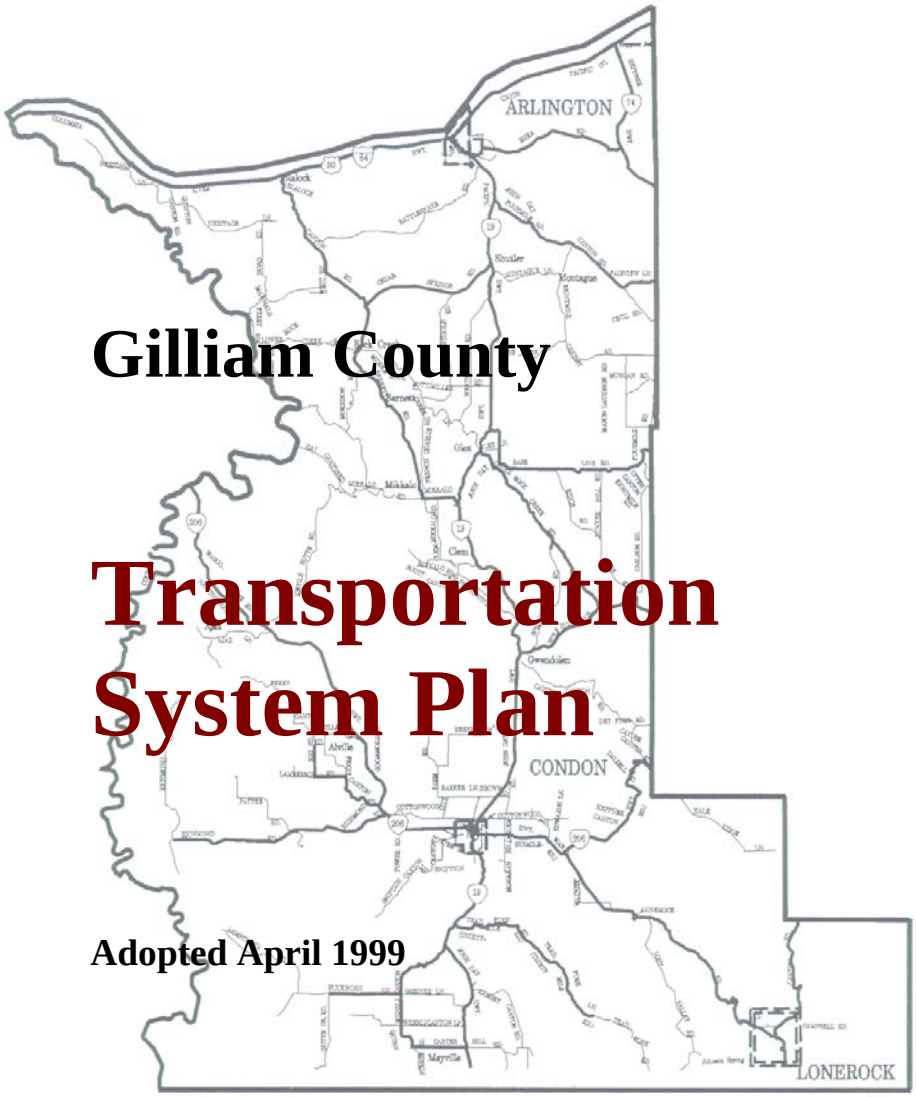
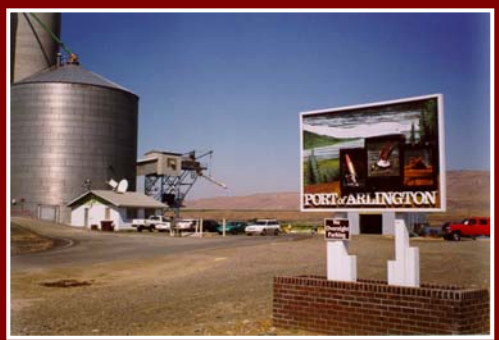


Gilliam County

Transportation System Plan

Adopted April 1999



Prepared by

DAVID EVANS AND ASSOCIATES, INC.

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CHAPTER 1: INTRODUCTION

The Gilliam County Transportation System Plan (TSP) guides the management of existing transportation facilities and the design and implementation of future facilities for the next 20 years. This TSP constitutes the transportation element of the county's comprehensive plan and satisfies the requirements of the Oregon Transportation Planning Rule (TPR) 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 (STIP).

PLANNING AREA

The Gilliam County TSP covers the unincorporated areas of Gilliam County and the incorporated Cities of Arlington and Condon. The TSP also addresses transportation issues specific to the Port of Arlington and the incorporated City of Lonerock.

The City of Lonerock exists as an incorporated city within Gilliam County (incorporated in 1901). However, the city has delegated its planning and zoning authority to the county as authorized by ORS 215.130(2)(b). This delegation of authority, and the county's designation of Lonerock as a residential recreation area, took place in 1977 and remains in effect with no apparent desire by the city or county for change in status.

The planning area for the Gilliam County TSP is shown on Figure 1-1. The planning area for the City of Lonerock is shown on Figure 1-2. Roadways included in the TSP fall under several jurisdictions: the incorporated cities, Gilliam County, and the State of Oregon.

Gilliam County is located in north-central Oregon. It is 1,223 square miles in area. Although the county has a population of 1,900, nearly 70 percent of the population (1,275) is concentrated in the cities of Arlington and Condon. Condon is the county seat and the largest city in the county, with nearly 42 percent of the population. The county is bordered by Sherman County to the west, Morrow County to the east, Wheeler County to the south, and the State of Washington to the north. The elevation at Condon is 2,844 feet above mean sea level and much of the county terrain transitions between mountainous valleys such as the John Day Valley and expansive plateaus. The county sits in the heart of the Columbia Basin wheat area and receives only about 11 inches of precipitation a year.

The main east-west routes through the county are I-84 and OR 206 (Wasco-Heppner Highway). OR 206 briefly shares its alignment with OR 19 (called Main Street) within Condon's city limits. The main north-south route is OR 19 (John Day Highway) which connects the cities of Arlington and Condon through the John Day Valley. OR 19 serves as the main street in Condon and Arlington, and is called Main Street in Condon. Additionally, OR 74 (Heppner Highway) runs north-south through the northeast tip of the county.

Gilliam County's economy is based primarily in agriculture, with an average farm size of about 4,200 acres. Wheat, barley, and beef cattle form the principal crops. The county's largest individual employers are subsidiaries of Waste Management Inc: Chemical Waste Management of the Northwest and Oregon Waste Systems, Inc., a regional state-of-the-art solid waste landfill. Hunting, fishing, and tourism are important secondary industries.

PLANNING PROCESS

The Gilliam County TSP was prepared as part of an overall effort in Gilliam County to prepare TSPs for Gilliam County and two municipalities: the City of Arlington and the City of Condon. Each plan was developed through a series of technical analyses combined with systematic input and review by the county,

the cities, the local working group, the Transportation Advisory Committee (TAC), ODOT, and the public. The TAC consisted of staff, elected and appointed officials, residents, and business people from Gilliam County and the Cities of Arlington and Condon. Key elements of the process include:

- Involving the Gilliam County community (Chapter 1)
- Defining goals and objectives (Chapter 2)
- Reviewing existing plans and transportation conditions (Chapters 3 and 4; Appendices A-D)
- Developing population, employment, and travel forecasts (Chapter 5; Appendices E and F)
- Developing and evaluating potential transportation system improvements (Chapter 6)
- Developing the Transportation System Plan and Capital Improvement Program (Chapter 7)
- Developing Funding Options and a Financial plan (Chapter 8; Appendix G)
- Developing recommended policies and ordinances (Chapter 9)

Community Involvement

Community involvement was an integral component in the development of TSPs for Gilliam County, the City of Arlington, and the City of Condon. Since each of the communities 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 TAC provided guidance on technical issues and direction regarding policy issues to the consultant team. Staff members from each local jurisdiction, ODOT, and a local resident from each community served on this committee. This group met six times during the course of the project.

The second part of the community involvement effort consisted of community meetings within Gilliam County. The first public meeting was held in September 1998 in Arlington. The general public was invited to learn about the TSP planning process and provide input on transportation issues and concerns. A second public meeting was held in December 1998 in Condon to accomplish similar goals.

The third part of the community involvement process involved formal presentations before elected officials within the county. The first presentation to the planning commission was made in January 1999. The City of Lonerock held their own meeting to review and discuss the county TSP. The second presentation, made in February 1999, involved formal adoption of the county and city TSPs. The public was notified of the meetings through public announcements in the local newspapers.

Goals and Objectives

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

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

To begin the planning process, all applicable Gilliam 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 Gilliam County, including the street system improvements planned and implemented in the past, and how the county is currently managing its ongoing development. A brief review of existing plans and policies are described in this Chapter with a more detailed review presented 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 and Appendix C provides an inventory of the county road network.

Future Transportation System Demands

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

Transportation System Potential Improvements

Once the travel forecasts were developed, it was possible to evaluate a series of potential transportation system improvements. The evaluation of the potential transportation improvements was based on a qualitative review of safety, environmental, socioeconomic, and land use impacts, as well as estimated cost. 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). The potential improvements were evaluated in Chapter 6 and recommended for short-range (0-5 years), intermediate-range (5-10 years), and long-range (10-20 years) implementation.

Transportation System Plan

The TSP addresses each mode of transportation and provides an overall implementation program. The street system plan was developed from the forecasting and potential improvements evaluation described above. The bicycle and pedestrian plans were developed based on current usage, land use patterns, and the requirements set forth by the TPR. The public transportation, air, 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 and presents the overall Capital Improvement Program (CIP) listing prioritized projects to be implemented over the 20-year planning horizon.

Funding Options

Gilliam County will need to work with ODOT and the incorporated jurisdictions to finance new transportation projects over the 20-year planning period. An overview of funding and financing options that may be available to the community are described in Chapter 8.

Recommended Policies and Ordinances

Suggested comprehensive plan policies and implementing zoning and subdivision ordinances are included in Chapter 9. These policies and ordinances are intended to support the TSP and satisfy the requirements of the TPR. The county and the cities will need to consider amending their comprehensive plan policies and zoning codes as part of the TSP adoption process.

RELATED DOCUMENTS

The Gilliam County TSP addresses the regional and rural transportation needs in the county as well as the incorporated City of Lonerock, which is under the land use jurisdiction of Gilliam County. There are several other documents that address specific transportation elements or areas in Gilliam County. These documents

were reviewed to ensure that the Gilliam County TSP is consistent with other transportation policies and plans already in effect or being developed. This section lists the applicable documents that were reviewed while a brief summary of the document elements that pertain to transportation planning, policies, and operations is outlined in Appendix A.

County and City Planning Documents

- Gilliam County Comprehensive Plan
- Gilliam County Zoning and Land Development Ordinance
- City of Arlington TSP
- City of Condon TSP
- Port of Arlington Expansion Study
- Arlington Area of Mutual Concern Conversion to an Urban Growth Boundary Report

Other State Plans

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

CHAPTER 2: GOALS AND OBJECTIVES

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

OVERALL TRANSPORTATION GOAL

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

Policies

1. Maintain and upgrade the overall transportation system within the county to meet present and future needs.
2. Develop and upgrade highway facilities in such a manner that valuable soil, timber, water, scenic, historic, or cultural resources are not damaged or impaired.
3. Provide adequate signage along major and minor county roads for the purpose of easy identification.
4. Design new roads and highways to preserve and enhance natural and scenic resources, i.e., new roads should not be constructed in areas identified as sensitive wildlife areas.
5. Retain countywide school bus service.
6. Retain rail freight service along OR 19 in the vicinity of Arlington.
7. Actively encourage development of the Port of Arlington enterprises and commerce.
8. Actively encourage continued operation and support of waste management facilities.
9. Protect the county's municipal airports from the encroachment of incompatible land uses to ensure efficient aviation operations and to minimize the noise and safety problems for the general public.
10. Comply with all applicable state and federal noise, air, water, and land quality regulations.
11. The general policy of the Planning Commission will be not to create a traffic hazard in the granting of variances, conditional uses permits, and zone amendments.
12. Encourage active pedestrian and bicycle use within urban areas and along state highways.

Goal 1

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

Objectives

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

B. Promote alternative modes of transportation (e.g., walking, biking).

C. Promote transportation demand management programs (e.g., dial-a-ride transit, carpooling).

D. Develop passing lanes as warranted.

E. Examine the need for specific pedestrian crossing locations in urban areas.

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

Goal 2

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

Objectives

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

B. Improve and maintain existing roadways (e.g., pavement condition, bike lanes, crosswalks).

C. Ensure planning coordination between the local jurisdictions, the county and the state.

D. Identify truck routes to focus truck traffic to a limited number of roads in urban areas.

E. Encourage citizen involvement in identifying and solving local problem spots.

F. Encourage development of connective sidewalk systems in urban areas.

Goal 3

Identify the 20-year roadway system needs to accommodate developing or undeveloped areas without undermining the rural nature of the county.

Objectives

A. Continue to develop the road system as the principal mode of transportation both for access to the county and within the county.

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

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

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

Goal 4

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

Objectives

A. Provide adequate shoulders on rural collector and arterial roads to support biking and walking.

B. Develop a county bicycle plan.

C. Identify needs for bike lanes and sidewalks in urban areas and develop programs to fulfill needs.

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

E. Encourage development to occur near existing community centers where services are presently available so as to reduce the dependence on automotive transportation.

F. Plan for provision of transportation services to transportation disadvantaged.

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

H. Promote railroad and waterway freight service.

Goal 5

Ensure that the road system within the county is adequate to meet public needs, including the transportation disadvantaged.

Objectives

A. Meet identified maintenance and level of service standards on the county roads.

B. Direct commercial development and use access onto major arterials by means of improved county roads.

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

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

E. Develop an access management strategy for OR 19, 74 and 206 for rural and urban areas.

F. Analyze the safety of traveling speeds and consider modifying posted speeds as necessary.

G. Continue to monitor the needs of the transportation disadvantaged (e.g., children under the driving age, people with limited physical mobility) people and provide support as required.

Goal 6

Improve coordination among Gilliam County, ODOT, the Federal Highway Administration (FHWA), the Port of Arlington, and the local jurisdictions.

Objectives

A. Cooperate with ODOT in the implementation of the STIP.

B. Encourage improvement of state highways.

C. Work with the local jurisdictions in establishing cooperative road improvement programs, funding alternatives, and schedules.

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

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

F. Encourage development of the Port of Arlington and improved waterway commerce.

Goal 7

Support efforts to maintain the airport facilities for small aircraft and charter services.

Objectives

A. Encourage the state and local municipalities to improve and maintain airport facilities.

B. Support airport master planning efforts.

CHAPTER 3: TRANSPORTATION SYSTEM INVENTORY

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

ROADWAY 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 all American cities is the roadway system. This trend is clearly seen in the existing Gilliam County transportation system, which consists predominantly of roadway facilities for cars and trucks. The street system will most likely continue to be the basis of the transportation system for at least the 20-year planning period; therefore, the emphasis of this plan is on improving the existing street system for all users.

- The existing road system inventory was reviewed for all highways, arterial roadways, and collector roadways within Gilliam County that are included in the TSP planning area. Appendix B lists the complete inventory for state highways while Appendix C lists the county road inventory. The state highway inventory was prepared by David Evans and Associates, Inc., and the county road inventory was prepared by the Gilliam County Public Works Department.

Roadway Classification

The roads in the unincorporated or rural areas of Gilliam County fall under two jurisdictions: county and state. The state highways generally function as major or principal arterials through the county. Figure 3-1 shows the functional classification of the state and county road system.

County Roads

Although the state highway system forms the backbone of the roadway system in Gilliam County, county roads are a vital part of the circulation system.

Description

Gilliam County has 85 roads under its jurisdiction covering approximately 395 miles. Of these roadway miles, approximately 41 miles (10 percent) are paved, another 61 miles (15 percent) are chip sealed, and the remaining 293 miles (75 percent) are gravel roads. These roadways are an integral part of the transportation system. In addition to providing alternate or more direct routes than the state highways, they also serve rural areas, connecting them with each other, state highways, recreational areas, and cities.

County roads are generally two lanes wide. Paved and chip sealed roads are generally 20 feet wide with two-foot gravel shoulders on both sides, and gravel roads are generally 20 feet wide with no shoulders.

The Gilliam County Road Department follows ODOT's roadway classification system for all roads under county jurisdiction dividing county roads into three classification levels: urban collector/rural major collector, minor collector, and local road. Only state highways are classified at the arterial level. Of the 85 county roads, all or part of 12 are classified as rural major collectors and ten as minor collectors. Cottonwood Road shares its alignment with the Wasco-Heppner Highway, which is classified as a minor arterial. The remaining 62 county roads are classified as local roads.

Maintenance

Gilliam County has not adopted a formal county roadway maintenance program. Typical of larger primarily rural counties in Oregon with limited budgets and personnel, the county has worked to develop maintenance processes that make sense and are manageable for the size of the county and its associated road system. The county primarily addresses roadway maintenance on an "as needed" basis. They develop prioritized project lists each year through roadway inspection by maintenance crews and through the help of citizens that inform the county of maintenance needs, especially in rural areas not routinely traveled by maintenance personnel. Like many counties, Gilliam County's maintenance department is responsible for all aspects of road maintenance including, but not limited to, pavement rehabilitation, roadway signing and lighting needs, ditch and culvert clearing, pavement marking, and more.

Gilliam County has classified all county roads into five prioritized maintenance classes. Although the maintenance classes are generally not defined by specific routine maintenance activities, the classification system does focus the priority of county maintenance resources where most needed.

- Class I: These roadways are the highest traffic use market roads.
- Class II: These roadways are moderate traffic use market roads.
- Class III: These are moderate traffic use roads requiring grading once a year.
- Class IV: These are low traffic use roads receiving infrequent maintenance "as needed."
- Class V: These limited traffic use roads receive emergency maintenance only.

The Gilliam County maintenance department consists of a working roadmaster and five additional crew members and is based in Condon. The Gilliam County Roadmaster provided insight into typical maintenance practices within the county.

- Paved Roads - The county has not been paving new roads and is not likely to in the near future, primarily due to budget constraints. The county approaches maintenance of paved roads on an "as needed" basis without any formal routine or preventive maintenance plan. Maintenance activities range from filling potholes to overlays.
- Dirt (chip seal) Roads - All county roads listed as dirt roads in the county roadway inventory are actually chip sealed. As with paved roads, the county approaches maintenance of chip sealed roads on an "as needed" basis without a formal routine or preventive maintenance plan. Maintenance activities range from patching to new chip seals.
- Gravel Roads - Gravel roads in Gilliam County receive perhaps the most routine maintenance. According to the roadmaster, the majority of gravel roads in the county are "bladed" twice annually: once in the spring and once in the autumn.

The county additionally provides services to the cities of Condon and Arlington. The county performs roadway maintenance on some city streets and provides some snow removal service during the winter months.

Existing Rural Roadway Standards

Roadway 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. Roadway standards are necessary to provide a community with roadways, which are relatively safe, aesthetic, and easy to administer when new roadways are planned or constructed. Table 3-1 summarizes existing street design standards outlined in the county's comprehensive plan. The county's existing street standards are limited to right-of-way and pavement width and do not specify standards for provision of sidewalks, bike lanes, or on-street parking.

TABLE 3-1
EXISTING RURAL STREET DESIGN STANDARDS - GILLIAM COUNTY

	Minimum Right of Way Width (ft)	Minimum Pavement Width (ft)
Arterial	80-120	40-52
Collector Street	60-80	36-48
Continuous Minor Street	60	36
Minor Street less than 2,400'	50	28
Alleys	20	20
Radius for cul-de-sac turn-around	50	40

Source: Gilliam County Comprehensive Plan, Pg. 127.

The majority of paved Gilliam County roads are 20 feet wide with 2-foot to 4-foot gravel shoulders. Gravel roads are of a similar roadway and shoulder width. The City of Lonerock does not have existing street design standards.

State Highways

State highways often function as major arterial streets, forming the primary roadway network within and through a region. They provide a continuous road system that distributes traffic between cities. Generally, major arterial streets are high capacity roadways that carry high traffic volumes with minimal localized activity. In Gilliam County, the state highways/major arterial streets often serve statewide, regional, and local traffic demands.

Discussion of the Gilliam County street system must include the state highways that traverse the planning area. Although Gilliam County has no direct control over the state highways, adjacent development as well as traffic patterns are heavily influenced by the highways. Gilliam County is served by four state highways as listed below. These highways serve as the major routes through the county with commercial and industrial development focused along the corridors. Table 3-2 list the highways within Gilliam County.

TABLE 3-2
STATE HIGHWAYS

State Highway Number	Highway Name	ODOT Highway Number
I-84	Columbia River Highway	2
OR 19	John Day Highway	5
OR 74	Heppner Highway	52
OR 206	Wasco-Heppner Highway	300

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

Gilliam County has one highway of interstate importance: I-84; one highway of regional importance: OR 19; and two highways of district importance: OR 74 and 206.

According to the OHP, the primary function of an interstate highway is to "provide connections and links to major cities, regions of the state, and other states." The management objective for interstate highways is to "provide for safe and efficient high-speed, continuous-flow operation in urban and rural 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." A secondary function is to serve land uses in the vicinity of these highways. The management objective for regional highways 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."

The primary function of a district highway is to "serve local traffic and land access." For highways of district significance, emphasis is placed on preserving safe and efficient higher speed through travel in rural areas, and moderate- to low-speed operations in urban or urbanizing areas with a moderate to high level of interruption to flow. This means that design factors such as controlling access and providing passing lanes are of primary importance. The management objective for regional highways is to "provide for safe and efficient moderate to high-speed, continuous-flow operation in rural areas reflecting the surrounding environment, and moderate to low-speed operation in urban and urbanizing areas with moderate interruptions to flow."

I-84

I-84 (Columbia River Highway) is a highway of interstate importance. Beginning in Portland at the junction of Interstate 5 near the Willamette River, the highway winds through the Columbia River Gorge and Eastern Oregon before continuing into Idaho. I-84 is the main east-west highway through central Oregon. Throughout Gilliam County, I-84 operates as a four-lane freeway with two travel lanes in each direction. The posted speed is 55 mph for trucks and 65 mph for other passenger vehicles. Roadway shoulders on the left side of the highway in each travel direction are generally two to four feet wide and paved. Roadway shoulders on the right side of the highway in each travel direction are generally eight to ten-feet wide, paved, and more than adequate to accommodate bicyclists. Shoulders on both sides constrict to two to four feet wide when crossing most bridges.

Throughout much of Gilliam County, the highway is bordered by the expansive Columbia River to the north and steep mountain slopes to the south. Highway topography in the western part of Gilliam County is generally flat. Both travel directions are adjacent and separated by a concrete median and the highway shoulders are lined with

intermittent paved vehicle pull-outs. As the highway transitions from western Gilliam County heading eastbound near MP 131.0, the mountainous scenic area gives way to a rolling plateau. Throughout the eastern portion of Gilliam County to the Gilliam/Morrow County line, the highway is primarily grade-separated with the eastbound travel direction elevated and generally out of sight to westbound traffic.

OR 19

OR 19 (John Day Highway) begins at the connection to I-84 in the City of Arlington and runs north-south through the City of Condon and into Wheeler County. OR 19 is a highway of regional importance and serves as the primary freight route between Gilliam County's two largest cities; Arlington and Condon. The highway shares alignment with S. Locust Street in Arlington and with Washington, Walnut, and Main Streets in Condon. In both cities, the highway serves as the main street through town, forming the downtown business core.

The highway is a two-lane roadway with a posted speed of 55 mph except within the city limits of Arlington and Condon. The route is comprised of numerous curves and moderate grade changes resulting in localized rural speed reductions ranging from 35 to 45 mph. Although the highway traverses fairly steep intermittent upgrades in both directions, there are no passing lanes along the highway within Gilliam County. The highway has roadway shoulders on both sides of the highway that are typically four to six feet wide and partially paved. Some shoulders are fully paved, supporting bicycle use; however the intermittent shoulder paving provides a discontinuous bicycle system along the highway.

OR 74

OR 74 (Heppner Highway) is a highway of district importance. Beginning at the connection to I-84, OR 74 travels southeast crossing into Morrow County after only approximately eight miles. Within Gilliam County, the highway is a two-lane roadway with a posted speed of 55 mph. The route is comprised of numerous curves and moderate grade changes resulting in localized rural speed reductions ranging from 30 to 45 mph. Although the highway traverses fairly steep intermittent upgrades in both directions, there are no passing lanes along the highway within Gilliam County. The highway has shoulders on both sides of the roadway that are typically four to six feet wide and partially paved. Due to narrow paving and the presence of loose gravel. the shoulders are not adequately designed to accommodate bicycle use.

OR 206

OR 206 (Wasco-Heppner Highway) is a highway of district importance. The highway enters Gilliam County from Sherman County on a fairly steep descent into a valley bordered by steep slopes. After approximately four miles through mountainous terrain, the highway emerges from the valley into an expansive plateau with rolling terrain. Within Gilliam County, the highway is a two-lane roadway with a posted speed of 55 mph. The route is comprised of numerous curves and moderate grade changes resulting in localized rural speed reductions ranging from 30 to 45 mph. Although the highway traverses fairly steep intermittent upgrades in both directions, there are no passing lanes along the highway within Gilliam County. The highway has shoulders on both sides of the roadway that are typically four to six feet wide comprised of loose gravel. The shoulders are not adequately designed to accommodate bicycle use.

Pavement Conditions

All Oregon state highways are surveyed and assessed annually to determine current pavement conditions. The five pavement condition categories used include: Very Good, Good, Fair, Poor, and Very Poor. A brief definition of the pavement condition categories used by ODOT for both asphalt and Portland cement concrete pavements is provided.

Very Good

Asphalt pavements in this category are stable, display no cracking, patching or deformation and provide excellent riding qualities. Nothing would improve the roadway at this time. Concrete pavements in this category provide good ride quality, display original surface texture, and show no signs of faulting (vertical displacement of one slab in relation to another). Jointed, reinforced pavements display no mid-slab cracks and continuously reinforced pavements may have tight transverse cracks with no evidence of spalling (or chipping away).

Good

Asphalt pavements in this category are stable and may display minor cracking (generally hairline and hard to detect), minor patching, and possibly some minor deformation. These pavements appear dry or light colored, provide good ride quality, and display rutting less than 1/2 inch deep.

Concrete pavements in this category provide good ride quality. Original surface texture is worn in wheel tracks exposing coarse aggregate. Jointed, reinforced pavements may display tight mid-slab transverse cracks, and continuously reinforced pavements may show evidence of minor spalling. Pavements may have an occasional longitudinal crack but no faulting is evident.

Fair

Asphalt pavements in this category are generally stable while displaying minor areas of structural weakness. Cracking is easier to detect, patching is more evident (although not excessive), and deformation is more pronounced and easily noticed. Ride quality is good to acceptable.

Concrete pavements in this category provide good ride quality. Jointed, reinforced pavements may display some spalling at cracks and joint edges with longitudinal cracks appearing at less than 20 percent of the joints. A few areas may require a minor level of repair. Continuously reinforced pavements may show evidence of spalling with longitudinal cracks appearing in the wheel paths on less than 20 percent of the rated section. Shoulder joints may show evidence of deterioration and loss of slab support and faulting may be evident.

Poor

Asphalt pavements in this category are marked by areas of instability, structural deficiency, large crack patterns (alligatoring), heavy and numerous patches, and visible deformation. Ride quality ranges from acceptable to poor.

Concrete pavements in this category may continue to provide acceptable ride quality. Both jointed and continually reinforced pavements display cracking patterns with longitudinal cracks connecting joints and transverse cracks occurring more frequently. Occasional punchout (or pothole) repair is evident. Some joints and cracks show loss of base support.

Very Poor

Asphalt pavements in this category are in extremely deteriorated condition marked by numerous areas of instability and structural deficiency. Ride quality is unacceptable. Concrete pavements in this category display a rate of deterioration that is rapidly accelerating.

Pavement conditions along the four state highway segments within Gilliam County vary in both the rural and urban areas. There are nearly 136 miles of state highway pavement mileage in Gilliam County. Approximately 56 percent of the highway mileage in Gilliam County is in Good or Very Good pavement condition while 24 percent is in Fair condition. Therefore, approximately 80 percent of all highway mileage meets ODOT's standard of "fair or better" pavement condition. The final 20 percent of highway mileage is in Poor pavement condition. Roughly 40 percent of the Poor condition pavement lies along I-84 between the City of Arlington and the Morrow County line. The remaining 60 percent lies along OR 206 between Ferry Canyon and Morrow County. Table 3-3 summarizes the state highway pavement conditions as of 1997.

TABLE 3-3
1997 STATE HIGHWAY PAVEMENT CONDITIONS

Highway	Milepost	Section Description	1997 Pavement Condition
I-84	114.55 - 122.98	Sherman Co. to Quinton	Very Good
	122.98 - 138.0	Quinton to Arlington	Good
	138.0 - 149.50	Arlington to Morrow Co.	Poor
OR 19	0.00 - 0.60	I-84 jct. to E. 3rd St. (Arlington)	Good
	0.60 - 7.25	E. 3rd St (Arlington) to MP 7.25	Very Good
	7.25 - 17.03	MP 7.25 to Rock Creek	Good
	17.03 - 24.60	Rock Creek to Wilkin Ranch	Fair
	24.60 - 37.50	Wilkin Ranch to Condon	Very Good
	37.50 - 38.63	Condon Urban Area	Fair
	38.63 - 52.06	Condon to Morrow Co. line	Good
OR 74	0.00 - 8.44	I-84 jct. to Morrow Co.	Good
OR 206	14.95 - 34.0	Sherman Co. line to Ferry Canyon	Fair
	34.0 - 40.18	Ferry Canyon to Condon	Poor
	40.18 - 41.35	Condon Urban Area	Poor
	41.35 - 47.00	Condon to MP 47.00	Poor
	47.00 - 52.00	MP 47.00 to Rock Creek	Fair
	52.00 - 54.86	Rock Creek - Morrow Co. line	Poor

Source: 1997 Pavement Condition Report - Oregon Department of Transportation Pavements Unit.

Bridges

Bridge inventory data as of April 1998 was obtained from ODOT's Bridge Maintenance Section and was reviewed. Three mutually exclusive elements are used to rate bridge conditions: structural deficiency, functional obsolescence, and sufficiency rating. Structural deficiency 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. Functional obsolescence is determined based on the appraisal rating for the deck geometry, underclearances, approach roadway alignment, structural condition, or waterway adequacy. 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 zero 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.

County Bridges

Gilliam County owns and maintains 16 bridges, which are included in the state bridge inspection inventory. Currently, one county-owned bridge is identified as being functionally obsolete. The bridge (ODOT Bridge No. 21C04) spans Rock Creek and is located along Cayuse Canyon Road (County Road No. 772) approximately 4.4 miles east of OR 19. Additionally, one county-owned bridge has a sufficiency rating below 55. The bridge (ODOT Bridge No. 21C17) spans Ferry Canyon Creek and is located along Alville Lane (County Road No. 600) approximately one mile west of OR 206. Neither bridge is scheduled for improvements under ODOT's final 1998-2001 STIP. No county-owned bridges were identified as being structurally deficient.

State Bridges

The state owns and maintains 54 bridges located on state highways in both rural and urban Gilliam County. There are 16 bridges located on I-84, 28 bridges located on OR 19, and five bridges each located on OR 74 and OR 206.

Currently, two state-owned bridges are identified as being functionally obsolete. The first bridge (ODOT Bridge No. 08820) spans the Arlington Viaduct and is located along I-84 at MP 137.91 near Arlington. The second bridge (ODOT Bridge No. 09198) crosses over I-84 and is located along OR 74 at the I-84 junction. Neither of these two bridges are scheduled for improvements under ODOT's final 1998-2001 STIP. No state-owned bridges were identified as being structurally deficient or having a sufficiency rating below 55.

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 a means of travel. This is mainly because pedestrian facilities are generally an afterthought and not planned as an essential component of the transportation system.

The majority of pedestrian traffic in Gilliam County is found within the Cities of Arlington and Condon. Pedestrian facilities within these cities are covered under each city's TSP. There is little, if any, demand for pedestrian facilities outside the cities due to the rural nature of the county and the vast distances between trip generators. Attempts to encourage people to walk many miles between these destinations would likely be ineffective.

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 while parked, do not contribute to air or noise pollution, and offer relatively higher speeds than walking.

Currently, there are no sanctioned bikeways in Gilliam County. Intermittent rural segments of OR 19 have adequately designed shoulders that are paved and wide enough to accommodate bicyclists. Additionally, intermittent segments of OR 19 and OR 206 adequately serve as shared roadway facilities through the urban areas of Arlington and Condon, where speeds and traffic volumes are relatively low. Although bicycle use along rural highway segments in Gilliam County is low, and likely predominated by recreational users, the discontinuity of adequate shoulders along highways discourages bicycle use. With slightly more than 75 percent of all roadway mileage in the county being gravel, the state highway system provides the only viable link for bicyclists to destinations within the county.

PUBLIC TRANSPORTATION

There is no established fixed-route public transportation system anywhere in Gilliam County. The Mid-Columbia Bus Company operates home-to-school bus service for the County's two school districts located in Arlington and Condon. Mid-Columbia maintains an office and storage facility for its five school buses in Arlington and operates its primary storage facility and maintenance hub in Condon. Since the state requires school bus coverage for elementary students that live more than three-quarters of a mile from school and for high school students that live more than one-mile from school, Mid-Columbia's bus coverage is widespread.

Mid-Columbia also operates charter bus service within the county and much of Oregon to various destinations including Seattle, Washington. Within Gilliam County, Mid-Columbia operates 10 charter buses out of Condon. This service is targeted to adult passengers and serves only Arlington and Condon within the County.

Demand responsive, otherwise referred to as "dial-a-ride," transit is available in Arlington and Condon. Both cities operate one handicapped-access van and a 12 passenger van. This volunteer program is provided as a special transportation service primarily for seniors. Arlington and Condon each have transit coordinators that work in cooperation with Gilliam County and the Mid-Columbia Council of Governments who manage the provision of the service.

TRANSPORTATION DISADVANTAGED

The transportation disadvantaged are generally those people that either due to age, economic status, or physical or mobility impairment do not have access to mainstream transportation modes such as automobiles, bicycles, or walking. Young children for instance are generally dependent upon parents to serve their transportation needs. Many elderly people that can no longer drive are dependent on other transportation sources including demand responsive or "dial-a-ride" transportation. It is important for communities to understand what segment of the population is considered transportation disadvantaged and to take steps to plan service to these people.

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.

The Portland State University Center for Population Research and Census estimated the Gilliam County population at 1,950 residents in 1997. The Center further estimates that 468 of those people, or nearly one-quarter of the population, are 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 383, or about 20 percent of the population, are under the age of 16, the legal driving age in Gilliam County.

According to the 1990 Census, 11.9 percent of the 1,717 persons living in Gilliam County at the time were below the poverty level. Poverty statistics are based on a threshold of nutritionally-adequate food plans by the Department of Agriculture for the specific size of the family unit in question. The distribution of the population below poverty level shows that a larger proportion of younger persons than older persons are affected by this indicator, as shown in Table 3-4.

Economic status has traditionally been linked with auto ownership. People living below the poverty line are less likely to be able to afford ever increasing ownership and operating costs associated with auto use. Lack of access to the automobile has also traditionally been linked with inability to access better paying jobs above the poverty line since many poor people do not live within walking or biking distance to these jobs.

TABLE 3-4
GILLIAM COUNTY POVERTY STATUS- 1990 CENSUS RESULTS

Age	Number Below Poverty Level	Total Age Group Population	Percent of Total Age Group Population Below Poverty
11 and under	47	333	19.4%
12 to 17	26	135	19.3%
18 and older	131	1,249	10.5%
Total	204	1,717	11.9%

Source: 1990 Census.

A mobility impairment can impact a person's access to destinations outside of the home unless specially equipped transportation is available. As mentioned previously, Gilliam County does provide handicapped access to residents in Arlington and Condon. Provision of specialty services to more rural residents may need to be addressed by the county. The Census Bureau reports that 2.3 percent of the population in Gilliam County 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. Table 3-5 summarizes the mobility status of Gilliam County residents as reported in the 1990 census.

TABLE 3-5
GILLIAM COUNTY MOBILITY STATUS- 1990 CENSUS RESULTS

	Mobility Limitation				
Age	Male	Female	Total	Total Population in Age Groups	Percent of Total Age Group Population with Mobility Limitation
16 to 64	1	2	3	956	0.3%
65 to 74	7	7	14	194	7.2%
75 and over	5	8	13	138	9.4%
Total	13	17	30	1,288	2.3%

Source: 1990 Census.

Using the proportion of the population with a mobility limitation and below the poverty level[1] in 1990, DEA estimated the number of people with specific transportation needs in 1997. Children under the age of six

[1] DEA used the Census Bureau's age diaggregation to estimate that 13.2 percent of the population 16 and older was under the poverty level in 1990.

were not included assuming that their transportation needs would be provided for in some way most likely by parents. Table 3-6 indicates that as of 1997, nearly 25 percent of the Gilliam County population may have specific transportation needs. There is likely to be some overlap between the 1.7 percent of the population with mobility limitations and the 8.2 percent below the poverty level; therefore, the sum of the figures may slightly overstate the proportion of the population with specific transportation needs.

TABLE 3-6
ESTIMATED 1997 GILLIAM COUNTY POPULATION WITH SPECIFIC TRANSPORTATION NEEDS

Demographic Group	Percent of Total County Population	Estimated Number
Persons between the ages of 5 and 15	14.9%	290
Persons 16 and older under the Poverty Level	8.2%	160
Persons 16 and older with Mobility Limitations	1.7%	33
Total Specific Transportation Needs Populations	24.8%	483

In many communities, public transit serves a large segment of the transportation disadvantaged. Public transit can serve children, elderly, poor, and handicapped patrons. Traditional fixed route does not exist in Gilliam County. Evaluation and expansion of existing services may be appropriate.

RAIL SERVICE

The Union Pacific Railroad maintains a rail line along the I-84 corridor throughout Arlington with a spur that runs through Arlington approximately 11 miles south along OR 19 to the Waste Management facility located on Cedar Springs Road. The Waste Management facility generates one outgoing 60 to 90 car freight train daily during the week with occasional service on Saturday. The daily roundtrip train service brings a loaded train into the landfill site in the morning from Seattle, WA which upon off-load, returns empty at night. This freight operation represents the extent of rail service in Arlington and Gilliam County.

Approximately five years ago, Union Pacific Railroad ceased rail operations between Arlington and Condon and along the OR 74 corridor. Both rail lines have been physically removed. Freight operations between Arlington and Condon are now primarily accommodated via truck.

AIR SERVICE

Gilliam County is served by two airports located in Arlington and Condon. Arlington Municipal Airport is owned by the city and operates for private and agriculture use only. The airport is not staffed and consists of a turf and loose gravel runway measuring 3,000 feet by 50 feet. Arlington's airport is not lit, precluding nighttime operations. If needed, the airport property could support development of additional landside facilities and could support extension of the runway to 5,000 feet in length. However, the city has no plans to further develop the airport at this time.

Condon State Airport's - Pauling Field in Condon is owned by the state. Pauling Field has one concrete runway measuring 3,500 feet by 60 feet and is equipped with medium intensity runway lighting, supporting nighttime operations. The airport primarily serves private and charter users but is not staffed.

Master Plans have not been prepared for either airport. However, Gilliam County recognizes the importance, existing and future, of maintaining these two airport facilities. According to *Gilliam County's Comprehensive Plan*, the county will follow policies to "...protect these airports from hazards to navigation and to otherwise encourage the development of adjacent lands and facilities in a manner conducive to increased utilization."

The nearest passenger-use airport is located in Pendleton. Eastern Oregon Regional Airport in Pendleton is a tower controlled airport with 40,600 annual operations. Passenger service includes 16 scheduled flights per day by Horizon Airlines, with flights to Portland and Seattle. The airfield is also home to 60 locally owned fixed-wing aircraft, four rotor, and eight CH-47 Chinook helicopters with the Oregon Army Air Guard.

The Portland International Airport is located about 140 miles to the west of Arlington. Most people probably use this airport for air travel.

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. Two natural gas pipelines maintained by Pacific Gas Transmission traverse the central portion of Gilliam County. Although the county is not currently served by the pipelines, future natural gas service within the county has been discussed. Although a substation location has not been addressed, the pipelines' proximity to an urban center is closest to Condon; located about seven miles north of the city.

WATER TRANSPORTATION

Water transportation in Gilliam County is concentrated in the Arlington area and consists of river cargo operations and marina operations, which are both, managed through the Port of Arlington. The two primary sources of information used by DEA to research water transportation include review of the *Port of Arlington Expansion Study*, March 1998 and a personal interview with representatives of Cargill Enterprises, the Port of Arlington's single tenant and operator of the Port's grain elevator.

Cargo Operations

The Port of Arlington is located within Arlington's city limits on the north side of I-84 and abutting the Columbia River. The Port is presently engaged in grain export only and Port facilities consist of a single 703,000 bushel capacity grain elevator with one leg (or loading conveyor). The Port also maintains an 80-foot slip on the river to moor barges awaiting loading. There is currently only one marine cargo operator in the Port District— Cargill Enterprises, Inc. Cargill has been a long term tenant with the Port and leases use of the grain elevator.

The export of grain is critical to Gilliam County's largely agriculture-based economy. The County is a leading grain producer in the state. The only cargo, historically and currently, exported from Arlington is grain. Historically, no cargo has been imported to Arlington by water. Exported grain from Arlington travels via barge to Portland for export internationally.

Demand on the Port facility varies throughout the year. Farmers harvest their grain in the summer months, transporting a portion for immediate sale and export through the Port and storing some for sale later. The three peak periods of export volume through the Port are from late June to late September following harvest, November and December as farmers sell some of the grain they've been storing for money to get through the winter, and from February to March as farmers empty their storage bins in preparation for the next harvest and earn money to pay taxes. During these peak periods, which cover nearly seven months of the year, truck

traffic through the Port averages approximately 100 trucks per day. Cargill representatives have indicated that at times, the Port exceeds the storage capacity of its existing bins and the capacity of its single loading conveyor. Although results of the *Port of Arlington Expansion Study* concluded that, "there is inadequate grain production in Arlington's service area to justify establishment of a second grain terminal" Cargill has indicated a potential future need to have the Port build additional bins and install an additional loading conveyor to keep up with demand.

Truck circulation through the Port facility has not been a problem in the past. Trucks enter the Port district on Arlingtonport Road and proceed to the west end of the Port where they drive eastbound through the truck scale and off-load site. Upon being off-loaded, trucks proceed eastbound out of the Port district. While trucks circulate along Arlingtonport Road, they share the roadway with motorists accessing the marina and recreational boat launch facilities and those parking near the east tip of the Port site to access the Columbia River to windsurf or engage in other recreational activities. Cargill representatives at the Port perceive recent increases in recreational traffic and have indicated a concern that continued increases in traffic could hinder continued safe traffic circulation through the facility.

Expansion of cargo operations within the Port facility other than grain transport appears limited. According to the *Port of Arlington Expansion Study*, the very limited developable area available to support cargo operations (about 2 acres adjacent to the grain elevator) is inadequate to support either rock or container activities which are the only two identified potential cargos for movement through the Port. Although the report indicates that future throughput of cargo to the landfill is a potential business opportunity, the report also indicates that Waste Management is not pursuing this option.

Marina Operations

The Port of Arlington owns and operates a marina that is part of the riverfront complex. The riverfront complex also includes a recreational boat launch and recreational vehicle park. The marina is served by an inlet from the Columbia River and offers about 800 gross frontage feet for tie-up and moorage. Services provided include: lighting, sewer dump, parking, and restrooms. The marina site is located adjacent to the Earl Snell Memorial Park located to the south which is a popular swimming and picnic destination. According to the *Port of Arlington Expansion Study*, the Port has excess moorage capacity and has not historically had, and does not currently have, a waiting list. Based largely on these facts, the study concludes that marina expansion is not warranted.

CHAPTER 4: CURRENT TRANSPORTATION CONDITIONS

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

TRAFFIC VOLUMES

A large base of traffic volume counts exists for Gilliam County. Extensive 24-hour counts were performed by ODOT on the state highways throughout the county during 1997.

Average Daily Traffic

County Roads

Gilliam County has not collected or maintained traffic count information along county roads in recent years. Typical ADT volumes experienced in other largely rural Oregon counties of similar population provide a reasonable guideline for expected volumes in Gilliam County. It is expected that major collectors in the county generally carry ADT volumes in the range of 100 to 200 vehicles per day (vpd). The minor collectors generally carry ADT volumes in the range of 50 to 100 vpd. Traffic volumes on local streets are typically very low, generally less than 50 vpd.

State Highways

The 1997 ADT volumes on the state highways in Gilliam County are shown in Figure 4-1. Traffic volumes are highest in the cities and drop off significantly in the rural sections.

The volumes shown in Figure 4-1 are average volumes for the year. Summertime is the season when volumes are highest. ODOT data on OR 19 and OR 206 south of Arlington and south of Condon, respectively, indicated that during the summer season, volumes are about 15 to 20 percent higher than average volumes. Rural highway sections in Gilliam County are assumed to follow the same pattern, with smaller increases in the urban areas. Summertime variations along I-84 east of Arlington ran as high as 36 percent. The summertime variations are due, in part, to increases in freight movement related to agricultural harvesting.

I-84

ADT volumes along I-84 reach 9,900 vehicles per day (vpd) at the Sherman/Gilliam County line, peaking at 10,000 vpd between the Quinton interchange and OR 19, and tapering down to 9,400 vpd at the Gilliam/Morrow County line. With the exception of a slight dip in 1996, traffic along I-84 has steadily increased over the last ten years.

OR 19

OR 19 (John Day Highway) carries the second highest traffic volumes in the county. Rural highway segments carry traffic levels ranging from 290 vpd near Baseline Road to 1,600 vpd near Eight-Mile canyon Road. Average rural traffic levels are roughly 450 to 500 vpd. Traffic levels are highest in the urban areas of Condon

and Arlington. Arlington experiences traffic levels of 1,800 to 1,900 vpd throughout its city limits while Condon experiences traffic levels ranging from 2,700 vpd along Walnut Street east of OR 206 to 520 vpd at the south city limits.

OR 74

Traffic volumes on the rural section of OR 74 (Heppner Highway) in Gilliam County range from 160 vpd near the Columbia River to 140 vpd at the Gilliam/Morrow County line.

OR 206

Rural traffic volumes on OR 206 (Wasco-Heppner Highway) range from 310 to 500 vpd west of Condon and from 250 to 70 vpd east of Condon. The lowest ADT in the county, 70 vpd, is reported at the Gilliam/Morrow County line. Traffic volumes within Condon range from 250 vpd at the east city limits to 1,100 vpd between Church and Main Streets.

Roadway 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 4-1 presents the level of service criteria for facilities encountered in Gilliam County including: freeways, two-lane highways, and unsignalized intersections. Appendix F provides a qualitative description of level of service for freeways and two-lane rural highways.

TABLE 4-1
LEVEL OF SERVICE CRITERIA FOR ROADWAY FACILITIES AND TRAFFIC CONTROL

Level of Service	Type of Roadway or Traffic Control Device		
	Freeways	Two-Lane Rural Highway Sections[1]	Unsignalized Intersections
	Minimum Speed (mph)	Average Speed (mph)[2]	Average Delay (seconds/vehicle)
A	65.0	≥ 57	≤ 5
B	65.0	≥ 54	> 5 and ≤ 10
C	64.5	≥ 51	> 10 and ≤ 20
D	61.0	≥ 49	> 20 and ≤ 30
E	39.3 -43.4	≥ 40	> 30 and ≤ 45
F	varies	< 40	> 45

Notes:

1. LOS shown for rolling terrain only as it applies to Gilliam County. LOS changes under flat or mountainous terrain.
2. Average speeds based on a design speed of 60 mph or greater.

Source: Transportation Research Board, Highway Capacity Manual, Special Report 209. National Research Council, 1994.

The OHP establishes operating level of service standards for the state highway system[2]. Highways of interstate importance, such as I-84, should operate at LOS C or better (i.e., minimum speed of 65 mph for passenger cars and 55 mph for trucks as posted) in urban and urbanizing areas and at LOS B or better in rural areas (i.e., same speed standards as for urban areas). For highways of Regional importance such as OR 19, the roadway should operate at LOS C (i.e., average speed ≥ 51 mph) in rural areas. For highways of district importance, such as OR 74 and OR 206, the roadways should operate at LOS C (i.e., average speeds ≥ 51 mph) in rural areas.

The operations analysis of Gilliam County's state highway system focused on the rural sections of the highways (those sections outside the incorporated cities). Capacity along those roadway segments was evaluated in two different ways: traffic operations along the roadway alone and traffic operations at major intersections. No urban sections of roadway were addressed as part of this analysis. The urban section analyses can be found in the separate TSP reports prepared for Arlington and Condon.

Rural Roadway Operations

The traffic operation of mainstream traffic along the rural highway sections were determined using the 1994 Highway Capacity Software. This software is based on the *1994 Highway Capacity Manual*, Special Report 209, published by the Transportation Research Board. Analysis of a rural two-lane highway takes into account the magnitude, type, and directional distribution of traffic as well as roadway features such as the percentage of no-passing zones, general terrain, and lane and shoulder widths.

For each of the five rural highway segments in Gilliam County, the peak hour traffic was assumed to be ten percent of the 24-hour ADT volume reported in ODOT's *1997 Traffic Volume Table* and the directional split was assumed to be 60/40. Since all rural segments have multiple ADT volumes reported, a worst case analysis was performed using the highest reported volume for each segment.

The operations on the rural sections of the highway were analyzed for a typical peak hour condition. The resulting level of service for each highway segment is shown in Table 4-2. All rural segments of the state highways currently operate at LOS A.

TABLE 4-2
SUMMARY OF OPERATIONS ON TWO-LANE HIGHWAYS

Location	1997 LOS
OR 19 between Arlington and Condon	A
OR 19 between Condon and Wheeler/Gilliam Co. line	A
OR 74 between I-84 and Morrow/Gilliam Co. line	A
OR 206 between Sherman/Gilliam Co. line and Condon	A
OR 206 between Condon and Morrow/Gilliam Co. line	A

[2]1991 *Oregon Highway Plan*, Appendix A, Table 1, Operating Level of Service Standards for the State Highway System.

Freeway Operations

Analysis of freeway operations is based on traffic volumes and composition (i.e., percent trucks), lane widths, lateral clearance between the edge of the travel lane and the nearest roadside or median obstacle or object influencing traffic behavior, and driver population (i.e., regular and familiar users of the facility).

Freeway operations were analyzed along I-84 east of Arlington near ODOT's automatic traffic recorder at MP 146.16. This segment of the freeway was chosen due to the combination of high ADT volumes and the high percentage of truck traffic which produce a worst-case freeway analysis within Gilliam County. The freeway was analyzed using 1997 ADT volumes representing average daily conditions and using the same 1997 ADT volumes increased by 36 percent to represent traffic levels during peak summer conditions. Peak hour traffic was assumed to represent ten percent of the 24-hour ADT volumes used and the directional split was assumed to be 60/40.

The resulting LOS for average and peak summer traffic conditions was LOS A.

Operations at Intersections

Traffic operations were determined at intersections along the critical urban highway sections using the *1994 Highway Capacity* software. Since all intersecting streets and driveways are controlled by STOP signs in these areas, the analysis was performed for unsignalized intersections.

The traffic operations were analyzed for two intersections located along the critical urban sections of the state highways: OR 19 and Main Street in Arlington and OR 19 and OR 206 in Condon. Traffic operations were analyzed using a peak hour two-way traffic volume representing ten percent of the 1997 ADT. Also, a 60/40 directional split was used to reflect the distribution of traffic on the highways during the peak hour. Volumes approaching OR 19 on Main Street in Arlington were assumed to equal those along the highway representing a worst-case analysis.

Under these assumptions, the highway intersections operate at LOS A for all movements at both intersections. This indicates that all other lower-volume roads or driveways accessing any rural or urban portion of the highways are operating at LOS A as well.

TRANSPORTATION DEMAND MANAGEMENT MEASURES

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

Alternative Work Schedules

One way to maximize the use of the existing transportation system is to spread peak traffic demand over several hours instead of a single hour. Statistics from the 1990 US Census show the spread of departure to work times over a 24-hour period (see Table 4-3). Thirty-seven percent of the total employees depart for work between 7:00 and 8:00 a.m. Another 37 percent depart in either the hour before or the hour after the peak.

TABLE 4-3
GILLIAM COUNTY DEPARTURE TO WORK DISTRIBUTION

	1990 Census	
Departure Time	**Trips**	**Percent**
12:00 a.m. to 4:59 a.m.	9	1.3
5:00 a.m. to 5:59 a.m.	43	6.0
6:00 a.m. to 6:59 a.m.	118	16.5
7:00 a.m. to 7:59 a.m.	265	37.1
8:00 a.m. to 8:59 a.m.	148	20.7
9:00 a.m. to 9:59 a.m.	44	6.2
10:00 a.m. to 10:59 a.m.	7	1.0
11:00 a.m. to 11:59 a.m.	8	1.1
12:00 p.m. to 3:59 p.m.	38	5.4
4:00 p.m. to 11:59 p.m.	34	4.7
Total	**714**	**100.0**

Source: US Bureau of Census, 1990 Census.

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

Travel Mode Distribution

Although the automobile is the primary mode of travel for most residents in Gilliam County, other modes are used as well. Modal split data are not available for all types of trips; however, the 1990 Census data does include statistics for journey to work trips as shown in Table 4-4 and travel time to work as shown in Table 4-5. The census data reflects the predominance of automobile use.

Most Gilliam County residents travel to work by private vehicle. In 1990, 83 percent of all trips to work were in an auto, van, or truck. Trips in single-occupancy vehicles accounted for 72 percent of all trips and carpooling accounted for 11 percent.

Use of the automobile for commuting is not surprising for people with home to work travel times exceeding five minutes, since a five minute automobile trip could cover a number of miles while a five minute walking trip will likely cover about one-quarter to one-half mile. However, while 30 percent of work trips in Gilliam County took less than five minutes as of 1990, only eight percent were made by walking. A commonly used threshold for acceptable walking distances is one-quarter mile. At a reasonable walking pace of 240 feet per minute, an average person can walk one-quarter mile in 5.5 minutes. Therefore, the opportunity for increased walking appears to exist in the county. However, for walking to occur safely and efficiently, there needs to be acceptable infrastructure (e.g., sidewalks, roadway shoulders) in place to support it. Since most pedestrian facilities, although fragmented, exist in the cities of Arlington and Condon, these two cities are the most likely places to incur increased pedestrian usage.

The complete lack of reported bicycle usage as a commute mode was lower than many other primarily rural Oregon counties in 1990. Since the census data do not include trips to school or other non-work activities, overall bicycle usage may be higher. There are no roadways in Gilliam County with dedicated bicycle lanes on them, however, portions of state highways do have adequate shoulders to accommodate bicycle use. In addition to bicycle lanes, bicycle parking, showers, and locker facilities can help to encourage bicycle commuting.

Pedestrian activity was relatively high (8 percent of trips to work) in 1990. Again, census data do not include trips to school or other non-work activities.

TABLE 4-4
GILLIAM COUNTY JOURNEY TO WORK TRIPS

	1990 Census	
Trip Type	**Trips**	**Percent**
Private Vehicle	642	83.2
Drove Alone	*555*	*71.9*
Carpooled	*87*	*11.3*
Public Transportation	0	0.0
Motorcycle	2	0.3
Bicycle	0	0.0
Walk	59	7.6
Other	8	1.0
Work at Home	61	7.9
Total	**772**	**100.0**

Source: US Bureau of Census, 1990 Census.

TABLE 4-5
GILLIAM COUNTY TRAVEL TIME TO WORK DISTRIBUTION

	1990 Census	
Departure Time	**Trips**	**Percent**
Less than 5 minutes	232	30.0
5 to 9 minutes	174	22.5
10 to 14 minutes	56	7.3
15 to 19 minutes	85	11.0
20 to 29 minutes	84	10.8
30 to 39 minutes	34	4.4
40 to 59 minutes	23	3.0
60 to 89 minutes	23	3.0
more than 90 minutes	3	0.1
Worked at home	61	7.9
Total	**775**	**100.0**

ACCIDENT ANALYSIS

David Evans and Associates, Inc., reviewed accident data along the state highways within Gilliam County to identify high accident locations, potential accident patterns, and safety concerns at these locations. The two sources of accident data reviewed included:

- Accident summaries generated by ODOT's Transportation Development Branch for the three-year period from January 1, 1994 to December 31, 1996.

- Accident summaries generated from the ODOT Accident Summary Database for locations along the state highways in Gilliam County.

ODOT's Accident Summary Database calculates two useful factors for comparison with statewide statistics based on accident information over the three-year period studied. The first factor is a computed average three-year accident rate, which compares the number of accidents with the ADT volume and the length of the segment analyzed. The second factor is the Safety Priority Index System (SPIS) value. This factor evaluates accident frequency, severity, and traffic volumes to create an index for prioritizing state highway locations with safety concerns.

Additionally, ODOT collects detailed accident information on an annual basis along I-84 and OR 19, 74, and 206 in Gilliam County. The accident information data shows overall accident rates for the routes and accident locations. The accident rate for a stretch of roadway is typically calculated as the number of accidents per million vehicle miles traveled along that segment of roadway.

Historic

Table 4-6 shows the accident rates for I-84 and OR 19, 74, and 206 in Gilliam County as well as the Oregon statewide average for rural freeway and urban and rural non-freeway primary state highways from January 1, 1994 to December 31, 1996.

The accident rates for the rural segments of I-84 during the three years analyzed are lower than the statewide average for similar highways except in 1996 where the highway segment east of Arlington roughly doubled the statewide average. The urban segments displayed lower rates over the three-year period.

The three-year accident rates for OR 19 are only available for rural segments of the highway and are well below the statewide average.

The 1996 accident rate for rural OR 74 is more than double the 1996 statewide average for similar highways, which may indicate a safety concern along this stretch of highway. The three-year accident rates for the rural portion of OR 206 west of Condon are below the statewide average. However, east of Condon, the rates exceed the statewide averages. This stretch of highway has also displayed a threefold increase in its accident rate from 1995 to 1996 indicating a possible safety concern.

TABLE 4-6
HISTORIC ACCIDENT RATES FOR STATE HIGHWAYS
(Accidents per Million Vehicle Miles Traveled)

Highway	1996	1995	1994
Primary State Highways			
I-84 (Columbia River Highway)			
Rural: Sherman/Gilliam Co. line to Quinton Interchange	0.06	na	0.12
Rural: Quinton Interchange to Blalock Interchange	0.13	0.09	0.22
Rural: Blalock Interchange to Arlington	0.24	0.10	0.20
Urban: Arlington- West city limits to OR Hwy 19	na	na	na
Urban: Arlington- OR Hwy 19 to OR Hwy 19 connection	0.66	na	0.65
Urban: Arlington- OR Hwy 19 connection to east city limits	na	na	na
Rural: Arlington east city limits to OR Hwy 74	0.63	0.13	0.17
Rural: OR Hwy 74 to Morrow/Gilliam Co. line	0.50	na	0.24
OR 19 (John Day Highway)			
Urban: I-84 to Arlington south city limits	na	na	1.63
Rural: Arlington south city limits to Condon	0.34	0.47	0.31
Urban: Condon- north city limits to OR Hwy 206 (Main St.)	na	na	na
Urban: Condon- OR Hwy 206 to Bayard St.	na	na	na
Urban: Condon- Bayard St. to south city limits	na	na	na
Rural: Condon south city limits to Wheeler/Gilliam Co. line	0.59	na	na
OR 74 (Heppner Highway)			
Rural: I-84 to Morrow/Gilliam Co. line	2.08	na	na
Secondary State Highways			
OR 206 (Wasco-Heppner Highway)			
Rural: Sherman/Gilliam Co. line to Condon	0.81	0.39	0.78
Urban: Condon- West city limits to OR Hwy 19	na	na	na
Urban: Condon- OR Hwy 19 to east city limits	na	na	na
Rural: Condon east city limits to Morrow/Gilliam Co. line	3.35	1.07	na
Average for all **Rural/Urban** Freeway Primary State Highways	**0.31/0.99**	**0.14/0.58**	**0.27/0.93**
Average for all **Rural** Non-freeway Primary/Secondary State Highways	**0.89/1.26**	**0.89/1.11**	**0.81/1.10**
Average for all **Urban** Non-freeway Primary/Secondary State Highways	**3.63/3.10**	**3.98/3.27**	**3.45/2.79**

Source: 1996 Oregon Department of Transportation Accident Rate Tables.

Table 4-7 contains detailed accident information on I-84 and OR 19, 74, and 206 in Gilliam County 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 Gilliam County.

TABLE 4-7

HIGHWAY ACCIDENT SUMMARIES
(January 1, 1994 to December 31, 1996)

Location	Fatalities	Injuries	PDO[1]	Total Accidents	Accident Frequency (acc/mi/yr)	Accident Rate (acc/mvm)
I-84 *(Columbia River Hwy)*						
Sherman Co. to Arlington (MP 114.95 - 137.56)	0	19	21	32	0.47	0.14
Arlington to Morrow Co. (MP 137.56 - 149.50)	2	38	21	35	0.98	0.31
OR 19 (*John Day Hwy*)						
Arlington to Condon (MP 0.00 - 37.50)	0	4	3	7	0.06	0.37
Condon to Wheeler Co. (MP 37.50 - 38.68)	0	1	0	1	0.28	na
OR 74 (*Heppner Hwy*)						
I-84 to Morrow Co. (MP 0.00 - 8.44)	0	1	0	1	0.04	2.08
OR 206 (*Wasco-Heppner Hwy*)					0.07	
Sherman Co. to Condon (MP 14.95 - 40.18)	1	5	1	5		0.66
Condon to Morrow Co. (MP 40.18 - 54.86)	0	4	3	4	0.09	2.21

Notes:
1. PDO: Property Damage Only Accident
Source: Oregon Department of Transportation Accident Summary Database Investigative Report.

I-84 (Columbia River Highway)

Within Gilliam County during the three-year period analyzed, there were 67 reported accidents, 42 of which were reported as property damage only. There were two fatalities and 57 injuries on the freeway during the period. Most accidents (44) occurred during daylight hours and nearly 35 percent involved wet or icy pavement conditions. The most common types of accidents involved vehicles hitting fixed objects (28), rear-end collisions (10), and side-swiping collisions involved in vehicle passing maneuvers (7). Over half of the accidents involving vehicles that hit fixed objects occurred under wet or icy pavement conditions.

The reported accidents were scattered along the freeway throughout the county. Of the 52 reported accident locations, only ten locations experienced multiple accidents and only one experienced four accidents; the maximum reported. This location (MP 147.0) is less than one-quarter mile west of the OR 74 junction. Of the four reported accidents at this location, three involved rear-end collisions and the four accidents in total resulted in one fatality, seven severe injuries, six moderate injuries, and three minor injuries. All accidents were in the eastbound direction. Although the number of accidents at this location is not excessively high for a three-year period considering the relatively high ADT volumes, the severity of the accidents resulted in ODOT's designation of this location as a high SPIS location. This designation places this accident location in the top ten percent of serious accident locations in the state over the three-year period reviewed. The 1997 SPIS value for this location was 46.13, exceeding the cutoff value of 42.7.

OR 19 (John Day Highway)

There were eight (8) accidents along OR 19 in Gilliam County during the three-year period analyzed. These consisted of no accidents with fatalities, five with injuries and five with property damage only. All accidents occurred along rural sections of the highway, all but one occurred during daylight hours, and three occurred under wet/icy roadway conditions. The most common types of accidents involved vehicles hitting fixed objects (4), turning maneuvers (2), and rear-end collisions (1). Half of the accidents involving vehicles that hit fixed

objects occurred under icy pavement conditions. The accidents were scattered along the roadway segment and there were no particular locations that showed a consistent accident pattern. Accident rate information for 1994-1996 shows that the rural section of OR 19 between Arlington and Condon has a three-year accident rate (0.37) less than half the statewide average for similar highways (0.86) indicating no safety issues along this primary segment of highway.

OR 74 (Heppner Highway)

There was only one (1) ODOT-reported accident along OR 74 within Gilliam County during the three-year period analyzed. The accident occurred at MP 4.50, about one-half mile south of Willow Creek, and resulted in one severe injury.

OR 206 (Wasco-Heppner Highway)

There were nine (9) accidents along OR 206 in Gilliam County during the three-year period analyzed resulting in one fatality, five severe injuries, three moderate injuries, and one minor injury. All accidents occurred along rural sections of the highway, all but two occurred during daylight hours, and three occurred under icy roadway conditions. The most common types of accidents involved vehicles hitting fixed objects (4) and turning maneuvers (2) Half of the accidents involving vehicles that hit fixed objects occurred under icy pavement conditions. The accidents were scattered along the highway and there were no particular locations that showed a consistent accident pattern. Accident rate information for 1994 to 1996 shows the rural segment of OR 206 between the county line and Condon has a three-year accident rate (0.66) less than below the statewide average for similar highways (0.86) indicating no safety issues along this primary segment of highway. The rural segment east of Condon has a rate (2.21) nearly three-times as high as the statewide average.

One location was designated as a high SPIS location by ODOT. The location is at MP 15.30, which is nearly one-half mile east of the Gilliam County line. This location experienced only one accident in the three-year period, but it resulted in one fatality and one severe injury. Calculation of ODOT's SPIS value heavily weights fatalities and severe injuries. This fact coupled with the very low ADT volumes along the highway (approximately 250 vehicles per day), resulted in a SPIS value at this location of 74.8. The state's 1997 cutoff value was 42.7.

CHAPTER 5: TRAVEL FORECASTS

The traffic volume forecasts for Gilliam County are based on historic growth on the state highway system, historic population growth, and projected population growth. Forecasts were only prepared for the state highway system in the county, since the volumes on these roadways are much higher than on any of the county roads. More detailed traffic forecasts were performed in the urban sections of Arlington and Condon, and are located in the separate TSPs for those cities.

LAND USE

Land use and population growth plays 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.

Population projections in Gilliam County are based on historic growth rates and forecasts by the State of Oregon Office of Economic Analysis (OEA). Factors that will affect the future population growth rate of Gilliam County include employment opportunities, available land area for development, and community efforts to manage growth.

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 E. The analysis also includes population estimates for the Cities of Arlington and Condon.

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. 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. These annual population estimates for cities and counties are used for the purpose of allocating certain state tax revenues to cities and counties.

Historic population estimates for Gilliam County are summarized in Table 5-1.

TABLE 5-1
GILLIAM COUNTY POPULATION TRENDS

Year	Population	Average Annual Growth Rate	Total Growth
1960	3,069	--	--
1970	2,342	-2.7%	-23.7%
1980	2,057	-1.3%	-12.2%
1990	1,717	-1.8%	-16.5%
1997	1,950	1.8%	13.6%

Source: US Census Bureau (1960, 1970, 1980, and 1990 censuses); and Portland State University Center for Population Research and Census (1997 estimates).

Historic Population Trends

Population levels in most of Eastern Oregon are close to, or actually lower than, those experienced earlier in the century. Counties included in this phenomenon include Baker, Gilliam, Harney, Union, Grant, and Wallowa Counties. The population of Gilliam County actually declined in the 1970s and 1980s, reflecting a general slowdown in the state's economy. As a result, the population of Gilliam County in 1990 was lower than at any time since 1960. Location of one of the region's primary employers, Waste Management Inc., to Gilliam County in 1990 contributed to the county's recent population growth trend from 1990 to 1997. Estimated at 1,950 in 1997, the population of Gilliam County has grown moderately since the 1990 Census, with an average annual growth rate of approximately 1.8 percent.

During the 27-year period from 1970 through 1997, Gilliam County's population declined by 392 people encompassing a major rural decline of 357 people, a decline of 173 residents in Condon, an increase of 125 residents in Arlington, and an increase of 13 residents in Lonerock. During the recent seven-year period from 1990 to 1997, rural population has declined by three percent (21 residents), Arlington's population has increased by nearly 18 percent (75 residents), Condon has grown by 26 percent (165 residents), and Lonerock has grown by 127 percent (14 residents). This recent growth must be weighed appropriately against longer 20-year growth rates.

Projected Population Trends

Gilliam County is expected to experience population gains for the next 20 years. Like much of rural Oregon, the economy of Gilliam County remains largely seasonal, with a large sector of employment being agriculture-based. Therefore, population increases are difficult to predict, and may not be as stable as the forecasts appear to imply.

The methodology used in forecasting the future population of Gilliam County 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 the state's OEA county-distribution methodology to develop population and employment forecasts for each of the cities in Gilliam County. DEA calculated a weighted average growth rate for each jurisdiction (weighting recent growth more heavily than past growth) and combined this average growth rate with the projected county-wide growth rate. This methodology assumes convergence of growth rates because of the physical constraints of any area to sustain growth rates beyond the state or county average for long periods of time. These constraints include availability of land and housing, congestion, and other infrastructure limitations.

Projected population estimates for Gilliam County, using this methodology, are summarized in Table 5-2.

TABLE 5-2
GILLIAM COUNTY POPULATION PROJECTIONS

Year	Population	Average Annual Growth Rate	Total Growth
1997	1,950	--	--
2000	1,992	0.71%	2.2%
2005	2,032	0.40%	2.0%
2010	2,071	0.38%	1.9%
2015	2,116	0.43%	2.2%
2020	2,161	0.42%	2.1%
1997 to 2020	+211	0.45%	10.8%

Source: 1997 estimates developed by Portland State University Center for Population Research and Census; forecasts developed by State of Oregon Office of economic Analysis.

Using this methodology, Gilliam County is expected to experience a population gain of 211 people during the next 22 years. This represents an increase of nearly 11 percent from the 1997 estimate of 1,950 residents to an estimated 2,161 residents in year 2020.

The majority of expected population growth between 1997 and 2020 is forecast to occur within the cities of Arlington and Condon. These cities are forecast to receive 180 of the 211 new residents to the county representing 85 percent of all new residents. Arlington is forecast to receive 120 new residents, Condon is forecast to receive 60 new residents, and Lonerock is forecast to receive five new residents.

Potential Development Impact Analysis

To supplement the demographic analysis and to determine more specific potential growth areas in Gilliam County, David Evans and Associates, Inc., reviewed ODOT's Potential Development Impact Analysis (PDIA). The PDIA provides estimates for a maximum development scenario in rural Gilliam County. Potential growth areas or "polygons" are identified around the county based on zoning. A detailed summary of the PDIA is contained in Appendix F.

The analysis is based on a number of assumptions, some of which are acknowledged to overstate potential development. Some of the key assumptions include the following:

- No adjustments were made for slopes, bodies of water, riparian areas, or other physical development constraints.
- Development estimates do not account for market factors.
- Where the zoning ordinance does not specify a parking requirement, no adjustment was made for parking.

Gilliam County has approximately 5,190 acres of land zoned for industrial use. The county also has one commercial zoning designation (Rural Service Center; A-S), but no lands are actually designated under this zone. Because aerial photographs were not available for Gilliam County, the PDIA analysis could not be used to determine the portion of commercial and industrial acres that are vacant. Therefore, no sense of potential development associated with commercially zoned land was established through the PDIA. These figures could only be generated for residential land use in rural Gilliam County as summarized in Table 5-3.

TABLE 5-3
POTENTIAL DEVELOPMENT IMPACT ANALYSIS SUMMARY

	Acreage		Residential Units		
Designated Use	**Net Area**	**Vacant**	**Existing**	**Potential**	**Maximum**
Residential	167	117	131	117	248
Commercial	none	none	na	na	na
Industrial	5,190	na	na	na	na

Source: *Potential Development Impact Analysis* (PDIA) report prepared for ODOT by Community Planning Workshop department of Planning, Public Policy, and Management, December 1995.
na- not available.

Approximately 167 acres of land is zoned for residential uses with 131 existing residential units. Of the residential land, approximately 117 acres are vacant representing development potential of 117 units assuming an average density of one unit per acre. This methodology combines existing units with the potential units to achieve a maximum development potential estimated at 248 residential units.

TRAFFIC VOLUMES

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

Historic

Before projecting future traffic growth, it is important to examine past growth trends on the Gilliam County roadway system. Historic data are only available for the state highway system in Gilliam County; however, these roadways carry far more traffic than any other streets in the county. 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 Gilliam County were established using the average daily traffic (ADT) volume information presented in the ODOT Traffic Volume Tables for the years 1977 through 1997. The ADT volumes were obtained for each of these years at several locations along each highway. Using a linear regression trendline analysis of the average ADT volumes between 1977 and 1997, an average annual growth rate was determined. Table 5-4 summarizes the state highway historic average growth rates based on the trendline analysis.

Over the past 20 years, traffic levels have grown throughout most of Gilliam County. Growth on the rural sections of I-84 in Gilliam County has ranged between 2.3 and 2.5 percent per year. Traffic volumes on the rural sections of OR 19 have been growing in the range of 0.95 percent per year between Condon and the Wheeler/Gilliam County line to as much as 3.6 percent per year between Arlington and Condon. The uncharacteristically large growth along the northern section of OR 19 north of the Shutler automatic recorder has primarily occurred since the Waste

Management site began operations along Cedar Springs Road in 1990. The rural section of OR 74 has experienced a negative growth trend over the past 20 years averaging -0.72 percent per year. Rural sections of OR 206 have experienced growth ranging from 0.70 percent per year between Condon and the Gilliam/Wheeler County line and 0.90 percent per year between the Gilliam/Sherman County line and Condon.

In general, historic traffic volume growth on the rural sections of the state highways exceeded the 20-year historic population growth in Gilliam County. Although Gilliam County has experienced population gains during this decade (1.8 percent per year since 1990), during the 17-year period between 1980 and 1997, Gilliam County population declined at about -0.3 percent per year. While population declined over the 20-year period, rural traffic volumes grew from 0.70 percent per year along OR 206 to 3.6 percent per year along OR 19. 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 in Condon could be a result of the decrease in population in and around Condon during much of this period.

No historic traffic volumes for the county roads are available. Without historic data, growth trends on the county road system cannot be observed.

TABLE 5-4
HISTORIC TRAFFIC GROWTH RATES ON STATE HIGHWAYS

Highway Section	Milepoint	AAGR[1] 1977-1997	Total Growth 1977-1997
Interstate 94			
Rural- Gilliam/Sherman Co. line to Arlington	114.55 - 137.56	2.49%	63.5%
Rural- Arlington to Gilliam/Morrow Co. line	137.56 - 149.50	2.35%	59.0%
OR 19			
Urban- Arlington	0.33 - 1.07	4.10%	123.3%
Rural- Arlington to Condon	1.07 - 37.49	3.60%	103.0%
Urban- Condon	37.49 - 38.68	-0.84%	-15.5%
Rural- Condon to Gilliam/Wheeler Co. line	38.68 - 52.06	0.95%	20.8%
OR 74			
Rural- I-84 to Gilliam/Morrow Co. line	0.30 - 8.44	-0.72%	-13.5%
OR 206			
Rural- Gilliam/Sherman Co. line to Condon	14.95 - 40.18	0.90%	19.7%
Urban- Condon	40.18 - 41.35	-0.43%	-8.3%
Rural- Condon to Gilliam/Wheeler Co. line	41.35 - 54.86	0.70%	14.9%

Source: 1997 ODOT Traffic Volume Tables; information compiled by DEA, Inc.
1. AAGR- Average Annual Compound Growth Rate

Forecasting Methodology

The forecasting methodology was based on the available existing and historical traffic data and population growth trends. The traffic forecast for the state highway system in Gilliam County was performed using *a Level 1 - Trending Forecast*[3] analysis. This methodology assumes that traffic demand on the state highways will grow over the 20-year planning period according to the greater of the linear 20-year historical traffic growth trendline

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

rate or the forecast county population growth rate. State highway locations that have displayed increasing 20-year historical traffic growth are assumed to continue to grow according to the 20-year historical linear trendline growth rate. Locations displaying negative historical traffic growth are assumed to grow at a rate equivalent to the forecast population growth rate within the county. For any of these highway locations near urban areas, forecast urban population growth will be considered as well. To confirm that use of the historical traffic growth linear trendline in the Trending Forecast analysis was the best projection methodology for most rural highway locations, comparisons were made with the historical and projected population growth for the county.

Comparisons show that historical traffic growth trendline rates on all but three of the rural sections of the four state highways in the county are higher than the 20-year historical and 20-year forecast population growth rates for the county which are -0.05 and 0.44 percent per year, respectively. The rural section of OR 19 from Condon to the Gilliam/Wheeler County line displayed a negative 20-year growth trend as did the rural section of OR 74 from I-84 to the Morrow County line. The rural section of OR 206 between the Gilliam County line and Condon displayed a positive historical 20-year growth trend that was lower (0.33 percent per year) than the forecast population growth rate (0.44 percent per year). In this case, the historical growth trend is assumed to better reflect expected future traffic growth along this rural section. All other rural highway sections in the county averaged traffic growth rates ranging from 0.7 to 3.6 percent per year; well above 20-year forecast population growth rates.

As appropriate, forecast future traffic growth along selected rural sections of OR 19 and OR 74 that have displayed negative historical growth trends are assumed to grow at an average annual compound rate equivalent to the 20-year forecast population growth rate in Gilliam County of 0.44 percent per year. All other rural highway sections are forecast to continue to grow according to their associated 20-year historical traffic growth trendlines.

It is important to note that using the historical growth trends assumes that future traffic patterns will remain consistent with historical patterns, without consideration of future planned developments.

Future Traffic Volumes

Using the same linear regression analysis used to calculate the historic growth rate of traffic, forecasts were generated for the years 1998 through 2018 for all rural highway sections except OR 74 and the section of OR 19 between Condon and the Wheeler County line where the forecast County population growth rate was used to forecast traffic growth. Future 2018 ADT volumes are shown in Figure 5-1. Rural highway traffic volumes are expected to range in growth from 6.1 percent along OR 206 between the Sherman County line and Condon to 47.7 percent along OR 19 between Arlington and Condon. Urban highway growth is expected to range from 6.4 percent in Condon to 50.5 percent in Arlington.

The forecast future traffic volumes and total growth from 1998 to 2018 are shown in Table 5-5.

TABLE 5-5
FUTURE FORECAST TRAFFIC GROWTH RATES ON STATE HIGHWAYS

Highway Location	Milepoint	1998 ADT (vehicles/day)	2018 ADT (vehicles/day)	Total Growth 1997-2018
Interstate 94				
Rural- Gilliam/Sherman Co. line to Arlington	114.55 - 137.56	10,171	14,658	44.1%
Rural- Arlington to Gilliam/Morrow Co. line	137.56 - 149.50	10,171	14,658	44.1%
OR 19				
Urban- Arlington	0.33 - 1.07	1,579	2,377	50.5%
Rural- Arlington to Condon	3.89 - 37.49	446	658	47.7%
Urban- Condon	37.49 - 38.68	1,099	1,169	6.4%
Rural- Condon to Gilliam/Wheeler Co. line	38.68 - 52.06	466	509	9.2%
OR 74				
Rural- I-84 to Gilliam/Morrow Co. line	0.30 - 8.44	151	164	9.2%
OR 206				
Rural- Gilliam/Sherman Co. line to Condon	14.95 - 40.18	282	299	6.1%
Urban- Condon	40.18 - 41.35	647	688	6.4%
Rural- Condon to Gilliam/Wheeler Co. line	41.35 - 54.86	187	226	20.9%

Source: 1977-1997 ODOT Traffic Volume Tables; growth rate information compiled by DEA, Inc.

HIGHWAY SYSTEM CAPACITY

Both existing year 1998 and future year 2018 level-of-service analyses were performed on the rural sections of state highways in Gilliam County. The future year volumes were generated in accordance with the forecasting procedures outlined previously. Analyses were conducted for the same rural highway locations and in the same manner as outlined in Chapter 4 (*Current Transportation Conditions*).

Rural Roadway Operations

The traffic operation of mainstream traffic along the rural highway sections was determined using the 1994 Highway Capacity Software. This software is based on the *1994 Highway Capacity Manual*, Special Report 209, published by the Transportation Research Board. Analysis of a rural two-lane highway takes into account the magnitude, type, and directional distribution of traffic as well as roadway features such as the percentage of no passing zones, general terrain, and lane and shoulder widths.

For each of the five rural highway segments in Gilliam County, the peak hour traffic was assumed to represent 10 percent of the 24-hour ADT volume forecast through the procedures outlined in this chapter. Volumes were increased by 20 percent to represent worst-case peak summer month operations and a 60/40 directional split was assumed.

Traffic operations on the rural sections of the highway were analyzed for a typical peak hour condition. The resulting level of service for each highway segment is shown in Table 5-6. All rural highway segments are expected to continue to operate at LOS A.

TABLE 5-6
SUMMARY OF OPERATIONS ON TWO-LANE HIGHWAYS

Location	1998 LOS	2018 LOS
OR 19 between Arlington and Condon	A	A
OR 19 between Condon and Wheeler/Gilliam Co. line	A	A
OR 74 between I-84 and Morrow/Gilliam Co. line	A	A
OR 206 between Sherman/Gilliam Co. line and Condon	A	A
OR 206 between Condon and Morrow/Gilliam Co. line	A	A

Freeway Operations

Analysis of freeway operations is based on traffic volumes and composition (i.e., percent trucks), lane widths, lateral clearance between the edge of the travel lane and the nearest roadside or median obstacle or object influencing traffic behavior, and driver population (i.e., regular and familiar users of the facility).

Freeway operations were analyzed along I-84 east of Arlington near ODOT's automatic traffic recorder at MP 146.16. This segment of the freeway was chosen to represent operations within Arlington's city limits due to the combination of high ADT volumes, and the high percentage of truck traffic which produce a worst-case freeway analysis. Future 2018 freeway operations were analyzed using 2018 ADT volumes representing average daily conditions, and using the same 2018 ADT volumes, increased by 36 percent to represent the same traffic level trend experienced during peak summer conditions in 1997. Peak hour traffic was assumed to represent ten percent of the 24-hour ADT volumes used and the directional split was assumed to be 60/40.

The resulting freeway LOS for average and peak summer traffic levels near Arlington, under the assumptions outlined above, was LOS A for 1998. Under average 2018 traffic levels the freeway would continue to operate at LOS A. However, the analysis using the higher 2018 summer peak traffic levels indicates LOS B operations in the heavier peak direction and continued LOS A operations in the lighter off-peak direction. Overall, future 2018 freeway operations are expected to continue to operate very well throughout Gilliam County.

Operations at Intersections

Traffic operations were determined at intersections along the critical urban highway sections using the *1994 Highway Capacity* software. Since all intersecting streets and driveways are controlled by STOP signs in these areas, the analysis was performed for unsignalized intersections.

Traffic operations were again analyzed for two intersections located along the critical urban sections of the state highways: OR 19 and Main Street in Arlington and OR 19 and OR 206 in Condon. The analysis was based on a peak hour two-way traffic volume of roughly ten percent of the ADT. Also, a 60/40 directional split was used to reflect the distribution of traffic on the highways during the peak hour. Volumes approaching OR 19 on Main Street in Arlington were assumed to equal those along the highway representing a worst-case analysis.

Under these assumptions, the highway intersections are expected to continue to operate at an overall LOS A under 2018 peak summer traffic volumes. Selected individual movements are expected to just cross the threshold to LOS B operations, which still constitute very good traffic operations. The results indicate that all other lower-volume roads or driveways accessing any rural or urban portion of the highways are expected to operate at LOS A as well in 2018.

Capacity Issues

Overall freeway, two-lane rural highway, and unsignalized intersection operations in Gilliam County are expected to continue to operate at LOS A or B under worst-case future 2018 peak summer traffic volumes. This indicates that there are no identified capacity constraints or issues within the county including the urban areas of Arlington and Condon.

CHAPTER 6: IMPROVEMENT OPTIONS ANALYSIS

As required by the Oregon Transportation Planning Rule, transportation alternatives were formulated and evaluated for the Gilliam County Transportation System Plan. These potential improvements were developed with the help of the TAC, and the individual communities and attempt to address the concerns specified in the goals and objectives (Chapter 2).

IMPROVEMENT OPTIONS

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 2 through 10 are identified in Figure 6-1.

Gilliam County

The proposed transportation system improvements recommended for the Gilliam County TSP include both state highway and county road projects. This section of the TSP describes the individual improvements and their associated costs. Improvement options evaluated include:

1. Implement Transportation Demand Management Strategies.
2. Improve roadway alignment and grade on OR 19 at Olex Grade.
3. Improve roadway alignment of "S" curves on OR 19.
4. Improve roadway alignment around rock quarry on OR 19.
5. Improve intersection operation control at intersection of OR 19/206 in Condon.
6. Install truck escape ramp along OR 206 at Cottonwood Canyon.
7. Install flashing beacon at intersection of OR 19 and Cedar Springs Road.
8. Develop Columbia View Drive Extension to Main Street in Arlington.
9. Upgrade structurally deficient and functionally obsolete bridges.
10. Develop multi-use path along Old Cottonwood Road near Condon

In addition to the nine potential improvement options listed above, the Gilliam County TAC identified three additional projects, which are included in the Gilliam County 5-year working road plan:

- Realign intersection of OR 19 and Lonerock Road.
- Realign and pave a four-mile section of Blalock Canyon Road.
- Improve Lonerock Road from OR 206 to the Erickson Grade.

As part of the county's 5-year working road plan, these projects have already been evaluated and assessed as necessary. Therefore, these projects are not evaluated in this chapter, but are included in the county's 5-year road plan, which is summarized in Chapter 7 of this TSP.

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

City of Lonerock

The City of Lonerock identified one project to be included in the Gilliam County TSP. The project involves completion of paving for the three primary county roads within the city limits. This project was reviewed following the same evaluation criteria used to evaluate the county improvement options. The project evaluation is listed at the end of the county project evaluations and is included in the overall recommendation summary.

EVALUATION CRITERIA

Each improvement option was evaluated with regard to impacts to traffic; safety; environmental factors, such as air quality, noise, and water quality; and socioeconomic and land use impacts, such as right-of-way requirements and impacts on adjacent lands. A 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. Final review of each project resulted in a recommendation of whether the project should be implemented.

EVALUATION OF GILLIAM COUNTY IMPROVEMENT OPTIONS

Through the transportation analysis and input provided from the public involvement program, several potential improvement projects were identified. These options ranged from major highway realignment to minor intersection traffic control modifications.

Option 1. Implement Transportation Demand Management (TDM) Strategies

Overview: One of the goals of the Oregon Transportation Planning Rule (TPR) is to reduce the reliance on the automobile. The TPR recommends that counties should evaluate TDM measures as part of their Transportation System Plans. These strategies are designed to change the demand on the transportation system by providing facilities for other modes of transportation, implementing carpooling programs, and developing other transportation measures within the community, such as staggering work schedules at local businesses. These types of TDM strategies may be more effective in a large urban city, but some strategies can still be useful in the rural and urban areas of Gilliam County.

There is one type of TDM measure that would be useful in Gilliam County: development of facilities for alternative modes of transportation. This would include paved shoulders and paths, sidewalks, and bike lanes, which would handle pedestrians and bicyclists.

All future street improvement projects in the rural areas of Gilliam County, whether they involve new roadways or a retrofit of an existing roadway, should include the addition of 2- to 6-foot paved shoulders, depending on the amount of traffic on the roadway. This would allow pedestrians and bicyclists to travel separately from the traffic on the road. All future street improvement projects in the urban areas of the cities of Gilliam County should include a pedestrian facility, such as a walkway or sidewalk, and should also consider bicycle lanes as well.

Impacts: Providing adequate facilities for pedestrians and bicyclists increases the livability of rural and urban areas of the county, and improves driver, pedestrian, and bicycle safety.

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

- *Paved Shoulders* – Shoulders constructed along both sides of a road that are 4 feet in width would cost around $25 per linear foot of road. This would include 4 inches of asphalt and 9-inches of aggregate.

- *Multi-Use Paths* – A 10-foot wide multi-use path would cost around $16 per linear foot. This includes 2 inches of asphalt over 4 inches of aggregate.

- *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 5-foot wide walkway composed of 4 inches of concrete over 2 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 5 feet on both sides, installing curbs, using a fill composed of 4 inches of asphalt over 9 inches of aggregate, and placement of an 8-inch painted stripe.

These costs are for stand-alone improvements; the costs can be reduced when they are included as needed in roadway improvement projects throughout Gilliam County.

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

Option 2. Improve roadway alignment and grade on OR 19 along Olex Grade

Overview: ODOT has identified the two-mile segment of OR 19 from milepost 15.4 to 17.4, known as the Olex grade, as having a substandard highway alignment. This section of highway is comprised of a number of substandard curves and steep grades and does not provide an adequate roadway to serve larger trucks commonly used throughout Gilliam County to haul freight. This impacts operations along this primary freight highway between Arlington and Condon. Traffic speeds within most of this highway section are 20 mph and involve limited sight distance.

The 1999 Oregon Highway Plan identifies the need to define a system of highways as "lifeline" routes which provide access to areas of the state that may be stricken with some form of disaster such as flood, fire, or earthquake. The draft OHP indicates that "...in some cases, the most cost-effective solution to maintaining these lifeline routes involves investments in roads or bridges...." ODOT has indicated that OR 19 would be such a lifeline route.

OR 19 is the primary freight route through Gilliam County. It serves as the primary connection between the county's two largest cities and provides the primary farm-to-market connection between farmers and the Port of Arlington, where grain is exported from the county.

ODOT has conducted a reconnaissance level analysis of the Olex grade area. They have also stated that, due to the magnitude and cost of this project, improvements would likely be split into two phases involving

improvements north and south of the approximate mid-point at milepost 16.4. ODOT has indicated that the southern section is the primary concern due in part to recurring flooding near the Rock Creek Bridge.

Based on the reconnaissance study conducted to date, ODOT has considered upgrading the Olex grade to meet highway standards for ADT volumes up to 400 vehicles assuming rolling terrain. There would be exceptions for some curves and probably for pavement width and shy distance in some cases based on recommendations from ODOT's project development team, which have yet to be determined. Replacement of the Rock Creek Bridge is included as part of the project.

Impacts: Roadway improvements along Olex grade would improve traffic operations and safety. With ADT volumes along this stretch of highway at only 320 vehicles per day in 1997, expected delays to motorists would likely be minimal due to construction of this project.

Cost: Based on the reconnaissance study conducted to date, ODOT has estimated that the cost to upgrade Olex grade would be approximately $6.5 million.

Recommendation: Completion of an Olex Grade improvement project would support improved traffic operations for motorists and especially trucks. It would also help to sustain OR 19 as a "lifeline" route. This project is recommended for inclusion in the TSP as a medium priority project estimated for construction between by year 2008.

Option 3. Improve roadway alignment of "S" curves on OR 19

Overview: The section of OR 19, located at milepost 8.39, approximately 7 miles south of Arlington, involves a moderately sharp "S" curve. The roadway alignment leading to and from the curve is relatively straight and flat with a posted speed of 55 mph. The recommended speed lowers to 35 mph through the curve. This location does not have a high accident rate based on ODOT accident records, but it did experience a serious accident in the early part of 1998, and both county and ODOT public works representatives indicate that this location has been a problem in the past. It is possible that smaller scale accidents at this location do not get reported, which would tend to understate any safety concerns associated with this location.

A culvert (ODOT Bridge No. 03468) bisects the "S" curve. This structure spans the west fork of Shutler Creek and is 28.5-feet wide by 7-feet wide. The highway is approximately 28-feet wide through this section with two 12-foot travel lanes and two 2-foot shoulders. ODOT indicated that one of the reasons leading to introduction of the curve when the road was built was to cross the waterway at the narrowest point. A second culvert (ODOT Bridge No. 03467) located 6.5 miles south of Arlington on OR 19 would be replaced as part of this project. This culvert is 7-feet wide by 42-feet wide.

This improvement project would involve realigning the roadway to ease the curve and extending the existing culvert located within the curve.

Impacts: Realigning the roadway would eliminate the sharp "S" curve and improve roadway sight distance. The recommended speed would likely be increased to 55 mph, depending on the final design.

Cost: Preliminary planning level estimates indicate that the roadway project may involve as much as 200 feet of roadway realignment and extension of the culvert to approximately 30 feet. A project of this magnitude could cost in the range of $400,000 to $600,000 based on final alignment decisions. Costs could run higher based on the need to mitigate environmental issues such as salmon habitats.

Recommendation: This project would improve sight distance and traffic operations along OR 19 and may improve overall road safety. Although advance signing of the curve is in place, local residents indicate that some drivers get lulled by the combination of low traffic volumes and being able to travel at 55 mph prior to the curve in each direction. The lack of accident history at this location and the fact that trucks are able to safely maneuver through this roadway section would suggest that this may be a lower priority project than other highway projects such as the Olex grade. This improvement is recommended as a long-term project in the TSP.

Option 4. Improve roadway alignment around rock quarry on OR 19

Overview: This project would involve realignment of a nearly one-mile section of OR 19 between mileposts 26.0 and 26.7. This section of roadway is comprised of a fairly sharp system of curves requiring localized speed reductions to 35 mph. The highway leading to and from the curves is fairly straight with a posted speed of 55 mph. The highway is bordered by gently rolling pastures throughout this roadway section.

ODOT's accident database does not reflect any accidents along this section of roadway during the three-year period from 1994 through 1996. The accident rate for the rural section of OR 19 from Arlington to Condon has consistently been less than one-half the statewide average for all rural non-freeway primary highways from 1994 through 1996. Local residents indicate that this series of curves can be difficult to maneuver under foggy or other impaired visibility conditions. ODOT has not determined if this section of highway is substandard relative to agency design guidelines.

Impacts: Roadway improvements along OR 19 at the rock quarry site would improve traffic operations and safety by eliminating the need to slow to 35 mph to negotiate the existing system of curves. With ADT volumes along this stretch of highway at only 320 vehicles per day in 1997, expected delays to motorists would likely be minimal due to construction of this project.

Cost: The existing section of OR 19 between Arlington and Condon is approximately 32-feet wide with two 12-foot travel lanes and two 4-foot shoulders. Applying a typical rural highway realignment unit cost of $10 per square foot, which includes all engineering, construction, and contingency costs, this project could cost approximately $1.2 million. Costs will of course vary based on the final alignment and project limits determined.

Recommendation: This project would improve sight distance and traffic operations along OR 19 and may improve overall road safety. Although advance signing of the curves is in place, local residents indicate that some drivers get lulled by the combination of low traffic volumes and being able to travel at 55 mph prior to the curve in each direction. The lack of accident history at this location and higher operating speeds suggests that this may be a lower priority project than other highway projects such as the Olex grade. This improvement is recommended as a long-term project in the TSP.

Option 5. Improve intersection operation control at intersection of OR 19/206 in Condon

Overview: According to local residents, many out of town motorists have been involved in near accidents at the intersection of OR 19 and Or 206 in Condon.

The primary concern is with out of town motorists traveling southbound on OR 19. Although OR 19 has the right of way through Condon, some motorists slow or stop to read directional signs guiding them to their destinations. Some local residents who don't expect to see motorists stop on the highway have had near accidents. Option one addresses this concern.

The second, but seemingly more minor concern, is with out of town northbound motorists that fail to stop at the intersection. Although the intersection is clearly signed for northbound travelers to stop unless they are making a permitted right-turn, some motorists run the intersection. Option two addresses this concern.

A number of traffic control devices are in place at and upstream of the intersection. The northbound approach is controlled by a stop sign with a regulatory sign mounted below it indicating that right turns are permitted without stopping. A stop ahead sign is mounted upstream from the intersection and a stop flap is mounted on the pavement at the stop line of the through lane. The stop sign, which is posted back from the stop line and nearly 40 feet from the centerline of the road, may be difficult for some drivers to perceive.

Option 5A- Advance intersection guide signing

Advance intersection signing would better guide out of town motorists to their destinations. A sign could potentially say, "Fossil next left" and "Wasco straight ahead". An existing guide sign for westbound motorists is posted on the northwest corner of the intersection, but is somewhat obscured by an existing building on the northeast corner of the intersection. A more visible advance guide sign should give travelers enough advance notice of upcoming traffic movements that they don't need to significantly slow or stop at the intersection to read the existing directional sign located on the northwest corner of the intersection.

The sign should be mounted along westbound Walnut Street near the existing "20 mph" posted speed sign and must meet guidelines outlined in ODOT's *Sign Policy and Guidelines for the State Highway System* (see Chapter 5 for intersection guide signing). The cost to make and install one advance sign would cost approximately $500.

Option 5B- Flashing hazard beacon

A three-way red flashing beacon would reinforce the need for northbound motorists to stop at the intersection. Motorists on southbound OR 19 would see an amber flashing light, reinforcing the fact that they do not need to stop. Ideally, the pole and mast arm assembly supporting the beacon should be installed on the northwest corner of the intersection to ensure that the beacon is positioned for optimum recognition by northbound motorists traveling through the intersection and by westbound motorists. These are the two travel directions where local residents have noticed problems with out of town motorist's driving habits.

This option, in addition to advance traveler signing, may provide the most effective intersection control alternative. The cost of the beacon alone is approximately $2,500.

Impacts: There are no foreseeable negative traffic operations impacts associated with this improvement option.

Cost: The cost to install one advance intersection guide sign is approximately $500. The cost to install a flashing warning beacon is approximately $2,500.

Recommendation: It is recommended that ODOT install the advance intersection guide sign. Condon should continue to monitor northbound compliance with the existing stop sign and establish a trigger point for installing a flashing beacon. Such a trigger might be one or two "close calls" involving the apparent existing pattern of drivers running the northbound stop sign.

Option 6. Install truck escape ramp along OR 206 at Cottonwood Canyon

Overview: This project would involve construction of a vehicle escape ramp along northbound OR 206 south of the Cottonwood Canyon Bridge. Most of the section of OR 206 from milepost 20.09 to 15.00 (Cottonwood Canyon Bridge) is comprised of a fairly steep 7 percent downgrade. ODOT accident records indicate that two accidents occurred along this section between 1994 and 1997. Only one involved a truck. Local perception of accident frequency may vary from ODOT accident records since not all accidents are necessarily reported.

Terrain throughout Cottonwood Canyon is fairly steep along both sides of the highway and is comprised of numerous curves requiring localized speed reductions from 30 to 40 mph. Terrain along the majority of the roadway section does not reasonably allow construction of an escape ramp. The only potential location is between mileposts 15.93 and 15.65. This roadway section is immediately uphill of a fairly sharp westbound curve requiring slowing to 40 mph. The majority of this 1500-foot roadway segment is characterized by a fairly wide 50-100 foot clearing on the east side of the highway. Some excavation would be required near the ramp entrance, but the material could be used to build up the remainder of the section to accommodate a horizontal escape ramp running parallel to the highway.

A preliminary planning level design investigation was done to determine the ramp length required assuming a horizontal ramp is built. Based on the terrain, a horizontal ramp would require less construction effort and cost than an ascending ramp. The ramp would be designed to stop a fully loaded semi-trailer truck entering the ramp at 90 mph. It was assumed that the ramp's arresting bed would be composed of pea gravel, which has the greatest resistive capability. Under these design assumptions, a horizontal arresting bed of nearly 1,100 feet would be required. Including the paved ramp entrance, the total escape ramp could be approximately 1,300 feet long. Using arresting bed materials other than pea gravel would result in required ramp lengths beyond what is available. The AASHTO *Policy on Geometric Design of Highways and Streets* recommends building the ramp wide enough to accommodate two trucks at a time and building a paved service road parallel to the ramp to allow service vehicles to maneuver and retrieve vehicles in the ramp.

Impacts: The majority of construction of this project could probably be done without restricting traffic operations on the highway. While the escape ramp may benefit some truck drivers, it is quite possible that out-of-control trucks would have difficulty maneuvering upstream curves over the 4-mile stretch of roadway preceding the ramp. According to the AASHTO guide, an escape ramp should be provided as soon as a need arises. The need is primarily based on accident history. The guide warns that unnecessary ramps should be avoided.

Cost: A detailed cost estimate was not prepared as part of the TSP. The cost could vary greatly based on the final design, location, and materials used. Final project costs would be expected to range from $500,000 to $1 million.

Recommendation: Accident history based on ODOT recorded accidents over the last four years does not suggest an escape ramp is needed along this stretch of highway at this time. It is recommended that the ODOT Safety Analysis Unit (SAU) conduct a more detailed safety analysis of this highway segment. Implementation of this project should be tied to a recommendation from the SAU or to development of an accident concern along the highway.

Option 7. Install flashing beacon at intersection of OR 19 and Cedar Springs Road

Overview: ODOT has previously investigated the possible need to install a flashing intersection control beacon at the intersection of OR 19 and Cedar Springs Road. Cedar Springs Road provides access to the Columbia

Ridge Landfill, a major regional employer and source of truck travel. The abutting property west of the highway and north and south of Cedar Springs Road is zoned industrial and the County intends to develop the land as an industrial park in the near-term. Commuters to the landfill indicate that the intersection is difficult to locate, especially under fog conditions that occur frequently in the county. The flashing beacon would improve intersection recognition by motorists.

Impacts: According to the *Manual on Uniform Traffic Control Devices* (MUTCD) section 4E-1, intersection control beacons are intended for use at intersections where traffic or physical conditions do not justify conventional traffic signals but where high accident rates indicate a special hazard. Traffic volumes at the intersection would not pass signal warrants, nor do ODOT accident records indicate that any accidents have occurred at the intersection over the three-year period from 1994 through 1996. However, some accidents may only be reported locally. Local residents indicate that accidents have occurred over recent years, and close calls are on the rise. As the industrial property is developed, traffic volumes will increase which could lead to increased accidents.

A flashing beacon would improve overall intersection recognition by drivers. This would be especially helpful during periods of limited visibility due to fog or heavy rain. There are no foreseeable negative impacts associated with this type of control device at this location.

Cost: ODOT generated cost estimates for two different installation plans in 1995. Cost estimates were increased by 5 percent per year to reflect 1998 dollars. One plan calls for installing a pole and 40-foot mast arm to attach a beacon at a cost of $6,100. A second installation plan involves moving the Cedar Springs stop sign back and placing a light on top of the pole along with "intersection ahead" signs on OR 19. This would cost $3,000. Power costs were not figured into the cost estimates.

Recommendation: This is one of the higher traffic volume intersections within the County, serving one of the largest regional employment sites in the county. Although a high accident rate does not appear to exist today, improving driver recognition of the intersection is likely to become necessary, especially as the industrial site begins to develop.

This project is recommended for development. Although immediate installation of the beacon does not appear warranted, it should be tied to some trigger point as the industrial site is developed or as traffic volume levels increase. For instance, the county, ODOT, and Waste Management Inc. may agree that the beacon should be installed when one-half of the industrial site property is occupied. Under the county's lead, these three parties should evaluate at what point the beacon is to be installed. ODOT will have the final authority to determine which type of installation (pole or mast arm) occurs.

Option 8. Develop Columbia View Drive Extension to Main Street in Arlington

Overview: A relatively new 60-parcel housing development is being built in Gilliam County within Arlington's UGB but outside of the current city limits. The Columbia View Estates is located in the southern portion of Arlington's UGB and has access to the city of Arlington roadway network exclusively via Krameria Street. The development road network remains under the control of the developer, and the City of Arlington has no plans to annex the development until the site is more fully developed. This may be a number of years.

Under the current development roadway network, all roads feed to Columbia View Drive, which connects to Krameria Street. The portion of Columbia View Drive from Krameria Street to Wright Road, which serves as the entrance road to the development, is one of the steepest roads in the UGB. The City of Arlington has identified that this road would likely be difficult to maintain during winter conditions and could limit mobility

for residents within the development and limit emergency response access to the development. The city would like to see a second access road built to the development.

The Columbia View Drive extension would extend west from the current road end and connect to Main Street just east of the existing gravel road that runs north-south from Main Street. This alignment eliminates any encroachment on existing school property. The Columbia View Estates developer owns the existing gravel road and land where the roadway extension would be built.

Columbia View Drive would function as a collector road and with its connection of residential and school land uses should be built with some type of facility to serve pedestrians such as paved roadway shoulders, a multi-use path, or sidewalks. Any of these treatments could potentially be built along just one side of the road initially (likely the north side) to reduce costs while still providing adequate service to pedestrians. Traffic volumes and speeds will likely be low enough that bicycles and cars could share the road without the need for bike lanes.

Impacts: A second access road to the Columbia View Estates development would improve roadway connectivity throughout the Arlington area. More importantly, it would provide a more viable access road during winter conditions when maintaining the existing steep access road is difficult, if possible. A new road with pedestrian use facilities would provide an alternate and safer facility for children within the development to access the city's school system.

Cost Estimate: This roadway would function as a collector. Since it is not part of the Arlington street network, it was assumed that the road would be built to a 28-foot paved rural collector street design standard consisting of two 10-foot travel lanes, and two 4-foot paved shoulders to provide pedestrian and bicycle circulation. The unit cost to build this type of roadway is approximately $144 per linear foot including all construction and material costs but excluding right-of-way costs since the developer already owns the land. Based on a preliminary alignment submitted by Arlington, the roadway would be approximately 1,800 ft long, resulting in an approximate project cost of $260,000.

Recommendation: The benefits of improved access between the Columbia View Estates development and City of Arlington urban area, expansion of safe and efficient pedestrian circulation between the development and nearby schools, and an alternate access route during winter weather conditions make this a desirable project. Development of the project is recommended ; however, because this project involves Gilliam County, Arlington, and the landowner, an agreement about funding of construction and maintenance of the new roadway must be reached before implementation. The county should take the lead in coordinating the development of this project.

Option 9. Upgrade substandard bridges

Overview: The county has six bridges with deficiencies[4] that need to be addressed. One of the six bridges is under county ownership and five are under state ownership. Each bridge is discussed briefly.

Bridge improvements included in roadway projects:

- Bridge No. 00802A on OR 19 at Olex grade (State)- This bridge is identified as having inadequate width and is susceptible to flooding during times of high water. Although not flagged as a substandard

[4]The description of structural deficiency, functional obsolescence, and sufficiency ratings are based on the *Oregon Coding Guide for the Inventory and Appraisal of Oregon Bridges* by the Oregon Department of Transportation Bridge Section in May, 1994.

bridge in ODOT's database, this bridge is planned for replacement as part of the Olex grade realignment project. It is therefore not evaluated or recommended as a "stand-alone" project.

- Bridge No. 03467 on OR 19, 6.5 miles south of Arlington at Shutler Creek (State)- Although not flagged as a substandard bridge in ODOT's database, this culvert requires replacement and would be replaced as part of the "S" curve realignment project. It is therefore not evaluated or recommended as a "stand-alone" project.
- Bridge No. 03468 on OR 19, 7.3 miles south of Arlington at west fork Shutler Creek (State)- Although not flagged as a substandard bridge in ODOT's database, this culvert requires replacement as part of the "S" curve realignment project. It is therefore not evaluated or recommended as a "stand-alone" project.

Other bridge projects:

- Bridge No. 08820 on I-84, 0.9 miles west of Arlington (State)- This bridge is listed in ODOT's bridge maintenance database as being functionally obsolete. However, ODOT Region 4 bridge representatives indicate that this bridge will continue to adequately function beyond the 20-year planning horizon. It is therefore not recommended for repair or replacement.
- Bridge No. 01792 on OR 206 at Rock Creek, 10.3 miles east of Condon (State)- Although not flagged as a substandard bridge in ODOT's database, ODOT is focused on replacing all timber bridges within the state. ODOT sees this "stand-alone" bridge project as an intermediate-term project to be completed within the next ten years.
- Bridge No. 21C04 on Cayuse Canyon Road crossing Rock Creek (County)- Gilliam County has developed a maintenance plan to upgrade this bridge within the next five years. This project is included in the county's five-year working road plan.
- Bridge No. 09198 on OR 74 at the I-84 junction (State)- Although identified as a functionally obsolete bridge in ODOT's database, ODOT region 4 representatives determined that this bridge was flagged as being functionally obsolete due to a coding error. This bridge is not actually functionally obsolete.

The Rock Creek bridge (No. 01792) and Cayuse Canyon bridge (No. 21C04) will need to be repaired or replaced some time in the next 20 years.

Safety: Substandard bridges cannot adequately service the demand placed on them because of some design deficiency such as being too narrow for today's standards. They need to be upgraded, which could involve improving or replacing the existing facility. If these bridges serve a high traffic demand, they may be a high priority for upgrades.

Impacts: If the bridges are not repaired or replaced, limitations on usage may affect users of the facilities. This could include long routes to divert traffic off bridges that cannot safely service demand. Limitations on bridge use could affect the economy of some of the resource-based industries in the area.

Cost: The estimated cost to upgrade bridge No. 21C04 is based on cost estimates provided by ODOT's bridge inspection inventory. The estimate was increased by an annual rate of five percent to reflect present day (1998) dollars. The cost estimate for bridge No. 01792 was figured using a unit cost of $100 per square foot for bridge replacement.

TABLE 6-1
CONSTRUCTION COSTS FOR UPGRADING SUBSTANDARD BRIDGES

Bridge Location	Improvement	Estimated Cost
Substandard Bridges		
Bridge #01792 on OR 206, 10.3 mi. east of Condon (state)	Replace	$270,000
Bridge #21C04 on Cayuse Canyon Road crossing Rock Creek[(1)] (County)	Repair	$175,000
Total		**$445,000**

1. this bridge is scheduled for improvement in the Gilliam County 5-Year Road and Bridge Improvement Program.

Recommendation: Both bridges are recommended for improvement over the next 20 years. Priority for bridge improvements will be a function of several factors including severity of deficiency, demand for the facility, and availability of funding.

Option 10. Develop multi-use path along Old Cottonwood Road near Condon

Overview: Gilliam County has identified a need to improve bicycle connectivity in near Condon. To support this goal, the County has proposed to develop a multi-use path along Old Cottonwood Road/Lane to accommodate bicycle, pedestrian, and other uses (e.g., roller-blading).

Based on preliminary alignment, the path would begin near the golf course located near the west city limits and end at the Condon airport (see Figure 6-2). The path would run along the north side of Old Cottonwood Road between the golf course and OR 19, accommodating two-way use. East from OR 19 to the cemetery, the path would border Old Cottonwood Lane, accommodating one-way use on each side of the road. East of the cemetery to the airport, the path would run along the north side of Old Cottonwood Lane, accommodating two-way use.

Impacts: A multi-use path connecting the golf course and fairgrounds would enhance recreational biking and walking opportunities in Condon. No negative impacts have been identified in association with this option.

Cost Estimate: Gilliam County's roadmaster developed a multi-use path cost estimate of approximately $6.40 per linear foot. This cost involves construction of a four foot wide asphalt path over aggregate base. At approximately 8,500 total lineal feet, the estimated cost for the alignment described would be $54,000. This cost estimate does not include any right of way acquisition that may be necessary.

Recommendation: Gilliam County, primarily Condon residents, would benefit from improved bicycle connectivity and safer roadway conditions for bicyclists in and around Condon. A connected bicycle system supports and promotes bicycle travel, which may lead to slightly decreased auto use.

EVALUATION OF CITY OF LONEROCK IMPROVEMENT OPTIONS

The City of Lonerock identified one project to be included in the Gilliam County TSP.

Option 1. Complete paving of three county roads with the city limits

Overview: The City of Lonerock identified the complete paving of three gravel county roads within their city limits as the key transportation improvement option to be completed in the next 20 years. The city has prioritized the roads to be paved as money becomes available for paving. The priority is Lonerock Road, Brown Creek Road, and Canyon (Buttermilk) Road.

Impacts: Benefits of these paving projects include improved roadway surfaces which should diminish automobile wear and tear, reduction in dust circulation from existing interaction of auto use on gravel and dirt roads, and improved pedestrian and bicycle circulation assuming the development of at least 4-foot directional shoulders. Residents who currently must walk or ride bikes will enjoy the benefit of paved shoulders, especially under adverse weather conditions where roadways currently become muddy and potentially unsafe.

Cost: All three county roads in Lonerock are classified as rural minor collectors. It is assumed that each roadway would be paved by the county using a bladed double chip seal to a standard 28-foot cross section including two 10-foot travel lanes and two 4-foot paved shoulders. The construction and material unit cost provided by Gilliam County is approximately $22,000 per mile. Assuming a 40 percent engineering contingency, a conservative total unit cost of $31,000 per mile was used. Table 6-2 presents a cost estimate based on preliminary measurements.

TABLE 6-2
CITY OF LONEROCK PAVING COST ESTIMATE

Road	Length (mile)	Unit Cost ($) per linear mile	Total Cost ($)
Lonerock Road	0.51	$31,000	$15,850
Brown Cr. Road	0.63	$31,000	$19,530
Canyon (Buttermilk) Road	0.49	$31,000	$15,190
TOTAL			**$50,570**

Costs may be lower depending on the level of excavation, grading, and preparation work needed for paving. Costs may also be lower if the county paves the roads versus hiring a private contractor.

Recommendation: The City of Lonerock should strive to complete these paving projects within the next 20-year planning horizon. This project is recommended.

SUMMARY

Table 6-3 summarizes the recommendations of the street system modal plan based on the evaluation process described in this chapter. Chapter 7 discusses how these improvement options fit into the modal plans for the Gilliam County area.

TABLE 6-3
TRANSPORTATION IMPROVEMENT OPTIONS: RECOMMENDATION SUMMARY

Option	Recommendation
Gilliam County Improvement options	
1. Implement TDM measures	• Implement
2. Improve roadway alignment and grade on OR 19 along Olex Grade.	• Implement pending further review by ODOT
3. Improve roadway alignment of "S" curves on OR 19.	• Implement
4. Improve roadway alignment around rock quarry on OR 19.	• Implement
5. Improve intersection operation control at intersection of OR 19/206 in Condon.	• Implement
6. Install runaway truck ramp along OR 206 at Cottonwood Canyon.	• Not recommended at this time
7. Install flashing beacon at intersection of OR 19 and Cedar Springs Road.	• Implement as industrial site development occurs
8. Develop Columbia View Drive extension to Main Street in Arlington	• Implement
9. Upgrade substandard bridges.	• Implement
10. Develop multi-use path along Old Cottonwood Road near Condon	• Implement
City of Lonerock Improvement Options	
1. Complete paving of three gravel county roads within the city limits	• Implement

CHAPTER 7: TRANSPORTATION SYSTEM PLAN

The purpose of this chapter is to provide detailed operational plans for each of the transportation systems within Gilliam County and the City of Lonerock. Components of the TSP include roadway standards, access management recommendations, transportation demand management measures, modal plans, and a system plan implementation program.

The Gilliam County TSP covers all the transportation modes that exist and are interconnected throughout the county. This is typically the area outside the urban growth boundaries of incorporated cities. Some areas inside the urban boundaries of specific cities in the County, such as Lonerock, have been included in this plan. The City of Lonerock has delegated its planning and zoning authority to the county as authorized by Oregon Revised Statute (ORS) 215.130(2)(b). Areas within a city's urban growth boundary (UGB) or Area of Mutual Concern, where the County has jurisdiction over a specific roadway or bridge, would require coordination as necessary between the County and cities on potential transportation improvement projects.

RECOMMENDED RURAL ROADWAY STANDARDS

The development of the Gilliam County TSP provides the County with an opportunity to review and revise roadway design standards to more closely fit with the functional roadway classification, and the goals and objectives of theTSP.

Gilliam County

The recommended roadway standards are shown graphically in Figure 7-1 and summarized in Table 7-1. Since the Gilliam County TSP primarily applies to land outside the urbanized, incorporated cities, rural road standards should be applied in these outlying areas.

TABLE 7-1
RECOMMENDED RURAL ROADWAY DESIGN STANDARDS- GILLIAM COUNTY

		Roadway		Shoulder	
Classification	**Right-of-Way Width**	**Width[1]**	**Surface**	**Width[2]**	**Surface**
Arterial Street[1]	60-120 ft	32-40[3] ft	Paved	4-8 ft	Paved
Collector Street	60-80 ft	24-32 ft	Paved/gravel	2-4 ft	Paved/gravel
Local Street	60 ft	24-28 ft	Paved/gravel	2-4 ft	Paved/gravel
Radius for cul-de-sac turn-around	50 ft	40 ft			

1. ODOT has overall jurisdiction regarding pavement width and roadway design of state highways in Gilliam County.
2. Shoulder width is included in pavement width.
3. Pavement width can vary to accommodate passing lanes and or left-turn refuge lanes.

The recommended roadway widths for the three different roadway classifications include shoulders sufficiently wide to accommodate safe bicycle and pedestrian travel. Recommended shoulder widths follow guidelines outlined in AASHTO's *Policy on Geometric Design of Highways and Streets* as summarized in Table 7-2. In areas where traffic volumes warrant only 2-foot shoulders, the County may wish to increase shoulder width to at least 4 feet to safely accommodate bicycle and/or pedestrian traffic if they exist or are expected to exist.

Expected 20-year traffic volumes in Gilliam County do not warrant shoulder widths in excess of four feet. However, the county may wish to increase shoulder width to better accommodate pedestrian and bicycle use.

Recommended roadway widths differ from existing pavement widths outlined in the county's comprehensive plan. The recommended widths reflect the majority of roadways in existence in the county and are expected to adequately serve forecast future traffic demands within the county. ODOT has jurisdiction over all state highways (arterials) in the county and will ensure that all highway projects are designed in accordance with ODOT highway design standards. At the discretion of county staff, Gilliam County may choose to deviate from the recommended design standards for those roadways under county control.

TABLE 7-2
RECOMMENDED SHOULDER WIDTHS ON RURAL ROADS

Road Use	Local Streets	Major and Minor Collectors	Arterial Streets
ADT under 400	2 ft	2 ft	4 ft
ADT over 400 and DHV* under 100	2 ft	4 ft	6 ft
DHV 100-200	4 ft	6 ft	6 ft
DHV 200-400	6 ft	8 ft	8 ft
DHV over 400	8 ft	8 ft	8 ft

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

City of Lonerock

Because of the essentially rural nature of the city, street design standards for the City of Lonerock follow the rural roadway standards outlined previously in Table 7-1 and discussed below. Lonerock does not have any arterial streets, but does have collector and local streets.

Rural Local Roadways

The recommended standard for a rural local roadway is a 24- to 28-foot roadway within a 60-foot right-of-way, as shown in Figure 7-1. The width of the roadway and right-of-way is determined by the width of the shoulder, assuming two 10-foot travel lanes as a constant. The roadway surface could be paved, but most local roadways in Gilliam County are gravel.

Rural Collector Roadways

Collector roadways are primarily intended to serve abutting lands and local access needs of neighborhoods. Depending on traffic volumes, collector roadways can be classified as minor or major. Figure 7-1 shows a cross section with a 60-foot right-of-way and a 24- to 32-foot paved width. This width allows two ten-foot travel lanes and two to four-foot shoulders for minor collectors and two 12-foot travel lanes and two to four-foot shoulders for major collectors. The width of the roadway and right-of-way is determined by the width of the shoulder. Anticipated traffic volumes, as shown in Table 7-2 determine the width of the shoulder. It is expected that on rural collector roadways,

parking will be off-pavement. The roadway surface may be paved or gravel. Many of the collector roadways in Gilliam County are currently gravel.

Rural Arterial Roadways

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

Figure 7-1 shows a cross section with an 80- to 120-foot right-of-way and a 32- to 40-foot paved width. This width allows two 12-foot travel lanes and four to eight-foot shoulders. The width of the roadway and right-of-way is determined by the width of the shoulder. Anticipated traffic volumes, as shown in Table 7-3 determine the width of the shoulder. No on-roadway parking should be allowed on arterial roadways.

Bike Lanes

For the most part, rural roadways do not require separate bikeway facilities. Bicyclists shall be accommodated on the shared roadway or on a shoulder, depending on traffic volumes. Low volume roadways where motorists can safely pass a bicyclist due to the low likelihood of encountering an oncoming vehicle support shared roadway use. Higher vehicular and/or bicycle volume roadways may be better served by shoulder bikeways. Additionally, in areas with high bicycle use, a pathway should be considered, preferably located on both sides of the roadway, separated from the roadway by at least five feet of greenbelt or drainage ditch. In general, the shoulder widths recommended by AASHTO for rural highways, which take into account traffic volumes and other considerations, are adequate for bicycle travel.

Sidewalks

Rural roadways generally do not require separate pedestrian facilities. Pedestrians can typically be accommodated on the shoulder of the roadway. In areas with high pedestrian activity, a pathway should be considered, preferably located on both sides of the roadway and separated from the roadway by at least five feet of greenbelt or drainage ditch.

ACCESS MANAGEMENT

Access management is an important tool for maintaining a transportation system. Too many access points along arterial roadways lead to an increased number of potential conflict points between vehicles entering and exiting driveways, and through vehicles on the arterial streets. This not only leads to increased vehicle delay and deterioration in the level of service on the arterial, but also leads to a reduction in safety. Research has clearly shown a direct correlation between the number of access points and collision rates. Experience throughout the United States has also shown that a well-managed access plan for a street system can minimize local cost for transportation improvements needed to provide additional capacity and/or access improvements along unmanaged roadways. Therefore, it is essential that all levels of government maintain the efficiency of existing arterial streets through better access management.

The Transportation Planning Rule (TPR) defines access management as measures regulating access to streets, roads and highways from public roads and private driveways and requires that new connections to arterials and

state highways be consistent with designated access management categories. As areas of Gilliam County continue to develop, the arterial/collector/local street system will become more heavily used and relied upon for a variety of travel needs. This is especially true for segments of roadway near the urbanizing edges of cities. As such, it will become increasingly important to manage access on the existing and future arterial/collector street system as new development occurs.

One objective of the Gilliam County TSP is to develop an access management policy that maintains and enhances the integrity (capacity, safety, and level-of-service) of the County road network. Too many access points along a street can contribute to a deterioration of its safety, and on some streets, can interfere with efficient traffic flow.

Access Management Techniques

The number of access points to an arterial can be regulated through a variety of techniques including, but not limited to:

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

Recommended Access Management Standards

Access management is hierarchical, ranging from complete access control on freeways to increasing use of roadways for access purposes, parking and loading at the local and minor collector level. Table 7-3 describes recommended general access management guidelines by roadway functional classification.

TABLE 7-3
RURAL STATE HIGHWAY ACCESS MANAGEMENT STANDARDS

Functional Classification	Access Category	Urban/ Rural	Intersection[4] Public Road Type[1]	Public Road Spacing	Private Drive[2] Type	Private Drive[2] Spacing	Signal Spacing	Median Control
Arterial								
I-84	1	R	Interchange	3-8 Mi.	None	na	None	Full
OR 74	6	R	At grade	¼ Mi.	Lt./Rt. Turns	300 ft	½ Mi.	None
OR 19	4	R	At grade	1 Mi.	Lt./Rt. Turns	1200 ft	None	Partial/None
OR 206	5	R	At grade	½ Mi.	Lt./Rt. Turns	500 ft	½ Mi.	None
Collector	na	R	At grade	¼ Mi.	Lt./Rt. Turns	1,200 ft	na	na
Local Street	na	R	At grade	200-400 ft	Lt./Rt. Turns	Vary[3]	na	na

1. Other intersection design treatments may be considered within categories 2-6.
2. Generally, no signals will be allowed at private access points on statewide and regional highways.
3. pacing designed to provide access to each lot.
4. llowed movements and spacing requirements may be more restrictive than those shown to optimize capacity and safety. Access to state highways require a permit from an ODOT District office and will generally not be granted where a reasonable alternative access exists.

Source for Arterial Roadways: Table 1 - Access Management Classification System, Appendix B, 1991 Oregon Highway Plan.

It should be noted that existing developments and legal accesses on the transportation network will not be affected by the recommended access management standards until either a land use action is proposed, a safety or capacity deficiency is identified that requires specific mitigation, a specific access management strategy/plan is developed, redevelopment of existing properties along the highway occurs, or a major construction project is begun on the street.

Application

These access management guidelines 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.

State Highways

Access management is important to promoting safe and efficient travel for both local and long distance users along I-84 and OR 19, OR 74, and OR 206 in Gilliam County. The 1991 *Oregon Highway Plan (OHP)* specifies an access management classification system for state facilities. The Draft 1998 Highway Plan (OHP) updates the access management standards and establishes guidelines and criteria to be applied when making access management assignments. Future developments on state highways (zone changes, comprehensive plan amendments, redevelopment, and/or new development) will be required to meet the 1991 OHP Level of Importance (LOI) and Access Management policies and standards until the 1998 Highway Plan is adopted.

Gilliam County follows ODOT's designation of state highways as arterial roadways within the county, and should therefore follow the access management categories for these facilities as outlined in the Oregon Highway Plan. This section of the Transportation System Plan describes the state highway access categories and specific roadway segments where special access areas may apply.

Future developments on state highways (zone changes, comprehensive plan amendments, redevelopment, and/or new development) will be required to meet the 1991 Oregon Highway Plan Level of Importance (LOI) and Access Management policies and standards. Spacing guidelines are measured (centerline-to-centerline) between either existing private or public access points on both sides of the roadway and to either side of the proposed access point. Additional property frontage along the state highway does not guarantee that additional approach roads will be allowed.

Proposed land use actions that do not comply with the designated access spacing policy will be required to apply for an access variance from Gilliam County and/or ODOT. In addition, according to the 1991 OHP, the impact of traffic generation from proposed land uses must not diminish established level of service (LOS) standards. Interstate highways (I-84) must maintain LOS C within urban areas and LOS B within rural areas along the highways influence area. Highways of regional importance (OR 19) and district importance (OR 74 and OR 206) must maintain LOS D within urban areas and LOS C within rural areas along the highway's influence area. The influence area is defined as the area in which the average daily traffic is increased by 10 percent or more by a single development, or 500 feet in each direction from the property-line of the development (whichever is greater).

The existing legal driveway connections, traffic intersection spacing, and other accesses to the state highway system are not required to meet the spacing standards of the assigned category immediately upon adoption of this access management plan. However, existing permitted connections not conforming to the design goals and objectives of the roadway classification will be upgraded as circumstances permit and during redevelopment. At any time, an approach road may need to be modified due to a safety problem or a capacity issue that exists or becomes apparent. By statute, ODOT is required to ensure that all safety and capacity issues are addressed.

A conditional access permit may be issued by ODOT and Gilliam County for a single connection to a property that cannot be accessed in a manner that is consistent with the spacing standards (shown in Table 7-4). These conditions typically apply to properties that either have no reasonable access or cannot obtain reasonable alternative access to the public road system. The permit should carry a condition that the access may be closed at such time that reasonable access becomes available to a local public street. In addition, approval of a conditional permit might require ODOT-approved turning movement design standards to ensure safety and managed access. Under special circumstances, ODOT may be required to purchase property in order to prevent safety conflicts.

The OHP provides more than one appropriate access management classification for highways based upon their level of importance. Therefore, the Gilliam County TSP recommends which access management category is most appropriate for each highway based on the OHP guidelines and development levels. ODOT is ultimately responsible for determining the appropriate access management category for each highway.

I-84 through Gilliam County is a state highway of Interstate level of importance. Within the Gilliam County limits, Oregon Highway Plan Category 1, "Full Control" applies. This classification requires interchange access with a minimum spacing of 3 miles in rural areas. No other access type is allowed.

OR 19 through Gilliam County is a state highway of regional level of importance. Within the Gilliam County limits, and outside the UGBs of the incorporated cities, Oregon Highway Plan Category 4, "Partial Control" applies.

Within rural areas, this classification permits at-grade intersections at a minimum spacing of one mile. Private driveways should have a minimum spacing of 1,200 feet from each other and from intersections. Traffic signals are allowed if other means to control traffic operations are not feasible.

OR 74 through Gilliam County is a state highway of district level of importance. Within the Gilliam County limits, and outside the UGBs of the incorporated cities, Oregon Highway Plan Category 6, "Partial Control" applies. Within rural areas, this classification permits at-grade intersections at a minimum spacing of one-quarter mile. Private driveways should have a minimum spacing of 300 feet from each other and from intersections. Traffic signals are permitted at a minimum of one-half mile spacing.

OR 206 through Gilliam County is a state highway of district level of importance. Within the Gilliam County limits, and outside the UGBs of the incorporated cities, Oregon Highway Plan Category 5, "Partial Control" applies. Within rural areas, this classification permits at-grade intersections at a minimum spacing of one-half mile. Private driveways should have a minimum spacing of 500 feet from each other and from intersections. Traffic signals are permitted at a minimum of one-half mile spacing.

MODAL PLANS

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

Roadway System Plan

The Gilliam County roadway system plan encompasses all of the roadway and bridge projects identified to date by Gilliam County and ODOT over the 20-year planning horizon. It provides a consolidated list of the many projects that have been identified by various sources. The three primary sources of identified roadway and bridge projects include:

- Gilliam county's five-year working road and bridge maintenance plan,
- ODOT's final 1998-2001 Statewide Transportation Improvement Program (STIP),
- Input from the Gilliam County TSP public involvement process

The projects identified in Gilliam County's road plan are considered necessary routine maintenance needs based on field observations by county staff; therefore, they were not evaluated through the TSP public involvement process for implementation. Projects identified under ODOT's STIP are already state funded and scheduled to take place over the next four-year planning horizon, and are included in the 20-year transportation project list.

Projects identified through the TSP public involvement process were evaluated in Chapter 6 (Improvement Option Analysis) and recommended for implementation and inclusion in the county's 20-year transportation project list.

Recommended TSP projects are prioritized for short-term (0-5 years), intermediate-term (5-10 years), or long-term (10-20 years) implementation. The following sections outline the identified projects under the four sources listed above. Where available, cost estimates are provided.

Gilliam County five-year Working Road Plan

Gilliam County has developed a five–year working roadway improvement plan to identify priority projects that the county would like to accomplish from 1999 to 2004. These projects represent Gilliam County's routine maintenance needs, and were not evaluated through the TSP public involvement process for implementation. The county clearly understands the impact that available funding and resources may have on accomplishing these projects. Inclusion of a project in this list does not guarantee completion within the five-year planning horizon. Based on periodic review, the county may add or delete projects from their "working" list as other higher priority projects are identified. A key component of the Gilliam County road plan is flexibility. The road department routinely adapts its work schedule to changing priorities. Therefore, estimated completion dates of particular projects have not been determined.

The road plan includes pavement rehabilitation and bridge maintenance projects. Table 7-4 summarizes the identified roadway projects with a short description of the project location, description, and cost estimate. The projects are not listed in any particular order. Projects included in Gilliam County's road plan do not constitute capital improvements where money needs to be raised to pay for the project. The projects are funded by the county's annual budget for roadway improvements and are therefore not included in the county's 20-year transportation project list presented later in this chapter.

Project costs for most improvements were estimated by the County Roadmaster. Where those estimates did not exist, DEA used average costs of $10 per square foot for roadway reconstruction projects, $3 per square foot for bridge maintenance projects (cleaning, painting, etc.), and $20 per square foot for bridge repair projects (timber plank replacement, rebuild shoulder, etc.). These unit costs include a 40 percent contingency per ODOT guidelines. The total cost to make all of the improvements is approximately $1.9 million. It is expected that the County would fund all of the roadway project costs, except for the improvements to Cedar Springs Lane. The total cost for this project is $298,480. The county' share is $11,560 with the remainder paid through a partnership with the Columbia Ridge Landfill and Chemical Waste Management NW. The county may wish to investigate the possibility of competing for federal matching funds through the Federal Highway Administration's (FHWA) Highway Bridge Repair and Replacement (HBRR) program.

TABLE 7-4
GILLIAM COUNTY FIVE-YEAR PLANNED ROADWAY PROJECTS

Road	Location	Description	Estimated Cost
COMPREHENSIVE ROADWAY PROJECTS			
Alville Lane	Where needed	Repair ditch, shoulder, add rock	$3,900
Blalock Canyon Road	Cedar Springs Rd. to Blalock Ranch	Straighten road, add drainage, rock and pave	$366,300
Buttermilk Road	2.5 miles- Morrow Co. toward Lonerock	Rebuild road	na
Carlson Road	Standing water locations	Install drainage, add rock where needed	$52,400
Cedar Springs Lane	OR 19 to Chemical Waste site	Pavement rehabilitation, shared cost	$11,600
Lonerock Road	5-miles- OR 206 to Ericksen grade	Rebuild, road realignment	na
Mikkalo Lane	Where needed	Fix drainage, install culverts, chip seal	$86,000
Rattlesnake Canyon	Where possible	Widen ditch and shoulder, add road rock	$29,000
Richmond Lane	¾ mi.- Ellsworth dwy to Cameron school	Remove pavement, improve ditches, other	$77,100
Ridge Road	Where needed	Patch existing pavement, overlay	$122,400
Rock Creek Road	Upper, middle, lower	Ditch repair, add road rock, widen corners	na
Trailfork Road	Eaton Place to wheeler Co. line	Install drainage and base rock	$52,000
County Road System	All gravel roads	Patrol roads, clean ditches, add road rock, etc.	na
Subtotal			***$800,700+***
ROADWAY BASING PROJECTS			**Base rock only**
Ridge Road	End of oil to Wolf Hollow Lane	Add base rock to existing roadway	$54,500
Four-mile Road	Four-mile roadway segment	Add base rock to existing roadway	$72,500
Blalock Road	Five-mile roadway segment	Add base rock to existing roadway	$91,000
Ferry Canyon Road	Four-mile roadway segment	Add base rock to existing roadway	$72,500
Wherli Canyon Loop	Mayville area, 3-mile roadway segment	Add base rock to existing roadway	$54,500
Lonerock Road	Three-mile roadway segment	Add base rock to existing roadway	$54,500
Lost Valley Road	Three-mile roadway segment	Add base rock to existing roadway	$54,500
Mikkalo Road	Three-mile roadway segment	Add base rock to existing roadway	$54,500
Barnett Road	Three-mile roadway segment	Add base rock to existing roadway	$54,500
Richmond Road	Various locations, three-miles total	Add base rock to existing roadway	$54,500
Heritage Lane	Three-mile roadway segment	Add base rock to existing roadway	$54,500
City Farm Road	Three-mile roadway segment	Add base rock to existing roadway	$54,500
Subtotal			***$726,500+***
FOG SEAL PROJECTS			
Baseline Road	10.6-mile roadway segment	Treat pavement surface with a fog seal	$7,600
Sniption Canyon Rd.	3.9-mile roadway segment	Treat pavement surface with a fog seal	$2,800
Richmond Road	4.3-mile roadway segment	Treat pavement surface with a fog seal	$3,100
Cedar Springs Lane	5-mile roadway segment	Treat pavement surface with a fog seal	$3,600
Cottonwood St. Road	1.4-mile roadway segment	Treat pavement surface with a fog seal	$1,100
Subtotal			***$18,200***
CHIP SEAL PROJECTS			
Mikkalo Road	5.1-mile roadway segment	Double blade and one-shot chip seals	$50,300
Fourmile Road	4.9-mile roadway segment	Double blade chip seal	$58,100
Wherli Canyon Road	8.8-mile roadway segment	Double blade and one-shot chip seals	$49,140
Buckhorn Road	2.7-mile roadway segment	Double blade chip seal	$32,400
Ferry Canyon Road	2.8-mile roadway segment	Double blade chip seal	$33,600
Richmond Road	one-mile roadway segment	Double blade chip seal	$12,000
Upper Creek Road	3.3-mile roadway segment	One-shot chip seal with patching	$17,200
Ramsey Canyon Rd.	5-mile roadway segment	One-shot chip seal	$26,000
Ridge Road	5.1-mile roadway segment	Double blade chip seal	$61,100
Trailfork Road	6.9-mile roadway segment	One-shot chip seal	$10,400
Quinton Grade	1.2-mile roadway segment	One-shot chip seal	$6,300
Subtotal			***$356,600***
OVERALL TOTAL			**$1,902,000+**

Note: Some cost estimates were not yet available (na) at the time of publication.
Source: Gilliam County five-year working road plan.

Table 7-5 summarizes the identified bridge projects with a short description of the project location, description, and cost estimate, if available.

TABLE 7-5
GILLIAM COUNTY FIVE-YEAR PLANNED BRIDGE PROJECTS

Bridge (ODOT No.)	Location	Description	Estimated Cost (1998)
Bridge Repair Projects			
Ferry Canyon (21C17)	Alville Lane- 1-mile west of OR 206	Replace bridge decking	$12,400
Cayuse Canyon (21C04)	Cayuse Canyon Rd.- 4.4-mi. E. of OR 19	Replace planks, rebuild east shoulder, more	$175,000[1]
Eightmile Creek (21C05)	FourmileRoad- 4.4-mi. SE. of OR 19	Rebuild shoulders	$36,850
Rock Creek (21C07)	Barnett Road- 9.2-mi. NW. of OR 19	Rebuild shoulders	$36,300
Eightmile Creek (21C11)	Eightmile Road-Lemon Ranch	Clean/seal cracks, install load limit sign	$5,600
Lonerock Creek (21C10)	Lonerock Road- City of Lonerock	Clean debris, inspect/replace rotten pilings	$6,200
Up. Cayuse Canyon (na)		Repair timber abutments	$20,000
TOTAL			**$292,350**

1. Cost estimate prepared by ODOT and adjusted to 1998 dollars.
Source: Gilliam County five-year working road plan.

Statewide Transportation Improvement Program (STIP) Projects

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

The final 1998-2001 STIP, published in December 1997, identified two major highway improvements in Gilliam County as listed below. These projects are identified in Figure 7-2.

- I-84 Inlay/Overlay Phase I— The nearly 12-mile segment of I-84 between Arlington and Willow Creek (Milepost 138.00 to 149.65) is programmed to receive a pavement preservation inlay and overlay. Construction is scheduled to begin in federal fiscal year 1999 at an estimated cost of $7.87 million.
- I-84 Inlay/Overlay Phase II— The nearly 10-mile segment of I-84 between Willow Creek and Tower Road (Milepost 149.65 to 159.30) is programmed to receive a pavement preservation inlay and overlay. Construction is scheduled to begin in federal fiscal year 2000 at an estimated cost of $6.75 million.

The draft 2002-2005 STIP includes one major highway improvement in Gilliam County.

- The project involves replacement of the Lonerock Bridge (ODOT Bridge No. 21C10) located in the City of Lonerock. This project is tentatively programmed for construction beginning in federal fiscal year 2003 at an estimated project cost of $480,000 (1999 dollars).

This project is identified in Figure 7-2.

Other Roadway and Bridge Improvement Projects

In addition to the projects identified previously, two bridge and six roadway projects have been identified in Gilliam County and one roadway project has been identified in the City of Lonerock. These projects were identified through the Gilliam County public involvement process and project evaluation presented in Chapter 6. The county-specific projects listed in Table 7-6 are illustrated in Figure 7-2. The City of Lonerock's single roadway improvement project is shown in Figure 7-3. These projects are recommended for implementation over the 20-year planning horizon. The roadway improvement projects for Lonerock are shown in Figure 7-3.

Pedestrian System Plan

In rural areas, it is typical to accommodate pedestrians on roadway shoulders. Currently, many of the shoulders on both county roads and state highways in Gilliam County can not safely accommodate pedestrians. Therefore, when Gilliam County's roads and the state highways are paved, repaved, or reconstructed, shoulders should be widened to meet the standards shown in Figure 7-1. New roads should be constructed with adequate shoulders as outlined in Table 7-2.

In addition to accommodating pedestrians and bicyclists, shoulders also protect the roadway edge from raveling and increase safety for motorists. Costs for shoulder additions are approximately $2 per square foot.

TABLE 7-6
RECOMMENDED IMPROVEMENT PROJECTS

Project No.	Road	Project Description	Estimated Cost (x $1000)
GILLIAM COUNTY			
3	OR 19	Realign Olex Grade	$6,500
4	OR 19	Realign "S" curves along OR 19 including reconstruction of two culverts	$400 to $600
5	OR 19	Realign approximately one-mile section of OR 19 from milepost 26.0 to 26.7	$1,200
6	OR 19/206	Intersection improvements	
		- Option 1: Advance traveler roadway signing	$0.5
		- Option 2: Install hazard beacon and advance signing	$2.5
7	OR 19	Install flashing hazard beacon at intersection of OR 19 and Cedar Springs Road as the industrial site on the west side of the intersection develops	$3.0 to $6.1
8	Columbia View Drive	Extend Columbia View Drive, located in Arlington's urban growth boundary (UGB) but south of the city limits, to connect with Main Street in Arlington.	$260
9	OR 206	Replace state bridge No. 01792 on OR 206 across Rock Creek	$275
10	Cayuse Canyon Rd.	Repair country bridge No. 21C04 on Cayuse Canyon Rd.	$175
TOTAL			***$8,814- $8,819***[1]
CITY OF LONEROCK			
1	Various	Complete paving of County Roads within city limits	$50.5
TOTAL			***$50.5***

1. Cost varies depending on which options are chosen for certain projects.

Source: Chapter 6, Gilliam County TSP.

Pedestrian System Plan

Multi-use paths are popular in rural areas, especially when they provide a viable alternative to a busy highway. Although no paved separated paths are found in Gilliam County at this time, Gilliam County is planning to develop a multi-use path within the next 10 years. This project is identified under the bicycle system plan, but is mentioned in this section because it will benefit pedestrians in and around Condon by interconnecting area attractions such as the golf course, the fairgrounds, and the airport.

Multi-use paths should follow the design standards of the *Oregon Pedestrian and Bicycle Plan (1995).* Pedestrian facilities on the urban sections of Gilliam County's roads are addressed in the city TSPs for those sections.

State law provides guidelines requiring the provision of bikeways and sidewalks. Oregon Revised Statute (ORS) 366.514 *Use of Highway Fund for Footpaths and Bicycle Trails* requires the inclusion of bikeways and walkways, including curb cuts or ramps, whenever highways, roads, and streets are constructed, reconstructed, or relocated, with three exemptions: (1) where sparsity of population indicates no need or probable use, (2) where safety would be jeopardized, and (3) if the cost is excessively disproportionate to the need or probable use. ODOT's interpretation of this statute is provided in the *1995 Oregon Bicycle and Pedestrian Plan*, and provides greater detail on issues such as exemptions.

The City of Lonerock has expressed a desire to prioritize street paving rather than developing their pedestrian system. The city may qualify for an exemption from developing pedestrian facilities based on the possible exemptions listed above. However, the city should consider at least developing four-foot directional shoulders along all roadways to accommodate pedestrians and motorists concurrently.

Bicycle System Plan

At present, bicyclists in Gilliam County share the roadway with motorists on most of the county roads. Many of the shoulders on both the county roads and state highways are inadequate for accommodating bicyclists. These shoulders are also needed to accommodate pedestrians, as mentioned above. Therefore, as Gilliam County's roads and the state highways are developed, repaved, or reconstructed, shoulders should be widened to meet the standards shown in Figure 7-1. New roads should be constructed with adequate shoulders.

Gilliam County is planning to develop a multi-use path just north of the Condon city limits within the next 10 years. As currently proposed, the County's multi-use path along Old Cottonwood Road/Lane would accommodate bicycle, pedestrian, and other uses (e.g., roller-blading). Based on preliminary alignment, the path would begin near the golf course located near the west city limits and end at the Condon airport (see Figure 7-4). The path would run along the north side of Old Cottonwood Road/Lane between the golf course and airport, accommodating two-way use, except for the section between OR 19 and the cemetery. This section of the path would border Old Cottonwood Lane, accommodating one-way use on each side of the road. The city expects that due to its proximity to the County fairgrounds, this section of OR 19 would receive the greatest demand, at least at certain times of year.

Bike facilities on the urban sections of Gilliam County's roads are addressed in the city TSPs for those sections. Due to the low traffic volumes and speeds in Lonerock, bicycle needs could be accommodated through shared use of the roadways. No additional bicycle infrastructure (bike lanes, bike paths, etc.) are recommended for construction under this TSP.

Transportation Demand Management Plan

Through transportation demand management (TDM), peak travel demands can be reduced or spread to more efficiently use the transportation system, rather than building new or wider roadways. Techniques, which 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 Gilliam County, where traffic volumes are low and the population and employment is small, implementing TDM strategies is not practical in most cases. However, the pedestrian and bicycle improvements recommended earlier in this chapter are also considered TDM strategies. By providing these facilities, Gilliam County is encouraging people to travel by other modes than the automobile. In rural communities, TDM strategies include providing mobility options.

Because intercity commuting is a factor in Gilliam County, residents who live in one city and work in other cities should be encouraged to carpool with a fellow coworker or someone who works in the same area. Gilliam County should consider creating a rideshare program, which could further boost carpooling ridership. The County may be able to coordinate with large-scale employers such as Waste Management to implement such a program.

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

Public Transportation Plan

The Oregon Transportation Plan indicates that intercity passenger service should be available for an incorporated city or group 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.

Gilliam County does not meet these requirements nor does it appear needed or economically feasible to provide intercity transit within the county. However, if in the future Gilliam County identifies a need or desire to begin such service, state support is usually necessary to get this kind of service started. For regular intercity service to have a chance of success, it must attract riders from the general public, not just the elderly. Ideally it should connect with Greyhound service. Further, it must run at regularly scheduled times so that people may depend on the service.

The Mid-Columbia Bus Company operates home-to-school bus service for the Arlington and Condon school districts. Mid-Columbia also operates charter bus service within the county and much of Oregon to various destinations including Seattle, Washington. Mid-Columbia operates 10 charter buses out of Condon with stops in Arlington. This service is targeted to adult passengers and serves only Arlington and Condon within the County. This type of recreational service appears well suited for many of the seniors in Gilliam County and should remain in effect.

Demand responsive, otherwise referred to as “dial-a-ride,” transit is available in Arlington and Condon. Both cities operate one handicapped-access van and a 12-passenger van. This volunteer program is provided as a special transportation service primarily for seniors. Arlington and Condon have a transit coordinator that works in cooperation with Gilliam County and the Mid-Columbia Council of Governments who manage the provision of the service.

Gilliam County is scheduled to receive one new modified van in 1999 and two new minivans by year 2001. The modified van will be purchased for use in Condon in 1999 and the minivans will be purchased by year 2001. Arlington and Condon will each receive one minivan. The vans will be purchased with funds allocated within ODOT’s final 1998-2001 STIP for the *elderly and persons with disabilities program.*

Rail Service Plan

The Union Pacific Railroad maintains a rail line along the I-84 corridor throughout Arlington with a spur that extends through Arlington and approximately 11 miles south along OR 19 to the Columbia Ridge Landfill site located on Cedar Springs Road. The landfill generates one outgoing 60- to 90-car freight train daily during the week with occasional service on Saturday. The daily round-trip train service brings a loaded train into the landfill site in the morning from Seattle, WA which, upon off-load, returns empty at night. This freight

operation represents the extent of rail service in Arlington and Gilliam County. Gilliam County supports maintaining this service within the county.

Approximately five years ago, Union Pacific Railroad ceased rail operations between Arlington and Condon and along the OR 74 corridor. Both rail lines have been physically removed. Freight operations between Arlington and Condon are now primarily accommodated via truck.

Future rail expansion is not currently being planned within the county. However, Gilliam County is in the process of rezoning a 56.5-acre site at Willow Creek. This site has been identified as a potential quarry site and could support rock export via rail along the I-84 corridor. The site has an existing spur line from the I-84 line. Findings from the *Port of Arlington Expansion Study* indicate that Portland metropolitan rock demand far exceeds supply. The Willow Creek site could develop into a viable source of rock production throughout the state.

Air Service Plan

Gilliam County is served by two airports located in Arlington and Condon. Arlington Municipal Airport is owned by the city and operates for private and agriculture use only. If needed, the airport property could support development of additional land facilities and could support extension of the runway to 5,000 feet in length. However, the city has no plans to further develop the airport at this time.

Condon State Airport's - Pauling Field in Condon is owned by the state and primarily serves private and charter users. Condon has no current plans to expand service or improve the airport facility at this time.

Master Plans have not been prepared for either airport. However, Gilliam County recognizes the importance, existing and future, of maintaining these two airport facilities. According to *Gilliam County's Comprehensive Plan*, the county will follow policies to "...protect these airports from hazards to navigation and to otherwise encourage the development of adjacent lands and facilities in a manner conducive to increased utilization."

The nearest passenger-use airport is located in Pendleton. Passenger service includes 16 scheduled flights per day by Horizon Airlines, with flights to Portland and Seattle. However, the Portland International Airport, located about 140 miles to the west of Arlington, probably serves most passenger air travel needs of Gilliam County residents.

Pipeline Service Plan

Two natural gas pipelines maintained by Pacific Gas Transmission traverse the central portion of Gilliam County. Although the County is not currently served by the pipelines, future natural gas service within the county has been discussed. Although a substation location has not been addressed, the pipeline is closest to Condon; located about seven miles north of the city. Large commercial operations and Port operations within the Arlington area could support future development of pipeline access in the Arlington area.

Water Transportation Plan

Water transportation in Gilliam County is concentrated in the Arlington area and consists of river cargo operations and marina operations, which are both, managed through the Port of Arlington. The two primary sources of information used by DEA to evaluate water transportation operations and potential needs include

review of the *Port of Arlington Expansion Study*, March 1998 and a personal interview with representatives of Cargill Enterprises, the Port of Arlington's single tenant and operator of the Port's grain elevator.

Cargo Operations

The Port of Arlington is presently engaged in grain export only; receiving grain from area farmers in Gilliam County and exporting the grain via barge to Portland with final destinations overseas. Port facilities consist of a single 703,000 bushel capacity grain elevator with one leg (or loading conveyor) and an 80-foot slip on the river to moor barges awaiting loading.

The export of grain is critical to Gilliam County's largely agriculture-based economy. The County is a leading grain producer in the state. The only cargo, historically and currently, exported from Arlington is grain. Historically, no cargo has been imported to Arlington by water. Exported grain from Arlington travels via barge to Portland for export internationally.

Demand on the Port facility varies throughout the year during and around the harvest season. The Port storage and conveyance facilities often operate near capacity, and operate over capacity at times during peak periods, which cover nearly seven months of the year. Although results of the *Port of Arlington Expansion Study* concluded that, "there is inadequate grain production in Arlington's service area to justify establishment of a second grain terminal" Cargill Enterprises, the Port's long time grain conveyance tenant, has indicated a potential future need to have the Port build additional bins and install an additional loading conveyor to keep up with demand.

Expansion of cargo operations within the Port facility other than grain transport appears limited. According to the *Port of Arlington Expansion Study*, the very limited developable area available to support cargo operations (about 2 acres adjacent to the grain elevator) is inadequate to support either rock or container activities which are the only two identified potential cargoes for movement through the Port. Although the report indicates that future throughput of cargo to the landfill is a potential business opportunity, the report also indicates that Waste Management is not pursuing this option.

Marina Operations

The Port of Arlington owns and operates a marina, which is part of the Arlington riverfront complex. According to the *Port of Arlington Expansion Study*, the Port has excess moorage capacity and has not historically had, and does not currently have, a waiting list. Based largely on these facts, the study concludes that marina expansion is not warranted.

Expanded Barge Dock Operations

Under the *Port of Arlington Expansion Study*, three alternatives were analyzed regarding the expansion of barge dock operations within the existing port facility in Arlington. Much of the discussion in this section is based on results from that report.

In concept, based on expanded barge dock operations, inbound containerized solid wastes, destined for the Waste Management facility, would off load at the port. Barges would then leave Arlington with cargo ranging from bulk aggregate material to containerized value-added products from the Waste Management to products (containerized or breakbulk) produced at the North Gilliam County Industrial Park. The optimum dock configuration would support handling the various types of cargo described previously.

The optimal facility design, as described in the expansion study, would consist of a 300-foot by 50-foot slip surrounded by an expanded gravel pad. The pad would be constructed in the shallow bay east of the existing grain elevator and causeway. A track-mounted gantry would be installed to access the slip. The approximate cost for this design, as outlined in the expansion study, is $10.4 million.

A second, scaled down, design would be constructed on the existing two-acre port site just west of the grain elevator. This design would involve a rail mounted overhead crane and new barge dock. A small access dock would also be constructed. The approximate cost for this design, as outlined in the expansion study, is $2.3 million.

A third design is different from option 2 in that it is assumed that a private entity would provide the overhead crane as part of a long-term contract with the port. The approximate cost for this design, as outlined in the expansion study, is $1.6 million.

Previous analysis conducted under the *Port of Arlington Expansion Study* indicated that existing demand on the port facility does not warrant facility expansion. Future expansion of barge dock operations within the Port of Arlington will likely be tied to some commitment by one or more major users, which would support the economic viability of such an expansion. At that point, further analysis of which design concept to implement would be needed.

TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM

Implementation of the Gilliam County Transportation System Plan will require changes to both the County comprehensive plan and zoning code and preparation of a 20-Year Capital Improvement Plan. These actions will enable Gilliam County to address both existing and emerging transportation issues throughout the county in a timely and cost effective manner. This implementation program is focused on providing Gilliam County with the tools to amend the comprehensive plan and zoning ordinance to conform with the Oregon Transportation Planning Rule and to fund and schedule transportation system improvements.

One part of the implementation program is the formulation of a 20-year transportation project list. The purpose of the project list is to detail what transportation system improvements will be needed as Gilliam County grows and to provide a process to fund and schedule the identified transportation system improvements. It is expected that the 20-year transportation project list can be integrated into the existing County CIP and the ODOT STIP, and the CIPs of the various cities in Gilliam County involved in related projects. This integration is important since the Transportation System Plan proposes that these 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 included in Chapter 9. The proposed ordinance amendments will require approval by the Board of County Commissioners.

20-Year Transportation Project list

The 20-year transportation project list is shown with the following priorities:

- High Priority (next 0 to 5 years)
- Medium Priority (5 to 10 years)

- Low Priority (10 to 20 years)

These priorities are based on current need, the relationship between transportation service needs and the expected growth of the county, and a reasonable balance of near and long-term expenditures. The following schedule indicates priorities and may be modified to reflect the availability of finances or the actual growth in population and employment.

The 20-year transportation project list is summarized in Table 7-7. The estimated cost of each project is shown in 1998 dollars by jurisdiction. These costs include design, construction, and some contingency costs. They are preliminary estimates and do not include right-of-way acquisition, water or sewer facilities, or detailed intersection design.

Gilliam County has identified 11 projects in its 20-year transportation project list with a total cost of about $23.7 million. Four high priority projects have been identified with an approximate cost of $15.2 million. Six medium priority projects have been identified with an approximate cost of $7.3 million. One low priority project has been identified with an approximate cost of $1.2 million.

The City of Lonerock has identified one improvement project that involves completing paving of the three existing county roads within the city limits. This high priority project has an approximate cost estimate of $50,500. Additionally, the Lonerock Creek Bridge has been identified for replacement under ODOT's draft 2002-2005 STIP. Replacement of this bridge is tentatively planned for construction in federal fiscal year 2003 at an estimated cost of $480,000.

TABLE 7-7
PRIORITIZED 20-YEAR TRANSPORTATION PROJECT LIST

Project Number/Description	Estimated Cost Allocation			
	County	**State**	**Other**	**Total**
GILLIAM COUNTY				
High Priority (1998-2003)				
1 Pavement preservation on I-84 from MP 138.00-149.65[1]		$7,870,000		$7,870,000
2 Pavement preservation on I-84 from MP 149.65-159.30[1]		$6,747,000		$6,747,000
6 Improve traffic control at OR 19/206 intersection		$2,700		$2,700
4 Realign OR 19 through "S" curve at MP 8.4[2]		$600,000		$600,000
Medium Priority (2004-2008)				
3 Improve roadway alignment at Olex Grade		$6,500,000		$6,500,000
7 Install flashing beacon at OR 19/Cedar Sp. Intersection[3]	$6,100			$6,100
8 Extend Columbia View Dr. to Main Street in Arlington	$86,600		$173,400	$260,000[4]
9 Replace state bridge No. 01792 on OR 206 across Rock Creek		$275,000		$275,000
10 Repair county bridge No. 21C04 on Cayuse Canyon Road	$175,000			$175,000
11 Develop multi-use path along Old Cottonwood Road	$54,000			$54,000
Low Priority (2009-2018)				
5 Improve roadway alignment on OR 19 near MP 26-26.7		$1,200,000		$1,200,000
Subtotal High Priority Projects	**$0**	**$15,219,700**	**$0**	**$15,219,700**
Subtotal Medium Priority Projects	**$321,700**	**$6,775,000**	**$173,400**	**$7,270,100**
Subtotal Low Priority Projects	**$0**	**$1,200,000**	**$0**	**$1,200,000**
GILLIAM COUNTY TOTAL	**$321,700**	**$23,194,700**	**$173,400**	**$23,689,800**
CITY OF LONEROCK				
High Priority (1998-2003)				
1 Complete paving of county roads within city limits	$50,500			$50,500[5]
2 Draft 2002-2005 STIP project to replace the Lonerock Bridge		$480,000		$480,000
Subtotal High Priority Projects	**$50,500**	**$480,000**	**$0**	**$530,500**
Subtotal Medium Priority Projects	**$0**	**$0**	**$0**	**$0**
Subtotal Low Priority Projects	**$0**	**$0**	**$0**	**$0**
CITY OF LONEROCK TOTAL	**$50,500**	**$480,000**	**$0**	**$530,500**

Notes
1. 1998-2001 STIP project.
2. The higher cost estimate for this improvement has improvement has been shown; however, cost estimates range from $400,000 to $600,000.
3. The higher cost estimate for this improvement has improvement has been shown; however, cost estimates range from $3,000 to $6,100. The county should also investigate cost sharing with Waste Management.
4. The county should coordinate development of a cost sharing plan among the county, Arlington, and the affected landowners. For this program, all three parties have been assigned an equal share the total project cost.
5. Gilliam County will need to determine what portion of the project they are willing to pay for.

CHAPTER 8: FUNDING OPTIONS AND FINANCIAL PLAN

The Transportation Planning Rule requires TSPs to include an evaluation of the funding environment for recommended improvements. This evaluation must include a listing of all recommended transportation improvement projects, estimated costs to implement those improvements, and a review of potential funding mechanisms. Gilliam County's TSP identifies nine specific capital improvement projects over the next 20 years. This section of this TSP provides an overview of some funding and financing options that may be available to Gilliam County to fund these improvements.

Pressures from increasing growth throughout much of Oregon have created an environment of planned improvements that remain unfunded. Gilliam County will need to work with its incorporated cities and ODOT to finance the proposed 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 Gilliam County will grow at the rate forecast by the State of Oregon Office of Economic Analysis over the next 20 years. If population growth exceeds this rate, the improvements may need to be accelerated. Slower than expected growth will relax the improvement schedule.

HISTORICAL STREET IMPROVEMENT FUNDING SOURCES

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

TABLE 8-1
SOURCES OF ROAD REVENUES BY JURISDICTION LEVEL

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

Source: ODOT 1993 Oregon Road Finance Study.

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

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

Transportation Funding in Gilliam County

Historically, sources of road revenues for Gilliam 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 Gilliam County are shown in Table 8-2 and Table 8-3.

TABLE 8-2
GILLIAM COUNTY TRANSPORTATION-RELATED REVENUES

	1995-1996 Actual	1996-1997 Actual	1997-1998 Budget	1998-1999 Budget
Beginning Fund Balance	$406,296	$368,957	$330,000	$310,789
Resources				
Taxes	$294,615	$300,158	$298,640	$313,642
Investment Earnings	$6,463	$9,402	$6,000	$6,000
Charges/Fees/Services	$80,649	$239,774	$5,000	$255,000
Sale of Assets	$24,279		$100	$46,000
Misc. Other Revenue	$86,214	$92,126	$15,100	$10,100
State Motor Vehicle Fund	$135,773	$138,990	$140,000	$140,000
County Allotment	$54,712	$255,240	$20,000	$20,000
Sale of Public Land	$1,592	$5,221	$1,000	$25,000
Federal Disbursements	$2,161	$1,310	$1,200	$1,250
Interfund Transfers	$345,281	$122,803	$205,500	$112,395
	$1,031,738	$1,165,025	$692,540	$929,387

Source: Gilliam County.

As shown in Table 8-2, revenues have declined somewhat, from a high of nearly $1.2 million in 1996-1997 to an estimated $700,000 in 1997-1998. Nearly $140,000 of the annual revenue comes from the State Highway Fund. In recent years, Gilliam County has also benefited from resources from the County Allotment Fund, which distributes monies to counties with the lowest resource-per-equivalent road-mile ratios. (See the description of the County Allotment Program below.)

As shown in Table 8-3, Gilliam County has spent between $6,000 and $44,000 annually in capital improvements. The bulk of expenditures in the road fund are for personal services and materials and services relating to maintenance.

TABLE 8-3
GILLIAM COUNTY TRANSPORTATION-RELATED EXPENDITURES

	1995-1996 Actual	1996-1997 Actual	1997-1998 Budget	1998-1999 Budget
Personal Services	$363,895	$340,046	$327,757	$358,717
Materials and Services	$285,024	$181,511	$218,050	$285,050
Capital Outlay	$43,794	$6,311	$13,550	$11,100
Other Requirements	$2,288	$12,283	$60,410	$95,307
Transfers	$293,668	$290,000	$226,795	$263,500
	$988,669	$830,151	$846,562	$1,013,673

Source: Gilliam County.

The County also accounts for funds intended for the purchase of road improvement equipment in a Road Equipment Replacement Fund. Its revenues and expenditures are shown in Table 8-4. Its revenues are typically transfers from the general road fund.

TABLE 8-4
GILLIAM COUNTY ROAD EQUIPMENT REPLACEMENT FUND

	1995-1996 Actual	1996-1997 Actual	1997-1998 Budget	1998-1999 Budget
Beginning Fund Balance	$183,727	$100,754	$76,100	$120,000
Resources				
Investment Earnings	$2,989	$1,863	$2,000	$2,000
Transfers	$100,000	$120,000	$120,000	$100,000
	$102,989	$121,863	$122,000	$222,000
Expenditures				
Road Equipment Purchase	$136,514	$97,399	$149,100	$173,000
Road Equipment Leases	$49,449	$46,918	$49,000	$49,000
	185,963	$144,317	$198,100	$222,000

Source: Gilliam County.

Transportation Revenue Outlook in Gilliam County

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 TPR requiring a ten-percent reduction in per-capita vehicle miles of travel (VMT) in MPO planning 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 will increase 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; and
- 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

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 more slowly than inflation early in the planning horizon until fuel-tax and vehicle-registration fee increases occur in year 2002, then increase somewhat faster than inflation through year 2015, then (again) more slowly than inflation.

As the State Highway Fund is expected to remain a significant source of funding for Gilliam County, the County is highly susceptible to changes in the State Highway Fund. 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. It will also depend on the population growth in Gilliam County because the distribution of state highway funds is based on an allocation formula that includes population.

REVENUE SOURCES

In order to finance the recommended transportation system improvements requiring expenditure of capital resources, it may be necessary 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 Measures 5 and 47. The alternative revenue sources described in this section may not all be appropriate in Gilliam County. However, this overview is provided to illustrate the range of options currently available to finance transportation improvements during the next 20 years.

Property Taxes

Property taxes have historically been the primary revenue source for local governments. However, property tax revenue goes into general fund operations, and is not typically available for street improvements or maintenance. The dependence of local governments on this revenue source is partly due 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 has a predictable value and appreciation to base taxes upon. This contrasts with 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 they can be imposed. Bond levies are for specific projects and are limited by time based on the debt load of the local government or the project.

The historic dependence on property taxes is changing with the passage of Ballot Measure 5 in the early 1990s. Ballot Measure 5 limits the property tax rate for purposes other than payment of certain voter-approved general obligation indebtedness. Under full implementation, the tax rate for all local taxing authorities is limited to $15

per $1,000 of assessed valuation. As a group, all non-school taxing authorities are limited to $10 per $1,000 of assessed valuation. All tax base, serial, and special levies are subject to the tax rate limitation. Ballot Measure 5 requires that all non-school taxing districts' property tax rate be reduced if together they exceed $10 per $1,000 per assessed valuation by the county. If the non-debt tax rate exceeds the constitutional limit of $10 per $1,000 of assessed valuation, then all of the taxing districts' tax rates are reduced on a proportional basis. The proportional reduction in the tax rate is commonly referred to as compression of the tax rate.

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

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

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

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

System Development Charges

System Development Charges (SDCs) are becoming increasingly popular for funding public works infrastructure needed for new local development. Generally, the purpose of a systems development charge is to allocate portions of the costs associated with capital improvements on the developments, which increase demands on transportation, sewer or other infrastructure systems.

Local governments have the legal authority to charge property owners and/or developers fees for improving local public works infrastructure to meet the projected demand resulting from their developments. Charges are most often targeted toward improving community water, sewer, or transportation systems. In order to collect SDCs, cities and counties must have specific infrastructure plans in place that comply with state guidelines.

Typically, an SDC is collected when new building permits are issued. Transportation SDCs are 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 square footage for the type of business or industrial uses. SDC revenues would help fund the construction of transportation facilities necessitated by new development. A key legislative requirement for charging SDCs is the link between the need for the improvements and the developments being charged.

State Highway Fund

Gas tax revenues received from the State of Oregon are used by all counties and cities to fund street and road construction and maintenance. In Oregon, the state collects gas taxes, vehicle registration fees, overweight/overheight fines and weight/mile taxes and returns a portion of the revenues to cities and counties through an allocation formula. The revenue share to cities is divided among all incorporated cities based on population. Like other Oregon counties, Gilliam County uses its State Gas Tax allocation to fund street construction and maintenance.

Local Gas Taxes

The Oregon Constitution permits counties and incorporated cities to levy additional local gas taxes with the stipulation that the money 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. Gilliam County 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 Gilliam County and gas purchased in neighboring counties may encourage drivers to seek less expensive fuel elsewhere. Any action will need to be supported by careful analysis to minimize the unintended consequences of such an action.

Vehicle Registration Fees

The Oregon Vehicle Registration Fee is allocated to the state, counties and cities for road funding. Oregon counties are granted authority to impose a vehicle registration fee covering the entire county. The Oregon Revised Statutes would allow Gilliam 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 Gilliam County, all the incorporated cities and the county would need to formulate an agreement which would detail how the fees would be spent on future street construction and maintenance.

Local Improvement Districts

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

Grants and Loans

There are a variety of grant and loan programs available, most with specific requirements related to economic development or specific transportation issues, rather than for the general construction of new streets. Many programs require a match from the local jurisdiction as a condition of approval. Because grant and loan programs are subject to change as well as statewide competition, they should not be considered a secure long-term funding source for Gilliam County. Most of the programs available for transportation projects are funded and administered through ODOT and/or the Oregon Economic Development Department (OEDD). Some programs that may be appropriate for Gilliam County are described below. Appendix G provides a list of current 1998 program representatives for each of the grant and loan programs along with their phone numbers.

Bike-Pedestrian Grants

By law (ORS 366.514), all road street or highway construction or reconstruction projects must include facilities for pedestrians and bicyclists, with some exceptions. ODOT's Bike and Pedestrian Program administers two programs to assist in the development of walking and bicycling improvements: local grants, and Small-Scale Urban Projects. Cities and counties with projects on local streets are eligible for local grant funds. An 80 percent state/20 percent local match ratio is required. Eligible projects include curb extensions, pedestrian crossings and intersection improvements, widening shoulders and restriping existing roads for bike lanes. Projects on urban state highways with little or no right-of-way taking and few environmental impacts are eligible for Small-Scale Urban Project Funds. Both programs are limited to projects costing up to $100,000. Projects that cost more than $100,000, require ROW acquisition, or generate environmental impacts should be submitted to ODOT for inclusion in the STIP.

Enhancement Program

This federally-funded program earmarks $8 million annually for projects in Oregon. Projects must demonstrate a link to the intermodal transportation system, compatibility with approved plans, and local financial support. A 10.27 percent local match is required for eligibility. Each proposed project is evaluated against all other proposed projects in its region. Within the five Oregon regions, the funds are distributed on a formula based on population, vehicle miles traveled, number of vehicles registered and other transportation-related criteria. The solicitation for applications was mailed to cities and counties the last week of October 1998. Local jurisdictions have until January 1999 to complete and file their applications for funding available during the 2000-2003 fiscal years, which begin October 1999.

Highway Bridge Rehabilitation or Replacement Program

The Highway Bridge Rehabilitation or Replacement Program (HBRR) provides federal funding for the replacement and rehabilitation of bridges of all functional classifications. A portion of the HBRR funding is allocated for the improvement of bridges under local jurisdiction. A quantitative ranking system is applied to the proposed projects based on their sufficiency rating, cost factor, and load capacity. They are ranked against other projects statewide, and require state and local matches of 10 percent each. The HBRR includes the Local Bridge Inspection Program and the Bridge Load Rating Program.

Transportation Safety Grant Program

Managed by ODOT's Transportation Safety Section (TSS), this program's objective is to reduce the number of transportation-related accidents and fatalities by coordinating a number of statewide programs. These funds are

intended to be used as seed money, funding a program for three years. Eligible programs include those relating to impaired driving, occupant protection, youth, pedestrians, speed, enforcement, and bicycle and motorcycle safety. Every year, TSS produces a Highway Safety Plan that identifies the major safety programs, suggests countermeasures, and lists successful projects selected for funding, rather than granting funds through an application process.

Special Transportation Fund

The Special Transportation Fund (STF) awards funds to maintain, develop, and improve transportation services for people with disabilities and people over 60 years of age. Financed by a two-cent tax on each pack of cigarettes sold in the state, the annual distribution of funds is approximately $5 million. Three-quarters of these funds are distributed to mass transit districts, transportation districts, and, where no such districts exist, to counties, on a per-capita formula. The remaining funds are distributed on a discretionary basis.

County Allotment Program

The County Allotment Program distributes funds to counties on an annual basis; the funds distributed in this program are in addition to the regular disbursement of State Highway Fund resources. The program determines the amount of total revenue available for roads in each county and the number of road miles (but not lane miles) of collectors and arterials under each county's jurisdiction. Using these two benchmarks, a "resource-per-equivalent" ratio is calculated for each county. Resources from the $750,000 program are provided to the county with the lowest resource-per-equivalent road-mile ratio until they are funded to the level of the next-lowest county. The next-lowest county is then provided resources until they are funded to the level of the third-lowest county, and so on, until the fund is exhausted.

Immediate Opportunity Grant Program

The Oregon Economic Development Department (OEDD) and ODOT collaborate to administer a grant program designed to assist local and regional economic development efforts. The program is funded to a level of approximately $7 million per year through state gas tax revenues. The following are primary factors in determining eligible projects:

- Improvement of public roads;
- Inclusion of an economic development-related project of regional significance;
- Creation or retention of primary employment; and
- Ability to provide local funds (50/50) to match grant.

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

Oregon Special Public Works Fund

The Special Public Works Fund (SPWF) 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 that supports commercial and industrial development and results in permanent job creation or job retention. To be awarded funds, each infrastructure project must support businesses wishing to locate, expand, or remain in Oregon. SPWF awards can be used for improvement, expansion, and new construction of public sewage treatment plants, water supply works, public roads, and transportation facilities.

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

Oregon Transportation Infrastructure Bank

The Oregon Transportation Infrastructure Bank (OTIB) program is a revolving loan fund administered by ODOT to provide loans to local jurisdictions, including cities, counties, special districts, transit districts, tribal governments, ports, and state agencies. Eligible projects include construction of federal-aid highways, bridges, roads, streets, bikeways, pedestrian accesses, and right-of-way costs. Capital outlays such as buses, light-rail cars and lines, maintenance yards, and passenger facilities are also eligible.

ODOT Funding Options

The State of Oregon provides funding for all highway related transportation projects through the Statewide Transportation Improvement Program (STIP) administered by the Oregon Department of Transportation. The STIP outlines the schedule for ODOT projects throughout the state. The STIP, which identifies projects for a four-year funding cycle, is updated each biennium. In developing this funding program, ODOT must verify that the identified projects comply with the Oregon Transportation Plan (OTP), ODOT Modal Plans, Corridor Plans, local comprehensive plans, and TEA-21 Planning Requirements. The STIP must fulfill TEA-21 planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on a review of the TEA-21 planning requirements and the different state plans. ODOT consults with local jurisdictions before highway related projects are added to the STIP.

The highway-related projects identified in Gilliam County's TSP will be considered for future inclusion on the STIP. The timing of including specific projects will be determined by ODOT based on an analysis of all the project needs within Region 4. Gilliam County, its incorporated cities and ODOT will need to communicate on a biennium basis to review the status of the STIP and the prioritization of individual projects within the project area. Ongoing communication will be important for the city, county, and ODOT to coordinate the construction of both local and state transportation projects.

ODOT also carries out some highway improvements as part of its 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 conducted 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 Gilliam County's TSP is the use of state and federal transportation dollars for off-system improvements. Until the passage and implementation of ISTEA, state and federal funds were limited to transportation improvements within highway corridors. ODOT now has the authority and ability to fund transportation projects that are located outside the boundaries of the

highway corridors. The criteria for determining what off-system improvements can be funded has not yet been clearly established. It is expected that this new funding technique will be used to finance local system improvements that reduce traffic on state highways or reduce the number of access points for future development along state highways.

FINANCING TOOLS

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

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

General Obligation Bonds

General obligation (GO) bonds are voter-approved bond issues, which represent the least expensive borrowing mechanism available to municipalities. GO bonds are typically supported by a separate property tax levy specifically approved for the purposes of retiring debt. The levy does not terminate until all debt is paid 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 jurisdiction not exceed three percent of the real market value of all taxable property in its boundary. 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 each new bond must be voter approved, Measure 47 and 50 provisions are not applicable to outstanding bonds, unissued voter-approved bonds, or refunding bonds.

Limited Tax Bonds

Limited tax general obligation bonds (LTGOs) are similar to general obligation bonds in that they represent an obligation of the municipality. However, a municipality's obligation is limited to its current revenue sources and is not secured by the public entity's ability to raise taxes. As a result, LTGOs do not require voter approval. However, since the LTGOs are not secured by the full taxing power of the issuer, the limited tax bond represents a higher borrowing cost than general obligation bonds. The municipality must pledge to levy the maximum amount under constitutional and statutory limits, but not the unlimited taxing authority pledged with GO bonds. Because LTGOs are not voter approved, they are subject to the limitations of Ballot Measures 5, 47, and 50.

Bancroft Bonds

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

FUNDING REQUIREMENTS

Gilliam County's TSP identifies capital improvements recommended during the next 20 years to address safety and access problems and to expand the transportation system to support a growing population and economy. This TSP identifies nine projects, classified into three implementation phases:

- High Priority: between 1999 to 2003;
- Medium Priority: between 2004 and 2008; and
- Low Priority: After 2008.

Estimated costs summarized by project and by implementation phase were presented previously in Chapter 7 in Table 7-7. The overall estimated project cost associated with Gilliam County's 20-year transportation project list is $$23.7 million.

Four of the projects have been classified as high-priority projects. This classification is attached to the projects that the county would like to see completed within five years of completion of this plan. An additional six projects are classified as medium-priority, scheduled for implementation between years 2004 and 2008. The last project is classified as low priority, intended for implementation between years 2009 and 2018. Two of the four high-priority projects (the pavement preservation projects along I-84) are on the STIP, to be financed through state and federal sources. Where the proposed projects improve safety or general traffic operations, they may be eligible for Transportation Safety Grants or Enhancement Funds. Further analysis will be required to evaluate the applicability of these programs for these proposed projects. Gilliam County will need to continue to work with its incorporated cities and ODOT in order to fully implement this TSP.

The overall estimated project cost associated with the City of Lonerock's 20-year transportation project list is $530,000. The state is responsible for funding $480,000 of the total project dollars associated with replacing the Lonerock Creek Bridge. Lonerock will need to coordinate financing for the estimated $50,500 dollars worth of roadway paving.

APPENDIX A

TECHNICAL MEMORANDUM #1
REVIEW OF EXISTING PALNS AND POLICIES FOR GILLIAM COUNTY

APPENDIX A

TECHNICAL MEMORANDUM #1

REVIEW OF EXISTING PLANS AND POLICIES FOR GILLIAM COUNTY

The purpose of this memorandum is to review the existing plans and policies in Gilliam County, in particular those that relate to transportation. Below are the plans summarized that were reviewed.

GILLIAM COUNTY COMPREHENSIVE PLAN

The Gilliam County Comprehensive Plan was adopted in 1977 and last updated in 1987.

The Plan's introduction provides an overview of land uses and jurisdictional responsibility in Gilliam County. Much of the County lies in agriculture land uses. The two cities of Arlington and Condon represent the County's primary population centers, accounting for approximately 60% of its population at the time of the Plan's 1987 revision. It was expected that most of the future growth in the county would occur in or adjacent to these cities and that they would represent 70-75% of the County's population in the future. Such a growth pattern is encouraged by the Comprehensive Plan in order to preserve agricultural land and provide for adequate levels of service.

The County has planning authority for unincorporated areas. However, the document states that cities will have a major role in implementing of the County Comprehensive Plan. The Plan identifies Areas of Mutual Concern, consisting of unincorporated areas within 660 feet or the corporate limits of the cities of Arlington and Condon. The Areas of Mutual Concern are designated to ensure coordinated planning between the County and cities. A special planning commission separate from the General County Planning Commission is established for each Area of Mutual Concern.

The Comprehensive Plan is divided into sections addressing general planning policies; agricultural land use; urban land uses; park, recreation and open space land uses; transportation facilities; and public service facilities. Each section contains a set of findings and policies. Sections with transportation planning relevance are described below.

Part 1. General Planning Policies

This section notes some key planning issues facing Gilliam County. Historically, growth in the County was tied to agriculture and agriculture served as its economic base. The Plan states that agriculture will remain primary, but stresses the need for economic development and diversification. The two major towns, Arlington and Condon, have sufficient land to accommodate any expected urban growth. Efforts are necessary to stabilize these towns from continued population loss. The Plan identifies the vacated radar base near Condon as a site with significant redevelopment potential.

County policy encourages conservation of the land resource and efforts to minimize erosion by wind or water. The Plan states that Gilliam County has a high-quality environment but cites a need to minimize pollution, especially from non-point sources. It notes the risk of flash flooding in all stream beds, canyons, and gullies in the County.

Part 4: Urban and Urban Type Land Uses

Policies

4. Urban services shall not be extended to residents located in the Areas of Mutual Concern unless an Exception is taken for said area to be incorporated into the respective City Urban Growth Boundary.

Part 6. Transportation Facilities

Policies in this section of the Plan are intended to respond to Statewide Planning Goal 12: Transportation

Findings

2. While principal highways in county provide for movement of people and goods through the county, the County road system functions primarily to facilitate transportation between various areas in the county or between an area of the County and a principal highway. Maintaining these important trafficways in a major County responsibility and prudent public management dictates that the relatively limited resources available for this purpose be directed toward those areas in which they can do the most good.

3. Rail service from Arlington to Condon is considered vital to the economic base of the county. The abandonment of such service would constitute an absolute adverse impact on total economy of County.

4. Three separate sites for river port terminal facilities were identified in the Mid-Columbia Riverfront Plan.

5. There are two public use airports in the County, one at Arlington and one at Condon... Both airports are important to the County and must be protected from conflicting uses.

7. If the need arises for the Condon Radar Base to be developed to accommodate housing demands, improvements to existing transportation routes or alternate transportation methods will be needed.

Policies

1. Major attention by the Oregon State Highway Division should be directed toward improvement of:

   A. Oregon Route 19 between Arlington and Condon

   B. Oregon Route 206 in its entirety in that order. Both of these major routes are in need of improvement including straightening of the basic alignment and widening of the roadway... It shall be the policy of the County to continue to work with, support and coordinate with the State Highway Six-Year Planning Programs... Highway projects shall only be regulated when an existing right-of-way realignment crosses productive agricultural lands...

2. The County's transportation system is at present adequate to handle the needs of the area. If, however, Union Pacific Railroad is allowed abandonment of its line from Arlington to Condon, then it will be the policy of Gilliam County to seek the help of appropriate State and Federal agencies for the immediate

improvement of the road network so that farm products can continue to move to major market areas in an efficient manner. The rail line from Arlington to Condon is, however, identified as "vital" and the County shall support and investigate all alternatives which may provide the basis for the retention of this important transportation facility.

3. Current County policy involves periodic maintenance of county roads on a regular schedule. In addition to construction and maintenance of these County roads, Gilliam County has traditionally maintained school bus routes, be they on public or private roads. The County hereby reaffirms these policies as being in the general public interest.

5. It has been and will continue to be the policy of Gilliam County to not build or totally fund major improvements of existing roads to serve isolated non-agricultural areas or developments.... The County will continue to concentrate its maintenance and construction efforts on County roads of major significance to the overall economy of the County ...

6. If the Condon Radar Base is converted to housing for such a needed purpose, the County will encourage commuter transportation service from said Base to the point(s) of destination.

GILLIAM COUNTY ZONING AND LAND DEVELOPMENT ORDINANCE

The Gilliam County Zoning and Land Development Ordinance was adopted in 1977 and amended in 1987. Land use zones include: Airport Development, Exclusive Farm Use, Rural Service Center, Recreational Residential, Limited Industrial, General Industrial, Flood Hazard Combining (overlay), Geologic Hazard Combining, and Significant Resource zones. Below, sections with possible transportation planning relevance are described.

In the airport development (A-D) zone, there are use limitations to control road access: properties are limited to one ingress and one egress per 600 feet of site frontage (Section 4.010, 3, F) and no use which generates more that 30 vehicle trips per hour is permitted unless served directly by arterial or collector.

In the Exclusive Farm Use Zone (EFU), the following are Type II Conditional Uses: construction of additional passing and travel lanes requiring additional right of way, improvement of public roads and highway related facilities requiring additional property or right of way, and reconstruction or modification of public roads involving the removal or displacement of buildings.

There is an Airport Overlay Zone (AO) which applies to properties which lie within the airspace surrounding the airports at Arlington and Condon. The overlay zone is intended to prevent airspace obstructions through height restrictions and other land use controls.

In the Geologic Hazard zone, standards for road construction limit fill and water diversion. In the Significant Resource zone (SR), there are limitations and conditions on road construction within riparian areas.

Article 5, Land Development Regulations and Standards, explains the process for creation of public and private streets. Section 5.260 specifies development standards for streets including minimum right of way and roadway widths, alignment, future road extensions, intersection angles, grades and curves, etc. Section 5.340, requires certain improvements to be installed at the expense of the subdivider, including public streets, sidewalks, and bicycle routes when appropriate to the extension of a system of bicycle routes.

GILLIAM COUNTY/ARLINGTON
IN THE MATTER OF THE PROPOSED DELETION OF THE AREA OF MUTUAL CONCERN, AND ESTABLISHMENT OF AN URBAN GROWTH BOUNDARY TO THE CITY OF ARLINGTON

The City of Arlington and Gilliam County jointly agree to delete the area of mutual concern around the City of Arlington and establish the Urban Growth Boundaries. The "Area of Mutual Concern" to be deleted is located on the east and west boundaries of the existing city limits and add approximately 75 acres to the south boundary, extending the distance to 1/4 mile from the south city limits and redefining it as an Urban Growth Boundary. This would reduce the "Area of Mutual Concern" from 360 acres to a 150 acre Urban Growth Boundary on the south side of the City. This property would be designated as Residential (R-1), Open Space, and Industrial on the Comprehensive Map, but remain under Gilliam County until officially annexed to the City of Arlington.

The City's population has remained under 500 people since the early 1980's. The predicts a population growth of 1,250 within the planning period. The significant residential growth is due to the expanded operations of the solid waste disposal facilities in nearby Gilliam County.

There will be a need for development to accommodate the predicted population growth. The Distance and topography between the lands within the "Area of Mutual Concern" on the east and west side of the city and the existing infrastructure available in the City make it highly unlikely this property will be developed.

Proposed Urban Growth Boundary

The proposed Urban Growth Boundary lies within the south of city limits and involves one ownership of approximately 150 acres; 75 of which are currently within the "Area of Mutual Concern". The property is essentially undeveloped and is currently zoned Exclusive Farm Use by Gilliam County. The property has been used as pasture land, but soils prohibit it from extensive agricultural use.

The City's Comprehensive Plan has two policies that deal with the establishment of the Urban Growth Boundary:

a *"There is a demonstrated need for housing in the City and this need an be satisfied by development of the area to annexed."*

Findings: These lands to the east and west are impractical and inappropriate for intensive urban development due to topography, elevations, and distance from existing infrastructure.

b. *"The number of housing sites needed cannot be accommodated within the exiting city limits without causing substantial damage to the character of the city."*

Findings: According to Goal 14, 300 additional housing is needed. The level of development on the steep hillsides would cause environmental problems and significantly alter the character of the city.

There are two statewide planning goals need to be addressed to establish the Urban Growth Boundary. Goal 14: Urbanization, and the Exception process under Goal 2, for an exception to the Agricultural Lands.

Goal 14

There are 7 factors and findings-of-fact to justify the need for the Urban Growth Boundary.

1. *"Demonstrated need to accommodate long-range urban population growth requirements consistent with the LCDC goals.'*

   Findings: In order to meet the city's projected 20 year growth, the City would need an additional 372 dwelling units (based on current trends). A recent survey by City officials indicates only 80 buildable lots within existing city limits. There is undeveloped land which are above the capabilities of the city's water system and other infrastructure needs. The City intends to designate approximately 100 acres of the 150 acres in the UGB as

   R-1 Residential. Approximately 20 acres will be designated Open Space and approx. 32 acres (next to the railroad tracks) will be designated as industrial.

2. *"Need for housing, employment opportunities, and livability."*

   Findings: The 150 acres of the Urban Growth Boundary will be designate as Residential, Open Space, and light industrial. There will be a need for this to match the predicted population growth. This will also fill requests for industrial sittings. This will be of benefit to the economic growth of the city.

3. *"Orderly and economic provision of public facilities and services."*

   Findings: The most orderly and economic provision of facilities is to the south to the proposed Urban Growth Boundary area.

4. *"Maximum deficiency of land uses within and on the fringe of the existing urban area."*

   Findings: The proposed 150 acres of the Urban Growth Boundary is immediately adjacent to the existing facilities and urban development.

5. *"Environmental, energy, economic, and social consequences."*

   Findings: The land can readily be served by existing infrastructure, extension of existing streets will provide and energy savings over extending up the hill, the industrial lands will benefit the economy, and the social structure will not be impacted.

6. *"Retention of agricultural land is defined with Class 1 being the highest priority for retention and Class IV being the lowest priority."*

   Findings: The 150 acres within the proposed UGB is Class IV, and has not been farmed and has been pasture land over time.

7. *"Compatibility of the proposed urban uses with nearby agricultural activity."*

   Findings: There is little farming activity in this portion of the China Creek Valley. Lands to the north are urbanized.

Goal 2 Exception To Agricultural Goal

There are 4 findings:

(1) "Reasons justify why the State Policy embodied in the applicable goals should not apply."

Findings: The area the west is impractical for development, and the existing infrastructure, water, sewer, and streets can simply be extended to the south without major effort. The land to the south, historically has not been used for agriculture other than range or pasture land.

(2) "Areas which do not require a new Exception cannot reasonably accommodate the use."

Findings: The only area in the City that can move toward is the land to the south.

(3) "The long-term environmental, economic, social, and energy consequences resulting form the use at the proposed site. The measures designed to reduce adverse impacts were not significantly more adverse than would typically result from the same proposal being located on areas requiring a Goal Exception other than the proposed site."

Findings: The long-term environmental, economic, social, and energy consequences of developing the land to the south would be considerably less than to the east or west.

(4) "The proposed uses are compatible with other adjacent uses or will be so rendered through measures designed to reduce adverse impact."

Findings: The expansion to the south is a continuation of the existing land use to the north, therefore is compatible.

Conclusion

The deletion of the "Area of Mutual Concern" and establishment of the Urban Growth Boundary meets state and local criteria.

Decisions and Recommendations

The City of Arlington Planning Commission and the Gilliam County Planning Commission recommend the approval of the proposed Comprehensive Plan Amendments to the Arlington City Council and the Gilliam Court, respectively.

APPENDIX B

MAJOR STREET INVENTORY

APPENDIX C

COUNTY ROAD INVENTORY

APPENDIX D

LEVEL OF SERVICE CRITERIA DESCRIPTIONS

APPENDIX D
LEVEL OF SERVICE CRITERIA DESCRIPTIONS

This appendix qualitatively describes the level of service (LOS) criteria for freeways and two-lane rural highway sections.

TABLE D-1
LEVEL OF SERVICE CRITERIA FOR FREEWAYS

LOS	Typical Traffic Flow Conditions
A	Average operating speeds at the free-flow speed generally prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. Even at the maximum density for LOS A, the average spacing between vehicles is over 500 ft., or 26 car lengths, which affords the motorist with a high level of physical and psychological comfort.
B	Average operating speeds at the free-flow speed are generally maintained. The lowest average spacing between vehicles is about 330 ft., or 18 car lengths. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high.
C	Speeds are still at or near the free-flow speed of the freeway. Freedom to maneuver within the traffic stream is noticeably restricted at LOS C, and lane changes require more vigilance on the part of the driver. Minimum average spacings are in the range of 220 ft., or 11 car lengths.
D	Speeds begin to decline slightly with increasing flows. In this range, density begins to deteriorate somewhat more quickly with increasing flow. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels. Vehicles are spaced at about 165 ft., or nine car lengths.
E	LOS E describes operation at capacity. Operations in this level are volatile, because there are virtually no usable gaps in the traffic stream. Vehicles are spaced at approximately six car lengths, leaving little room to maneuver within the traffic stream at speeds that still exceed 50 mph. At capacity, the traffic stream has no ability to dissipate even the most minor disruptions, and any incident can be expected to produce a serious breakdown with extensive queuing. Maneuverability within the traffic stream is extremely limited, and the level of physical and psychological comfort afforded the driver is extremely poor.
F	LOS F describes breakdowns in vehicular flow. Such conditions generally exist within queues forming behind breakdown points. Breakdown occurs when the ratio of arrival flow rate to actual capacity or the forecast flow rate to estimated capacity exceeds 1.00. Whenever LOS F conditions exist, there is a potential for them to extend upstream for significant distances.

Source: Transportation Research Board, Highway Capacity Manual, Special Report 209. National Research Council, 1994.

TABLE D-2
LEVEL OF SERVICE CRITERIA FOR TWO-LANE HIGHWAYS

Service Level	Typical Traffic Flow Conditions
A	Motorists are able to drive at their desired speed which, without strict enforcement, would result in average speeds approaching 60 mph. Passing demand is well below passing capacity, and almost no platoons of three or more vehicles are observed.
B	Speeds of 55 mph or slightly higher are expected on level terrain. Passing demand needed to maintain desired speeds becomes significant and approximately equals the passing capacity.
C	Further increases in flow result in noticeable increases in platoon formation, platoon size, and frequency of passing impediment. Average speed still exceeds 52 mph on level terrain, even though unrestricted passing demand exceeds passing capacity. While traffic flow is stable, it is becoming susceptible to congestion due to turning traffic and slow-moving vehicles.
D	Unstable traffic flow as passing demand is very high. Average platoon sizes of 5 to 10 vehicles are common, although speeds of 50 mph can still be maintained under ideal conditions. This is the highest flow rate that can be maintained for any length of time over an extended section of level terrain without a high probability of breakdown
E	Under ideal conditions, speeds will drop below 50 mph. Average travel speeds on highways with less than ideal conditions will be slower, as low as 25 mph on sustained upgrades. Passing is virtually impossible and platooning becomes intense when slower vehicles or other interruptions are encountered.
F	Heavily congested flow with traffic demand exceeding capacity.

Source: Transportation Research Board, Highway Capacity Manual, Special Report 209. National Research Council, 1994.

APPENDIX E

TECHNICAL MEMORANDUM #2
POPULATION AND EMPLOYMENT FORECASTS FOR GILLIAM COUNTY

APPENDIX E

TECHNICAL MEMORANDUM #2

POPULATION AND EMPLOYMENT FORECASTS FOR GILLIAM COUNTY

The purpose of this memorandum is to present population and employment forecasts for Gilliam County and the incorporated cities of Arlington, Condon, and Lonerock. This memorandum briefly discusses historical population growth trends, the methodology used to develop the future forecasts, and the future population and employment trends estimated through the year 2020.

Methodology and Data Sources

Population estimates and projections were developed from historical data as reported by the Census Bureau. Portland State University's Center for Population Research and Census (PSU CPRC) develops annual population estimates for cities and counties for the purpose of allocating certain state tax revenues to cities and counties. In January of 1997, the State of Oregon Office of Economic Analysis (OEA) developed 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.

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 Gilliam County. DEA calculated a weighted average growth rate for each jurisdiction (weighting recent growth more heavily than past growth) and combined this average growth rate with the projected county-wide growth rate. This methodology assumes convergence of growth rates because of the physical constraints of any area to sustain growth rates beyond the state or county average for long periods of time. These constraints include availability of land and housing, congestion, and other infrastructure limitations. The forecasts were then modified to reflect more recent official estimates and local knowledge.

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

Historical Growth

Interestingly, population levels in most of Eastern Oregon are close to, or actually lower than, those experienced earlier in the century. Counties included in this phenomenon include Baker, Harney, Union, Wallowa, Grant and Gilliam counties. The population of Gilliam County actually declined during the 1960s, 1970s and 1980s, reflecting the general slowdown in the state's economy during the 1960s and 1980s. Estimated at 1,950 in 1997, the population of Gilliam County has grown an average of nearly 2 percent annually since 1990, recovering from the declining trend of earlier decades. Table 1 shows historical and current estimated population levels for Gilliam County, Arlington, Condon, and Lonerock, as well as the State of Oregon.

Table 1
Population Growth, 1960 to 1997

						1970 to 1997 Change	
	1960	1970	1980	1990	1997	Number	Annual Average*
Gilliam County	3,069	2,342	2,057	1,717	1,950	(392)	-0.68%
Arlington	643	375	521	425	500	125	1.07%
Condon	1,149	973	783	635	800	(173)	-0.72%
Lonerock	31	12	26	11	25	13	2.76%
State of Oregon	1,768,687	2,091,533	2,633,156	2,842,321	3,217,000	1,125,467	1.61%

** Compound Average Annual Rate of Growth*
Source: Portland State University Center for Population Research and Census.

Like the county, the incorporated cities of Arlington, Condon and Lonerock have all grown in population, according to the most recent official estimates. This recent growth has helped these communities recover some of the net population loss they experienced between 1960 and 1990.

Population and Employment Forecasts

Gilliam County is expected to experience small population gains for the next 20 years. Like much of Eastern Oregon, the economy of Gilliam County remains largely seasonal, with over one-third of all employment agriculture-based. Therefore, the population increases are difficult to predict, and are not likely to be as stable as the forecasts appear to imply. Population and employment as forecast by the State of Oregon Office of Economic Analysis are shown in Table 2.

Table 2
Population and Employment Forecast, 1997 to Year 2020
Gilliam County and State of Oregon

							1997 to 2020 Change	
	1997	2000	2005	2010	2015	2020	Number	Annual Average
Gilliam County								
Population	1,950	1,992	2,032	2,071	2,116	2,161	211	0.45%
Non-Agr. Empl.	760	852	881	899	905	910	150	0.79%
State of Oregon								
Population	3,217,000	3,406,000	3,631,000	3,857,000	4,091,000	4,326,000	1,109,000	1.30%
Non-Agr. Empl.	1,524,900	1,601,718	1,718,659	1,814,276	1,882,653	1,947,702	422,802	1.07%

Source: Portland State University Center for Population Research and Census (1997 population estimates); State of Oregon Employment Department (1997 employment estimates); and State Of Oregon Office of Economic Analysis (forecasts).

As shown in Table 2, the State Office of Economic Analysis expects the population and employment in Gilliam County to grow, with population growing at the average rate of 0.45 percent over the 20-year planning horizon and non-agriculture based employment growing at an average rate of 0.79 percent. Based on the OEA projections, population forecasts for the jurisdictions of Arlington, Condon, and Lonerock are shown in five-year increments in Table 3.

Table 3
Population Forecast, 1997 to Year 2020
Gilliam County and Cities of Arlington, Condon, and Lonerock

							1997 to 2020 Change	
	1997	2000	2005	2010	2015	2020	Number	Annual Average
Gilliam County	1,950	1,989	2,029	2,069	2,112	2,158	208	0.44%
Arlington	500	520	550	580	600	620	120	0.94%
Condon	800	820	830	840	850	860	60	0.31%
Lonerock	25	30	30	30	30	30	5	0.80%

Source: Portland State University Center for Population Research and Census (1997 population estimates); and State Of Oregon Office of Economic Analysis (county forecasts); and David Evans and Associates, Inc. (disaggregation of county forecast to cities).

Based on this analysis, Arlington is expected to continue growing faster than the county overall, reaching a population of approximately 620 by year 2020. This growth represents a net increase of nearly one-quarter over the 1997 population level. The populations of Condon and Lonerock are also expected to grow over the 20-year planning horizon.

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APPENDIX F

POTENTIAL DEVELOPMENT IMPACT ANALYSIS

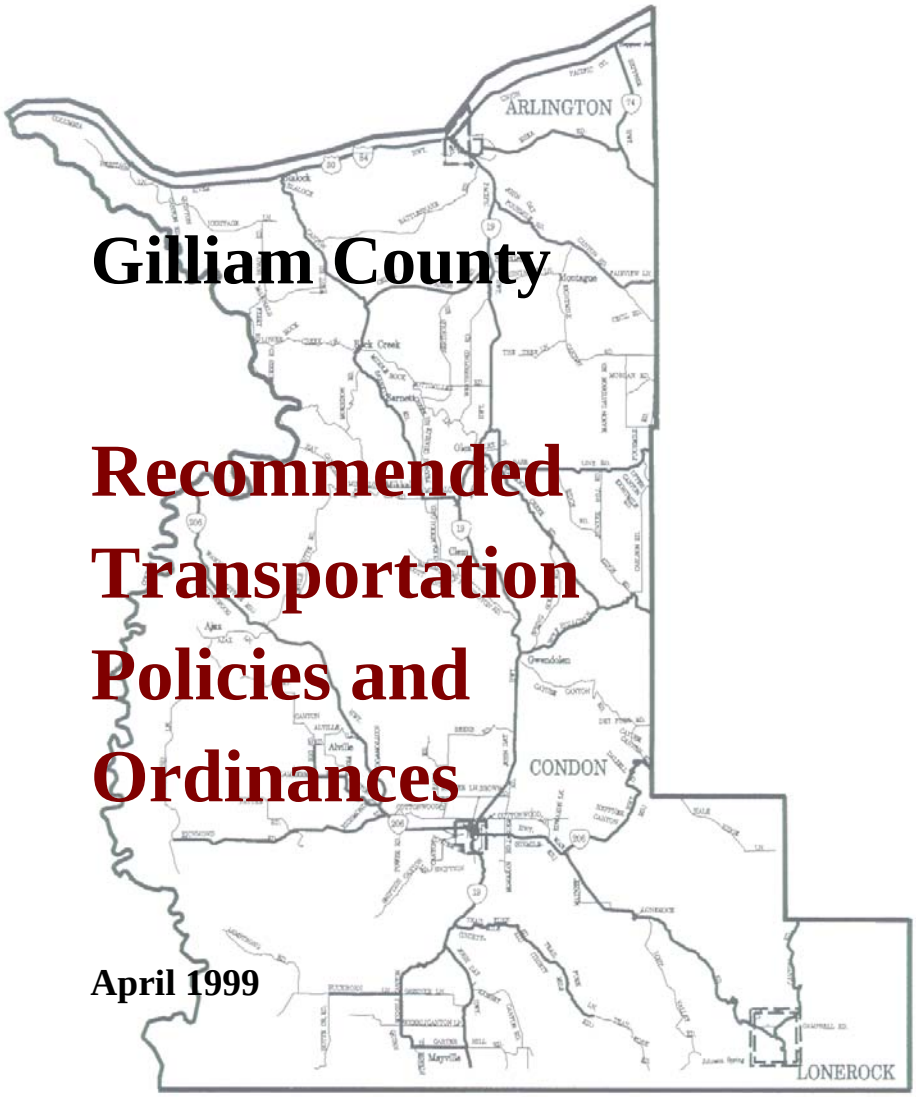
APPENDIX G

GRANT AND LOAN CONTACTS-1998

APPENDIX G

GRANT AND LOAN CONTACTS-1998

Program	Agency	Contact Person	Phone Number
Bike-Pedestrian Grants	ODOT	Michael Ronkin	(503) 986-3555
Tea-21 Enhancement Program	ODOT	Pat Rogers	(503) 986-3528
Highway Bridge Rehabilitation Or Replacement Program (Hbrr)	ODOT	Mark Hirota	(503) 986-3344
Transportation Safety Grant Program	ODOT	Troy Costales	(503) 986-4192
Special Transportation Fund	ODOT	Gary Whitney	(503) 986-3885
Special Small City Allotment Program	ODOT	Michael Augden	(503) 986-3893
Immediate Opportunity Grant Program	ODOT	Mark Ford	(503) 986-3463
Oregon Special Public Works Fund	ODOT	Betty Pongracz	(503) 986-0136
Oregon Transportation Infrastructure	ODOT	John Fink	(503) 986-3922



Gilliam County

Recommended Transportation Policies and Ordinances

April 1999

Prepared by

DAVID EVANS AND ASSOCIATES, INC.

GILLIAM COUNTY
TRANSPORTATION SYSTEM PLAN:
Recommended Implementing Policies and Ordinances
[DRAFT]

March 10, 1999

Gilliam County
Transportation System Plan:
Recommended Implementing Policies and Ordinances
[DRAFT]

March 10, 1999

Prepared for

Gilliam County, Oregon and Oregon Department of Transportation

Prepared by

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

Contents

IMPLEMENTING POLICIES AND ORDINANCES

The Oregon Transportation Planning Rule requires TSP's to include policies and regulations to implement the TSP. *The Comprehensive Plan for Land Use in Gilliam County, Oregon* and the *Gilliam County Planning and Zoning Statutes* were most recently amended in 1987, prior to the adoption and implementation of the Transportation Planning Rule. The *Comprehensive Plan* and the *Planning and Zoning Statutes* will need to be updated in order to meet the requirements of the Transportation Planning Rule and this TSP. Both documents were reviewed to determine where the language or standards should be amended to implement the policies and standards contained in the TSP. The recommended changes to each document are outlined below in italicized text and preceded by a brief paragraph discussing the intent of the language. Information in square brackets indicates existing section titles or headings where the recommended language should be inserted or amended.

ELEMENTS REQUIRED BY THE TRANSPORTATION PLANNING RULE

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

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

In addition, state regulations in ORS 836.600 to 836.630 and OAR 660-13 encourage and support the continued operation of Oregon's airports by mandating planning for and recognition of airports consistent with their function in the state airport system. The regulations require local governments with jurisdiction over airports to amend their comprehensive plans and zoning regulations to:

- Create an Aviation System Plan (not included in this document);
- Identify and classify airports in their jurisdictions;

- Acknowledge permitted uses on public use airports; and
- Implement land use compatibility and safety requirements.

These elements are discussed in the following sections, where they are grouped according to topic as well as appropriate policy and ordinance.

APPROVAL PROCESSES FOR TRANSPORTATION FACILITIES

Section 660-12-045(1) of the Transportation Planning Rule describes how cities and counties should amend their land use regulations to clarify the approval process for transportation-related projects.

Recommended Policies for Approval Process

The *Gilliam County Comprehensive Plan* policies should clarify the approval process for different types of transportation projects. The following policies are recommended to be adopted as additions to Part 6, Transportation Facilities of the *Comprehensive Plan*:

[Insert #1 at beginning of Transportation Facilities Section, renumber the existing policies accordingly, and append #'s 10 -12 below.]

10. *The Transportation System Plan is an element of the Gilliam County Comprehensive Plan. It identifies the general location of transportation improvements. Changes in the specific alignment of proposed public road and highway projects shall be permitted without plan amendment if the new alignment falls within a transportation corridor identified in the Transportation System Plan.*
11. *Operation, maintenance, repair, and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.*
12. *Dedication of right-of-way, authorization of construction and the construction of facilities and improvement, for improvements designated in the Transportation System Plan, the classification of the roadway, and approved road standards shall be allowed without land use review.*
13. *For State projects that require an Environmental Impact Study (EIS) or Environmental Assessment (EA), the draft EIS or EA shall serve as the documentation for local land use review, if local review is required.*

Recommended Ordinances for Approval Process

Projects that are specifically identified in the Transportation System Plan and for which Gilliam County has made all the required land use and goal compliance findings should be permitted outright, subject only to the standards established by the Transportation System Plan. For improvements which are included in the Transportation System Plan but for which no site-specific decisions have been made, it is recommended that Gilliam County review these projects as regulated land use actions, using a conditional use process.

The following language should be added to the list of permitted uses specified for each base zone, which corresponds to Sections 4.010 (1), 4.030 (1), 4.040 (1), and 4.060 (1) of the Gilliam County Planning and Zoning Statutes. In Section 4.020 (1), which lists permitted uses in the Exclusive Farm Use Zone (EFU), the following language should replace items D through G, which address transportation facilities. For Section 4.050, which regulates land uses in the Limited Industrial Zone (M-L), the following language should constitute a new section, since currently, no uses are permitted outright.

[1. USES PERMITTED OUTRIGHT]

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

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

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

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

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

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

__. *Construction of a street or road as part of an approved subdivision or land partition approved consistent with the applicable land division ordinance.*

The following language should be added to the list of conditional uses permitted in each base zone, which corresponds to Sections 4.010 (2), 4.020 (2), 4.030 (2), 4.040 (2), 4.050 (1)(B), and 4.060 (2). Where Type I and Type II conditional uses are differentiated, the following uses should be added to the list of Type II conditional uses:

[2. CONDITIONAL USES]

__. *Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are: (1) not improvements designated in the Transportation System Plan or (2) not designed and constructed as part of a subdivision or planned development subject to site plan and/or conditional use review. Such transportation projects shall comply with the Transportation System Plan and applicable standards, and shall address the standards governing conditional uses specified in Section 7.020. For State projects that require an Environmental Impact Statement (EIS) or EA (Environmental Assessment), the draft EIS or EA shall be reviewed and used as the basis for findings to comply with the standards governing conditional uses.*

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

Article 7 of the *Gilliam County Planning and Zoning Statutes* specifies procedures and approval criteria for conditional uses. An additional section of Article 7 should be adopted in order to establish approval criteria for conditional use transportation improvements.

[Section 7.020. STANDARDS GOVERNING CONDITIONAL USES]

18. Transportation Improvements

A. Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are: (1) not improvements designated in the Transportation System Plan or (2) not designed and constructed as part of a subdivision or planned development subject to site plan and/or conditional use review shall comply with the Transportation System Plan and the following standards:

a) The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning.

b) The project is designed to minimize avoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.

c) The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.

d) The project includes provision for bicycle and pedestrian circulation as consistent with the comprehensive plan and other requirements of this ordinance.

C. If review under this Section indicates that the use or activity is inconsistent with the Transportation System Plan, the procedure for an amendment shall be undertaken prior to or in conjunction with the conditional permit review.

Recommended Process for Applying Conditions to Development Proposals

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

The Site Plan review process is a useful tool for a small jurisdiction. Gilliam County may wish to implement a Site Plan review process that includes a requirement to provide data on the potential traffic impacts of a project through a traffic impact study or, at a minimum, an estimation of the number of trips expected to be generated by the proposed land use. The site plan review process could be specified in Article 5, Land Development Regulations and Standards. Recommended language to be included under Site Plan Criteria is as follows:

- *The proposed use shall not impose an undue burden on the public transportation system. For developments that are likely to generate more than 400 average daily motor vehicle trips (ADTs), the applicant shall provide adequate information, such as a traffic impact study or traffic counts, to demonstrate the level of impact to the surrounding road system. The developer shall be required to mitigate impacts attributable to the project.*
- *The determination of impact or effect and the scope of the impact study should be coordinated with the provider of the affected transportation facility.*

If Gilliam County decides to implement a Site Plan review process, conditions such as the following may be included in the ordinance, to be applied in the event that a proposed project is demonstrated to potentially have an adverse effect on the transportation system.

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

proposed use.

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

Section 660-12-045(2)(g) of the Transportation Planning Rule requires that jurisdictions develop regulations to assure that all development proposals, plan amendments, or zone changes conform with the Transportation System Plan.

Within the Gilliam County Comprehensive Plan, consistency of plan amendments with the TSP can be addressed by adding a new policy in Part 2, General Planning Policies.

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

Article 10, Amendments, of the Gilliam County Planning and Zoning Statutes addresses amendments to the text of the planning and zoning statutes or the zoning map. A new section specifying the approval criteria for amendments should be added to Article 10. This new section should include the following:

Section 10.050 APPROVAL CRITERIA FOR AMENDMENTS

A. *The applicant for an amendment must show that the proposed change conforms with the Comprehensive Plan.*

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

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

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

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

PROCESS FOR COORDINATED REVIEW OF LAND USE DECISIONS

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

Recommended Policies for Coordinated Review

The following policies should be added to Part 6, Transportation Facilities, of the Comprehensive Plan:

15. *Gilliam County shall coordinate with the Department of Transportation to implement the highway improvements listed in the Statewide Transportation Improvement Program (STIP) that are consistent with the Transportation System Plan and Gilliam County Comprehensive Plan.*
16. *Gilliam County shall provide notice to ODOT of land use applications and development permits for properties that have frontage or access onto a state highway.*
17. *Gilliam County shall consider the findings of ODOT's draft Environmental Impact Statements and Environmental Assessments as integral parts of the land use decision-making procedures. Other actions required, such as a goal exception or plan amendment, will be combined with review of the draft EA or EIS and land use approval process.*

Recommended Regulations to Provide Notice to Public Agencies

Review of land use actions is typically initiated by a Notice. The Gilliam County Planning and Zoning Statutes establish a requirement for public notification in Article 11, Administrative Provisions, Section 11.050, Public Notice. The County should also provide notice to potentially affected public agencies. In particular, the County should provide notice to ODOT regarding any land use action on or adjacent to a State facility. The County should also provide notice to the appropriate jurisdiction if an action by Gilliam County could potentially affecting a city street. The following language should be inserted in Section 11.050.

4. NOTICE TO AFFECTED AGENCIES

A) Gilliam County will provide timely notice to ODOT regarding any land use action on or adjacent to a State transportation facility. Information that should be conveyed to reviewers includes:

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

Additional information which may be supplied to ODOT upon request includes::

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

PROTECTING EXISTING AND FUTURE OPERATION OF FACILITIES

Section 60-12-045(2) of the Transportation Planning Rule requires that local governments adopt land use regulations to protect the future operation of transportation corridors. Such regulations shall include access control measures as well as standards to protect the operation of roads, transitways, major transit corridors, and public use airports. For example, the proposed function of a future roadway must be protected from incompatible land uses.

Gilliam County's Comprehensive Plan and Planning and Zoning Statutes include provisions to protect the county's airports. Part 6, Policy 9 of the Comprehensive Plan recognizes the importance of the County's two public use airports, stating that the County's policy is to protect them from hazards to navigation, and encourage the development of adjacent lands and facilities in a manner that will be conducive to their increased utilization.

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

Recommended Policies for Protection of Transportation Facilities

The following policies are recommended to be adopted in Part 6, Transportation Facilities, of the Gilliam County Comprehensive Plan:

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

Recommended Ordinances for Establishing Street Standards Consistent with the Transportation System Plan

Section 5.260(2) of the *Planning and Zoning Statutes* specifies minimum right-of-way and roadway widths for different types of streets. This section should be updated to reflect the street classifications and standards recommended in Chapter 7 of the Transportation System Plan.

The recommended standards are:

Classification	Right-of-Way Width	Roadway Width[1]	Roadway Surface	Shoulder Width	Shoulder Surface
Arterial Street	60-120 ft.	32-40 ft.[2]	paved	4-8 ft.	paved
Collector Street	60-80 ft.	24-32 ft.	paved or gravel	2-4 ft.	paved or gravel
Local Street	60 ft.	24-28 ft.	paved or gravel	2-4 ft.	paved or gravel
Radius for cul-de-sac turn-around	50 ft.	40 ft.			

[1]Roadway width includes shoulder width.
[2]Roadway width can vary to accommodate passing lanes and/or left-turn refuge lanes.

Recommended Access Control Ordinances

Section 5.260 of the *Gilliam County Planning and Zoning Statutes* establishes design standards for streets. Subsections 1A, General, and 3, Future Extensions of Streets, address street connectivity while subsection 13, Marginal Access Streets, partially addresses access. Additional access management provisions would strengthen this provision. The following definitions relating to access management should be added to Section 1.030, Definitions, of the *Planning and Zoning Statutes*.

[Section 1.030 Definitions]

Access. *A way or means of approach to provide pedestrian, bicycle, or motor vehicular entrance or exit to a property.*

Access Classification*. A ranking system for roadways used to determine the appropriate degree of access management. Factors considered include functional classification, the appropriate local government's adopted plan for the roadway, subdivision of abutting properties, and existing level of access control.*

Access Connection. *Any driveway, street, turnout or other means of providing for the movement of vehicles to or from the public roadway system.*

Access Management. *The process of providing and managing access to land development while preserving the regional flow of traffic in terms of safety, capacity, and speed.*

Corner clearance*. The distance from a public or private road intersection to the nearest access connection, measured from the closest edge of the pavement of the intersecting road to the closest edge of the pavement of the connection along the traveled way.*

Cross Access. *A service drive providing vehicular access between two or more contiguous sites so the driver need not enter the public street system.*

Easement. *A grant of one or more property rights by a property owner to or for use by the public, or another person or entity.*

Frontage Road. *A public or private drive which generally parallels a public street between the right-of-way and the front building setback line. The frontage road provides access to private properties while separating them from the arterial street. (see also Service Roads)*

Functional Area (Intersection). *That area beyond the physical intersection of two roads that comprises decision and maneuver distance, plus any required vehicle storage length.*

Functional Classification. *A system used to group public roadways into classes according to their purpose in moving vehicles and providing access.*

Joint Access (or Shared Access). *A driveway connecting two or more contiguous sites to the public street system.*

Lot. *A parcel, tract, or area of land whose boundaries have been established by some, legal instrument, which is recognized as a separate legal entity for purposes of transfer of title, has frontage upon a public or private street, and complies with the dimensional requirements of this code.*

Lot, Corner. *Any lot having at least two (2) contiguous sides abutting upon one or more streets, provided that the interior angle at the intersection of such two sides is less than one hundred thirty-five (135) degrees.*

Lot Depth. *The average distance measured from the front lot line to the rear lot line.*

Lot, Flag. *A lot not meeting minimum frontage requirements and where access to the public road is by a narrow, private right-of-way line.*

Lot, Through. *(or Double Frontage Lot). A lot that fronts upon two parallel streets or that fronts upon two streets that do not intersect at the boundaries of the lots.*

Lot Frontage. *That portion of a lot extending along a street right-of-way.*

Nonconforming Access Features. *Features of the property access that existed prior to the date of ordinance adoption and do not conform with the requirements of this ordinance.*

Parcel. *A division of land comprised of one or more lots in contiguous ownership.*

Plat. *An exact and detailed map of the subdivision of land.*

Private Road. *A road under the jurisdiction of a public body that provides the principal means of access to an abutting property.*

Public Road. *A road under the jurisdiction of a public body that provides the principal means of access to an abutting property.*

Reasonable Access. *The minimum number of access connections, direct or indirect, necessary to provide safe access to and from the roadway, as consistent with the purpose and intent of this ordinance and any applicable plans and policies of the City of Gold Beach.*

Right-of-Way. *Land reserved, used, or to be used for a highway, street, alley, walkway, drainage facility or other public purpose.*

Significant Change in Trip Generation. *A change in the use of the property, including land, structures or facilities, or an expansion of the size of the structures or facilities causing an increase in the trip generation of the property exceeding: (1) local 10 percent more trip generation (either peak or daily) and 100 vehicles per day more than the existing use for all roads under local jurisdiction; or (2) State exceeding 25 percent more trip generation (either peak or daily) and 100 vehicles per day more than the existing use for all roads under state jurisdiction.*

Stub-out (Stub-street). *A portion of a street or cross access drive used as an extension to an abutting property that may be developed in the future.*

Substantial Enlargements or Improvements. *An increase in existing square footage or increase in assessed valuation of the structure as described in Section 20(4) of this ordinance.*

Additional access management standards should be adopted as part of Section 5.260, Streets of the *Planning and Zoning Statutes*. The following language should be added to Section 5.260 (1):

The intent of this section is to manage access to land development to preserve the transportation system in terms of safety, capacity, and function. This ordinance shall apply to all arterials and collectors within Gilliam County and to all properties that abut these roadways.

The following access management provisions should be inserted in Section 5.260 as items 7 through 15 and the existing paragraphs renumbered as 16 to 24 accordingly:

7. Corner Clearance

A. Corner clearance for connections shall meet or exceed the minimum connection spacing requirements for that roadway.

B. New connections shall not be permitted within the functional area of an intersection or interchange as defined by the connection spacing standards of this ordinance, unless no other reasonable access to the property is available.

C. Where no other alternatives exist, the County may allow construction of an access connection along the property line farthest from the intersection. In such cases, directional connections (i.e. right in/out, right in only, or right out only) may be required.

8. Joint and Cross Access

A. Adjacent commercial or office properties classified as major traffic generators (i.e. shopping plazas, office parks), shall provide a cross access drive and pedestrian access to allow circulation between sites.

B. A system of joint use driveways and cross access easements shall be established wherever feasible and shall incorporate the following:

1) A continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.

2) A design speed of 10 mph and a maximum width of 20 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;

3) Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross-access via a service drive;

4) A unified access and circulation system plan for coordinated or shared parking areas is encouraged.

C. Shared parking areas shall be permitted a reduction in required parking spaces if peak demands do not occur at the same time periods.

D. Pursuant to this section, property owners shall:

a) Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;

b) Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the County and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;

c) Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.

E. The County may reduce required separation distance of access points where they prove impractical, provided all of the following requirements are met:

1) Joint access driveways and cross access easements are provided in accordance with this section.

2) The site plan incorporates a unified access and circulation system in accordance with this section.

3) The property owner enters into a written agreement with the County, recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint use driveway.

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

9. Access Connection and Driveway Design

A. Driveways shall meet the following standards:

1) If the driveway is a one way in or one way out drive, then the driveway shall be a minimum width of 10 feet and a maximum width of 12 feet and shall have appropriate signage designating the driveway as a one way connection.

2) For two-way access, each lane shall have a minimum width of 10 feet and a maximum width of 12 feet.

B. Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view. Construction of driveways along acceleration or deceleration lanes and tapers shall be avoided due to the potential for vehicular weaving conflicts.

C. The length of driveways shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public road or causing unsafe conflicts with on-site circulation.

10. Requirements for Phased Development Plans

A. In the interest of promoting unified access and circulation systems, development sites under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall be reviewed as single properties in relation to the access standards of this ordinance. The number of access points permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of this ordinance and both shall be cited for any violation.

B. All access must be internalized using the shared circulation system of the principal development or retail center. Driveways shall be designed to avoid queuing across surrounding parking and driving aisles.

11. Nonconforming Access Features

A. Legal access connections in place as of [date of adoption] that do not conform with the standards herein are considered nonconforming features and shall be brought into compliance with applicable standards under the following conditions:

1) When new access connection permits are requested;

2) Change in use or enlargements or improvements that will increase trip generation.

12. Reverse Frontage

A. Lots that front on more than one road shall be required to locate motor vehicle accesses on the road with the lower functional classification.

B. When a residential subdivision is proposed that would abut an arterial, it shall be designed to provide through lots along the arterial with access from a frontage road or interior local road. Access rights of these lots to the arterial shall be dedicated to Gilliam County and recorded with the deed. A berm or buffer yard may be required at the rear of through lots to buffer residences from traffic on the arterial. The berm or buffer yard

shall not be located with the public right-of-way.

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

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

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

The following language, which addresses land access and connectivity between existing and future streets, should replace Section 5.260 (5), Future Extensions of Streets:

5. *Connectivity*
    - A. *The road system of proposed subdivisions shall be designed to connect with existing, proposed, and planned roads outside of the subdivision as provided in this Section.*
    - B. *Wherever a proposed development abuts unplatted land or a future development phase of the same development, road stubs shall be provided to provide access to abutting properties or to logically extend the road system into the surrounding area. All road stubs shall be provided with a temporary turn-around unless specifically exempted by the Public Works Director, and the restoration and extension of the road shall be the responsibility of any future developer of the abutting land.*
    - C. *Minor collector and local residential access roads shall connect with surrounding roads to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation. Connections shall be designed to avoid or minimize through traffic on local roads. Appropriate design and traffic control such as four-way stops and traffic calming measures are the preferred means of discouraging through traffic.*

By requiring that each lot front a public street for at least 25 feet (Section 8.020 (1) and Section 5.280 (2)), the Gilliam County Planning and Zoning Statutes effectively disallow flag lots. If, in the future, the County decides to allow flag lots, the following provisions should be adopted to protect the function of affected streets.

25. *Flag Lot Standards*
    - A. *Flag lots shall not be permitted when the result would be to increase the number of properties requiring direct and individual access connections to the State Highway System or other arterials.*
    - B. *Flag lots may be permitted for residential development when necessary to achieve planning objectives, such as reducing direct access to roadways, providing internal platted lots with access to a residential road, or preserving natural or historic resources, under the following conditions:*
        1) *Flag lot driveways shall be separated by at least twice the minimum frontage requirement of that zoning*

district.

2) *The flag driveway shall have a minimum width of 10 feet and maximum width of 20 feet.*

3) *In no instance shall flag lots constitute more than 10 percent of the total number of building sites in a recorded or unrecorded plat, or three lots or more, whichever is greater.*

4) *The lot area occupied by the flag driveway shall not be counted as part of the required minimum lot area of that zoning district.*

5) *No more than one flag lot shall be permitted per private right-of-way or access easement.*

Recommended Ordinances to Protect Public Use Airports

The Oregon Airport Land Use Compatibility Guidelines (November 1994), which have been distributed to all County and City planning departments, provide examples for ordinance development, including an example Airport Overlay Zone appropriate to protect many smaller airports.

Section 4.100 of the Gilliam County Planning and Zoning Statutes establishes the Airport Overlay Zone (A-0) and provides standards for development within the A-0 zone. The standards of Section 4.100 are largely consistent with the Oregon Airport Land Use Compatibility Guidelines. However, minor additions and changes are recommended to update this section, as described below.

Section 4.100. A-O Airport Overlay Zone

3. Special Definitions

[Replace E., Clear Zone, with the following:]

E. Runway Protection Zone (RPZ). *An area off the runway end (formerly the clear zone) used to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. It begins 200 feet (60 m) beyond the end of the arcs usable for takeoff or landing. The RPZ dimensions are functions of the type of aircraft and operations to be conducted on the runway.*

[Replace I., Noise Impact, with the following:]

I. Noise Sensitive Area. *Within 1,500 feet of an airport or within established noise contour boundaries exceeding 55 Ldn.*

[The following definitions are missing. They should be added to Section 3, Special Definitions, and re-numbered accordingly. The definitions should be placed in alphabetical order for easier reference.]

Commercial and Recreational Airport Uses *means those uses described in OAR 660-013-0100.*

Approach Surface. **[This paragraph should be amended to reflect only those regulations pertaining to the type of airport that Pauling Field is and the capabilities it has.]** *A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the Primary Surface. The inner edge of the approach surface is the same width as the Primary Surface and extends to a width of: 1,250 feet for utility runway having only visual approaches; 1,500 feet for a runway other than a utility runway having only visual approaches; 2,000 feet for a utility runway having a nonprecision instrument approach; 3,500 feet for a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile; 4,000 feet for a nonprecision instrument runway having visibility minimums as low as three-fourths statute mile; and 16,000 feet for precision instrument runways. The Approach*

Surface extends for a horizontal distance of 5,000 feet at a slope of 20 feet outward to each foot upward (20:1) for all utility and visual runways; 10,000 feet at a slope of 34 feet outward for each foot upward (34:1) for all nonprecision instrument runways other than utility; and for all precision instrument runways extends for a horizontal distance of 10,000 feet at a slope of 50 feet outward for each foot upward (50:1); thence slopes upward 40 feet outward for each foot upward (40:1) an additional distance of 40,000 feet.

Non-Towered Airport *means an airport without an existing or approved control tower on June 5, 1995.*

Primary Surface. **[This paragraph should be amended to reflect only those regulations pertaining to the type of airport that Pauling Field is and the capabilities it has.]** *A surface longitudinally centered on a runway. For runways with a specially prepared hard surface, the Primary Surface extends 200 feet beyond each end of that runway. The width of the primary Surface is 250 feet for utility runways having only visual approaches, 500 feet for utility runways having nonprecision instrument approaches, 500 feet for other than utility runways having only visual approaches or nonprecision instrument approaches with visibility minimums greater than three-fourths of a mile and 1,000 feet for nonprecision instrument runways with visibility minimums of three-fourths of a mile or less and for precision instrument runways.*

Sponsor *means the owner, manager or other person designated to represent the interests of an airport.*

Transitional Surface. *Extends seven feet outward for each one foot upward (7:1) beginning on each side of the Primary Surface which point is the same elevation as the runway surface, and form the sides of the approach surfaces thence extending upward to a height of 150 feet above the airport elevation (Horizontal Surface).*

Utility Runway. *A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight or less.*

Visual Runway. *A runway that is intended solely for the operation of aircraft using visual approach procedures with no instrument approach procedures has been approved, or planned, or indicated on an FAA or state planning document or military service airport planning document.*

The code defines permitted and conditional uses, procedures, and limitations for the Airport Approach Safety Zone, but not for the Runway Protection, or "clear" zone. The following section should be added to Section 4.100, inserted before the section, "Permitted uses within the Airport Approach Safety Zone" and re-numbered accordingly:

4. Permitted uses within the Runway Approach Zone (RPZ).

While it is desirable to clear all objects from the RPZ, some uses are permitted, provided they do not attract wildlife, are below the approach surface and do not interfere with navigational aids.

A. Agricultural operations (other than forestry or livestock farms).

B. Golf courses (but not club houses).

C. Automobile parking facilities.

The following additions should be made to the section, "Permitted uses within the Airport Approach Safety Zone":

F. In noise sensitive areas (within 1,500 feet of an airport or within established noise contour boundaries of 55 Ldn and above for identified airports) where noise levels are a concern, a declaration of anticipated noise levels shall be attached to any building permit, land division appeal, deed, and mortgage records. In areas where the noise level is anticipated to be 55 Ldn and above, prior to issuance of a building permit for construction of noise sensitive land use (real property normally used for sleeping or normally used as schools, churches, hospitals, or public libraries) the permit applicant shall be required to demonstrate that a noise abatement strategy will be incorporated into the building design which will achieve an indoor noise level equal to or less than 55 Ldn. The planning and building department will review building permits or noise sensitive developments.

G. No development that attracts or sustains hazardous bird movements from feeding, watering, or roosting across the runways and/or approach and departure patterns of aircraft. Planning authority shall notify Oregon Aeronautics of such development (e.g., waste disposal sites and wetland enhancements) within the airport overlay zone so as to provide Oregon Aeronautics Section an opportunity to review and comment on the site in accordance with FAA AC 150/5200-33.

The section, "7. Limitations", should be replaced with the following section, which updates some of the existing limitations in Gilliam County's code, and adds new ones:

A. To meet the standards established in FAA Regulations, Part 77 and LCDC 660-013-0070, Exhibit 1, no structure shall penetrate into the Airport Imaginary Surfaces as defined above.
B. No place of public assembly shall be permitted in the Airport Approach Safety Zone or RPZ.
C. No structure or building shall be allowed within the RPZ.
D. Whenever there is a conflict in height limitations prescribed by this overlay zone and the primary zoning district, the lowest height limitation fixed shall govern; provided, however, that the height limitations here imposed shall not apply to such structures customarily employed for aeronautical purposes.
E. No glare producing materials shall be used on the exterior of any structure located within the Airport Approach Safety Zone.
F. In noise sensitive areas (within 1,500 feet of an airport or within established noise contour boundaries of 55 Ldn and above for identified airports) where noise levels are a concern, a declaration of anticipated noise levels shall be attached to any building permit, land division appeal, deed, and mortgage records. In areas where the noise level is anticipated to be 55 Ldn and above, prior to issuance of a building permit for construction of noise sensitive land use (real property normally used for sleeping or normally used as schools, churches, hospitals, or public libraries) the permit applicant shall be required to demonstrate that a noise abatement strategy will be incorporated into the building design which will achieve an indoor noise level equal to or less than 55 Ldn. The planning and building department will review building permits or noise sensitive developments.
G. No development that attracts or sustains hazardous bird movements from feeding, watering, or roosting across the runways and/or approach and departure patterns of aircraft. Planning authority shall notify Oregon Aeronautics of such development (e.g., waste disposal sites, open water impoundments, and wetland enhancements) within the airport overlay zone so as to provide Oregon Aeronautics Section an opportunity to review and comment on the site in accordance with FAA AC 150/5200-33.
H. Siting of new industrial uses and the expansion of existing industrial uses is prohibited where either, as part of regular operations, would cause emissions of smoke, dust or steam that would obscure visibility within airport approach corridors.
I. Outdoor lighting for new industrial, commercial or recreational uses or the expansion of such uses is limited to prevent light from projecting directly onto an existing runway or taxiway or into existing airport approach corridors except where necessary for safe and convenient air travel.
J. The establishment of new water impoundments larger than one-quarter acre in size within the airport boundary and RPZ is prohibited. Wetland mitigation required for projects located within the airport boundary or RPZ may be authorized within the airport boundary where it is impractical to provide mitigation off-site. Seaplane landing areas are exempt from this prohibition.
K. The establishment of new landfills near airports, consistent with Department of Environmental Quality (DEQ) rules is prohibited.
L. Land use regulations and standards for land use decisions regarding land use compatibility and other requirements of this code shall consider the effects of mitigation measures or conditions which could reduce the potential for safety risk or incompatibility.

The following is a new section that should be added to all of the zones that underlie airport property.

Permitted Commercial and Recreational Airport Uses at Non-Towered Airports

Within airport boundaries established pursuant to Land Conservation and Development Commission rules, the following uses and activities are permitted:

A. Customary and usual aviation-related activities including but not limited to takeoffs, landings, aircraft hangars, tie-downs, construction and maintenance of airport facilities, fixed-base operator facilities and other activities incidental to the normal operation of an airport;
B. Emergency medical flight services;
C. Law enforcement and firefighting activities;

D. Flight instruction;
E. Aircraft service, maintenance and training;
F. Crop dusting and other agricultural activities;
G. Air passenger and air freight services at levels consistent with the classification and needs identified in the State Aviation System Plan;
H. Aircraft rental;
I. Aircraft sales and sale of aeronautic equipment and supplies; and
J. Aeronautic recreational and sporting activities.

SAFE AND CONVENIENT PEDESTRIAN AND BICYCLE CIRCULATION

Sections 660-12-045(3)(b), (c), and (d) of the Transportation Planning Rule address the provision of facilities for safe and convenient pedestrian and bicycle circulation and access within new residential and commercial development and on public roads. The Transportation Planning Rule specifies that, at a minimum, sidewalks and bikeways be provided along arterials and collectors in urban areas. Separate bicycle and pedestrian facilities should be provided where these would safely minimize trips distances by providing a "short cut."

The majority of land areas in Gilliam County are zoned and used for agricultural purposes and do not constitute "urban areas." The following provisions for bicycle and pedestrian facilities are most appropriately applied to zones allowing urban-type land uses, and not to the Exclusive Farm Use (EFU) Zone.

Recommended Ordinances for Bicycle and Pedestrian Circulation and Access

Section 5.350 ("Improvements in Subdivisions") of the Gilliam County Planning and Zoning Statutes requires the provision of sidewalks on both sides of a public street in a subdivision, with certain exceptions, and the installation of bicycle lanes if "appropriate to the extension of a system of bicycle routes." However, Gilliam County should strengthen existing ordinances by adopting additional provisions related to bicycle and pedestrian facilities.

The following definitions related to pedestrian and bicycle access and facilities should be added to Section 1.030, Definitions, of the Planning and Zoning Statutes:

Accessway. *A walkway that provides pedestrian and bicycle passage either between roads or from a road to a building or other destination such as a school, park, or transit stop. Accessways generally include a walkway and additional land on either side of the walkway, often in the form of an easement or right-of-way, to provide clearance and separation between the walkway and adjacent uses. Accessways through parking lots are generally physically separated from adjacent vehicle parking or parallel vehicle traffic by curbs or similar devices and include landscaping, trees, and lighting. Where accessways cross driveways, they are generally raised, paved, or marked in a manner that provides convenient access for pedestrians.*

Bicycle. *A vehicle designed to operate on the ground on wheels, propelled solely by human power, upon which any person or persons may ride, and with two tandem wheels at least 14 inches in diameter. An adult tricycle is considered a bicycle.*

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

Bikeway. *Any road, path, or way that is some manner specifically open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are shared with other transportation modes. (These are further defined in the Gilliam County Transportation System Plan).*

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

Neighborhood Activity Center. *An attractor or destination for residents of surrounding residential areas. Includes, but is*

not limited to existing or planned schools, parks, shopping areas, transit stops, employment areas.

Reasonably direct. *A route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.*

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

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

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

The following language should be added to the Design Standards section of the Planning and Zoning Statutes. It could be incorporated as a new section following Section 5.260, Streets.

5.261 PEDESTRIAN AND BICYCLE ACCESS AND FACILITIES

1. *GENERAL*

The purposes of this section are to provide for safe and convenient pedestrian, bicycle and vehicular circulation consistent with access management standards and the function of affected streets, to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel.

2. *On-site facilities shall be provided which accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development.*

A. *Pedestrian Access and Circulation*

1) *Single family residential developments shall generally include streets and accessways.*

2) *Sidewalks shall be required along arterials, collectors, and most local streets in urban areas, except that sidewalks are not required along controlled access roadways, such as freeways.*

3) *Pedestrian circulation through parking lots should generally be provided in the form of accessways.*

4) *Internal pedestrian circulation shall be provided in new commercial, office, and multi-family residential developments through the clustering of buildings, construction of hard surface walkways, landscaping, accessways, or similar techniques.*

B. Bicycle Parking.

1) The development shall include the number and type of bicycle parking facilities required in Section 8.070. The location and design of bicycle parking facilities shall be indicated on the site plan.

C. Commercial Development Standards.

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

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

building(s).

The Transportation Planning Rule states that local governments shall adopt land use or subdivision regulations for urban areas and rural communities to require bicycle parking facilities as part of new, multi-family residential developments of four units or more, new retail, office, and institutional developments, and all transit transfer stations and park and ride lots (660-12-045, (3), (a)). Currently, Gilliam County does not require bicycle parking to be provided in conjunction with new development. Section 8.070 of the Gilliam County Planning and Zoning Statutes requires that off-street motor vehicle parking be provided as required by the Planning Commission or in accordance with standards requested the affected city if within the area of mutual concern. The County should consider adding a requirement for bicycle parking to Section 8.070.

Article 5 of the Gilliam County Planning and Zoning Statutes outlines the submission requirements for subdivisions and other land partition applications. In order to meet the intent of the Transportation Planning Rule, the county should add the following provision to Section 5.060.

[Section 5.060 PROPOSED PLAN OF SUBDIVISION].

5. The location and design of all proposed pedestrian and bicycle facilities, including accessways.

The following language should be added to Section 5.260 (9), Cul-de-sac, in the street design standards.

[9. CUL-DE-SAC]

Culs-de-sac or permanent dead-end roads may be used as part of a development plan. However, through roads are encouraged except where topographic, environmental, or existing adjacent land use constraints make connecting roads infeasible. Where culs-de-sac are planned, accessways shall be provided connecting the ends of culs-de-sac to each other, to other roads, or to neighborhood activity centers, as specified in Section 5.270 (3)(C)..

The following language should replace Section 5.270 (3)(C), Pedestrian and Bicycle Ways.

C. Culs-de-sac and Accessways

1. Where culs-de-sac are planned, accessways shall be provided connecting the ends of culs-de-sac to each other, to other roads, or to neighborhood activity centers.

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

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

4. The Hearings Body or Planning Director may determine, based upon evidence in the record, that an accessway is impracticable. Such evidence may include but is not limited to:

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

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

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

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