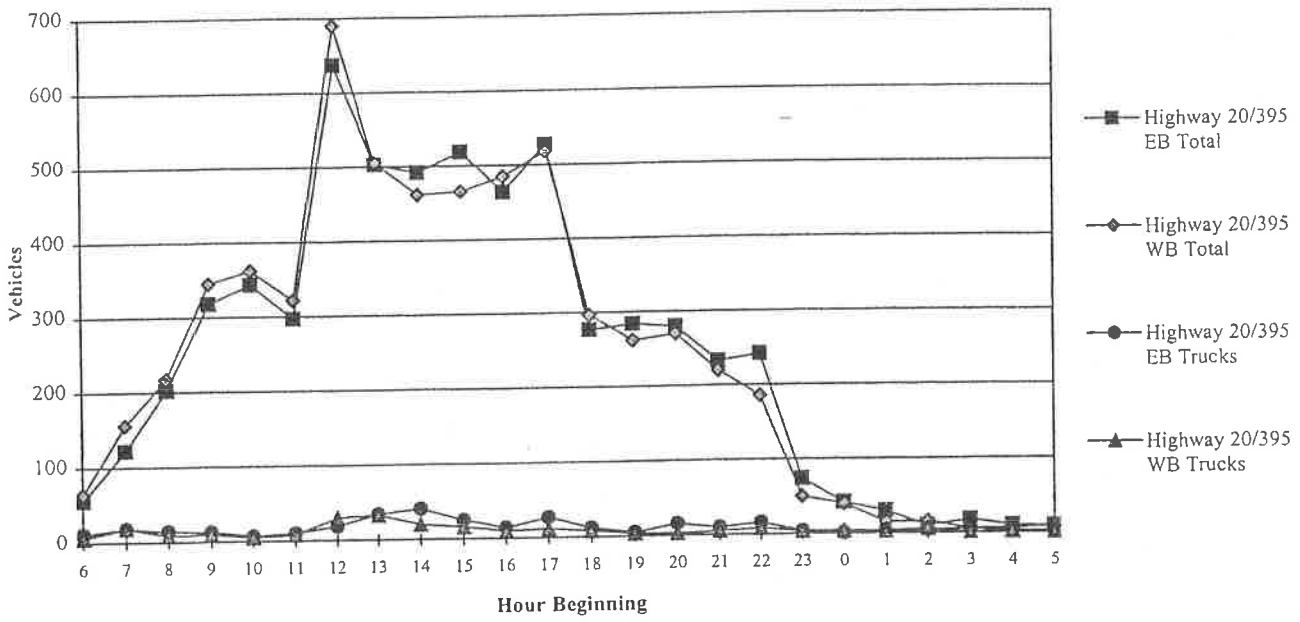
Evaluation of a roadway's capacity and level of service is usually based on an analysis of peak hour volumes. Peak hour volumes vary from about eight to 11 percent of the total daily traffic volumes.

Hourly turning movement counts were conducted at seven intersections on US Highway 20/395 in Burns in 1996 and 1997: the entrance to the High School; Grand Avenue; Egan Avenue; Court Avenue; Broadway Avenue; Adams Street, and Foley Drive. The City of Burns provided traffic counts on the Highway at the intersection of US Highway 20/395 and Alvord Avenue conducted during 1996 and 1997.

Highway 20/395 - October 10-11, 1996



Highway 20/395 - June 20-21, 1997



Source: City of Burns

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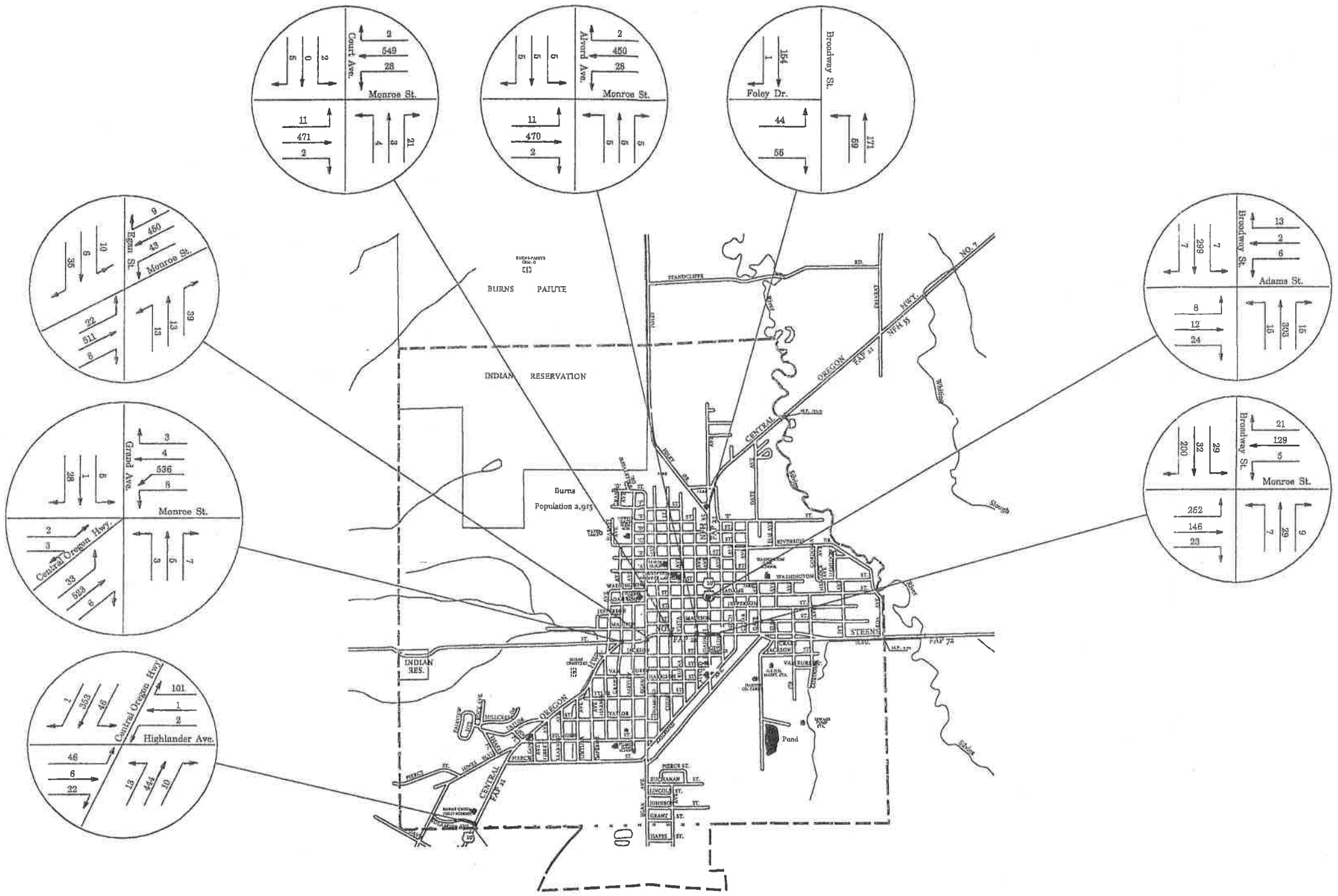
FIGURE 4 1

Hourly Traffic Patterns on Highway 20/395 (Monroe Street at Alvord Avenue)

City of Burns TSP



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LEGEND: ---- URBAN GROWTH BOUNDARY

. . . . . CITY LIMITS

FIGURE 4-2

Existing PM Peak Hour Traffic Volumes

City of Burns TSP

HARN0001/BURN4-2.DGN/TNT/03-20-01

Hourly traffic patterns are shown in Figure 4-1 for Monroe Street (US Highway 20/395) at Alvord Avenue. The City of Burns conducted these traffic counts throughout the day. Traffic volumes increased steadily through the morning, peaking at noon. From noon to about 5:00 p.m., traffic activity is very high. It drops off again dramatically after 7:00 p.m. each evening.

Figure 4-1, Hourly Traffic Patterns on Highway 20/395 (Monroe Street at Alvord Avenue)

Turning movement volumes at eight intersections during the PM peak hour are shown in Figure 4-2. Highway volumes ranged from approximately 850 vehicles per hour (vph) at the south end of town to 1,100 vph at Grand and Egan Avenues. Side street volumes were typically less than 100 vph, except at the intersection of Broadway Avenue and Monroe Avenue, which is the intersection of two state highways (US Highway 20/395 and OR Highway 78).

Figure 4-2, Existing PM Peak Hour Traffic Volumes

4.1.3 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 Burns or Hines, 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 Burns or Hines. The survey was conducted at five "stations" located on state highways just outside the urban area of Burns and Hines, 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 Burns or Hines 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 Burns or Hines 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 Burns and Hines, stopping for less than 30 minutes if stopping at all. The remaining 85 percent of traffic surveyed had an origin, destination, or both in the Burns/Hines urban area.

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

4.2 Street Capacity

Transportation engineers have established various standards for measuring traffic capacity of roadways or intersections. Each standard is associated with a particular level of service (LOS). The LOS concept requires consideration of factors that include travel speed, delay, frequency of interruptions in traffic flow, relative freedom for traffic maneuvers, driving comfort and convenience, and operating cost. Six standards have been established ranging from Level A where traffic flow is relatively free flowing to Level F where the street system is totally saturated with traffic and movement is very difficult. Table 2 presents the level of service criteria for arterial roadways.

The *1991 Oregon Highway Plan* established operating level of service standards for the state highway system[1]. Highways of statewide importance, such as US Highway 20, should operate at LOS C or better (i.e., average speeds between 20 and 25 mph) in urban and urbanizing areas. For highways of district importance, such as OR Highway 205, the roadways should operate at LOS D (i.e., average speeds between 15 and 20 mph) in both urban and urbanizing areas.

The traffic operation was determined at intersections along the highway using the *1994 Highway Capacity* software. Intersections controlled by STOP signs were analyzed using the software for unsignalized intersections; the three signalized intersections (Oregon Avenue at the High School, Monroe Street and Egan Avenue) were analyzed using the software for signalized intersections.

The operations at the eight critical intersections in Burns for which hourly traffic data were available were calculated for the weekday PM peak hour (seeTable 4-3). These locations were selected because they were identified as some of the highest activity spots in the city. In general, the intersections operate very well, at LOS C or better. Exceptions include the northbound and southbound approaches at Grand Avenue, which carry very low volumes but operate at LOS D due to high volumes on the highway. The westbound US Highway 20/395 approach to Egan Avenue also operates at LOS D.

The *1999 Oregon Highway Plan* does away with the Level of Service structure of using lettered designations and uses rather a volume to capacity (v/c) ratio. For the given roadway, the volumes at peak hours are divided by the peak capacity to determine the level at which the roadway is functioning. A ratio that is lower than 1.0 would mean the roadway is able to handle the volume of traffic to some degree. For example, if the v/c Ratio were .70, it would indicate that the roadway is functioning at 70% capacity. The ratio system provides a more tangible, understandable way in which to describe the roadway handling of traffic volumes

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

present. The *1999 Oregon Highway Plan* (OHP, Table 6, P. 80) provides the v/c ratios for the various roadways under their jurisdiction.

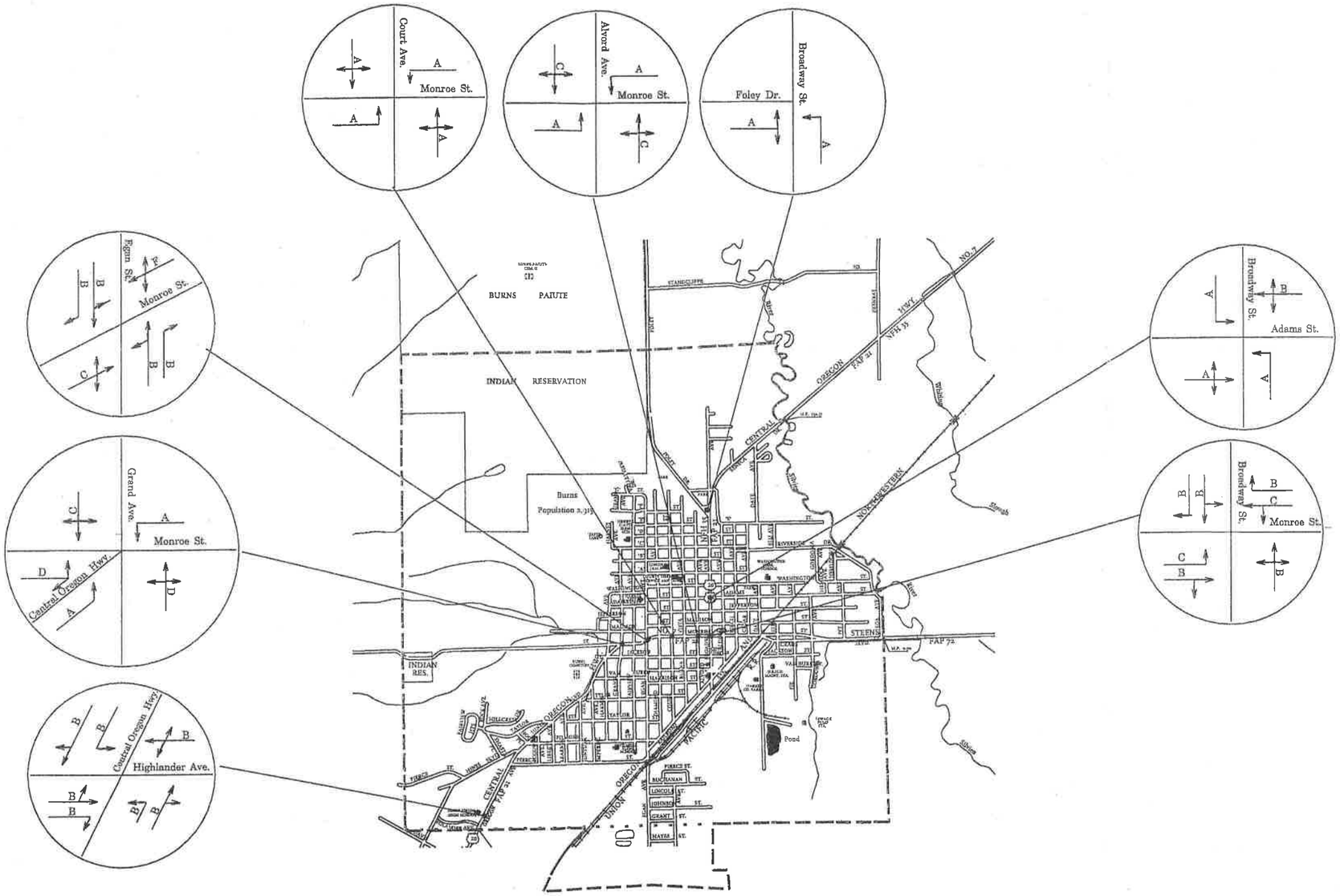
VOLUME/CAPACITY RATIO
AS COMPARED TO LEVEL OF SERVICE CRITIERIA
FOR ARTERIAL AND COLLECTOR STREETS

Volume/ Capacity Ratio	Level of Service	Typical Traffic Flow Conditions
0.00-0.48	A	Relatively free flow of traffic with some stops at signalized or stop sign controlled intersections. Average speeds would be at least 30 miles per hour.
0.49-0.59	B	Stable traffic flow with slight delays at signalized or stop sign controlled intersections. Average speed would vary between 25 and 30 miles per hour.
0.60-0.69	C	Stable traffic flow with delays at signalized or stop sign controlled intersections. Delays are greater than at level B but still acceptable to the motorist. The average speeds would vary between 20 and 25 miles per hour.
0.70-0.83 0.84-0.87	D DE	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.
0.88-0.97 0.98-0.99	E EF	Traffic flow would be unstable with congestion and intolerable delays to motorists. The average speed would be approximately 10 to 15 miles per hour.
>1.00	F	Traffic flow would be forced and jammed with stop and go operating conditions and intolerable delays. The average speed would be less than 10 miles per hour.

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

Table 2 - Volume/Capacity Ratios as compared to Level of Service Criteria for Arterial and Collector Streets

Figure 4-3, Existing PM Peak Hour Level of Service



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LEGEND: – – – – URBAN GROWTH BOUNDARY

. . . . . CITY LIMITS

FIGURE 4-3

Existing PM Peak Hour Level of Service

City of Burns TSP

HARN0001/BURN4-3.DGN/TNT/03-20-01

4.3 Accident Analysis

ODOT collects detailed accident information on an annual basis along US Highway 20/395 and OR Highway 78 in Burns. 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 (mvm) traveled along that segment of roadway.

4.3.1 Historic

Table 3 shows the accident rates for US Highway 20 and OR Highway 78 in Burns as well as the Oregon statewide average for urban non-freeway primary state highways from January 1, 1994 to December 31, 1996. The accident rates for US Highway 20/395 have consistently decreased over the three-year period and are currently well below the statewide average for similar highways.

1996 accident data are not available for OR Highway 78 within Burns. In 1994, the accident rate on OR Highway 78 was well below the statewide average for secondary highways. The 1995 accident rate on this highway was slightly higher than the statewide average.

HISTORIC ACCIDENT RATES FOR STATE HIGHWAYS
(ACCIDENTS PER MILLION VEHICLE MILES TRAVELED)

Highway	1996	1995	1994
Highway 20/395 in Burns *(Primary Highway)*			
Burns south city limits to OR Hwy 78 jct.	1.96	3.38	4.06
OR Hwy 78 jct. to Burns east city limits	1.30	1.20	4.21
Highway 78 in Burns *(Secondary Highway)*			
US Hwy 20 jct. to Burns' city limits	NA	3.46	1.73
Average for all Urban Non-freeway Primary/Secondary State Highways	3.63/3.10	3.98/3.27	3.45/2.79

Source: Oregon Department of Transportation Accident Rate Tables.

Table 3 - Historic Accident Rates for State Highways

Table 4 contains detailed accident information on US Highway 20 and OR Highway 78 in Burns from January 1, 1994 to December 31, 1996. 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 the segments of these roadways in Burns.

ACCIDENT SUMMARIES FOR HIGHWAYS 20/395 AND 78
(JANUARY 1, 1994 TO DECEMBER 31, 1996)

Location	Fatalities	Injuries	Property Damage Only	Total Accidents	Accident Frequency (acc/mi/yr)	Accident Rate (acc/mvm)
Highway 20/395						
MP 130.10 to 132.51	0	25	34	53	7.33	2.69
Highway 78						
MP 0.00 to 0.70	0	2	2	3	1.43	2.60

Source: Oregon Department of Transportation Accident Summary Database Investigative Report.
Table 4 - Accident Summaries for Highways 20/395 and 78

4.3.2 US Highway 20

The urban segment of US Highway 20 within Burns between the OR Highway 78 junction and Burns northern city limits (MP 131.50 to MP 132.51) had 11 accidents between 1994 and 1996. The 1996 accident rate of 1.30 accidents per million vehicle miles was well below the statewide average of 3.63 accidents per mvm for all urban, primary, non-freeway highways. There were no fatalities, nine injuries, and eight accidents involving property damage only. Six of the accidents occurred under icy road conditions. The accidents were scattered along this one-mile segment and nearly half (5) of the accidents involved rear-end collisions, three of which occurred under wet or icy road conditions.

The segment between the Hines/Burns' city limits border and the OR Highway 78 junction (MP 130.10 to MP 131.50) had 42 accidents between 1994 and 1996, with a 1996 accident rate of 1.96 accidents per million vehicle miles; well below the statewide average of 3.63 accidents per mvm. There were no fatalities, 18 injuries, and 29 accidents involving property damage only. The accidents were scattered along this 1.4-mile segment and over half (24) occurred at intersections. The primary vehicle maneuvers involved in the accidents included; turning maneuvers (12), angle maneuvers (7), and rear-end collisions (10). The remaining accidents fall under "other" maneuvers. Two intersections had five or more accidents during the three-year period.

The intersection of US Highway 20 (West Monroe Street) and Egan Avenue located at MP 131.22 had five accidents from 1994 through 1996. All accidents occurred under dry roadway conditions. All six accidents appear to stem from driver error including: disregarding traffic signal (3), turning from the wrong lane (1), hitting a fixed vehicle (1), turning in front of an on-coming vehicle (1). It does not appear that a consistent accident pattern exists at the intersection. There is no evidence to suggest that intersection operations (signals, signing, striping, etc.) were a contributing factor in any of the accidents.

The intersection of US Highway 20 (West Monroe Street) and the OR Highway 78 junction located at MP 131.50 had five accidents from 1994 through 1996. Three of the accidents occurred under icy/snowy roadway conditions. All five accidents appear to stem from driver error including: turning into the wrong lane (1), disregarding traffic signal (1), turning in front of an on-coming vehicle (1), speeding (1), and driving an unsafe vehicle (1). It does not appear that a consistent accident pattern exists at the intersection. There is no evidence to suggest that intersection operations (signals, signing, striping, etc.) were a contributing factor in any of the accidents.

4.3.3 OR Highway 78

On the short urban segment of OR Highway 78 within Burns during the three-year period, there were a total of three accidents, two of which were reported as property damage only. There were no fatalities and two injuries on this roadway segment during the period. All three accidents occurred at intersections under dry pavement conditions. The identified driver error in all three of the accidents was "failure to yield right-of-way." There is no evidence to suggest that intersection operations (signals, signing, striping, etc.) were at fault. No 1996 accident rate information is available. The 1994 and 1995 accident rates for this segment were 1.73 and 3.46 accidents per mvm, respectively. The 1994 rate for this segment was well below the statewide average of 2.79 whereas the 1995 rate was slightly above the statewide average of 3.27 for the respective years.

4.4 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.

4.4.1 Alternative Work Schedules

One way to maximize the use of the existing transportation system is to spread peak traffic demand over several hours instead of a single hour. Statistics from the 1990 Census show the spread of departure to work times over a 24-hour period (see Table 5). Twenty 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.

DEPARTURE TO WORK DISTRIBUTION

	1990 Census	
Departure Time	**Trip**	**Percent**
12:00 a.m. to 4:59 a.m.	41	3.5
5:00 a.m. to 5:59 a.m.	155	13.3
6:00 a.m. to 6:59 a.m.	160	13.7
7:00 a.m. to 7:59 a.m.	235	20.2
8:00 a.m. to 8:59 a.m.	204	17.5
9:00 a.m. to 9:59 a.m.	56	4.8
10:00 a.m. to 10:59 a.m.	33	2.8
11:00 a.m. to 11:59 a.m.	19	1.6
12:00 p.m. to 3:59 p.m.	181	15.6
4:00 p.m. to 11:59 p.m.	18	7.0
Total	**1,165**	**100.0**

Source: US Bureau of Census.
Table 5 - Departure To Work Distribution

Assuming an average nine-hour workday, 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.

4.5 Travel Mode Distribution

Although the automobile is the primary mode of travel for most residents in the Burns 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 6. Most Burns residents travel to work via a private vehicle. In 1990, more than 91 percent of all trips to work were in an auto, van, or truck. Trips in single-occupancy vehicles made up almost 80 percent of all trips, and carpooling accounted for 12 percent.

Bicycle usage was low (less than 1 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 (6.6 percent of trips to work) due to the fact that in a small city the size of Burns 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.

JOURNEY TO WORK TRIPS

	1990 Census	
Trip Type	**Trips**	**Percent**
Private Vehicle	1,076	91.4
Drove Alone	*936*	*87.0*
Carpooled	*140*	*13.0*
Public Transportation	0	0.0
Motorcycle	0	0.0
Bicycle	7	0.6
Walk	77	6.6
Other	5	0.4
Work at Home	12	1.0
Total	**1,177**	**100.0**

Source: US Bureau of Census.

Table 6 – Journey To Work Trips

Chapter 5

5 Traffic Forecasts

The traffic volume forecasts for the City of Burns 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.

5.1 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.

5.1.1 Historic

Population levels in most of Eastern Oregon are close to, or actually lower than, those experienced earlier in the century (see Table 7). Counties included in this phenomenon include Baker, Harney, Union, Grant, and Wallowa Counties. The population of Harney County and the Cities of Burns and Hines actually declined in the 1980s and 1990s, reflecting a general slowdown in the state's economy.

Hines actually declined in the 1980s and 1990s, reflecting a general slowdown in the state's economy.

CITY OF BURNS POPULATION TRENDS

Year	Population	Average Annual Growth Rate	Total Growth
1970	3,295	--	--
1980	3,580	0.8%	8.6%
1985	2,830	-5.6%	-20.9%
1990	2,915	0.6%	3.0%
1995	2,890	-0.2%	-0.9%
1997	2,975	1.5%	2.9%

Source: US Bureau of the Census.
Table 7 – City of Burns Population Trends

5.1.2 Projected

Projecting future population growth for the City of Burns is difficult because long-term historic growth has been very low, but in the past few years both Burns and Hines have been experiencing a period of strong economic growth. Two methodologies were employed in forecasting the future population of the City of Burns. 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 8.

CITY OF BURNS POPULATION PROJECTIONS

Year	Population	Average Annual Growth Rate	Total Growth
Office of Economic Analysis Forecasts (1)			
1995	2,890	--	--
2000	3,000	0.7%	3.8%
2005	3,040	0.3%	1.3%
2010	3,080	0.3%	1.3%
2015	3,110	0.2%	1.0%
2017	3,120	0.2%	0.3%
Alternative Growth Scenario (2)			
1990	2,915	--	--
1997	2,975	0.3%	2.1%
2017	3,160	0.3%	6.2%
OEA 1997-2017	**145**	**0.24%**	**4.9%**
Alternative 1997-2017	**185**	**0.30%**	**6.2%**

Notes:
(1) 1995 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.
Table 8 – City of Burns Population Projections

5.1.3 Office of Economic Analysis Forecasts

Historical data were compiled as reported by the US 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 1995 and a state econometric model, the State of Oregon Office of Economic Analysis 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 Burns is expected to experience a population gain of 145 people between 1997 and 2017. This represents an increase of 4.9 percent, from the 1997 estimate of 2,975 to an estimated 3,120 in year 2017.

5.1.4 Alternative Growth Scenario

Harney County has experienced economic growth with the location of several new employers in the Burns/Hines area. (Detailed discussions will follow this section.)

At the request of Harney County and its jurisdictions, an alternative growth scenario for the purposes of this TSP was also prepared. 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 Burns is expected to experience a population gain of 185 people during the next 20 years. This represents an increase of more than six percent, from the 1997 estimate of 2,975 to an estimated 3,160 in year 2017. The estimate for the year 2017 is higher than that made by the State Office of Economic Analysis by 40 people. This alternative growth scenario is valuable, but it should be remembered that the forecasts by OEA would be used over this higher growth rate when the State performs any transportation forecasting.

5.1.5 Summary

Factors that will affect the future growth rate of Burns 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.

5.2 Traffic Volumes

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

5.2.1 Historic

Before projecting future traffic growth, it is important to examine past growth trends on the Burns roadway system. Historic data are only available for the state highway system in Burns; 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 Burns 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 9 summarizes the historic average growth rate on each of these sections.

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 Burns and Hines	-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.
Table 9 – Historic Growth Rates on State Highways

Over the past 20 years, growth on the rural sections of US Highway 20 in Harney County has ranged between 1.2 and 2.6 percent per year. Traffic volumes on the rural sections of US 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 OR Highway 78 has had little to no growth in traffic over the past 20 years. The rural section of OR 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 US Highway 20/395 through Burns and Hines, could be a result of the decrease in population in Harney County and the cities during this period.

5.22 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 Burns 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 Burns and Hines 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 Burns/Hines 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 Burns/Hines urban area; therefore, the growth rate applied to the "local" traffic was 0.3 percent per year, the rate at which the population of Burns 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). Special generators in Burns and Hines consist of:

- a gaming facility on the Burns Paiute Indian Reservation west of Burns
- the juvenile detention facility on Monroe Street in Burns
- the addition of 70 new USFS/BLM employees at the 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.

Using the same linear regression analysis used to calculate the historic growth rate of traffic, forecasts were made for the year 2018 (see Figure 5-1). Where the historic growth rates were very low, traffic volume projections were based on the projected population for Harney County. The resulting projected growth varies from under 20 percent to over 40 percent.

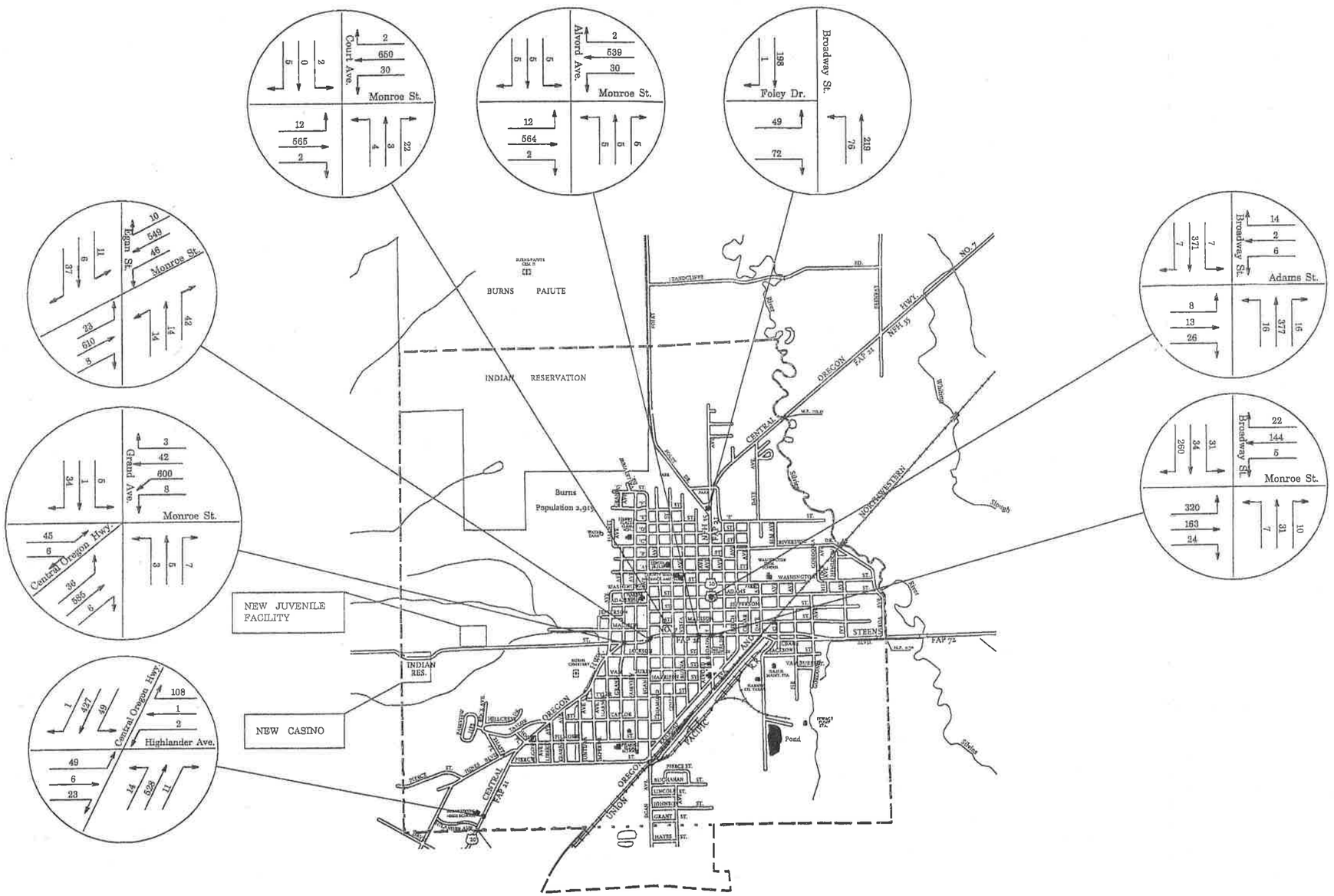
5.2.3 Future Traffic Volumes

The resulting future traffic volumes in the alternative peak hour are shown in Figure 5-1.

Figure 5-1, Estimated 2018 PM Peak Hour Traffic Volumes

The forecasting methodology described above results in future year traffic volumes on US Highway 20/395 in the year 2017, which are 18 to 28 percent higher than existing volumes. Traffic volumes would increase by 1,700 vpd from 8,500 vpd to 10,200 vpd in the vicinity of Monroe Street and Broadway Avenue.

Traffic volumes on the local street network would increase by approximately six percent during the same 20-year period. Only Monroe Street west of US Highway 20/395 would have a much larger increase (385 vpd) due to operation of the casino and juvenile detention facility.



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

NORTH
0 1200 2400 3600
FEET

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

FIGURE 5-1
Estimated 2018
PM Peak Hour
Traffic Volumes
City of Burns TSP

HARN0001/BURN5-1.DGN/TNT/03-20-01

5.3 Highway System Capacity

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

Figure 5-2, Estimated 2018 PM Peak Hour Level of Service

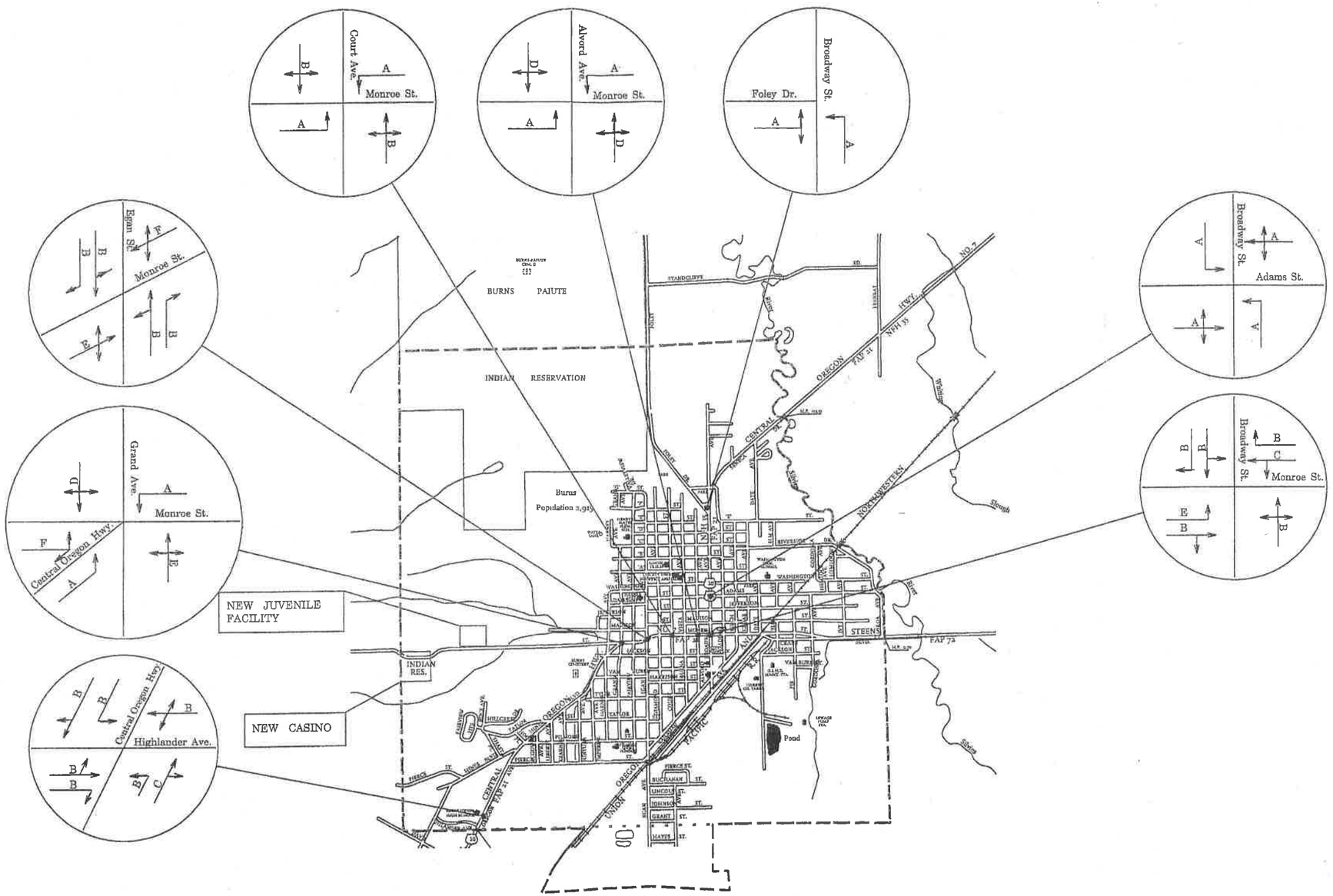
In general, the intersections operate well, at LOS C (v/c ratio of .60-.69, See Table 3, page 38, for a comparison between Level of Service, LOS, and Volume/Capacity Ratios) or better, except for some of the approaches at the intersections of Monroe Street and Grand Avenue, Monroe Street and Egan Avenue, Monroe Street and Alvord Avenue, and Monroe Street and Broadway Avenue.

At the five-legged unsignalized intersection of Monroe Street and Grand Avenue, the northbound and southbound operate at LOS E (v/c ratio .84-.97) and LOS F (v/c ratio > 1.0) due to high volumes on the highway and the increased traffic on Monroe Street due to the Burns Paiute Indian "Old Camp" Casino and the Oregon Youth Authority Juvenile Detention facility on this street. This intersection was identified as a future congestion area and safety problem, and several geometric improvement alternatives were analyzed in the *US Highway 20 Traffic Analysis*. Safety and operating conditions at this intersection will be addressed in Chapter 6, Improvement Options Analysis.

At the signalized intersection of Monroe Street and Egan Avenue, the eastbound and westbound approaches (US Highway 20/395) operate at LOS E (v/c ratio .84-.94) and LOS F (v/c ratio > 1.0). Improvement options for this intersection may be as easy as changes in the existing signal timing, and will also be addressed in Chapter 6, Improvement Options Analysis.

At the unsignalized intersection of Monroe Street and Alvord Avenue, the northbound and southbound side street approaches to the highway, which carry very low volumes, operate at LOS D (v/c ratio .70-.83) due to high volumes on the highway.

At the signalized intersection of Monroe Street and Broadway Avenue, the eastbound left-turn (actually eastbound through movement for US Highway 20/395) operates at LOS E (v/c ratio .84-.97). Improvement options for this intersection may be as easy as changes in the existing signal timing, and will also be addressed in Chapter 6, Improvement Options Analysis.



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0 1200 2400 3600

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LEGEND: ---- URBAN GROWTH BOUNDARY

. . . . . CITY LIMITS

FIGURE 5-2

Estimated 2018 PM Peak Hour Level of Service

City of Burns TSP

HARN0001/BURN5-2.DGN/TNT/03-20-01

Chapter 6

6 Improvement Options Analysis

6.1 Evaluation Criteria
6.2 Improvement Options Evaluation
6.3 Summary

As required by the Oregon Transportation Planning Rule, transportation alternatives were formulated and evaluated for the Burns Transportation System Plan. 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 Burns 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. Improve the two multi-legged intersections on US Highway 20/395.
4. Improve the actuated traffic signal at Hilander Avenue and US Highway 20/395.
5. Construct a truck route parallel to Broadway Avenue.
6. Construct a bypass in the Burns and Hines.
7. Improve Monroe Street west of US Highway 20/395.
8. Create a new connection from the main Burns Paiute Indian Reservation to Monroe Street.
9. Create bike routes parallel to US Highway 20/395.

10. Improve the intersection at Monroe and Broadway to allow better right-hand turning movements (traveling south on Broadway, turning right onto Monroe Street) of large vehicles.

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.

6.1 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.

6.2 Improvement Options Evaluation

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

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

Overview: One of the goals of the 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 Burns, 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 Burns is around two 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. More than six percent of the population already walks to work, which is higher than the statewide average.

Increasing density may have some effect on development in Burns. Projected population growth of five to six percent in the next 20 years can be accommodated by infill development inside the city limits or by development of vacant land within the UGB. Therefore, as city limits are expected to expand to include portions of the UGB, 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 Burns. 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 five to six percent in the next 20 years). Burns development code was revised in August 1997 and does not currently permit mixed-use zoning. Future revisions to the code should consider allowing these uses.

6.2.2 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. Examples include implementing carpooling programs, altering work shift schedules, and applying other transportation measures within the community. The Transportation Planning Rule recommends that cities evaluate these 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 Burns. Although establishing a carpool program in Burns 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 staggering work shifts to spread the peak hour can be beneficial for residents of the city. In rural communities, transportation demand management strategies include providing mobility options.

Burns 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 flextime 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 Burns. 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 for are for standalone improvements; the costs can be reduced when they are included, as needed, in roadway improvement projects throughout the Burns 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 Burns area. Therefore, the strategies summarized above are recommended.

6.2.3 Option 3. Improve the Two Multi-Legged Intersections

Two intersections along US Highway 20 in Burns have more than two side street approaches. These multi-legged intersections can be hazardous because of conflicting turning movements.

The intersection of Monroe Street, Hines Boulevard, and Grand Avenue has three side street approaches for a total of five legs at the intersection (see Figure 6-1, Section A). US Highway 20 runs diagonally through the intersection, approaching from the southwest side on Hines Boulevard and from the east side on Monroe Street. Monroe Street also approaches US Highway 20 due west of the intersection as a side street. Grand Avenue approaches US Highway 20 from due north and south. The Grand Avenue approaches are lined up directly opposite each other.

Figure 6-1 Multi-Legged Intersection Improvements

Immediately southwest of the first intersection lies the intersection of Hines Boulevard, Jackson Street, and Harney Avenue, which has four side street approaches for a total of six legs at the intersection (see Figure 6-1, Section A). US Highway 20 runs diagonally through the intersection as Hines Boulevard, approaching from the southwest and northeast. Jackson Street approaches US Highway 20 due east and west of the intersection. The Jackson Street approaches are lined up directly opposite each other. Harney Avenue approaches US Highway 20 due north and south of the intersection. The Harney Avenue approaches are slightly skewed, and they do not line up exactly opposite each other.

Four traffic flow improvement alternatives have been considered at these two intersections, as shown in Figure 6-1, Sections B through E. These alternatives include combinations of travel limitations, such as one-way streets and turn prohibitions, and major street changes, such as new connections and closures. Each alternative attempts to limit the number of conflicting movements at the two multi-legged intersections by controlling the number of approaches.

Alternative 1 - One-Way Streets and Turn Prohibitions

Overview: Alternative 1, shown in Section B, shows traffic flow changes, which could be brought about by the use of one-way streets and turn prohibitions only. The elements of this alternative include:

- Monroe Street between Grand Avenue and Harney Avenue - One-Way Street Westbound
- Jackson Street between Grand Avenue and Harney Avenue - One-Way Street Eastbound
- Harney Avenue between Jackson Street and Van Buren Street - One-Way Street Southbound
- Grand Avenue between Monroe Street and Madison Street - One-Way Street Northbound
- Grand Avenue northbound at Monroe Street - Limited to Right Turns Only

One result of this alternative is to reduce the number of approaches at the Monroe Street/Hines Boulevard, Grand Avenue intersection from five to four. The number of legs at the intersection would still be the same but the change to one-way traffic on Monroe Street would prevent vehicles from entering the intersection from that leg. Limiting the northbound Grand Avenue approach to right turns only eliminates the sharp turns that could be made onto Hines Boulevard.

Another result of this alternative is to reduce the number of approaches at the Hines Boulevard/Jackson Street/Harney Avenue intersection from six to four. The number of legs at the intersection would still be six but the change to one-way traffic on the southern Harney Avenue and eastern Jackson Street legs would prevent vehicles from entering the intersections from those legs.

One factor that would not change as a result of these improvements would be the remaining two adjacent side street approaches to Hines Boulevard at this intersection. Both would be on the same side of the street, which leaves some of the existing conflicting movements in place. The western leg of Jackson Street would need to remain two-way because that approach currently has no other outlet. The Harney Avenue approach would need to remain two-way because it would have to serve as an outlet onto US Highway 20 for the Monroe Street traffic.

Impacts: Advantages of this alternative include the reduction in the number of approaching vehicles and conflicting movements at the two multi-legged intersections without any major construction. All improvements could be achieved by signing.

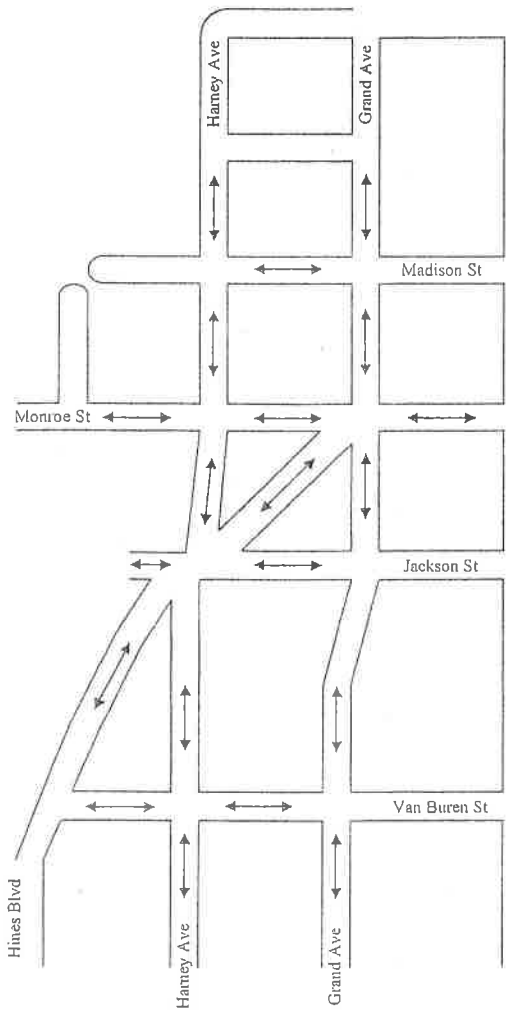
Disadvantages of this alternative include the conflicting approaches that would still exist at the Hines Boulevard/Jackson Street/Harney Avenue intersection.

Cost: The cost of this improvement would be nominal since no new construction would take place. Some new signage, estimated to be under $2,000 would be necessary. Some initial enforcement could also be needed to educate drivers about the new circulation patterns.

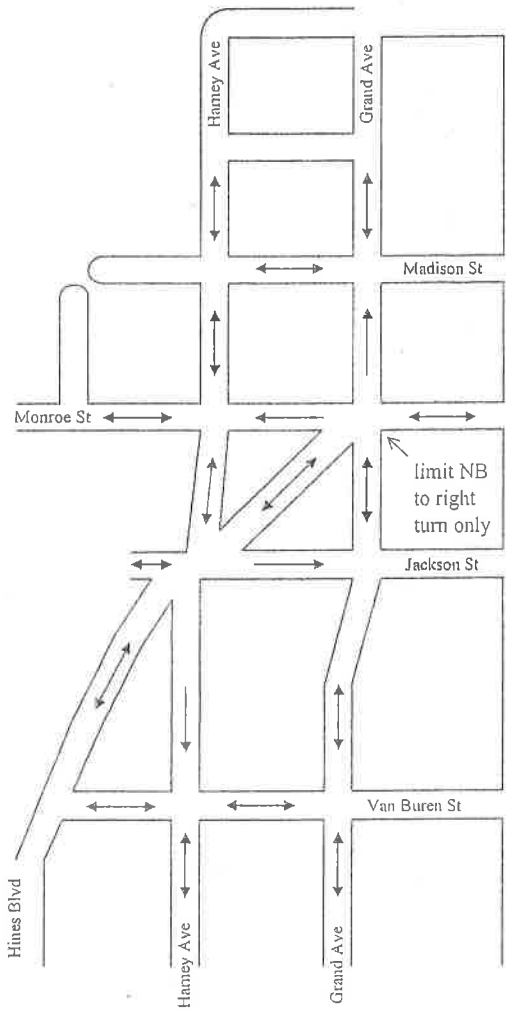
Alternative 2 - New Connection, One-Way Streets, Turn Prohibitions, and Dead Ends

Overview: Alternative 2, shown in Section C, shows traffic flow changes, which could be brought about by a combination of one-way streets, turn prohibitions, street closures, and new connections. The elements of this alternative include:

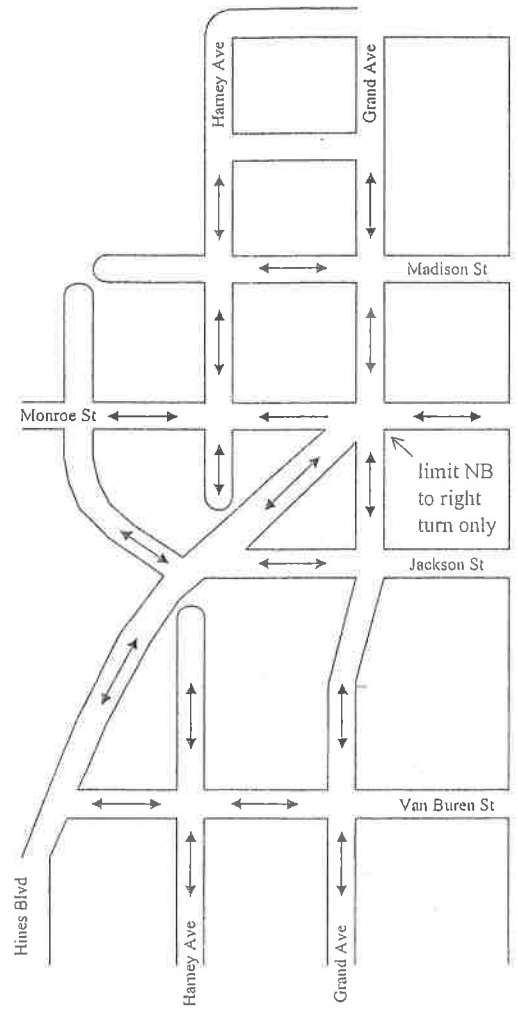
- Monroe Street between Grand Avenue and Harney Avenue - One-Way Street Westbound
- Monroe Street west of Harney Avenue - New Connection with Hines Boulevard at Jackson Street



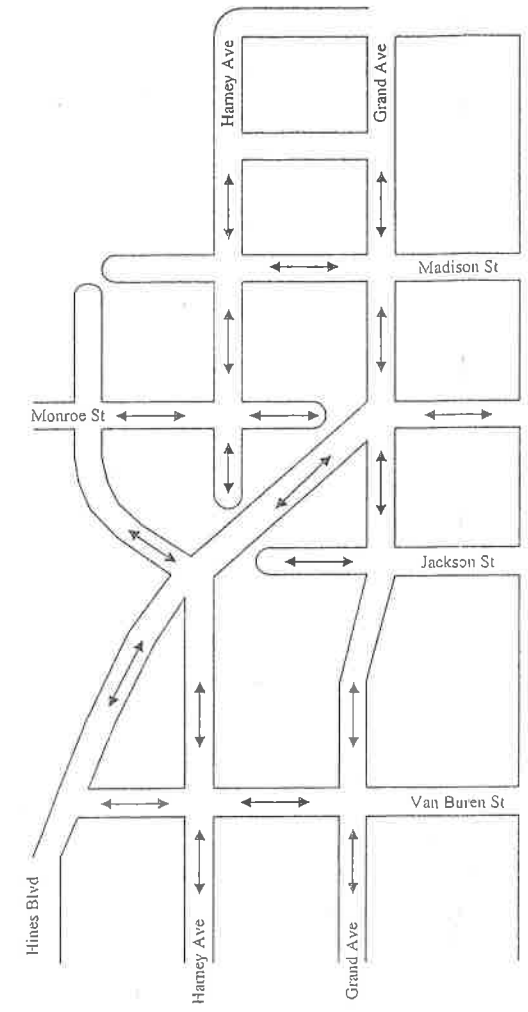
A Existing Street Traffic Flow



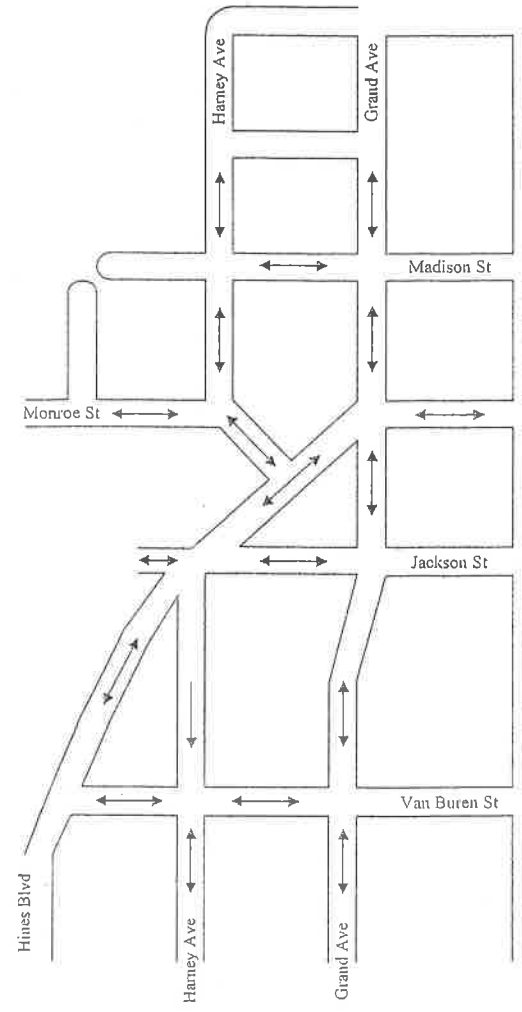
B. Traffic Flow Option 1



C. Traffic Flow Option 2



D Traffic Flow Option 3



E. Traffic Flow Option 4

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SCHEMATIC
NOT TO SCALE

FIGURE 6-1

Multi-Legged Intersection Improvements

City of Burns TSP

- Harney Avenue north of Hines Boulevard - Dead End with No Connection with Hines Boulevard
- Harney Avenue south of Hines Boulevard - Dead End with No Connection with Hines Boulevard
- Grand Avenue northbound at Monroe Street - Limited to Right Turns Only

At the Monroe Street/Hines Boulevard/Grand Avenue intersection, the number of approaches would be reduced from five to four. The number of legs at the intersection would still be the same but the change to one-way traffic on Monroe Street would prevent vehicles from entering the intersection from that leg. Limiting the northbound Grand Avenue approach to right turns only eliminates the sharp turns that could be made onto Hines Boulevard.

At the Hines Boulevard/Jackson Street/Harney Avenue intersection, the number of approaches would be reduced from six to four. The number of legs at the intersection would also be reduced from six to four. This would be achieved by stubbing-off the Harney Avenue connections with Hines Boulevard, forcing traffic along Harney Avenue to access the highway by other routes. The remaining approaches to the intersection would be on opposite sides of Hines Boulevard, although not directly so.

Another important element of this alternative is the Monroe Street connection to the stub of Jackson Street on the west side of Hines Boulevard. This new connection would carry most of the traffic to and from destinations on Monroe Street. In creating this connection, the approach to Hines Boulevard could potentially be realigned so that the roadways intersect at more of a right angle. The improved geometry would allow for better viewing of highway traffic for vehicles making any movement out of the side street.

Impacts: Advantages of this alternative include the reduction in the number of approaching vehicles and conflicting movements at the two multi-legged intersections. At the Hines Boulevard/Jackson Street/Harney Avenue intersection, the number of legs at the intersection would also be reduced. This alternative also provides a new connection between Monroe Street and Hines Boulevard with better alignment and sight distance.

There are several disadvantages to this alternative. Constructing the new connection and closing roadways would have impacts on adjacent properties. The Jackson Street approaches to Hines Boulevard would not be aligned directly opposite each other. Direct highway access to properties along Hines Boulevard would probably have to be maintained when Harney Avenue is closed off.

Cost: The construction cost for making these improvements is estimated at about $84,000. This does not include the cost of right-of-way that would need to be acquired between Monroe Street and Hines Boulevard.

Alternative 3 - New Connection and Dead Ends

Overview: Alternative 3, shown in Section D, shows traffic flow changes, which could be brought about by closing certain streets and creating a new connection. The elements of this alternative include:

- Monroe Street west of Harney Avenue - New Connection with Hines Boulevard at Jackson Street
- Monroe Street west of Grand Avenue - Dead End with No Connection with Hines Boulevard
- Harney Avenue north of Hines Boulevard - Dead End with No Connection with Hines Boulevard
- Harney Avenue south of Hines Boulevard - Dead End with No Connection with Hines Boulevard

At the Monroe Street/Hines Boulevard/Grand Avenue intersection, the number of approaches would be reduced from five to four. The number of legs at the intersection would also be reduced from five to four, creating a more standard four-way intersection. This would be achieved by stubbing off the current Monroe Street connection on the west side of Hines Boulevard.

At the Hines Boulevard/Jackson Street/Harney Avenue intersection, the number of approaches would be reduced from six to four. The number of legs at the intersection would also be reduced from six to four. This would be achieved by stubbing off the north Harney Avenue and east Jackson Street connections with Hines Boulevard, forcing traffic along these roadways to access the highway by other routes. The remaining approaches to the intersection would be on opposite sides of Hines Boulevard, nearly directly opposite each other.

As with Alternative 2, another important element of this alternative is the Monroe Street connection to the stub of Jackson Street on the west side of Hines Boulevard. This connection would be even more important with this alternative because it would be the only direct access from US Highway 20 to Monroe Street.

Impacts: Advantages of this alternative include the reduction in the number of legs and approaching vehicles and conflicting movements at the two multi-legged intersections. Both intersections would become four-leg intersections. This alternative also provides a new connection between Monroe Street and Hines Boulevard with better alignment and sight distance.

There are several disadvantages to this alternative. Constructing the new connection and closing roadways would have impacts on adjacent properties. Direct highway access to properties along Hines Boulevard would probably have to be maintained when Harney Avenue is closed off.

Cost: The construction cost for making these improvements is estimated at about $86,000. This does not include the cost of right-of-way that would need to be acquired between Monroe Street and Hines Boulevard.

Alternative 4 - New Connection, Street Closures, and One-Way Streets

Overview: Alternative 4, shown in Section E, shows traffic flow changes, which could be brought about by a combination of one-way streets, turn prohibitions, street closures, and new connections. The elements of this alternative include:

- Monroe Street between Grand Avenue and Harney Avenue -Existing Section Closed
- Monroe Street - New Mid-block Connection with Hines Boulevard
- Harney Avenue north of Hines Boulevard - Existing Section Closed
- Harney Avenue between Jackson Street and Van Buren Street - One-Way Street Southbound

At the Monroe Street/Hines Boulevard/Grand Avenue intersection, the number of approaches would be reduced from five to four. The number of legs at the intersection would also be reduced from five to four, creating a more standard four-leg intersection. This would be achieved by stubbing-off the current Monroe Street connection on the west side of Hines Boulevard.

Another result of this alternative is to reduce the number of approaches at the Hines Boulevard/Jackson Street/Harney Avenue intersection from six to four. The number of legs at the intersection would be reduced from six to five with the elimination of the Harney Avenue connection. The change to one-way traffic on the southern Harney Avenue would prevent vehicles from entering the intersections from that leg.

Impacts: Advantages of this alternative include the reduction in the number of legs and approaching vehicles and conflicting movements at the two multi-legged intersections. One intersection would become a four-leg intersection while the other would be limited to four approaching lanes. This alternative also provides a new direct connection between Monroe Street and Hines Boulevard with a simple alignment.

There are several disadvantages to this alternative. Constructing the new connection and closing roadways would have impacts on adjacent properties. Direct highway access to properties along Hines Boulevard would probably have to be maintained when Harney Avenue and Monroe Street were closed off. There could be some sight distance issues with this new midblock connection. Another concern would be the increase in intersection frequency. ODOT is trying to limit new access to the highway in order to preserve capacity and maintain travel flow.

Cost: The construction cost for making these improvements is estimated at about $70,000. This does not include the cost of right-of-way that would need to be acquired. There is a car lot currently located in the alignment of new construction. This lot would need to be acquired although a vacated street could potentially be exchanged for the property acquisition.

Recommendation: Because it will have relatively few impacts, Alternative 2, which would form a new connection between Monroe Street and US Highway 20/395, is recommended. This option would have the fewest impacts on side streets and would not create a new intersection with US Highway 20/395. Although projected traffic volumes at the Monroe Street/US Highway 20/395 intersection may not warrant a traffic signal at this time, additional development along Monroe Street could trigger the need in the future. This improvement would tie in with Option 8, which would improve Monroe Street west of US Highway 20/395.

6.2.4 Option 4. Improve the Actuated Traffic Signal at Hilander Avenue and US Highway 20/395

The intersection of Hilander Avenue (Burns High School) and US Highway 20/395 is currently controlled by an actuated traffic signal with loop detectors embedded in the pavement (typically three loops on each approach, set back from the stop line by 4, 16, and 76 feet, respectively). This intersection was identified during the public involvement process as requiring improvement to the signal operations. The signal operation issue arises when a vehicle on the west approach (coming from the high school) triggers a "call" for the signal to turn red on the highway and to turn green on the side street. In many cases, the vehicle that actuates the signal makes a right-on-red turn, negating the need for a green signal phase on the side street. The perception to drivers on the highway is that they were delayed unnecessarily by the red signal phase when no side street traffic is present.

Two possible ways to address this problem were evaluated. The first alternative is to change the way the actuated traffic signal functions; the second alternative is to construct a separate, channelized right-turn lane, which is not controlled by the traffic signal.

Alternative 1 - Modified Signal Operation

Overview: Change the actuated traffic signal from *Call, Extend, Carryover* operation to *Extend, Carryover* operation. By changing this signal from "locked call" operation to "unlocked call" operation, and by removing the "call" feature on the "back" loop, the signal would be able to recognize that a vehicle has made a right-on-red turn and is no longer waiting at the "stop bar loops".

Impacts: The result of this improvement would be that the signal for the highway traffic would continue to "rest" in the green phase, and highway traffic would not be delayed unnecessarily by a side street green phase when no traffic is present on the side street approaches.

This alternative would have all movements remain controlled by the traffic signal while addressing the issue of delay for vehicles turning right from the west approach. Therefore, if a vehicle approaches the intersection during a period of heavy highway volumes, it is still guaranteed a green signal phase after the maximum green time for the highway movements has elapsed (in this case, 40 seconds).

Cost: The cost of changing how the existing signal operates would be negligible. It would not require any new hardware, only the labor cost for a traffic engineer or an electrician from ODOT District 14 to go to the site and make the necessary changes in the signal control box. No excavation of the detector loops or any other construction would be required.

Alternative 2 - Channelized Right-Turn Lane

Overview: Construct a separate, channelized right-turn lane on the eastbound Hilander Avenue approach to the highway. By constructing a separate, channelized right-turn lane on the west approach, which is STOP-sign controlled, and not controlled by the signal, would be another possible solution.

Impacts: This alternative would also cause the highway traffic signal phase to continue to "rest" in the green phase, and highway traffic would not be delayed unnecessarily by a side street green phase when no traffic is present on the side street approaches. With the channelized right turn lane, right-turn movements are made based on driver discretion (i.e., the driver determines what constitutes an acceptable gap in highway traffic to make a turn). As a result, operations may not be as safe as when all vehicular movements are controlled by the signal. With Alternative 1, highway traffic stops so that side street traffic can proceed, and there is no question of which movements have the right-of-way.

With the channelized right turn lane, drivers wishing to make this turn during periods of heavy highway volumes could experience long delays, waiting for a gap in the highway traffic. This could queue traffic back into the approach so that through and left turning traffic could not get to the "stop bar" loops.

Even if a separate, channelized right-turn lane were constructed, the "call" function on the "back" loop would still have to be disabled since free right traffic would pass over this loop.

Cost: The cost of constructing a separate, channelized right turn lane would be approximately $20,000, assuming a 100-foot lane is constructed at a cost of $200 per linear foot.

Recommendations: Because the change to the signal phasing could be accomplished at a very low cost, would not involve any heavy construction, would provide a safer solution, and would address the delay experienced by traffic on the west approach, this improvement option is recommended.

6.2.5 Option 5. Construct a Truck Route Parallel to Broadway Avenue

Broadway Avenue serves the downtown business district in Burns. The atmosphere in this corridor is pedestrian-friendly with wide sidewalks, shops close to the street, and convenient on-street parking.

At the same time, US Highway 20/395 also runs along Broadway Avenue carrying both local and long distance traffic and relatively high truck volumes. The trucks are large and noisy, conflicting with the downtown-shopping environment.

Four alternative truck routes were developed and evaluated to provide an alternate route to Broadway Avenue, as shown in Figure 6-2. These alternatives all seek to use existing roadways when possible with added connections where necessary.

Figure 6-2, Truck Route Alternatives

Alternative 1 - Alder Avenue and D Street

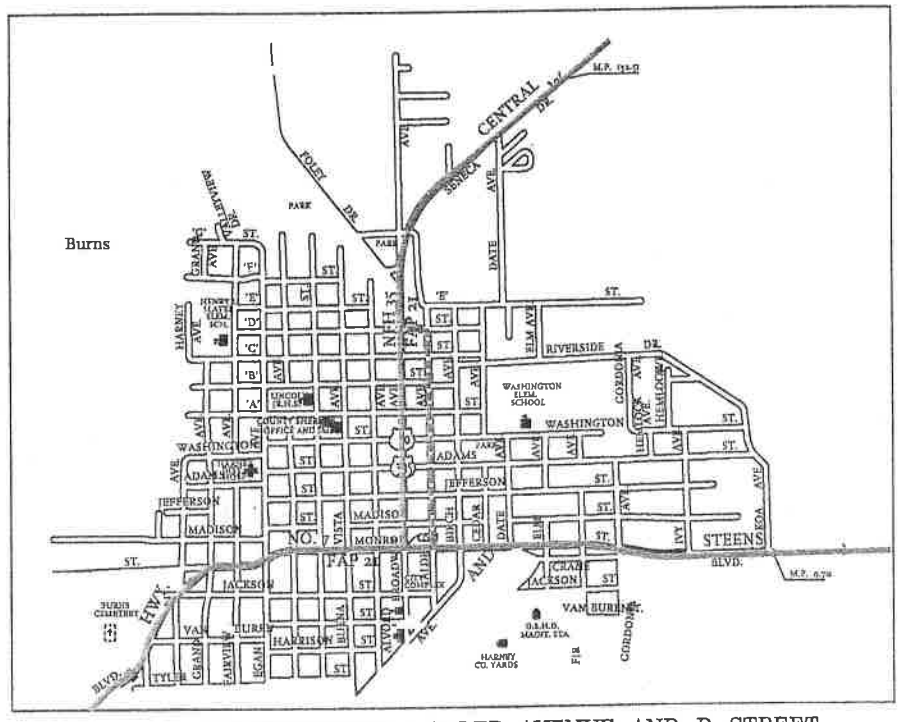
Overview: This first alternative, shown in Section A, would take trucks one block further east on Monroe Street to Alder Avenue. The route would run along Alder Avenue from Monroe Street to D Street. At D Street, it would run back to connect with Broadway Avenue.

Impacts: The goal of this route is to keep trucks in town but avoid having them on Broadway Avenue. While it would achieve this goal, Alternative 1 would have many other impacts.

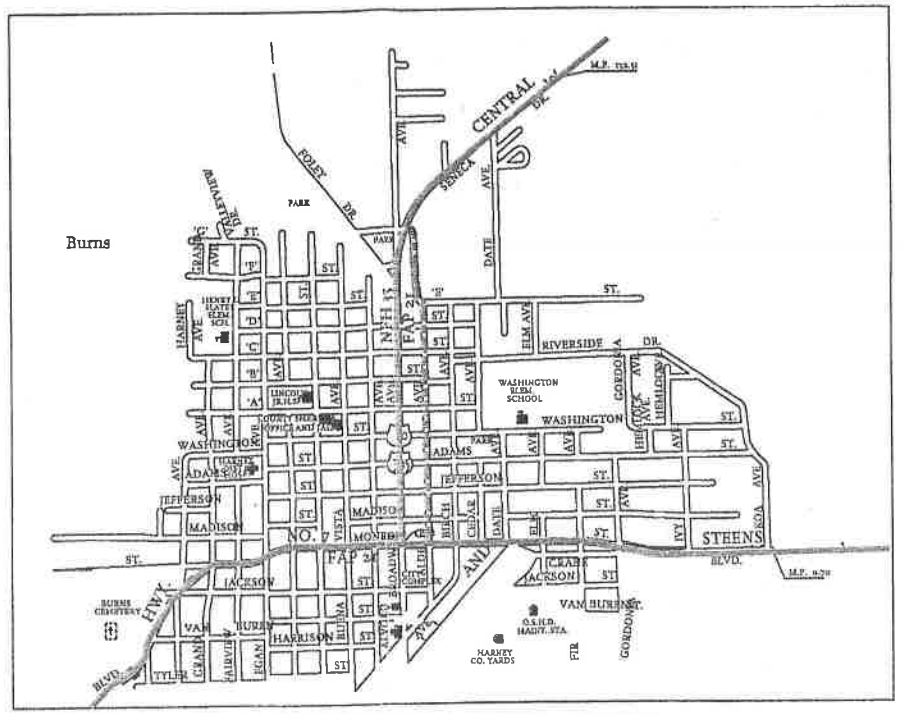
First, there is a mix of development on Alder Avenue. Some residences and businesses would be negatively impacted by the presence of trucks.

Second, this truck route would lengthen travel time for trucks by requiring additional turns and two new traffic signals. Longer travel time and increased maneuvering requirements would deter truck drivers from using the route. Unless rigid enforcement was applied, many trucks would probably ignore the route.

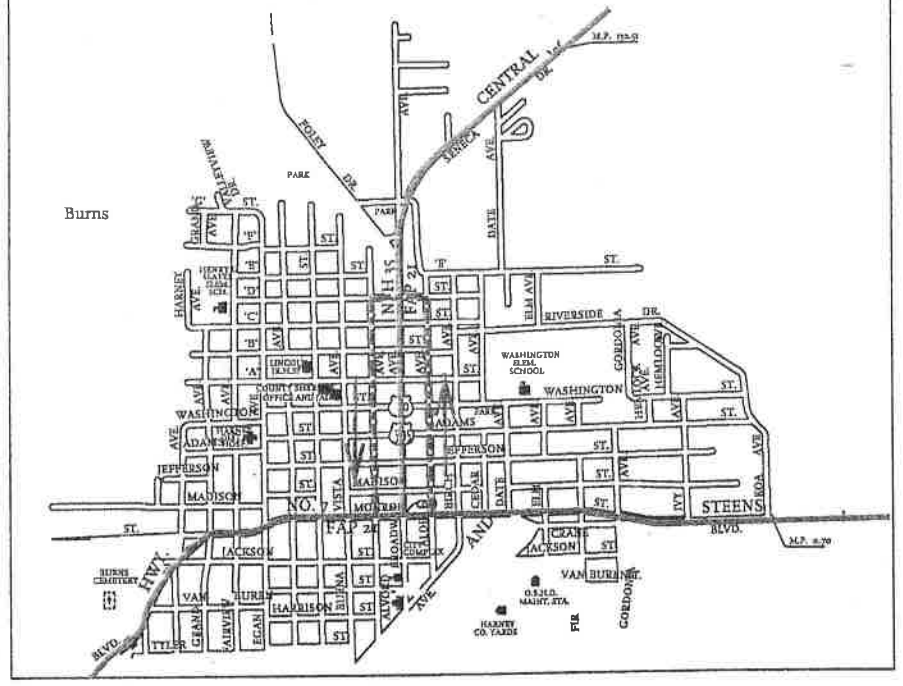
Third, D Street connects with Broadway Avenue near the crest of a hill. Sight distance for oncoming traffic is not good; therefore, a traffic signal would probably be needed.



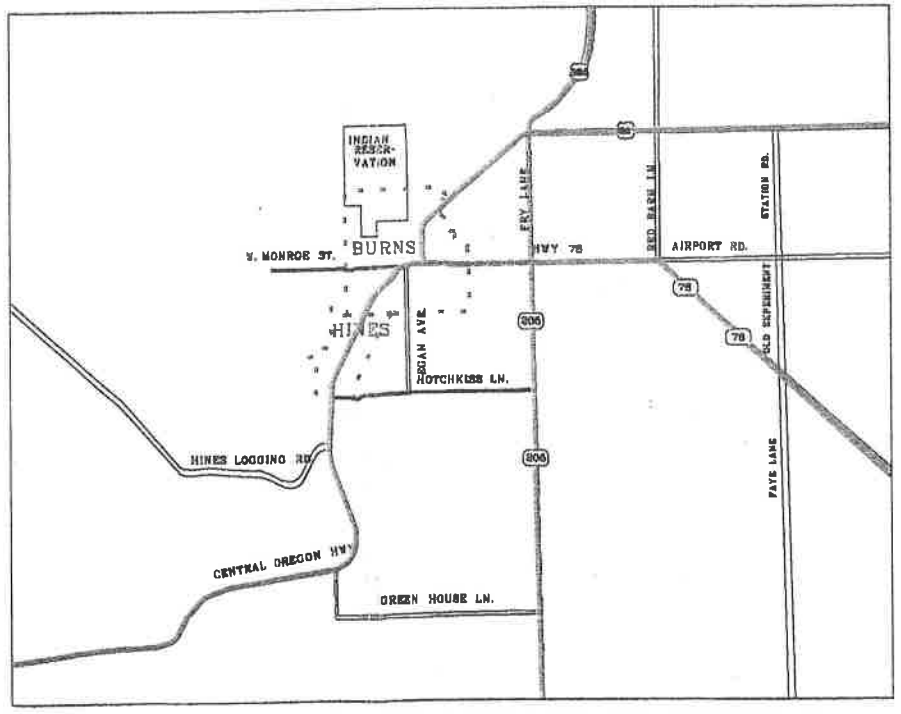
A. ALTERNATIVE 1: ALDER AVENUE AND D STREET



B. ALTERNATIVE 2: ALDER AVENUE



C. ALTERNATIVE 3: ALDER AVENUE AND ALVORD AVENUE COUPLET



D. ALTERNATIVE 4: FRY LANE AND HIGHWAY 78

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

NORTH

SCHEMATIC
NOT TO SCALE

LEGEND:
STATE HIGHWAY
TRUCK ROUTE

FIGURE 6-2

Truck Route Alternatives

Lastly, removing truck traffic from Broadway Avenue could have some economic impact on businesses along Broadway Avenue. Impact may be minor, however, since most of the trucks are likely to be serviced by the new truck stops in Hines. Because this truck route is unlikely to shorten travel time, through traffic would probably not use it as an alternative route to Broadway Avenue.

Cost: The estimated construction cost for this improvement is $855,000. It includes a 50-foot pavement section with sidewalks along 2,300 feet of Alder Avenue and 400 feet of D Street. It also assumes that traffic signals would be needed at the intersections of Monroe Street/Alder Avenue and D Street/Broadway Avenue.

Alternative 2 - Alder Avenue

Overview: This alternative, shown in Section B, would be similar to Alternative 1 except that it would continue on Alder Avenue to an intersection with Highway 20/395 where it becomes Seneca Drive.

Impacts: As with Alternative 1, the goal of this route is to keep trucks in town but avoid having them on Broadway Avenue. Again, this goal would be achieved with many other impacts.

As mentioned for Alternative 1, there is a mix of development on Alder Avenue. Some residences and businesses would be negatively impacted by the presence of trucks.

This truck route would lengthen travel time for trucks by requiring additional turns and one new traffic signal. Longer travel time and increased maneuvering requirements would deter truck drivers from using the route.

The northern connection with US Highway 20/395 would have some safety issues as well. Traffic would be traveling faster at this intersection, making it more hazardous for trucks to enter and exit the traffic stream. It would also occur at a turn in the roadway, which could have some limited sight distance.

Removing truck traffic from Broadway Avenue could also have some economic impact on businesses along Broadway Avenue; however, most of the trucks are likely to be serviced by the new truck stops in Hines. Because this truck route is unlikely to shorten travel time, through traffic would probably not use it as an alternative route to Broadway Avenue.

Cost: The estimated construction cost for this improvement is $886,000. It includes a 50-foot pavement section with sidewalks along 3,300 feet of Alder Avenue. It also assumes that a traffic signal would be needed at the intersection of Monroe Street/Alder Avenue.

Alternative 3 - Alder Avenue and Alvord Avenue Couplet

Overview: This alternative, shown in Section C, would create a truck route couplet along Alvord and Alder Avenues between D Street and Monroe Street. The Alder Avenue leg of the couplet would carry northbound trucks while the Alvord Avenue leg of the couplet would carry southbound trucks.

Impacts: As with the other routes, the goal of this route was to keep trucks in town but avoid having them on Broadway Avenue. Again, this goal would be achieved with many other impacts.

As mentioned for Alternative 1, there is a mix of development on both Alvord and Alder Avenues. Some residences and businesses would be negatively impacted by the presence of trucks.

Although this route would require fewer turns, it would still lengthen travel time for trucks by requiring additional turns and another traffic signal. Longer travel time and increased maneuvering requirements would deter truck drivers from using the route.

Again, the truck route would reconnect on D Street where it connects with Broadway Avenue near the crest of a hill. Sight distance for oncoming traffic is not good; therefore, a traffic signal would probably be needed.

Removing truck traffic from Broadway Avenue could also have some economic impact on businesses along Broadway Avenue; however, most of the trucks are likely to be serviced by the new truck stops in Hines. Because this truck route is unlikely to shorten travel time, through traffic would probably not use it as an alternative route to Broadway Avenue.

Cost: The estimated construction cost for this improvement is $1,476,000. It includes a 50-foot pavement section with sidewalks along 2,300 feet of Alder Avenue, 2,300 feet of Alvord Avenue, and 700 feet of D Street. It also assumes that traffic signals would be needed at the intersections of Monroe Street/Alder Avenue, Monroe Street/Alvord Avenue, and D Street/Broadway Avenue.

Alternative 4 - Fry Lane and OR Highway 78

Overview: This alternative would run outside of the Burns UGB, as shown in Section D. It would run along Fry Lane between the US Highway 20/395 junction and OR Highway 78. It would then use OR Highway 78 from Fry Lane to Broadway Avenue.

Impacts: In general, this alternative has fewer impacts and more benefits.

This route would take trucks completely out of downtown Burns and bring them into town on OR Highway 78. It will have some economic impacts that result

from the rerouting. While some businesses along Broadway Avenue could lose some patronage, most of the trucks are likely to be serviced by the new truck stops in Hines. However, some through traffic may also use the truck route. This traffic would bypass the businesses on Broadway Avenue that might otherwise have provided services.

The junction of US Highway 20/395 is going to be reconstructed to form a simple four-way intersection as part of the Silvies River Bridge to US Highway 395 Junction project. The new junction will already be aligned with Fry Lane, which means that no new construction will be required to improve the intersection.
Fry Lane is a county road, which has a fairly good base and would only need an overlay and shoulders added to serve truck traffic while OR Highway 78 would need no improvements.

The main 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.

Another 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.

Discussions with city and county staff and residents indicate that some trucks already use Fry Lane as an alternative travel route. The county shops are located east of Burns on OR Highway 78, and this route would be more direct for most of their travel. Some of the trucks on OR Highways 78 and 205 also use the Fry Lane route because it provides a more direct connection to/from the north for them.

Cost: The estimated construction cost for this improvement is $687,000. It includes adding four-foot shoulders to Fry Lane and widening on bridge by about four feet. It assumes no significant upgrade to existing pavement. The cost includes relocating the existing weigh station to a new location.

Recommendation: Alternative 4, which uses Fry Lane and OR Highway 78, is recommended for implementation in the TSP. Because the truck route would run outside of the Burns UGB and would run along a county road, close coordination between the City of Burns, Harney County, and ODOT would be needed.

6.2.6 Option 6. Construct a Bypass around Burns and Hines

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 Burns and Hines. 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 bypass alternatives are shown in Figure 6-3. These alternatives all seek to use existing roadways when possible with added connections where necessary.

Figure 6-3, Bypass Route Alternatives

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.

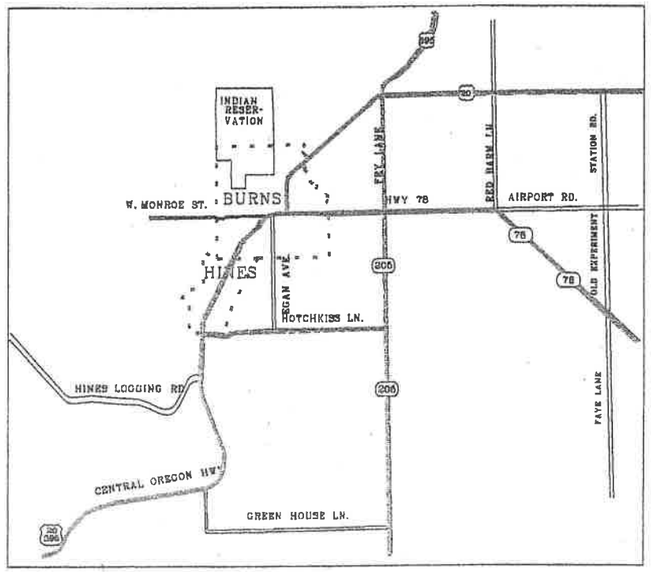
The major impact of this bypass would be to businesses that serve highway travelers. They would lose customers that would go around the cities and be serviced at the next town on the highway. However, because there are no nearby cities, some travelers may still choose to go into Burns and Hines for services.

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

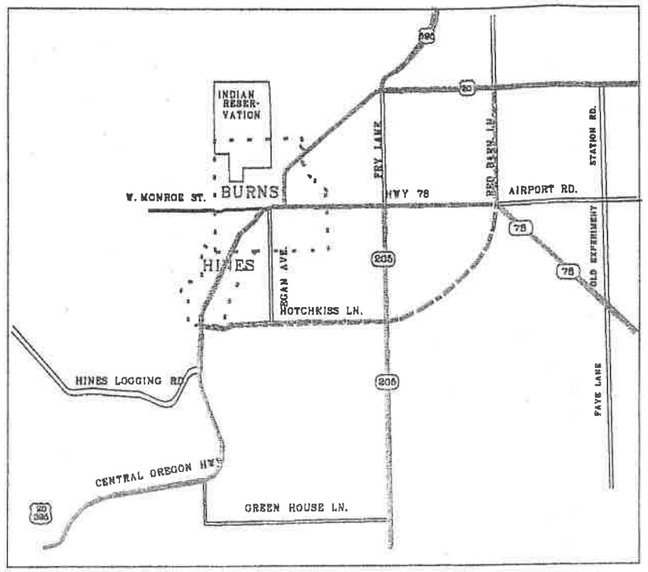
Another impact would be the relocation of the weigh station to a site on US Highway 20 east of the north US Highway 20/395 junction.

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.

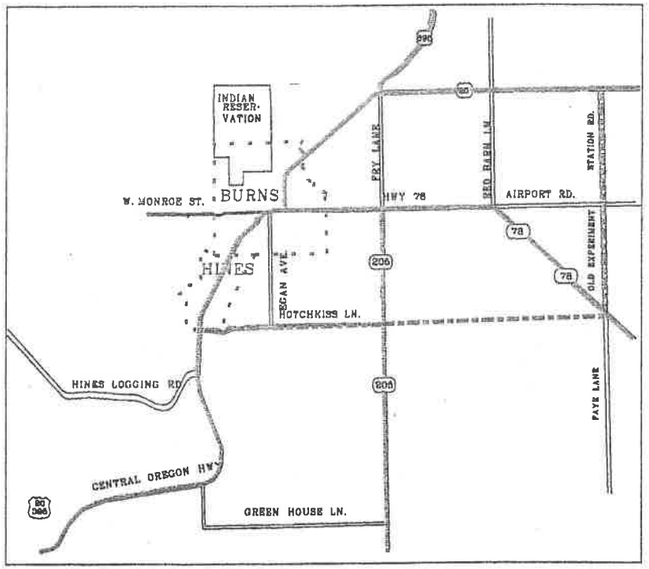
Cost: The estimated construction cost for this improvement is $1,231,000. It includes modifying approximately 10,300 feet of Fry Lane and 17,000 feet of Hotchkiss Lane/Lottery Lane. The cost includes some overlay; new shoulders and relocating the existing weigh station to a new location.



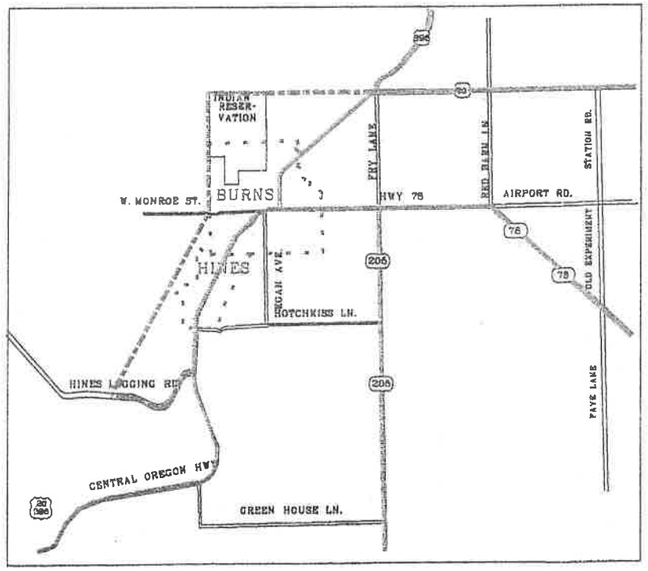
ALTERNATIVE 1: FRY LANE TO HOTCHKISS LANE



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

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 Burns and Hines 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 $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 Burns and Hines 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 Burns and Hines using a combination of existing roadways and new connections. It would extend westward from Eben Ray 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 Burns and Hines 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. Eben Ray 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 Burns and Hines.

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 Burns and Hines.

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 Eben Ray 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: Although through traffic is still a relatively small component of traffic in the core of Burns and Hines, the cost of constructing a bypass far outweighs the economic benefits. Option 6 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. As truck traffic continues to increase through downtown Burns, considerations including public safety, may warrant implementation of one of these bypass alternatives.

6.2.7 Option 7. Improve Monroe Street West of US Highway 20/395

Overview: Monroe Street is the focus of several new development projects in the City of Burns. The juvenile facility is located on the north side of the roadway. The Burns Paiute Casino is located on the south side of the roadway. A motel and gas station may also be constructed in later phases of the casino project. The current roadway is only two lanes wide with very little shoulder and no pedestrian or bicycle facilities. The existing pavement is in fair to poor condition. Monroe Street will not serve the projected traffic demand from these new facilities very well in its present state.

To serve future travel demand, Monroe Street would need to be widened and repaved, and sidewalks should be added. The minimum roadway width should be 36 feet from US Highway 20/395 approximately 4,800 feet west to the reservation. It should also be upgraded to a collector street classification.

Impacts: Improving Monroe Street will facilitate traffic movements along the roadway and better serve both vehicles and pedestrians. Together with improvements to the multi-legged intersections on US Highway 20/395, traffic operations would be safer.

Residents along Monroe Street would not experience any greater increase in traffic than would otherwise occur with construction of the planned developments along the roadway.

There could be some minor right-of-way acquisition required with the roadway widening.

Cost: The estimated cost for reconstructing Monroe Street is $577,000 (excluding right-of-way acquisition). This estimate includes widening about 4,800 feet of roadway to a 36-foot section and adding sidewalks. If Monroe Street were only improved to a 36-foot paved surface with no curbs or sidewalks, the estimated cost for construction is about $392,000.

Recommendation: Improving Monroe Street west of US Highway 20/395 should be included as part of the street system plan. As part of the improvement, this section of Monroe Street would also be reclassified as a collector street. This improvement could also be tied to improvements at the multi-legged intersections on US Highway 20/395.

6.2.8 Option 8. Create a New Connection from the Main Burns Paiute Indian Reservation to Monroe Street

Overview: The Burns Paiute Indian Reservation lies in the northwest quadrant of the City of Burns and extends northward into Harney County. Access from the reservation into the city is available along Foley Drive connecting into US Highway 20/395.

The tribe has constructed a casino on the south side of Monroe Street in a separate, smaller parcel of reservation land known as "Old Camp". To provide more direct access between the two parcels, a new roadway could be constructed between Radar Road and Monroe Street.

This roadway would be approximately 10,000 feet in length. Part of it would lie in Harney County and part would fall within the Burns' city limits. Although this road would lie within an urban area, a rural road standard would adequately serve the traffic demand.

Impacts: This new roadway would provide a direct connection between the main reservation on the north side of Burns and Old Camp where the casino is operated. This connection would result in some reduction of traffic volumes on Highway 20/395 through Burns. It could also serve as an alternate route between the reservation and other businesses besides the casino.

The main disadvantage to constructing this roadway would be acquisition of property. The tribal representative has indicated that they would support the construction of this new roadway and could facilitate property acquisition through the reservation. The Bureau of Indian Affairs (BIA) might also contribute funding to the project.

Cost: The estimated cost for this improvement is about $964,000. This includes constructing a 32-foot-wide roadway with two 12-foot travel lanes and four-foot shoulders on each side of the road.

Recommendation: Constructing the new roadway should be included as part of the street system plan. The new roadway would need to be a combined Harney County and City of Burns project. The Burns Paiute Indian Tribe and the BIA would also be players in the construction of the new street.

6.2.9 Option 9. Create Bike Routes Parallel to US Highway 20/395

Overview: As traffic volumes on US Highway 20/395 continue to increase, bicyclists, particularly young children may prefer to travel on alternative routes with lower traffic volumes. There is a multi-use path that runs parallel to the highway along the old railroad bed between Lottery Lane and Egan Avenue with a connection to Pettibone Avenue in Hines. In addition to this route, several roadways were considered for signing as bike routes.

- *Jackson Street* runs east/west parallel and one block south of Monroe Street. It is a two-lane, local street abutting residential development to the south.
- *Egan Avenue* runs north/south parallel and five blocks west of Broadway Avenue. It is a two-lane, collector street running through residential development and connecting with the Harney District Hospital and Lincoln Junior High School. A parking lot for the multi-use trail that runs along the railroad bed is located at the southern end of Egan Avenue. There is a traffic signal located at the intersection of US Highway 20/395 (Monroe Street) and Egan Avenue.
- *Alvord Avenue* runs north/south parallel and one block west of Broadway Avenue. It is a two-lane, local street running through commercially zoned property.

- *Alder Avenue* runs north/south parallel and one block east of Broadway Avenue. It is a two-lane, local street running through commercially zoned property.
- *D Street* runs east/west parallel and eight blocks north of Monroe Street. It is the northernmost roadway in the Burns grid system to cross Broadway Avenue. It is a two-lane, local street running through residential neighborhoods.

Impacts: Each of these roadways is a two-lane facility that lies within several blocks of US Highway 20/395. Each could serve as an alternate route for local cyclists who may want to access services on US Highway 20/395 but do not wish to travel directly along the highway.

Jackson Street connects with US Highway 20/395 at an unsignalized intersection with fair sight distance. This intersection is unsignalized and a bicyclist traveling west on Jackson Street to south US Highway 20/395 could find it difficult to cross the highway traffic. In the future, this intersection could lie opposite a new improved connection to Monroe Street.

Egan Avenue connects with US Highway 20/395 at a signalized intersection. Although it does not run immediately adjacent to Broadway Avenue, it does serve many of the residential neighborhoods, schools, and the hospital on the north side of Burns. It is also the northern terminus of the multi-use trail running from Lottery Lane in Hines through southern Burns.

Alvord Avenue connects with US Highway 20/395 at an unsignalized intersection one block west of Broadway Avenue. Although it would provide a nearby parallel route through a commercial area, bicyclists would need to cross Monroe Street at a busy intersection without the protection of a traffic signal.

Alder Avenue connects with OR Highway 78 at an unsignalized intersection one block east of Broadway Avenue. It would provide a nearby parallel route through a commercial area but would cross Monroe Street at a much lower volume location than Alvord Street.

D Street connects with US Highway 20/395 at an unsignalized intersection on Broadway Avenue. It would serve as the northern connector between the highway and Egan, Alvord, or Alder Avenue bike routes.

Traffic volumes on all of these roadways are relatively low. Separate bike lanes would not be needed to provide a safe travel route for bicyclists. However, bike lanes could be added by eliminating parking on both sides of streets less than 36 feet wide or limiting parking to one side of the street for roadways between 36 and 44 feet in width. Wider roadways could maintain parking on both sides. These roadways could then be striped with four-foot bike lanes on each side.

Cost: A typical "Bike Route" sign costs about $100. If the bike routes are signed but no additional striping is done, the estimated cost would be under $2,000. If bike lanes were striped on the roadways, approximately 12,000 linear feet of striping would be required at an estimated cost of about $10,000.

Recommendation: Include bike routes on Jackson Street from US Highway 20/395 to Alder Avenue, Egan Avenue from Railroad Avenue to D Street, Alder Avenue from Jackson Street to D Street, and D Street from Egan Avenue to Alder Avenue.

An additional consideration should be taken into account when this option is reviewed for implementation – ODOT has indicated that although creating a bike route may, in theory, be a plausible proposal, the utilization of such a route via signage by bicyclists may be minimal for the City of Burns. Most often bicyclists ride where they feel comfortable and use the route that best serves their destination. The establishment of a designated route system may not fit into the majority of bicyclists' pattern of use or serve their destination point. These items should be considered when reviewing this option for implementation.

6.2.10 Option 10. Improve the Intersection at Monroe Street and Broadway Avenue.

Overview: The intersection at Monroe Street and Broadway Avenue is one of the most traveled intersections in the Burns area. Additionally, US Highway 20/395 shares this same alignment and is designated as both a Statewide Highway and a Freight Route by ODOT. Thus, the use of this intersection by large trucks and other long wheel-based vehicles is increasing. Many observations have shown that the turning movements of these large vehicles (i.e. tractor-trailers, large RVs, etc.) can prove to be a great potential for accidents. Vehicles traveling south on Broadway Avenue and turning west onto Monroe Street have a tight corner to negotiate, thus crossing travel lanes and blocking traffic is often a result. The improvement of this intersection would see an improvement to the radius of this particular corner allowing large vehicles to have an easier experience when making the turn (see Figure 6-4).

Figure 6-4 Monroe Street and Broadway Avenue Intersection Conceptual Drawing (ODOT)

Impacts: The improvement of this intersection will improve the turning movement of large vehicles; making the travel of traffic safer and more convenient for the City of Burns residents and those that travel through this area. The possibility of averting accidents at this intersection is much greater as well as the overall intersection functionality with the improvement of this corner.

Costs: The costs of this improvement are estimated to be $386,000. The majority of the costs are the HAZMAT cleanup and the acquisition of right-of-way

of the land that comprises this corner of the intersection. Other costs of realignment of signals and striping are marginal.

Recommendations: It is recommended to implement this option to improve the turning movement at this highly traveled intersection. An additional consideration is that if the Truck Route option, mentioned above, is implemented before this improvement option the modification of this intersection may be unnecessary. The goal of the Truck Route option is to remove large vehicles from traveling through the downtown area and thus would not make the right hand turn at the intersection of Monroe Street and Broadway Avenue. Thus, this option would be unnecessary if the Truck Route option were to remove the need to modify the corner radius to accommodate large vehicles if the large vehicles were to use a different route. The City recognizes, however, that this corner has been in need of change for some time and that this option could alleviate many concerns and problems that occur when large vehicles are negotiating this intersection. It would be the City's recommendation that this option be implemented as soon as possible.

6.3 Summary

Table 10 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 Burns area.

TRANSPORTATION IMPROVEMENT OPTIONS: RECOMMENDATION SUMMARY

Option	Recommendation
1. Revise Zoning Codes	• Implement
2. Implement TDM Strategies	• Implement
3. Improve the multi-legged intersections	
Alternative 1 – One-Way Streets and Turn Prohibitions	• Do Not Implement
Alternative 2 – New Connection, One-Way Streets, Turn Prohibitions, and Dead Ends	• Implement
Alternative 3 – New Connection and Dead Ends	• Do Not Implement
Alternative 4 – New Connection, Street Closures, and One-Way Streets	• Do Not Implement
4. Improve traffic signal at Hilander Avenue and US Highway 20/395	
Alternative 1 – Modified Signal Operation	• Implement
Alternative 2 – Channelized Right-Turn Lane	• Do Not Implement
5. Construct a truck route parallel to Broadway Avenue	
Alternative 1 – Alder Avenue and D Street	• Do Not Implement
Alternative 2 – Alder Avenue	• Do Not Implement
Alternative 3 – Alder Avenue and Alvord Avenue Couplet	• Do Not Implement
Alternative 4 – Fry Lane and Highway 78	• Implement
6. Construct a bypass around Burns/Hines	
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
7. Improve Monroe Street west of Highway 20/395	• Implement
8. Create a new connection from reservation to Monroe Street	• Implement
9. Create bike routes parallel to Highway 20/395	
Jackson Street – Highway 20/395 to Alder Avenue	• Implement
Egan Avenue – Railroad Avenue to D Street	• Implement
Alvord Avenue - Jackson Street to D Street	• Do Not Implement
Alder Avenue – Jackson Street to D Street	• Implement
D Street – Egan Avenue to Alder Avenue	• Implement
10. Improve intersection at Monroe Street and Broadway Avenue	• Implement

Table 10 – Transportation Improvement Options Recommendations

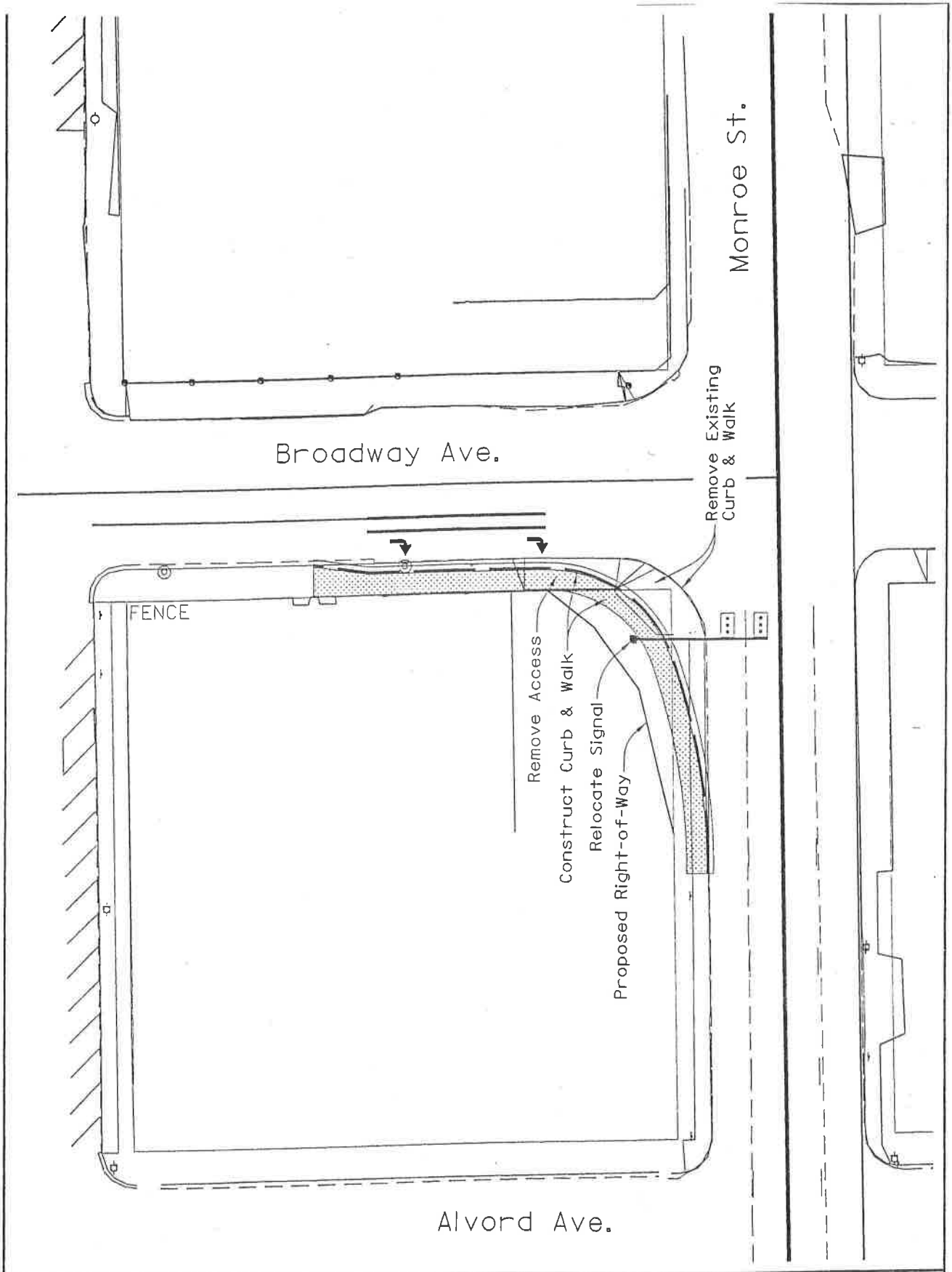

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FIGURE 6-4

Option 10: Monroe Street & Broadway Avenue Intersection Improvement

Chapter

7

7 Transportation System Plan

7.1 Street Design Standards

7.2 Access Management

7.3 Modal Plans

7.4 Transportation System Plan Implementation Program

The purpose of this chapter is to provide detailed operational plans for each of the transportation systems within the City of Burns. The Burns 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.

7.1 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 Burns 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 11. Since the Burns 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.

Figure 7-1, Recommended Street Standards

RECOMMENDED STREET DESIGN STANDARDS

Classification	Pavement Width	Right-of-Way Width	Sidewalks	Parking	Minimum Posted Speed
Minor	32 feet	50 feet	5 feet	Both Sides	15-25 mph
Cul-de-Sac	32 feet	50 feet	5 feet	Both Sides	15-25 mph
Alley	20 feet	20 feet	None	None	15 mph
Collector 1	40 feet	60 feet	6 feet, 2 foot buffer strip	Both Sides	25-35 mph
Collector 2	36 feet	50 feet	6 feet, 2 foot buffer strip	One Side	25-35 mph

Table 11 – Recommended Street Design Standards

7.1.1 Minor Streets

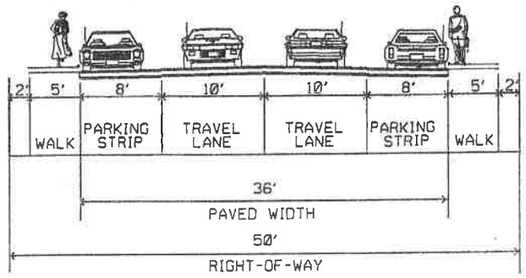
The design of a minor or residential street affects its traffic operation, safety, and livability. The minor street should be designed to enhance the livability of the neighborhood as well as to accommodate less than 1,200 vehicles per day. Design speeds should be 15 to 25 mph. When traffic volumes exceed 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, minor streets should be designed to encourage low speed travel and to discourage through traffic.

The standard for a minor or residential street should be a 32-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. The City recommends the inclusion of sidewalks along all newly constructed or existing minor streets as improvements occur.

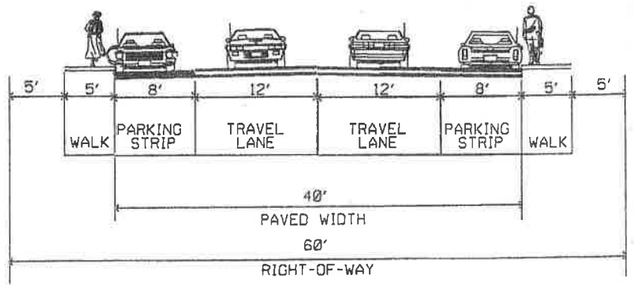
7.1.2 Cul-de-Sac Streets

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 800 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

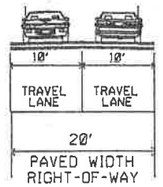
Minor:



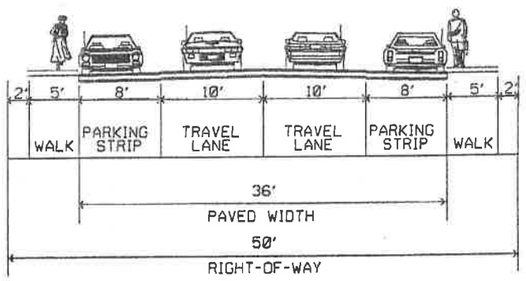
Collector 1:



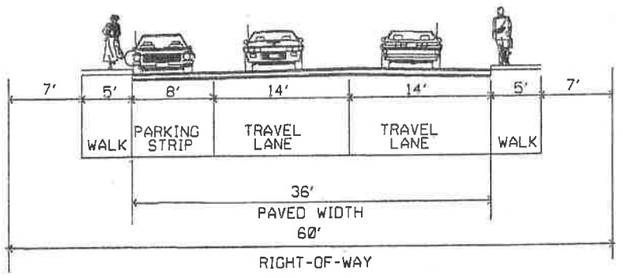
Alley:



Cul-de-Sac:



Collector 2:



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(NOT TO SCALE)

FIGURE 7-1

Recommended Street Standards

City of Burns TSP

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 minor street standard. It should be a 32-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.

7.1.3 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 Burns. Alleys should be 20 feet wide, with a 20-foot right-of-way (see Figure 7-1).

7.1.4 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.

Two collector street options have been identified varying in width and ability to accommodate on-street parking.

Collector 1. This street standard provides a 40-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. Six-foot sidewalks should be provided on each side of the roadway. Additionally, the placement of the sidewalk should include a two-foot buffer strip between the curb and the sidewalk facility. The buffer strip will allow pedestrians to move comfortably along the flow of traffic and can consist of low maintenance plants, gravel, bark, etc.

Collector 2: This Street standard provides 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 only one side of the street. Six-foot sidewalks should be provided on each side of the roadway. Additionally,

the placement of the sidewalk should include a two-foot buffer strip between the curb and the sidewalk facility. The buffer strip will allow pedestrians to move comfortably along the flow of traffic and can consist of low maintenance plants, gravel, bark, etc.

7.1.5 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 streets in Burns are US Highway 20/395 and OR Highway 78. Since ODOT has jurisdiction over these facilities, city standards are not necessary. The widths of pavement, right-of-way and sidewalks are specified in the *1999 Oregon Highway Plan* and are to be referred to as developed along these arterials occur.

7.1.6 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 has traffic volumes high enough to warrant bike lanes.

7.1.6 Sidewalks

A complete pedestrian system should be implemented in the urban portion of Burns. 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 minor and collector streets should have a five or six-foot width respectively. In addition, pedestrian and bicycle connections should be provided between any cul-de-sac and other dead-end streets. It is also recommended that on collector streets a

buffer strip between the curb and the sidewalk of two feet or more should be constructed to allow the comfortable movement of pedestrians along busy roadways. These buffer strips can consist of low maintenance plants, gravel, bark, etc.

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.

7.1.7 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.

7.1.8 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. . The majority of the Burns streets are positioned in a grid pattern. Ensuring that this grid is extended as development occurs is important to Burns' continued livability. Block sizes vary but are typically 240 feet square. The grid system loses its rigidity in the northeast and southwest edges of the urbanized area. The section of US Highway 20/395 along Oregon Avenue and Hines Boulevard, in the southwest quadrant of the city, runs southwest to northeast, forming several skewed intersections within the grid system.

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

7.2 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.

7.2.1 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 spillover 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.

7.2.2 Recommended City of Burns 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 12 describes recommended general access management guidelines by roadway functional classification.

RECOMMENDED CITY ACCESS MANAGEMENT STANDARDS

Functional Classification	Intersections			
	Public Road		Private Drive	
	Type	Spacing	Type	Spacing
Collector	at-grade	250 feet	L/R Turns	100 feet
Minor	at-grade	250 feet	L/R Turns	Access to Each Lot
Alley	at-grade	100 feet	L/R Turns	Access to Each Lot

Table 12 – Recommended Street Design Standards

These access management restrictions are generally not intended to eliminate existing intersections or driveways. Rather, they should be applied as new development occurs. Over time, as land is developed and redeveloped, the access to roadways will meet these guidelines. 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 program that provides reasonable access while maintaining the safety and efficiency of traffic movement.

7.2.3 Access Management on State Highways

Access management is important to promoting safe and efficient travel for both local and long distance users along US Highway 20/395 and OR Highway 78 in the City of Burns. The *1999 Oregon Highway Plan* specifies an access management spacing standards and policies for state facilities.

While the City of Burns may designate state highways as arterial roadways within their transportation system, access management for these facilities follows the Access Management Spacing Standards of the *1999 Oregon Highway Plan*. 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 TSP describes the state highway access management objectives and provides a summary of recommendations from the *Burns and Hines Access Management Plan*, including identification of specific highway segments where special access spacing standards may apply.

The *Burns and Hines Access Management Plan* for the state highway segments within the two cities was completed in January 2001. The purpose of the access management 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.

1. General

US Highway 20/395 through the City of Burns is classified in the *1999 Oregon Highway Plan* as a Statewide Highway. The primary function of these highways is to provide connections to larger urban areas, ports, and major recreation areas of the state not served by freeways. The management objective of Statewide urban highways is to provide high to moderate speed operations with limited interruptions in traffic flow.

OR Highway 78 is classified in the *1999 Oregon Highway Plan* as a District Highway. The primary function of these highways is to provide connections and links between small-urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements.

To assist in implementing state access management standards and policies, the *1999 Oregon Highway Plan* also recognizes that state highways serve as main streets of many communities, such as downtown Burns. Shorter block lengths and a well-developed grid system are important to a downtown area, along with convenient and safe pedestrian facilities. In general, downtown commercial arterial streets typically have blocks 200 to 400 feet long, driveway access sometimes as close as 100-foot intervals and occasionally, crosswalks, along with on street parking. The need to maintain these typical downtown characteristics must be carefully considered along with the need to maintain the safe and efficient movement of through traffic. The *1999 Oregon Highway Plan* (OHP) recognizes the main street function through the designation of Special Transportation Areas (STAs). The OHP also recognizes areas where vehicular accessibility is important to continued 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 Burns. 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 Burns.

2. Special Transportation Area (STA)

A Special Transportation Area (STA) is a designation that may be applied to a state highway, when a downtown, business district or community center straddles the state highway within a community's urban growth boundary. STAs can include central business districts but they do not apply to whole cities or strip development areas along individual highway corridors.

The primary objective of a STA is to provide access to community activities, businesses and residences, and to accommodate pedestrian, and bicycle movements along and across the highway in a compact central business district. A STA designation will allow reduced mobility standards, accommodate existing public street spacing and compact- development patterns, and enhance opportunities to provide improvements for pedestrians and bicyclists in the downtown area. Inclusion in a STA allows for redevelopment with exception to the proposed access management standards.

Access management in STAs corresponds to the existing city block for public road connections and discourages private driveways. However, where driveways are allowed and land use patterns permit, the minimum spacing for driveways is 175 feet or mid-block if the current city block spacing is less than 350 feet. In addition, the need for local street connections may outweigh the consideration of maintaining highway mobility within a STA.

The *Burns and Hines Access Management Plan* includes a recommendation of a STA designation for the segment of US Highway 20/395 between Monroe Street and "D" Street on Broadway Avenue in downtown Burns. Within this eight-block segment, buildings (primarily commercial) are spaced close together, parking is on street, and the posted speed limit is 25 m.p.h. These elements along with a compact development pattern qualify this area for a STA highway segment designation.

Upon adoption of the TSP and the *Burns and Hines Access Management Plan* by the Burns City Council and a finding of compliance with the *1999 Oregon Highway Plan*, the City of Burns and ODOT Region 5 may jointly designate this segment of US Highway 20/395 as an STA through a Memorandum of Understanding (MOU). The MOU will incorporate by reference the TSP, *Burns and Hines Access Management Plan* and the following STA Management Plan provisions.

3. Special Transportation Area Management Plan

The Burns STA is located on the portion of the Central Oregon Highway (US Highway 20/395) routed on Broadway Street between the intersections of Monroe Street (mile point 131.50), and "D" (mile point 131.92) and which is located completely within the urban growth boundary and city limits of the City of Burns.

The primary objective of the Burns STA is to provide access to community activities, businesses and residences, and to accommodate pedestrian, and bicycle movements along and across the highway in the city's central business district.

The designation of an STA in Burns is intended to accommodate the existing public street spacing and compact development pattern. Specific access management conditions for the Burns STA on US Highway 20/395 include:

a) Minimum spacing for public road connections at the current city block spacing of 250 feet.
b) Public road connections are preferred over private driveways. Private driveways are discouraged in an STA.
c) Where land use patterns permit, ODOT will work with the City and property owners to identify appropriate access to adjacent property owners within the STA.
d) Where a right to access exists, access will be allowed to property at less than the designated spacing standard only if the property does not have reasonable alternatives. If possible, other options should be considered, such as joint access.
e) Where a right to access exists, the number of driveways to a single property shall be limited to one. ODOT will work with the City and property owners if additional driveways are necessary to accommodate and service the traffic to the property, and will not interfere with driver expectancy and the safety of through traffic on the highway.
f) Driveways shall be located where they do not create undue interference or hazard to the free movement of normal highway or pedestrian traffic. Locations in areas of restricted sight distance or at points that interfere with the placement and proper functioning of traffic control signs, lighting or other devices that affect traffic operation will not be permitted.
g) If a property is landlocked (no reasonable alternative exists) because a driveway cannot be safely constructed and operated and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. However, if a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT has no responsibility for purchasing the property.

Today, traffic on the state highway within the STA operates at LOS C or better, which correlates to maximum volume to capacity ratio of 0.69. Increase in traffic volumes over the 20-year projection period within the STA will not impact the level-of-service (LOS) or meet the maximum volume to capacity ratio of 0.80 for US Highway 20/395 within the City of Burns' urban growth boundary, except for the signalized intersection of Monroe Street and Broadway Avenue. For the year 2017, the eastbound left-turn, which is the eastbound through movement for US Highway 20/395, will operate at a LOS E, which correlates to maximum volume to capacity of 0.97.

To maintain highway mobility through a STA in Burns, land use development decisions (within the urban growth boundary) shall not cause traffic flow to exceed a volume to capacity ratio of 0.80. An improvement options for signalized intersection of Monroe and Broadway intersection is identified in Chapter 6 of the TSP. The TSP also recommends a truck route that takes trucks completely out of the STA along OR Highway 78 (East Monroe Street) and Fry Lane (a county road) that connects at the US Highway 20/395 junction east of the Burns urban growth boundary. This would eliminate left-turning movements for through trucks at the intersection of Monroe and Broadway. The posted speed limit in the STA is currently and will remain at 25 miles per hour as allowed by state statute in a business district. Parallel curb parking is permitted in the STA, provided minimum sight distance requirements are met for all public road connections and private driveways. Parking in this area is adequate at this time.

The designation of an STA in Burns further identifies the need to accommodate pedestrian, and bicycle movements along and across the highway in the compact central business district. The recommended urban arterial standard within the STA consists of a 70-foot right-of-way with a paved width of 56 feet that includes two 13-foot travel lanes, two 6-foot shared bikeways and a 7-foot parking strip on each side of the road. The standard includes a 13-foot concrete sidewalk on each side of the road. ODOT has recently reconstructed US Highway 20/395 through Burns. This improvement included upgrading sidewalks in the downtown district. There are no other bicycle and pedestrian improvements identified in this area, at this time.

Another essential component to accommodate pedestrians in an STA is street crossings. There are no specific crosswalk enhancements or safety improvements recommended within the STA at this time. Future improvements and modifications to the highway within the STA and within the curb line will be made in accordance with the Oregon Highway Design Manual and with ODOT approval.

Existing maintenance and operational strategies along US Highway 20/395 will be employed within the STA, consistent with Oregon Revised Statute 373.020, as follows:

ODOT shall be responsible for the ongoing maintenance of: a) the roadway surface between curbs, or if no regular established curb, to that portion of right-of-way utilized for highway purposes b) painting centerline stripe, c) designated school crosswalk delineation, directional and regulatory signs except those signs described as the City's responsibility and d) plowing snow one blade-width of centerline stripe provided there are no conflicts with utilities.

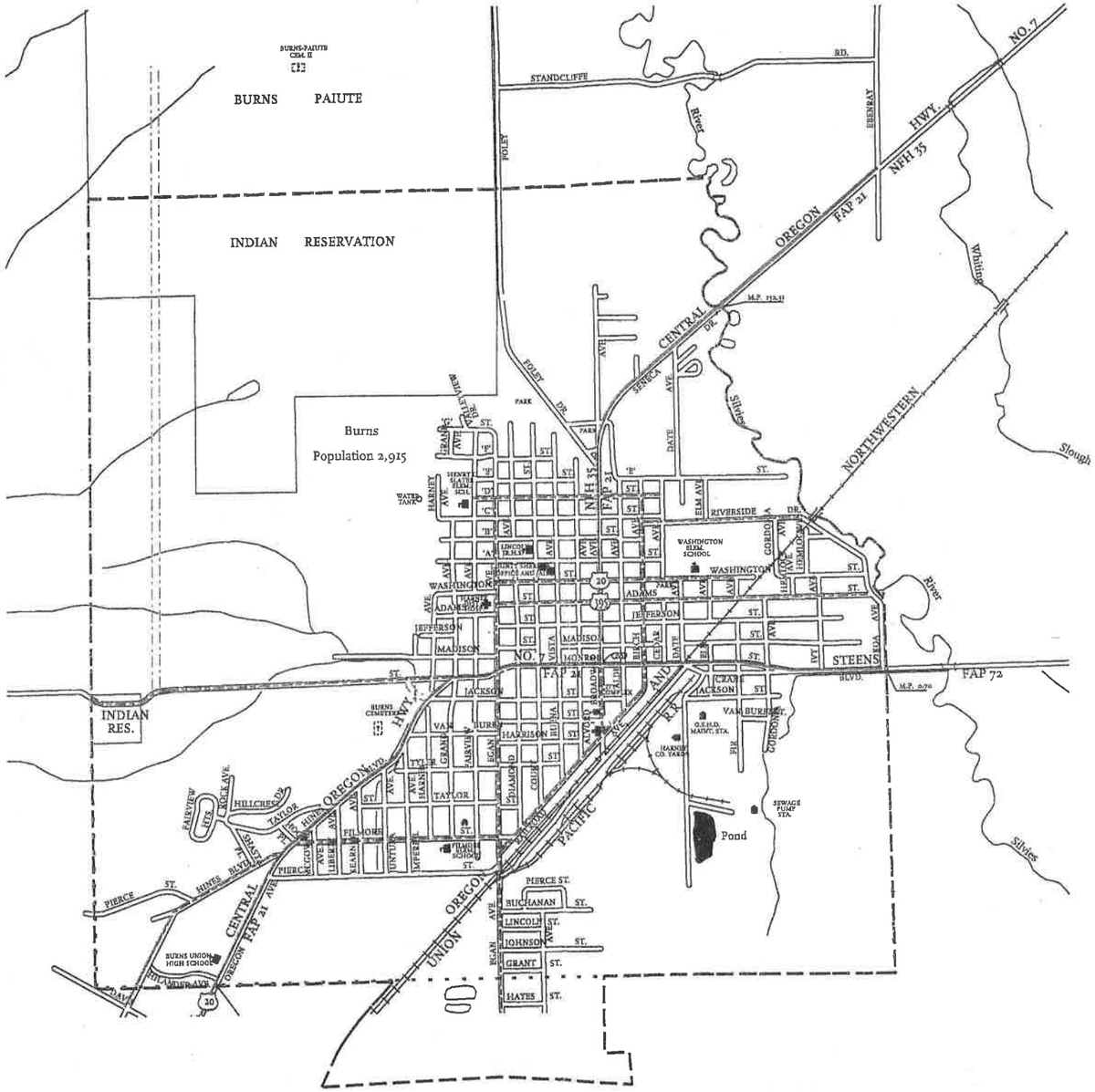
City shall be responsible for the on going maintenance of: a) storm sewer system, b) sidewalks, c) landscaping, d) luminaries, e) U-turn signs, parking signs, and street name signs, f) painting parking-stripes and other pavement delineation not described as ODOT's responsibility, and g) snow removal from parking strip.

Future improvements and modifications to the highway within the STA will include maintenance and operational strategies with ODOT and City approval.

4. Urban Business Area

An Urban Business Area (UBA) is a designation that may be applied to an existing area of commercial activity or future center or node of commercial activity 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 and 350 feet for UBAs on District Highways with posted speeds of 30 or 35 mph.

The *Burns and Hines Access Management Plan* includes a recommendation that the City of Burns consider a UBA designation for the segment of US Highway 20/395 (Hines Blvd/W. Monroe Street) from Harney Avenue (milepost 131.00) to Broadway Avenue (milepost 131.50) and for OR Highway 78 (E. Monroe Street) from Broadway Avenue (milepost 0.00) to Gordonia Avenue (milepost 0.041). Upon adoption of the TSP by the Burns City Council and a finding of compliance with the *1999 Oregon Highway Plan*, the City of Burns may pursue ODOT designation of these segments as a UBA.



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

FIGURE 7-2

Recommended Street System

City of Burns TSP

HARN0001/BURN7-2.DGN/TNT/03-20-01

7.3 Modal Plans

The Burns 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 Burns during the next 20 years assuming the growth projections discussed in Chapter 5. The implementation of individual improvements will be guided by the changes in land use patterns and population growth in future years. Specific projects and improvement schedules may need to be adjusted depending on when and where growth occurs within Burns.

7.3.1 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 Burns during the next 20 years.

Figure 7-2, Recommend Street System

1. 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 and OR Highway 78 as the only arterial streets in Burns. The following street segments are currently classified as collector streets:

- D Street - Fairview Avenue to Cedar Avenue
- Riverside Drive - Birch Avenue to Hemlock Avenue
- Washington Street - Egan Avenue to Fir Avenue
- Adams Street - Egan Avenue to Koa Avenue
- Filmore Street - Hines Boulevard (US Highway 20/395) to Egan Avenue
- Railroad Avenue - Egan Avenue to Birch Avenue
- Egan Avenue - D Street to Hayes Street

The street system plan would include the addition of several new collector streets. Many of these roadways already collect and distribute traffic in Burns along a variety of minor roadways 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:

- Monroe Street - Burns Paiute Indian Reservation (Old Camp Casino property) to Hines Boulevard (US Highway 20/395)

- Broadway Avenue - Monroe Street (US Highway 20/395) to Railroad Avenue
- Birch Avenue - D Street to Railroad Avenue
- Hines Boulevard - Saginaw Avenue to Oregon Avenue (US Highway 20/395)
- Saginaw Avenue - Burns' city limits to Hines Boulevard
- Hilander Avenue - Saginaw Avenue to Oregon Avenue (US Highway 20/395)

The Hines Boulevard/Saginaw Avenue collector classification would tie into the classification system for the City of Hines.

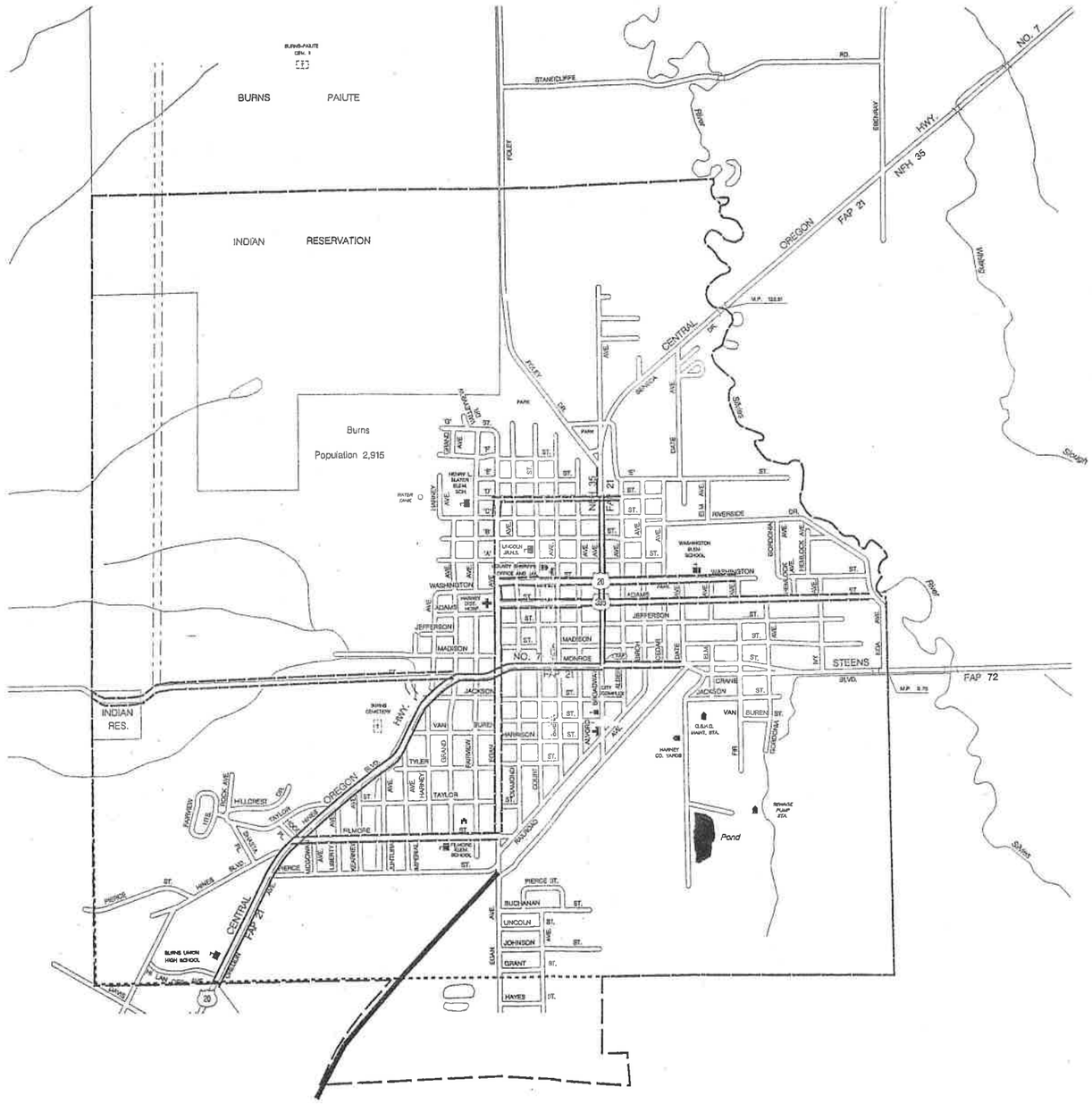
2. Street Improvement Projects

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

- *Multi-Legged Intersections on US Highway 20/395* - Make Monroe Street a one-way street westbound between Grand Avenue and Harney Avenue. Create a new connection from Monroe Street west of Harney Avenue to Hines Boulevard at Jackson Street. Stub off Harney Avenue both north and south of Hines Boulevard so that it has no connection with Hines Boulevard. Limit Grand Avenue northbound at Monroe Street to right turns only. (Estimated Cost = $84,000)
- *Hilander Avenue and US Highway 20/395* - Modify the traffic signal phasing to detect right-on-red movements. (Estimated Cost = $0)
- *Monroe Street* - Upgrade Monroe Street to a Collector 2 (36-foot pavement with sidewalks) standard. (Estimated Cost = $375,000)
- *Truck Route* - Create a truck route along Fry Lane and OR Highway 78 in cooperation with Harney County and ODOT. (Estimated Cost = $681,000)
- *New Roadway* - Create a new connection from the Main Burns Paiute Indian Reservation to Monroe Street in cooperation with Harney County, the Burns Paiute Tribe, and the Bureau of Indian Affairs. (Estimated Cost = $1,030,000)
- *Improve the Intersection at Monroe Street and Broadway Avenue* – Provide a better turning radius for large vehicles traveling south on Broadway Avenue and turning right onto Monroe Street.

3. 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.



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LEGEND:

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

FIGURE 7-3

Recommended Pedestrian System

HARN0001/BURN7-3.DGN/TNT/03-20-01

The final 1998 to 2001 Statewide Transportation Improvement Program, published in December 1997, identified one improvement project which will affect the City of Burns and went out for contract in 1999 and has been completed: the Silvies River Bridge to US Highway 395 Junction project. This project included repaving US Highway 20/395 from the Burns' city limits to the north junction of the highways. It also involved upgrading sidewalks and widening shoulders as needed along the highway. ODOT also improved the "S" curve on Monroe Street as part of this project. This project was identified in the 1997 program with construction beginning in 1998 and ending in 1999.

There are currently no projects slated for the City of Burns in the 2000-2003 State Transportation Improvement Program.

7.3.2 Pedestrian System Plan

A complete pedestrian system should be implemented in the city. Every paved street shall 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.

A sidewalk inventory revealed that the downtown core of Burns has fairly good sidewalk coverage along US Highway 20/395, although curb cuts for wheelchair access are generally lacking. Some of the collector roadways intersecting the highway also have sidewalks but the majority of the existing roadways do not have sidewalks, or sidewalks are segmented and curb cuts are lacking.

Six roadways have been identified for sidewalk improvement projects in Burns, as shown in Figure 7-3.

Figure 7-3, Recommended Pedestrian System

- *D Street* - Construct sidewalks on both sides of the roadway from Egan Avenue to Alder Avenue. (Estimated Cost = $75,000)
- *Washington Street* - Construct sidewalks on both sides of the roadway from Egan Avenue to Buena Vista Avenue and from Alder Avenue to Fir Avenue. (Estimated Cost = $35,000 and $65,000 for each segment respectively with a total cost of $100,000)
- *Adams Street* - Construct sidewalks on both sides of the roadway from Egan to Alvord Avenue and from Alder to Ivy Avenue. (Estimated Cost = $50,000 and $125,000 for each segment respectively with a total cost of $175,000)
- *Monroe Street (OR Highway 78)* - Construct sidewalks on both sides of the roadway from Broadway Avenue (Highway 20/395) to Date Avenue. (Estimated Cost = $50,000)

- *Filmore Street* - Construct sidewalks on both sides of the roadway from Oregon Avenue (US Highway 20/395) to Egan Avenue. (Estimated Cost = $130,000)
- *Egan Avenue* - Construct sidewalks on both sides of the roadway from Filmore Street to Monroe Street (US Highway 20/395), from Monroe Street (Highway 20/395) to Madison Street, and from Adams Street to D Street. (Estimated Cost = $105,000, $15,000, and $65,000 for each segment respectively with a total cost of $185,000)

In addition to these improvements, ODOT has recently reconstructed US Highway 20/395 through the City of Burns. This improvement included upgrading sidewalks and widening shoulders as needed along the highway.

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 is assuming 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.

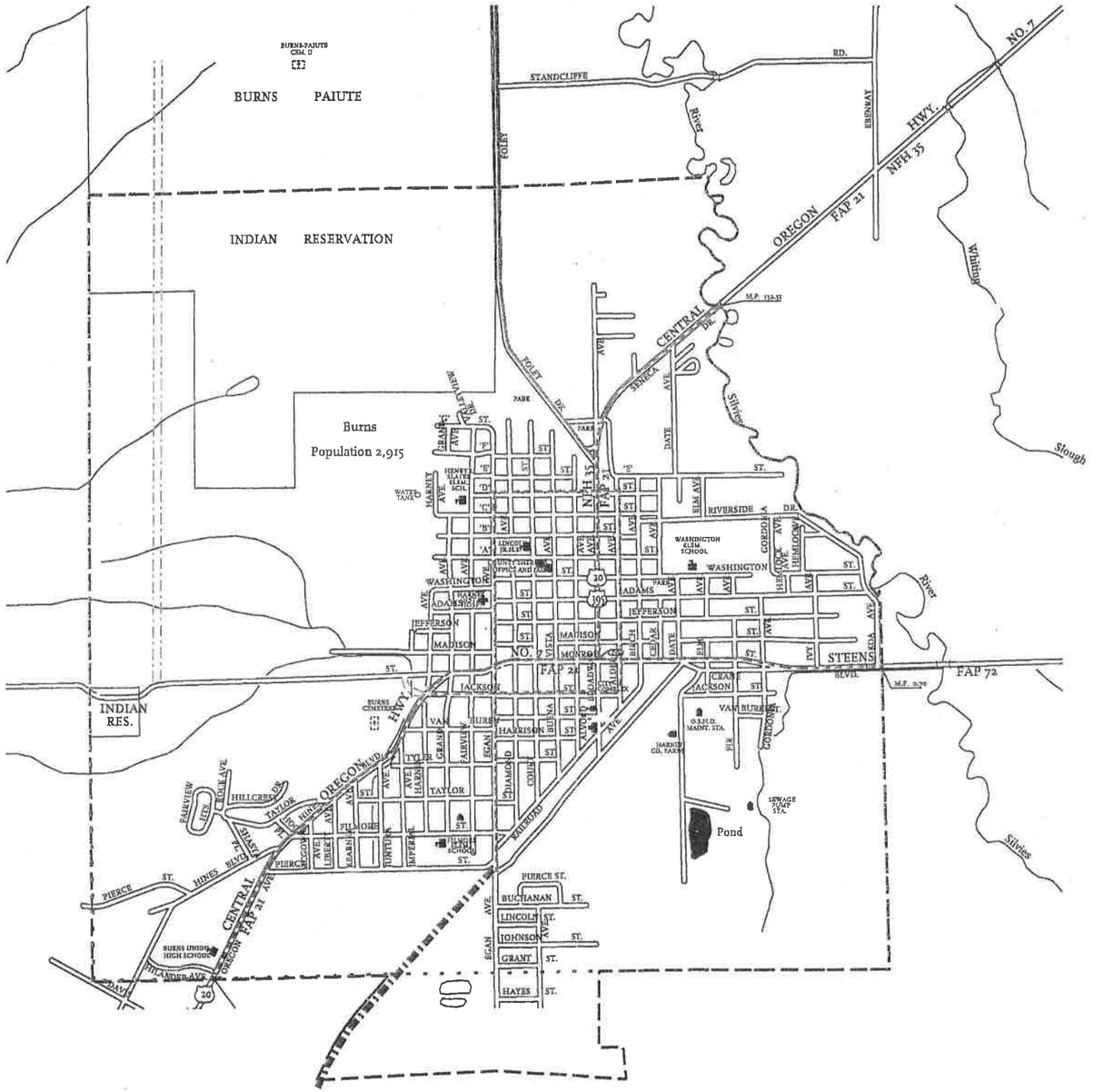
Because of the relatively low traffic volumes on most roadways in Burns, asphalt pathways could be provided instead of concrete sidewalks. In general, asphalt pathways are a lower cost alternative to concrete sidewalks. Construction costs for asphalt pathways are about 40 percent of the costs for sidewalks;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

7.3.3 Bicycle System Plan

Four new, shared roadway bike routes have been identified for bicycle system improvement projects in Burns, as shown in Figure 7-4. These bike routes would all run parallel to US Highway 20/395 providing a non-highway route for local cyclists to travel around town. The combined cost of these improvements is estimated at $2,000 for route signage.

Figure 7-4, Recommended Bikeway System

- *Jackson Street* - Create a shared roadway bike route from Highway 20/395 to Alder Avenue.
- *Egan Avenue* - Create a shared roadway bike route from Railroad Avenue to D Street.



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LEGEND:

- URBAN GROWTH BOUNDARY
- CITY LIMITS
- BIKE LANES
- SHARED BIKEWAY
- FUTURE MULTI-USE PATH
- NEW STREET

FIGURE 7-4

Recommended Bikeway System

City of Burns TSP

HARN0001/BURN7-4.DGN/TNT/03-20-01

- *Alder Avenue* - Create a shared roadway bike route from Jackson Street to D Street.
- *D Street* - Create a shared roadway bike route from Egan Avenue to Alder Avenue.

Shared roadways, where bicyclists share normal vehicle lanes with motorists, are generally acceptable if speeds and traffic volumes are relatively low; therefore, the above routes have not included bike lanes striped on the roadway. When future traffic volumes exceed 2,500 to 3,000 vehicles per day, bike lanes should be added to the existing roadways.

Bicycle parking is generally lacking in Burns. 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 Burns can begin to place racks where needs are identified and to respond to requests for racks at specific locations.

7.3.3 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 Burns, 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 is also considered TDM strategies. By providing these facilities, the City of Burns 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 flextime 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.

7.3.4 Public Transportation Plan

The City of Burns has several existing local public transportation services available and limited long distance service.

1. Local Service

Existing public transportation includes the senior citizen and disabled dial-a-ride service provided by the Harney County Senior Center Transportation and Little Joe's Taxi Service.

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

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.

2. Long Distance Service

Currently, the Harney County Senior Center provides long distance service to Bend twice a month. Senior center staff indicated that 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.

In March 2000, an Amtrak Thruway Motor Coach 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 Motor Coach 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. Portland is the temporary western terminus of the initial route, which crosses the Cascades via the Santiam Pass. The second Willamette Valley corridor Amtrak train began service from Portland to Eugene in July 2000; the western segment of the bus route was cut back to Salem. This change did not affect the bus route or service through Harney County.

The buses, privately operated motor coaches, make three round-trips each week. Motor coaches operate eastbound on Monday, Thursday and Saturday and westbound on Tuesday, Friday and Sunday. Amtrak handles the reservation and ticketing service for the route with help from local businesses. 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 biennium that ends

June 30, 2001. The goal of this effort is to build a customer base that will support incremental expansion of motor coach 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.

7.3.5 Rail Service Plan

The City of Burns has no rail service. However, the Eastern Oregon Amtrak Thruway Motor Coach provides direct service to the Amtrak rail system with a regularly scheduled stop in Burns.

7.3.6 Air Service Plan

Burns is served locally by the Burns Municipal Airport, which falls under the jurisdiction of the City. 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.

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.

7.3.7 Pipeline Service Plan

There are currently no pipelines serving the City of Burns.

7.3.8 Water Transportation Plan

The City of Burns has no waterborne transportation services.

7.4 Transportation System Plan Implementation Program

Implementation of the Burns 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 Burns 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 Burns 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 to the requirements of the Transportation Planning Rule is available. 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 Harney County Court.

7.4.1 20-Year Capital Improvement Program

The 20-Year Capital Improvement Program includes street, pedestrian, and bikeway improvement projects, as shown in Table 13. The cost of each project listed in the CIP is shown in (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. The City adopted the CIP by Resolution to enable the City to update the CIP as needed without amending the Comprehensive Plan. The City adopted the original CIP in June 2001 with anticipated modifications to come in the future.

Burns has identified a total of seventeen projects in its CIP with a total cost of about $3 million. Six street improvement projects have been identified with a cost of over $1.3 million. Seven pedestrian improvement projects have been identified with a cost of about $665,000. Four bikeway improvement projects have been identified with a cost of about $2,000.

It should be noted that neither the City of Burns nor contributing agencies guarantee funding to complete the projects listed in the following table. The City may want to review and prioritize the projects differently in the future to allow decision makers to earmark funds when resources do become available.

CAPITAL IMPROVEMENT PROGRAM (1998) DOLLARS

Project Description with Priority Listed	Estimated Cost			
	Local	County	State	Total
Street Improvement Projects				
2 - Improve the multi-legged intersections on Highway 20/395 by making changes to Monroe Street, Harney Avenue, and Grand Avenue (1)	$42,000	$0	$42,000	$84,000
3 - Modify the traffic signal phasing at Hilander Avenue and Highway 20/395 to detect right-on-red movements	$0	$0	$0	$0
1 - Create a truck route along Fry Lane and Highway 78 in cooperation with Harney County and ODOT (2)	$0	$687,000	$0	$687,000
4 - Upgrade Monroe Street to a Collector 2 (36-foot pavement with sidewalks) standard	$577,000	$0	$0	$577,000
5 - Create a new connection from the Main Burns Paiute Indian Reservation to Monroe Street (3)	$482,000	$482,000	$0	$964,000
6 - Improve the intersection at Monroe Street/Broadway Avenue	$200,000	$0	$186,000	$386,000
Pedestrian Improvement Projects				
2 - Construct sidewalks on both sides of Egan Avenue from Monroe Street (Highway 20/395) to Madison Street	$15,000	$0	$0	$15,000
3 - Construct sidewalks on both sides of D Street from Egan Avenue to Alder Avenue	$75,000	$0	$0	$75,000
6 - Construct sidewalks on both sides of Washington Street from Egan Avenue to Buena Vista Avenue and Alder Avenue to Fir Avenue	$100,000	$0	$0	$100,000
7 - Construct sidewalks on both sides of Adams Street from Egan to Alvord Avenue and from Alder to Ivy Avenue	$175,000	$0	$0	$175,000
4 - Construct sidewalks on both sides of Monroe Street (Highway 78) from Broadway Avenue (Highway 20/395) to Date Avenue	$0	$0	$50,000	$50,000
5 - Construct sidewalks on both sides of Filmore Street from Oregon Avenue (Highway 20/395) to Egan Avenue	$130,000	$0	$0	$130,000
1 - Construct sidewalks on both sides of Egan Avenue from Filmore Street to Monroe Street (Highway 20/395) and Adams Street to D Street.	$170,000	$0	$0	$170,000
Bikeway Improvement Projects				
2 - Create a shared roadway bike route on Jackson Street from Highway 20/395 to Alder Avenue	$500	$0	$0	$500
3 - Create a shared roadway bike route on Egan Avenue from Jackson Street to Railroad Avenue	$500	$0	$0	$500
4 - Create a shared roadway bike route on Alder Avenue from Jackson Street to D Street	$500	$0	$0	$500
1 - Create a shared roadway bike route on D Street from Egan Avenue to Alder Avenue	$500	$0	$0	$500
Subtotal Street Improvement Projects	**$1,301,000**	**$1,169,000**	**$228,000**	**$2,698,000**
Subtotal Pedestrian Improvement Projects	**$665,000**	**$0**	**$50,000**	**$715,000**
Subtotal Bikeway Improvement Projects	**$2,000**	**$0**	**$0**	**$2,000**
Total	**$1,968,000**	**$1,169,000**	**$278,000**	**$3,415,000**

Notes:

(1) The improvements to the multi-legged intersections on Highway 20/395 affect both the city and state roadway facilities; therefore, the funding has been shown as split between Burns and the state.

(2) Most of the improvements to create the truck route on Fry Lane and Highway 78 would involve the county road; however, the state may be willing to contribute some funding, especially for the relocation of the weigh station.

(3) The new connection from the reservation to Monroe Street would affect the city and county; therefore, the funding has been shown as split between Burns and the county. The Burns Paiute Indian Tribe and Bureau of Indian Affairs may also contribute to the construction costs.

Table 13 – Capital Improvement Program

Chapter

8

8 Funding Options

The Transportation Planning Rule 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. Burns' TSP identifies over $3.4 million in 17 specific projects over the next 20 years. This section of the TSP provides an overview of Burns' revenue outlook and a review of some funding and financing options that may be available to the City of Burns to fund the improvements.

Pressures from increasing growth throughout much of Oregon have created an environment of estimated improvements that remain unfunded. Burns 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 Burns will grow at an annual rate of between 0.3 and 0.35 percent. If population growth exceeds this rate, the improvements may need to be accelerated. Slower than expected growth will relax the improvement schedule and provide additional time to achieve the desired outcomes from these specified projects.

8.1 Historical Street Improvement Funding Sources

In Oregon, state, county, and city jurisdictions work together to coordinate transportation improvements. Table 14 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.

SOURCES OF ROAD REVENUES BY JURISDICTION LEVEL

Revenue Source	Jurisdiction Level			Statewide Total
	State	County	City	
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.

Table 14 – Sources of Road Revenues by Jurisdiction Level

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.

8.1.1 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 Table 15 and Table 16.

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.
Table 15 – Harney County Transportation Related Revenues

As shown in Table 15, 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.

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.

Table 16 – Harney County Transportation Related Expenditures

As shown in Table 16, 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.

8.1.2 Historical Revenues and Expenditures in the City of Burns

The City of Burns accounts for its revenues and expenditures for streets in two separate funds: the State Tax Street Fund and the Street Fund. Revenues and expenditures for the City of Burns' streets are shown in Table 17 and Table 18. Sources of revenues available for street operations and maintenance include the state highway fund, federal forest receipts, interest from the working capital balance, and grants for specific projects.

CITY OF BURNS STATE TAX STREET FUND REVENUES

	1994-1995 Actual	1995-1996 Actual	1996-1997 Actual	1997-1998 Budget	1998-1999 Budget
Beginning Fund Balance	$387,873	$261,415	$279,001	$162,700	$73,119
Revenue					
Interest	$19,410	$24,376	$11,348	$9,000	$7,000
State Receipts	$130,903	$132,179	$128,614	$130,656	$136,344
Timber Receipts	$243,000	$200,000	$135,000		
Small Cities Allotment Grant		$25,000		$25,000	
Misc. Revenue	$42,981	$5,000	$25,000		
ISTEA Grant N. Broadway				$250,000	
Bike Path- Foley Drive			$12,000		
Forest Service Grant				$30,000	$30,000
Regional Strategies					$25,000
Total Revenues	**$436,294**	**$386,555**	**$311,962**	**$444,656**	**$198,344**

Source: City of Burns

Table 17 – City of Burns State Tax Street Fund Revenues

As shown in Table 17, funds from the State Highway Fund and Timber Receipts provide a large proportion of the revenues available to the City of Burns' State

Tax Street Fund. As noted in the discussion of Harney County's revenues, the timber receipts are expected to decline, increasing the city's reliance on the State Highway Fund.

CITY OF BURNS STATE TAX STREET FUND EXPENDITURES

	1994-1995 Actual	1995-1996 Actual	1996-1997 Actual	1997-1998 Budget	1998-1999 Budget
Expenditures					
Materials and Services	$452,448	$218,230	$283,263	$429,500	$426,500
Capital Outlay	$109,407	$150,739	$82,734	$109,400	$5,000
Other Expenses				$68,456	$104,963
Total Expenditures	**$561,854**	**$368,969**	**$365,997**	**$607,356**	**$536,463**

Source: City of Burns

Table 18 – City of Burns State Tax Street Fund Expenditures

Over one-half of the Street Fund expenditures are used for maintenance, with some resources (an average of $115,000 for years 1994-1995 through 1996-1997) available for capital outlay street construction projects.

In general, the State Tax Street Fund captures expenditures related to maintenance and capital improvements. The Street Fund captures overall expenditures related to personnel, as well as some incidental materials and services, as shown in Table 19.

CITY OF BURNS STREET FUND EXPENDITURES

	1994-1995 Actual	1995-1996 Actual	1996-1997 Actual	1997-1998 Budget	1998-1999 Budget
Expenditures					
Personal Services	$68,532.30	$87,747.72	$86,863.40	$99,448.00	$105,108.00
Materials and Services	$16,423.20	$23,012.98	$24,228.14	$26,500.00	$35,000.00
Capital Outlay		$1,730.50	$1,093.00	$3,000.00	
Other Expenses	$15,500.00	$15,500.00	$15,500.00		$15,500.00
Total Expenditures	**$100,455.50**	**$127,991.20**	**$127,684.54**	**$128,948.00**	**$155,608.00**

Source: City of Burns.

Table 19 – City of Burns Street Fund Expenditures

8.1.3 Transportation Revenue Outlook in the City of Burns

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:

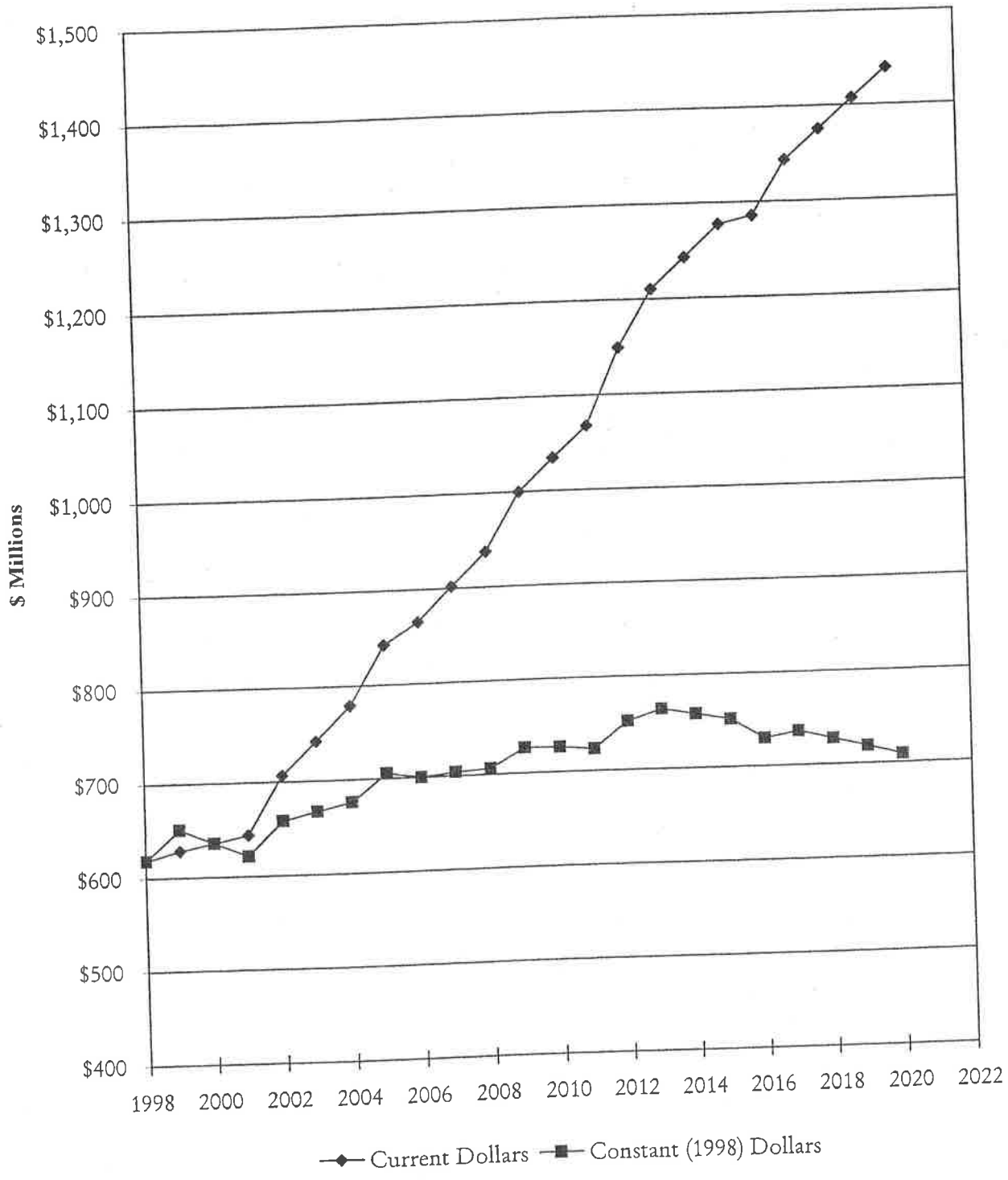
- Fuel tax increases of 1 cent per gallon per year (beginning in year 2002), with an additional 1 cent per gallon every fourth year
- Vehicle registration fees would be increased by $10 per year in 2002, and by $15 per year in year 2012
- Revenues will fall halfway between the revenue-level generated 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)

Table 21(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.

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 Burns, the city is highly susceptible to changes in the State Highway Fund. From 1994 to 1998, the State Highway Fund supplied over 30 percent of Burns' total street fund revenue. Together with the federal timber receipts, the state highway fund accounted for over 85 percent of all revenue sources.
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 to 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



Source: Oregon Department of Transportation

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

FIGURE 8 1

State Highway Fund
(in Millions of Dollars)

City of Burns TSP

Based on these assumptions, resources from the State Highway Fund available to the City of Burns for all operations, maintenance, and capital outlay purposes are estimated at approximately $122,000 to $150,000 annually (in 1998 dollars), as shown in Table 20.

ESTIMATED RESOURCES AVAILABLE TO CITY OF BURNS FROM STATE HIGHWAY FUND, 1998 DOLLARS

Year	Total Estimated Resources from State Highway Fund	Estimated Funds Available for Capital Outlay
1999	$128,100	$57,400
2000	$125,200	$56,100
2001	$122,300	$54,800
2002	$129,600	$58,100
2003	$131,400	$58,900
2004	$133,100	$59,600
2005	$138,900	$62,200
2006	$137,800	$61,700
2007	$138,600	$62,100
2008	$139,100	$62,300
2009	$143,100	$64,100
2010	$143,000	$64,100
2011	$142,400	$63,800
2012	$148,000	$66,300
2013	$150,400	$67,400
2014	$149,200	$66,800
2015	$147,900	$66,300
2016	$143,700	$64,400
2017	$145,000	$65,000
2018	$143,200	$64,200

Table 20 – Estimated Resources Available To City of Burns From State Highway Fund, 1998 Dollars

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 Burns (since the distribution of state highway funds is based on an allocation formula which includes population)

Based on the amount of resources historically available to fund capital improvements this analysis suggests that the City of Burns will have between $55,000 and $66,000 available annually for capital improvements.

8.2 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 passage of Measure 47. The alternative revenue sources described in this section may not all be appropriate in Burns, however this overview is being provided to illustrate the range of options currently available to finance transportation improvements during the next 20 years.

8.2.1 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.

Oregon voters passed Measure 47, an initiative petition, 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. Voters approved this revised tax measure in May 1997.

The League of Oregon Cities estimated that direct revenue losses to local governments, including school districts, totaled $467 million in fiscal year 1998, $553 million in 1999, and continues to increase thereafter. The actual revenue losses to local governments depend on actions of the Oregon Legislature. They also estimated that the state had revenue gains of $23 million in 1998, $27 million in 1999, and will continue to 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.

8.2.2 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 Burns does not result from new development or capacity constraints, system development charges could not be used to fund them.

8.2.3 State Highway Fund

All counties and cities, to fund street and road construction and maintenance, use gas tax revenues received from the State of Oregon 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 Burns uses its State Gas Tax allocation to fund street construction and maintenance.

8.2.4 Local Gas Taxes

The Oregon Constitution permits counties and incorporated cities to levy additional local gas taxes with the stipulation that the moneys generated from the taxes will be dedicated to street-related improvements and maintenance within the jurisdiction. At present, only a few local governments (including the cities of Woodburn and The Dalles and Multnomah and Washington Counties) levy a local gas tax. The City of Burns 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 Burns 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.

8.2.5 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.

8.2.6 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 is 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 Local Improvement Ordinance only limits the types of allocation methods. 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.

8.2.7 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 Burns.

All of the following programs provide financial assistance to local jurisdictions for transportation projects and related activities. The brief program descriptions are intended to give introductory information on selected characteristics of each program. Some of these programs are operated by ODOT while others are

operated jointly with other state agencies. Not all of those listed below are applicable for the City of Burns, but are left in the listing to show what funding is generally available. Only those programs where the city is eligible are described further and are marked with an asterisk (*):

Capital Assistance Program (Section 5310)
Congestion Mitigation and Air Quality Improvement (CMAQ)
Emergency Relief Program (ER)
* Highway Bridge Rehabilitation or Replacement (HBRR)
* Immediate Opportunity Fund (IOF)
National Scenic Byways Program
* Oregon Transportation Infrastructure Bank (OTIB)
Public Transit Set-Aside of STP Funds
Public Lands Highways Discretionary Program
* Small Cities and Rural Areas Program (Section 5311)
*Special City Allotment Program
Special County Allotment Program
* Special Transportation Fund (STF)
* State and Local STP Fund Exchange Program
* State Bicycle and Pedestrian Grants
* STP Set Aside for Safety; Hazard Elimination Program (HEP)
Surface Transportation Program (STP)
* Transportation Enhancement Program (TE)
* Transportation Growth Management Program
* Transportation Safety
* Oregon Public Works Fund

The program's source of funding, either federal or state, may be of particular interest since the type of funding involved determines most of the program requirements. Federally funded programs are governed by strict federal requirements. Some of the relevant federal requirements are summarized within the program descriptions. More current and comprehensive information on federal requirements is available at the appropriate web site: for Federal Highway Administration, http://www.fhwa.dot.gov/: and for Federal Transit Administration, http://www.fta.dot.gov/. State-funded programs are primarily funded from state highway fund revenues. The Oregon State Constitution and various state laws govern these expenditures.

1. Highway Bridge Rehabilitation or Replacement (HBRR)

The purpose of HBRR funding is to replace or rehabilitate roadway bridges over waterways, other topographical barriers, other roadways, railroads, canals, ferry landings, etc., when those bridges have been determined deficient because of structural deficiencies, physical deterioration, or functional obsolescence.

These funds are used for replacement or rehabilitation of local bridges, both "on" and "off" the federal-aid highway system. ODOT develops a list of eligible bridges every one or two years from the Bridge Management System. The Bridge owners submit a list of bridges they would like considered. The Local Bridge Review Selection Committee reviews and prioritizes the bridges based on a technical ranking system. HBRR funds can be used for:

- The total replacement of a structurally deficient or functionally obsolete highway bridge on any public road with a new facility constructed in the same general traffic corridor.
- The rehabilitation that is required to restore the structural integrity of a bridge on any public road, as well as the rehabilitation work necessary to correct major safety (functional) defects.
- Bridge painting, seismic retrofitting.

By agreement, ODOT provides half the required 20% non-federal match, leaving the local government responsible for only 10% of the project costs.

ODOT Contact: Ivan Silbernagel, 503-986-3399, Interim Bridge Operations Managing Engineer, Bridge Section, Technical Services Branch.
Annual Amount: $19,000,000 for Local Agency bridges.
Match Requirements: In Oregon, 80% HBRR funds are matched with 10% local (non-federal funds) and 10% state funds.
Program Rules: 23 U.S.C. 144
Eligible Uses: Qualifying bridge repair and replacement
Eligible Recipients: Non-less than 15% is to be spent on bridges off of the Federal-aid highway system (i.e., bridges on local roads and rural minor collectors). Up to 85%, but not less than 65% is to be spent for bridges on the Federal-aid highway system.
Project Selection Process: Projects programmed for funding are listed in the Statewide Transportation Improvement Program (STIP).
Web Site: http://www.odot.state.or.us/tsbbridgep

2. Immediate Opportunity Fund (IOF)

Immediate Opportunity Funds are available to support economic development in Oregon through the construction and improvement of public streets and roads in support of plant locations and other immediate opportunities. The maximum available to the Immediate Opportunity Fund is $7 million per year. The fund is separated into two categories:

- Type A projects support specific economic development activities that affirm job retention and create job opportunities. A qualifying project can receive up to $500,000.

- Type B projects focus on the revitalization of business or industrial centers to support economic development and quality development objectives. A qualifying project can receive up to $250,000.

Both types of projects require a 50 percent match from public or private sources. Funding requests are made through the Oregon Economic and Community Development Department's (OECDD) Regional Development Officer and coordinated with ODOT Regional offices. Forma recommendations for approval are made by the OECDD and ODOT directors to the Oregon Transportation Commission based on economic merit, transportation need and quality development objectives. Annual funding is set at $7 million; unused balances are returned annually to the Statewide Transportation Improvement Program.

Program Contact: 503-986-0110, OECDD Office of the Director can provide referrals to the regional contact for your area.
Annual Amount: Up to $7,000,000; project limits of either $500,000 or $250,000.
Match Requirements: 50/50; 50% IOF funds matched with 50% local funds.
Program Rules: Policy guidelines are available upon request.
Eligible Uses: Policy guidelines are available upon request.
Eligible Recipients: Cities and counties.
Project Selection Process: Oregon Economic and Community Development Department receives initial applications, final decisions are by the Oregon Transportation Commission.
Web Site: http://www.econ.state.or.us

3. Oregon Transportation Infrastructure Bank (OTIB)

The Oregon Transportation Infrastructure Bank provides loans and other forms of financial assistance to local jurisdictions for Federal-aid eligible highway and for Title 49 eligible transit capital projects. Projects must meet appropriate planning, programming, design and contracting requirements. Applications are evaluated and ranked on ten criteria by OTIB staff and a Regional Advisory Committee. The Chief Financial Officer makes formal recommendations for approval to the Oregon Transportation Commission. The bank was initially capitalized with $10 million of federal and state highway funds. An additional $5.51 million of federal funds has also been awarded to the OTIB.

ODOT Contact: John Fink, 503-986-3922, Oregon Transportation Infrastructure Bank, Financial Services Branch.
Annual Amount: Determined by local agency need.
Match Requirements: OTIB loans can finance up to 100% of eligible project costs.
Program Rules: Code of Federal Regulations (CFR) Title 23 and state requirements governs highway Federal-aid projects. Code of Federal Regulations (CFR) Title 49 and state requirements applies to transit capital projects.

Eligible Uses: Federal-aid highway (Title 23) and transit capital (Title 49) projects.
Eligible Recipients: Cities, counties, special districts (including transit, transportation, and port districts) state agencies and tribal governments.
Project Selection Process: Projects are ranked on established criteria; the Oregon Transportation Commission makes final decisions.
Web Site: http://www.odot.state.or.us/fsbpublic/otib.htm

4. Small Cities and Rural Areas Program (Section 5311)

The Public Transit Division of ODOT operates the Small Cities and Rural Areas Program, which is funded by the Federal Transit Administration (FTA). The program provides funds (by formula) to eligible recipients for general public transit service. Local public bodies providing service to areas of less than 50,000 population are eligible recipients. Funds are awarded annually and disbursed quarterly. More than $2,000,000 per year is available.

ODOT Contact: Kathy Straton, 503-986-3408, Public Transit Division
Annual Amount: More than $2,000,000 annually.
Match Requirements: 80/20; 80% federal funds matched with 20% local (non-federal) funds for "capital" projects; 50% match required for "operations" expenditures.
Program Rules: Code of Federal Regulations (CFR) Title 49
Eligible Uses: Transportation services for the general public.
Eligible Recipients: Transit providers serving rural areas of less than 50,000 population.
Project Selection Process: Potential grantees apply for eligibility and funds are distributed to eligible grantees by formula.
Web Site: http://www.odot.state.or.us/tdb/pubtrans/index.htm

5. Special City allotment (SCA) Program

Funding for road improvements is available to incorporated cities with populations of 5,000 or less. This funding comes from state highway funds revenues and provides reimbursement funds up to $25,000 to selected projects. ODOT annually asks cities to apply for funding for projects they select on their local street system. Cities can apply only if previous SCA projects are complete and paid for. ODOT Regions evaluate and rank project proposals from each city. Total funding of $1,000,000 per year is available.

ODOT Contact: Regional Federal-Aid Specialist.
Annual Amount: Up to $1,000,000 annually; project limit of $25,000.
Match Requirements: No match required.
Program Rules: ORS 366.805
Eligible Uses: Maintenance, repair and/or improvement of existing roads.
Eligible Recipients: Incorporated cities with populations of 5,000 or less.

Project Selection Process: Region Federal-Aid Specialists rate projects in their region. Ranking is based on established criteria.

6. Special Transportation Fund (STF)

The Special Transportation Fund makes funds available to maintain, develop and improve transportation services for people with disabilities and people age 60 and over. Funds are distributed to mass transit districts, transportation districts and, where the districts do not exist, to counties. Three fourths of the funds are distributed on a per capita formula, and one fourth of the funds are awarded by competitive grant. The grants are awarded every two years, in conjunction with the STIP update process, and grant funds are distributed annually.

Total distribution is approximately $10,000,000 annually during the July 1, 1999 to June 30, 2001 biennium. Of the $10,000,000 about half is from a two-cents per pack state tax on cigarettes and half is from state general funds.

ODOT Contact: 503-986-3300, Public Transit Division.
Annual Amount: Approximately $10,000,000 annually during the July 1, 1999 to June 30, 2001 biennium.
Match Requirements: No match requirements on funds disbursed by formula; 80/20 match (80% STF funds matched with 20% local funds) required for planning and capital projects; 50% match for operations projects funded by competitive grant.
Program Statutes: ORS 391.800 to 391.830
Eligible Uses: Transportation services for the elderly and persons with disabilities.
Eligible Recipients: Governing Bodies as defined by the statute.
Project Selection Process: None for funds distributed by formula; every two years in conjunction with the STIP update for funds distributed by competitive grant.
Web Site: http://www.odot.state.or.us.tdb/pubtrans/index.htm

7. State and Local STP Fund Exchange Program

Currently ODOT will exchange the local STP funds with state funds, allowing local governments to use less restrictive state dollars instead of federal dollars on their projects. Because state funds are not governed by Title 23 requirements and are more flexible and desirable, the federal funds trade at $1.00 federal for $.94 state funds.

8. State Bicycle and Pedestrian Grants

Cities and counties can apply for grants for bicycle and/or pedestrian projects. Grants are limited to $100,000 and projects are to be administered by the applicant. Projects can be located on local streets or state highways, but they must be located in the right-of-way of a highway, street, or road. In other words,

no bicycle or pedestrian paths in parks can be constructed through this program. State highway projects should not require additional right-of-way and should be low-impact. Improvements proposed in conjunction with preservation overlays are looked at very favorably. The addition of bike lanes and sidewalks as part of road construction and reconstruction are not eligible. Some conditions are common to both the local program and the state program, others apply to only one:

> **ODOT Contact:** 503-986-3555, Bicycle and Pedestrian Program, Technical Services Branch.
> **Annual Amount:** $1,800,000 annually.
> **Match Requirements:** 20% match on local projects. No match required on state highway projects, but contributions are welcome.
> **Program Rules:** Projects must meet current ODOT design standards.
> **Eligible Uses:** For bicycle projects: shoulder widening or bike lane striping. For pedestrian projects: sidewalk infill, ADA upgrades, pedestrian crossings or intersection improvements.
> **Eligible Recipients:** *Local Projects*: Cities and counties. *State Highway Projects*: Cities, counties and ODOT.

9. STP Set Aside for Safety; Hazard Elimination Program (HEP)

The mission of the Hazard Elimination Program (HEP) is to fund safety improvement projects that reduce the risk, number and/or severity of accidents. It is a federally funded program that is open to both Local Agencies and to ODOT.

Projects should be funded primarily or exclusively using HEP funds and should not exceed $500,000. Any public road or public transportation surface facility is eligible for funding, including improvements at public transportation facilities and public pedestrian and bicycle pathways and trails. The projects should be stand-alone projects and not portions of larger construction projects.

Types of eligible projects include:

- Signal Installation or Improvement
- Signal Priority Preemption
- Channelization
- Grade Separation
- Curve Realignment
- Illumination
- Pavement Markings
- Delineation
- Guardrail or Median Barrier
- Impact Attenuators
- Slope Flattening
- Fixed Object Removal
- Rockfall Correction

- Corridor Safety Improvements
- Bicycle Lanes
- Pedestrian Paths

ODOT Application Contact: Applications go to Region Federal-Aid Specialists or Region Traffic.
ODOT Program Contact: 503-986-3609, Hazard Elimination Program Coordinator, Traffic Management Section, Technical Services Branch.
Annual Amount: During TEA-21, $2,000,000/year is available statewide.
Match Requirements: The match ratio is 89.73/10.27, with 10.27% being local (non-federal) funds.
Program Rules: 23 U.S.C. 152.
Eligible Uses: See list above.
Eligible Recipients: Counties, cities and ODOT
Project Selection Process: See the program guidebook available from ODOT Contact.

10. Transportation Enhancement Program

States are required to apportion 10% of their Surface Transportation Program funds to the Enhancement Program. These funds are available for a variety of projects that enhance the cultural, aesthetic, and environmental value of the state's transportation system. Projects may include:

- Pedestrian and bicycle facilities
- Safety and educational activities for pedestrians and bicyclists
- Acquisition of scenic easements and scenic or historic sites
- Scenic or historic highway programs (including provision of tourist and welcome center facilities)
- Landscaping and other scenic beautification
- Historic preservation
- Rehabilitation and operation of historic transportation buildings, structures or facilities (including historic railroad facilities and canals)
- Preservation of abandoned railway corridors (including conversion and use for pedestrian or bicycle trails)
- Control and removal of outdoor advertising
- Archaeological planning and research
- Mitigation to address water pollution due to highway runoff
- Mitigation to reduce vehicle-caused wildlife mortality, while maintaining habitat connectivity, and
- Establishment of transportation museums

TEA-21 will provide Oregon up to $8 million annually. ODOT will allocate $5 million per year to local governments and other public agencies for "local program" projects, and $2 million to $3 million annually to a "statewide" program for projects having regional, multi-regional or statewide significance. The Statewide Program is open to ODOT and other public agencies.

ODOT Contact: 503-986-3528, Transportation Enhancement Coordinator, Preliminary Design Unit, Technical Services Branch.
Annual Amount: $5 million annually to the Local Program; and $2 to $3 million annually to the Statewide Program.
Match Requirements: 89.73% maximum federal share. Minimum of 10.27% matching funds from the project sponsor, in cash or approved in-kind contribution.
Program Rules: Code of Federal Regulations (CFR) Title 23.
Eligible Uses: Transportation enhancement activities (defined in 23 USC 101(a)).
Eligible Recipients: Public Agencies with taxing authority. Private entities must have a public agency sponsor.
Project Selection Process: *Local Program:* Separate committees for each ODOT region, made up of local government and public agency representatives, along with ODOT staff and a citizen advocate or interest group member. *Statewide Program:* One inter-agency committee that includes ODOT and private/nonprofit representation. Committees select projects using an agreed upon point system, and recommend the top ranking projects for available funding.
Web Site: **http://www.odot.state.or.us/techserv/engineer/pdu/Enhance.htm**

11. Transportation Growth Management Funds

The Transportation Growth Management Program will provide approximately $8 million in grants and development assistance to local governments for transportation planning in the 1999-2001 biennium. Three separate programs, one grant program and two assistance programs; operate under the umbrella of the Transportation Growth Management Program.

The grants program:

- Transportation and coordinated transportation/land use planning grants totaling approximately $6 million will be provided to local governments in the 1999-2001 biennium. Applications were closed May 17th for the current biennium.

The development assistance programs are:

- The Quick Response Program provides planning and design services to help developers and communities create compact, pedestrian-friendly, and livable neighborhoods and activity centers. In response to local requests, property owners, local and state officials and affected stakeholders come together to review development proposals, develop innovative design solutions, and overcome regulatory obstacles to land use, transportation, and design issues. For further information contact Eric Jacobson, by e-mail Eric.Jacobson@state.or.us, by phone 503-373-0050 ext. 265, or by fax 503-378-2687.

- The Smart Development Code Assistance Program provides technical assistance to local communities to revise land development codes to remove obstacles to development that supports efficient use of the transportation system. For further information contact Gloria Gardiner by e-mail Gloria.Gardiner@state.or.us, by phone 503-373-0050 ext. 282; or by fax 503-378-2687.

  ODOT Contact: For general information contact Alan J. Fox, 503-986-4126, TGM Program Coordinator.
  Biennial Amount: Approximately $6 million in 1999-2001 biennium grants.
  Match Requirements: 89.73% federal funds matched with 10.27% non-federal funds.
  Program Rules: Federal requirements and State Transportation Planning Rule.
  Eligible Uses: Transportation and coordinated transportation/land use planning.
  Eligible Recipients: Cities, counties and metropolitan planning organizations are the principal recipients. Other eligible recipients include councils of government when acting on behalf of governments, and special districts for cooperative and urban service agreements.
  Project Selection Process: Transportation planning grants are awarded on a biennial basis in odd numbered years. The Quick Response Program and the Smart Development Code Assistance Program are open continually to accepting new applications.
  Web Site: http://www.lcd.state.or.us/issues/tgmweb/index-f.htm

12. Transportation Safety Programs

The Transportation Safety Division of ODOT awards grants for transportation safety programs. The selection of recipients is based on a statewide analysis of safety data followed by a detailed review of the local data. More than $6 million per year is awarded for programs in impaired driving, occupant protection, youth, pedestrian, speed, enforcement, bicycle and motorcycle safety.

ODOT Contact: Sandy Bertolani, 503-986-4193, Grants/Contract Coordinator, Transportation Safety Division.
Annual Amount: $6 million
Match Requirements: Sliding scale
Program Rules: Code of Federal Regulations (CFR) Title 23.
Eligible Uses: Enforcement, education, minor engineering.
Eligible Recipients: State, local and non-profit organizations.
Project Selection Process: Solicited annually by Transportation Safety Division staff, based upon statewide problem identification (no unsolicited grant requests will be funded).
Web Site: http://www.odot.state.or.us/lawsafe.htm

13. 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 that 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.

8.2.8 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 Burns' 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 Burns, 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.

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

An ODOT funding technique that will likely have future application to Burns' 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.

8.3 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 is a number of debt financing options available to the City of Burns. 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.

8.3.1 General Obligation Bonds

General obligation bonds are voter-approved bond issues that represent the least expensive borrowing mechanism available to municipalities. These 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 are typically used to make public improvement projects that will benefit the entire community.

State statutes require that the general obligation indebtedness of a city not exceed three percent of the real market value of all taxable property in the city. Since general obligation bonds would be issued subsequent to voter approval, they would not be restricted to the limitations set forth in Ballot Measures 5, 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.

8.3.2 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 the full taxing power of the issuer does not secure them, 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.

8.3.3 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, municipalities who were required to compress their tax rates have not used Bancroft bonds.

8.3.4 System Development Charges

Many jurisdictions look to System Development Charges to fund public works infrastructure; however, most of the projects identified for Burns are not a direct result of new development. As noted earlier, a key legislative requirement for charging System Development Charges is the link between the need for the improvements and the developments being charged. As a capacity improvement, the upgrade of Monroe Street could be linked to new development. With System Development Charges funding the $577,000 project, the City of Burns would be able to fund the Monroe Street upgrade and the balance of the recommended local system improvements. This decision to implement System Development Charges must be carefully considered because it could encourage development in neighboring communities and may discourage future development in Burns.

8.4 Funding Requirements

Burns' 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. The TSP identifies 17 projects totaling an estimated $3.4 million. Estimated costs by financial responsibility are shown in Table 21.

FUNDING REQUIREMENTS AND FINANCIAL RESPONSIBILITY

Financial Responsibility	Estimated Cost
Local	$1,968,000
County	$1,169,000
State	$278,000
Total	**$3,415,000**

Table 21 – Funding Requirements and Financial Responsibility

The City of Burns has some financial participation in fourteen projects, totaling an estimated $1.9 million. One of these projects, the truck route, involves sharing the financing with Harney County. Another project, the improvements to the US Highway 20/395 intersection with Monroe Street, involves sharing the financing with ODOT. There is also one project, the upgrade of Monroe Street that is considered a capacity improvement, which could be linked to new development, and potentially funded through System Development Charges.

Based on current revenue sources for the City of Burns and the improvements identified in this Transportation System Plan, the City is expected to experience a budget deficit of approximately $659,000 over the 20-year planning horizon, as shown in Table 22.

ESTIMATED CAPITAL FUNDING BALANCE

	Amount
Capital Available from Existing Revenue Sources	$1,309,000
Capital Needed to Fund Projects Identified as City-Funded Projects	$1,968,000
Surplus (Deficit)	**($659,000)**

Table 22 – Estimated Capital Funding Balance

8.5 Funding Options, Conclusions

This TSP identifies 17 projects recommended for the City of Burns over the 20-year planning horizon. The cost of the projects is estimated at over $3.4 million in 1998 dollars. The city expects some funding available from existing funding sources for capital improvements, but the amount will be limited to approximately $1.3 million over the next 20 years. With project requirements of nearly $1.9 million, relying on existing funding sources would result in a budget shortfall of about $659,000 over the 20-year planning horizon. With a $577,000 project resulting in capacity improvements, the city would have the option of implementing System Development Charges to charge new development for the infrastructure costs to serve it. The City of Burns will need to work with Harney County and ODOT to explore System Development Charges and other alternative sources of funding to finance these transportation projects over the 20-year planning horizon.

Appendix A: PLAN INVENTORY

CITY OF BURNS

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 Comprehensive Plan for the City of Burns, the Subdivision and Partition Ordinance for the City of Burns, The Zoning Ordinance for the City of Burns, the Airport Layout Plan for Burns Municipal Airport, a US Highway 20 Traffic Analysis, and a Burns Paiute Gaming Facility Traffic Impact Study. A description of the information in the plans is provided followed by comments in italics.

Comprehensive Plan For the City of Burns

Tenneson Engineering Corporation prepared the Comprehensive Plan for the City of Burns in August 1997.

The plan was developed in accordance with the provisions of Oregon Revised Statutes (ORS) Chapters 92, 197, 227 and 696 which set forth the standards and procedures governing the development and use of land, and the interrelated functional and natural systems and activities relating to the use of land in the city. Furthermore, the purpose of this ordinance shall be to promote the general health, safety and welfare of the public by providing for:

A. Opportunities for citizens to be involved in all phases of the planning process.
B. Land use planning process and policies, which serves as a framework for all decisions and actions related to the use of land and an adequate factual basis for such decisions and actions.
C. Preservation and maintenance of lands used for livestock purposes.
D. Recognition of the economic values of forest lands.
E. Conservation of open space and protection of natural and scenic resources.
F. Maintenance and improvement of the quality of air, water and land resources of the community.
G. Protection of life and property from natural disasters and hazards.

H. Satisfaction of the recreational needs of the community's citizens and its visitors.
I. Diversification and improvement of the economy of the community.
J. Provision for the housing needs of the citizens of the community.
K. Planning and development of a timely, orderly, and efficient arrangement of public facilities and services.
L. Provision and encouragement of a safe, convenient and economic transportation system.
M. Conservation of energy and development of renewable energy resources.
N. Provision for an orderly and efficient transition from rural to urban land use in areas surround the community.

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

Transportation Goal

Goal

Provision and encouragement of a safe, convenient and economic transportation system.

Findings

1. The street pattern of Burns is characterized by a conventional grid pattern. Broadway Avenue and Monroe Boulevard (Highway 20/395) are the most heavily traveled in Burns. There is no designated truck route in the Burns area and none is anticipated in the near future. No public transportation system exists and virtually every trip of greater than walking or bicycling distance is accomplished in a private automobile, either as a driver or passenger.
2. The Burns Municipal Airport is located on 800 acres of city-owned land, five miles east of the city (considerably beyond the Urban Growth Boundary). The airport houses a fixed-base operation, which provides aircraft repair and related services, flight training, air charter, and car rental. Land use planning responsibility for the airport and vicinity lies with Harney County.
3. There is no intra-city bus service in the Burns/Hines area, except for limited senior citizen service provided by the county. Inter-city service is provided by Trailways. There is one taxi company serving Burns/Hines.
4. A bike path parallels Highway 20/395 from Hines to Burns, for approximately two miles.

Policies

1. The city shall encourage and support a safe, convenient and economic transportation system for the community.
2. The city shall encourage all appropriate modes of transportation, including vehicle, pedestrian, bicycle, rail, air and mass transit, wherever practical. Handicapped access shall be promoted in all transportation modes.
3. The city shall seek to avoid principal reliance upon any one mode of transportation, and to minimize adverse social, economic, environmental, or energy impacts resulting from transportation activities.
4. The city shall designate roadways as arterial, collector or minor streets in accordance with the provisions of this ordinance, so as to provide a street network appropriate to surrounding land uses.
5. The city shall continue to improve streets to current city standards wherever needed and practical.
6. New direct access to arterials shall be granted during commercial zone site plan reviews, and particular consideration shall be given to the land use and traffic pattern in the area of development, not just at the specific site. Frontage roads and access collection points along arterials shall be encouraged.
7. The city shall plan, improve and designate streets, such that through traffic in residential neighborhoods is minimized; and through traffic in commercial and industrial areas is disbursed, to the greatest extent practical.
8. Adequate off-street parking shall be provided to avoid street congestion and hazards.
9. The city shall continue to support the availability of the present rail service in Burns, recognizing its significant transportation and economic value to the community.
10. The city shall continue to use the Airport Master Plan to guide future airport activities.
11. In the event the city annexes the airport and/or surrounding property, the city shall, at the time, implement airport hazard zoning measures to assure continued compatibility between aviation and surrounding uses. The city shall support county implementation of such measures in the interim.
12. The city shall continue to support and encourage the availability of bus, taxi and motor freight services, recognizing their significant transportation and economic value to the community.
13. The city shall continue to support and encourage bicycle transportation and the use of bike paths and other appropriate right-of-way for such activities, recognizing their significant transportation, energy and social values to the community.

The traffic volume data is from1977 and 1981 and will have to be updated in the TSP. 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.

Subdivision and Partition Ordinance for the City of Burns

The Subdivision and Partition Ordinance for the City of Burns was prepared by Tenneson Engineering Corporation in August 1997 and has been adopted by the city.

The purpose of this ordinance is to enact subdivision and partition regulations for the city which will provide for better living conditions within new subdivisions and partitions; assure necessary streets, utilities and public areas and provide for their installation or improvement; enhance and secure property values in subdivisions and adjacent land; simplify and make land descriptions more certain; implement the comprehensive land use plan and zoning ordinance; and, in general, to promote the health, safety, convenience and general welfare of the citizens of the City of Burns.

The ordinance contains the following seven articles:

Article 1. General Provisions
Article 2. Procedures
Article 3. Final Plat Procedures
Article 4. Design Standards
Article 5. Street Standards
Article 6. Access and Driveways
Article 7. Property Line Adjustments

Articles 4, 5 and 6 affect transportation and include regulations for block lengths, need for crosswalks, street connectivity, right-of-way widths, street standards, and driveway access.

This information will be incorporated into the TSP for the City of Burns, as appropriate, and every effort will be made to make the street standards in the TSP consistent with those in the Subdivision and Partition Ordinance, unless the latter is found not to meet ODOT standards for state highways.

Zoning Ordinances for the City of Burns

The Zoning Ordinance for the City of Burns was prepared by Tenneson Engineering Corporation in August 1997 and has been adopted by the city.

The purpose of the Zoning Ordinance is to implement the Burns Comprehensive Plan as adopted by the City Council, to comply with ORS Chapters 227 and 197,

and to promote the public health, safety and welfare of the citizens of the City of Burns.

The ordinance contains the following six sections:

Section 1. General Provisions
Section 2. Definitions
Section 3. Land Use Zones
Section 4. Supplemental Provisions
Section 5. Administrative Provisions
Section 6. Application Procedures

The only section of the ordinance, which pertains to transportation, is the section on off-street parking regulations.

Airport Layout Plan for Burns Municipal Airport

Devco Engineering, Inc., prepared the Airport Layout Plan for Burns Municipal Airport in April 1996.

The primary objective of the Airport Layout Plan is to provide a long-term development program, which will yield a safe, efficient, economical and environmentally acceptable air transportation facility for the area. The description of existing facilities includes an inventory of airspeed, landslide and support facilities. The plan contains estimates of existing use and forecasts of future use, which were used to determine facility requirements. The plan also includes sections on land use planning and zoning as well as airspace planning considerations. 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. Information from this plan, such as the physical inventory and the forecasts of future use will be incorporated into the TSPs for both the City of Burns and Harney County.

US Highway 20 Traffic Analysis (Burns/Hines Urban Area Section)

David Evans and Associates, Inc. (DEA) prepared the US Highway Traffic Analysis 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.

Burns Paiute Gaming Facility Traffic Impact Study

Tom R. Lancaster, P.E., and Todd E. Modley, E.I.T. prepared the Burns Paiute Gaming Facility Traffic Impact Study in July 1997. The project is a proposed 15,000 square foot gaming facility on the old Camp Site of the Burns Paiute Indian Reservation on the south side of West Monroe Street, in the City of Burns, Oregon. The purpose of the study was to assess the traffic impact of the proposed development on the nearby street system and to recommend any required mitigative measures.

Conclusions and recommendations developed in the study are as follows:

- It is recommended that if any signing is used for the Burns Paiute Reservation or the gaming facility, it be placed such that westbound traffic is encouraged to turn from Highway 20 onto Harney Street, then onto Monroe Street.

  Examination of the figures in the report indicate that what was intended is that eastbound traffic be encourage to turn from Highway 20 onto Harney Street.

- Acceptable levels of service at the study intersections are expected for each phase of the proposed development, and no mitigations are recommended.
- Since one of the three traffic signal warrants studied was only marginally satisfied and operation of the intersection is expected to be acceptable, no traffic signals are recommended. After build-out of the proposed development, the study intersections should be evaluated for operation performance and safety. If unforeseen growth occurs in the area or if trip generation is higher than expected, mitigation may be warranted.

- Accident analysis shows that the intersections are operating safety, and no safety mitigations are proposed.

Appendix B: 1997 MAJOR STREETS INVENTORY

Roadway Segment Location	Jurisdiction	Level of Importance	Speed Limit (mph)	Street Width (feet)	No. of Travel Lanes	Passing Lanes (direction)	Shoulders Width (feet)	Shoulders Side	Shoulders Paving	On-Street Parking	Curbs	Sidewalks	Bikeway	1997 Pavement Condition*
Arterials														
US Hwy 20 (Burns)														
Oregon Avenue														
Burns south city limits to S. of Pierce Street	State	Statewide	35	65	5	No	No	NA	NA	No	Both sides	Both sides	No	**Poor**
S. of Pierce Street to Nevada Avenue	State	Statewide	35	54	4	No	No	NA	NA	No	Both sides	Both sides	No	**Poor**
Hines Blvd.														
Nevada Avenue to Harney Avenue	State	Statewide	35	54	4	No	No	NA	NA	No	Both sides	Both sides	No	**Poor**
Harney Avenue to Grand Avenue	State	Statewide	25	54	4	No	No	NA	NA	No	Both sides	Both sides	No	**Poor**
Monroe Street														
Grand Avenue to Broadway Avenue	State	Statewide	25	54	4	No	No	NA	NA	No	Both sides	Both sides	No	**Poor**
Broadway Avenue														
Monroe Street to "D" Street	State	Statewide	25	54	2	No	No	NA	NA	Both sides	Both sides	Both sides	No	**Poor**
"D" Street to Foley Drive	State	Statewide	25	37	2	No	No	NA	NA	No	No	No	No	**Poor**
Seneca Drive														
Foley Drive to Date Avenue	State	Statewide	25	24	2	No	4 - 6	Both	Partial	No	No	No	No	**Poor**
Date Avenue to Burns north city limits	State	Statewide	35-45	24	2	No	4 - 6	Both	Partial	No	No	No	No	**Poor**
OR Hwy 78 (Burns)														
E. Monroe Street														

US Hwy 20 junction to Fir Avenue	State	Regional	25	24	2	No	4 - 6	Both	Paved	No	No	No	No	**Fair**
Fir Avenue to Gordonia Avenue	State	Regional	40	24	2	No	4 - 6	Both	Partial	No	No	No	No	**Fair**
Crane Blvd.														
Gordonia Avenue to Burns east city limits	State	Regional	40	24	2	No	4 - 6	Both	Partial	No	No	No	No	**Fair**
Collectors														
Riverside Drive														
Birch Avenue to RR X-ing	City	NA	25	22-24	2	No	No	NA	NA	No	No	No	No	Fair
"D" Street														
Fairview Avenue to Court Street	City	NA	25	32	2	No	No	NA	NA	No	No	No	No	Fair
Court Street to Broadway Ave. (US Hwy 20)	City	NA	25	32	2	No	No	NA	NA	No	No	Partial/North Side	No	Fair
Broadway Ave. (US Hwy 20) to Cedar Avenue	City	NA	25	32	2	No	No	NA	NA	No	No	No	No	Fair
Filmore Street														
Hines Blvd. (US 20) to Railroad Avenue	City	NA	25	38	2	No	No	NA	NA	No	Both Sides	No	No	Fair
Railroad Avenue														
Eagan Avenue to Monroe St. (OR Hwy 78)	City	NA	25	32	2	No	No	NA	NA	No	No	No	No	Fair
Washington Street														
Eagan Avenue to Court Street	City	NA	25	36	2	No	No	NA	NA	No	Both Sides	No	No	***Poor***
Court Street to Buena Vista Avenue	City	NA	25	36	2	No	No	NA	NA	No	Both Sides	Partial/South Side	No	***Poor***
Buena Vista Avenue to Alvord Avenue	City	NA	25	36	2	No	No	NA	NA	No	Both Sides	Both Sides	No	***Poor***
Alvord Avenue to Alder Avenue	City	NA	25	54	2	No	No	NA	NA	Both Sides	Both Sides	Both Sides	No	***Poor***

Alder Avenue to Elm Avenue	City	NA	25	36	2	No	No	NA	NA	No	Both Sides	No	No	***Poor***
Elm Avenue to End of road	City	NA	25	36	2	No	No	NA	NA	No	No	No	No	Fair
Adams Street														
Eagan Avenue to Buena Vista Avenue	City	NA	25	46	2	No	No	NA	NA	No	Both Sides	No	No	Fair
Buena Vista Avenue to Alvord Avenue	City	NA	25	46	2	No	No	NA	NA	No	Both Sides	Partial/North Side	No	Fair
Alvord Avenue to Alder Avenue	City	NA	25	54	2	No	No	NA	NA	Both Sides	Both Sides	Both Sides	No	***Poor***
Alder Avenue Elm Avenue	City	NA	25	46	2	No	No	NA	NA	No	Both Sides	No	No	***Poor***
Elm Avenue to Koa Avenue	City	NA	25	24	2	No	No	NA	NA	No	No	No	No	Fair
Eagan Avenue														
Culp lane to Pierce Street	City	NA	25	42	3	No	2-4	Both	Unpaved	No	No	No	No	Fair
Pierce Street to Taylor Street	City	NA	25	38	2	No	No	NA	NA	No	Both sides	No	No	Fair
Taylor Street to Jackson Street	City	NA	25	38	2	No	No	NA	NA	No	Both sides	Partial/West Side	No	Fair
Jackson Street to Madison Street	City	NA	25	47	2	No	No	NA	NA	No	Both sides	No	No	Good
Madison Street to Jefferson Street	City	NA	25	47	2	No	No	NA	NA	No	Both sides	Partial/Both Sides	No	Good
Jefferson Street to Adams Street	City	NA	25	42	2	No	No	NA	NA	No	Both sides	Partial/Both Sides	No	Good
Adams Street to "A" Street	City	NA	25	44	2	No	No	NA	NA	No	Both sides	No	No	Good
"A" Street to "B" Street	City	NA	25	44	2	No	No	NA	NA	No	Both sides	West Side	No	Good
"B" Street to "C" Street	City	NA	25	52	2	No	No	NA	NA	Both Sides	Both sides	West Side	No	Good
"C" Street to "D" Street	City	NA	25	44	2	No	No	NA	NA	No	Both sides	Partial/West Side	No	Good

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 DEA in November 1997.

Appendix C: 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 (weighing 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 1980's, reflecting a general slowdown in the state's economy.

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%

Notes:
* 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 following.

EMPLOYMENT TRENDS
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%
Non-farm 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 1995 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 and 1996.

HARNEY COUNTY POPULATION LEVEL
1990 AND 1996

					1970 – 1990 Change	
	1990	1995	1996	1997	Number	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%

Notes:
* 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 show in the following table.

HARNEY COUNTY
EMPLOYMENT

			1990 – 1996 Change	
	1990	**1996**	**Number**	**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:
* Compound Average Annual Rate of Growth.
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.
Source: Oregon Employment Department

The average unemployment rate in Harney County is significantly higher than the state average unemployment. 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 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 flood 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.

HARNEY COUNTY
1990 CENSUS – POVERTY STATUS

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

Notes:
* 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 *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.)

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 Lands Inventory forecasts the population of Harney County to reach an estimated 7,800 residents by year 2000, in 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 population in Harney County. These various forecasts are shown in the following table.

HARNEY COUNTY POPULATION FORECAST OFFICE OF ECONOMIC ANALYSIS; HARNEY COUNTY BUILDABLE LANDS 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 County Housing Study					6,642	6,417	6,185
Harney County Buildable Lands					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 Lands Inventory, this growth rate may need to be revisited as PSU has estimated significant population grown 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.

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	1,620	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 & 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.

HARNEY COUNTY POPULATION FORECAST
STRAIGHT GROWTH RATE METHODOLOGY

	1990	1997	1990-1997 Change 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

Note:
* 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 1995. 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 estimate 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.

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%

Notes:
* 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.