Morrow County

2012 Transportation System Plan

Effective January 15, 2012

Morrow County 2012 Transportation System Plan
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CHAPTER 1
INTRODUCTION

Morrow County prepared its original Transportation System Plan (TSP) in 1997 as part of its overall Comprehensive Plan, as required by Oregon Revised Statute 197.712 and the Transportation Planning Rule (TPR) Oregon Administrative Rule) 660 Division 12 developed by the Department of Land Conservation and Development (DLCD). The TPR and its provisions are designed to encourage the development of a planning process that allows development of future transportation facilities, protects the operation of existing and future transportation facilities, coordinates the review of land use decisions, and promotes safe and convenient pedestrian and bicycle circulation. Oregon counties and cities over a certain size are required to develop TSPs and supporting implementation ordinances to carry out the TPR goals at the local level. Local jurisdictions are required to update their TSPs every 5 to 7 years.

In 2005, a major update to the TSP was completed with the intent that the plan would guide transportation system development for the next 20 years. It was understood that the plan would need to be periodically updated to ensure it remains current and meets county needs. Minor updates were completed in 2006, 2007, 2009, and 2010 in the spirit of keeping the plan current.

The current version, the 2012 major update, will replace the TSP in its entirety and is being designed to support transportation growth for the next 5 to 7 years and address a 20-year planning horizon. To limit the number of potential short-term amendments and support easier maintenance of the project lists, some portions of the TSP are being rearranged, most notably, the project list is being moved to the appendix.

PLAN ORGANIZATION

Morrow County was assisted with the preparation of the 2005 plan by CTS Engineers, with assistance from the Mitchell Nelson Group, under a Transportation Growth Management grant. This major plan update is being accomplished by planning staff with support from a technical advisory committee.

Chapter 2 introduces the plan's goals and policies. These transportation-related goals and policies, developed over time, guide the process and give direction to the development of future system improvements. The goals and policies ensure not only that the plan meets the intent of the TPR, but that it strives to meet the interests of the county.

Chapter 3 assesses existing conditions, and identifies the issues that currently face the county. This chapter discusses transportation issues and opportunities, current land use and population, and existing transportation facilities.

Chapter 4 discusses future conditions, including the projected areas of future population growth and transportation demand, as well as the future needs for greater connectivity. These future conditions represent the setting under which transportation alternatives can be compared.

Chapter 5 develops alternatives that reflect Morrow County's goals and policies, and addresses the identified existing and future transportation issues and needs.

Chapter 6 presents the specific actions necessary to implement the plan's preferred alternative. The chapter also recommends actions regarding future opportunities; land-use requirements, including development, right-of-way, and access management; and recommendations for transportation facilities and operations, including road standards and connectivity.

Chapter 7 evaluates funding sources for transportation improvements and presents funding options and a financial plan for meeting the recommended improvements identified in the TSP.

In Chapter 8, the plan is discussed in relation to the Transportation Planning Rule and addresses each of the required elements of the TPR.

The 2012 TSP maintains most of the assumptions made and used in the 2005 TSP. Planning staff asserts that the conditions in place in 2005 have not changed significantly for the majority of the County with one exception: the development at the Port of Morrow within the area now commonly known as the East Beach Industrial Area. Planning and Public Works staff, with assistance from the Oregon Department of Transportation (ODOT), have updated many of the components within this 2012 version.

The TSP is required by the State of Oregon Transportation Planning Rule, OAR 660 Division 12, developed by the DLCD and ODOT. The TPR requires all jurisdictions to develop a transportation plan that includes the following elements:

- Roadways
- Transit
- Bicycle and pedestrian facilities
- Air, rail, water, and pipelines
- System alternatives
- Financing
- Policies and ordinances for implementation.

In addition, the TPR requires local jurisdictions to adopt land-use code amendments to protect transportation facilities, coordinate their plans with other jurisdictions, and encourage the development of bicycle and pedestrian facilities.

PHYSICAL SETTING

Morrow County is located in northern Oregon approximately 150 miles east of Portland and 30 miles west of the City of Pendleton. The county is bordered by the Columbia River to the north, the Umatilla National Forest to the south, and Gilliam and Umatilla Counties to the east and west, respectively. Grant and Wheeler Counties share the southern border of Morrow County.

The topography within this 2,065-square-mile area varies from lowlands along the Columbia River to the Peak of Black Mountain, nearly 6,000 feet above sea level. The county is largely rural in nature, although it has five incorporated cities: Boardman, Heppner, Irrigon, Ione, and Lexington. There also are six unincorporated rural centers: Cecil, Morgan, McNab, Ruggs, Hardman, and Lena. None of the county's rural centers are designated as rural communities under Oregon State law. Boardman is Morrow County's largest city, followed by Irrigon and

Heppner. This TSP focuses on the unincorporated areas of the county up to the urban growth boundaries of the incorporated cities.

The northern part of the county, home to Boardman and Irrigon, is moderately urban, especially along the I-84 corridor just south of the Columbia River. The southern part of the county is very rural. Industry is primarily natural-resource based, with agriculture, lumber, hydroelectric power generation, and food processing as the principal industries.

PUBLIC INVOLVEMENT, REGULATORY REQUIREMENTS, AND PLAN HISTORY

Public involvement is key to an effective planning process. The TSP process was guided by members of a technical advisory committee (TAC), which was instrumental in developing the 2011 TSP. Participating members of the TAC are as follows:

- Ron McKinnis, Port of Morrow
- Carla McLane, Morrow County Planning Director
- Bob Nairns, Morrow County Assistant Public Works Director
- Burke O'Brien, Morrow County Public Works Director
- Teresa Penninger, ODOT
- Jeff Wenholz, Morrow County Planning Commission member.

Additional key elements of the public involvement process focused on the plan approval process, which took place in 2011 with the final adoption in January 2012. The process included meetings with the county planning commission and the county court, and culminated in the adoption of the plan. Modifications to the Morrow County Zoning Ordinance and Subdivision Ordinance, if identified, will be accomplished at a later time.

The county's first TSP was adopted in 1997, with the first update being completed in 2005. Both the original plan and the 2005 update were done with the support of Transportation Growth Management (TGM) funding and completed by consultant teams. Since then, the plan has been updated by Morrow County Public Works and Planning staff.

A minor update was done in 2006 to amend Tables 5-5 and 6-10 added the Brenner Canyon and Valby Road Project to the long-term projects list. That action also changed the status of Brenner Canyon Road to a minor collector from a local road. The 2007 minor amendment accomplished the following tasks: updated the long-range system projects tables, removed the short-term projects, and added a new 5-year project plan, added a table to support Figure 3-1, Functional Classification, and amend the goals and policies to reflect the adopted policies in support of the speedway project in 2002. The speedway policies were not incorporated by the consultant who prepared the 2005 update.

The 2009 update amended the list of Major Collectors and Minor Collectors to reflect the Federal classifications. The Blue Mountain Scenic Byway language was updated and a map was added. Forest Highway Agreement roads language and a map were also added. The Bridge Deficiency Table (Table 3-5) was updated to reflect the repair/replacement of Clarks Canyon Road/Padberg Bridge. The tables in Chapter 6 Transportation System Plan showing facilities recommended improvements were updated to reflect increased costs for future projects on Depot Lane and the Port of Morrow East Beach development. Finally, a 5-lane roadway standard was added to facilitate development of the proposed speedway.

CHAPTER 2
GOALS AND POLICIES

INTRODUCTION

Morrow County recognizes the importance of its transportation system to the long-term health and vitality of the County. Well-designed roadways contribute to the ability of an area to accommodate additional growth and development. Deficiencies in the system affect user safety and their perception of a community's character and livability. As part of this Transportation System Plan (TSP), a series of goals and policies were designed to guide the development of the transportation system over the next 20 years.

The goals and policies included in this plan have been developed by several technical advisory committees (TAC), working under the requirements of the 1991 Oregon Transportation Planning Rule (TPR), during various plan amendments. The goals and policies developed for this process reflect both the required elements of the TPR and the interests of the County.

Goals are general in nature. Each goal focuses on a particular aspect of the transportation system or the relationship between transportation and the viability of the County. The first nine goals of this TSP are coordination/process, land use, economic development, quality of life, transportation modes available in the County, and finance. A tenth goal focuses on the proposed speedway project.

Because they are general in nature, goals are difficult to implement and, therefore, make gauging plan success difficult. To assist in plan implementation, a series of policies has been developed for each goal. Policies are specific steps to be taken in plan implementation to ensure that the goals are met. Policies are directive and often outline plan requirements.

The following section presents the goals and policies of Morrow County. These goals and policies will assist in prioritizing individual transportation projects to ensure that limited transportation funding is expended efficiently to promote the development of a healthy transportation system.

GOALS AND POLICIES

Goal 1 Coordination/Process

Ensure that the Morrow County TSP is coordinated with other transportation providers, meets applicable regulations, and considers the needs of all transportation system users.

Policy 1.1. Coordinate the preparation of the TSP with transportation providers in Morrow County, including the cities of Boardman, Irrigon, Ione, Heppner, and Lexington, and the Oregon Department of Transportation (ODOT).

Policy 1.2. Coordinate design standards with the cities within the county.

Policy 1.3. Coordinate transportation planning with the Port of Morrow.

Policy 1.4. Coordinate with ODOT for improvements on state facilities that could affect county facilities, through a ministerial or similar staff-level review

process to allow the County Public Works Department the opportunity to review improvement plans prior to final design.

Policy 1.5. Coordinate transportation planning with adjacent counties.

Policy 1.6. Fulfill the transportation planning requirements of ODOT and the Department of Land Conservation and Development (DLCD).

Policy 1.7. Participate actively in the North East Area Commission on Transportation (NEACT) to promote inclusion of transportation improvement projects in Morrow County in the Statewide Transportation Improvement Program (STIP).

Policy 1.8. Use a 20-year time horizon for all transportation planning.

Policy 1.9. Review annually and update the capital improvement program. Update the plan elements periodically, in conjunction with the periodic update of the county comprehensive plan, or every 5 years.

Policy 1.10. Evaluate the needs of all of the county's population groups, including transportation disadvantaged groups, such as older adults, young, physically challenged, and low-income residents.

Policy 1.11. Evaluate the needs of commercial users, including manufacturing, timber, agricultural, and recreational users.

Policy 1.12. Include consideration of urban issues, as appropriate, and rural issues in the TSP.

Policy 1.13. Provide extensive opportunities for public input throughout the transportation planning process.

Land Use

Goal 2

Support land-use planning with appropriate transportation improvements.

Policy 2.1. Design all new roadways to meet county and state adopted road design standards, as a minimum.

Policy 2.2. Identify and reserve future road corridors.

Policy 2.3. Require new development proposals, plan amendments, and zone changes to conform to the TSP as required of the TPR.

Policy 2.4. Require new development to provide appropriate access to the transportation system.

Policy 2.5. Require new development to identify transportation impacts and provide appropriate mitigation.

Policy 2.6. Require new development to dedicate right-of-way for transportation system improvements where appropriate. Establish procedures for the dedication of right of way necessary for the transportation system.

Policy 2.7. Use current state statute and rule to acquire right of way necessary for the transportation system.

Policy 2.8. Use current state statute and rule to abandon right of way no longer needed for the transportation system.

Policy 2.9. Use adopted ODOT access management standards for state facilities and proposed access management standards in this TSP for county facilities.

Policy 2.10. Request an exception to any statewide goal before the construction of roads, highways, and other transportation facilities and improvements not otherwise allowed outright on resource lands (EFU and FU zones).

Economic Development

Goal 3

Enhance economic development through transportation improvements.

Policy 3.1. Support transportation system improvements that contribute to economic development opportunities.

Policy 3.2. Pursue opportunities to improve access to business and employment centers for all modes of travel.

Policy 3.3. Pursue opportunities to improve access to tourist and recreation sites, such as the Columbia River Heritage Trail and the County Off-Highway Vehicle (OHV) Park, for all modes of travel.

Quality of Life

Goal 4

Promote a high quality of life in Morrow County by providing a well-developed transportation system that is appropriate to its surroundings.

Policy 4.1. Consider community character when providing transportation system improvements in the urban growth areas.

Policy 4.2. Maintain the rural character of the county in the areas outside the designated urban areas.

Policy 4.3. Promote and maintain the Blue Mountain Scenic Byway corridor through the Blue Mountains of Morrow County.

Roadway System

Goal 5

Provide and maintain a safe, efficient roadway system to provide mobility throughout the county.

Policy 5.1. Design and construct all new roadways to the county's adopted road design standards, as a minimum.

Policy 5.2. Preserve the transportation system through regular maintenance.

Policy 5.3. Use the county's established procedure to set speed limits.

Policy 5.4. Provide roadway channelization (striping, turn lanes) where needed, using American Association of State Highway Officials standards.

Policy 5.5. Use the *Manual on Uniform Traffic Control Devices* for traffic signal and signing standards.

Policy 5.6. Establish criteria for the design of surface water retention for transportation facilities.

Policy 5.7. Improve connectivity within the County by identifying and working to improve additional road corridors.

Policy 5.8. Improve emergency vehicle access to the transportation system.

Policy 5.9. Emphasize work zone safety for all workers.

Policy 5.10. Identify emergency routes for priority in snow plowing or other circumstances where access is restricted.

Policy 5.11. Use the County Road Committee to identify and prioritize modernization, preservation, and construction projects.

Policy 5.12. Use the *Highway 730 Corridor Refinement Plan* and the Interchange Area Management Plans for the Port of Morrow and I-84/U.S. 730 interchanges to further guide roadway system improvements.

Bicycle, Pedestrian, Equestrian, and Transit Modes

Goal 6

Support the use of other modes of transportation (bicycles, pedestrians, equestrians, and transit) through effective transportation improvements.

Policy 6.1. Include design features, such as widened shoulder areas, to accommodate bicycles, pedestrians, and equestrians in the county roadway design standards.

Policy 6.2. Include design features, such as pullout areas and turnarounds, to accommodate school bus use in the county roadway design standards, in coordination with school bus providers.

Policy 6.3. Continue development of the Columbia River Heritage Trail, and other similar facilities, for recreational uses.

Policy 6.4. Support the efforts of private transit systems within the county, such as transporters for older adults.

Policy 6.5. Encourage the development of additional transit opportunities for transportation-disadvantaged groups within the county.

Policy 6.6. Coordinate with ODOT and the cities to construct bicycle and pedestrian improvements in unincorporated areas within urban growth boundaries.

Policy 6.7. Encourage and support development of van pool opportunities to move workers from population centers both within and outside of the county to job centers within the county.

Air Transportation

Goal 7

Support the local and regional air transportation needs of Morrow County.

Policy 7.1. Provide and maintain airport facilities to serve general aviation needs.

Policy 7.2. Expand airport facilities as necessary to support future service needs.

Policy 7.3. Coordinate with the Oregon Department of Aviation when preparing airport planning documents and reviewing proposed land use development in the vicinity of the airport.

Policy 7.4. Encourage the establishment of passenger and freight air service in the future.

Policy 7.5. Maintain minimum operating standards for the county's airports as required by the Federal Aviation Authority.

Policy 7.6. Establish appropriate land uses near airports that are compatible with airport noise levels and support airport operations.

Freight and Goods Movement

Goal 8

Promote efficient movement of freight and goods throughout the county.

Policy 8.1. Develop a freight and goods mobility strategy in conjunction with the Port of Morrow and others interested in freight and goods movement.

Policy 8.2. Evaluate roads with weight restrictions and develop an improvement strategy for those that adversely affect freight and goods mobility.

Policy 8.3. Encourage improvements to rail freight facilities by encouraging improved intermodal connections.

Policy 8.4. Establish rail crossing standards for county roads.

Policy 8.5. Support the development of passenger rail service.

Policy 8.6 Support rail development at the Port of Morrow through the TSP and the zoning ordinance.

Finance

Goal 9

Use a fiscally sound approach to financing transportation system improvements.

Policy 9.1. Develop a financial strategy for funding transportation system improvements.

Policy 9.2. Explore innovative funding methods, such as system development charges, to finance transportation system improvements.

Policy 9.3. Coordinate with other transportation users and providers to seek joint funding opportunities for transportation system improvements.

Policy 9.4. Actively seek available funding sources for transportation system improvements.

Oregon Motor Speedway

Goal 10

The following policies are incorporated based on the adoption of Ordinance MC-C-2-02 on July 10, 2002, which amended the *Morrow County Comprehensive Plan*, the *Morrow County Transportation System Plan*, and the *Morrow County Zoning Ordinance* to allow for the siting of a speedway and related facilities adjacent to the Boardman Airport.

Policy 10.1. As required by the *National Environmental Policy Act*, the Port of Morrow, in coordination with the Oregon Department of Transportation and the Federal Highways Administration, shall examine and analyze transportation network alternatives that might reasonably accommodate traffic generated by the speedway during peak events. The study shall determine whether reasonable transportation alternatives exist that are feasible to develop and meet ODOT's needs better than the transportation improvements authorized by this plan. If such alternatives exist and are desired by ODOT, the Port shall apply to Morrow County for TSP amendments, including goal exceptions if necessary, to substitute those transportation improvements for authorized improvements that would no longer be required.

Policy 10.2. Required transportation improvements may be developed in stages as authorized by ODOT.

Policy 10.3. As part of the site development review process for the Oregon Motor Speedway, the speedway owner or operator shall prepare and submit to Morrow County detailed traffic management and event management plans identifying traffic management measures, including access, circulation, and parking management measures, and event management measures to be employed during mid-sized and peak Speedway events. Those measures shall be designed to ensure reasonable roadway access, circulation, and movement for non-speedway-generated traffic traveling within or through the Boardman area before and after Speedway events. The traffic management plan shall be prepared by a licensed traffic engineering firm in coordination with ODOT, the City of Boardman, Morrow County, and the Port of Morrow.

Policy 10.4. Unless otherwise agreed to by federal, state or local transportation providers, the Oregon Motor Speedway operator or any successors in interest shall be responsible for payment of all expenses associated with implementing the speedway's traffic management plan.

Policy 10.5. Unless otherwise agreed to by federal, state or local transportation providers, the Oregon Motor Speedway operator or any successors in interest shall be responsible for payment of all expenses associated with implementing the specific transportation improvements required for compliance with the Transportation Planning Rule.

Policy 10.6. Implementation of the Speedway's traffic management plan shall be an ongoing condition of approval for the speedway. Failure to substantially comply with the traffic management plan or to pay the expenses associated with implementation of that plan shall be a basis for enjoining operation of the speedway.

Policy 10.7. The Oregon Motor Speedway operator or any successor in interest shall work cooperatively with emergency service providers and affected state and local governments and agencies to develop one or more interagency agreements to prepare and implement a traffic management plan.

CHAPTER 3
EXISTING CONDITIONS AND INVENTORY

INTRODUCTION

This chapter provides an inventory of the existing transportation system, and other information relevant to system operation. It specifically addresses the following topics:

- Existing land use and population
- Transportation facilities.

Data used to complete the 2011 TSP were collected from several sources. Specific issues to be considered in the 2011 plan were identified by the Road Committee, Planning and Public Works staff, and TAC members.

EXISTING LAND USE AND POPULATION

Land use and population play key roles in determining the demand on the transportation system. Land use has an impact on what kinds of roads are needed and where they can be located. Changes in population and employment, together with historical trends in traffic volume, are used to predict changes in vehicle trips that will drive future system use and, thus shape future system configuration.

Existing Land Use

Morrow County's topography plays a large role in how the land is used. The Columbia River borders the northern edge of the county. South of the river, lowlands gently rise to the Umatilla forest, which occupies the southern part of the county. The road system generally follows drainage corridors in the south county, and is straight and rolling in the north county.

The major population center, commercial operations, and transportation facilities all are located in the northern part of the county, near the river, along with the port facilities, including docks and loading facilities. Interstate-84, the major east-west route across the county, parallels the river, as does the Union Pacific rail line. The lowlands south of the river are well suited to agriculture. This area is characterized by large tracts of land, including some of which is used for farming. The U.S. Navy's bombing range and the U.S. Army's Umatilla Chemical Depot also occupy a large portion of northern Morrow County and affect land use, road placement, and traffic patterns. Logging, recreation, and grazing are the major activities in the forested area.

Because land uses in the county are largely agricultural related, the population is sparse. Most of the population is concentrated in the Irrigon-Boardman area, which also provides most of the land available for urban development. Smaller population centers are Heppner (the county seat), Lexington, and Ione.

Existing Population

Between the 2000 census and the 2010 census, Morrow County's population increased by about 1.6 percent, or 178 residents (Table 3-1). Countywide growth from 2000 to 2010 averaged about 0.2 percent per year, compared to about 3.7 percent per year from 1990 to

2000. Most of the recent growth has occurred in the northern part of the county. County population growth reflects employment changes, which have been concentrated in the northern part of the county and in adjacent areas of Umatilla County.

TABLE 3-1.
Recent Census Data.

City/County Area	2010 Census Count	2000 Census Count	1990 Census Count	Growth (%)
Boardman	3220	2,855	1,387	12.8
Heppner	1291	1,395	1,412	-7.5
Ione	329	321	255	2.5
Irrigon	1,826	1,702	737	7.3
Lexington	238	263	286	-9.5
Unincorporated Area	4,269	4,459	3,548	26
Total	**11,173**	**10,995**	**7,625**	**1.6**

Potential Growth/Traffic Impact

Growth

The Office of Economic Analysis (OEA) publishes population data prepared by Portland State University for all Oregon counties. The 2010 U.S. census, shows a population of 11,173 for Morrow County, an increase of 1.6 percent over the 2000 census count.

In evaluating existing land uses and population, as well as its distribution, the issue of potential growth and resulting traffic impact should be considered. Two types of growth are anticipated. One is the growth in residential housing development. This will likely take the form of new subdivisions on currently vacant land within the UGBs and in rural residential areas outside of UGBs. These vacant parcels are distributed largely south and west of Irrigon and south and west of Boardman.

The other opportunity for growth is through economic development led by expansion of Port of Morrow industrial facilities throughout the county. Throughout its 30-year history, the Port has developed a significant inventory of developable land at its three industrial park sites: the Boardman Industrial Park, located east of Boardman and north of U.S. 730; the Airport Industrial Park, located west of Tower Road; and the South Morrow Industrial Park, located at the Kinzua sawmill complex just outside the City of Heppner.

Traffic Impact

The traffic impacts of these growth opportunities differ. The impact of residential development will require transportation planning to ensure adequate connectivity between new development and existing highway and road corridors. Creating block length and cross-circulation standards for new residential and commercial development will be an important element of the county's access management strategy.

Development of Port facilities will generate the need to upgrade transportation facilities including highway, rail, and barge facilities. In addition to maintaining the continued orderly movement of goods through the Port of Morrow, ensuring that the work force have adequate access to the Port's industrial facilities will be important. A portion of this work force may use bike or pedestrian facilities to gain access, but major emphasis will continue to be focused on an interconnected system of roadways.

Another impact expected by the growth within the Port of Morrow is the need for improved access to its east industrial site. This site is a portion of the Boardman Industrial Park. It is located north of I-84 and west of U.S. 730. A new access to this industrial area is being developed near the I-84-U.S. 730 interchange, as discussed in the roadway interchange management plan (IAMP).

Roadway Existing Needs

Morrow County maintains jurisdiction for design, construction, and maintenance of county roadways within its boundaries. It also maintains jurisdiction for non-state facilities located outside of city limits, but inside the cities' urban growth boundaries. Towns and cities within the county are responsible for their own facilities. The Oregon Department of Transportation (ODOT) is responsible for design and construction of state facilities.

Ordinances and design standards for county roadways are described in the county's subdivision ordinance. Design standards for bicycle and pedestrian facilities in the county are limited and are included in county roadway design standards developed in Section 6 of this TSP. Existing functional classifications for county roads are listed in Table 3-2 and shown in Figure 3-1.

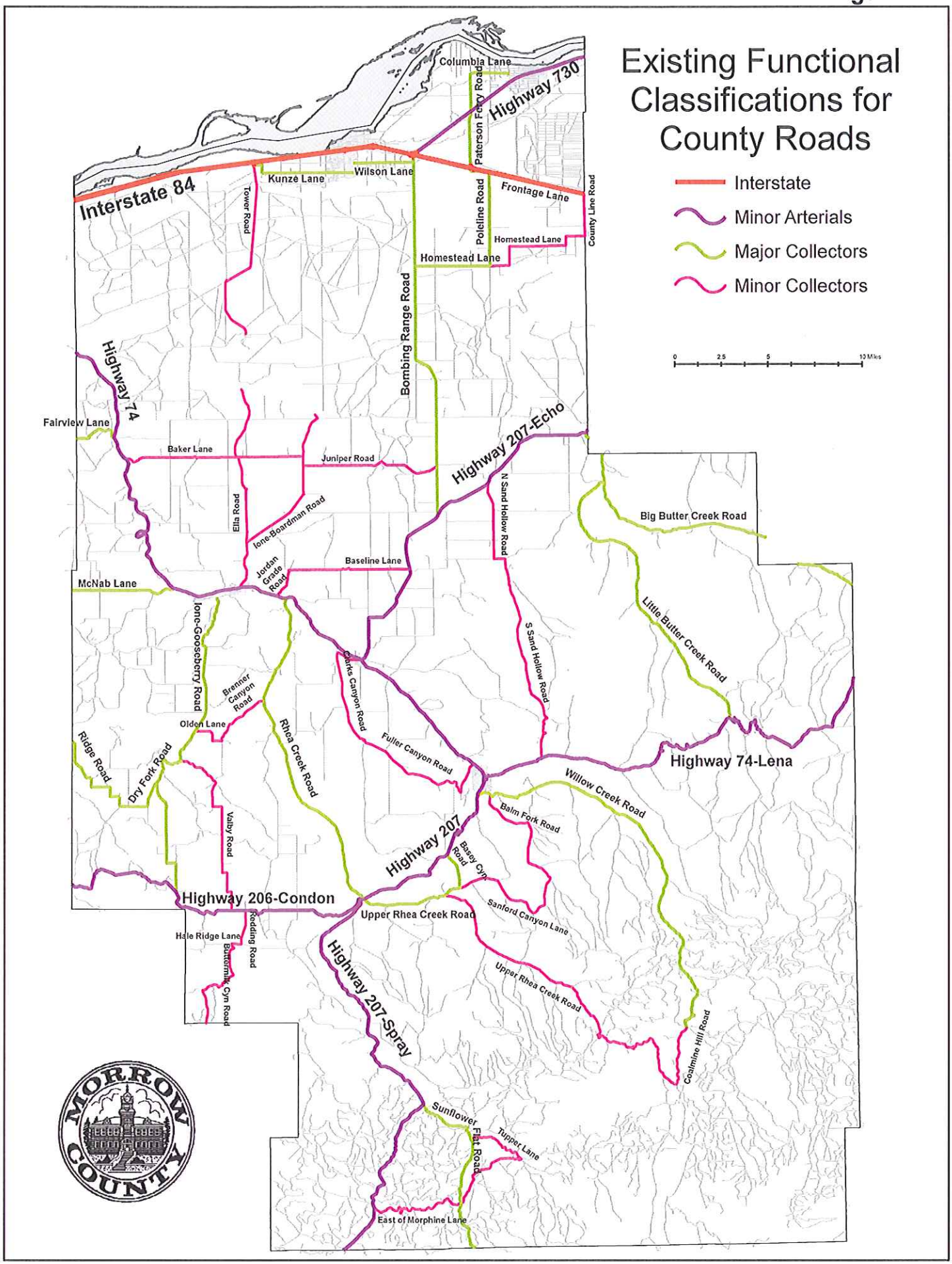
Table 3-2
County Road Functional Classifications and Associated Lengths

Major Collectors	Miles	Minor Collectors	Miles
Basey Canyon Road	2.89	Baker Lane	9.72
Big Butter Creek	14.4	Balm Fork Road	8.99
Bombing Range Road	19.5	Baseline Lane	6.25
Coalmine Hill Road	2.34	Brenner Canyon Road	3.26
Columbia Lane	2.39	Buttermilk Canyon Road	5.84
Dry Fork Road (part)	3.0	Clarks Canyon Road (part)	6.65
Fairview Lane	2.69	Coalmine Hill Road	3.69
Frontage Lane	5.95	County Line Road	2.15
Homestead Lane (part)	4.0	East of Morphine Lane	11.5
Ione-Gooseberry Road	19.42	Ella Road	9.34
Kunze Lane (part)	4.6	Fuller Canyon Lane	8.35
Little Butter Creek (part)	17.73	Hale Ridge Lane	0.50
Main Street - Boardman	0.25	Homestead Lane	3.0

Table 3-2 County Road Functional Classifications and Associated Lengths			
Major Collectors	**Miles**	**Minor Collectors**	**Miles**
McNab Lane	5.67	Ione-Boardman Road	0.5
Paterson Ferry Road (part)	5.0	Jordan Grade Road	1.59
Poleline Road	4.94	Juniper Road	7.77
Rhea Creek Road	18.37	Olden Lane	1.80
Ridge Road	5.59	Redding Road	1.81
Sunflower Flat Road	10.3	Sandhollow connector	0.56
Tower Road	0.45	N Sandhollow Road	4.08
Upper Rhea Creek	4.46	S Sandhollow Road	11.56
Willow Creek Road	19.76	Sanford Canyon Lane	4.92
Wilson Lane (part)	3.0	Tower Road	8.02
		Tupper Lane	3.7
		Upper Rhea Creek Road	20.04
		Valby Road	10.0
Column Total:	**176.70**	**Column Total:** **Grand Total:**	**155.59** **332.29**

Overlying the County's roadway jurisdiction and that of the City of Boardman are the Port of Morrow facilities. The Port is a participating agency, along with Boardman and Morrow County, in developing improvements needed to meet the requirements of industrial development. The Port of Morrow's facilities include the Boardman Industrial Park, the Airport Industrial Park, the East Beach Industrial Park, and the South Morrow Industrial Park. Standards necessary to meet the load rating requirements of port industrial users should be coordinated between Morrow County, the City of Boardman, the Port of Morrow, and ODOT.

Figure 3-1


Existing Functional Classifications for County Roads
Interstate
Minor Arterials
Major Collectors
Minor Collectors
0
2.5
5
10 Miles
Interstate 84
Highway 730
Columbia Lane
Paterson Ferry Road
Kunze Lane
Wilson Lane
Frontage Lane
Poleline Road
County Line Road
Homestead Lane
Homestead Lane
Tower Road
Bombing Range Road
Highway 74
Fairview Lane
Baker Lane
Juniper Road
Highway 207-Echo
N Sand Hollow Road
Ella Road
Ione-Boardman Road
Big Butter Creek Road
Jordan Grade Road
Baseline Lane
McNab Lane
Little Butter Creek Road
Ione-Gooseberry Road
S Sand Hollow Road
Brenner Canyon Road
Clarks Canyon Road
Olden Lane
Rhea Creek Road
Fuller Canyon Road
Ridge Road
Dry Fork Road
Highway 74-Lena
Willow Creek Road
Balm Fork Road
Valby Road
Highway 207
Basey Cyn Road
Highway 206-Condon
Sanford Canyon Lane
Upper Rhea Creek Road
Hale Ridge Lane
Redding Road
Buttermilk Cyn Road
Highway 207-Spray
Upper Rhea Creek Road
Coalmine Hill Road
Sunflower Flat Road
Tupper Lane
East of Morphine Lane
MORROW COUNTY

County Roadways

Evaluation of need relating to the County's roadway network falls in the following categories: maintenance of existing roadways; safety; capacity; and economic development.

Maintenance

By far the most overwhelming need of the Morrow County road system is for maintenance. The county currently has 340 miles of pavement or hard-surface roads and 600 miles of gravel roadways. The county annually budgets to maintain the existing level of service and, where possible, to improve the service level.

Safety

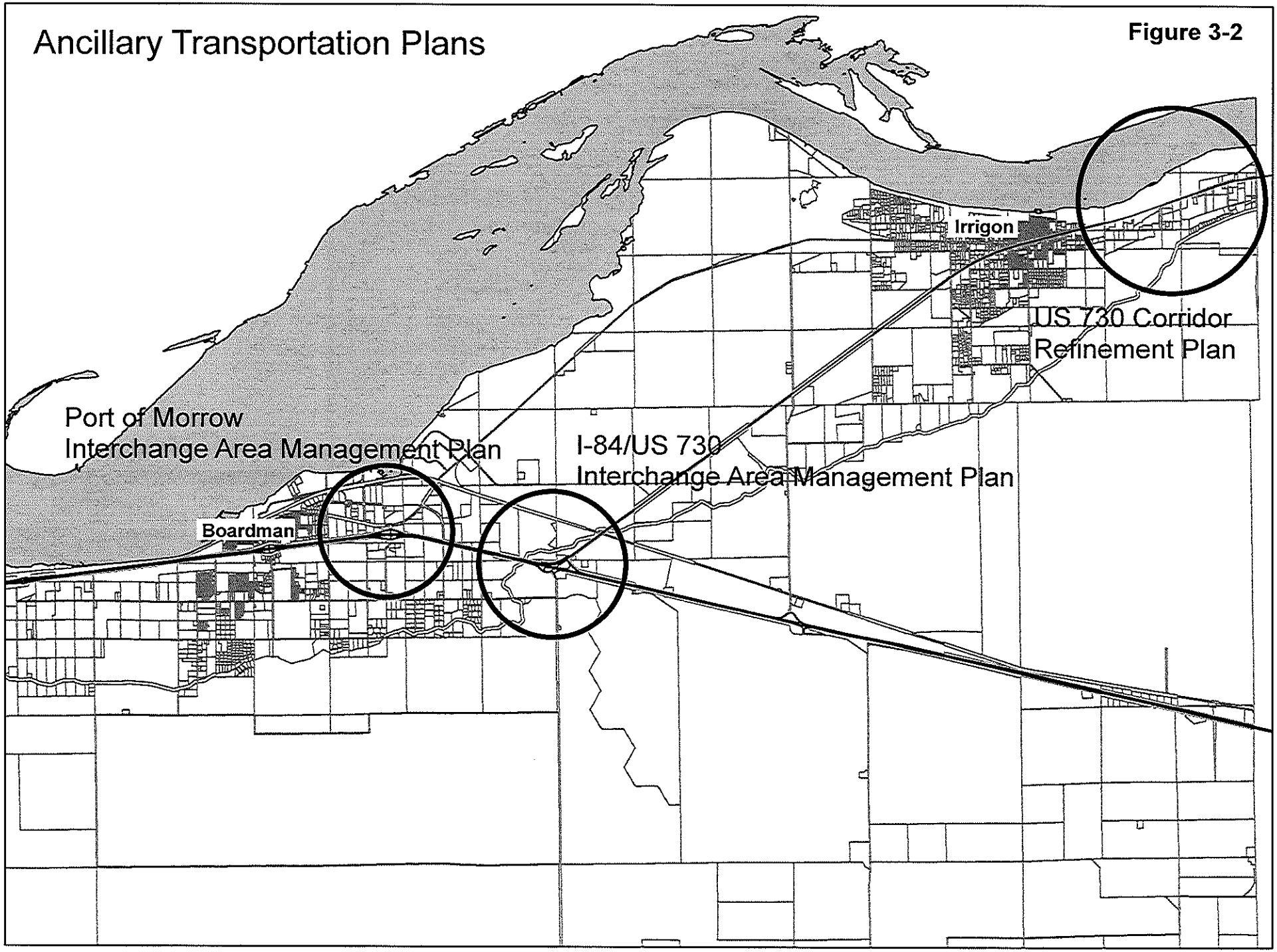
From available information about the safety record of county roadways, it is known that improvements should be scheduled to address existing needs. Safety improvements identified by county staff and other stakeholders are included in the recommendations in Chapter 6. Safety is also known to be an issue with respect to farm-to-market roadways. During the harvest season, the intermixing of slow-moving farm trucks and other forms of transportation can be an issue.

Because of the high number of crashes involving truck traffic and turning movements, U.S. 730 in Morrow County and Umatilla County has been designated as a safety corridor. Based on this designation, a U.S. 730 corridor refinement plan was completed in 2007. This refinement plan is an extension of this TSP, addressing development of U.S. 730 and the local street network adjacent to U.S. 730.

Two other safety issues also have been identified. The first is the need for an alternative to US 730 for circulation between Irrigon and Boardman in the event of an emergency at the Umatilla Army Depot or the Port of Morrow. The second is the need for a north-south connection between Boardman and Ione in addition to Bombing Range Road.

Concerns with access and circulation between the communities of Irrigon and Boardman and the Port of Morrow are addressed in the Interstate 84/U.S. 730 Interchange Area Management Plan. This is one of the two IAMPs ancillary to this TSP. The second is the Port of Morrow Interchange. (The two IAMPs and the Corridor Refinement Plan are represented on the map shown in Figure 3-2.)

A second north/south route addresses overall County circulation and safety and emergency vehicle access needs. It would provide both an alternative route for emergency vehicles and a fire break in an area of the County with extensive grasslands and predominately westerly winds. Finally, a north-south connection would ensure that the County would have one north-south roadway under its authority. The northern section of Bombing Range Road is presently controlled by the U.S. Navy. With the possibility of a military training facility being constructed on the Boardman Bombing Range, as was revealed to the County while the 2005 TSP was being prepared, concerns were raised over the potential for Bombing Range Road to be closed. While the military has expressed no desire to close Bombing Range Road, that possibility remains.


Ancillary Transportation Plans
Figure 3-2
Irrigon
US 730 Corridor
Refinement Plan
Port of Morrow
Interchange Area Management Plan
I-84/US 730
Interchange Area Management Plan
Boardman
0 0.5 1 2 Miles

The second north/south route has historically been referred to as Ione-Boardman Road. The County has acquired a dedicated right-of-way that would allow construction of a road (Tower Road Extension) connecting the southern end of Tower Road to Highway 74 near Cecil, which would be useful for the western mid-County area. However, this indirect alignment would not fully meet the need for a second north-south connection.

The existing impediments to transferring Bombing Range Road to the county magnify the importance of the Ione-Boardman Road as a second north-south connection. However, there are also impediments to constructing the Ione-Boardman Road. Throughout the 1980's and 1990's Morrow County participated in negotiations with the State of Oregon and major property owners, including the Boeing Agri-Industrial Company and Threemile Canyon Farms, to secure right-of-way for an Ione-Boardman Road by extending Ella Road north to Boardman. This effort was hampered by a 2001 Multi-Species Candidate Conservation agreement with Assurances (MSCCAA) for the Washington ground squirrel, ferruginous hawk, loggerhead shrike, and sage sparrow, in the event any or all of these species are listed in the future endangered or threatened.

The 2001 MSCCAA was researched in the May 11, 2005, Federal Register as part of the 2005 TSP. The Federal Register states in part: "The majority of existing colonies [of Washington ground squirrel] (in Oregon and throughout the species' current range) are located on the Boardman Bombing Range and the Boeing tract, which contain the largest contiguous suitable Washington ground squirrel habitat. Although Boardman Bombing Range activities are not certain, they are not expected to change significantly in the foreseeable future."

The major military training facility now in the initial stages of planning by the Oregon National Guard would certainly significantly change activities on the Boardman Bombing Range in the foreseeable future. This information is not addressed by the May 2005 Federal Register or the 2001 MSCCAA. The Oregon National Guard's plans for a military training facility on the Boardman Bombing Range create both an opportunity and an obligation to revisit the 2001 MSCCAA and the ability to construct an Ione-Boardman connection. Action steps to assist the County in pursuing this issue further are included in the 2005 TSP implementation program.

Capacity

Indications are that capacity-related issues on the County's roadway system are few. The one exception is roadways developed within the Port of Morrow's industrial parks, which will be required to serve increasing industrial development. These capacity issues are addressed in the IAMPs discussed earlier.

Economic Development

The most significant transportation system needs beyond maintenance are economic development requirements created in the Port of Morrow industrial parks. As industrial development continues in the Port, roadway expansion will be needed to accommodate increased vehicle capacity, turning movements, and increased weight load requirements. A list of projects created by anticipated economic development requirements is generated in Chapter 4 and screened in Chapter 5.

Buildable Lands

Morrow County has significant tracts of buildable lands both within and just beyond the Boardman and Irrigon UGBs. The areas outside the UGBs are zoned rural residential and farm residential, zoning designations intended to recognize the existence of smaller lots outside of UGBs and allow continuation of single family dwellings in areas where this development has been established. However, when the County increased the minimum lot area for residential development outside the UGB from 1 to 2 acres in 2000 to reflect official state policy discouraging development of smaller lots in rural areas, the potential development on these parcels was substantially reduced.

Other buildable lands are located south of Irrigon in the Division Street-4th Road area and west of Irrigon, north of U.S. 730. Buildable lands also are located south of the Boardman city limits, between Tower Road and Bombing Range Road. A portion of these lands is zoned farm residential, allowing 2-acre-minimum sized lots to be developed. The balance is zoned small farm 40.

These areas illustrate the need to develop minimum requirements for the creation of new county roads as development occurs. These new roadways should be built at intervals that meet Morrow County standards for block length. Requirements of this TSP suggest not more than 600 feet of roadway be developed in this area without interconnecting roadways. With a 2-acre-minimum parcel size for residential development, density will be very low. Local road standards are expected to be adequate for new internal roadways in these buildable lands. Actual roadway locations will be refined through the site development process.

In addition, access management is a critical issue, especially along U.S. 730, where standards are established for minimum spacing and new connections. The U.S. 730 corridor refinement plan provides access management standards and identifies improvements for the Morrow County segment of the highway. Standards presented in Chapter 6 recommend a minimum distance between connections for roads and highways elsewhere in the county.

TRANSPORTATION FACILITIES

This section describes the components of the transportation system within the county. These include roadways, pedestrian, bicycle, equestrian, transit, rail, air, and other transportation facilities.

Roadway System

As an agricultural area, Morrow County is especially dependent on its roadway system. The system is in good condition overall and currently functions generally well. Existing traffic volumes are relatively low, and existing delay is typically low. Outside of urban areas, the system is geared toward moving small numbers of vehicles over long distances. Five state highways, including I-84, serve the county. Hundreds of miles of county roads, ranging from paved two-lane roads to narrow gravel roads, provide access between the state highways. This report describes and evaluates only roads currently classified or recommended to be classified as arterials or collectors.

Roadways in the county fall under the jurisdiction of Morrow County, ODOT, and the cities within the county. There are also numerous private roads, with significant facilities falling under the administration of the Port of Morrow. As discussed earlier, a significant portion of the Bombing Range Road is on land owned by the U.S. Navy with the county having limited authority granted via an easement.

State Highways

State highways are the backbone of Morrow County's roadway system. They are used for virtually all of the through traffic in the county, and connect the cities and other population centers. State highway facilities in and near Morrow County are summarized in Table 3-3.

Morrow County is connected to the federal interstate highway system via I-84, which parallels the Columbia River in the north end of the county. I-84 links the county to I-5 to the west through Portland, and to I-80 and I-15 to the south and east through the Boise, Idaho, and Salt Lake City, Utah, areas. Using the ODOT name and number classification, I-84 west of the junction with U.S. 730 is called Columbia River Highway No.2, and east of the U.S. 730 junction, Old Oregon Trail No. 6. Nearby I-82 links Morrow County to the Tri-Cities, Washington, across the Columbia River via the Umatilla Bridge.

Table 3-3.
State Highways Serving Morrow County

State Highway Designation	Location Served	Highway Category
I-84 (Columbia River Highway State Highway No. 2)	West of U.S. 730 through Boardman to Gilliam County, to I-5 and Portland.	Interstate Highway
I-84 (Old Oregon Trail State Highway No. 6)	East of U.S. 730 to Umatilla County, to I-80 and I-15, Boise and Salt Lake City.	Interstate Highway
U.S. 730 (Columbia River Highway State Highway No. 2)	From I-84, east through Irrigon to Umatilla County.	Regional Highway
OR 74 (Heppner Highway State Highway No. 52)	From I-84, southeast through Cecil, Morgan, Ione, Lexington, Heppner, and Lena and Umatilla County.	District Highway
OR 207 (Lexington-Echo Highway State Highway No. 320)	From Lexington northeast to Umatilla County.	Regional Highway
OR 207 (Heppner-Spray Highway State Highway No. 321)	From Ruggs, south through Hardman to Wheeler County.	Regional Highway
OR 206 (Wasco-Heppner Highway State Highway No. 300)	East from Gilliam County through Ruggs to Heppner.	District Highway
Reference: ODOT (2004)		

Other state highways within the county are, from highest to lowest traffic volumes, U.S. 730 (Columbia River Highway No.2), which serves Irrigon and the Port of Morrow, and links I-84 and I-82 at Umatilla; OR 74 (Heppner Highway No. 52), which crosses the middle of the county from east to west, serving Ione, Lexington, and Heppner; OR 207, which crosses the county from north to south and is called the Lexington-Echo Highway No. 320 north of Lexington and the Heppner-Spray Highway No. 300 south of Ruggs; and OR 206 (Wasco-Heppner Highway No. 300) an east-west route terminating in Heppner.

While the 2005 Morrow County TSP was being prepared, the Oregon National Guard announced plans to create a major military training facility at the Boardman Bombing Range in north county. At the time this plan was prepared, the Oregon National Guard was evaluating several options, including rail barge and truck, for delivering heavy vehicles such as tanks to the bombing range. Any of these options could require improving the roadways serving the Bombing Range to meet load requirements. Analysis of roadway improvements to serve movement of both tanks and personnel for a tank training facility on the Bombing Range has not yet begun, as plans for the training facility are in the very early stages. Planning for improvements needed to accommodate this facility will need to continue beyond this TSP, and may require future TSP amendments, preparation of a Transportation Refinement Plan (TRP) for the area, or other appropriate instruments.

ODOT also classifies highways based on their function and use. Interstates provide a corridor between major cities for both auto and truck travel. I-84 is classified as an interstate highway. It originates in Portland, Oregon, and traverses the state east into Idaho. U.S. 730 and OR 207 are classified by ODOT as regional highways, linking adjacent counties and higher classification facilities. OR 74 and OR 206 are district facilities, primarily providing circulation within Morrow County.

As of February 2011, ODOT designated pavement conditions on the majority of state highways within the County as good or very good. Fair pavement conditions were assigned to U.S. 730 between the Umatilla County Line and Irrigon, and to OR 74 north of Ione and OR 207 south of Hardman.

ODOT has assigned the following total-length restrictions (truck plus trailer) on OR 74, to accommodate the constraining geometry through horseshoe curve near Morgan:

- Truck-tractor and semitrailer with maximum trailer length of 48 feet: No limit on total length.
- Truck-tractor and semitrailer with maximum trailer length of 53 feet: 65 feet total length.
- Pickup truck and trailer with maximum trailer length of 53 feet: 65 feet total length.
- Doubles with no single trailer to exceed 40 feet, trailer combo not to exceed 68 feet: No limit on total length.

The maximum length allowed without district approval is 105 feet. The district may allow a longer load under special circumstances with specified traffic control.

County Roads

Morrow County has 1,063 miles of roads under its jurisdiction, including about 120 miles of unimproved (unpaved) roads. They connect the state highways and provide access to individual properties. The county has assigned a name, a road number, and a functional classification to each road.

The county maintains detailed records of roadway conditions by surface type. A majority of the paved county roads are classified as "good" or better, compared to half of the unpaved roads. For gravel roads, "very good" roads are passable under all weather conditions, "good" and "fair" roads are open year around, and "poor" roads are seasonal roads that are impassable during the winter months. Table 3-4 summarizes surface quality by type for county paved roads and all types and gravel farm-to-market roads.

Table 3-4. Surface Condition of Morrow County Paved and Gravel Roadways.			
Surface Type	**Classification**	**Number of Miles**	**Percent at Classification**
Paved	Excellent	46.72	14
	Very Good	22.01	6
	Good	119.61	35
	Fair	151.55	45
	Total:	***339.89***	***100***
Gravel (farm to market roads)	Very Good	29.36	5
	Good	270.76	45
	Fair	196.81	33
	Poor	103.58	17
	Total:	***600.51***	***100***
Reference: Morrow County Public Works			

Construction projects in the latest statewide transportation improvement program (STIP) are shown in Table 3-5. These projects represent the county's major roadway and bridge construction projects over the next 3 years. These projects are funded through a combination of public and private sources. Table 3-5 includes projects on the 2010-2013 proposed STIPs, and the OTIA III Bridge Delivery Program.

Table 3-5. Programmed Improvements in Morrow County.					
Project Key	**Program Year**	**Program**	**Project Description**		**Amount**
n/a	n/a	OTIA III	I-84 Irrigon Junction	Repair eastbound, westbound bridges	$9,800,000
17208	2010	2010-2013 STIP	Heppner snow fence		76,000
15988	2010	2010-2013 STIP	Morrow Multmodal Rrail Logistics Center		7.927,000
17140	2011	2010-2013 STIP	OR 207 Corridor Section Improvements Phase II		500,000
16775	2011	2010-2013 STIP	Morrow multimodal Rail Logistics Center (POM)		2,000,000
16794	2011	2010-2013 STIP	Port of Morrow Access improvements		10,800,000

Table 3-5. Programmed Improvements in Morrow County.					
Project Key	**Program Year**	**Program**	**Project Description**		**Amount**
16790	2012	2010-2013 STIP	Drainage/Slope and Pedestrian Improvements (Heppner)		1,520,000
16797	2013	2010-2013 STIP	Barratt Blvd. Reconstruction (Heppner)		1,480,000
16052	2013	2010-2013 STIP	Sperry St./Willow Creek Bridge #49811		807,000
Reference: ODOT Approved 2010-2013 Statewide Transportation Improvement Program					

Functional Classifications

The County's roadways are classified according to the function of each within the system. Functional classifications are shown in Figure 3-1. The county uses the following classifications based on the traffic load on a road or street and the origin and destination of the traffic:

- Rural Arterial I - Five-Lane Standard
- Rural Arterial I
- Rural Arterial II
- Rural Collector I
- Rural Collector II
- Rural Collector III
- Rural Access I
- Rural Access II
- Rural Gravel

Arterials carry the highest volumes of traffic within the roadway system, provide facilities for through traffic, provide connections within the system for traffic using other classifications of roadways, and link high-volume destinations and land uses such as major employers or larger commercial centers. Arterials are divided into categories based on average daily traffic volume(ADT) values.

Collectors connect traffic from access roads to arterials. They can be used for through trips, or can serve as the origin or destination of trips. Collectors are divided into three categories, also based on ADT volumes.

Rural access roads are low volume, usually less than 200 vehicles per day. They usually serve as the origin or destination of vehicle trips. They also can be used as access roads within residential developments.

A Rural Gravel classification is included to provide a more versatile functional classification in the TSP for gravel roads in the county. In rural areas, gravel roads serve as local, collector, or arterial facilities. The Rural Access II gravel surface standard is available for local roads.

Road Standards

Road standards provide design guidelines for the physical characteristics of roads, including size and materials used. Each road classification has a specific standard associated with it. Some of the items included in standards are listed below.

- Roadway width, including lane width, shoulder width, and parking accommodations.
- Pedestrian, bicycle, and equestrian accommodations.
- Drainage features, such as ditches or curbs and gutters.
- Surface and base materials, including both material type and thickness.
- Right-of-way requirements.

Many variables must be taken into account when determining appropriate road standards. Some of these variables reflect engineering considerations necessary to ensure adequate strength and longevity, other reflect function and use. Some of the information used to determine standards includes the following items.

- Types of users, including passenger vehicles, trucks, non-motorized users, farm vehicles, and parked vehicles.
- Amount of traffic for each type of user.
- Site characteristics, including soil conditions, topography, and average annual rainfall.
- Community values regarding issues such as desire for sidewalks and parking, costs of improvements versus afford ability, and aesthetics.

Morrow County's road standards were developed with assistance of the 1997 and 2005 TACs and adopted as interim standards by the county court. Since the first TSP was issued, the county has also adopted both gravel and five-lane road standards. These standards are discussed in Chapter 6. Roadway cross sections are illustrated in Appendix A.

Because most county roads were constructed before adoption of the 1997 TSP, most roads do not meet these standards. Many are deficient in lane and shoulder width, and, in many cases, pavement thickness and base material also do not meet the new standards. The county employs a roadway inventory and maintenance program designed to maximize the effective use of available resources and gradually move toward adopted roadway standards.

Blue Mountain Scenic Byway

The Blue Mountain Scenic Byway was designated in 1989 under the National Scenic Byway Program. It stretches 130 miles from the Willow Creek intersection of Interstate 84 and State Highway 74 through Ione, Lexington and Heppner over county, state, and U.S. Forest Service (USFS) roads. From Heppner the Byway goes south along Willow Creek Road until it crosses into Umatilla County in the Umatilla National Forest. In 1997 the Byway achieved Oregon State Scenic Byway status through the efforts of the Umatilla National Forest Rural Community Assistance Program. The Byway is maintained by the ODOT Engineering Services Unit of Roadway Engineering. The Blue Mountain Scenic Byway Action Group (BAG), is a local organization that coordinates its efforts with ODOT to place signs and markers and to provide Byway travel services information brochures supporting the marketing, promotion, and development of the Byway. Four stops have been developed to promote the Byway, with a pull-off area, an informational kiosk, and rest room facilities. The stops are located on I-84 near the intersection with OR 74, near Cecil and Ione, and in Lexington.

Forest Highway Segments

In south Morrow County, where the county's rural nature is especially evident, a significant amount of USFS property exists. This area contains three designated federal forest highways.

- Forest Highway #32: Heppner-Spray Highway (a state highway) from the intersection with OR 207 east of Spray to the intersection with Sunflower Flat Road about 6 miles southeast of Hardman. It is maintained by ODOT.

- Forest Highway #109: Willow Creek Road (County Road #678) from the intersection with Highway 206/207 southeast of Heppner to the north boundary of the Umatilla National Forest and from there southeasterly 18 miles to the intersection with County Road #603 Cole Mine Hill/Ditch Creek Road. This forest highway is part of the Blue Mountain Scenic Byway.

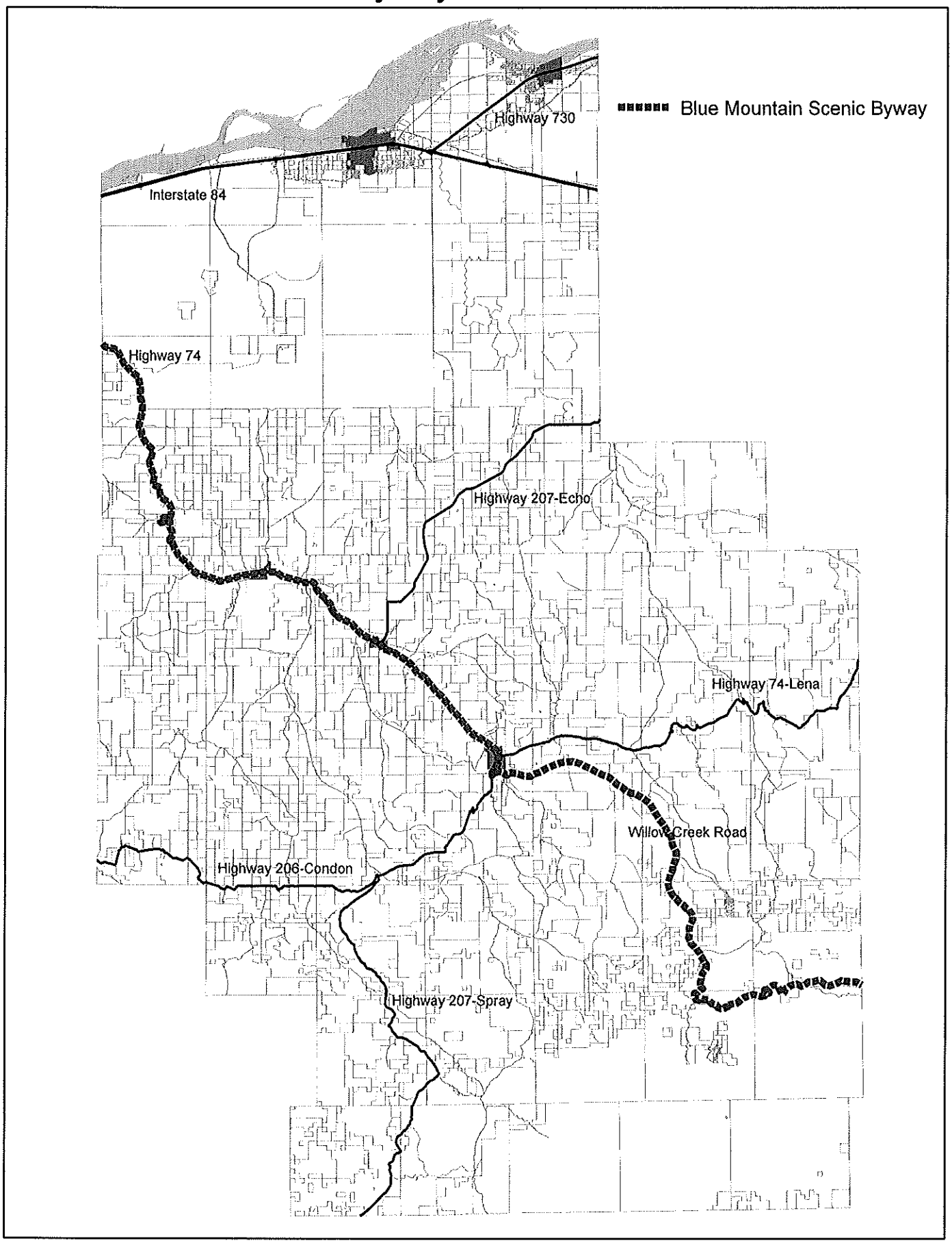
- Forest Highway #110: Starting from 1 mile west of Monument, it runs to the northwest for 20 miles along Top Road to Sunflower Flat Road at the Morrow-Grant County line, then northwest for 10 miles along Sunflower Flat Road to the intersection with OR 207 southeast of Hardman. Forest Highway 110 is entirely county-owned and maintained from the junction with OR 207 to the Morrow-Grant County line.

Forest Road Agreement Roads

Morrow County maintains an agreement with the USFS to maintain 16 forest roads in south Morrow County. The roads connect the forest road systems and funding is provided to the county to maintain access for traffic in all weather conditions.

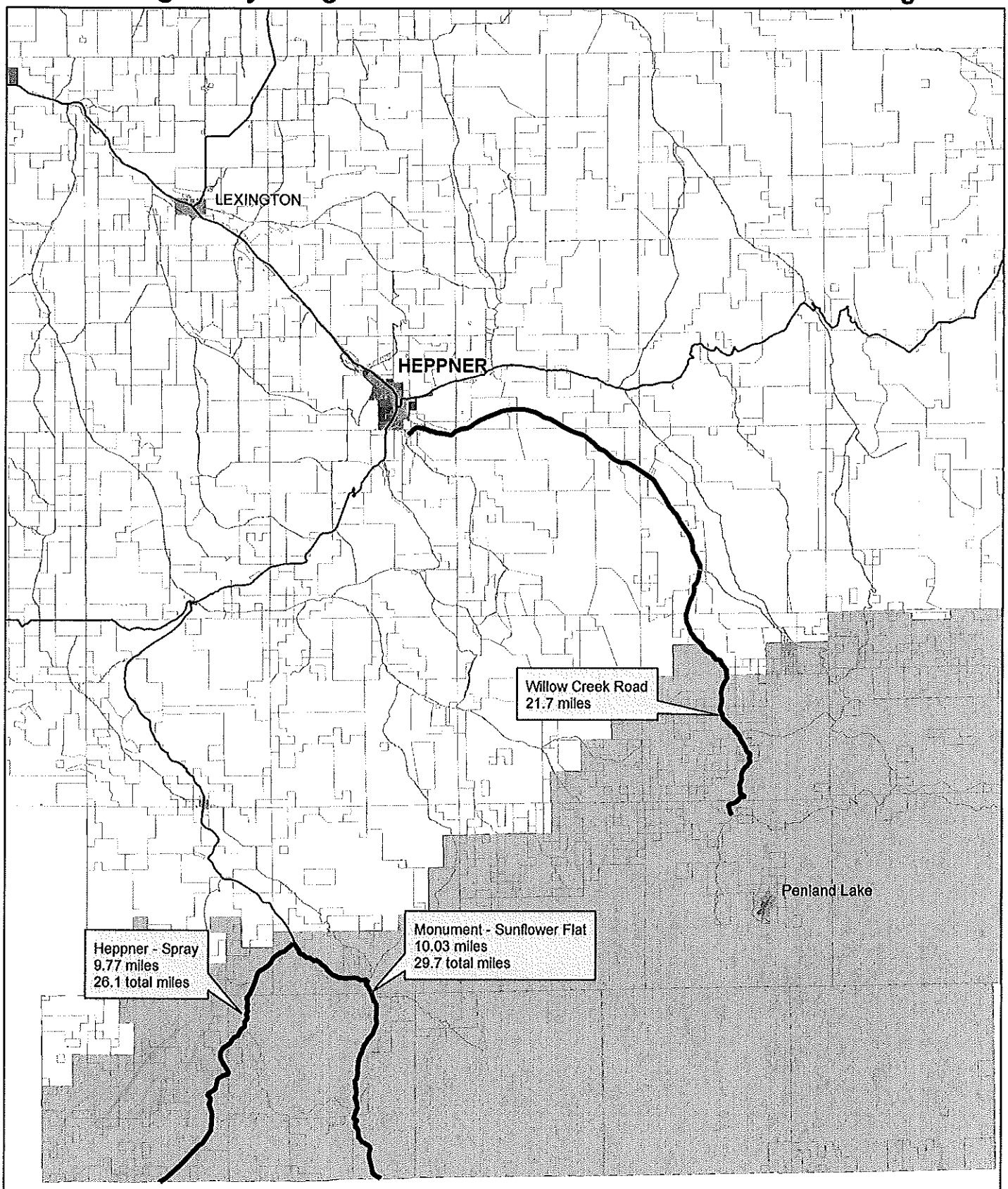
Blue Mountain Scenic Byway

Figure 3-3



Forest Highway Segments

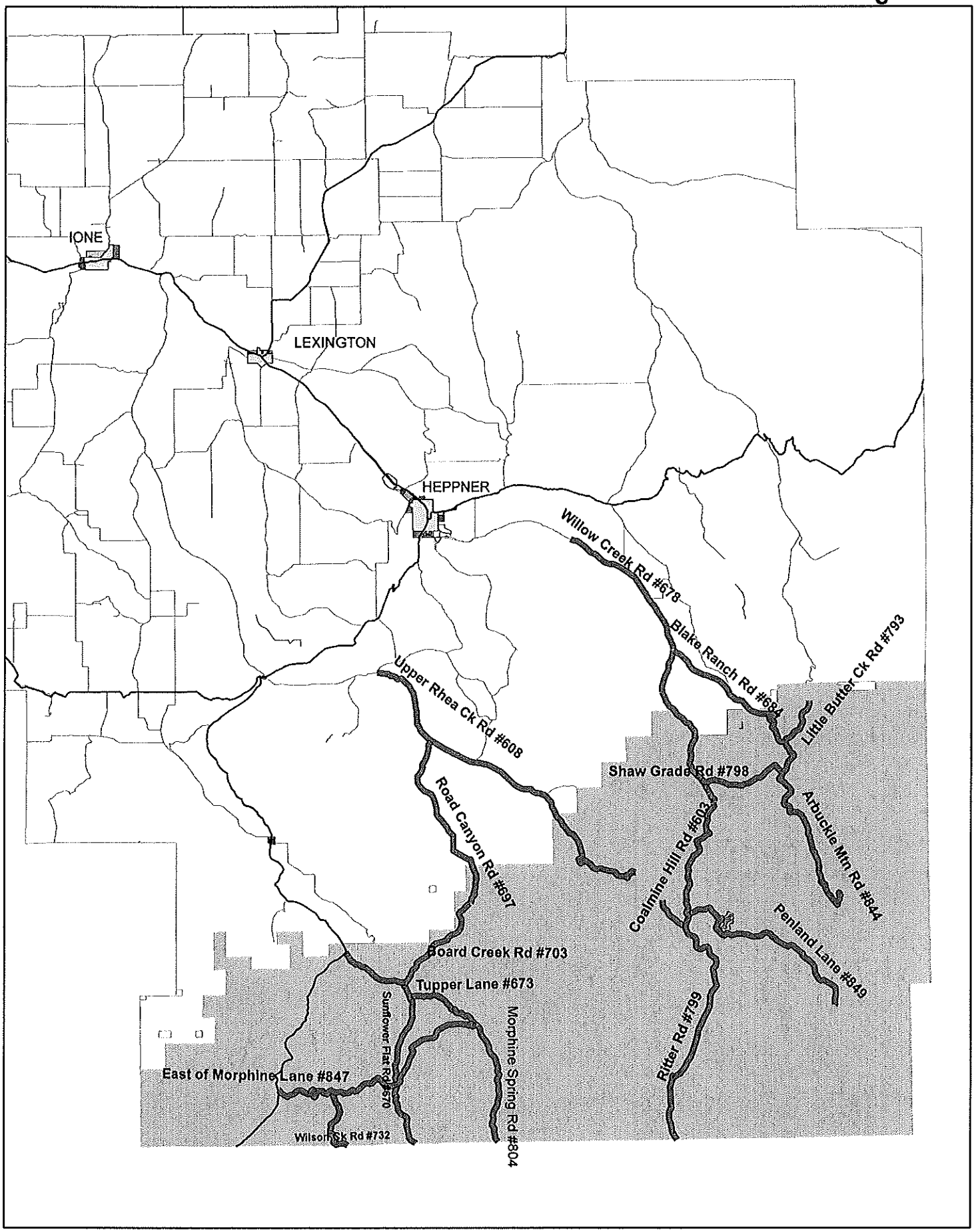
Figure 3-4



Heppner-Spray extends into Wheeler County
Monument-Sunflower Flat extends into Grant County

Forest Road Agreement Roads

Figure 3-5



Bridges

Bridges in Morrow County are inventoried biennially. The inventory rates bridges on a sufficiency scale that ranges from 0 to 100, with lower scores meaning worse conditions and higher scores indicating adequate conditions. Sufficiency scores for bridges in the National Bridge Inventory (NBI) database are translated to a qualitative ranking of not deficient, structurally deficient, or functionally obsolete. Of the 116 bridges in the county, 44 are county bridges, 11 are city bridges, 60 are ODOT bridges and 1 is a railroad bridge. Table 3-6 lists the bridges in the county rated as structurally deficient or functionally obsolete, and identifies bridges previously listed that have been repaired or replaced.

The Brenner Canyon Bridge in Morrow County was replaced under a project funded by OTIA I. Morrow County will benefit from OTIA III, the state's multibillion dollar transportation improvement program focusing on bridge replacement and repair along the state's primary and secondary freight routes. Repair of the I-84 Irrigon Junction interchange bridge is included in the tentative OTIA III project list as part of a multi-year, multimillion dollar "bundled" bridge improvement package along I-84 from the Irrigon Junction in Morrow County to Union County.

TABLE 3-6.
Existing Bridge Deficiencies.

Bridge No.	Owner	Description	Status Code
08885	ODOT	U.S. 730/USRS Canal	
49C05	County	Spring Hollow Road/Rhea Creek	Functionally Obsolete
49C12	County	Road Canyon Road/Rhea Creek Replaced 2008-2009	
08475	County	Willow Creek, Oley McNab Road	Structurally Deficient
49609	County	Willow Creek, Clarks Canyon Road	Structurally Deficient

Reference: ODOT 2010

Access Management

Access management is a set of strategies used to minimize the impact of turning movements caused by vehicles entering and exiting driveways and side streets. Control of these movements increases the speed and capacity of the major roadway and lowers the number of potential conflict points where accidents can occur.

ODOT has an extensive access management program, which is regulated by Oregon Administrative Rules Section 734-051. Through the adopted standards in OAR 734-051, ODOT controls access based on the type of facility, level of importance (state, regional, or district), and whether the facility is in an urban or rural area. This program, directed toward managing state facilities, has been used to protect access along state facilities and at interchanges.

The state access management standards apply to the development of all ODOT highway construction, reconstruction and modernization projects, and approach road and private road crossing permits, as well as all planning processes involving state highways, including corridor studies, refinement plans, state and local transportation system plans, and local comprehensive plans.

The standards do not retroactively apply to legal approach roads or private road crossings in effect before adoption of this Oregon Highway Plan, except or until any redevelopment, change of use, or highway construction, reconstruction, or modernization project affecting these legal approach roads or private road crossings occurs.

When in-fill development occurs, the goal is to meet the appropriate spacing standards. In some cases this may not be possible, in which case the goal becomes to improve the current conditions by moving in the direction of the spacing standards. Thus, in-fill development should not worsen current approach road spacing. This may involve such options as joint access.

In some cases, access will be allowed to a property at less than the designated spacing standards, but only where a right of access exists, that property does not have reasonable access, and the designated spacing cannot be accomplished. If possible, other options, such as joint access, should be considered.

If a property becomes landlocked (no reasonable access exists) because an approach road cannot be safely constructed and operated, and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. (Note: If a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT does not have responsibility for purchasing the property.)

Access within the influence area of existing or proposed interchanges also is regulated by the State of Oregon (OAR 734-051). Appendix FC includes current guidelines and illustrative figures for freeway and non-freeway interchanges with two-lane or multi-lane crossroads.

Morrow County relies on ODOT's adopted access management policies to control access on state highways. Access onto county facilities is controlled by using access management standards applied through the development review process and proposed access spacing standards described in this plan (see Chapter 6).

Crash History

Crash data was collected for state facilities within Morrow County from ODOT's published Highway Crash Tables. Table 3-7 summarizes the crash data by location and crash rates. These crash rates are shown as crashes per million miles traveled and are calculated using existing volumes, reported crashes and travel distances.

As expected the crash rates for the non-interstate highways are significantly higher than the interstate system. These non-interstate highway crash rates do exceed a 1.0 crash rate factor on many of these highway segments. Do to the low traffic volumes, these crash rates can vary significantly as they are very sensitive to the number of crashes.

US 730 is still planned for the safety improvement project, which is scheduled for construction in 2012. This project should result in a reduced crash rate for this segment of this highway.

Table 6 does show some significant crash rate increases when compared to the previous Table 6 from January 2000 through December 2002. However, as indicated earlier, do to the low traffic volumes on these highways, these crash rates are very sensitive to any increase in the number of crashes. Also, as before, the crash data shows no particular pattern on any one highway, which indicates the randomness of these crashes.

Table 3-7 Historic Crash Rates by Roadway Segment (Crashes per Million Vehicle Miles Traveled)			
Segment	Year 2007	Year 2008	Year 2009
I-84 west of US 730 (Mile Post 150.00 to 167.580)	0.11	0.12	0.28
I-84 east of US 730 (Mile Post 167.58 to 177.00)	0.25	0.17	0.21
US 730 north of I-84 (Mile Post 167.58 to 178.70)	1.15	0.75	1.45
OR 74 (Mile Post 9.00 to 67.20)	0.24	1.26	1.22
Highway 207 north of Lexington (Mile Post 1.00 to 19.38)	0.44	0.50	0.48
Highway 207 south of Ruggs (Mile Post 9.00 to 21.00)	3.80	1.08	0.00
OR 206 (Mile Post 57.99 to 83.30)	1.04	1.34	1.12
Reference 2009 ODOT Crash Data Table 2 – (Crash Rates averaged over segments)			

Crash data from January 2007 through December 2009 was also captured for all of the non-state highway facilities (County and City) within Morrow County. Table 3-8 summarizes the reported crashes by type, severity and by year. Over this 3 year period there was a total of 90 reported crashes, which is about double the amount shown (46 crashes) in the previous Morrow County Crash Report, which covered the years 2001 through 2003. The 2007 through 2009 data does include crashes reported for Cities as well. Of these 90 crashes, 63 crashes were reported on the County Roads, with 27 being reported within the cities. (Boardman- 20, Heppner – 4 and Irrigon – 3). As shown in Table 3-8, these 90 crashes resulted in 2 fatalities, 56 injuries to vehicle occupants and 54 property damage only incidents.

Also as seen in the Table 3-8, there were 24 fixed object crashes, 19 other type crashes (backing, sideswiping, miscellaneous), 14 non-collision crashes, 12 turning crashes, 11 angle crashes, 5 rear-end crashes, 3 head-on crashes, and 2 pedestrian crashes.

Per the summary data, of these 90 crashes, 61occurred during the daylight hours and 29 at night. In addition 74 occurred on dry surface conditions with 16 occurring on wet surfaces. Overall the number of crashes are up, however not at a level that would cause concern. Crashes are a random event and it is common to see fluctuations in these numbers.

Table 3-8

Crash Summary For All Non – State Roadways in Morrow County (January 2007 through December 2009)												
Crash Type	Fatalities			Injuries			Property Damage Only			**Total Crashes**		
	07	08	09	07	08	09	07	08	09	**07**	**08**	**09**
Head-On	0	0	1	0	0	0	2	0	0	**2**	**0**	**1**
Rear-End	0	0	0	1	2	1	1	0	1	**2**	**1**	**2**
Turning	0	0	0	0	2	0	4	2	4	**4**	**4**	**4**
Angle	0	0	0	2	1	7	2	3	2	**3**	**4**	**4**
Non Collision	0	0	1	1	4	4	1	3	2	**2**	**6**	**6**
Fixed Object	0	0	0	9	5	8	3	5	2	**6**	**10**	**8**
Pedestrian	0	0	0	0	1	1	-	-	-	**0**	**1**	**1**
Other	0	0	0	1	2	4	6	4	7	**7**	**5**	**7**
Total	0	0	2	14	17	25	19	17	18	**26**	**31**	**33**
Crash data Information is from Salem Traffic Data Unit - July 2011												

Existing Traffic Conditions

Morrow County's low population and large size result in low travel demand on most roadways. The 2003 ADTs for the state highways within the county are shown in Figure 3-4 and Figure 3-5, which is just the Boardman-Irrigon area of north county. Morrow County provided daily traffic counts on selected county roadways, which are also shown in Figure 3-4 and Figure 3-5. Existing daily volumes on the state facilities range from 13,800 ADT on I-84 west of U.S. 730, to less than 1,500 ADT on the rest of the county highways, most of which carry less than 500 ADT. The highest daily volumes on county facilities were counted on Tower Road (2,600 vehicles south of Kunze Lane, and 3,280 vehicles between Kunze and I-84); Paterson Ferry road (1,350 vehicles); Bombing Range Road (1,250 vehicles); and Wilson Road (1,060 vehicles). Existing volume-to-capacity ratios (V/C ratios) estimated for these roadways are low, with a maximum of 0.24 on Kunze Lane. Although limited traffic counts are available for county roads, it is reasonable to assume that with such low V/C ratios on the county roads known to carry the highest traffic volumes, existing capacity deficiencies on any county roadways are unlikely.

The performance of the transportation infrastructure (roadway and highway segments, intersections, freeways, freeway ramps, etc.) is typically analyzed for conditions representing the peak demand on the particular component of the transportation network. Generally, the weekday peak hour is analyzed. However, for state facilities, the peak period to be analyzed is required to be the peak 15 minutes of the 30th highest hour of the year (referred to as the 30th design hour volumes, or 30th DHV). Generally, if capacity (the maximum number of vehicles that can use a roadway in a given period) exceeds demand (the number of users actually using the roadway during that period), then the road is said to be operating adequately. When demand approaches capacity, traffic congestion occurs.

Traffic volumes are measured in several ways, but the most common for a rural area is *average daily traffic (ADT).* This is a measure of the average number of vehicles using a roadway in a 24-hour period. ADTs are usually measured by taking traffic counts over one or more weekdays, then averaging the totals. For the 2005 TSP, Morrow County Public Works provided 24-hour counts conducted on the primary roadways throughout the County. For state facilities,

ODOT publishes an annual summary of average daily traffic volumes on every state highway, called the Traffic Volume Tables. Data from the 2004 Traffic Volume Tables was used to estimate 30th DHV for analysis.

To estimate the 30th DHV for analysis of state facilities, hourly volumes are first adjusted to account for variations in flow over the hour, truck traffic, roadway conditions, and other factors. The resulting peak 15-minute passenger-car equivalent flow rate is compared to the facility capacity to determine the volume-to-capacity ratio, or v/c ratio, which can be compared to the state's v/c ratio thresholds, which are shown on Table 3-9.

TABLE 3-9
Volume-to-Capacity (v/c) Standards
for State Highways in Unincorporated Morrow County

Highway	Category	Maximum Peak Hour V/C Ratio	
		Inside UGB	Outside UGB
Interstate 84	Interstate	0.70	0.70
US 730	Regional Highway	0.75	0.70
OR 207	Regional Highway	0.75	0.70
OR 74	District Highway	0.80	0.75
OR 206	District Highway	0.80	0.75

REFERENCE: 1999 Oregon Highway Plan

ODOT operates one automatic traffic recorder (ATR) in Morrow County on OR 74 near Lexington, a location that is representative of traffic conditions across most of the county, and one on I-84 at Arlington just west of the county border. Published data from the Lexington ATR indicate that the ADT grew from 1994 to 1998, but has decreased since then such that ADT for 2003 remains about the same as it was in 1994. In 2009, traffic has decreased or remained the same as 2003, with the exception of traffic along I-84 near the Port of Morrow-U.S. 730, and Patterson Ferry Road interchange. Seasonal variation at the Lexington ATR is minimal, with all but January ADT volumes within 10 percent of the annual average. In addition to historical and seasonal traffic data, ATR's provided factors used to analyze v/c ratios, including 30th DHV, directional split, and percent truck traffic.

For I-84 and U.S. 730, values from the Arlington ATR were used for truck traffic (40 percent) and the 30th DHV factor (15 percent). For the other highways, Lexington ATR data were used for truck traffic (12 percent) and 30th DHV factor (11 percent). Conservative values were assumed for the other primary analysis variable, the peak hour factor (PHF), which reflects the variation in flow rates over the course of the hour. For analysis of existing conditions the PHF was assumed to be 0.80. For future conditions, when future travel demand growth is expected to smooth out the variation in demand over the course of the peak hour, a PHF of 0.85 was assumed for two-lane highways, and a PHF of 0.95 was assumed for I-84. Table 3-10 summarizes existing v/c ratios on state highways in Morrow County, based on these values. Based on estimated existing 30th DHV, the highways in Morrow County are operating well below maximum v/c thresholds.

TABLE 3-10 EXISTING 30TH HIGHEST HOUR VOLUME-TO-CAPACITY (V/C) RATIOS FOR STATE HIGHWAYS IN UNINCORPORATED MORROW COUNTY					
Highway/Location	**2003 ADT**	**2005 30th DHV**	**2005 30th DHV V/C Ratio**	**2009 ADT**	**2010 ADT**
I-84 Morrow-Gilliam County line	10,600	1,650	0.30	10,600	
I-84 west of Tower Road	10,900	1,700	0.31	10,900	
I-84 west of Port of Morrow interchange	13,800	2,150	0.40	15,000	
I-84 east of U.S. 730	11,700	1,850	0.34	13,100	
I-84 east of Paterson Ferry Road	12,400	2,060	0.38	13,300	
U.S. 730 west of Division Street	6,500	990	0.40	—	—
U.S. 730 east of Seventh Street	—	—	—	5,500	
OR 74 north of Morgan Road	150	20	0.01	110	
OR 74 Ione west city limits	240	30	0.02	240	
OR 74 east of Ione	740	90	0.02	730	
OR 74 east of Rhea Creek Road	600	80	0.02	620	
OR 207/74 at Lexington ATR	1,500	180	0.05	1,400	
OR 207/74 east of Little Butter Creek Road	180	20	0.01	120	
OR 206 at Morrow-Gilliam County Line	70	10	0.01	60	
OR 206 at south Heppner city limits	1,300	120	0.05	980	
OR 207 north of Tall Rock Road	310	30	0.02	180	
OR 207 south of Blue Mtn. Ranch Road	210	30	0.02	130	

Another way that traffic is measured is level of service (LOS). LOS is a measure of the operational performance of a roadway or intersection that is expressed as a report-card-style letter grade that ranges from LOS A (free flowing, minimal delay), to LOS F (long queues and delays and, for signalized or all-way-stop-controlled intersections, extreme congestions). The methodology for measuring LOS is documented in the *Highway Capacity Manual* (Transportation Research Board, 3rd Edition, 2000). The HCM is the industry standard for analyzing the operations of most types of transportation facilities. The HCM uses different methods for determining LOS based on the type of facility such as intersections, two-lane roadways, and limited-access freeways. For urban areas, the minimum acceptable LOS is usually set at LOS E. For rural areas such as Morrow County where less congestion is expected, minimum acceptable performance of LOS D is more appropriate. Roadway segments or intersections operating at LOS E or LOS F would be considered candidates for capacity and/or operational improvements. At three-legged or four-legged unsignalized

intersections, the LOS applies only to traffic turning from the major street or to traffic entering the major street from the side street. At these intersections, the through movement on the major street operates without any delay, so a poor LOS is not always indicative of a need for improvement.

Current intersection LOSs reported in the adopted TSPs of Boardman and Heppner are all in the acceptable LOS A or B range. As it is expected that existing intersection volumes are higher in the cities of Morrow County than the rural areas, it is reasonable to assume that intersection operations in the rural areas also are acceptable.

Connectivity

Connectivity is defined as the extent to which cars, bicyclists, or pedestrians can travel in a direct path toward their destination. Connectivity can be looked at both regionally or locally. Regionally, connectivity refers to the ability to travel between adjacent population centers. Morrow County has good connectivity of its major population center, with one major exception. The basic roadway system connects the population centers and provides adequate access to all parts of the county. Much of the land area of the county is divided into large tracts because it is farmed, forested, or incorporated into one of the two defense facilities. This decreases the need for extensive cross-circulation or connectivity beyond the basic system. The exception to this is a lack of a direct, county-controlled connection between Boardman and Ione, which also is discussed earlier in this chapter in the section addressing County Roadway safety.

Before World War II, a county-controlled connection existed. When the bombing range was established during the war, the existing road was appropriated as a part of the range. Although activity at the bombing range has decreased significantly, it has not been cleared of the potentially live munitions, thus it has not been possible to reestablish the road along the former alignment as a county facility, although Morrow County does maintain Bombing Range Road. As already noted, the Oregon National Guard is planning a major training facility for the Boardman Bombing Range, which could require improvements to the access roads including Bombing Range Road. However, the U.S. Navy controls Bombing Range Road and could decide to close it as a public facility, which would eliminate the only north-south connection between Boardman and Ione within the county. While the Navy has expressed no desire to close Bombing Range Road , it is a possibility. The county will continue to work with the Navy toward improving the terms of the easement for use of Bombing Range Road, with the ultimate goal of establishing a public right-of-way.

A potential second north-south route has historically been referred to as Ione-Boardman Road. The existing impediments to transferring Bombing Range Road to the county magnify the importance of Ione-Boardman Road as a second north-south connection. However, there are also impediments to constructing Ione-Boardman Road. The county has acquired a dedicated right of way that would allow construction of a road (Tower Road Extension) through property owned by Threemile Canyon Farms that would connect the southern end of Tower Road to Highway 74 near Cecil, which would be useful for the western mid-county area. However, this indirect alignment would not fully meet the need for a second north-south connection.

Street spacing requirements can help to develop connectivity on a local level in denser areas near urban centers. Ideally, streets in developed urban areas should not be spaced more than 1/4 mile apart, allowing for easy movement between origins and destinations. For example, areas with short blocks and through roads have high connectivity, and areas with many cul-de-sacs and few connections between roads have poor connectivity. Safety also is a key benefit of good connectivity, allowing multiple access routes for emergency service providers.

Connectivity with the unincorporated portions of the urban growth boundaries generally follows a 1/4-mile block length. In most cases, county roadways have been developed along these block boundaries, providing good system connectivity. Some areas, such as the unincorporated land south of Irrigon, lack roads along the land division boundaries, suggesting the need for additional connections within this area.

Connectivity in the open area of developable land is problematic. Large parcels exist south of U.S. 730, with only limited service from this major ODOT corridor. These concerns are addressed in the U.S. 730 Corridor Refinement Plan.

Another large tract of land with limited development potential is located west of Division Street and south of Irrigon. This block of property is bounded by Division Street on the east, Depot Lane on the south, and West 8th Road on the west. A small subdivision has previously been undertaken, which is serviced by Wagon Loop Road. Intervening land in this tract could be serviced by extension of 4th, 3rd, 2nd and 1st Streets, which are parallel to Division Street. Connectivity through extension of these streets is complicated because of the northeast-southeast right-of-way of the Bonneville Power Administration for power lines. This right-of-way is 400 feet wide north-south, creating a non-buildable area within this block of property. In addition, an irrigation canal crosses this tract from the northeast to the southwest near the intersection of Nevada Avenue and 1st Street. The County TSP makes recommendations for connectivity in this area.

Another parcel of land that is developable into two-acre tracts is located north of U.S. 730, east of 8th Street West and south of Idaho Avenue extended. Connectivity with this large parcel of land is at issue, as is an interconnection with South Main Avenue and U.S. 730.

Developable land also is located in the FR-2 zone west of Boardman. Issues of connectivity exist in accessing these parcels from Kunze and Wilson Roads, which run in an east-west direction through the area. The ultimate connection of this area to Tower Road also is at issue. Access from these parcels and throughout this unincorporated area west of Boardman can be addressed as improvements continue to occur at the Port of Morrow's airport (west of Tower Road) and through the potential extension of Tower Road to Ione.

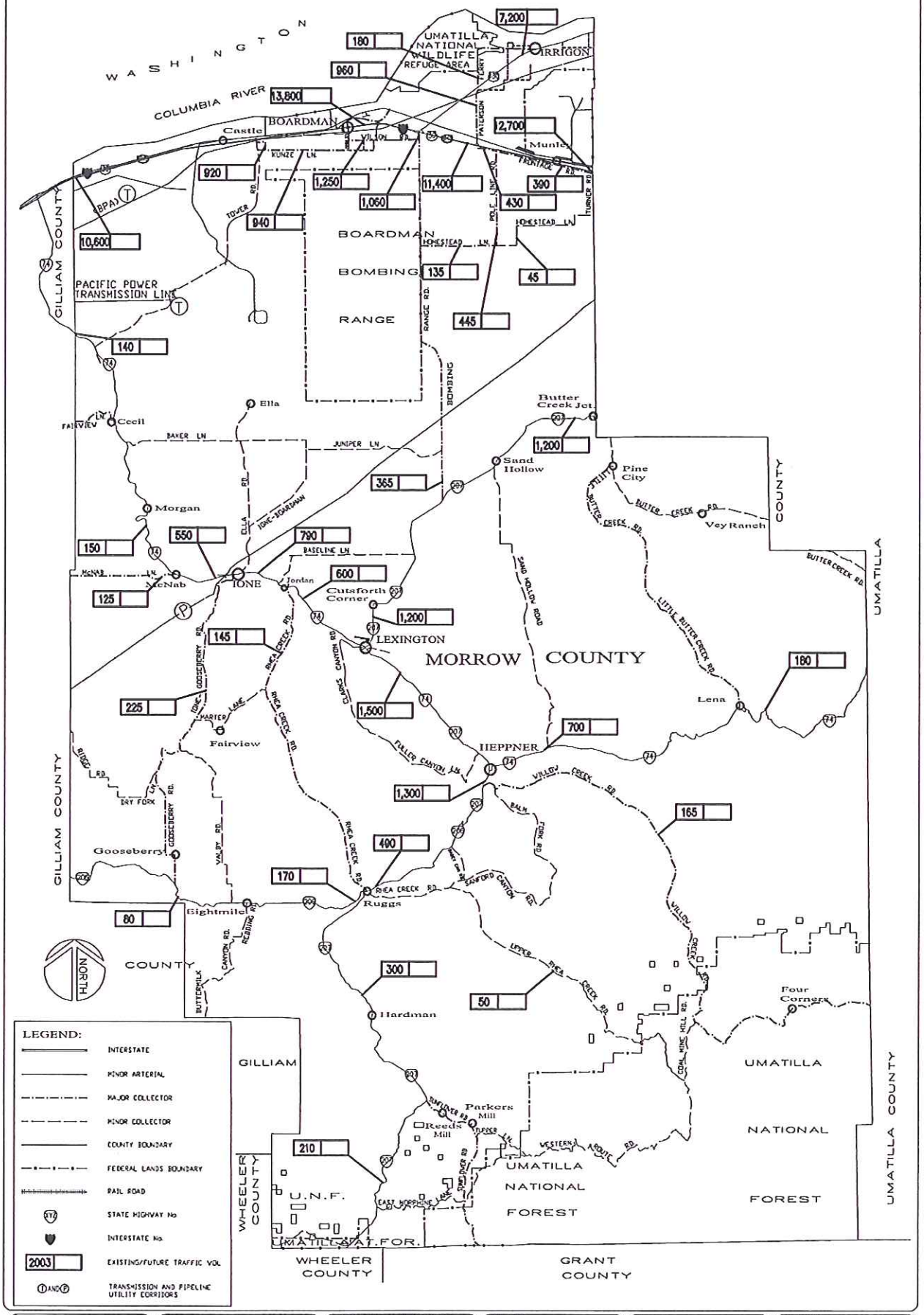
Block Lengths

The Transportation Planning Rule (TPR) requires that this TSP establish a block length in this TSP. The concept of block length is to limit the distance a roadway can extend without creation of interconnecting roadways. The purpose for a reasonable block length is to provide needed access as currently vacant land develops.

Where vacant land exists in large tracts and where surface features or other infrastructure also occur such as irrigation canals, freeways or railroads, it is difficult to establish a block length and interconnecting of streets. The other primary reason for establishing block length is to allow pedestrian and bicycle access in blocks that have a reasonable perimeter, approximately 1,500 feet, and for safety purposes (e.g., emergency vehicle access).

For the County TSP, block lengths are relevant generally only for areas within the UGBs. Block length standards are not appropriate for rural unincorporated areas. Undeveloped lands in the Irrigon and Boardman area in particular will benefit as development occurs if a block length standard is instituted as residential densities increase.

EXISTING TRAFFIC VOLUMES



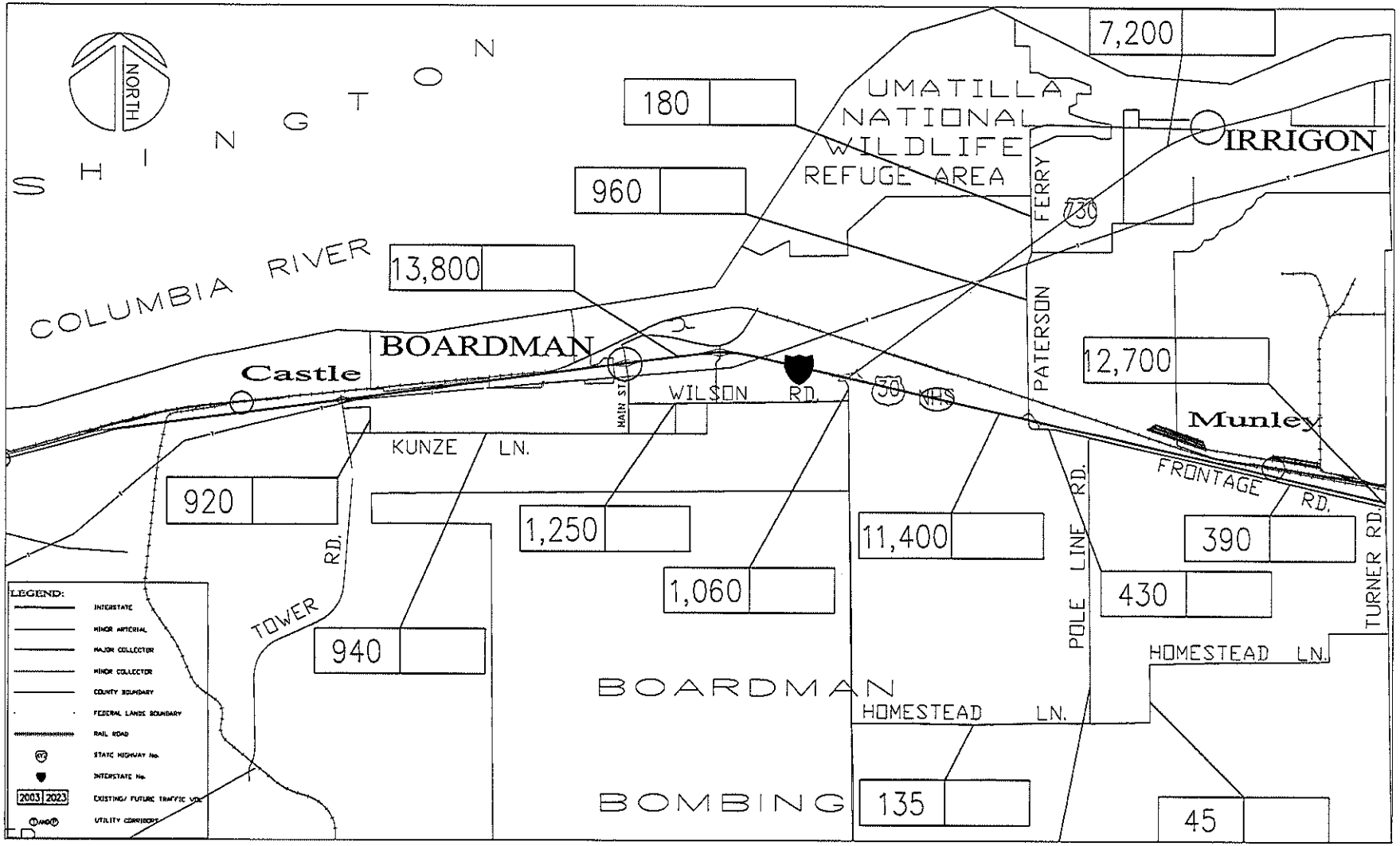
CTS Engineers — CIVIL TRANSPORTATION STRUCTURAL LAND SURVEYING

Figure No.: 3-6
EXISTING TRAFFIC VOLUMES (2004)

PROJECT: MORROW COUNTY TSP UPDATE

PREPARED FOR: ODOT/ MORROW COUNTY

BOARDMAN-PORT OF MORROW (EXISTING TRAFFIC VOLUMES)



PREPARED FOR: ODOT/ MORROW COUNTY

PROJECT: MORROW COUNTY TSP UPDATE

DRAWING TITLE: Figure No. 3-7 BOARDMAN-PORT OF MORROW EXISTING TRAFFIC VOLUMES(2004)

CTS TRANSPORTATION SERVICES, INC. LAND SURVEYING Engineers

CASE_FILE

Port of Morrow System

The Port of Morrow is one of a number of Oregon ports established under Oregon Administrative Rule (OAR). It owns, operates, finances, and develops facilities primarily of an industrial nature within the City of Boardman and areas of Morrow County. To provide the proper climate and resources for its numerous industrial customers, the Port is necessarily active in the development of the following:

- Industrial sites
- Transportation systems
- Utilities

It is important within this TSP to maintain flexibility for rapid expansion of transportation systems serving the Port's three industrial sites.

Industrial Sites

The Port of Morrow offers industrial building sites varying in size. These sites are an economical alternative and strategic to metropolitan area locations. The three industrial parks owned and operated by the Port are major generators of transportation activity with respect to access to I-84, rail access to union Pacific's east-west Columbia Gorge route, and barge transportation via the Columbia River. Because of their existing impact and potential growth, they will be discussed briefly in the following paragraphs.

Boardman Industrial Park and East Beach Industrial Park

The Boardman Industrial Park is home to Lamb-Weston's french fry plant, Oregon Potato's potato flake plant, Boardman Foods' onion processing facility, and Columbia River Processing's cheese plant. A number of additional plant sites up to several hundred acres in size are ready for additional facilities. In addition to these processing facilities, tens of thousands of tons of potato and onion storage facilities are also in place.

A fiber and seed processing cluster is also located at the Boardman site. Facilities include Oregon Hay Company, which processes alfalfa and other forage crops for export, and Cargill's grain terminal ships transporting Inland Empire wheat and Barenbrug U.S.A. grass seed worldwide. The East Beach Industrial Park, which saw development increase after the installation of the rail loop in 2005, is home to RDO/Calbee's potato processing plant, Pacific Ethanol's facility, and Vadata's data center, to name just a few.

Transportation facilities such as the Longview Fibre's chip reload facility and Tidewater Terminal's public container and chip reload docks are evident along the Columbia River in the Port's Boardman Industrial Park. Additional acres of industrially zoned land are available and ready for occupancy.

Airport Industrial Park

The Port owns a 2,700-acre Airport Industrial Park, which centers on a 100-foot wide, 4,200-foot long, Category 5 general aviation landing strip located near the intersection of I-84 and Tower Road. This general aviation strip is currently used by Portland General Electric and Lamb-Weston, among others. The Port is actively marketing the movement of goods and services via air from this airport facility. The Port resurfaced the asphalt runway in 2004.

Between 2001 and 2007 a number of land-use approvals were completed, paving the way for development by a major motor speedway on this site. Approximately 1,500 acres are identified for this potential development.

South Morrow Industrial Park

In the southern region of Morrow County is the South Morrow Industrial Park, site of the now closed Kinzua sawmill facility. The site, home to a power facility and Miller Manufacturing on the west side of the highway and offices on the east side, is zoned for industrial development. Highway 74/207, which bisects this facility, was improved to include turning lanes and is posted with a 45 mile per hour speed limit, both actions designed to preserve this portion of the highway transportation system.

Port Transportation Systems

The Port of Morrow is in the heart of the Pacific Northwest inland empire. It maintains critical transportation connections with the Columbia River barge lines, Union Pacific's main line, I-84 with east-west access, and US 730 with access north into Washington and beyond. With the accesses indicated, the Port of Morrow offers crucial transportation links to the Pacific Ocean and the continental United States. Beyond the current use of the Port's barge, rail, and highway system is the development of the port-owned general aviation facility for use in transportation of goods and services.

Columbia River Barges

Transportation via Columbia River barge is the most economical form provided by the Port. Cargo picked up by the Port of Morrow can be on oceangoing freighters at the Port of Portland within 24 hours. Tidewater Terminal at the Boardman Industrial Park within the Port of Morrow is the largest container terminal upriver from the Port of Portland. Additional dockage facilities handle wood chips, aggregate, solid waste transferred from Clark County, ethanol, and grain for transportation by Columbia River barge.

The Port of Morrow maintains about four miles of frontage on the Columbia River. Facilities include six docks, two berths 12 to 17 feet deep, and two overhead cranes with an approximate 200-ton capacity. Tidewater Barge Lines serves the Port of Morrow, with approximately 2,130 containers handled at the container dock each month. Approximately 50 percent of the goods shipped are for foreign markets, which are first shipped to Portland before leaving the country.

Rail Service

Union Pacific's transcontinental rail line passes through the Port of Morrow's Boardman Industrial Park. In addition, the Port is only 20 miles west from the Hinkle Classification Yard, which is the largest hump yard west of St. Louis, connecting lines north to Canada and south to California. Through the Hinkle facility, Port of Morrow goods and services can be shipped by rail in all directions.

In 2005 the Port of Morrow installed the first rail loop in the East Beach Industrial Park. Since then a number of new businesses have developed in that area and the Port continues to invest in rail infrastructure. Opened in 2011 is a siding which will support the current rail loop and facilitate more freight transfer activities. It is anticipated that rail will continue to be a major infrastructure component as the East Beach area continues to develop.

Interstate Highway Systems

The two Port of Morrow industrial park facilities in North Morrow County enjoy easy access to I-84. This is the main east-west interstate serving both Oregon and Washington along the Columbia River. National common carriers and local contract truck lines serve industrial park industries via I-84. In addition, east of the Port of Morrow approximately 12 miles is I-84's connection with I-82, which provides northbound service to Spokane, Seattle, and Canada.

Access to the Port's facilities after leaving I-84 is from Columbia Avenue, a two-lane road that provides adequate service to current customers. Significant portions of Columbia Avenue have a center turn lane and other portions, in particular the portion serving the East Beach Industrial Park, have been rebuilt.

To provide better connection within the Boardman and East Beach Industrial Parks two IAMPs have been completed leading to planned improvements at the interchanges, a new proposed intersection along US 730 and better circulation within the East Beach Industrial Park.

Port Aviation

A central feature of the Port of Morrow is the Airport Industrial Park, which features a 4,200-foot-long runway that was repaved and widened by 100 feet in 2004. Corporate jets and light general aviation aircraft use the airport's facility on a regular basis. As industrial clientele express increasing interest in the Airport Industrial Park, the Port will move to upgrade these facilities, increasing both the types of aircraft that can be served by this airport and the facilities that can locate within its boundaries.

Utilities

A significant attraction of the Port of Morrow's industrial park facilities are the types of utilities provided. These utilities have an indirect impact on transportation facilities serving the Port because their presence creates the potential for siting of clients with transportation impacts who will take advantage of these utilities. Two of these utilities that are clearly attractive to significant industrial clients are process steam and electricity.

Pedestrian, Bicycle, and Equestrian Facilities

In addition to the motor vehicles that use the transportation system, there are also non-motorized users, namely pedestrians, bicyclists, and equestrians. These users have different needs than motor vehicles due to differences in the speed and distances that they travel and the amount of protection they have and need. In rural areas like Morrow County, non-motorized users are sometimes provided with facilities designed specifically for their use, but are most often required to share the roadway with all users.

Non-motorized travelers use the transportation system for two main reasons: transportation, or getting from place to place, and recreation, which can include sight-seeing and exercise. Transportation users usually use non-motorized transportation, such as walking, biking, or riding, instead of driving. These trips tend to be shorter and are usually geared to a particular destination, such as a school, park, or commercial center, and tend to be in more densely populated areas. Recreation users usually choose to walk, bike, or ride for the experience. These trips can be short or long, ranging from a child riding a horse for exercise to a days-long bike trek. They may or may not involve a particular destination. They are often concentrated near other recreation sites, such as parks, or scenic vistas.

The Columbia River Heritage Trail (the Heritage Trail), extending from Umatilla County through Irrigon into Boardman and on to Quesnal Park when complete, serves as both a transportation and a recreation facility. It links two of the major cities in the county and its major employer, as well as providing access to the Columbia River shoreline and Umatilla Wildlife Refuge. The Heritage Trail alignment includes Columbia Lane in Irrigon and Columbia Boulevard in Boardman, and also old Highway 2, which is owned and operated by the county and limited to bicyclists and pedestrians. The Heritage Trail design standards call for 2-foot shoulders on each side of the road for the segments of the trail on paved roadways; 10-foot dedicated trails (subject to right-of-way availability) in "urban" areas (City of Boardman/Tower Road to City of Irrigon/Twelfth Street), and 10-foot dedicated off-street trails in the rural segments (west Morrow County line to Tower Road; USFW Umatilla Wildlife Refuge where not already paved; and through the ODFW Wildlife Area). The Heritage Trail is a unique asset for Morrow County's non-motorized transportation system, and this Plan promotes its continued development and additional local connections to the existing trail.

Pedestrian Facilities

Designated pedestrian facilities can be provided in several ways. In urban areas, these are usually sidewalks, but they can also be separated paths. Widened shoulders are often used by both pedestrians and bicyclists in rural areas. Morrow County's road standards include a provision for widened shoulders to be used by pedestrians and bicycles. The width of shoulder varies, with higher volume roads of higher classifications providing wider shoulders to offer more protection.

The bike/pedestrian facility is incorporated into the road standards and is based on density and cost effectiveness. A commonly accepted criterion is that pedestrian facilities should be provided throughout urban areas. If this criterion is used, sidewalks would be required within the urban growth boundaries surrounding Boardman and Irrigon, when consistent with the TSPs for the two cities.

Bicycle Facilities

Designated bicycle facilities can be provided in a variety of ways as well and are often available for use by other non-motorized users in addition to bicyclists. The most common types in urban areas are striped lanes on roadways, signed roadways (with the bicycles sharing the lane with motor vehicles), and separated paths. Rural facilities are usually paved shoulders, which are sometimes signed or marked. Morrow County's new road standards include a provision for widened shoulders to be used by bicycles and pedestrians. The width of shoulder varies, with higher volume roads of higher classifications providing wider shoulders to offer more protection.

Many of the relatively low-volume state highways and roadways in south Morrow County attract recreational bicyclists who share the roadway with motorists. Morrow County has hosted Cycle Oregon on multiple occasions. A bike path was recently constructed in Heppner along OR 74 to connect to the new community swimming pool.

Equestrian Facilities

Designated equestrian facilities are usually provided as unpaved, separated paths, although they can also be provided as multi-use paths that are shared by bicyclists and/or pedestrians. These are not usually located in very dense urban areas, as horses are not stabled there. Equestrians may also share roadways with motor vehicles in some circumstances. Equestrian

facilities are available at Cutsforth Park, the Morrow County Fairgrounds, and along portions of the Heritage Trail.

Transit and Para-Transit

There are three types of transit to consider in the TSP: public transit, which is supported by public funds for use by the general public; private transit, which is not funded by public funds; and para-transit, which provides services for the transportation-disadvantages population, including older adults, the physically challenged and low-income users.

Public Transit

There is no public transit service in Morrow County. The population and density of the County are currently too low to support a transit system. Given the lack of impacted travel corridors within the County, there is little demand for a public transit system at this time. Van-pool options are being implemented to support moving workers from population centers, preferably within the county, to job centers within the county.

Private Transit

Greyhound operates private transit bus lines throughout the United States. Greyhound has a daily route that travels through Morrow County, but does not have a scheduled stop in the county. For the bus to stop in Boardman, current operations require the passenger to flag the approaching bus and to pay the driver the fare. The nearest scheduled Greyhound stop is in Stanfield, 12 miles south of Hermiston on US 395, in Umatilla County. Service is provided to various cities along routes to Portland, Seattle, and Boise, where connections can be made to other destinations. Morrow County residents feel strongly that Greyhound should schedule additional stops in Boardman and a new stop in Irrigon to provide service to this portion of the County. At this time Morrow County also is served by Estrella Blanca, which has offices at the Greyhound terminal in Pasco, Washington, and provides daily service to Boardman. Estreilla Blanca also has daily stops in Hermiston in Umatilla County and Biggs in Sherman County.

Para-Transit

Transportation services to older adults and physically challenged residents of Morrow County are provided by Morrow County Special Transportation, a para-transit provider. Services provided include dial-a-ride services, client transportation, and medical transportation, all provided by volunteer drivers. The operation includes two buses in Heppner serving mid-county, and one bus in Boardman and Irrigon. Three cars are also available in the communities of Heppner, Irrigon and Boardman for the eligible population to make longer trips. In mid-county, one of the buses is reserved for transportation to and from medical appointments, with the other bus is used mostly for entertainment and shopping. As available, the STF buses also serve populations outside the target groups. Operations are funded through a grant from the Public Transit Division of ODOT. Volunteer drivers are trained and administrative records maintained by the CAPECO in Pendleton. Local services are coordinated by local volunteers in the communities of Heppner, Boardman and Irrigon.

Rail Facilities

Rail services within Morrow County include both freight and passenger services. Rail transportation has historically been, and continues to be, an important avenue for moving goods within the region.

Rail Freight Facilities

Rail freight services are provided to businesses in Morrow County by the Union Pacific Railroad: from their main line, which parallels I-84. Multiple spurs extend from this line: one serving the coal-fired gas plant and another serving the Umatilla Ordinance Depot.

In fact, The Union Pacific main line running east-west through the Columbia River Gorge runs through the Boardman Industrial Park, owned by the Port of Morrow. Through this connection, the Port is able to transport its goods either to the Port of Portland or east into the continental United States.

The Hinkle Classification Yard, located 20 miles east of the Port of Morrow (near Hermiston, Oregon), is the largest hump yard west of St. Louis. Through use of this facility, the Port is able to access rail lines leading north into Canada and south into California. The Port is effectively able to use rail service because of the Hinkle hump yard to send its products in many different directions.

Passenger Rail Facilities

There has been no passenger rail service in Morrow County since the mid-1990s, when the Amtrak Pioneer line between Salt Lake City, Utah and Portland, Oregon stopped operating. Loss of this line not only removed service from Morrow County, but also from a regional perspective, deleted service east to Salt Lake City. Amtrak does provide service between Portland and Spokane on its Empire Builder line. Morrow County residents must go to the Tri-Cities, the closest stop, to use this service.

Airport Facilities

Two public airports exist in Morrow County currently limited to private aircraft. They include the Lexington-Morrow County airport and the Port of Morrow airport west of Boardman. The closest public air service is located in Pendleton, Oregon. Depending on the growth of Morrow County, opportunities exist to expand the Port of Morrow's airport facility to provide public air transportation service.

Lexington-Morrow County Airport

Morrow County owns and operates the Lexington-Morrow County airport facility. This airport is located one mile northwest of Lexington and is currently the largest airstrip in the County. It serves as the base for approximately 14 aircraft. Combined local and transient activity is about 85 operations weekly. The airport offers a single paved runway which is 4,150 feet in length, with a parallel taxiway. Fueling capacity is available on site at the airport. An Automated Weather Observation System (AWOS) also has been installed.

The Airport Layout Plan for the Lexington-Morrow County Airport, acknowledged by DLCD in 2002, defines how the airport is planned to be used over the next two decades. The Air Industrial Zone identified in the Airport Layout Plan has been applied as n overlay zone in the Morrow County Zoning Ordinance. Copies of the Airport Layout Plan are available at the County Public Works Department.

Plans for the Lexington-Morrow County Airport for period of this TSP include updating the master plan in 2012, conducting environmental work and preparing a preliminary design for a partial parallel taxiway in 2015, and constructing the taxiway in 2016.

Port of Morrow Airport Facility

The Port of Morrow purchased what was previously known as the Boardman airport. This facility offers a 4,200-foot long paved runway. This runway was designed to offer takeoff and landing capability for heavy bombers and commercial passenger/cargo jets, but current use is corporate jets and light general aviation aircraft.

After acquiring the airport, the Port of Morrow developed an Airport Industrial Park centering on the 100-foot wide, 4,200-foot long landing strip. Industrial sites are available for facilities that would benefit from the capabilities of the airport as well as the general services provided by the Port of Morrow. Sufficient land exists at the Port's Airport Industrial Park to extend the runway and to offer a full range of aviation services depending on the need of future industrial, commercial, or public clientele.

In Chapters 5 and 6, Port of Morrow improvements to the Airport Industrial Park are indicated, focusing on improved access for ground transportation services. Also to be considered are the actions approving a major motor speedway and related uses at the Boardman Airport.

The Airport Layout Plan for the Port of Morrow Airport has been acknowledged. The Airport is currently zoned Air/Industrial for land use purposes. Copies of the Airport Layout Plan are available from the Port of Morrow.

Utilities

Morrow County has several utility corridors, including the Old Columbia River Highway, which runs through the Umatilla Wildlife Refuge; various natural gas pipelines; a BPA power line that runs through the county generally parallel and south of I-84 and U.S. 730; a Pacific Power transmission line extending from the northwest corner of the County into Gilliam County; and a fiber optic line is located along several County roads and State highways, serving all five communities in Morrow County. A pipeline transporting natural gas runs across Morrow County. The PGT Pipeline enters Morrow County near the southeast corner of the county, travels near Ione, and continues to the northeast to the Morrow-Umatilla county line. Along Highway 74 from I-84 to Heppner, there is an abandoned railroad line. When the railroad abandoned the rail line they retained a perpetual easement for utilities. Installation of a pipeline connection to Heppner has been discussed. No other future expansion or major modifications are expected within Morrow County. The U.S. Navy's control of Bombing Range Road creates a deficiency for utility placement because the county does not control the right of way.

There is consensus that growing utility development in Morrow County necessitates the implementation of utility master plan separate from this TSP.

Other Transportation

Trucking Lines

There are numerous independent trucking lines serving the county's main industries: agriculture, logging, and various light industries. Several trucking firms also operate in Morrow County to haul refuse from the Port to area landfills. The county's Solid Waste Management Plan proposes truck routes for carriers of solid waste. The dairy industry in Morrow County has generated additional truck activity for the transport of raw milk and cheese. Much of the grain collected throughout the county is transported by trucks to the Morrow County Grain Growers' Association facility in Irrigon (via Patterson Ferry Road) and to the Port of Morrow.

School Bus Service

The Mid-Columbia Bus Service provides school bus service to all county public schools on a contract basis. There are over 25 buses serving the schools. These buses are in operation from 6:30 to 8:30 AM and from 2:00 to 5:00 PM, with some mid-day service. There are two major sources of potential problems for the bus service and these are split by geographic area: the condition of rural roads in the southern part of the county and the increasing volumes of traffic in the northern end of the county. The current condition of the roads in the county is good and does not inhibit bus operations. Stopping sight distance, bus pull-outs, and turnarounds are all adequate. The bus service reports a good working relationship with both the county and state road departments. When problems are detected, the county and state are quick to remedy the problem, and the County has helped in the widening of bus turnarounds and improved signage.

In the north end of the county, a grade school and high school are located on opposite sides of U.S. 730 in Irrigon. The heavy traffic on this highway hinders the provision of bus service in several ways, and has required development of a supplemental plan for bus service within the area near the schools normally not served by buses. Because there is not a safe location for school children to cross the highway, more children must use the buses instead of walking or riding bikes to school, which increases heavy vehicle traffic in the area. Also, the efficiency of routes is affected since buses typically are routed so that children are not required to cross the highway. Buses are also required to cross the highway several times during their normal routes and often incur long delays waiting for sufficient gaps in traffic, as there are no stoplights along the highway.

CHAPTER 4
FUTURE CONDITIONS

INTRODUCTION

This chapter forecasts the expected changes to the transportation system over the 20-year planning horizon. Future conditions expressed in this section represent the expected growth in population and travel demand based on the planned roadway system, and identify opportunities to improve that system.

FUTURE OPPORTUNITIES

Future growth and development in Morrow County an nearby areas will present opportunities for the county's transportation system. Projected growth in north Morrow County and west Umatilla County areas will increase employment activities significantly over the next 5 years. Increased employment will, in turn, increase the regional demand for housing and transportation facilities. Mitigating these impacts to the transportation system will create an opportunity for the county to upgrade the existing system.

Port of Morrow

The Port of Morrow has been developing industrial facilities in Morrow County for over 40 years and continues to be the most significant entity bringing jobs to Morrow County. Today, the Port has four established industrial parks with over 5,200 acres of available land: the Boardman and East Beach Industrial Parks, the Airport Industrial Park, and the south Morrow Industrial Park.

The Port of Morrow also is interested in or owns other sites in Morrow County and is actively seeking opportunities to increase industrial development. Many hundreds of jobs will likely be developed within the county over the 20-year time frame this study covers. Morrow County and the Port of Morrow have worked closely to identify opportunities to mitigate the impact of this development on the transportation system. To this end, the Port of Morrow has actively participated in preparing and maintaining the transportation system plan (TSP), and is an active partner with the county toward developing a freight and goods mobility strategy. This strategy is key to identifying future system needs based on increased industrial development.

A review of existing Port of Morrow development provides insight into future opportunities for growth in the region. For example, the Boardman Industrial Park has a thriving food processing park and includes the largest barge terminal on the Columbia River east of Portland. This facility currently ships alfalfa, grain, grass seed, aggregate, methanol, and wood chips. The East Beach Industrial Park, with its focus on rail improvements, provides continuing growth opportunities.

It should also be noted that the Port of Morrow airport has a jet-class runway that was recently extended to 4,200 feet. Together with industrial land surrounding the airfield, the potential for development at this site is excellent.

Most importantly, from the standpoint of future opportunities, the Port has developed a "can-do" attitude reinforced by facilities that are quickly able to be developed to meet a wide variety of demands. Within Morrow County, port facilities offer the greatest opportunity for sustained growth and job creation.

Morrow County

Within Morrow County, but outside of Port of Morrow lands, is the 20,000-acre Umatilla Army Depot. This depot spans the border between Morrow County and Umatilla County in the north county area between I-84 and U.S. 730. For nearly 40 years the U.S. Army stored nerve gas at this site, but in 1999 the EPA initiated cleanup activities using innovative technologies to speed up the project. The Depot represents a substantial development opportunity once cleanup activities are completed. The Local Reuse Authority, in 2010, finally took action and completed a reuse plan.

Another sizable opportunity exists at the Boardman Bombing Range. The U.S. Navy and the Oregon National Guard have initiated planning for expanded training activities at the Bombing Range. Should the concept go forward, it would involve concentrated activity on weekends and summer weekdays, with National Guard troops traveling to the Range from around Oregon. Substantial planning and engineering work will be necessary to remove unexploded munitions that remain on the site, and provide an adequate roadway system to accommodate heavy vehicle and personnel movement. Planning and engineering effort for the reuse of the Bombing Range may require future TSP amendments, preparation of a Transportation Refinement Plan (TRP), or other means appropriate to identify needed improvements and an implementation strategy.

FUTURE LAND USE AND POPULATION

Future Population

County population forecasts prepared by the Office of Economic Analysis (OEA) were reviewed to evaluate future population for Morrow County. For the 1997 TSP, OEA forecasts were found to underestimate long-term growth in Morrow County and were adjusted upward to be more realistic. OEA also certifies interim population estimates for Oregon's counties and incorporated cities for non-census years.

Table 4-1 shows the County's future population projections for the entire study period. Year 2030 population projections shown in Table 4-1 were estimated by applying the 2.5% annual growth rate determined by OEA for the 2000-2025 period to the 2010 census numbers for the County and its cities.

TABLE 4-1
FUTURE POPULATION DATA SUMMARY

Area of County	2010 Census Count	2030 Total	Change 2010-2030
Boardman	3,220	3381	161
Irrigon	1826	1917	91
Heppner	1291	1356	65
Ione	329	345	16
Lexington	238	250	12
Unincorporated Area	4958	5206	248
Total	11533	12455	922

FUTURE TRAVEL DEMAND

Future travel demand will increase as population grows and development occurs. Therefore, the future transportation demand is closely related to the forecasted increase in population in each region of the county. Adjustments to the population-based rates of growth in transportation demand were made to reflect the greater proportion of employment, medical and commercial services available in north county. In all, three different annual growth rates used to estimate 2030 daily traffic volumes. A 3.0- percent/year rate was assigned to the north county, 2.0 percent in mid-county from approximately Baker Lane to Willow Creek Road, and 1.0 percent per year in south county. These growth rates the State of Oregon's efforts to promote employment growth in rural counties are generally consistent with the adopted TSPs in the cities. ODOT prepares 20-year forecasts of average daily traffic (ADT) on all state highways, which are also used for projecting future travel demand. The projected 20-year growth rates were compared to the rates applied in this TSP:

- On I-84, projected average annual growth rates ranged from 1.9 percent near Boardman to 2.5 percent near the Port of Morrow interchange. These are generally consistent with the annual rate of 3.0 percent used in this TSP.

- On U.S. 730, projected annual growth rates ranged from 0.7 percent northeast of I-84 to 0.5 percent at the county line. These rates are much lower than the 3 percent annual rate used in this TSP, and underestimate potential growth in this area stemming from industrial development over the next two decades on Port of Morrow lands.

- On OR 207 from Lexington toward Umatilla County, projected growth rates ranged from 1.7 percent per year near Lexington to 3.8 percent at the county line. These are generally consistent with the 2 percent annual rate used in the TSP. With projected 2023 daily volumes less than 2,000 vehicles, a slight difference in the growth rate would have little effect on future traffic operations.

- On OR 206 south of Heppner, the projected growth rate of 0.9 percent per year is consistent with the 1% per year rate used in the TSP.

Figure 4-1 compares existing 2010 and projected 2030 daily traffic volumes throughout the County. As seen in the figure, the highest traffic growth is along the I-84 corridor near Boardman and at the Umatilla County border, where traffic volumes are expected to exceed 20,000 average daily trips (ADTs). Not surprisingly, the rural areas of the county are expected to see only modest growth over the next 20 years. Growth in travel demand is also expected to increase on county roads near urban areas such as 4th Street, Division Road, Columbia Avenue, and Bombing Range Road.

FUTURE TRANSPORTATION NEEDS

Volume-to-Capacity Ratio Performance

Roadway performance was evaluated using the volume to capacity (V/C) criteria described earlier. Future V/C ratios were calculated for existing and projected 2024 traffic volumes. Selected existing and projected future V/C ratios and daily volumes for the higher volume roadway segments in the county are shown in Table 4-2.

As seen in the table, most state highways are expected to operate with V/C ratios less than 0.50 through 2024. South county roadways are projected to gain only moderate traffic levels and will have minimal increases in their V/C ratios, projected to remain under 0.20 on state facilities. The highest volume corridors, which are along I-84, operate at acceptable conditions under both existing and future conditions. The only segment that approaches its v/c threshold is I-84 east of the Paterson Ferry interchange, where the estimated existing V/C ratio of 0.48 is projected to increase to 0.66.

TABLE 4-2
PROJECTED 2024 V/C RATIOS ON STATE HIGHWAYS

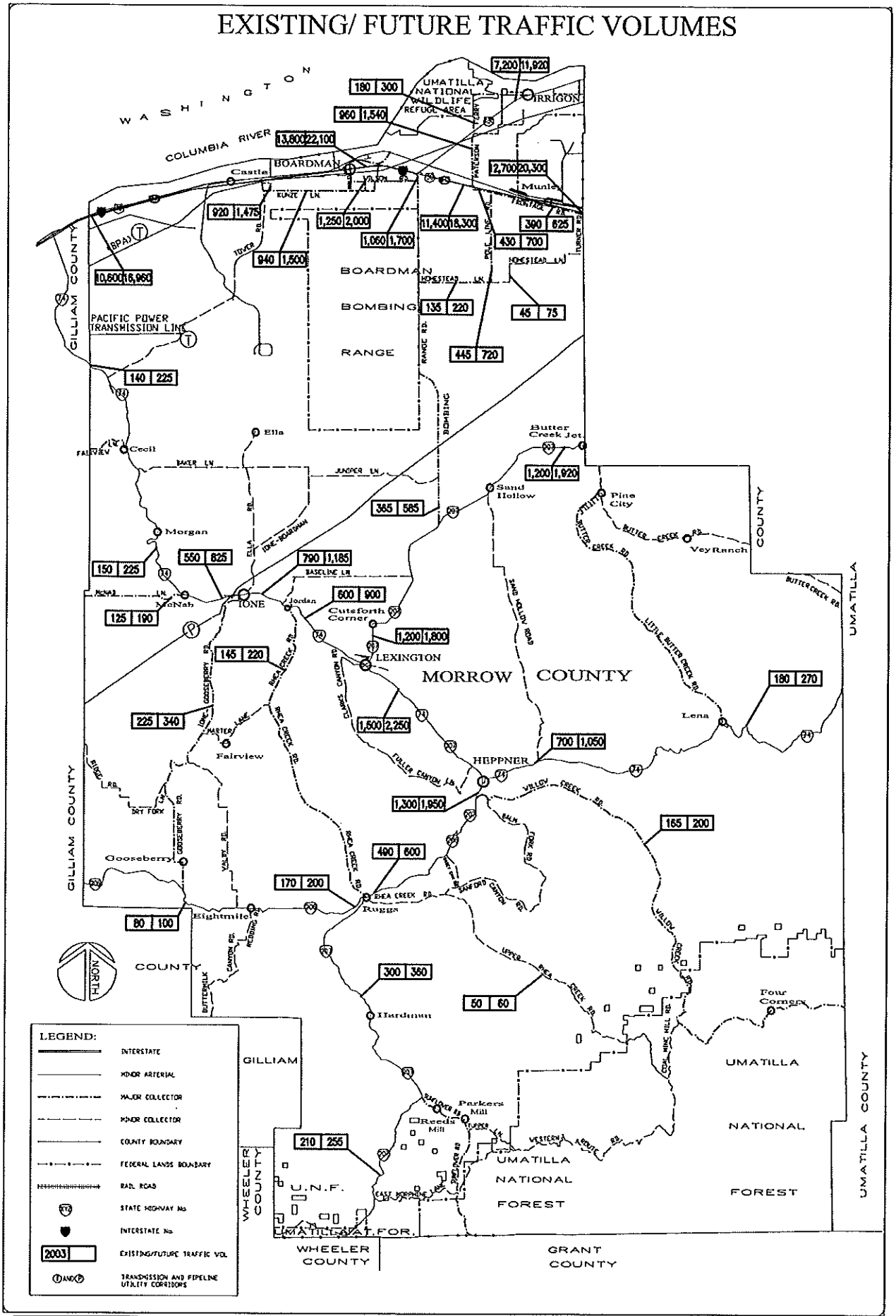
Highway/Location	2004 30th DHV	2004 30th DHV V/C Ratio	2024 30th DHV	2024 30th DHV V/C Ratio
I-84 Morrow-Gilliam County line	1,650	0.30	2,300	0.36
I-84 west of Tower Rd.	1,700	0.31	2,370	0.37
I-84 west of Port of Morrow interchange	2,150	0.40	3,010	0.47
I-84 east of US 730	1,850	0.34	2,860	0.44
I-84 east of Paterson Ferry Rd.	2,060	0.38	4,280	0.66
US 730 west of Division Street	990	0.40	1,160	0.47
OR 74 north of Morgan Rd.	20	0.01	30	0.02
OR 74 Ione west city limits	30	0.02	30	0.02
OR 74 east of Ione	90	0.02	120	0.03
OR 74 east of Rhea Creek Rd.	80	0.02	120	0.03
OR 207/74 at Lexington ATR	180	0.05	230	0.07
OR 207/74 east of Little Butter Creek Rd	20	0.01	20	0.01
OR 206 Morrow-Gilliam County line	10	0.01	10	0.01
OR 206 south of Heppner city limits	160	0.05	180	0.06
OR 207 north of Tall Rock Rd.	40	0.01	50	0.02
OR 207 south of Blue Mtn. Rd.	30	0.01	30	0.01

Morrow County's modest population and large size result in low travel demand on most County roadways. Estimated 2024 V/C ratios are at or above 0.10 include the following:

- Tower Road (2024 V/C of 0.38 between Kunze Lane and I-84);
- Paterson Ferry Road (2024 V/C of 0.16 north of I-84);
- Kunze Lane (2024 V/C of 0.10 at the west end);
- Bombing Range Road (2024 V/C of 0.11 near I-84); and
- Paterson Ferry Road (2024 V/C of 0.10 south of I-84).

All other measured ADTs indicate very low V/C ratios (LOS A), ranging between 0.01 and 0.09. The LOS standard for Morrow County is LOS D or better. LOS, which is based on peak hour volume, was not measured directly, but with estimated v/c ratios on county roads of 0.38 or less it is unlikely that levels of service exceed LOS D at any of the locations evaluated.

EXISTING/ FUTURE TRAFFIC VOLUMES



CTS Engineers — CIVIL TRANSPORTATION STRUCTURAL LAND SURVEYING

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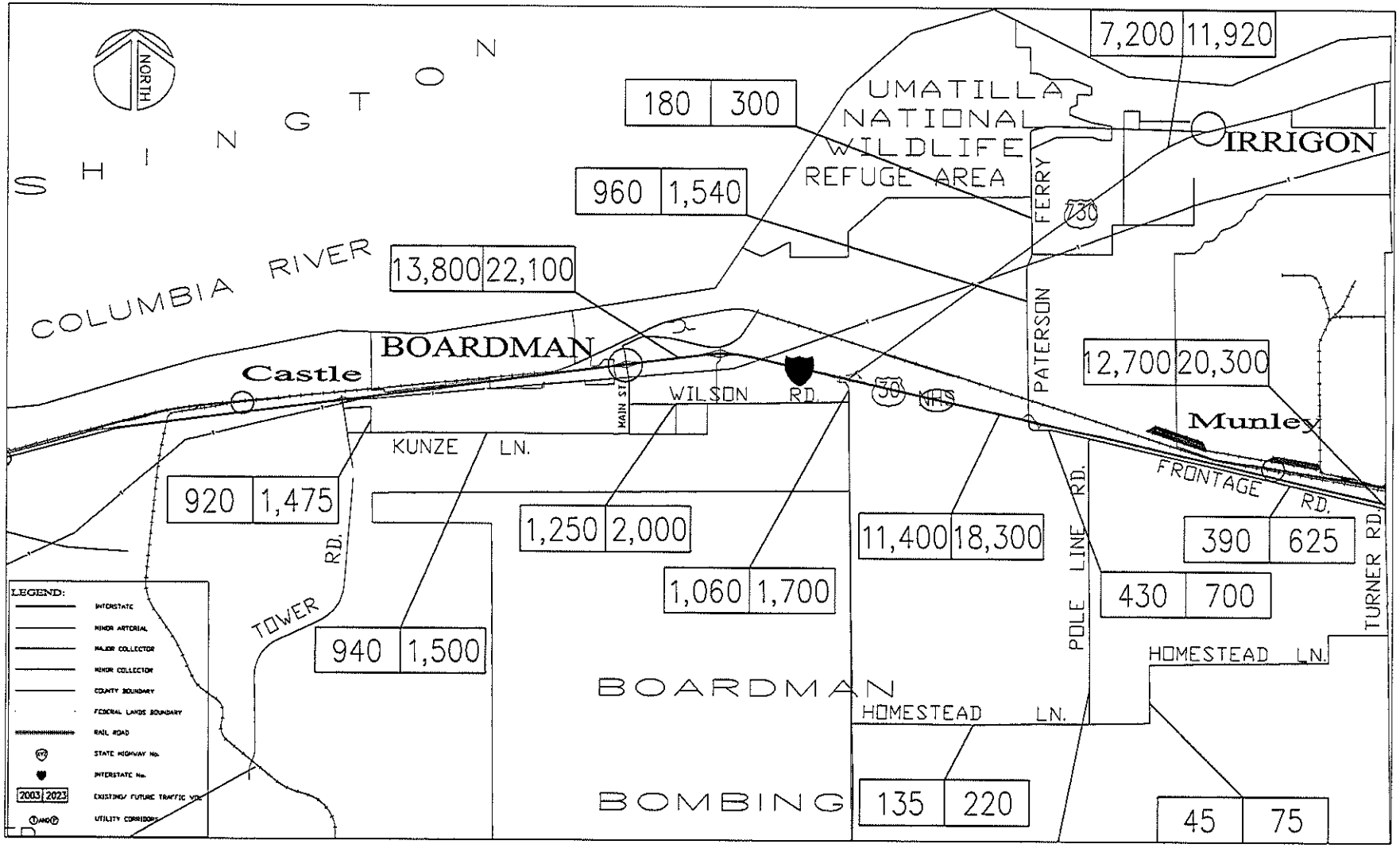
REVISIONS	
NO. DATE	DESCRIPTION

DRAWING TITLE: Figure No. 4-1 EXISTING/ FUTURE TRAFFIC VOLUMES (2004/2024)

PROJECT: MORROW COUNTY TSP UPDATE

PREPARED FOR: ODOT/ MORROW COUNTY

BOARDMAN-PORT OF MORROW (FUTURE TRAFFIC VOLUMES)



PREPARED FOR: ODOT/ MORROW COUNTY

PROJECT: MORROW COUNTY TSP UPDATE

DRAWING TITLE: Figure No. 4.2 BOARDMAN-PORT OF MORROW FUTURE TRAFFIC VOLUMES(2024)

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CTS TRANSPORTATION STRUCTURAL LAND SURVEYING Engineers

CASE_FILE

Future Connectivity

As growth and development continue in the northern part of the county, the lack of connectivity between north county and south county will limit opportunities for growth in population and employment in the southern part of the county. The development of an additional north-south connection between Boardman and Ione would open up opportunities for employment and population growth by decreasing travel time between north county and south county. Improved travel time will help to attract future population growth by offering an advantage to people employed in the north and residing in the south. It will also help to attract employment growth by reducing costs associated with hauling products.

This second route has historically been referred to as Ione-Boardman Road (Figure 4-3). The existing impediments to transfer of Bombing Range Road to the county magnify the importance of Ione-Boardman Road as a second north-south connection. However, there are also impediments to constructing Ione-Boardman Road. The county has acquired a dedicated right-of-way that would allow construction of a road (Tower Road Extension) connecting the southern end of

Tower Road to Highway 74 near Cecil. This indirect alignment, while beneficial for circulation and emergency access, would not fully meet the need for a second north/south connection. Implementation of a second route is unlikely to take place until after the Oregon National Guard's plans for future operations on the Bombing Range have been further developed. More intense use of the Bombing Range could result in greater traffic and population in the mid-county than assumed in this TSP for 2024. As discussed elsewhere in this plan, further analysis such as a Transportation Refinement Plan (TRP) or similar effort may be necessary to identify the improvements and implementation strategy needed to serve a military training facility on the Bombing Range. The new off-highway vehicle (OHV) park in south county could also increase traffic volumes more than expected. However, OHV park activity is expected to be concentrated on weekends. With existing traffic daily traffic volumes on the roads serving the park area a few hundred vehicles or less, capacity is not expected to be an issue.

Local Street Network

Under the requirements of the Transportation Planning Rule (TPR), Morrow County must develop its own standards for creation of streets that meet TPR objectives. Standards are used to control the spacing of streets and to limit excessive out-of-direction travel. This TSP provides recommended ordinance language that will assist the County in refining local street standards and in identifying local roadway networks.

Under the TPR, streets need not be required under one of the following conditions:

- Where physical or topographic conditions make a street impractical.
- Where redevelopment to accommodate a street or access way now or in the future is precluded by existing buildings or other development.
- Where the street or access way violates the provisions of an easement, lease, covenant, restriction, or other agreement existing as of May 1, 1995 that preclude the street's or access way's connection.

- Where conditions of development approval require off-site improvements. (The improvements shall include facilities that accommodate pedestrian and bicycle travel.)

A first step in developing a local street network plan is to identify opportunities for new local streets. Factors such as existing development patterns, vacant land, existing utility easements, and connectivity with surrounding streets must be considered in planning new street alignments. To assist in developing these local street networks, a series of figures is presented in this TSP and for the area east of Irrigon in the U.S. 730 Corridor Refinement Plan. These figures present a conceptual street network plan for buildable lands in north Morrow County in areas adjacent to Irrigon, Boardman, and the Army Depot, and have been developed with consideration of the street elements of the adopted Transportation System Plans for the two cities. The following figures identify buildable lands and a proposed conceptual street network:

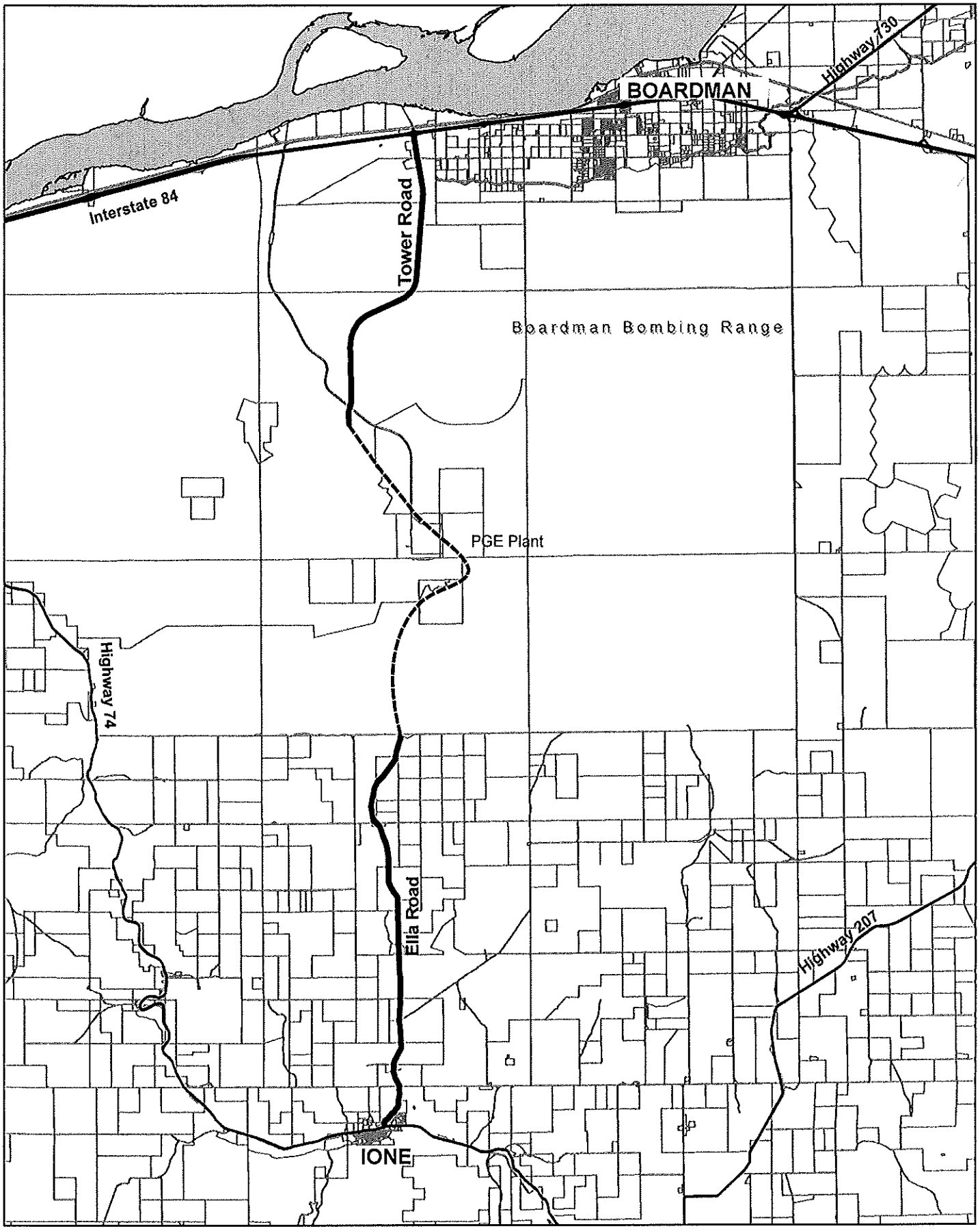
- Figure 4-4, East Irrigon Area Rural Residential Development
- Figure 4-5, West Irrigon Area Rural Residential Development
- Figure 4-6, South Irrigon Area Rural Residential Development
- Figure 4-7, East Boardman Farm Residential Development
- Figure 4-8, West Boardman Farm Residential Development
- Figure 4-9, Army Depot and Patterson Ferry Road

These local street network plans would be implemented through adoption of the TSP and supporting plan and ordinance language as the transportation chapter in the County's Comprehensive Plan. Zoning and subdivision ordinance amendments are needed to ensure that local street rights-of-way are acquired and that streets are improved over time as land is developed and new homes are constructed. While the implementation of the network plan is provided through zoning and subdivision ordinance modification, an allowance for flexibility in local street alignments to meet network plan objectives and phased development is crucial.

Recommended standards in the TSP are based on a 60-foot right-of-way for local, collector and arterial roads. This right-of-way width allows a reserve strip on each side of the street drainage and planting strips, sidewalks or paths, and other utilities.

Proposed Ione-Boardman Road

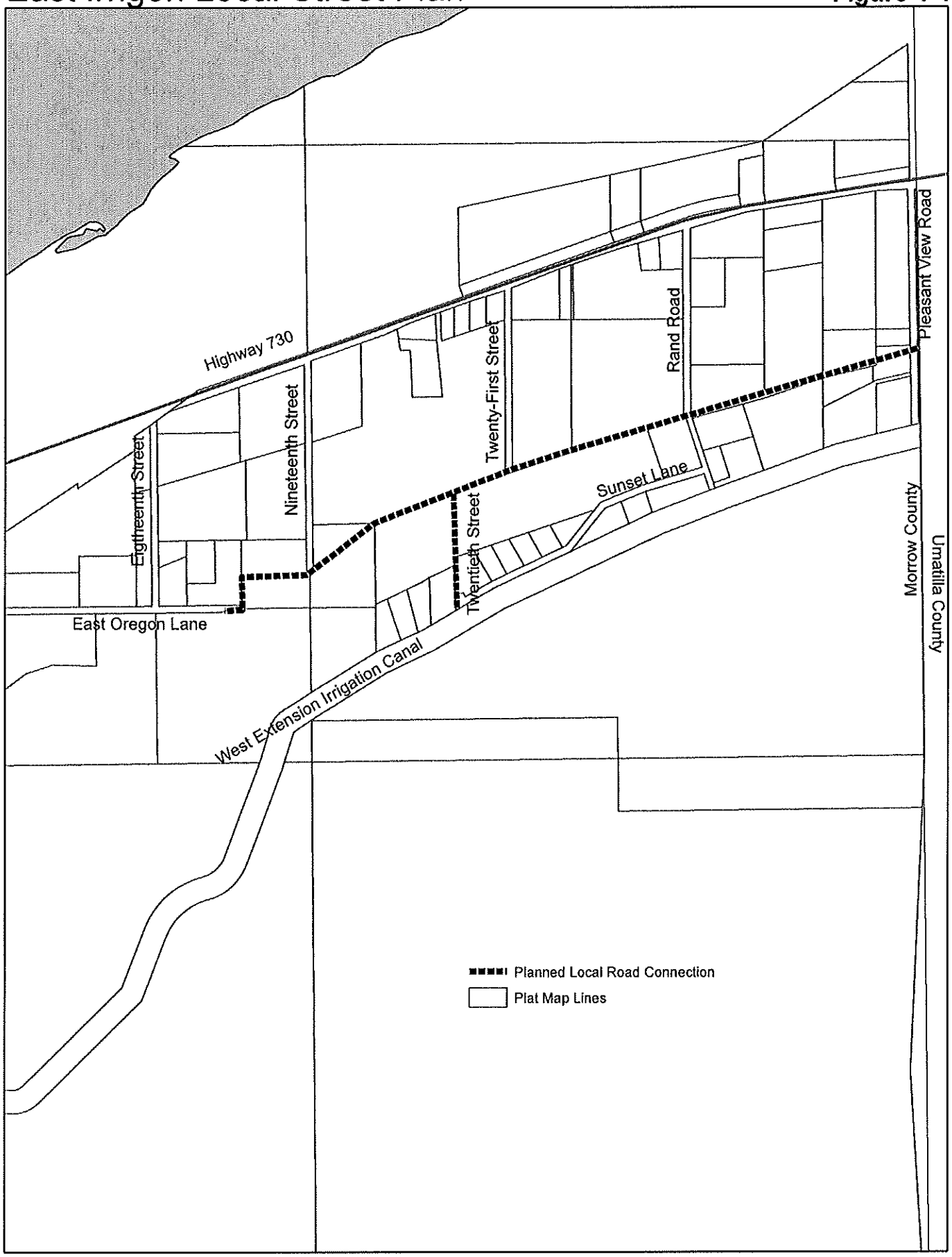
Figure 4-3



0 0.5 1 2 Miles

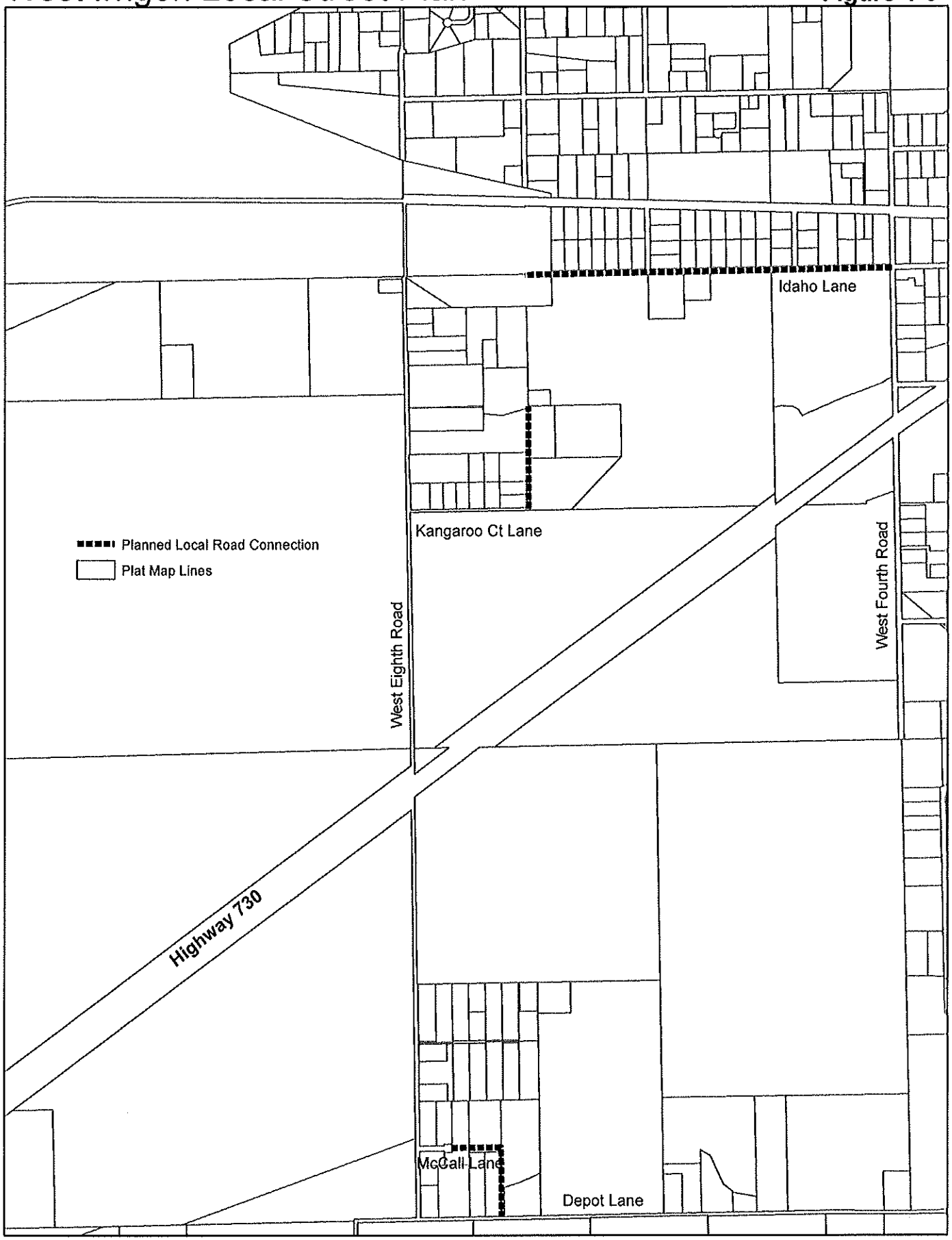
East Irrigon Local Street Plan

Figure 4-4



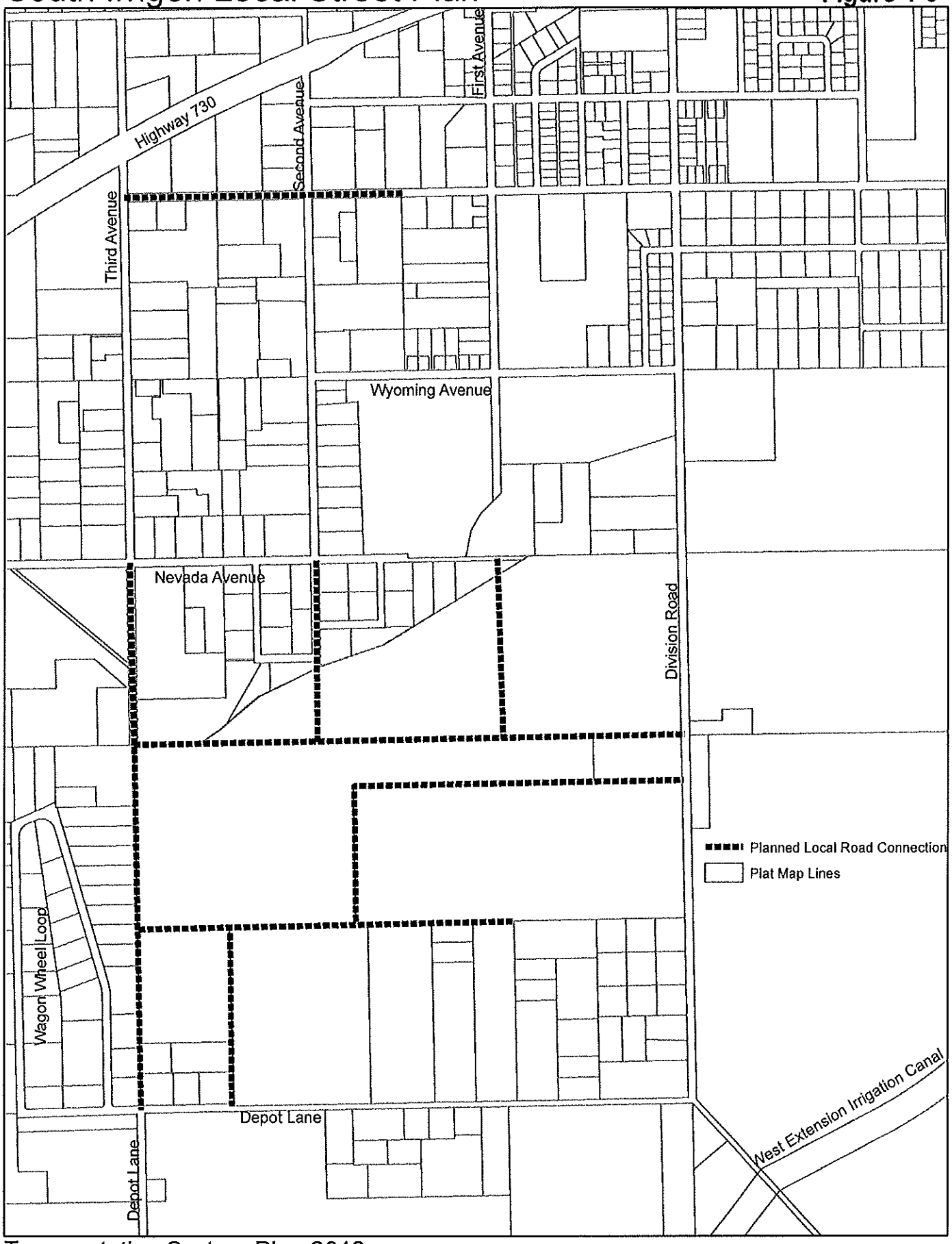
West Irrigon Local Street Plan

Figure 4-5



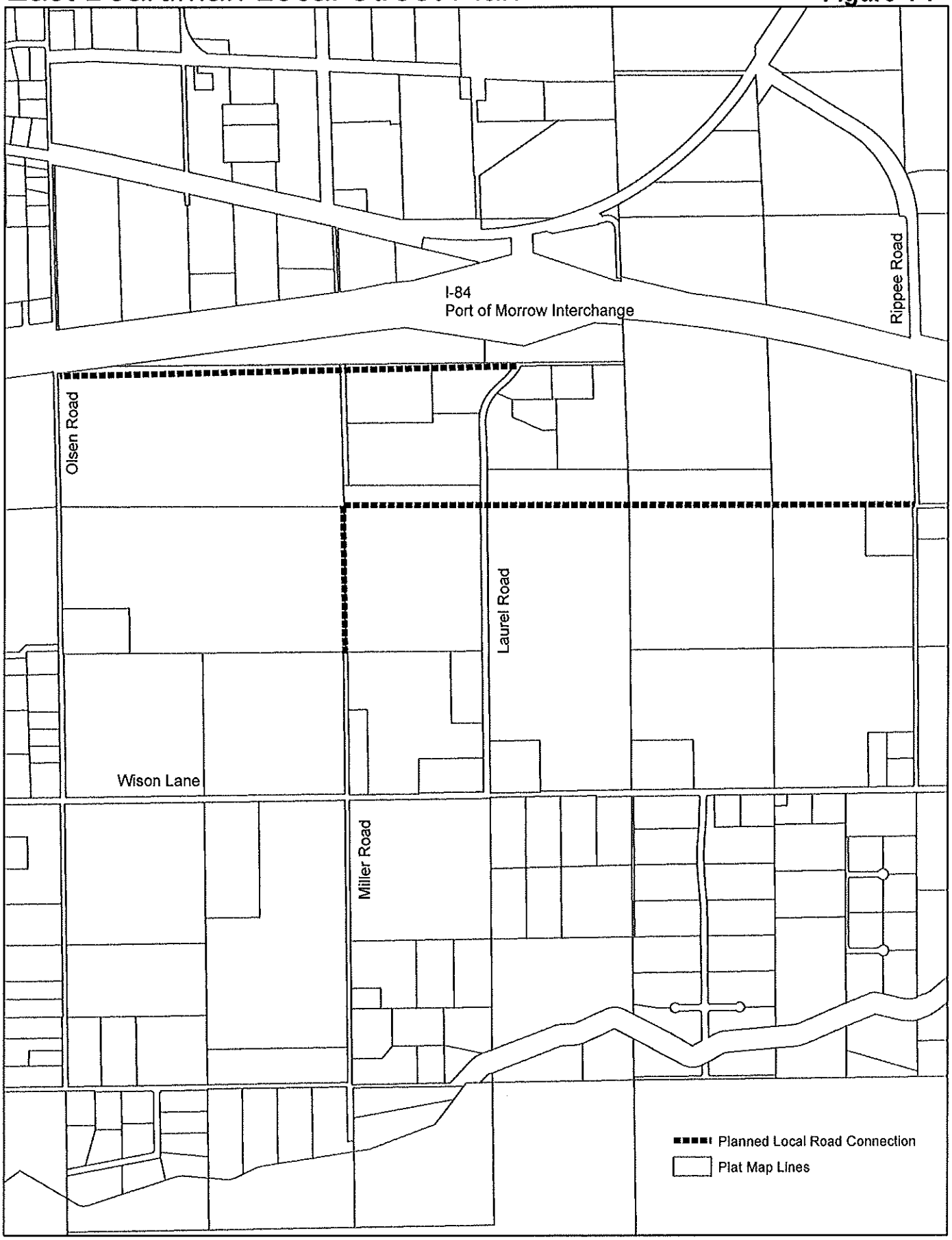
South Irrigon Local Street Plan

Figure 4-6



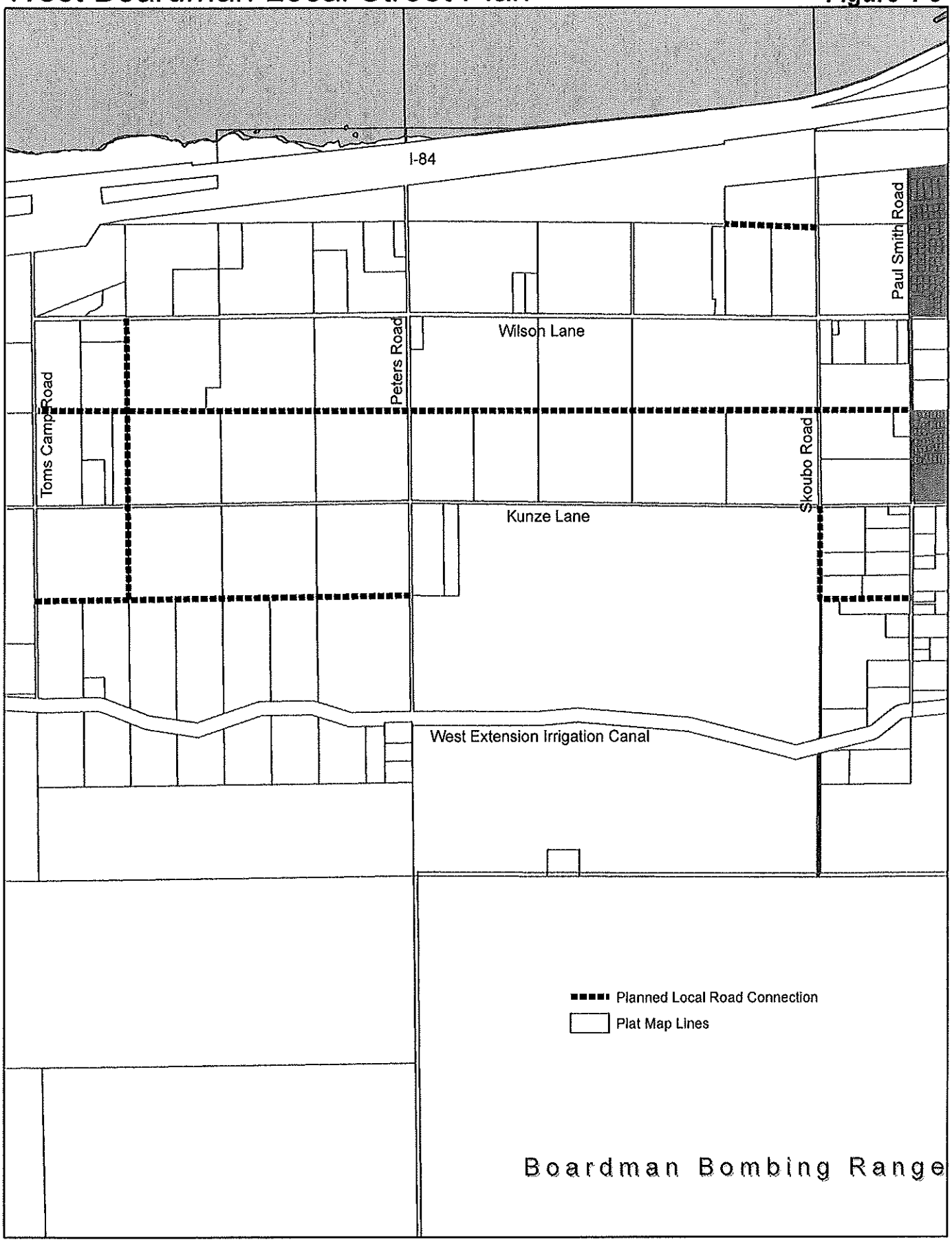
East Boardman Local Street Plan

Figure 4-7



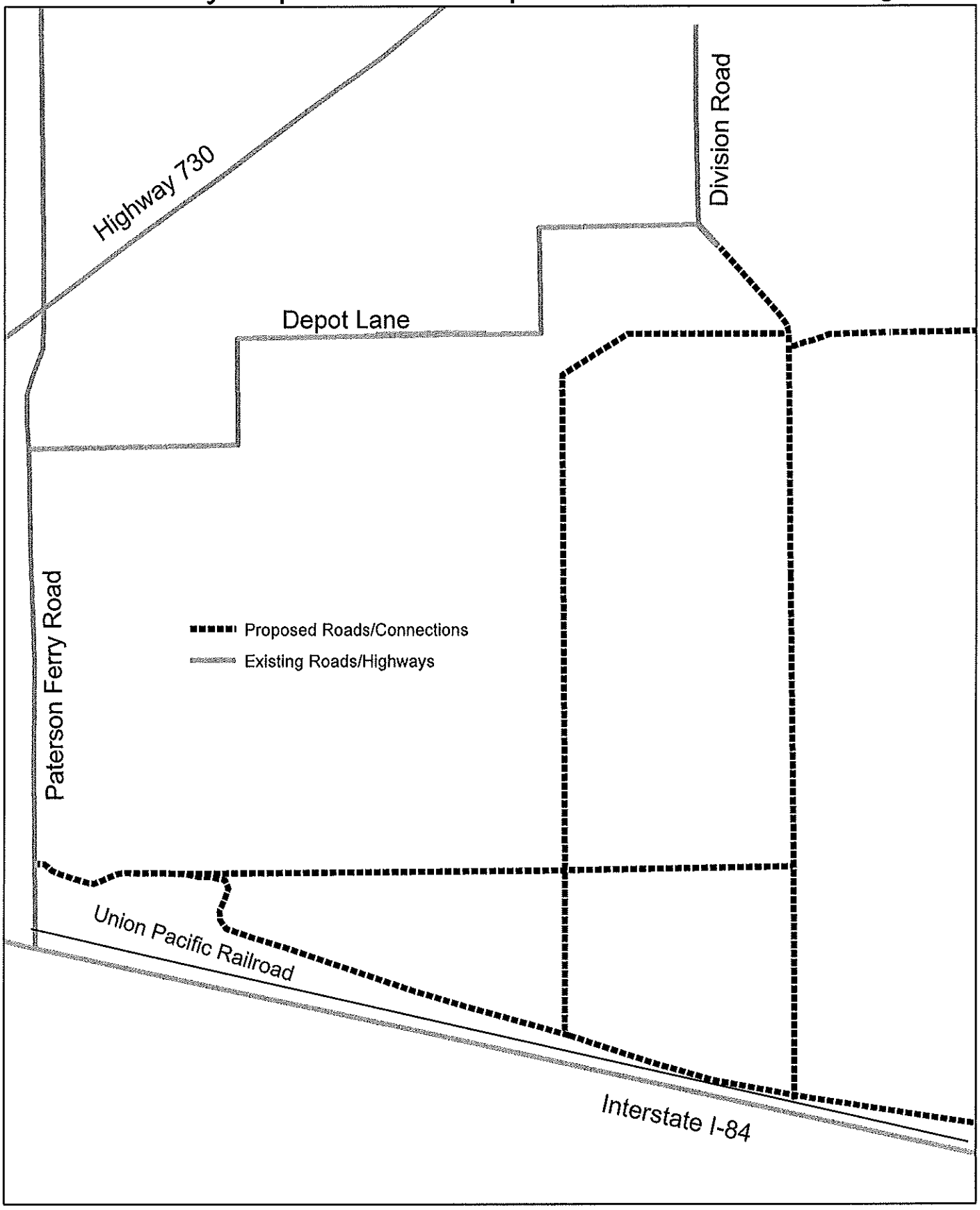
West Boardman Local Street Plan

Figure 4-8



Umatilla Army Depot Area Transportation Plan

Figure 4-9



0 0.25 0.5 1 Miles

Access Management

Access management is a tool used for controlling existing and future points of connection to major transportation facilities. It is intended to maintain or enhance safety and operational performance at less cost than adding capacity to the facility. Adding access points to an arterial can reduce its functional capability, causing delays and increased safety concerns created by turning movements.

In addition to reducing capital expenditures, implementing access management has positive impacts on maintaining the livability along arterials and improving safety. A direct correlation exists between the number of access points and collision rates. As an example, closing or consolidating existing driveways along arterials decreases the number of conflicts between vehicles entering and exiting from adjacent properties and those traveling along the arterial. The result is less vehicle delay with improved travel time along the arterial. Access management measures also decrease safety issues for motorists, pedestrians and bicyclists.

Where access management is not implemented, the livability of a community can suffer. This change in livability is usually created by increased numbers of access points, which lead to wider arterial construction and a resulting increase in traffic volume. Management techniques implemented at the outset will limit the number of connections and produce minimum spacing standards, reduce the need for costly improvements such as lane additions, and prevent the loss of livability to a community created by increased traffic volumes after arterial lane additions. For these reasons, it is prudent that all levels of government maintain the efficiency of existing arterial roadways by implementing an access management strategy.

Techniques

Access points are restricted by use of the following techniques:

- Restrict spacing between access points (driveways) based on the type of development and arterial.
- Consolidate looping driveways serving individual parcels into a single access point.
- Encourage adjoining properties to share a single access point.
- Provide driveway access to collector or local roadways where possible.
- Construct frontage roads for separation of local and through traffic.
- Provide service drives to reduce increased vehicle queues onto adjoining roadways.
- Provide acceleration, deceleration, and right turn lanes.
- Use T-intersections to create driveway offsets, which reduce the number of conflict points with through traffic.
- Place median barriers to control conflicts with left turn movements.
- Create side barriers along property adjacent to the roadway.

Also recommended is restricting the use of "split" accesses, where the driveway serving a single parcel splits into two connections just before reaching the public roadway. These split driveways or access points, which are fairly common on County roads, create safety concerns due to the driver's angle of approach. This is in contrast to a "tee" intersection, where the side street intersects the major street at or near a right angle, providing the driver with a clear view to the left and right.

Recommended Standards

Access management techniques range from complete access control on freeways to restrictions on parking and loading on local and minor streets. Recommended access management guidelines by roadway functional classification are described in Table 4-3. The table lists the recommended minimum spacing between adjacent access points for each functional classification. A modification or variance process is also needed, as less restrictive spacing standards can be appropriate in areas with more intense development and lower travel speeds.

TABLE 4-3
RECOMMENDED ACCESS MANAGEMENT STANDARDS FOR COUNTY ROADS*

Functional Classification	Type of Intersecting Facility			
	Public Road		Private Drive	
	Type	Minimum Spacing	Type	Minimum Spacing
Rural Arterial	at-grade	600 ft	Left/right turns	600 ft
Rural Collector	at-grade	300 ft	Left/right turns	300 ft
Rural Local	at-grade	200 feet	Left/right turns	Access to each lot

* For most roadways, at-grade crossings are appropriate. Also, allowed moves and spacing requirements may be more restrictive than those shown to optimize capacity and safety. Any access to a state highway requires a permit from the district office of ODOT and is subject to the access spacing standards in Table 4-4.

Application

Recommended access management standards should be applied to county roads in Morrow County. Morrow County is not required to meet these standards immediately. However, existing permitted connections that are not conforming will be upgraded as circumstances permit. Generally, access management standards do not eliminate existing intersections or driveways but apply to the creation of new access points as development occurs, and modification of existing accesses as redevelopment occurs. As the ongoing development process continues, access to roadways should meet these guidelines. Where safety has been compromised, as evidenced by an unusually high number of collisions or other difficulties, these access management standards and techniques can be applied using a "staged implementation" approach to improve an existing roadway. A "staged" approach might involve providing shared or consolidated driveway connections, eliminating left turns from selected driveways onto the street, installing a center median to limit access to right-in/right-out only (RIRO), and ultimately closing the access when it becomes possible to provide an alternate access point.

Summary

In summary, access management strategies control the number of access points and provide for roadway facility improvements. If used effectively, this comprehensive program provides reasonable access without compromising the safety and effectiveness of traffic movement.

State Highways

Access management is important to promoting safe and efficient travel for local and long distance travel along OR 74, OR 206, and OR 207 and US 730 in Morrow County. The Oregon Highway Plan (Oregon Department of Transportation 1999) includes an access management classification system for state facilities with access spacing standards based on the highway classification and posted speed. These access spacing standards are included in section 734-051 of the Oregon Administrative Rules. Although Morrow County may designate state highways as arterial roadways within their transportation systems, access management categories for these facilities would need to generally follow the guidelines of the Oregon Highway Plan. This section of the TSP describes the state highway access categories and specific roadway segments where special access applies.

U.S. 730 is an Oregon state highway that previously had a statewide level of importance. Since the interconnection of I-82 to I-84, U.S. 730 is judged to have regional importance within Morrow County, outside the urban growth boundary for Irrigon. OR 74 is also designated as a regional highway. Access spacing standards for regional highways range from 450 feet (at 25 miles per hour [mph] posted speeds) to 990 feet (at 55 mph posted speeds).

OR 206 and OR 207 through Morrow County are classified as district highways, with access spacing standards ranging from 400 feet (at 25 mph posted speeds), to 700 feet (at 55 mph posted speeds). Traffic signals are permitted at a minimum of 1/2-mile spacing.

Adopted Standards - State Highways

Access management standards for all state facilities are included in Section 731-054 of the Oregon Administrative Rules (OAR). Applicable standards for the highways in Morrow County are shown in Table 4-4. These standards apply only to unsignalized access points. Where a right of access exists, the Oregon Highway Plan requirements allow a property to have access onto a state highway only if that property does not have reasonable access and there are no other options possible.

TABLE 4-4
ACCESS MANAGEMENT STANDARDS FOR MORROW COUNTY NON-INTERSTATE HIGHWAYS

		Access Spacing Standards for Public or Private Unsignalized Access (ft) for Posted Speed Indicated (mph)				
Highway	**Classification**	**>55**	**50**	**40 & 45**	**30 & 35**	**<25**
US 730, OR 74	Regional	990	830	750	600	450
OR 206, OR 207	District	700	550	500	400	400

REFERENCE: Oregon Administrative Rules Section 734-051 (2004)

Access within the influence area of existing or proposed interchanges is also regulated by the State of Oregon (OAR 734-051). A minimum of 1,320 feet is required between an off-ramp and the nearest major intersection. No left turns and no four-legged intersections are allowed in the first 1,320 feet. On two-lane crossroads in developed urban areas, right turns are allowed a minimum of 750 feet from an interchange on two-lane crossroads. On four-lane crossroad in

developed urban areas, a minimum of 990 feet is required between the last right-in/right-out access and the start of an on-ramp taper. Exceptions to these interchange management standards must meet specific criteria described in OAR 734-051-0135 in order to be approved by the Region Access Management Engineer.

Other Transportation

Concerns have been raised that demand for transit services and other alternative travel modes will increase in Morrow County. Some indications demonstrate that there may be a greater demand for public transportation services as the existing population ages. Other system improvements that may follow modifications to county roadway standards will increase the ability for alternative methods of travel, such as bicycles and pedestrians.

Since the original TSP was prepared in 1997, the County has succeeded in receiving grants to partially fund signage for the Columbia River Heritage Trail (Heritage Trail), a bicycle/pedestrian facility along the north border of the County adjacent to the Columbia River. The Heritage Trail connects the cities of Irrigon and Boardman, creating an attractive intercity commute route for work, school, and recreation. The Heritage Trail also has historic and cultural significance relating to the Lewis and Clark trail route, the Oregon Trail, and native Americans' historical use of the area. The 2005 TSP promotes adding more local connections to the Heritage Trail to increase its accessibility.

Bicycle travel is also popular in south county along the Blue Mountain Scenic Byway and other roads. Most of the roadways have narrow shoulders not suitable for riding, but have traffic volumes low enough that shared use is comfortable for most bicyclists.

CHAPTER 5
FUTURE TRANSPORTATION SYSTEM OPTIONS ANALYSIS

INTRODUCTION

The Oregon Transportation Planning Rule (TPR) requires the analysis of transportation system alternatives that respond to safety and mobility needs. For the Morrow County Transportation System Plan (TSP), potential roadway improvement projects were identified using available county and state sources together with input from stakeholders and the public that address the specific goals and objectives of this plan. Options included in the analysis address both county and state facilities.

The options included in this chapter are based on recommendations made by the state, county, and local jurisdictions, and members of the general public. These recommendations reflect needs for safety, traffic mobility, and community development.

EVALUATION CRITERIA

Evaluating the appropriateness of transportation improvements requires that each project be compared to a set of criteria. The evaluation criteria selected for the Morrow County TSP are based on the goals and objectives identified in Chapter 2. This analysis qualitatively assesses each project based on whether a proposed project increases or decreases each of the following areas:

- Safety
- Environmental
- Socioeconomic
- Land use impacts
- Cost effectiveness.

The safety criterion addresses the proposed project's ability to increase the safety of drivers of both automobiles and, trucks, bicyclists, pedestrians, and equestrians. The environmental criterion considers factors such as air quality, wetlands protection, water quality, noise, and quality of life. The socioeconomic criterion includes the factors such as roadway capacity and maintenance needs, community livability, and economic development. Land use factors include the zoning adjacent to proposed projects, impacts to residential areas, and right-of-way requirements. Finally, cost effectiveness addresses the availability of sources of funding to address the proposed project, and the expected benefit to the community.

TRANSPORTATION SYSTEM OPTIONS ANALYSIS

This section involves the evaluation of recommended projects by the state and county for inclusion into the Morrow County TSP. In addition, projects are considered that were identified in the public involvement process. These projects include changes to state highways, county roads, bridges, intersections, and bicycle and pedestrian facilities.

State Transportation Improvement Program Projects

The Oregon Department of Transportation (ODOT) establishes a 4-year plan for improvements to the state highway system. T he STIP lists the specific projects, describes each project's purpose, sets a project schedule and estimates the completion cost. Most STIP projects correct existing or projected roadway preservation needs, improve safety, or increase facility capacity. The original TSP listed a number of bridge and resurfacing projects from the 1998-2001 STIP, which have all been completed. An additional $6.856 million in improvements listed in the 2002-2005 STIP that were not in the 1997 TSP have also been completed. Except for the 2004 Main Street enhancement in the City of Boardman, these projects were all funded under the first round of the Oregon Transportation Investment Act (OTIA I), which is described in more detail below. The primary 2004-2007 STIP project identified in the 2005 TSP was the Port of Morrow Rail Access Loop, a project with an estimated cost of $6.35 million, completed in 2006. The 2010-2013 STIP projects are listed in Table 5-1.

TABLE 5-1
STATE TRANSPORTATION IMPROVEMENT PROGRAM PROJECTS IN MORROW COUNTY

Program Year	Program	Project Description	Action	Estimated Cost
2010	2006-2009 STIP Draft 2008-2011 STIP	OR207 Corridor Intersection Improvements	Improve six identified intersections	$1,102,000
2010	2010-2013 STIP	Heppner Snow Fence		76,000
2011	2010-2013 STIP	Morrow Multimodal Rail Logistics Center		7,927,000
2011	2010-2013 STIP	OR 207 Corridor Section Improvements Phase II		500,000
2011	2010-2013 STIP	Morrow Mulitmodal Rail Logistics Center (POM)		2,000,000
2011	2010-2013 STIP	Port of Morrow Access Improvements		10,800,000
2012	2010-2013 STIP	Drainage/Slope and Pedestrian Improvements (Heppner)		1,520,000
2013	2010-2013 STIP	Barratt Blvd. Reconstruction (Heppner)		1,480,000
2013	2010-2013 STIP	Sperry St./Willow Creek Bridge #49811		807,000
Reference: 2010-2013 STIP and draft 2012-2015 STIP				

In 2001 the Oregon State Legislature initiated a $400 million-dollar bonding program, the Oregon Transportation Investment Act (OTIA), to finance major bridge and highway maintenance projects throughout the state. The act has been renewed twice and now represents over $1 billion in bonded improvements. OTIA III, the largest installment of OTIA funding to date, included two major projects in Morrow County, which represented an investment of nearly $13 million for repair of the bridges on I-84 at the Irrigon Junction and the now completed reconstruction of Kunze Road in Boardman from Main Street to Tower Road.

Additional State Highway improvements planned beyond the current STIP include an overpass of I-84 at Olson Road, which is also listed in the Boardman TSP. Table 5-2 lists these projects, which represent over $2 million in improvements for the County.

TABLE 5-2

STATE HIGHWAY IMPROVEMENTS IN MORROW COUNTY LISTED LOCAL TSPs

Program Year	Program	Project Description	Action	Estimated Cost ($)
N/A	OTIA III	I-84 Irrigon Junction	Repair eastbound, westbound bridges	9,800,000
N/A	City of Boardman TSP	Overpass	Construct overpass	8,000-10,000
Reference: City of Boardman Transportation System Plan.				

Evaluation of Recommended Transportation Improvements

Additional transportation strategies and improvement projects were identified by the county, Port of Morrow, and members of the community. These measures address safety, capacity, and maintenance issues that need to be attended to within the next 20 years and have been identified as needs in the County Comprehensive Plan or by stakeholders in the Morrow County TSP. The following sections describe transportation options for the Morrow County TSP.

State Facilities Recommendations

Several capital improvements had been suggested for state highway facilities in Morrow County, including corridor safety studies, roadway realignments, turnouts, and roadway maintenance. The projects on the original list were compiled from suggestions of the Morrow County Planning Department and from citizen and stakeholder comments made during various public involvement processes. Many of these projects have been completed and the remaining project is improvements to OR 74 at horseshoe bend near Morgan. These improvements are needed at this location to improve safety on this route. The estimated cost for the improvements would be $1,200,000 in 2004 dollars.

The County Road Program

In recent years the Morrow County Public Works Department has taken on a more strategic approach to prioritizing maintenance and repair needs that applies resources to more than one project within the same general area. This reduces set-up and transportation costs, allowing the County to stretch roadway improvement resources further compared to a traditional “worst-first” maintenance and repair process.

Table B-1 in Appendix B provides a list of the recommended projects to be completed in the short term or over the next 5 to 6 years. This list, prepared by Public Works, has the approval of the Morrow County Road Committee.

Table B-2, also in Appendix B represents additional projects that have been identified, but there is not a current funding mechanism to complete them. At the time of the next TSP update, or when the current projects listed in Table B-1 are complete, a new 5-year project list will be identified. This 20-year list will be the first place to look for projects to be included.

All of these roadway improvements are recommended, and can be found to support the evaluation criteria, particularly safety and socio-economic benefits. Priority of these projects will be determined by the Public Works Department based on the urgency of the need, total cost, and the availability of funding sources.

Port of Morrow Recommended Projects

In general, roadway improvements on Port lands are market-driven and timed to serve new industrial tenants. The Port, which is presently developing a new siding and has developed a rail loop connecting to the Union Pacific mainline, identified the additional major projects listed in Table 5-6 to be included in the TSP. These are projects that the Port has identified as necessary to increase capacity, allow for economic development, increase safety, and improve intermodal access. Projects that would be a joint effort of the Port and the City of Boardman are also listed. Access to the Port's east industrial area north of the I-84/US 730 interchange is recommended via one or more at-grade or grade-separated connections to US 730 between I-84 and Paterson Ferry Road. Over the longer term as this industrial area becomes more fully developed, additional access may be needed, potentially including modification to the existing I-84/US 730 interchange to provide direct freeway access. The initial step toward interchange modification, an interchange area access management plan, is currently under way. Also included in this list of projects are those identified as part of the speedway land-use approval process.

TABLE 5-3
MORROW COUNTY PORT OF MORROW FUTURE ROADWAY PROJECTS

Roadway	Project Description	Est. Cost ($1,000)
East Beach Industrial Area Access	New access is proposed to serve the Port of Morrow East Industrial Area located north of the existing I-84/US 730 interchange and west of US 730 via an at-grade or elevated intersection or intersections. As the east industrial area develops, the need for direct interchange access will require further analysis (see IAMP).	$2,000-10,000
U.S. 730 Connector for Industrial Park Access	Installation of 6,800 feet of road extension off U.S. 730 for east access to the Port's East Beach Industrial Park area. This project would extend Lewis & Clark Drive to U.S. 730 (see IAMP).	$6,200
East Beach Industrial Corridor	Installation of 18,900 feet of industrial road to extend Gar Swanson Lane from East Columbia Avenue to loop the Port's industrial property to intersect with Lewis & Clark Drive (see IAMP).	$4,500
Kunze Road (Boardman)	Reconstruct from Main to Tower (completed 2007-2008)	$2,700

TABLE 5-3 MORROW COUNTY PORT OF MORROW FUTURE ROADWAY PROJECTS		
Roadway	**Project Description**	**Est. Cost ($1,000)**
Olson Road (Boardman)	Construct overpass over I-84	$9,000
Tower Road overcrossing	Construct overcross over UP railroad line	$1,000
I-84/Tower Road Interchange	Modifications to the I-84/Tower Road Interchange, including dual lane ramps, a four-lane bridge, and improved turning radiuses at the on/off ramps.	
I-84/Tower Road Interchange	Stacking or merge lanes (acceleration/deceleration lanes) extending approximately 1.5 miles in each direction from the I-84/Tower Road Interchange.	
Tower Road	Widen Tower Road to five lanes between I-84 and the southern most entrance to the speedway on Tower Road.	
New I-84/Speedway Interchange	A new I-84/Speedway Interchange east of PGE's north/south rail spur crossing of I-84 and including two-lane on and off ramps and a four lane bridge over I-84.	
I-84 at New Speedway Interchange	Stacking or merge lanes (acceleration or deceleration lanes) extending approximately 1.5 miles in each direction from the I-84/Speedway interchange.	
Interstate 84	An additional (third) eastbound and westbound travel lane on I-84 between Highway 730 and the Speedway Interchange and from 1200 meters west of the Army Depot Interchange to the I-82/I-84 Interchange.	
Interstate 84	Bridge widening or modification as necessary along I-84	
Interstate 84	Extended ramps and taper lanes on I-84 westbound between I-82 and a point west of the I-84/Army Depot Interchange.	
Interstate 84	Merge/diverge lanes eastbound on I-84 between a point west of the I-84/Army Depot Interchange and the I-82/I-84 Interchange	
Interstate 84	Modifications to the connector ramps at the I-84/I-82 Interchange to provide two-lane on or off ramps.	
New Speedway Perimeter Road	A four-lane surface road system within and encircling the perimeter of the Speedway.	
Kunze Road	Realignment of the Kunze Road/Tower Road interconnection southward to meet Division 51 spacing standards.	Completed
Interstate 84	Improvements to the I-84/Army Depot Interchange to facilitate I-82/I-84 merge/diverge lanes.	

Structurally Deficient and Functionally Obsolete Bridges

Bridges in Morrow County are inventoried biennially. The inventory rates bridges on a sufficiency rating scale that ranges from 0 to 100, with lower scores meaning worse conditions and higher scores indicating adequate conditions. Sufficiency scores for bridges in the National Bridge Inventory (NBI) database are translated to a qualitative ranking of Not Deficient, Structurally Deficient or Functionally Obsolete. There are 116 bridges in the County, including 44 County bridges, 11 city bridges, 60 ODOT bridges and 1 railroad bridge. Table 5-7 lists the bridges in the County rated as structurally deficient or functionally obsolete. The U.S. 730 bridge is listed for repair in the state's OTIA III bridge program. Brenner Canyon Bridge was replaced under the OTIA I program.

TABLE 5-4
EXISTING BRIDGE DEFICIENCIES

Bridge No.	Owner	Description	Status Code
08885	ODOT	U.S. 730/USRS Canal	Structurally Deficient
49C05	County	Spring Hollow Road/Rhea Creek	Functionally Obsolete
49C12	County	Road Canyon Road/Rhea Creek	Replaced 2009-2010
08475	County	Willow Creek, Oley McNab Road.	Structurally Deficient
48609	County	Willow Creek, Clarks Canyon Road	Structurally Deficient

REFERENCE: Oregon Department of Transportation

These bridges are recommended for upgrades over the next 20 years to increase safety and mobility along these key roadways. Priority for improvement should be based on the traffic volume, level of deficiency, safety, and available funding.

Bicycle and Pedestrian Facilities

Adequate bicycle and pedestrian facilities become more important in and surrounding population centers. As population increases, so does the total number of bicyclists and pedestrians. Goals and policies identified in Chapter 2 include the development of multi-use paths and trail systems and roadway design features to accommodate bicycles and pedestrians. The county has developed a bicycle and pedestrian plan to promote bicycle, pedestrian, and other non-motorized forms of travel.

Two bicycle and pedestrian facilities recommended in the original TSP have been or are currently being built. A multi-use pathway extending from the City of Heppner to the swimming pool has been constructed. The Columbia River Heritage Trail, a multi-use pathway along the Columbia River, continues to be developed. The Heritage Trail in Boardman runs along Tom's Camp Road, Wilson Lane, Main Street and Marine Drive. East of Boardman the trail turns south along Ullman Boulevard to Columbia Avenue, continuing along Columbia through the wildlife refuge. From Irrigon it continues to the Umatilla County line, connecting with Umatilla

County's Lewis & Clark Trail. Additional connections to the existing portions of the Heritage Trail are needed to enhance its accessibility. Extension of the trail west of Boardman is planned.

The option to modify roadway design standards to include facilities for bicycles and pedestrians was also considered. Bicycle and pedestrian facilities can be developed at a variety of levels, from grade-separated pathways to shared roadway facilities. Because county roads serve mainly rural areas, the proposed modification to the roadway standards will include a widened roadway shoulder for pedestrian and bicycle travel.

All of these actions should be included in the TSP in order to increase safety and mobility for non-motorized travel. In addition, the county will work with the cities in the creation of their respective TSPs to develop bicycle and pedestrian projects within the urban growth boundaries.

Airport Facilities

Air access will be increasingly important as the county continues to grow. The state's most recent pavement maintenance report for the Lexington-Morrow County airport (2003) calls for a five-year maintenance plan for the 2004-2009 period with about $617,000 of inspection and maintenance work that is needed to avoid more costly repair work. The Airport Layout Plan for the Lexington-Morrow County Airport, acknowledged by DLCD in 2002, is a 20-year plan for use of the airport and adjacent lands.

Transportation Demand Management

Transportation demand management (TDM) is a collection of strategies directed to reduce the number of trips by automobiles. Programs are normally directed towards major employers whose size increases the chances for employees to carpool (share a ride with another employee), telecommute (work at home), or participate in shift work schedules (4-day, 10-hour shifts, for example). These strategies not only benefit the roadway system through reduced traffic levels, but also contribute to reduction in air pollutants.

TDM strategies are usually most effective in highly urbanized areas; however, these programs can be applied to rural areas. The county and cities can work towards providing more bicycle lanes, pedestrian paths, and carpool programs--all of which are still appropriate to rural areas. In addition, major employers within the county (those with more than 100 employees) could be required to develop TDM programs that promote the increased use of commute alternatives and reduce the dependence on the single occupant vehicle.

A TDM program is recommended for inclusion in the County's TSP. Construction of the Heritage Trail offers a TDM resource for employees to utilize non-vehicular commute alternatives. Further measures should include the county's adoption of employer-based TDM regulations to implement TDM strategies to its major employers. The county needs to also encourage cities within the county to evaluate TDM measures as part of their TSP.

SUMMARY OF RECOMMENDATIONS

The recommendations of the alternatives analysis are summarized in Table 5-8. As shown in the table, it is recommended that all projects listed for county transportation facilities be implemented and included in the Morrow County TSP. These recommendations reflect input by the state, county, jurisdictions, and residents. All projects are supported by the evaluation criteria and will assist in meeting the county's goals of improving safety and mobility, improving the quality of life for its residents, increasing opportunities for non-motorized forms of transportation, and providing for economic growth. Chapter 6 discusses the implementation of these actions for Morrow County.

TABLE 5-5
TRANSPORTATION IMPROVEMENT OPTIONS RECOMMENDATIONS

Option	Recommended Action
1. Construct projects identified in the STIP	Implement
2. Construct county-identified projects	Implement
3. Complete Port of Morrow recommended projects	Implement
4. Upgrade structurally deficient and functionally obsolete bridges	Implement
5. Develop bicycle, pedestrian and equestrian facilities, including the Heritage Trail	Implement
6. Perform recommended maintenance measures at the Lexington-Morrow County Airport to avoid more costly repair work.	Implement
7. Implement TDM Strategies	Implement

CHAPTER 6
TRANSPORTATION SYSTEM PLAN

INTRODUCTION

This chapter provides the detailed operational plan for each of the transportation systems within the County. The Transportation System Plan (TSP) identifies improvements necessary to address the needs of County residents over the next 20 years, including the development of new facilities, reconstruction and maintenance of existing facilities, and the development of bicycle and pedestrian facilities, as well as improvements to airport and freight operations. Components of the TSP include roadway classification standards, access management recommendations, transportation demand management (TDM) measures, improvements to the mobility of goods and freight, and a TSP implementation program.

This chapter describes the implementation strategy for each of the following areas: roadway standards modifications; management of access on arterials and highways; system plans for each transportation mode; implementation of the TSP

MODIFICATIONS TO ROADWAY STANDARDS

Roadway standards provide the minimum design characteristics for each class of road (called a functional classification). In other words, for each functional classification, the roadway standards specify the minimum lane width, shoulder width, pavement depth, etc. As discussed in Chapter 3, the County adopted roadway standards for eight classifications of roadways developed during the process of preparing the original TSP and have been subsequently revised and are summarized in Table 6-1. Illustrations of the proposed standards as roadway cross-sections are included in Appendix A, including standard dimensions for roadway base, pavement elements, and drainage for each class of road. These standards incorporate the increased shoulder width for bicycles and pedestrians maintain a minimum 60-foot right-of-way to ensure adequate room for utilities and drainage. If the initial review of the engineered street design plans indicate additional right-of-way is necessary beyond the standard width of 60 feet (e.g., areas where slopes, sensitive areas or other factors require additional right-of-way to accommodate the roadway), the additional right-of-way width will be required to be dedicated as part of final plat approval.

Roadways constructed by private development must comply with the basic cross sections for the appropriate functional classification in the TSP and applicable sections of the County's implementing ordinances, as well as applicable sections of the most current AASHTO and/or ODOT standards for other design elements, including horizontal and vertical geometry. Additionally, developers will be required to have a registered professional engineer sign and stamp final road design plans, and certify the conformity of roadway construction with final plans.

This TSP has two categories of gravel road standards. Many rural counties face the need to channel limited roadway maintenance funds toward delayed upgrades for low-volume paved facilities at various levels of disrepair. Maintaining these paved roadways requires a commitment of resources that is disproportionate to their use, and limits resources available for maintaining County facilities that accommodate more travel. Typically, these are low-volume

roadways where patching shoulders and filling potholes are no longer adequate, and there is a need to reconstruct the base and repave the entire road, but they may also be low-volume collectors or arterials. Adopting a gravel road standard applying to all types of County roads has given the County greater flexibility for cost-effectively using limited maintenance funds.

TABLE 6-1
ROADWAY STANDARDS

Road Classification	Rgt of Way (ft)	Lane Width (ft)	Paved Shoulder Width (ft)	Pavement Width (ft)	Avg. Daily Traffic (ADT)
Rural Access I*	60	9	1	20	100-200
Rural Access II*	60	9	1	20	50-100
Rural Gravel**	60	11	n/a	n/a	varies
Rural Collector I	60	12	3-4	30-32	300-500
Rural Collector II	60	12	2	28	200-300
Rural Collector III	60	12	1	26	100-200
Rural Arterial I	60	12	4-8	32-40	> 700
Rural Arterial II	60	12	3-6	32-40	300-700

* Rural Access 1 and Rural Access II differ in the surface material (Rural Access II is gravel).
** Applies to collector and arterial functional classifications, not just rural access.

The roadway standards discussed in this TSP are consistent with Policies 5.1, 5.2, 6.1 and 9.1, of the TSP.

Rural Gravel Roadways

Appropriate gravel road cross-sections are a function of several factors including the amount and type of precipitation, temperature variation, traffic volume, heavy truck traffic, and condition of the subgrade (roadbed soil). Minimum aggregate base thickness typically ranges from 4-5 inches for low volume roads with high quality roadbed soils, to 13-15 inches for medium volume roads with poor quality roadbed soils. Table 6-2, based on material published by the Washington State Department of Transportation, is proposed as general guidance for gravel road sections in Morrow County.

TABLE 6-2
GUIDANCE FOR GRAVEL ROAD THICKNESS

Relative Quality of Roadbed Soil	Traffic Level*	Aggregate Base (Inches)
	High	9
Very Good	Medium	7
	Low	4
	High	11
Good	Medium	9
	Low	5
	High	13
Fair	Medium	10
	Low	5
	High	**

TABLE 6-2 GUIDANCE FOR GRAVEL ROAD THICKNESS		
Relative Quality of Roadbed Soil	**Traffic Level***	**Aggregate Base (Inches)**
Poor	Medium	15
	Low	8
	High	**
Very Poor	Medium	**
	Low	8
* Typical traffic volume ranges are High = 100 or more daily trips; medium = 50 - 100 daily trips; low = fewer than 50 daily trips. ** Gravel surface not recommended. SOURCE: Washington State Department of Transportation		

A broader Rural Gravel standard is illustrated in Appendix A. The intent of this standard is to provide the County with more options for maintaining low-volume roads and provide a general guideline for gravel road sub-base sections needed with various conditions of underlying material and existing/expected traffic volumes.

Rural Access Roadways

The recommended minimum standard for paved rural access roadways is a 20-foot roadway within a 60-foot right-of-way. This class of roadway is designed for low average daily traffic (ADT) volumes without substantial amounts of heavy vehicle traffic. Paved shoulders outside of the travel lanes provide room for pedestrians.

Rural Collector Roadways

A collector roadway is intended to primarily serve the local access needs of adjacent land uses and between access roadways and arterials. Three subclassifications of collectors are found in the recommended standards, varying from 26 to 32 feet of paved roadway. Travel lanes are 12-feet wide, with 1- to 4-foot wide shoulders, depending on the expected ADT. On Collector I roadways, the 4-foot shoulders are generally wide enough to encourage bicycle as well as pedestrian travel.

Rural Arterial Roadways

Arterials make up the majority of the County's roadway system. An arterial's purpose is to handle higher traffic volumes at higher speeds, with minimal roadway access.

ACCESS MANAGEMENT

Access management is the practice of controlling the number and spacing of access points along roadways in order to improve main line roadway capacity and reduce the potential for accidents. By controlling the access onto a road, the number of turning movements is reduced, allowing the main line road to operate closer to its designed capacity. Access management benefits the County by efficiently using its existing roadway resources, reducing the need for expensive capacity improvements.

In addition to preserving roadway capacity, roadways with too many or poorly located driveways are a safety issue. Too many driveways or closely spaced accesses result in a high number of points where conflicts can occur. Research has shown that the number of conflict points is related to the number of collisions that occur.

Access management strategies include the following:

- Combining driveways and roadway approaches along a road in order to reduce the number of conflicting movements between vehicles.
- Developing frontage roads to minimize the need for major facility access.
- Developing of internal circulation between parcels.
- Requiring access onto collectors or local streets for corner parcels with arterial frontage.
- Realigning existing accesses to allow adequate spacing between access points, or to line up offset accesses.
- Developing access standards for new developments that require joint access with future subdivisions.

Table 6-3 lists recommended access management guidelines by roadway functional classification for County roadways. These are recommended minimum access management standards applicable to public roads and private driveways Along with access management standards, a process needs to be set up to allow modifications to the standards based on an evaluation of safety and other factors. Access management is generally not necessary for driveways onto local streets, although access spacing standards are appropriate for the intersections of public local roads.

TABLE 6-3
RECOMMENDED ACCESS MANAGEMENT STANDARDS FOR COUNTY ROADS*

	Intersection			
	Public or Private Road		Private Access	
Functional Classification	Type	Minimum Spacing	Type	Minimum Spacing
Rural Arterial	at-grade	600 ft	Left/right turns	300 ft
Rural Collector	at-grade	300 ft	Left/right turns	100 ft
Rural Local	at-grade	200 ft	Left/right turns	Access to each lot

* For most roadways, at-grade crossings are appropriate. Also, allowed moves and spacing requirements may be more restrictive than those shown to optimize capacity and safety. Any access to a state highway requires a permit from the district office of ODOT and is subject to the access spacing standards in Tables 6-4 and 6-5 in this section.

For state facilities, the County has decided to adopt the Oregon Department of Transportation (ODOT) access management standards shown in Table 6-4. The 2007 US 730 Corridor Refinement Plan evaluated and proposed access control to US 730 between Umatilla and Irrigon. When development is proposed east of Irrigon along US 730 the Corridor Refinement Plan will govern when not consistent with this TSP.

These access management measures are consistent with TSP Policies 2.4, 2.5, 2.9, 3.2 and 3.3.

TABLE 6-4 ACCESS MANAGEMENT STANDARDS for Morrow County non-interstate Highways						
Highway	Classification	Minimum Access Spacing Standards for Public or Private Unsignalized Access (ft) for Posted Speed Indicated (mph)				
		>55	50	40 & 45	30 & 35	<25
U.S. 730, OR 74	Regional	990	830	750	600	450
OR 206, OR 207	District	700	550	500	400	400
REFERENCE: Oregon Administrative Rules Section 734-051 (2004)						

Access Management for State Facilities in Morrow County

ODOT has an extensive access management program, which is regulated by Oregon Administrative Rules Section 734-051. Through the adopted standards in OAR 734-051, ODOT controls access based on the type of facility, level of importance (state, regional, or district), and whether the facility is in an urban or rural area. This program, directed toward the management of state facilities, has been used to protect access along state facilities and at interchanges.

The state access management standards apply to the development of all ODOT highway construction, reconstruction or modernization projects, approach road and private road crossing permits, as well as all planning processes involving state highways, including corridor studies, refinement plans, state and local transportation system plans and local comprehensive plans.

The standards do not retroactively apply to legal approach roads or private road crossings in effect prior to adoption of this Oregon Highway Plan, except or until any redevelopment, change of use, or highway construction, reconstruction or modernization project affecting these legal approach roads or private road crossings occurs. At that time the goal is to meet the appropriate spacing standards, if possible, but at the very least to improve current conditions by moving in the direction of the spacing standards.

When in-fill development occurs, the goal is to meet the appropriate spacing standards. In some cases this may not be possible, and at the very least the goal is to improve the current conditions by moving in the direction of the spacing standards. Thus, in-fill development should not worsen current approach road spacing. This may involve such options as joint access.

In some cases access will be allowed to a property at less than the designated spacing standards, but only where a right of access exists, that property does not have reasonable access, and the designated spacing cannot be accomplished. If possible, other options should be considered such as joint access.

If a property becomes landlocked (no reasonable access exists) because an approach road cannot be safely constructed and operated, and all other alternatives have been explored and rejected, ODOT might be required to purchase the property. (Note: If a hardship is self-inflicted, such as by partitioning or subdividing a property, ODOT does not have responsibility for purchasing the property.)

Access within the influence area of existing or proposed interchanges is also regulated by the State of Oregon (OAR 734-051). Current guidelines and illustrative figures for freeway and non-freeway interchanges with two-lane or multi-lane crossroads can be obtained from ODOT.

Morrow County relies on the adopted state access management policies to control access on state highways.

DEVELOPMENT REQUIREMENTS

This section describes the regulatory actions required for implementing the TSP. These actions include modification or adoption of land use development requirements, impact assessment, and right-of-way requirements.

Land Use Development Requirements

Development during the next 20 years will occur in many different ways: large and small, commercial and residential, urban and rural. Different types and sizes of development require different levels of assessment and mitigation. The full range of requirements for most types of development permits, including the transportation improvements required under the TSP, is shown in Table 6-5. The transportation requirements fall into the basic categories of access and system improvements. There are five basic types of permits issued for development in Morrow County. These are zoning permits, land partitions, subdivisions, conditional use, and variance permits. For land that is already platted into lots and is appropriately zoned, a *zoning permit* is required for development. *Land partition* is required when one lot is to be divided into two or three smaller lots. A subdivision is required when four or more lots are created. A conditional use permit is required for projects with the potential to create a larger impact than land uses that are permitted outright or with a zoning permit. If the proposed development is not fully consistent with the existing zoning requirements, a *variance permit* is required.

TABLE 6-5
LAND USE DEVELOPMENT PERMIT REQUIREMENTS

Permit Type	Plot Plan Requirements		Conditions		Review/Approval Type			
	Footprint (setbacks)	Access*	Transportation Improvements	DEQ Site Suitability	Parking	Sign	Review	Action
Zoning Permit								
Residential	Yes	Designated Access	Frontage improvements.	Yes	N/A	N/A	Staff	Bldg. Permits Road approach permit
Commercial	Yes	Legal access via r/w or easement.	Under 400 trips: Frontage improvements. Over 400 trips: TIA.		Yes	Yes	Staff	Bldg. Permits Road approach permit

TABLE 6-5 LAND USE DEVELOPMENT PERMIT REQUIREMENTS								
Permit Type	**Plot Plan Requirements**		**Conditions**		**Review/Approval Type**			
	Footprint (setbacks)	**Access***	**Transportation Improvements**	**DEQ Site Suitability**	**Parking**	**Sign**	**Review**	**Action**
Industrial	Yes	Legal access via r/w or easement.	Under 400 trips: Frontage improvements. Over 400 trips: TIA.		Yes	Yes	Staff	Bldg. Permits Road approach permit
Farm Exempt	Yes	Yes	N/A	N/A	N/A	N/A	Staff	County issues a Farm Agriculture Building Exemption Certificate
Land Partition								
1 to 3 Lots		Legal access via r/w or easement.	Frontage improvements.				Planning Comm.	Approval Road Approach permit
Subdivision								
4 to 39 lots		Legal access via r/w.	Frontage improvements.				Planning Comm.	Approval Road Approach permit
40 or more lots		Legal access via r/w.	Frontage improvements, TIA.				Planning Comm	Approval Road Approach Permit
Conditional Use Permit								
	Yes	Legal access via r/w or easement.	Under 400 trips: Frontage improvements. Over 400 trips: TIA.		Review	Review	Planning Comm.	Approval, Bldg. Permit Road Approach

*1000' or less, 20' easement; 1000' or more 40' easement; 3 or more lots (current or potential), 60' easement.
r/w=Right-of-way
TIA=Traffic Impact Analysis. Number of trips refers to passenger-car equivalents; one truck trip is generally equivalent to two passenger car trips.
N/A= not applicable.

Traffic Impact Assessment

New development provides many benefits to the County, including property tax revenues, more jobs, and economic stimulation. However, growth can also stress transportation facilities. Increased congestion, demands for new roads, and higher expectations for more services can often accompany development. It is appropriate for the County to require applicants to formally assess the potential traffic impacts of their development proposals on the County transportation system by conducting a traffic impact analysis (TIA).

TIAs are based on the number of trips generated by the development. A TIA would be required when a development generates more than 400 daily passenger car equivalent trips. Traffic engineering research shows that one single-family residence generates an average of 10 trips per day. (More trip generation information is available from the ITE Trip Generation Report and in Appendix C.) Based on this rate, up to 40 homes could be constructed in a residential development without preparing a TIA. Any commercial or industrial use that generates more than 400 daily passenger car equivalent trips would also be required to have a TIA.

The TIA would assess the traffic impacts of the project and identify the appropriate mitigation of those impacts. The TIA would need to be prepared by an engineer and would contain information about the traffic generated by the project including the following items:

- Trip generation of the development.
- Distribution pattern of project-generated traffic.
- Identification and of service (LOS).analysis of the access point onto the public road system and any intersections at which the project adds 30 or more peak-hour trips.
- Measurement of impacts caused by the project.
- Mitigation of the project's impacts in proportion to the relative impact of the project, e.g., construction of improvements, implementation of management measures, or payment of system development charges.

The actions listed above are consistent with Policies 2.5 and 9.2 of the TSP. The guidelines for the completion of the TIA are shown in Appendix C.

Access Requirements

Appropriate access would also be required for development. For a single-family residence, a driveway or easement could provide access if the lot does not front on a county road. Improvements to the frontage of the lot could also be required as determined by the county engineer or public works director. This could include minor widening to adopted standards, or improvements to ditches or culverts at driveway locations. For a small development that generates up to 30 trips per day, legal access would be required via a county road or a recorded easement (a 20-foot wide easement if 1,000 feet or less; a 40-foot wide easement if more than 1,000 feet). If it is possible to further partition the land into more than three lots, a 60-foot wide access to a county road must be provided. This could either be dedicated right-of-way or a legal guarantee that right-of-way would be provided at the time of further development.

The TSP actions listed above are consistent with Policies 2.4 and 2.6 of the TSP.

Right-of-Way

Right-of-way is the publicly owned corridor in which a road is constructed. Generally, the right-of-way includes the travel lanes, road shoulder, drainage ditch or gutter, and easements for utilities or a reserved area for future roadway expansion.

The TSP establishes a minimum 60-foot right-of-way for most classifications of county roadways with the 5-lane standard having a wider right-of-way width requirement. The 60-foot width provides adequate right-of-way width to allow the roadway as well as the shoulders, ditches and/or sidewalks, and utility corridors to be located within the right-of-way, eliminating the need for additional easements. This ensures protection of the public infrastructure, and minimizes disruption to the adjacent property owner caused by maintenance and repair

activities. The right-of-way width is reflected in the county road standards discussed later in this section.

In some cases, the County may need to acquire right-of-way for new transportation improvements, or abandon right-of-way that is no longer needed for transportation purposes. It is also likely that right-of-way needs to be dedicated to the County for transportation purposes by other parties. To clarify the requirements for this task, the TSP establishes policy statements that refer to following current State statute and rule for the acquisition, abandonment, and dedication of right-of-way. These rules include the circumstances under which right-of-way would be identified to be acquired or abandoned, and the legal process for approval and recording of the transactions.

The procedures for abandonment, acquisition, and dedication listed above are consistent with Policies 2.6, 2.7, 2.8, and 5.11 of the TSP.

MODAL PLANS

Modal plans are the sections of the TSP for each transportation mode required by the Transportation Planning Rule. Morrow County's modal plans were developed using information collected and analyzed through a review of state and county goals and objectives, input from area residents, and available roadway system data. These plans consider the transportation system needs for the County during the next 20 years for capacity improvements as well as roadway maintenance and safety needs. The timing of specific improvement will depend on the rate of development and the changes in land use patterns throughout the County.

Roadway System Plan

Within Morrow County, the roadway system will continue to be the primary method of transportation in the region throughout the 20-year planning period. This section highlights improvements to the roadway system to accommodate growth and address safety and operational needs.

Performance Standards

Traffic engineers use a measurement called level of service (LOS) to assess the performance of a roadway system. It is measured on a scale that ranges from LOS A, which represents free flowing traffic with minimal delay, to LOS F, which represents severe congestion and long delays. The LOS is often used as a threshold to determine when improvements should be considered, such as additional lanes or new traffic control devices.

Because Morrow County currently does not have what would be considered significant traffic congestion, determining LOS for every roadway was not included as part of this study. However, the growth and development projected for the next 20 years could cause enough congestion to affect the operation of the roadway system in the more developed areas of the County.

To maintain an acceptable operating standard, the TSP sets LOS C as the minimum acceptable level for the unincorporated areas of the County and LOS D for the areas surrounding the cities within urban growth boundaries.

ODOT uses V/C ratio thresholds to set performance standards for state facilities. The State V/C standards are listed earlier in Table 6-4.

Estimated Cost of Roadway Improvements

Using recent construction costs as a basis, estimated costs per mile to improve rural system deficiencies were developed. Cost-per-mile estimates for reconstructing an existing rural two-lane roadway to county standards are shown in Table 6-6. The standard conditions estimate is for relatively flat, straight roadway; the moderate conditions estimate is for roads with moderate grades; and the difficult conditions estimate is for roads with severe grade, roadway realignment, accessibility problems, or other difficult construction conditions. For roads that do not require complete reconstruction, the seal cost and overlay estimates are used; for example, collectors are assumed to be overlaid and minor collectors are assumed to be seal coated.

The costs include engineering, inspection, and construction management. Estimated costs are averages to be used for planning purposes only; they may not represent the actual cost of proposed improvements. All costs are given in 2004 dollars and do not represent the time-value of money. Costs do not include widening the roadway to provide more lanes, but shoulder widening is included. Purchase costs for additional right-of-way are not included.

TABLE 6-6
ESTIMATED CONSTRUCTION COSTS PER MILE FOR RURAL IMPROVEMENTS

Road Classification	Standard Conditions ($)	Moderate Conditions ($)	Difficult Conditions ($)	Overlay ($)	Seal Coat ($)
Collector	425,000	850,000	1,275,000	200,000	--
Minor Collector	360,000	720,000	1,080,000	--	40,000

Connectivity

Connectivity refers to the ability to travel between commonly used origins and destinations in a reasonably direct fashion. A major connectivity deficiency within the County is the lack of a second north-south connection specifically between Ione and Boardman, which has historically been referred to as Ione-Boardman Road. This deficiency is heightened by the fact that the portion of Bombing Range Road adjacent to the Naval Weapons System Training Facility is not dedicated public right-of-way, but is instead managed and controlled by the Navy. Lack of public right-of-way for the entire north-south route poses difficulty for installation of utilities along the road, and for improvements to the road itself.

The existing impediments to transfer of Bombing Range Road to the County magnify the importance of Ione-Boardman Road as a second north/south connection. However, there are also impediments to constructing Ione-Boardman Road. Throughout the 1980's and 1990's the County participated in negotiations with the State of Oregon and major property owners, including the Boeing Agri-Industrial Company and Threemile Canyon Farms, to secure right-of-way for an Ione-Boardman Road by extending Ella Road north to Boardman. This effort was hampered by a 2001 Multi-species Candidate Conservation Agreement with Assurances (MSCCAA) for the Washington ground squirrel, ferruginous hawk, loggerhead shrike, and sage sparrow, in the event any or all of the these species are listed in the future as endangered or threatened.

The 2001 MSCCAA was researched in the May 11, 2005 Federal Register as part of the 2005 TSP preparation. The Federal Register states in part (emphasis added):

“The majority of existing colonies (in Oregon and throughout the species’ current range) [i.e., colonies of the Washington ground squirrel] are located on the Boardman Bombing Range and the Boeing tract, which contain the largest contiguous suitable Washington ground squirrel habitat. Although Boardman Bombing Range activities are not certain, they are not expected to change significantly in the foreseeable future.”

However, a major military training facility now in the initial stages of planning by the Oregon National Guard would be certain to significantly change activities on the Boardman Bombing Range in the foreseeable future. This information is not addressed by the May 2005 Federal Register or the 2001 MSCCAA. The Oregon National Guard’s plans for a military training facility on the Boardman Bombing Range create both an opportunity and an obligation to revisit the 2001 MSCCAA and revisit the ability to construct an Ione-Boardman connection. Action steps to assist the County in pursuing this issue further are included in the TSP implementation program.

The County has acquired a dedicated right-of-way that would allow construction of a road (Tower Road Extension) connecting the southern end of Tower Road to Highway 74 near Cecil, which would be useful for the western mid-County area as a transportation facility and as a fire break. As the next step the County must initiate a design effort, which is recommended in the TSP. However, this indirect alignment does not fully meet the need for a second Ione-Boardman connection, since it would serve the western area of mid-County.

Within urban areas of the County, connectivity allows better access for auto as well as bicycle and pedestrian travel. In order to improve connectivity, the TSP includes a block length standard of a maximum of 1,200 feet per block face. This standard gives non-motorized travelers the ability to travel more directly between their origins and their destinations.

These actions are supported by public input and Goals 3, 5 and 8 of the goals and policies found in Chapter 2.

Intersection Controls

Most intersections in Morrow County will probably operate without signals for the next 20 years. The most likely intersections to require signalization are along I-84 in Boardman and along US 730. Any traffic signal proposed on US 730 should be coordinated with the school's pedestrian crossing plans. The placement of intersection controls should only be done when the control can improve the efficiency and safety of an intersection. Usual practice is to follow the intersection control warrants outlined by the Manual of Uniform Traffic Control Devices (MUTCD). These warrants consider a variety of factors including safety, sight distance, pedestrian presence, and traffic volumes in determining the type of appropriate traffic control. Signals on US 730 east of Irrigon should be in accordance with the US 730 Corridor Refinement Plan.

Proposed changes in intersection traffic control should be studied to ensure the changes are warranted based on thresholds in the MUTCD. This is consistent with Policies 5.4 and 5.5 of the TSP.

Pedestrian System Plan

In rural areas, pedestrians are typically accommodated on roadway shoulders. As roadways are paved, widened, reconstructed, or repaved on county and state facilities, shoulders should be

widened to meet the recommended roadway standards discussed previously in this chapter and illustrated in Appendix A.

The TSP calls for improved pedestrian and bicycle facilities on county roads by improving roadway standards to include widened shoulder areas and by promoting better connectivity through a block length standard. Reduced block lengths allow pedestrians and bicyclists to shorten their travel distance by creating more direct routes through an area.

The original TSP recommended the development of two bicycle/pedestrian pathways, one a short off-road pathway extending from the City of Heppner to the swimming pool, which has been constructed, and the second a path along the Columbia River over the 12 miles between Boardman and Irrigon (the Columbia River Heritage Trail). For the Heritage Trail, additional local connections are recommended in Boardman, Irrigon and the Port of Morrow Industrial Area, as well as extension of the trail west of Boardman. Ultimately the Heritage Trail is planned to extend approximately 30 miles from Umatilla County to Quesnal Park, subject to the availability of funding. Extensions of and connections to the Heritage Trail should conform to the trail guidelines, which include the following facility width recommendations:

- Two-foot rural road shoulders on both sides of the road, in compliance with Oregon Rural Road standards.
- Eight- to ten-foot dedicated trails in “urban” areas (City of Boardman/Tower Road to City of Irrigon/Twelfth Street), subject to right-of-way availability.
- Eight- to ten-foot dedicated trails in rural segments (west Morrow County line to Tower Road; USFW Umatilla Wildlife Refuge where not already paved; through the ODFW Wildlife Area)

Bicycle System Plan

On most County facilities, bicyclists share the roadway with motorists. On roadways with high ADT volumes, shoulders need to be widened to accommodate bicyclists. As roadways are paved, widened, reconstructed, or repaved on county and state facilities, shoulders should be widened to meet the recommended roadway standards.

Designated bicycle facilities can be provided in a variety of ways and are often available for use by pedestrians and other non-motorized users. Bicycles would share the road with motorists on roadways with shoulders narrower than 4 feet. In areas with high bicycle use, a separate pathway or striped bicycle lane should be considered along both sides of the roadway. This TSP recommends that the County prepare a county-wide bicycle, pedestrian, and equestrian strategy to identify opportunities for facilities. As outlined above in the Pedestrian System Plan, the County should continue to plan and construct additional connections to the Heritage Trail, which also serves bicycle travel.

This is consistent with Policies 6.1, 6.2, and 6.3 of the TSP.

Transportation Demand Management Plan

TDM is a collection of strategies directed to reduce the number of trips by automobiles. Programs are normally directed towards commute trips, when traffic levels are usually highest. These strategies not only benefit the roadway system through reduced traffic levels but also

contribute to reduction in air pollutants. While TDM is usually applied only in highly urbanized areas, the following measures are part of the TSP:

1. Require companies with more than 100 employees to provide TDM measures for their employees, that could include some or all of the following options:

   – *Cash-out parking program*: Gives an employee the choice between a parking space and a monthly cash incentive.
   – *Employer-sponsored shuttle or vanpools*: Usually works best for groups of employees who live more than 30 minutes from the work site.
   – *Carpool or vanpool incentives or subsidies*: Encourages employees to share rides to work.
   – *Ride matching services*: Helps employees find others who live along their commute route.
   – *Preferential carpool and vanpool parking*: Rewards those who share ride a more convenient parking location.
   – *Commute alternatives information*: Provides a variety of information on alternative methods to get to work.
   – *Provision of showers and locker facilities*: Encourages employees to bicycle or walk to work.
   – *Travel allowance*: Gives each employee a specific amount of money to use to "purchase" a parking space, or "save" by using commute alternative.
   – *Flexible work hours*: Allows employees to participate in carpools or other commute options.
   – *Compressed work week*: Reduces the number of weekly trips made by establishing 4-day 10-hour shifts or other compressed schedules.
   – *Assignment of a transportation coordinator*: Gives employees a contact person to assist in choosing a commute alternative.
   – *Telecommuting program*: Allows employees to work from home through the use of a "home-office".

2. Establish a population threshold of 15,000, after which the County will initiate TDM programs such as the following:

   • Employer information program on TDM measures.
   • Formation of TDM committee made up of major employers and governmental representatives. Such a committee should include the Oregon National Guard, if the Boardman Bombing Range becomes a major military training facility.
   • Development of park-and-ride facilities near freeway interchanges
   • Development of pedestrian and bicycle facilities between key destinations

This TDM program is included as part of the Morrow County TSP.

Public Transportation Plan

Public transportation in Morrow County is currently limited to dial-a-ride service for older adult and physically challenged residents, and regional bus service provided by Greyhound and Estrella Blanca.

Greyhound and Estrella Blanca operate private transit bus lines throughout the United States. Both have a daily route that travels through Morrow County with a scheduled stop in Boardman. Greater service options are available in Hermiston and Pendleton in Umatilla County and north in Pasco, Washington. Service is provided to various cities along routes to Portland, Seattle, and Boise, where connections can be made to other destinations. Existing and expected population in Morrow County suggest that Greyhound should schedule additional stops in Boardman and a new stop in Irrigon.

Transportation services to older adults and physically challenged residents of Morrow County are provided by Morrow County Special Transportation, a para-transit provider. Services provided include dial-a-ride services, client transportation, and medical transportation, all provided by volunteer drivers. The operation includes three buses in Heppner serving mid-county, and one bus and one car in both Boardman and Irrigon. Operations are funded through a grant from the Public Transit Division of ODOT.

The TPR exempts communities with a population of less than 25,000 from including mass transit facilities in their development regulations. The para-transit services provided by Morrow County Special Transportation are adequate to meet existing and projected transit needs, and fixed-route public transit is unlikely to be needed within the 20-year planning horizon of the TSP under currently projected conditions. However, Morrow County strongly supports transit use. The County will continue to promote private transit service to provide connections to major employment sites and regional airports, both within Morrow County and for linkages to Umatilla County, and periodically will re-evaluate the need for public transit in the County. Should the Oregon National Guard proceed with major military training facility, as is being discussed, additional transit service may be justified to and from Umatilla County.

Additionally to support current Port activities the development happening at the East Beach Industrial Park, this TSP supports van-pool type transit to move workers from residential centers to employment centers.

Rail Service Plan

Rail services within Morrow County include freight services. Rail transportation has historically been, and continues to be, an important avenue for moving goods within the region.

Union Pacific Railroad's main line parallels I-84. Two spurs extend from this line to serve a coal-fired gas plant and the Umatilla Army Depot. Most of the rail freight service supports agricultural activities in the county and the Port of Morrow freight activities.

The Port is served by Union Pacific and has rail service in the main port area. Over the past decade the port has completed a rail loop and siding to facilitate additional development in the East Beach area. The Port continues to work with a consultant to support additional rail development.

There has been no passenger rail service in Morrow County since rail service between Salt Lake City, Utah and Portland, Oregon was suspended in the mid-1990s. Amtrak does provide service between Portland and Spokane on its Empire Builder line. The Tri-Cities is the closest stop for this service as population in Morrow County and nearby counties increases, efforts

should be made by the County to investigate the development of passenger rail service into the region.

Truck Service Plan

Currently, all highways, arterials, and collectors are designated as truck routes within the County. This approach is limited in that it does not focus available resources in the development of specific truck routes. An exception to this approach is the County's Draft Solid Waste Management Plan, which does recommend specific truck routes for movement of solid waste. A freight and goods transportation strategy should be developed for Morrow County by the County and the Port of Morrow that involves interested stakeholders and emphasizes the development of private/public partnerships. The study should identify specific corridors for development into truck routes and develop the specific truck route design specifications to improve the operations and safety of these routes.

An additional concern for truck traffic is the impact on rural access roads from heavy truck traffic, most frequently in connection with trucks traveling to and from gravel quarry sites. Frequently these trucks are non-local contractors working on State facility projects, or trucks serving new development sites. The County needs to use ordinances and a permitting process to ensure local access roads damaged from truck traffic are repaired and restored by the parties causing the damage.

Airport Service Plan

Air access will be increasingly important as the County continues to grow. The state's most recent pavement maintenance report for the Lexington-Morrow County airport (2003) calls for a five-year maintenance plan for the 2004-2009 period with about $617,000 of inspection and maintenance work that is needed to avoid more costly repair work. The Airport Layout Plan for the Lexington-Morrow County Airport, acknowledged by DLCD in 2002, is a 20-year plan defining how the airport and the adjacent lands are planned to be used over the planning period. The County should coordinate pursuit of grants or other funding mechanisms to ensure that the recommended maintenance work is performed, and to begin implementing the measures identified in the 2002 Airport Layout Plan.

Pipeline Service Plan

A pipeline transporting natural gas runs across Morrow County. The PGT Pipeline enters Morrow County near the southeast corner of the County, travels near Ione, and continues to the northeast to the Morrow-Umatilla county line. Installation of a pipeline connection to Heppner is was planned, but has not been constructed. During the 2012 TSP update a proposal is just starting the approval process to develop the Carty lateral, a a line from the current facility to serve a proposed gas fire power plant near the Boardman coal fired plant.

Water Transportation Plan

The Port of Morrow operates barge facilities on the Columbia River. The port serves as a key multimodal transportation facility for the County, providing an interface between ground, rail, air, and water transportation. As discussed in Chapter 3, the port activities extend beyond its role

as a freight terminal. The Port offers a number of industrial sites, provides industrial utilities, and plays a supportive role in the development of the adjacent communities.

The Port is expanding its market from a historical emphasis on agriculture and logging to include more food processing and light manufacturing. The Port of Morrow has three to four miles of frontage on the Columbia River including six terminals, two berths that are 12 to 16 feet deep, and two overhead cranes that have an approximate 200-ton capacity. There are multiple barge companies that service the Port of Morrow with approximately 2,000 containers being handled at their container docks each month. Over 50 percent of the goods shipped are from foreign markets, and the destination port for most shipments is Portland.

In addition to freight traffic, the Port's facilities could provide docking for recreational and tourist opportunities, e.g., the Columbia Sternwheeler. The County and Port need to work cooperatively to provide needed docking facilities and promote their use.

Current access to the Port's facilities in Boardman is from a two-lane roadway with limited turning lanes. This facility serves current traffic adequately, but may not be sufficient as the Port's business increases. The width and weight restrictions of several overpasses on roads in the immediate vicinity of the port may also restrict the port's growth. Alternate access to the east side of the Port from US 730 is a priority to port officials. Two Port accesses to US 730 are included in the roadway element of this TSP, with a longer-term recommendation that they be connected by an overcrossing over the Union Pacific railroad. As a long-term improvement to serve industrial development in this area, modifications to the existing I-84/US 730 interchange may be necessary. Two Interchange Area Management Plans are being completed to address access concerns at the Port of Morrow and to facilitate current and future development of the East Beach Industrial Area.

TRANSPORTATION SYSTEM PLAN IMPLEMENTATION PROGRAM

Implementation of the Morrow County TSP requires increased coordination between jurisdictions, changes to the existing zoning code and subdivision ordinance, and the preparation of a 20-year capital improvement plan (CIP). These actions enable the County to address both existing and future transportation issues in a timely and cost effective manner.

Interjurisdictional Planning

The co-adoption of the Cities' TSPs allows for coordination of standards and planning efforts within the urban growth areas, such as the coordination of road standards and the provision of bicycle and pedestrian facilities. In addition, interjurisdictional planning allows the development of county-wide funding resources and the mechanisms to distribute these funds. The County's change to two-acre minimum parcel size for rural residential development allows a greater focus on areas within the Urban Growth Boundaries of the cities.

Interjurisdictional coordination with ODOT is a structured process involving Area Commissions on Transportation (ACTs), which establish the public process by which projects are included in the area project selection priorities for the Statewide Transportation Improvement Program (STIP). (ACTs) are advisory bodies charted by the Oregon Transportation Commission (OTC) to address all aspects of transportation (surface, marine, air, and transportation safety) with primary focus on the state transportation system. ACTs consider regional and local transportation issues if they affect the state system. They work with other local organizations dealing with transportation-related issues. There are 11 ACTs across the state. Morrow County is a member of the Northeast Area Commission on Transportation (NEACT), which includes representatives from Morrow, Baker, Union, Umatilla and Wallowa counties; five members representing the cities in each county; one at-large representative from each County; two representatives of the Confederated Tribes of the Umatilla Indian Reservation; and the ODOT Region 5 Area manager. NEACT prioritizes transportation problems and solutions, and recommends projects to be included in the STIP. Morrow County is committed to working through the NEACT to pursue implementation of improvements recommended in this TSP.

Another aspect of interjurisdictional planning is the need to address ownership of and planning for the section of Bombing Range Road owned by the US Navy and maintained by Morrow County.

20-Year Capital Improvement Program

A 20-year CIP that schedules and prioritizes each of the projects of the TSP is provided. Table 6-7 outlines State projects and Table 6-8 outlines Port and city projects. State, Port and city projects are listed for purposes of establishing consistency and funding eligibility. Two levels of priority are established in each table, based on the anticipated need for the project's implementation: High priority (0 to 5 years) and Medium priority (5 to 20 years). These priorities were set based upon the projects' qualitative evaluation as compared to the criteria established in Chapter 5. Scheduled projects that would produce the most safety, environmental, socioeconomic, land use, or cost benefits were ranked with the highest priority. Remaining projects were ranked medium priority.

Morrow County identified 54 projects in its 20-year roadway plan with at total cost of $60.8 million. These include 32 projects ranked highest priority at a cost of $14.4 million, including $3.7 million for 28 projects on County facilities and $10.7 million for 4 projects on state/local/Port facilities. Twenty-two medium-priority projects were identified with a total cost of approximately $46.4 million, including $22.7 million for 16 projects on County facilities and $23.7 million for 6 projects on state/local/Port facilities.

TABLE 6-7
STATE FACILITIES RECOMMENDED IMPROVEMENTS

Project Description	Action	Estimated Cost ($1,000's)
High Priority		
U.S. 730 Corridor Refinement Plan implementation	Implement Plan	
Bombing Range Road at OR 207	Relocate Intersection, add left turn pocket (completed 2009-2010)	400
Medium Priority		
I-84 Irrigon Junction	Repair eastbound, westbound bridges	9,800
OR 207 from Hardman to Spray	Overlay	1,420
OR 74 at horseshoe curve near Morgan	Safety improvements and reconstruction	1,200

TABLE 6-8
PORT/CITY FACILITIES RECOMMENDED IMPROVEMENTS

Project	Description/Action	Estimated Cost ($1,000's)
Medium Priority		
East Beach Industrial Area Access	New access to serve the Port of Morrow East Beach Industrial Area located north of the existing I-84/US 730 interchange and west of US 730, initially onto US 730 via an at-grade or elevated intersection or intersections. As the east industrial area develops, the need for direct interchange access will require additional analysis. (See IAMP)	$2,000 – 10,000
Highway 730 Connector for East Beach Industrial Area Access	Installation of 6,800 feet of road extension off Highway 730 for east access to the Port's East Beach Industrial Park area. This project would extend Lewis & Clark Drive to Highway 730. (See IAMP)	$6,200

TABLE 6-8 PORT/CITY FACILITIES RECOMMENDED IMPROVEMENTS		
Project	**Description/Action**	**Estimated Cost ($1,000's)**
East Beach Industrial Area Circulation	Installation of 18,900 feet of industrial road to extend Gar Swanson Lane from East Columbia Avenue to loop the Port's industrial property to intersect with Lewis & Clark Drive (See IAMP)	$4,500
Kunze Road (Boardman)	Reconstruct from Main to Tower (completed 2008-2009)	$2,700
Olson Road (Boardman)	Construct overpass over I-84	$9,000
Tower Road overcrossing (Boardman)	Construct overcross over UP railroad line	$1,000
I-84/Tower Road Interchange	Modifications to the I-84/Tower Road Interchange, including dual lane ramps, a four-lane bridge, and improved turning radiuses at the on/off ramps	
I-84/Tower Road Interchange	Stacking or merge lanes (acceleration/deceleration lanes) extending approximately 1.5 miles in each direction from the I-84/Tower Road Interchange.	
Tower Road	Widen Tower Road to five lanes between I-84 and the southern most entrance to the speedway on Tower Road	
New I-84/Speedway Interchange	A new I-84/Speedway Interchange east of PGE's north/south rail spur crossing of I-84 and including two-lane on and off ramps and a four land bridge over I-84.	
I-84 at New Speedway Interchange	Stacking or merge lanes (acceleration or deceleration lanes) extending approximately 1.5 miles in each direction from the I-84/Speedway interchange	
Interstate 84	An additional (third) eastbound and westbound travel lane on I-84 between Highway 730 and the Speedway Interchange and from 1200 meters west of the Army Depot Interchange to the I-82/I-84 Interchange	
Interstate 84	Bridge widening or modification as necessary along I-84	
Interstate 84	Extended ramps and taper lanes on I-84 westbound between I-82 and a point west of the I-84/Army Depot Interchange	

TABLE 6-8 PORT/CITY FACILITIES RECOMMENDED IMPROVEMENTS		
Project	**Description/Action**	**Estimated Cost ($1,000's)**
Interstate 84	Merge/diverge lanes eastbound on I-84 between a point west of the I-84/Army Depot Interchange and the I-84/I-82 Interchange	
Interstate 84	Modifications to the connector ramps at the I-84/I-82 Interchange to provide two-lane on or off ramps	
New Speedway Perimeter Road	A four-lane surface road system within and encircling the perimeter of the Speedway	
Kunze Lane	Realignment of the Kunze Lane/Tower Road interconnection southward to meet Division 51 spacing standards	Completed
Interstate 84	Improvements to the I-84/Army Depot Interchange to facilitate I-82/I-84 merge/diverge lanes.	

TABLE 6-9 MORROW COUNTY RECOMMENDED PROJECTS FOR NON-VEHICULAR MODAL SYSTEMS		
Plan Element - Facility.	Project Description	Estimated Cost ($1,000's)
Pedestrian/Bike – Heritage Trail	Phase 1 of the Heritage Trail between Irrigon and Boardman.	$350
Pedestrian/Bike – Heritage Trail	Completion of Phase 2 of the Heritage Trail, including an Ullman Boulevard bicycle/pedestrian overcrossing over the Union Pacific railroad, and additional pavement width along Ullman Boulevard north of railroad to accommodate bicyclists and pedestrians.	$215
Transit – Bus facility in Boardman	Parking/maintenance facility for Special Transportation buses serving North County (completed 2007)	$50
Air – Lexington-Morrow County Airport	Complete the 5-year maintenance program for the 2004-2009 period as recommended in the state's 2003 pavement maintenance report, to avoid more costly repair work. (completed 2009)	$600

CHAPTER 7
FUNDING OPTIONS AND FINANCIAL PLAN

The Transportation Planning Rule (TPR) requires the Morrow County Transportation System Plan (TSP) to evaluate possible sources of funding for improvements. Increased competition for available funding sources has created an environment where creative and innovative techniques are needed to fund both existing and future transportation needs. This chapter presents the funding options and financial plan for meeting the recommended improvements identified in the TSP.

TRANSPORTATION NEEDS

In Chapters 5 and 6, the short- and long-term project lists provide an approximate total in current dollars to implement the transportation improvement projects recommended in the TSP. Project scheduling will be determined partially by the population and employment growth the County experiences over the next 20 years, which will influence the timing and magnitude of improvement needs. For many projects, joint funding will need to be pursued, as appropriate, with the Port of Morrow, ODOT, and individual cities. Private developers may also be tapped for system improvements. Should the Boardman Bombing Range become an active tank training facility, as is being considered by the Oregon National Guard, a partnership with the federal government and/or the Oregon National Guard should also be pursued for needed improvements to the roadways serving the Bombing Range and the county should pursue opportunities to apply joint public and private financing for economic development projects such as major new industrial facilities or a major new entertainment facility.

HISTORICAL SOURCES OF FUNDING

Morrow County currently funds transportation system improvements through federal, state, and local sources. Property taxes make up the largest single source of revenue; although annual increases in property tax assessments on individual properties are limited as a result of Measures 5 and 50, property tax revenue as a whole has more than doubled since 1997, when property tax revenue totaled $721,000. Property tax revenue has increased as a result of new development throughout the county. Other major funding sources include gas tax/vehicle licensing revenues and funds from the Oregon Transportation Investment Act (OTIA), which are devoted to specific improvements, primarily bridge repair and/or replacement. Other funding sources include a portion of waste disposal fees collected at the Finley Buttes Landfill, for Bombing Range Road and forest receipts for national forest lands.

CURRENT REVENUE SOURCES

To finance the transportation system improvements recommended for Morrow County over the next 20 years, the county will need to consider and use a variety of funding sources. Recent property tax limitations (Measures 5 and 50) have substantially reduced local governments' the ability to raise needed funds through increases in property tax rates or higher property assessments. The revenue sources described in this section may not all be appropriate in Morrow County, but they represent the range of financial sources currently available to fund transportation improvements in Oregon. The County already uses many of these funding sources. Grant funding for bicycle and pedestrian improvements has been used in the City of Heppner, but not directly by the county.

ODOT Funds

ODOT provides funding for highway-related or highway-benefiting improvements through the Statewide Transportation Improvement Program (STIP). The STIP sets out a four-year funding cycle for transportation plans, and is updated every two years. The STIP is funded through federal transportation funding. ODOT's allocations of federal transportation revenues increasingly target those improvements that benefit highways indirectly, such as bicycle and pedestrian facilities, and those that provide economic benefit to a jurisdiction or region. Morrow County should continue to pursue funding for its high-priority projects through the STIP process, particularly those that provide economic benefits. Projects identified through this TSP or other planning processes may be eligible for STIP funds. The County's highway-related projects would be combined with all other projects within ODOT Region 5 submitted for STIP consideration, and then funded based on their relative priority to other projects within the region.

ODOT's OTIA bonding program has contributed the greatest influx of new transportation funds over the past few years. ODOT funds will continue to be an important resource for maintenance and improvement projects within Morrow County highway corridors.

Property Taxes

Property taxes are often considered as a primary revenue source for raising general fund revenues. Revenue from property taxes can be used to fund transportation improvements through general fund transfers. Property taxes may be permanent (tax base levies), directed to specific projects (bond levies), or be in effect for a limited amount of time (serial levies). Tax base levies are the most common type used. Over the last two decades, the use of property taxes for raising general fund revenues has been restricted through a series of ballot initiatives. The first, Measure 5, restricted the non-school tax districts to $10 per $1,000 of assessed value and the total tax to $15 per $1,000 of assessed value. In May 1997, Measure 50 passed, which rolled back property taxes to 1994-95 levels and limited future increases to 3 percent annually, while requiring that jurisdictions prioritize funding for public education and safety. These restrictions typically decrease the amount of funds available to cities and counties for application to the transportation system. Given that property tax revenues will likely continue to be limited for all governmental uses, transportation projects will have to compete with other government services. Morrow County has substantial amounts of undeveloped industrial property under the control of the Port of Morrow. As this property is developed, the increased assessed values will increase property tax revenues. However, the county should not consider property taxes to be a major source of new roadway improvement funds in the future.

Gasoline Taxes

The state of Oregon currently provides funds from the sale of gasoline, vehicle registration, and weight/mile taxes to provide jurisdictions with funds to maintain and improve streets. Gasoline taxes are collected for every gallon purchased by the consumer. An allocation formula based partially on population divides available funds among the state's counties and incorporated cities. State law also allows voters within a jurisdiction to approve additional gasoline taxes for use in funding street maintenance and improvements. A vote of the county's residents would be needed to enact a county-wide increase to the gasoline tax.

Vehicle Registration Fees

Like gasoline taxes, vehicle registration fees are collected by the state and then distributed to cities and counties. Under state law, counties are allowed to impose an additional vehicle registration surcharge on all vehicles residing within the county. Funds collected are required to be used to either maintain or improve roads within the county. To implement an additional vehicle registration fee within Morrow County would require voter approval, and the county would need to develop mechanisms to distribute the funds for county and city roadway projects.

Special Public Works Funds

The state of Oregon through the OEDD supports economic development and job creation by providing grants and loans to construct, upgrade, or repair public infrastructure. Special public works funds (SPWF) have been used for such projects as water, sewer, and street improvements. Funding is limited to projects that are associated with economic development of a community and the creation of family-wage jobs.

Project Mitigation

The county should pursue project mitigation to offset the transportation impacts from large projects. Under the preferred alternative, the project will be subject to TIA requirements included in this plan, which will analyze and identify impacts created on the transportation system. Expected mitigation for the project impacts would be provided either as mitigation payments or by the proponent completing improvements to affected facilities.

Public Transportation Funds

Funds and loans for public transportation are available to encourage the development and operation of service for the general public, older adults, and those with special needs. Most programs require local government contribution to receive funds. Four of the major sources available are as follows:

- Special transportation fund (STF)
- Section 5311 funds
- Community transportation program
- Special transportation district.

Bicycle and Pedestrian Program Funds

The state of Oregon offers grants through the state Bicycle and Pedestrian Program to promote bicycle facilities for non-recreational uses. A local match is required to obtain funds. Funding sources should be pursued by the County to further develop their bicycle and pedestrian systems.

Finley Buttes Road Fund

Since the opening of the Finley Buttes regional landfill a fee has been collected to support preservation and maintenance of the northern portion of Bombing Range Road.

EMERGING REVENUE SOURCES

Enterprise Zone / Strategic Investment Program

Morrow County has within its boundary the Columbia River Enterprise Zone and can authorize use of the Strategic Investment Program. Both programs have the ability to provide discretionary funding to the Morrow County Treasury. A portion of theses discretionary funds could be used to fund either specific road projects or provide general road funds for preservation and maintenance.

Aggregate Material Depletion Fee

The Morrow County Court is considering adoption of a fee charged to mining operators in aggregate material that leaves the county. Up to one half of the collected revenue under this fee is proposed to be used for the preservation and maintenance of the county road system.

REVENUE SOURCES NOT CURRENTLY USED IN MORROW COUNTY

Transportation System Development Charges

A transportation system development charge (SDC), also referred to as a transportation impact fee (TIF), is a fee charged to new development to offset a portion of the costs for necessary transportation improvements to the entire system. SDCs are also applicable to water and sewer. The fee is usually based on the number of new trips generated by a development, either during a peak hour or on a daily basis. ORS 223.297 to 223.314 describe the requirements that a SDC must meet and the method of determining the amount of the fee, which is based on the total cost of eligible improvements over the planning timeframe, typically 20 years. Generally, SDCs can only be applied to transportation projects identified in a jurisdiction's capital facilities plans. Developments that are conditioned to improve specific facilities to mitigate the development's impact can receive a credit against their SDC, subject to rules governing which facilities are eligible for SDC credits, and the specific components of improvements for which the developer can receive a credit. For example, a proposed shopping center development might be conditioned to widen an adjacent roadway or install a traffic signal at a nearby intersection, and could receive a credit for the cost of that work up to the amount of that development's SDC assessment. Should the county elect to enact a transportation SDC, the TSP recommends that traffic impact analyses (TIAs) be required of new development over a certain minimum threshold, to assess the impact to county-controlled facilities. Morrow County can then collect SDC fees based on the number of trips generated by new development and use the funds to construct or maintain the County's roadway system. Creating an SDC program first requires a countywide analysis of future transportation system needs, improvement costs, potential development, and the extent to which future development should be responsible for those costs.

Local Improvement Districts

State law allows jurisdictions to fund public improvements through the development of Local Improvement Districts (LID). This source allows either property owners or local jurisdictions to approve an LID as a method of funding street, sidewalk, or other improvements. An LID allows the cost of improvements to be shared among those who most benefit from the improvement.

Costs are normally assessed either by property frontage, building square footage, or some other method. Property owners usually have the option of paying for the improvement up front or apportioning the costs out over a specified term through financing through the jurisdiction. The county or city must adopt an LID Ordinance to identify the LID boundary and the repayment provisions. A difficulty of LIDs is that sufficient support among affected property owners must first be obtained to approve its implementation.

Street Utility Fees

A street utility fee is an assessment on all businesses and households to fund improvements to the transportation system. The fee differs from an LID in that the assessment is usually based on the type of land use and is based on the expected number of trips to be generated by that type of use. Differing fee schedules are normally developed for commercial and residential properties. The City of Medford, Oregon, implemented such a fee to operate and maintain its city street system.

FINANCING OPTIONS

Morrow County may require financing to accumulate the funds required to improve its transportation system. Financing allows the county to accrue debt to fund roadway improvements, which it then can pay back as revenue sources become available. This allows the County to initiate roadway improvements sooner or provide a local match to additional funding sources so that the improved roadway network can be used to attract new businesses and residents that should increase its tax base. Two main types of financing are available: general obligation bonds and revenue bonds.

General Obligation Bonds

General obligation bonds are bond issues that are repaid by a voter-approved property tax levy. Whether voters approve a property tax levy to fund repayment of the bond depends on the whether the project or projects are perceived as being a benefit to a majority of the county residents.

Revenue Bonds

Revenue bonds are sold by a jurisdiction and repaid with “revenue” from an enterprise fund. The most common examples are for sewer or water facilities where service rates are used to repay the bond. The bond's rating and interest rate are generally based on the reliability of the revenue source. In Morrow County’s case, revenue bonds could be sold to fund improvements with a portion of vehicle fuel tax revenues used as the method of repayment.

CHAPTER 8
ORDINANCE MODIFICATIONS AND TRANSPORTATION PLANNING RULE COMPLIANCE

REGULATION AND ORDINANCE MODIFICATIONS

The Transportation Planning Rule (TPR), OAR Section 660-012, requires that each jurisdiction in the state of Oregon adopt a transportation system plan (TSP) and make amendments to its land use regulations that support the implementation of the plan. Significant changes were made to the Morrow County Subdivision Code and Zoning Ordinance after both the 1997 and 2005 TSPs were adopted to implement the TSP and conform to the TPR. Modifications will continue to be identified and adopted as necessary.

TRANSPORTATION PLANNING RULE COMPLIANCE

In 1991, the Oregon Transportation Planning Rule (TPR), OAR 660-12-045, was adopted by the Oregon Department of Land Conservation and Development (DLCD) with concurrence of the Oregon Department of Transportation (ODOT). The TPR requires that all jurisdictions adopt an approved TSP. This section states each of the required TSP elements and shows how the Morrow County TSP meets each applicable requirement of the TPR.

COMPLIANCE ANALYSIS

The TPR requires that jurisdictions take four basic actions to implement their TSP. These include the following:

- Amend land use regulations to reflect and implement the TSP.
- 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, including access management and control, protection of public use airports, coordinated review of land use that could affect transportation facilities, conditional approval of development to minimize transportation impacts, regulations regarding notice, regulations to ensure consistency with the TSP.
- Adopt land use or subdivision regulations to provide safe and convenient pedestrian and bicycle circulation and bicycle parking, and ensure that new development provides on-street streets and accessways that provide reasonably direct routes for pedestrian/bicycle travel.
- Establish street standards that minimize pavement width and total right-of-way.

Morrow County has made changes to several areas to accomplish these requirements. The county has adopted a set of policies that were created as part of the development of the original TSP, which have been subsequently reviewed and modified as appropriate (Chapter 2).

Procedures to implement these policies have also been developed (Chapter 6). These procedures include new road standards, a traffic impact analysis (TIA) procedure, and a clarification of the approval process for development. Table 8-1 shows an analysis of the requirements and how they have been met.

TABLE 8-1
TPR COMPLIANCE ANALYSIS

TPR Required Elements	Morrow County TSP
1. Amend land use regulations to reflect and implement the TSP	• Land use goals and policies are included in Chapter 2 of the TSP that support and protect future transportation corridors. • Changes to county zoning and subdivision regulations and land-use ordinances were completed after adoption of the 1997 and 2005 TSPs.
2. Clearly identify which transportation facilities, services and improvements are allowed outright and which will be conditionally permitted or permitted through other procedures.	• Coordination/Process Policies 1.5-1.8 identify measures to plan, schedule, and fund projects through the capital improvement program. • Changes to the county zoning and subdivision regulations have been completed after adoption of the 1997 and 2005 the TSPs.
3. 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 and management control. • Protection of public use airports.	• Land Use Policy 2.4 requires new developments provide appropriate access to county roadways. • Land Use Policy 2.9 requires the preparation of an access management plan and use of ODOT standards in the interim. • Modifications to county access control standards have been adopted. • The county has adopted Goal 7 and Air Transportation Policies 7.3, 7.5, and 7.6 to protect public use airports.
• Coordinated review of land use decisions potentially affecting transportation facilities.	• Coordination Policies 1.1, 1.2, 1.3, and 1.4 call for the coordination of planning activities with the cities, Port of Morrow, adjacent counties, ODOT, and DLCD.

TABLE 8-1 TPR COMPLIANCE ANALYSIS	
TPR Required Elements	Morrow County TSP
• Conditions to minimize development impacts to transportation facilities.	• Land Use Policy 2.2 requires the identification and reservation of future transportation corridors. • Land Use Policy 2.5 requires new development to identify impacts and provide mitigation. • Land Use Policy 2.6 calls for the dedication of right-of-way where appropriate. • Traffic impact analyses are required for all developments creating more than 400 average daily trips.
• Regulations to provide notice to public agencies providing transportation facilities and services of land use applications that potentially affect transportation facilities.	• Coordination Policies 1.1, 1.2, 1.3 and 1.4 call for the coordination of planning activities with the cities, Port of Morrow, adjacent counties, ODOT, and DLCD.
4. Adopt land use or subdivision regulations to provide safe and convenient pedestrian and bicycle circulation and bicycle parking, and ensure that new development provides on-street streets and accessways that provide reasonably direct routes for pedestrian/bicycle travel.	• Roadway System Policy 5.2 requires the development of new roadways to meet the revised standards that provide improved bicycle and pedestrian facilities. • Bicycle, Pedestrian, Equestrian, and Transit Policy 6.1 calls for the development of new roadway design standards to accommodate bicycle, pedestrian and equestrian travel. • Bicycle, Pedestrian, Equestrian, and Transit Policy 6.3 encourages the development of multi-use paths and trails. • Roadway design standards are included in the TSP in Chapter 6, and have been adopted into the Zoning and Subdivision Ordinance.
5. Establish street standards that minimize pavement width and total right-of-way.	• County road standards are included in the TSP in Chapter 6 and have been adopted into the Zoning and Subdivision Ordinance.

APPENDIX A
ROADWAY STANDARDS

INTRODUCTION

The following roadway standards were developed in conjunction with the Morrow County Public Works Department and follow the design standards set by the American Association of State Highway and Transportation Officials (AASHTO) and the Oregon Department of Transportation (ODOT). The following nine road standards reflect the differing design and capacity needs within Morrow County. Generally, roadways of a lower number represent a higher design standard.

Rural Arterial

Rural arterials are design for roadways where higher traffic volumes are common or along major truck corridors. This standard of road is characterized by long-wearing asphalt concrete pavement over a base of 10 to 18 inches of aggregate. Travel lanes for this standards are 12-feet wide and a minimum of 3 feet of shoulder is provided on each side of the roadway.

Rural Collector

Rural collectors represent a second-level standard for road construction. Like rural arterials, rural collectors are paved using two to three inches of asphalt concrete, but provide only eight to nine inches of base aggregate. Travel lanes are still 12-feet wide, but shoulders can be narrow as one foot.

Rural Access

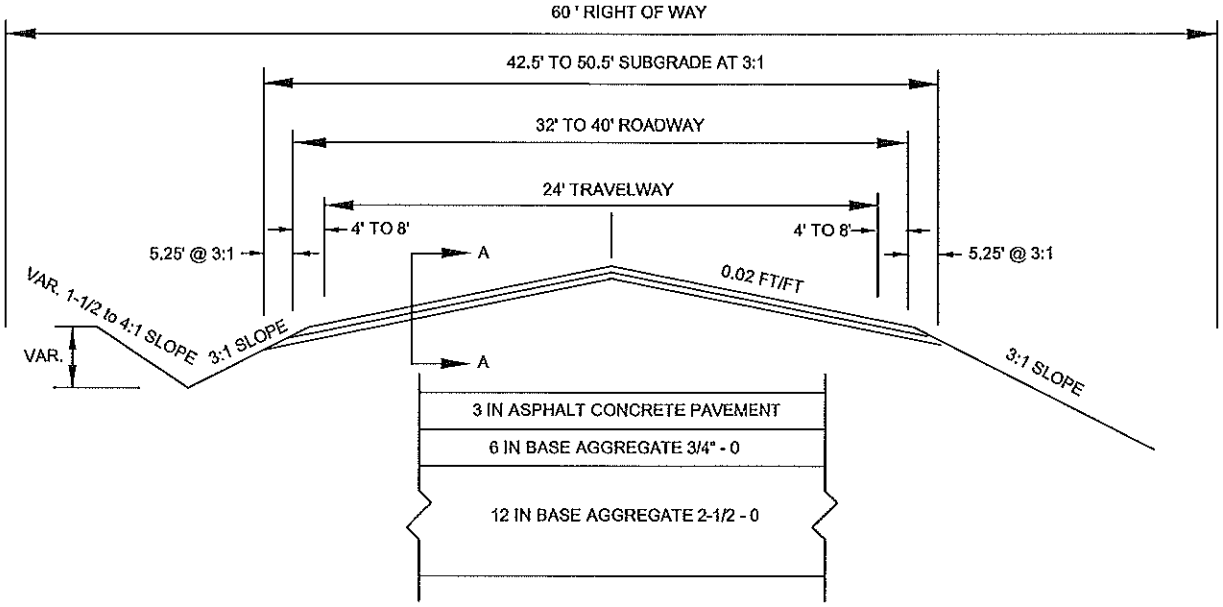
Rural access roads are lighter duty roads designed mainly for lower travel volumes and fewer truck trips. Rural Access I roads still use asphalt concrete paving, whereas Rural Access II roads are designed to be unpaved gravel roadways. Base aggregate is only 8 inches for this road standard. Travel lanes are specified at nine feet with one-foot shoulders on each side.

Rural Gravel

Gravel roads serve a wide range of needs in Morrow County, and there are gravel roads that serve as higher-classification facilities. The Rural Gravel classification provides a range of cross-sections to accommodate varying needs.

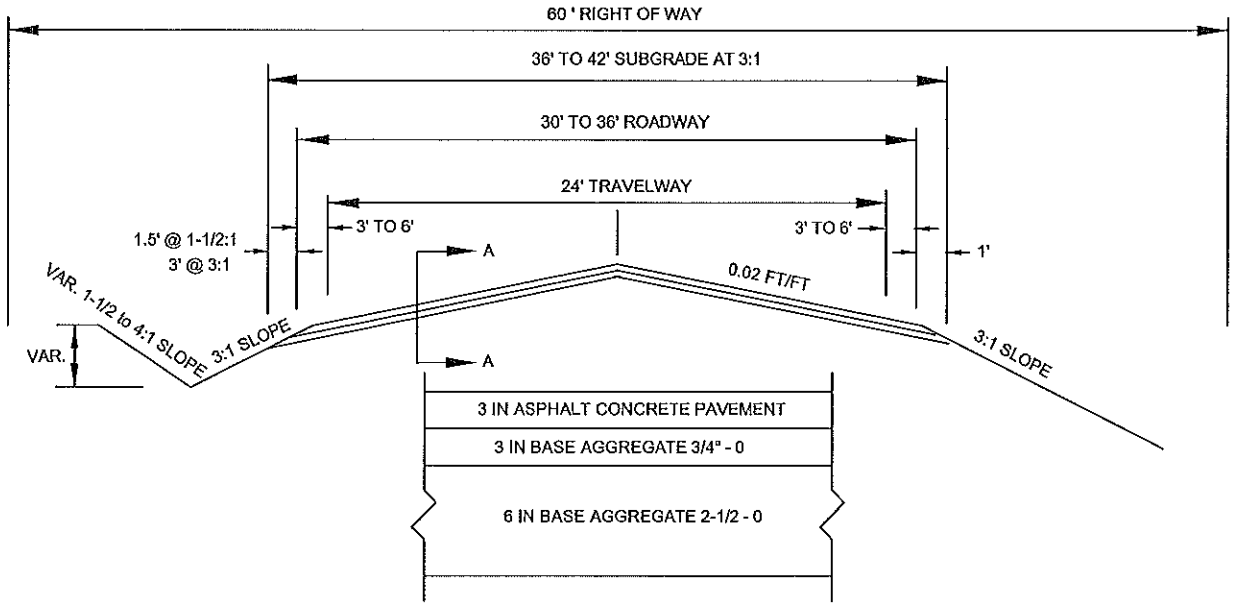
Five-Lane Standard

The five-lane road standard is a paved standard designed to periodically handle a high volume of vehicle traffic in a concentrated area of north Morrow County. The standard was adopted to support the planned Pacific Northwest Motorsports Park.



SECTION A-A

RURAL ARTERIAL I



SECTION A-A

RURAL ARTERIAL II

1. ASPHALT CONCRETE (AC) PAVEMENT SHALL BE STANDARD DUTY, CLASS B PER ODOT STANDARD SPECIFICATIONS 00745.
2. BASE AGGREGATE SHALL MEET THE REQUIREMENTS OF ODOT STANDARD SPECIFICATIONS 02630
3. ALTERNATIVE PAVEMENT SECTIONS MAY BE PROPOSED BASED ON A SOILS INVESTIGATION AND PAVEMENT DESIGN BY A LICENSED ENGINEER. ALL CHANGES SHALL BE APPROVED BY THE COUNTY ROAD ENGINEER.
4. DITCH SECTIONS SHALL BE APPROPRIATE TO ACCOMMODATE MAXIMUM STORMWATER FLOW PER ODOT STANDARD SPECIFICATIONS 00745.
5. RIGHT-OF-WAY (R/W) SHOWN IS MINIMUM. ADD'L R/W OR EASEMENT MAY BE REQUIRED FOR CONSTRUCTION IN SLOPED AREAS.

NOT TO SCALE
JUNE 2005

CTS Engineers
CIVIL
TRANSPORTATION
STRUCTURAL
LAND SURVEYING
20295 N.W. TAMARACK DR.
HILLSBORO, OREGON 97124
PHONE (503) 690-9050
FAX (503) 648-5430
www.ctseng@ctsengineers.com

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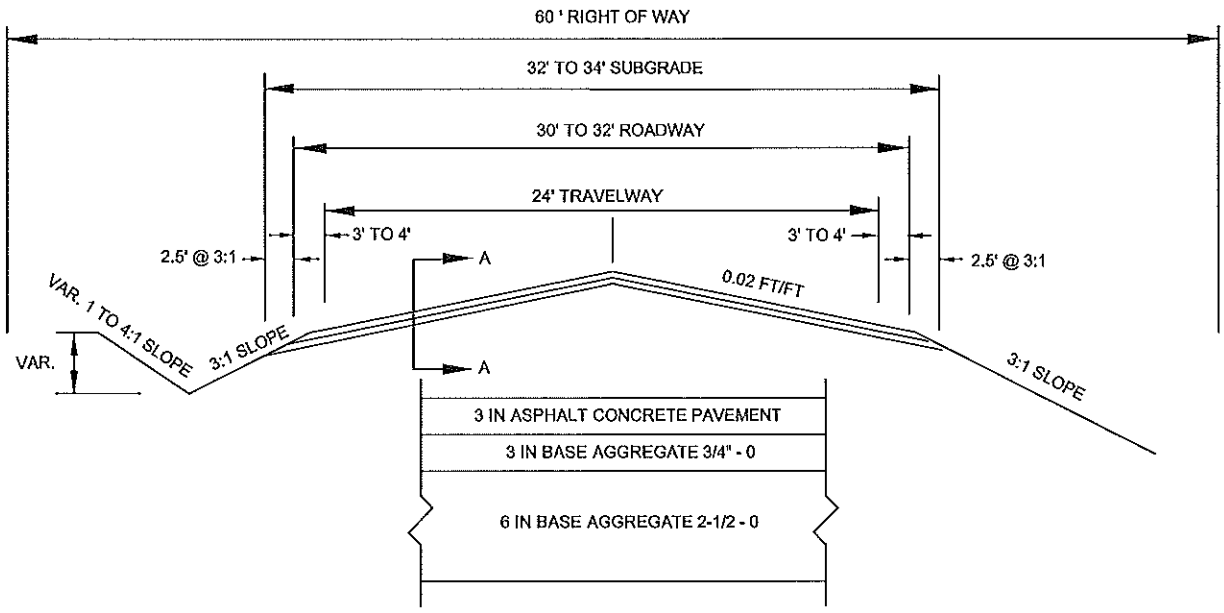
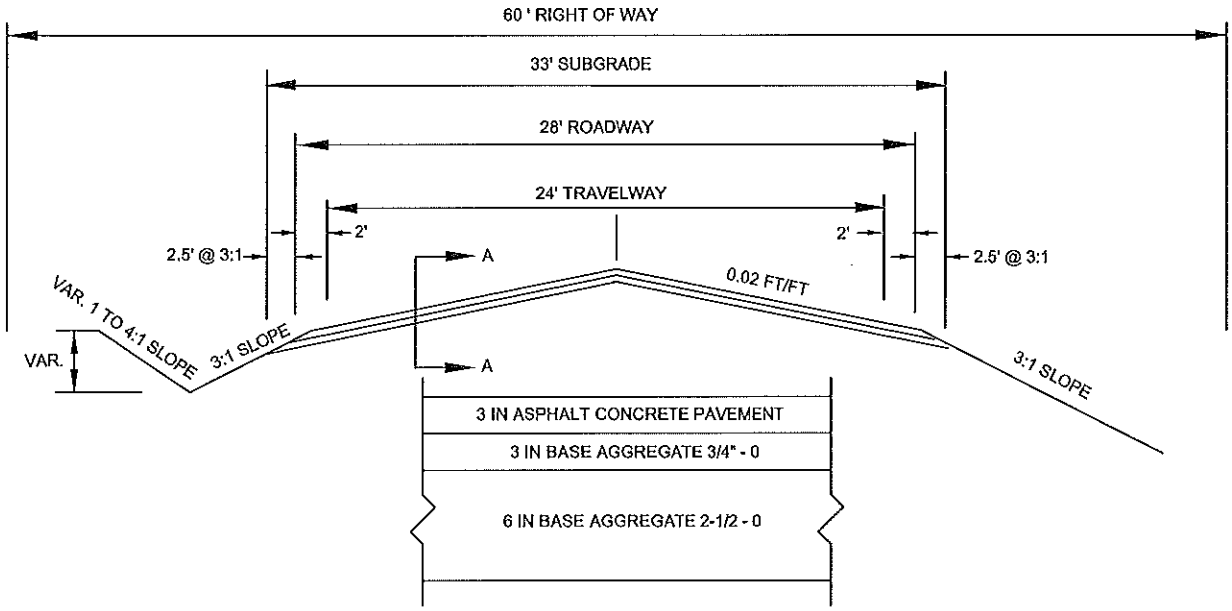


SECTION A-A

RURAL COLLECTOR I



SECTION A-A

RURAL COLLECTOR II

1. ASPHALT CONCRETE (AC) PAVEMENT SHALL BE STANDARD DUTY, CLASS B PER ODOT STANDARD SPECIFICATIONS 00745.
2. BASE AGGREGATE SHALL MEET THE REQUIREMENTS OF ODOT STANDARD SPECIFICATIONS 02630.
3. ALTERNATIVE PAVEMENT SECTIONS MAY BE PROPOSED BASED ON A SOILS INVESTIGATION AND PAVEMENT DESIGN BY A LICENSED ENGINEER. ALL CHANGES SHALL BE APPROVED BY THE COUNTY ROAD ENGINEER.
4. DITCH SECTIONS SHALL BE APPROPRIATE TO ACCOMMODATE MAXIMUM STORMWATER FLOW PER ODOT STANDARD SPECIFICATIONS 00745.
5. RIGHT-OF-WAY (R/W) SHOWN IS MINIMUM. ADD'L R/W OR EASEMENT MAY BE REQUIRED FOR CONSTRUCTION IN SLOPED AREAS.

NOT TO SCALE
JUNE 2005

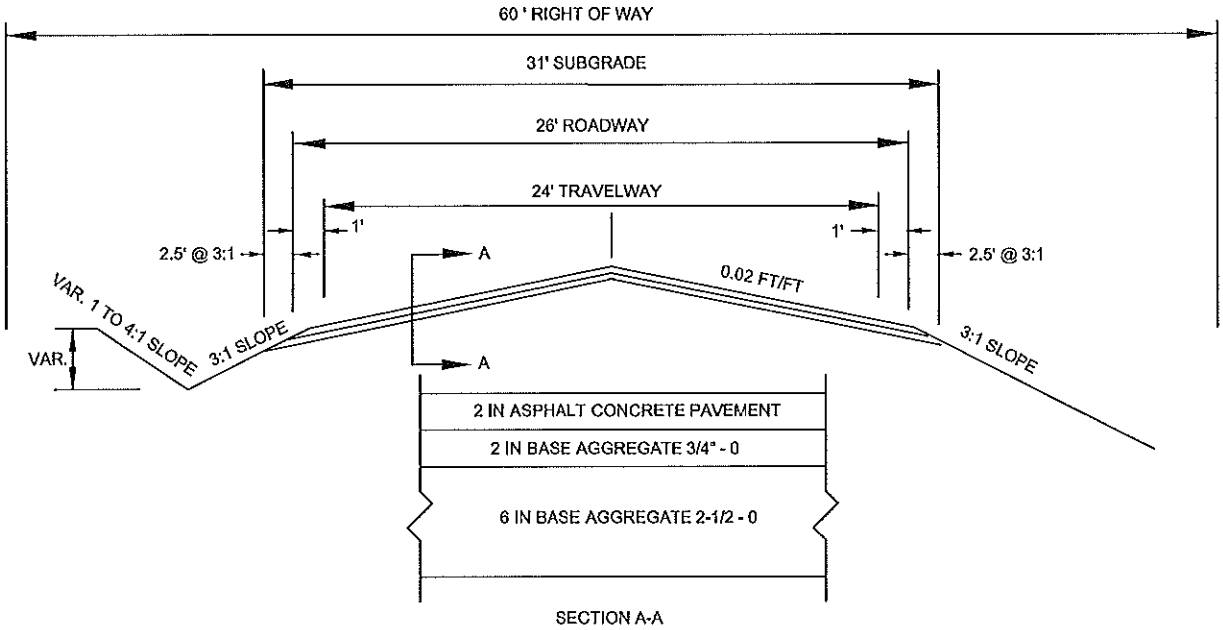
CTS Engineers
CIVIL
TRANSPORTATION
STRUCTURAL
LAND SURVEYING

CADD BY: NAME	CHECKED BY: NAME
REVISIONS	DESCRIPTION
NO. DATE	

DRAWING TITLE: MORROW COUNTY ROAD STANDARDS TYPICAL SECTIONS

PROJECT: MORROW COUNTY TSP UPDATE
OR04.055.T01

PREPARED FOR: ODOT/ MORROW COUNTY



RURAL COLLECTOR III

1. ASPHALT CONCRETE (AC) PAVEMENT SHALL BE STANDARD DUTY, CLASS B PER ODOT STANDARD SPECIFICATIONS 00745.
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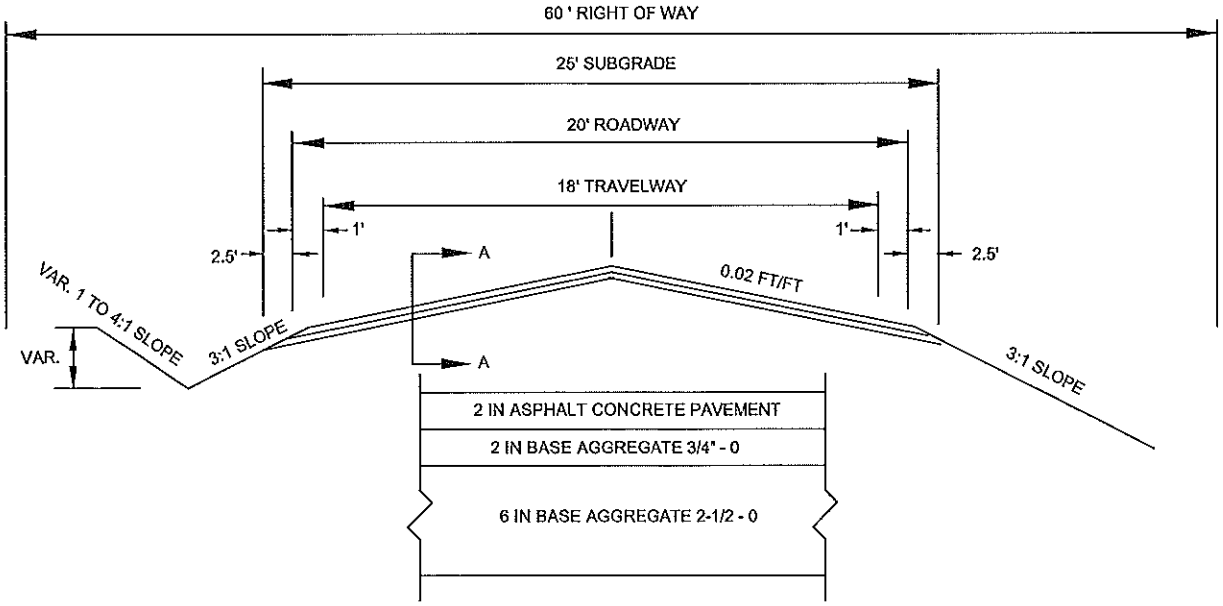
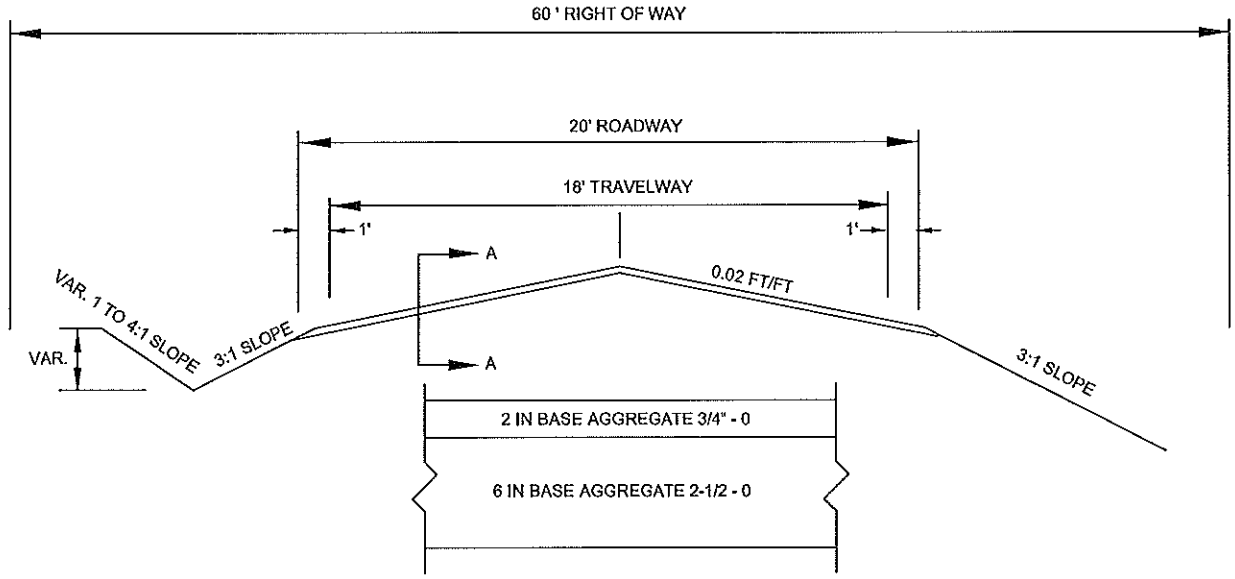
OR04.055.T01

PREPARED FOR: ODOT/ MORROW COUNTY



SECTION A-A

RURAL ACCESS I



SECTION A-A

RURAL ACCESS II (Gravel Surface)

1. ASPHALT CONCRETE (AC) PAVEMENT SHALL BE STANDARD DUTY, CLASS B PER ODOT STANDARD SPECIFICATIONS 00745.
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JUNE 2005

CTS Engineers
CIVIL
TRANSPORTATION
STRUCTURAL
LAND SURVEYING
20985 N.W. TOUCHSTONE DR.
HILLSBORO, OREGON 97124
PHONE (503) 690-9080
FAX (503) 645-2435
www.ctseng.com

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DRAWING TITLE: MORROW COUNTY ROAD STANDARDS TYPICAL SECTIONS

PROJECT: MORROW COUNTY TSP UPDATE OR04.055.T01

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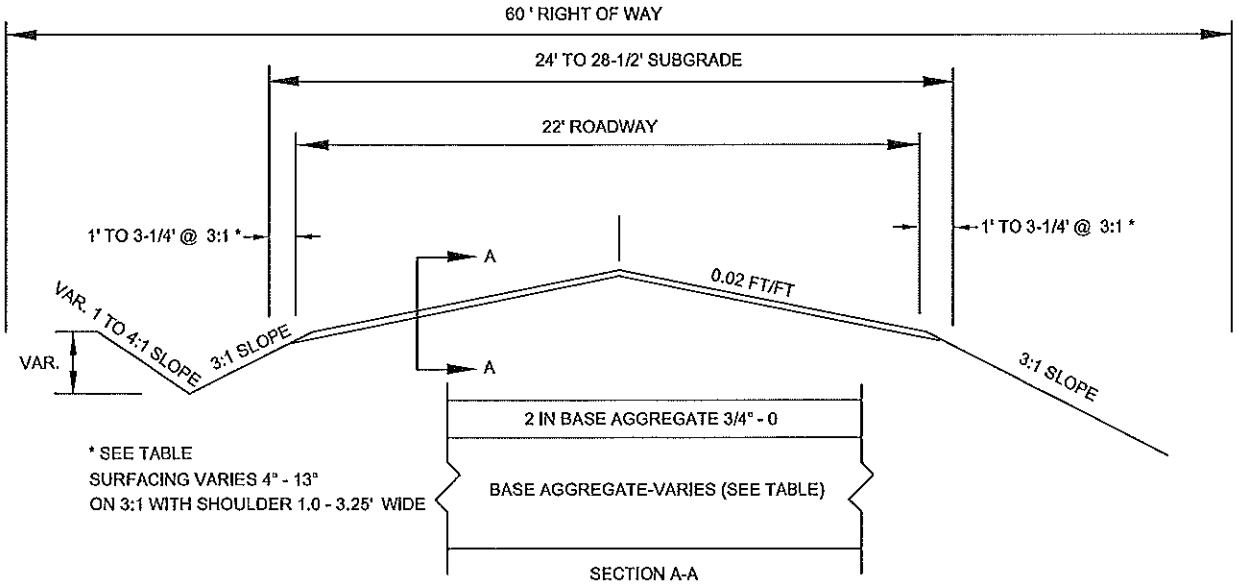

* SEE TABLE
SURFACING VARIES 4" - 13"
ON 3:1 WITH SHOULDER 1.0 - 3.25' WIDE

RURAL GRAVEL

(GRAVEL ROAD FOR MULTIPLE FUNCTIONAL CLASSIFICATIONS)

ROADBED SOIL	TRAFFIC LEVEL	AGGREGATE BASE
VERY GOOD	HIGH (ADT > 100)	9 IN
	MEDIUM (ADT 50 - 100)	7 IN
	LOW (ADT < 50)	4 IN
GOOD	HIGH (ADT > 100)	11 IN
	MEDIUM (ADT 50 - 100)	9 IN
	LOW (ADT < 50)	5 IN
FAIR	HIGH (ADT > 100)	13 IN
	MEDIUM (ADT 50 - 100)	10 IN
	LOW (ADT < 50)	5 IN
POOR	HIGH (ADT > 100)	NOT RECOMMENDED
	MEDIUM (ADT 50 - 100)	15 IN
	LOW (ADT < 50)	9 IN
VERY POOR	HIGH (ADT > 100)	NOT RECOMMENDED
	MEDIUM (ADT 50 - 100)	NOT RECOMMENDED
	LOW (ADT < 50)	8 IN

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CIVIL
TRANSPORTATION
STRUCTURAL
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20295 N.E. TAUSSOUNE DR.
HILLSBORO, OREGON 97124
PHONE:(503) 690-8080
FAX:(503) 648-5435
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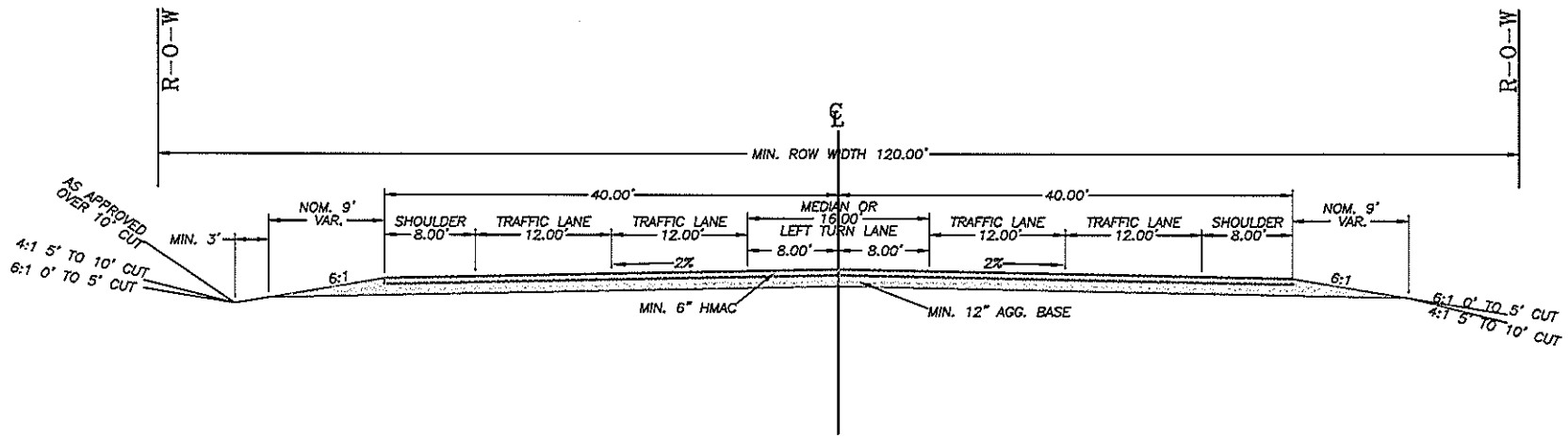
PROJECT: MORROW COUNTY TSP UPDATE
OR04.055.T01

PREPARED FOR: ODOT/ MORROW COUNTY

Morrow County
Design Standard for High Volume Roadway (DHV over 700)
SCALE 1"=10'



NOTES;

1) SURFACING SECTION (PAVEMENT – BASE COMBINATION) SHALL BE APPROVED BY THE MORROW COUNTY PUBLIC WORKS DEPARTMENT.
2) MAXIMUM GRADE 3%.
3) MAXIMUM 3° CURVE (NOMINAL 1900' RADIUS) STANDARD HIGHWAY SPIRALS OF APPROPRIATE LENGTHS SHALL BE USED
4) SUPER ELEVATION RATE AND APPLICATION SHALL BE APPROVED BY THE MORROW COUNTY PUBLIC WORKS DEPARTMENT.
5) INTERSECTION DESIGN SHALL CONFORM TO THE APPROPRIATE ODOT OR AASHTO STANDARDS, AND BE APPROVED BY THE MORROW COUNTY PUBLIC WORKS DEPARTMENT.
6) DRAINAGE DESIGN SHALL BE APPROVED BY THE MORROW COUNTY PUBLIC WORKS DEPARTMENT.
7) CONSTRUCTION SHALL CONFORM TO "2002 (OR CURRENT EDITION) OF "OREGON DEPARTMENT OF TRANSPORTATION, OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION".

Ferguson Surveying
Engineering

P.O. BOX 519, 210 E. MAIN
MT. VERNON, OR 97865
PHONE (541)932-4520
FAX (541)932-4430
EMAIL dfse@ortelco.net

APPENDIX B
RECOMMENDED ROADWAY SYSTEM PROJECTS

TABLE B-1 MORROW COUNTY HIGH PRIORITY RECOMMENDED ROADWAY SYSTEM PROJECTS 2011/2012 - 2016/2017 ROADWAY SYSTEM PROJECTS		
Roadway	**Project Description**	**Estimated Cost**
Bombing Range Road Highway 207 to Juniper Lane - 2.3 miles	Overlay with 3" of hot mix/4,385 tons @ $57.00 per ton = $250,000.00	$400,000
Bombing Range Road Alpine Lane to Finley Butte Jct - 3.9 miles	Overlay with 3” of hot mix/4,385 tons @ $57.00 per ton = $250,000	$400,000
Bombing Range Road Alpine Lane to Finley Butte Jct - 3.9 miles	Overlay with 3” of hot mix/4,385 tons @ $57.00 per ton = $250,000	$400,000
Tower Road Interstate 84 to Taggares Lane - 7.0 miles (a portion)	Overlay with 3” of hot mix/4,385 tons @ $57.00 per ton = $250,000	$400,000
Tower Road Interstate 84 to Taggares Lane - 7.0 miles (a portion)	Overlay with 3” of hot mix/4,385 tons @ $57.00 per ton = $250,000	$400,000
Tower Road Interstate 84 to Taggares Lane - 7.0 miles (a portion)	Overlay with 3” of hot mix/4,385 tons @ $57.00 per ton = $250,000	$400,000
Eastregaard Road Wilson Road to Canal - 0.5 miles	Work on shoulders and pave with hot mix @ $57.00 per ton = $28,000	$65,000
Wilson Lane/Laurel Road Intersection	Install left-turn lane on Wilson Lane plus associated improvements	$400,000
ESTIMATED TOTAL COST		$2,865,000

TABLE B-2 MORROW COUNTY MEDIUM PRIORITY RECOMMENDED ROADWAY SYSTEM PROJECTS		
Map Key / Roadway.	Project Description	Estimated Cost
CR #670 (Sunflower Flat Road)	Pave over gravel road (9.0 miles, a Federal Forest Highway Project	$4,587,000
CR #681 (Ione-Gooseberry Road)	McElligott Road to Hwy 206 (8.3 miles) – reconstruct roadway	$3,500,000
CR #689 (Olson Road)	Kunze Lane to I-84 – reconstruct and pave (2.0 miles total)	$750,000
CR #733 (Sand Hollow Road)	Hwy 74 to new pavement (6.7 miles) – reconstruct and pave	$2,215,000
CR #793 (Little Butter Creek Road)	Currin Ranch north (5.2 miles) – reconstruct and pave	$1,820,000
CR #608 (Upper Rhea Creek Road)	Ruggs to Basey Canyon Road (4.5 miles) – improve drainage and pave (completed 2.9 miles in 2008-2009) ARRA stimulus project 1.6 miles remaining	$500,000
CR #906 (3rd Street)	Nevada Avenue to Depot Lane (0.8 miles) – construct and pave	$350,000
CR #747 (Miller Road)	Kunze Lane to Wilson Lane (0.5 miles) – reconstruct and pave	$250,000
CR #598 (Kunze Lane)	South Main to Miller Road (1.3 miles) – reconstruct and pave	$450,000
CR #681 (Ione-Gooseberry Road)	Realign at junction with Hwy 206	$181,000
CR #713 (Shobe Canyon Road)	Realign at junction with Hwy 206/207	$80,000
CR #612 (Clarks Canyon Road)	Realign at junction with Hwy 206/207	$82,000
CR #693 (Rhea Creek Road)	Realign at junction with Hwy 206/207	$145,000
CR #533 (Porcupine Lane)	Realign at junction with Hwy 206/207	$80,000
Ione-Boardman Road – 1.8 miles (end of new pavement south 1.8 m)	Overlay with 2” of hot mix @$75.00 per ton = $215,000	$400,000
Ione-Boardman Road – 4.2 miles (end of previous year to Ella Road)	Overlay with 2” of hot mix @ $75.00 per ton = $450,000	$1,150,000

TABLE B-2 MORROW COUNTY MEDIUM PRIORITY RECOMMENDED ROADWAY SYSTEM PROJECTS		
Map Key / Roadway.	Project Description	Estimated Cost
Juniper Lane – 1.3 miles (end of new pavement to the Ione-Boardman Road)	Overlay with 2" of hot mix @ $75.00 per ton = $150,000	$300,000
Ella Road – 2.5 miles (Hwy 74 to Ione-Boardman Road junction)	Overlay with 1–½" of hot mix @ $75.00 per ton = $250,000	$425,000
Rippee Road – 0.5 miles (south of I-84 to Wilson Road)	Work on shoulders and pave with hot mix @ $80.00 per ton = $60,000	$100,000
Root Lane – 1.1 miles (Wilson Road to Rippee Road)	Work on shoulders and pave with hot mix @ $80.00 per ton = $120,000	$200,000
Big Butter Creek Road – 11.5 miles (Pine City to County line)	Repair cattle guards and bridge approaches, add some culverts and chip seal. Oil cost = $210,000	$375,000
Big Butter Creek Road – 3.0 miles (Hwy 207 to Pine City)	Crack seal and chip seal. Oil cost = $60,000	$100,000
Ione-Gooseberry Road – 8.3 miles (McElligott Road to Hwy 206)	Reconstruct roadway and pave. Oil cost $1,000,000	$3,500,000
ESTIMATED TOTAL COST		$21,540,000

APPENDIX C
TRAFFIC IMPACT ANALYSIS GUIDELINES

INTRODUCTION

Morrow County requires all permit applications generating more than 400 new daily trips to prepare a traffic impact analysis (TIA). The TIA will determine the impacts of the project on the existing and future transportation system and will serve as a vehicle for determining appropriate mitigation. The following guidelines contain the elements that should be included in the analysis. Where appropriate, additional study may be required to assess the full impact of the proposed project.

While the determination of whether a TIA is required is based on the number of daily trips, traffic impacts are typically analyzed only during the PM peak-hour of area-wide traffic, which is the one-hour period of highest traffic during the two-hour peak period, typically 4:30-5:30 PM on weekdays. Land uses that generate peak traffic on weekends or evenings (e.g. theaters or recreation facilities) may require additional periods to be counted.

DETERMINATION OF TIA REQUIREMENT

An initial step is necessary to determine whether the proposed project must complete a TIA. This step can often be performed by the applicant using information found in this document.

Calculate the number of daily trips generated using the attached table or using the rate found in the ITE Trip Generation Manual. Where a project is replacing an existing use, the net trip generation is used (trips generated by project less the former use). Projects that produce in excess of 400 new daily trips must complete a TIA.

COST OF A TIA

The cost of a TIA varies by the size of the development and the relative location to roadway facilities that are near or at capacity. Typical costs range from a minimum of $2.500 (small subdivision) to over $15,000 (new retail area).

QUALIFICATIONS OF PREPARER

A registered professional engineer is required for all TIA studies, unless approval is obtained by the planning director.

PROJECT DESCRIPTION AND STUDY AREA

The TIA should introduce the project and describe the approximate study area. A location map showing the site and the study area intersections should be included.

I. Project identification and description - The following information is included:

- Project location.
- Project name or name of developer or company.
- Project description. Building area, types of uses, number of units, on-site parking stalls.
- Project buildout year. The year the proposed project is assumed to be completed and occupied.

II. Definition of the study area - The study area is defined by the number and location of the study intersections. The study intersections are determined as follows:

- The study intersections are defined as those within 1,000 feet in either direction of each edge of the parcel for arterial access points, and within 600 feet in either direction of each edge of the parcel for collector or local access points that are likely to be impacted by more than 10 PM-peak-hour trips or are directly associated with the project (e.g. driveways). A trip generation, distribution and assignment process (see Project Conditions) can be used to identify the study area.

EXISTING CONDITIONS

The existing conditions section describes the existing roadway and traffic characteristics within the study area. The following topics are included:

I. Peak period traffic counts – Counts should be completed at each study intersection. Counts must be conducted as follows:

- Counts are completed on Tuesdays, Wednesdays or Thursdays during a two-hour peak period which includes the system PM peak-hour (typically 3:00 PM to 5:00 PM, or 4:00 PM to 6:00 PM). Counts must be collected by individual turning movement at each intersection. Land uses that generate substantial traffic during evenings or weekends (e.g. recreational uses or entertainment facilities) may require traffic counts to be conducted during additional time periods.
- Features such as the number of pedestrians, bicyclists and length of vehicle queuing should be noted.
- Seasonal adjustments should be made to represent peak conditions.

- Counts from other sources may be used if they are less than three years old and are factored to the current year using the background growth rate (see Background Conditions).

II. LOS Calculation – Using the latest published Highway Capacity Manual methodology (currently the 2000 manual), the level of service (LOS) is calculated for existing conditions for each study intersection. LOS at either signalized or all-way stop controlled intersections is defined by the overall intersection LOS. At an intersection with stop controls only on the minor (side street) movements, the LOS is defined by the worst approach to the intersection, typically left turns from the minor street. For intersections within the study area that are on State facilities, the volume-to-capacity ratio (V/C ratio) must also be calculated and reported.

III. Accident data - Five years of accident data is used to describe the number, type and severity of accidents that occurred at each study intersection. Accident data can be obtained from ODOT. High accident locations (where five or more recorded accidents occur annually) should be identified.

IV. Pedestrian, Bicycle and Equestrian Facilities – Include a description of all pedestrian, bicycle and equestrian facilities within the study area.

V. Transit – Describe any transit routes in the area. Include a description of school bus service and stop locations, if applicable.

BACKGROUND CONDITIONS

This section refers to the future year traffic operations before project trips are added. The background volumes need to account for the following elements:

I. Planned changes to roadway facilities and intersections scheduled to occur prior to the project buildout year.

II. Planned changes in land use within the study area resulting from approved development yet to be built and/or fully occupied. This step requires the collection of other TIAs and the inclusion of new trips that may occur as a result of these analyses.

III. Background growth rate at which overall traffic has grown in the area. This rate will be determined by the County.

IV. The calculation of background traffic volumes involve factoring existing traffic to the future year using the background growth rate, then adding all project trips in other TIAs that affect the study intersections.

V. LOS analysis based on background traffic volumes for each study intersection. All study intersections that exceed the LOS standard (or the V/C standard for state facilities) should be noted.

VI. Any planned changes to bicycle, pedestrian and equestrian facilities occurring through the project year should be noted.

PROJECT CONDITIONS

This section shows the calculated trip generation, assumed distribution and assignment of trips:

I. Trip generation – The number of trips generated as calculated from the attached table or from the latest version of the ITE Trip Generation Manual. Where a project is replacing an existing use, the net trip generation is required. A list of typical trip generation rates follows this document.

II Trip distribution – The percentage of trips traveling by direction, based on existing traffic patterns, unless preferable information is available (customer survey, market analysis, etc.).

III. Trip assignment – The project trips are assigned to the roadway based on the trip distribution and the proportion of trips entering, and exiting volumes from the trip generation.

IV. Future year LOS analysis – The LOS and V/C information for the study intersections based on the sum of the project trip assignment and the background trips.

V. Identify project impacts – All potential impacts to the transportation system should be identified, including vehicle sight distance, truck traffic, roadway geometrics and traffic control, site access, vehicle queuing and turn lane needs, bicycle and pedestrian access, and safety.

VI. Mitigation – Mitigation reflects the need for new development to pay for its fair share of traffic impacts. The following types of mitigation are required under county regulations:

- When the addition of project trips cause an individual intersection to exceed the applicable LOS or V/C standard, the mitigation measures necessary to bring the intersection back into compliance need to be identified, as well as the cost, the project's contribution to the overall cost of the improvement (proportionate share), and how the proportionate share will be paid. Typical mitigation includes the following:

  - Adjustments to signal timing.
  - Addition of turning lanes through restriping or widening.
  - Lengthening storage length of existing turn lanes.
  - Installation of traffic signals or other traffic control devices.
  - Improvements needed to provide adequate sight distance from the development's access onto the public road network.
  - Note: developers are not required to mitigate individual intersections that exceed the LOS or V/C standard in existing or background conditions as determined by HCM methodology. They may, however, be required to contribute a roughly proportionate share to improve the facility as needed to meet LOS or V/C standards.

- Other mitigation should be considered as appropriate to alleviate the impacts to the transportation system, such as reduction of vehicle queuing, reduction in peak hour travel of employment uses through transportation demand management, and increases in pedestrian, bicycle or equestrian travel and safety.

TRIP GENERATION TABLE

Below are some of the most common trip generation values. The first column defines the land use; the second, the average weekday rate; the third, the PM peak-hour rate; and the fourth, the percent of traffic entering and exiting during the peak-hour. More specific rates are found in the 7th edition of the ITE Trip Generation Manual. An example calculation is as follows:
Project: Construct 4 homes on a subdivided lot

Daily Trip Generation: 9.57 x 4 dwelling units = 38 trips
PM Peak-Hour: 1.01 x 4 = 4 trips (3 entering, 1 exiting)

Therefore, there are 38 daily trips and an impact of 4 trips during the PM peak-hour.

TABLE 1
TRIP GENERATION RATES

Land Use (ITE Code)	Weekday Daily Rate	PM Peak-Hour Rate	Percent Entering/ Exiting in Peak-Hour
Single Family Detached (210)	9.57 / D.U.	1.01 / D.U.	63% / 37%
Apartment (220-Post 1973)	6.72 / D.U.	0.62 D.U.	67% / 33%
Mobile Home Park (240)	4.99 / D.U.	0.59 / D.U.	62% / 38%
Church (560)	9.11 / 1000 GFA	0.66 / 1000 GFA	52% / 48%
Office-General (710)			
● <10,000 GFA	refer to ITE Trip Generation Equations	refer to ITE Trip Generation Equations	17% / 83%
● 25,000 GFA	18.4 / 1000 GFA	4.28 / 1000 GFA	
● 50,000 GFA	15.64 / 1000 GFA	2.70 / 1000 GFA	
● 100,000 GFA	13.34 / 1000 GFA	1.91 / 1000 GFA	
Restaurant-High Turnover (932)	127.15 / 1000 GFA	10.92 / 1000 GFA	61% / 33%
Fast Food Restaurant (934) (with drive-through)	496.12 / 1000 GFA	34.64 / 1000 GFA	52% / 48%
Supermarket (850)	102.24 / 1000 GFA	10.45 / 1000 GFA	51% / 49%
General Light Industrial (110)	6.97 / 1000 GFA	0.98 / 1000 GFA	12% / 88%
Manufacturing (140)	3.82 / 1000 GFA	0.74 / 1000 GFA	36% / 64%

D.U.-Dwelling Units
GFA – Gross Floor Area
GLA – Gross Leasable Area