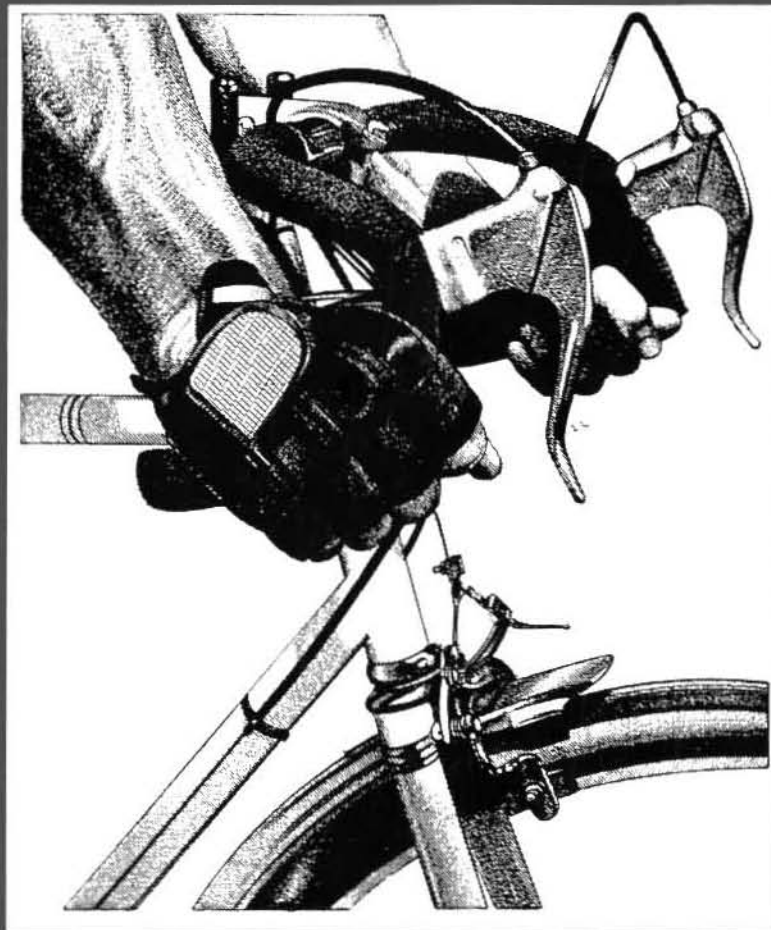


TRIS

STATE OF OREGON

Bicycle Master Plan



The Oregon Department of Transportation

Highway Division



**STATE OF OREGON
BICYCLE MASTER PLAN**

**APPROVED BY
OREGON TRANSPORTATION COMMISSION**

March 15, 1988

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Published By

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OVERVIEW

Bicycling is an important part of Oregon's livability. This master plan is dedicated to continued quality bicycling in Oregon. The primary purpose of this document is to give direction and guidance to the Highway Division's Bicycle Program. It also serves to provide uniform guidance for local government bicycle programs.

We hope citizens who are interested in bicycling will read this master plan and clearly understand Oregon's Bicycle Program (see glossary for unfamiliar terms).

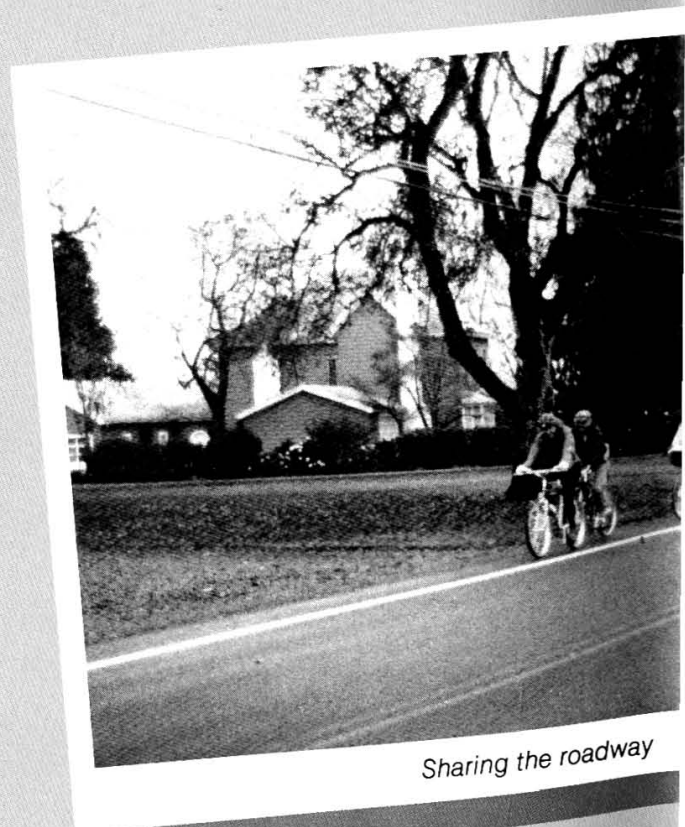
Background

INTRODUCTION

Developed originally as a transportation vehicle, the bicycle gained prominence 100 years ago as a sporty alternative to the mundane and cumbersome horse-drawn carriage. With the emergence of the motor vehicle, however, the situation quickly changed. Unlike Europe, where motoring took decades to supersede cycling, American cycling never had the chance to coexist with the motoring community. As a result, when the exchange of transportation modes occurred, bicycles experienced a rapid drop in status from high class fashion to mere



1880's "ordinary" bicycle



Sharing the roadway

CHAPTER 1: THE BICYCLING ENVIRONMENT

children's toys. No merging of these two modes was made. From there the bicycle's popularity fluctuated with the relative availability of cars and fuel costs, and was considered at best, a working class mode of transportation.

Cycling began its great comeback after the postwar urban sprawl. More and more young people turned to bicycles as their only transportation to and from the suburbs and this, in turn, encouraged the development of more suitable bikes. Then, other groups began catching on: open road lovers, fitness enthusiasts and recreationists. Enrollment in cycling clubs grew so fast that approximately 19 out of every 20 members were new and inexperienced, bringing with them their childhood taught "fear of motor vehicles."

This viewpoint placed cyclists and motorists in competition with each other; a competition where the motorist always won. This, being the predominant view of the time, led to the bike path trend of the 1970's. Bike paths physically separate the two types of vehicles so that there can be no competition. They also reinforce the fear of motor vehicles viewpoint by keeping cyclists off the road. Experience with separated bike paths proved that they were not the total answer. They function well in some areas and poorly in other areas. The serious bicyclist will not use poorly designed bike paths due to inconveniences and safety problems.

Modern cyclists and motorists have the roadway sharing viewpoint that is beginning to shape today's cycling trend. The roadway sharing view promotes the integration of motorists and cyclists by improving already existing roadway systems to accommodate bicycles. Bicyclists then share the roadway along with general motor vehicle traffic. Not only does this conserve funds, but it also unites the two groups under one set of rules of the road for better cooperation and safer operation.

With the increasing interest in bicycling, the development of quality bikeway facilities is becoming more and more important. Overall, the number of cyclists is still rising at a tremendous rate--particularly among adults, who now outnumber child cyclists. In 1986, it was estimated that 82 million Americans were bicycling. Bicycling is the fastest growing physical fitness sport in America.

The increased interest in bicycling has led to the development of various types of equipment. Today, all types of specialized bicycles and accessories are available including: touring, sport touring, racing, mountain and commuter bikes.



TYPES OF BICYCLE TRAVEL

Bicycling falls into five general use categories: commuting, utility, recreational, touring and racing. Commuters are those who regularly travel to and from a specific destination, usually as quickly and directly as possible. Utility cyclists ride for very practical purposes. They ride to purchase or transport goods and services. Recreational cyclists include those who take day long or less excursions and are generally riding for pleasure or fitness. Touring, on the other hand, extends over longer periods of time. Touring requires more planning since the destination and route are important factors. Racing is a specialized sport and race courses may use public roadways with the approval of appropriate government agencies.

ROUTE DEVELOPMENT

A significant focus of the Oregon Bicycle Program is on upgrading highway shoulders to develop routes for bicycle riding. The two best known of these are the Oregon Coast Bike Route and the Trans-America Trail through Central Oregon. They have received priority treatment in the past and will continue to receive priority because of their touring importance. Bicycle usage and demand are the primary factors used to set priorities for the improvement of bicycle routes. The Highway Division is also concerned with improving the safety of bicycle routes. Chapter 7 contains a detailed description of the factors used in the designation of Oregon's bicycle routes.

BIKEWAY FACILITIES AND TRENDS

There are four different types of bikeway facilities (as discussed in Chapter 8): shared roadway, shoulder bikeway, bike lane and bike path. All four types of facilities are used where circumstances and economics dictate. (1) A shared roadway facility is where motorists and cyclists occupy the same roadway area and is best used in areas that have minimal motor vehicle travel. These facilities have the lowest cost, and the low usage makes conflicts with vehicles infrequent. However, shared roadways are sometimes necessary in heavy traffic areas where it is too costly to provide other types of bikeways. (2) Shoulder bikeways are common in rural areas and they accommodate the cyclist on the roadway shoulder with few traffic conflicts. (3) Bike lanes go one step further by having a section of the roadway actually designated for exclusive bicycle use. They are generally more costly than the first two types, but for safety reasons are preferred when heavy motor vehicle and bicycle travel exist. (4) Bike paths are entirely separated from the roadway. They are often constructed in situations too hazardous for bicycle travel, such as along heavily traveled metropolitan freeways or arterials, where bicycle demand is high enough to merit the extra cost. Well designed bike paths can provide good commuter and recreational bicycle routes. Bike paths function best where motor vehicle crossings can be eliminated or minimized.

URBAN AND RURAL BICYCLE ENVIRONMENT

Oregon has a very favorable bicycling environment, both in urban and rural areas. Over 44 percent of State highways have paved shoulder widths of 4 feet or more (52 percent in Western Oregon and 37 percent in Eastern Oregon), not including Interstate highways. Oregon is one of the most popular states for bicycle touring. Partially because of the location of the two previously mentioned bike routes which are popular nationally; the TransAmerica Trail (also known as the Bikecentennial Route), established in 1976 to celebrate the nation's 200th birthday, and the Oregon Coast Bike Route. Oregon also enjoys a positive reputation among bicyclists nationwide because of its scenic beauty and climate and its pioneering spirit in the development of bicycle facilities.

Most urban areas in Oregon have good bikeway networks. Eugene is one of the leading bicycling communities in the nation. With federal and state assistance, the city by 1982 had built 21 miles of separated bike paths along the Willamette River and through several parks. This bike path system is supplemented with more than 36 miles of onstreet bike lanes and 18 miles of low traffic volume streets designated for shared roadway use.



Shoulder bikeway

BICYCLE SERVICES

Hiker Biker Camps

Hiker/biker camps are low cost, primitive camp sites located in many State and other parks. At a minimum, they provide tent sites. Some have picnic tables and fire pits with access to water, toilets and showers. The current user fee is \$2 per person per night at State parks.

Hiker/biker camps were first opened in 1977 and have enjoyed rapidly increasing usage. The camps along the coast tallied 2,486 visitor/nights in 1978, grew to 7,272 visitor/nights in 1981 and provided 8,037 visitor/nights in 1986. The camps are part of the State Park program built and maintained with funds from the State Parks and Recreation Division. Eighteen State hiker/biker camps are located on the Oregon Coast Bike Route. The State Parks and Recreation Division plans to improve and expand the system statewide and to standardize facilities in all camps.

Hostels

Cyclists preferring to spend their nights indoors may take advantage of youth hostels. Youth hostels are privately owned houses or apartments providing travellers with a bed, hot shower, kitchen facilities and a warm atmosphere all at a fee of approximately \$6 plus a small housekeeping task to keep the facility clean. Oregon has 7 youth hostels, all in western Oregon.

BICYCLE MAPS

Cyclists need different information from that provided by most highway maps, which are usually designed for the motoring public. Cyclists are concerned with traffic volumes, pavement widths, water availability, long climbs and descents, bicycle repair shops and campsites. Even knowing predominant wind directions greatly affects a cyclist's planning, enjoyment and ability to cover more miles. To meet this specialized need for bicycle mapping, the Highway Division presently produces two different maps.

Oregon Cycling Guide

First published in 1987, the main purpose of this map is to rate the bicycling suitability of every state highway, as well as a few local facilities, by comparing average daily traffic volumes with pavement widths. A system of color coding shows the cyclist which highways are the most suitable for bicycle travel. The map also shows grades and summits, campsites, repair facilities, mileage chart, and prevailing winds. The reverse side of the map has eight city inserts which show the best routes through these cities.

Oregon Coast Bike Route

This has been a very popular map which shows the route from Astoria to Brookings, a distance of 360 miles along the coast. It shows the main route, alternate and scenic routes, as well as grades and elevations, campgrounds, hiker/biker facilities, hostels and repair shops.

CHAPTER 2: OREGON PIONEER BICYCLE LAWS

OREGON BICYCLE BILL

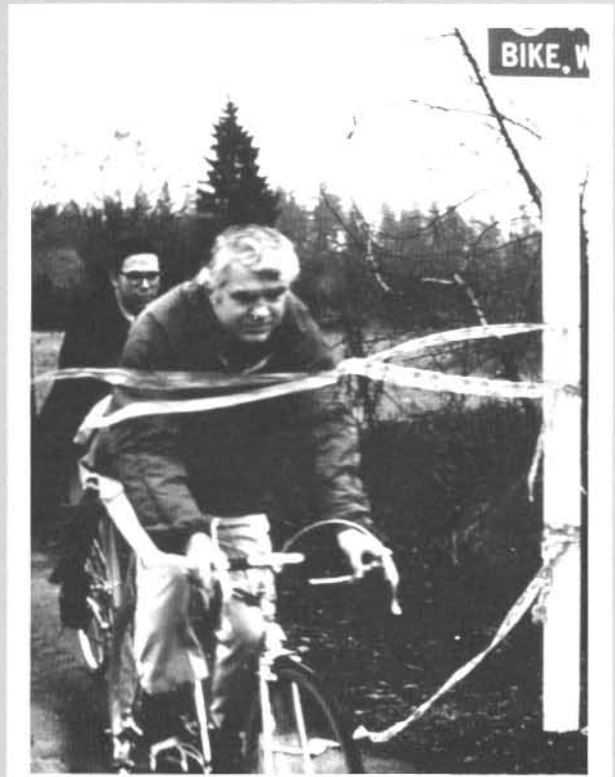
In 1971, Oregon pioneered a law for the funding and development of bikeways, the first of its type in the nation. This law has served as a model for many states. Initially, House Bill 1700 (now section 366.514 of the State of Oregon Revised Statutes) was not expected to pass. However, local bicycle groups organized a lobby in 1970 to appeal to the State Legislature for improved bicycling conditions. In 1971, the bicycle legislation was introduced and was enacted.

Essentially, the law provides that at least one percent of the State Highway Fund received by the Highway Division, counties and cities be expended for the development of footpaths and bikeways. These facilities are to be built in conjunction with all construction, reconstruction or relocation roadway projects. There are exceptions where there is a question of probable use or where costs appear excessively disproportionate to probable use or where public safety is compromised. A copy of this statute can be found in Appendix A.

As may be noted, ORS 366.514 relates to both bicycle and pedestrian facilities. This master plan primarily focuses on bicycle facilities; however, the needs of pedestrians are also considered in the development of all Highway Division projects. Sidewalks are generally constructed where needed to safely accommodate pedestrians. Bike paths serve the needs of both pedestrians and bicyclists.

OREGON BICYCLE ADVISORY COMMITTEE

In 1973, House Bill 2316 (ORS 366.112) was enacted which established an eight-member bicycle advisory committee appointed by the Governor to act as liaison between the public and the Highway Division. This committee advises the Highway



Don Stathos, sponsor of House Bill 1700, opening first bikeway in 1971 funded by HB1700.

Division in the regulation of bicycle traffic and the establishment of bicycle trails. Members include an employee of a unit of local government employed in land use planning, a representative of a recognized environmental group, a person engaged in the business of selling or repairing bicycles, a member designated by the Oregon Recreation Trails Advisory Council, and at least one member under the age of 21 at the time of appointment. Members serve for four years with meetings occurring four times per year. A copy of this statute can be found in Appendix A.

CHAPTER 3: ADMINISTRATIVE ORGANIZATION

INTRODUCTION

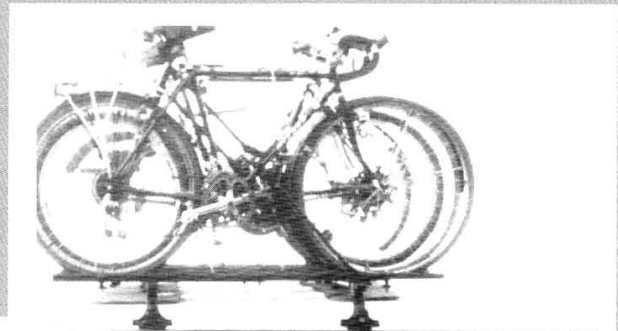
In response to Oregon Revised Statute 366.514, the Oregon Department of Transportation has developed an administrative process by which it complies with the intent of this bicycle legislation. The administration of the bicycle program is carried out at several levels within the Oregon Department of Transportation.

HIGHWAY DIVISION

The primary responsibility for administering and developing a safe system of bikeways is given to the Highway Division within the Oregon Department of Transportation. This Division administers the bicycle funds, handles bikeway planning, design, engineering and construction, and provides technical assistance and advice to local governments concerning bikeways.

OREGON BICYCLE ADVISORY COMMITTEE

The primary function of the Oregon Bicycle Advisory Committee (OBAC) is to assist the Highway Division in regulating bicycle traffic and establishing bikeways. The OBAC reviews public and Highway Division bikeway proposals and then forwards its recommendations to the Highway Division for further consideration.



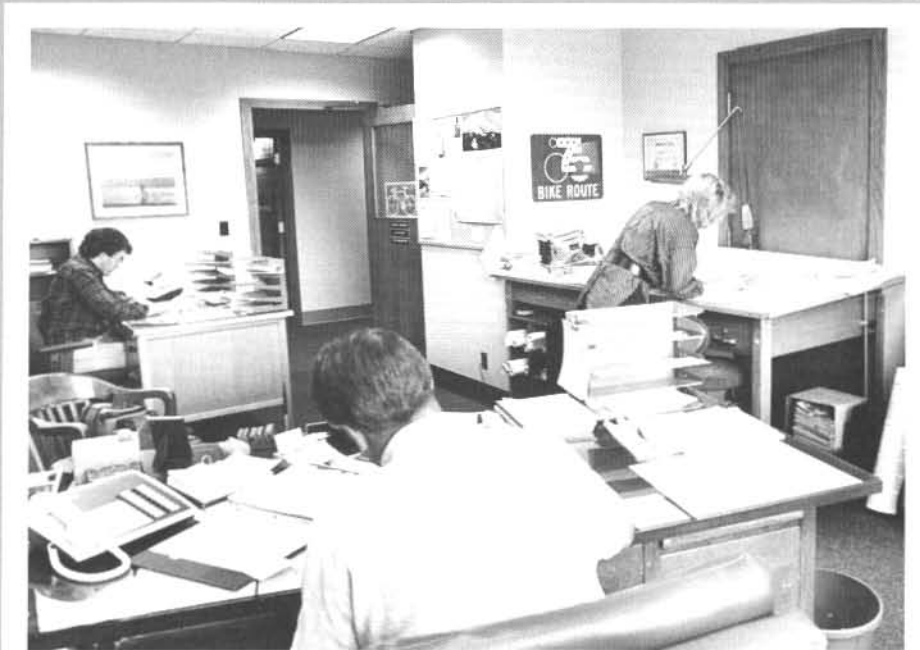
Oregon Bicycle Advisory Committee

BICYCLE PROGRAM MANAGER

Within the Highway Division is the Bicycle Program office headed by the Bicycle Program Manager. This is where policies and programs are formulated and where they are implemented. The Bicycle Program Manager has a variety of responsibilities. One is to identify and prioritize bikeway projects, taking into consideration budget limitations. A prime responsibility is to insure that the one percent Bicycle Funds are spent each year. The manager also gives engineering and technical assistance within the Highway Division regarding bikeway project design and construction. Coordination of Advisory Committee activities is also a responsibility of the Bicycle Program Manager as well as supervision of the Bicycle Program staff. Other important duties include responding to inquiries about the Bicycle Program, developing bicycle maps and brochures, and assisting city and county personnel with their bicycle programs.

OREGON TRANSPORTATION COMMISSION

Before implementation, all major bicycle policies and programs must be approved by the Oregon Transportation Commission. The Commission is appointed by the Governor and has the authority to set policy and approve expenditure of funds for the Department of Transportation, which includes the Highway Division. The Highway Division recommends policies or programs to the Transportation Commission for their approval. If approved, they are returned to the Highway Division for implementation.



Bicycle Program office

CHAPTER 4: BICYCLE FACILITY FUNDING SOURCES

INTRODUCTION

The core of the Oregon Bicycle Program is the Bicycle Law, ORS 366.514 which mandates that no less than one percent of the State Highway Fund each year be spent by cities, counties, and the Highway Division for bicycle trails and footpaths. Other funding is available, primarily from the Federal Highway Administration or local revenues.

STATE FUNDING

The State Highway Fund is comprised of weight mile taxes, fuel taxes, licensing and registration fees and truck load violations. From this fund, for example it is estimated in fiscal year 1989, counties will be allocated approximately \$74,367,000 for roadway purposes, and cities approximately \$46,556,000. The Highway Division will retain the remaining \$209,640,000 for its roadway purposes. Other miscellaneous revenues are added and transfers deducted from the Highway Division's funds before the State's one percent bikeway determination is made. See Table 1, page 11.

The use of these funds is limited by Article IX, Section 3a, of the Oregon Constitution. As initially conceived, the one percent bicycle fund could be used for footpaths and trails along highways, roads, and streets, as well as in parks and recreational areas. However, in May 1980, a constitutional amendment passed by the voters of Oregon restricted the use of all highway funds to highway purposes. This has been interpreted by the Oregon Attorney General to include only bikeways that are within highway rights-of-way. Consequently, the Bicycle Fund can no longer be spent on paths in parks or anywhere outside of highway, road, or street right-of-way. They also may not be spent for general bicycle safety education or bicycle law enforcement.

Bicycle monies can be expended for the following purposes:

1. Administrative costs of the Bicycle Program office and staff including payroll.
2. Expenses incurred by the Bicycle Advisory Committee.
3. Preliminary engineering costs of bikeways.
4. Construction costs for bikeway/footpath facilities within highway right-of-way.
5. Auxiliary bicycle facilities such as signs, curb cuts, ramps, and parking.
6. Maintenance of bikeways/footpaths.
7. Development and printing of bicycle route maps and brochures.
8. Bicycle planning assistance to Councils of Governments (COG's).

Appendix B contains a listing of the one percent bicycle/footpath expenditure requirements for the Highway Division, counties and cities for the five-year period of Fiscal Year 1983 through 1987.

FEDERAL FUNDING

There are no federal statutes similar to Oregon's bicycle law that require a percentage of federal funds be spent for the construction of footpaths or bicycle trails. However, several federal statutes address bicycle concerns or make funds available. Federal policy in 23 CFR 652.5 states: "The safe accommodation of pedestrians and bicyclists should be given full consideration during the development of federal-aid highway projects." In addition, 23 USC 109(n) prohibits "the severance or destruction of an existing major route for nonmotorized transportation traffic and light motorcycles unless such project provides a reasonable alternative route or such a route exists." Federal-aid money is available for bicycle facilities as part of a normal federal-aid highway construction project and at the same financial match ratio as the other highway work. Bicycle projects independent of other construction projects can be funded with a 100 percent federal share as provided in 23 USC 217. Section 217 also states that bicycle projects must be principally for transportation, rather than recreation purposes.

OTHER FUNDING

Although the one percent State monies provide the basic funding source for bikeways, local jurisdictions may also provide revenues from their general funds or from special bond levies. Also, cooperative projects have been funded with utility districts or companies to jointly build structures across streams which carry both utility lines and bicycle traffic.

TABLE 1

Determination of the Highway Division's 1 Percent State Bicycle Fund Amount

Estimate Fiscal Year 1989

Highway User Revenues:	
Weight Mile Tax	\$116,698,000
Fuel Taxes	189,389,000
License/Registrations	23,789,000
Truckload Violation Fines	<u>687,000</u>
	\$330,563,000
Less: County/City Transfers	<u>(120,923,000)</u>
SUBTOTAL	\$209,640,000
Plus: Miscellaneous Revenues:	
Overwidth/Overweight Permits	\$ 362,000
Gas and Oil Leases	500
Billboard Fees	63,000
Highway Property Rental	900,000
Interest Income	8,758,000
Other Revenues	900,000
Bond Sales	<u>0</u>
SUBTOTAL	\$ 10,984,000
Less: ODOT Assessment	\$(3,382,000)
Bond Payments	<u>(11,124,000)</u>
SUBTOTAL	\$(14,506,000)
Total Subject to 1 Percent Provision	<u>\$206,118,000</u>
Estimated 1 Percent Amount Required By Law	\$ 2,061,000

Oregon Bicycle Program

INTRODUCTION

As a part of this Bicycle Master Plan, the Oregon Transportation Commission has adopted the following mission statement, goals and objectives to give direction and guidance to the Oregon Bicycle Program.



Bicycle riders at Otter Crest

CHAPTER 5: GOALS AND OBJECTIVES

MISSION

To serve the needs of bicyclists within the State by supporting bicycling as a form of transportation and recreation that enhances the livability of Oregon.

GOALS AND OBJECTIVES

GOAL 1 *Provide a statewide bicycle system which is integrated with other transportation systems, that has desirable 6-foot wide (min. 4-foot) paved shoulders in rural areas to accommodate residential and visiting bicyclists.*

OBJECTIVE *Develop bicycle routes that provide for the desired mobility of bicyclists, while being responsive to the social, economic, and environmental objectives of Oregonians.*

OBJECTIVE *Integrate the consideration of bicycle routes and facilities into all planning, design, construction and maintenance activities of the State Highway Division.*

OBJECTIVE *Publish bicycle maps and guides which inform the public of bicycle routes, facilities and services.*

GOAL 2 *Provide and maintain a safe, convenient and pleasing bicycle environment.*

OBJECTIVE *Establish expenditure priorities for the construction, maintenance and operation of bicycle facilities from the 1 percent State Highway Funds set aside by ORS 366.514 for establishing bikeways and footpaths.*

OBJECTIVE *Provide bicycle facilities which consider the needs of commuting, recreational, touring and utility bicyclists of all ages.*

OBJECTIVE *Adopt design standards and policies which promote safe, convenient and pleasing bicycle facilities that encourage bicycle transportation.*

OBJECTIVE *Provide uniform signing and marking of all bikeways on the State highway system.*

OBJECTIVE *Adopt maintenance practices which maintain bikeways in a generally smooth, clean and safe condition.*

GOAL 3 *Encourage and support bicycle safety, education and enforcement programs.*

OBJECTIVE *Advocate the development of bicycle safety and education programs aimed at all ages, to improve bicycle skills, observance of traffic laws and overall safety.*

OBJECTIVE *Monitor and analyze bicycle accident data in order to devise ways to improve bicycle safety.*



CHAPTER 6: EXPENDITURE PRIORITIES

RELEVANT GOALS AND OBJECTIVES:
(from Chapter 5)

GOAL 2 Provide and maintain a safe, convenient and pleasing bicycle environment.

OBJECTIVE Establish expenditure priorities for the construction, maintenance and operation of bicycle facilities from the 1 percent State Highway Funds set aside by ORS 366.514 for establishing bikeways and footpaths.

INTRODUCTION

The Highway Division, with recommendations from the Oregon Bicycle Advisory Committee, has adopted four priorities for the expenditure of bike funds. These priorities are in addition to the cost of administering the bicycle program. These priorities are compatible with the intent of the Bicycle Law and the Highway Division's normal operating practices and policies. They insure that bikeways are given serious consideration in the Division's improvement programs. (See Appendix C for policy on eligible bikeway charges.)

EXPENDITURE PRIORITIES

Priority 1. First priority shall be the construction of bikeways whenever a highway is constructed, reconstructed or relocated.

DISCUSSION. This priority reflects the basic intent of the law that, whenever a highway is modernized or constructed, bikeways will be considered in the improvement. The majority of bikeway improvements are Priority 1 improvements. Usually these improvements are but a small portion of an overall project in the Highway Division's Six-Year Highway Improvement Program. Only State costs attributable to bicycle and pedestrian facilities are tallied as bikeway expenditures.

Priority 2. Second priority shall be adequate maintenance of existing state bikeways.

DISCUSSION. Maintenance costs are a relatively small portion of the bicycle program. However, maintenance costs of bikeways, such as sweeping, repair and sign replacement will gradually rise as new bikeways are established. Maintenance is a very important component of this program since bicyclists need safe facilities which have smooth and clean riding surfaces.

Priority 3. Third priority shall be the construction of independent bikeway projects on state-owned right of way or when approved by the State Highway Engineer, upon parallel routes that provide continuity to the State system.

DISCUSSION. Unlike Priority 1 projects, these projects are not associated with other highway improvements. The primary purpose of Priority 3 projects is to provide bikeway facilities, such as widening shoulders for bikes or building separated bike paths. The Oregon Bicycle Advisory Committee has recommended that the Highway Division budget the following amounts each year for Priority 3 projects:

Coast Highway	\$ 200,000
Region 1	250,000
Region 2	125,000
Region 3	125,000
Region 4	100,000
Region 5	100,000
Total	<u>\$ 900,000</u>

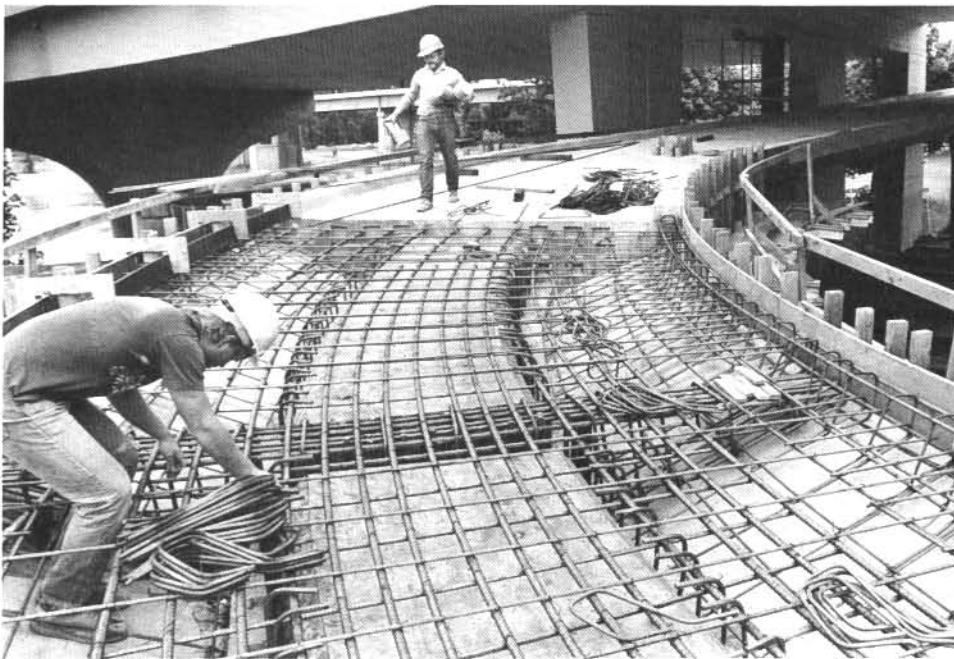
These independent bikeway projects are identified and listed in the Highway Division's Six-Year Highway Improvement Program. See Appendix D for "Guidelines for Approving Parallel Bicycle Routes."

Priority 4. *Fourth priority shall be financial assistance for local governmental agency bikeway projects.*

DISCUSSION. The Oregon Bicycle Advisory Committee has recommended that the Highway Division budget \$200,000 a year to assist local jurisdictions with their bicycle projects and programs. Eighty percent project grants of up to \$50,000 are available to successful applicants. Also, 50 percent planning grants of up to \$20,000 are available. Local jurisdictions can use their 1 percent bicycle monies or other sources for the matching amounts. These grants are important because they generally assist the bicycle commuter and recreational user where there is a high demand for bicycle facilities.

PRIORITY 4 PROJECT GRANT APPLICATIONS.

Each year a letter is sent to cities and counties informing them of the bikeway project grants. The Bicycle Program Manager and/or a staff person field review each proposed project and rate each according to criteria developed by the Bicycle Advisory Committee (see Appendix E for an example of the application form and rating sheet). The Bicycle Advisory Committee then reviews each application and may change the ratings by adding other considerations. The top rated projects which can be funded are then submitted to the Transportation Commission with a recommendation for approval. If approved, the Highway Division prepares project agreements whereby the local government entities agree to construct the projects on an 80 percent State and 20 percent Local match basis for grants of up to \$50,000.



Bike ramp under construction

PRIORITY 4 PLANNING ASSISTANCE.

Cities, counties and Councils of Government are encouraged to plan and develop comprehensive bikeway systems that can be incorporated into the overall statewide bicycle network. Fifty percent planning grants of up to \$20,000 are available from Priority 4 funds. To qualify for this assistance, the applicant must agree to prepare and submit a comprehensive master plan of bike routes for the area under its jurisdiction within a specified time. The comprehensive master plan must include route proposals, anticipated usage and bikeway project priorities. Master plan updates are not eligible for this assistance.

SIX-YEAR HIGHWAY IMPROVEMENT PROGRAM PROCESS

Priority 1 and 3 projects are included in the Highway Division's Six-Year Highway Improvement Program. Citizens who would like a bikeway constructed should submit their project proposal to the appropriate Region Engineer, who will evaluate the proposal and consider it for inclusion in the next preliminary Six-Year Program. The Oregon Bicycle Advisory Committee reviews all proposed Priority 3 bikeway projects at this stage and makes its recommendations to the Highway Division. Citizens are allowed further input later on in the process when public hearings are held to discuss the preliminary Six-Year Program. Here the public can make statements or supply testimony to support the need for their particular project. After evaluation, recommended projects are submitted to the Transportation Commission for approval in the final Six-Year Highway Improvement Program.

CHAPTER 7: DESIGNATED BICYCLE ROUTES

RELEVANT GOALS AND OBJECTIVES: (from Chapter 5)

GOAL 1 *Provide a statewide bicycle system which is integrated with other transportation systems, that has desirable 6-foot wide (min. 4-foot) paved shoulders in rural areas to accommodate residential and visiting bicyclists.*

OBJECTIVE *Develop bicycle routes that provide for the desired mobility of bicyclists, while being responsive to the social, economic and environmental objectives of Oregonians.*

OBJECTIVE *Integrate the consideration of bicycle routes and facilities into all planning, design, construction and maintenance activities of the State Highway Division.*

OBJECTIVE *Publish bicycle maps and guides which inform the public of bicycle routes, facilities and services.*

GOAL 2 *Provide and maintain a safe, convenient and pleasing bicycle environment.*

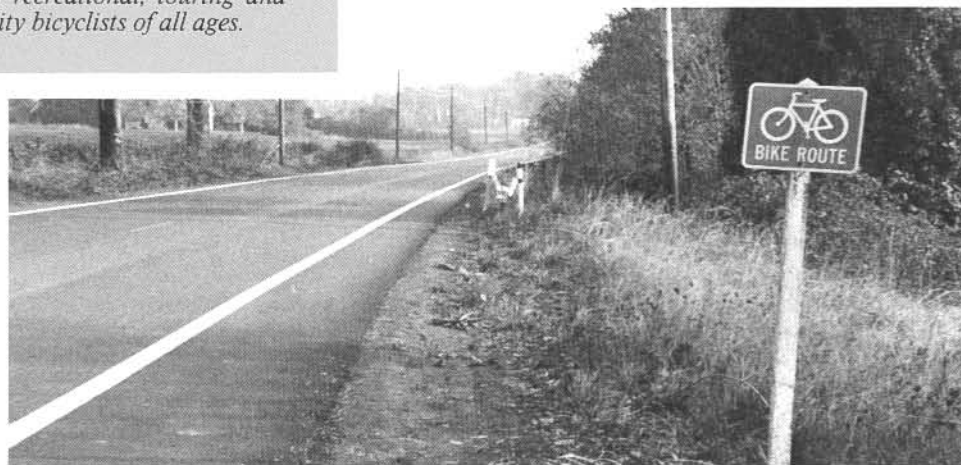
OBJECTIVE *Provide bicycle facilities which consider the needs of commuting, recreational, touring and utility bicyclists of all ages.*

INTRODUCTION

Bicycle transportation planning is much the same as conventional transportation planning because it is also concerned with travel demand, safety, convenience, economics and other factors. A connected system of bicycle routes is needed to guide bicyclists along reasonably direct routes which satisfy their travel desires. These routes also need to connect to other transportation modes and to bicycle services.

STATE HIGHWAY SYSTEM

The State Highway System is very compatible with the general needs of those bicyclists wishing to travel long distances. Over the years, Oregon has built a network of highways to carry cars, trucks and buses to locations through the State. Existing highways and roadways are the most economically efficient way to accommodate bicycles and are very convenient for bicyclists, most of whom want to travel to the same places as motorists. Oregon is fortunate that its citizens have supported its highway program and many of its main highways have adequate paved or oiled shoulders which can easily and safely accommodate bicycles.



Rural shoulder bikeway

The State Highway System has been classified by the Planning Section into four levels of importance: Interstate, Statewide, Regional, and District (see Map 1, page 20). This classification system is based on the function each highway performs, the traffic character and its sphere of influence.

Highways of Interstate significance are those high-volume "lifelines" of Oregon's economy that link this state with adjacent states and, beyond, to the rest of the nation. Oregon's major urban areas are serviced by highways in the Interstate category. Interstate highways normally have very wide paved shoulders, almost all of which are available for bicycle use.

Highways of Statewide significance are the major connectors between geographic areas in Oregon and adjacent states. Typical Statewide routes include The Dalles-California Highway (US 97), Oregon Coast Highway (US 101), Sunset Highway (US 26) and Willamette Highway (ORE 58). The majority of these highways have adequate width shoulders to accommodate bicycle travel.

Highways of Regional importance are those that are critical to the economy and well-being of a particular geographic area, and that serve as feeder routes to highways of Statewide significance. Examples of Regional highways include Pendleton-John Day Highway (US 395), Wilson River Highway (ORE 6) and Fremont Highway (ORE 31).

Highways of District importance serve the economy and mobility needs of small localized areas, and also serve as feeders to Regional and Statewide routes. Examples of District highways include Green Springs Highway (ORE 66), Silver Creek Falls Highway (ORE 214) and Crooked River Highway (ORE 27).

Regional and District highways tend to have narrower shoulder widths than Statewide highways, but they also tend to have lower traffic volumes. Many District highways lack or have very narrow paved shoulders, but generally motorists can safely pass bicyclists because of low motor vehicle traffic volumes.

ROUTE SELECTION CRITERIA

By law, footpaths and bicycle trails are to be provided wherever a highway, road or street is being constructed, reconstructed or relocated, except for certain circumstances (see ORS 366.514 Appendix A). In the broadest sense all of Oregon's paved roadways are part of the state bikeway system, but for this Master Plan, the Highway Division has selected the most significant State highways where efforts at creating adequate bikeways will be concentrated. These highways have been designated as Statewide Bicycle Routes.

The following three main guidelines were used to identify which routes to designate as Statewide Bicycle Routes:

(1) Demand - The intent of the statewide system is to serve the major portion of present day and projected bicycle use. The most used recreational routes were included, such as the Oregon Coast Highway, Lower Columbia River Highway, and the Trans-America Trail.

(2) Continuity and Linking - Routes linking population centers to one another or to destination points were incorporated, since these can be expected to attract more bicyclists as bicycle use grows. Some routes were included because they connect to another bicycle route or create loop routes which are a particular advantage for recreational cyclists.

(3) Riding Environment - Whenever possible, routes were chosen that offer advantages, such as:

- Scenic beauty
- Tourist attractions
- Safety (due to existing adequate shoulders or lower traffic volumes)
- Rest, food and overnight facilities
- Lesser gradient (low vertical rise and fall of the route)

The three guidelines were not applied collectively to the selection of each route; in several instances, only one guideline was applicable.

DESIGNATED STATEWIDE BICYCLE ROUTES

Map 2 on page 21 shows the rural Oregon highways which have been designated as Statewide Bicycle Routes. Inside urban areas, adopted local and regional bicycle plans may designate State highways as bicycle routes. It is the intent of this Master Plan that these designated bicycle routes be preserved and improved to safely accommodate bicycle travel.

BICYCLE ROUTE IMPROVEMENTS

Designated bicycle routes may be improved and signed in various ways to accommodate bicycle travel depending upon the location and bicycle use (see Chapters 8 and 9).

Shoulder Bikeways - On many rural highways and roads, the shoulders can be widened to provide a smooth, paved shoulder area to accommodate low to moderate bicycle volumes. Shoulder widths of 6 feet are desirable, but shoulders as narrow as 4 feet may be acceptable. Normally a 4-inch shoulder stripe is painted on the roadway of shoulder bikeways. When bicycle use is significant, the designated routes should be signed as bicycle routes.

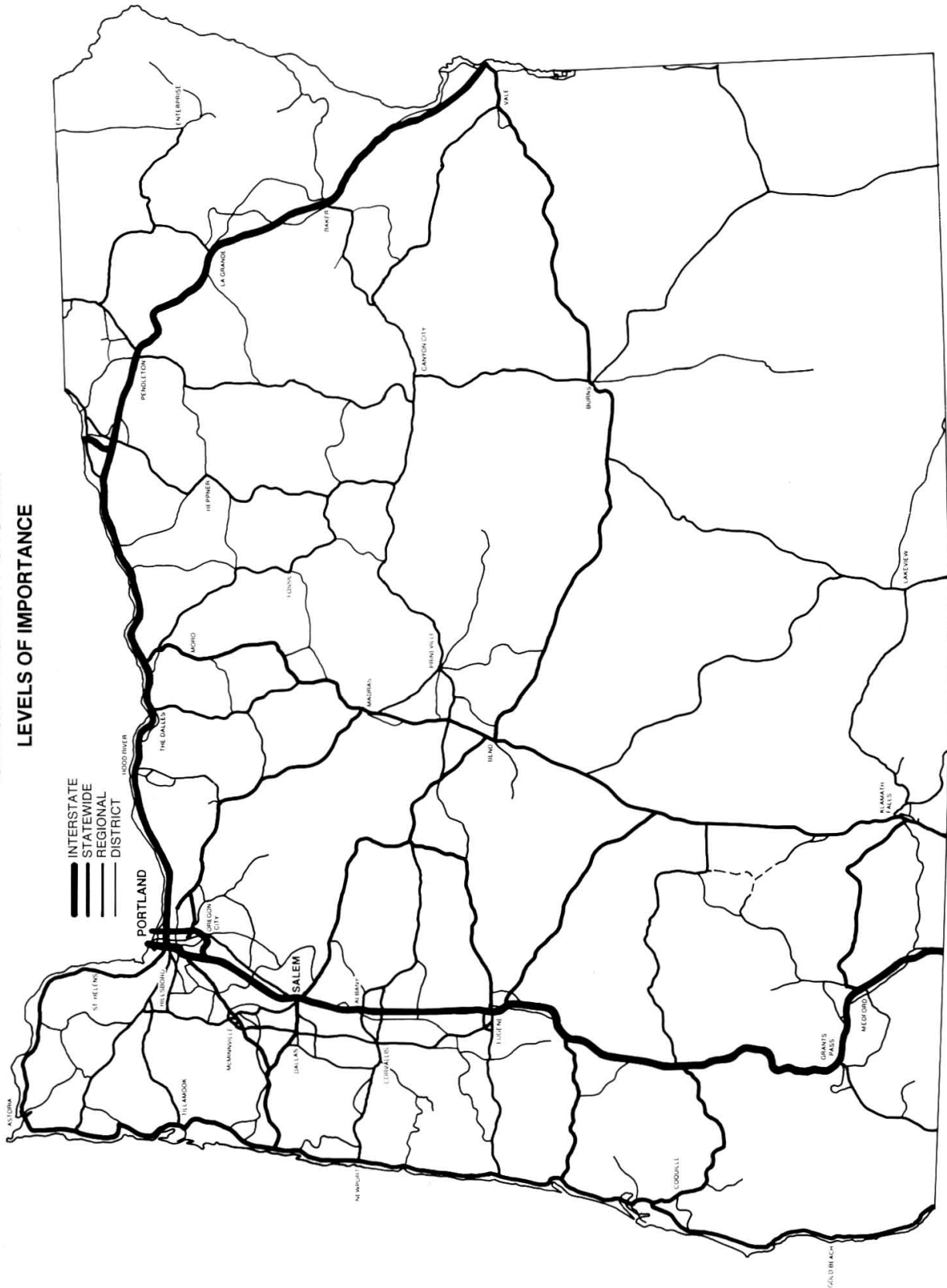
Bike Lanes - In urban areas and other areas where there is considerable bicycle use, a portion of the roadway can be designated as a bike lane for preferential use by bicyclists. Where adequate width is available, bike lanes can easily be striped and signed, otherwise the roadway must be widened to accommodate bike lanes. Bike lanes should be separated from motor vehicle lanes by an 8-inch painted solid line and should be well marked and signed. Bike lanes of 5 or 6 feet width are preferable.

Bike Paths - On some designated bicycle routes, it may be preferable to construct bike paths separated from the roadway and motorized vehicles. Separated bike paths along limited access roadways, such as freeways, provide safe and enjoyable bicycle routes if there are few motor vehicle crossings. Desirable widths of two directional bike paths are 10 to 12 feet.

IMPROVEMENT RECOMMENDATIONS

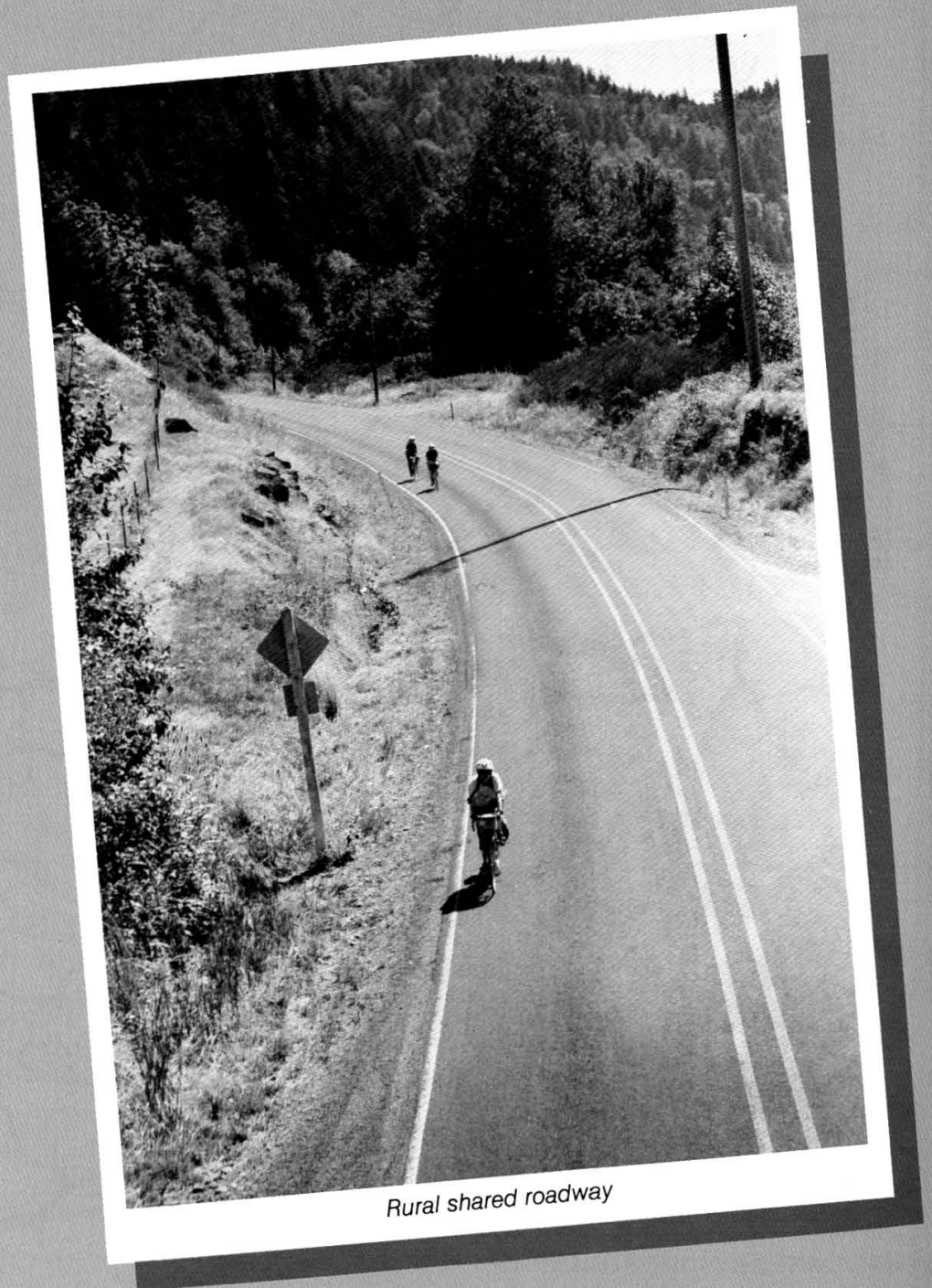
As roadways are improved, every effort should be made to accommodate bicycles on designated bicycle routes. Bicycle improvements should be made which are appropriate for existing and projected bicycle use. The surface of bikeways should be smooth and free of physical hazards. Highway projects which improve bikeways on designated Statewide Bicycle Routes should warrant extra consideration in the technical ranking of projects during the development of the Highway Division's Six-Year Highway Improvement Program.

OREGON HIGHWAY SYSTEM LEVELS OF IMPORTANCE



MAP 1

Bikeway Design & Operation



Rural shared roadway

CHAPTER 8: BASIC DESIGN STANDARDS

RELEVANT GOALS AND OBJECTIVES: (from Chapter 5)

GOAL 1 *Provide a statewide bicycle system which is integrated with other transportation systems, that has desirable 6-foot wide (min. 4-foot) paved shoulders in rural areas to accommodate residential and visiting bicyclists.*

GOAL 2 *Provide and maintain a safe, convenient and pleasing bicycle environment.*

OBJECTIVE *Provide bicycle facilities which consider the needs of commuting, recreational, touring and utility bicyclists of all ages.*

OBJECTIVE *Adopt design standards and policies which promote safe, convenient and pleasing bicycle facilities that encourage bicycle transportation.*

INTRODUCTION

Bicycles have become an important mode of transportation. As such, bicycle facilities need to be considered at the inception of new transportation projects and become incorporated into the total design of each project. Planning for bicycles should recommend routes and facilities which are direct, safe and efficient.

AASHTO GUIDELINES

To establish basic design standards for bicycle facilities, the Oregon Department of Transportation has adopted the American Association of State Highway and Transportation Officials' (AASHTO) manual "Guide for Development of New Bicycle Facilities 1981," with minor changes and supplements (see Appendix F). This guide may be purchased for \$2.50 plus \$1.25 shipping and handling from the American Association of State Highway and Transportation Officials, 444 N. Capitol Street, N.W., Suite 225, Washington, D.C. 20001. The Highway Division encourages local agencies to use the AASHTO guidelines as supplemented. In addition, all traffic control devices used in conjunction with bicycle routes must conform to the Federal Highway Administration's "Manual On Uniform Traffic Control Devices" as supplemented and adopted by the Oregon Transportation Commission.

TYPES OF BICYCLE FACILITIES

Bicycles are legally classified as vehicles which may be ridden on most public roadways in Oregon. Because of this, bicycle facilities should be designed to allow bicyclists to emulate vehicle drivers. There are four basic types of facilities which accommodate bicycle travel:

1. Shared Roadway - On a shared roadway facility, bicyclists share the normal vehicle lanes with motorists. Shared roadway facilities are common on city street systems. They are also common on narrow rural roads. Where bicycle travel is significant, these roadways are signed as bicycle routes.

2. Shoulder Bikeway - Smooth paved roadway shoulders provide a good area where bicyclists can ride with few conflicts with faster moving motor vehicle traffic. The majority of bicycle travel on the state highway system is accommodated on shoulder bikeways. Where bicycle travel is significant, shoulder bikeway routes are signed as bicycle routes.

3. Bike Lane - Where bicycle travel and demand is substantial and where adequate width is available, a portion of the roadway may be designated for preferential use by bicyclists. Bike lanes are very common in urban areas. Bike lanes should always be well marked and signed to call attention to their preferential use by bicyclists.

4. Bike Path - A bike path is a bikeway which is physically separated from motorized vehicular traffic by an open space or barrier and may be within the roadway right-of-way or within an independent right-of-way. Bike paths are normally two-way facilities. Bike paths should be used to serve corridors not served by other bikeways and where there are few crossing roadways.

DESIGN PRACTICES

The Highway Division has years of experience using various design practices. Some have been beneficial and some have proven to be poor practices. They are discussed here so that local agencies may have access to the Highway Division's collective statewide experience.

Beneficial Practices:

8-Inch Fog Lines - This width is adequate for a visual division of a motor vehicle lane and bike lane. (Should only be used with a designated bike lane.)

Paved Driveway Aprons - Paved driveway aprons prevent gravel from being carried onto the bikeway averting a significant hazard.

Concrete Shoulder Barriers - Under circumstances where it is desirable to separate the bikeway from a motor vehicle travel lane, 31-inch high concrete shoulder barriers are superior to other separators. They offer significant safety, as well as help prevent litter from building up on the bikeway.

Sidewalk Ramps on Major Bridge Crossings - These are a great help to the cyclist if bridge sidewalks are an adequate width for safe bike use. They deserve consideration especially when the traffic lanes or shoulders on the bridge are narrow.

Paved Shoulder Construction - When it is necessary to add paved shoulders to roadways for bicycle use, paving an asphalt panel 10 feet in width is preferred. This eliminates a joint at the edge of the existing pavement and allows the new asphalt to feather into the existing pavement between the motor vehicle wheel tracks. It provides a smooth and good appearing improvement.

Practices To Be Avoided:

Sidewalk Bike Paths - Early bike path efforts were aimed at multiple use of sidewalks as bike paths. While in rare instances this type of path may be desirable, in most cases it should be avoided. Sidewalks are generally unsafe because they put the cyclist in conflict with motorists using driveways and with pedestrians, utility poles and sign posts. Also, the cyclist is generally not visible or noticed by the motorist so that the cyclist suddenly emerges at intersections, surprising the motorist and creating a hazardous condition. Every attempt should be made to allow bicyclists to function as vehicle drivers, rather than as pedestrians.

Right-Turn-Only Lanes - Through bike lanes should not be placed to the right of right-turn-only motor vehicle lanes (or left of left-turn-only lanes). These situations force the crossing conflict of motor vehicles and bicycles in the immediate vicinity of the intersection. Striping and signing should provide these crossings in advance of the intersection where a safer merging maneuver can take place.

Extruded Curbs - These low curbs, when used as a barrier between the motorist and the bicyclist create a hazard to both. Either may hit the curb and lose control, with the motorist crossing into the bikeway or more often the cyclist falling into the traffic lane. They make the bikeway difficult to maintain and tend to collect debris. For these reasons, extruded curbs should not be used to delineate a bikeway.

If a physical barrier is necessary, a 31-inch high concrete shoulder barrier is superior since it offers safety advantages and discourages debris buildup.

Two-Way Bike Lane (on one side of road) - While this may seem a practical alternative to the expense of two one-way bike lanes, it creates a condition that is very dangerous to the bicyclist. The bicyclist closest to the motor vehicle lane has opposing motor traffic on one side of him and opposing bicycle traffic on the other. It also promotes illegal wrong-way riding and creates awkward and dangerous movements in the transition back to standard bikeways.

Reflectors in Pavement - Reflectors are a hazard to the bicyclist because they can deflect the wheel causing the bicyclist to steer into the traffic lane. If needed for motorists, they should always be installed on the motorist's side of the fog line and have a beveled front edge.

"Begin" and "End" Bike Route Signs - The supplemental "Begin" and "End" plaques attached to the green Bike Route sign (D11-1, see Figure 7, page 36) are often misused to indicate a change in the width of a designated bike route rather than to indicate the actual beginning or end of a bike route. They are not necessary and their use is discouraged.

BASIC DESIGN CRITERIA

Shared Roadways

A roadway which will accommodate both cyclists and motor vehicles is often the best solution when there is inadequate width to provide bike lanes or shoulder bikeways. The shared roadway may be any width; however, the optimum width is 14 feet which allows a motor vehicle and a bicycle to operate side-by-side. Lanes wider than this promote and encourage the operation of two motor vehicles in one lane. This width is based on usable pavement width; for example, from curb face or the longitudinal joint between the concrete gutter and pavement to the lane stripe. In addition, consideration must be made for drainage grates and vehicle parking.

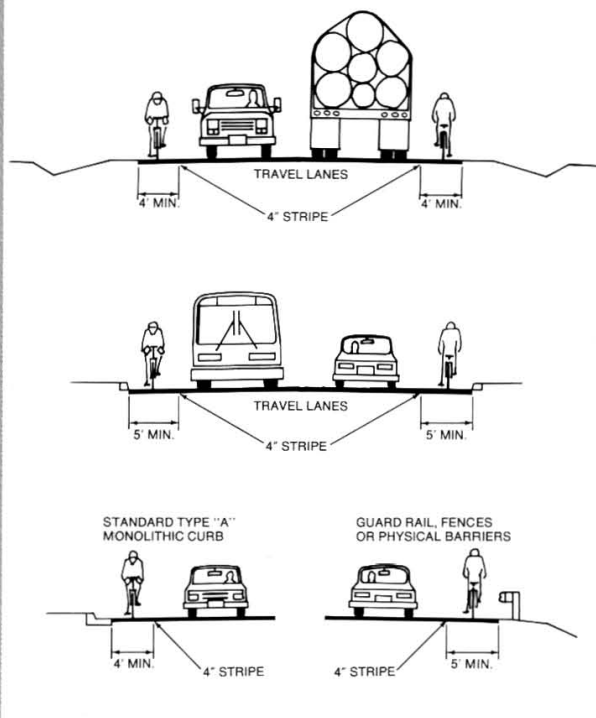
Shoulder Bikeways

Roadway shoulders for bikeways should preferably be 5 to 6 feet wide. This provides ample width for bicycle traffic, yet it is narrow enough for vehicle traffic to blow the area free of debris. If there are width limitations, a 4-foot shoulder may suffice (see Figure 1). Shoulder areas against a curb face must be a 5-foot minimum width or 4 feet from the longitudinal joint between the concrete gutter and pavement to the shoulder stripe. Five foot shoulders are required from the face of a guardrail or other roadside barrier.

On climbing lanes it is desirable to maintain a 5-foot minimum shoulder, as the uphill cyclist needs more space for maneuvering.

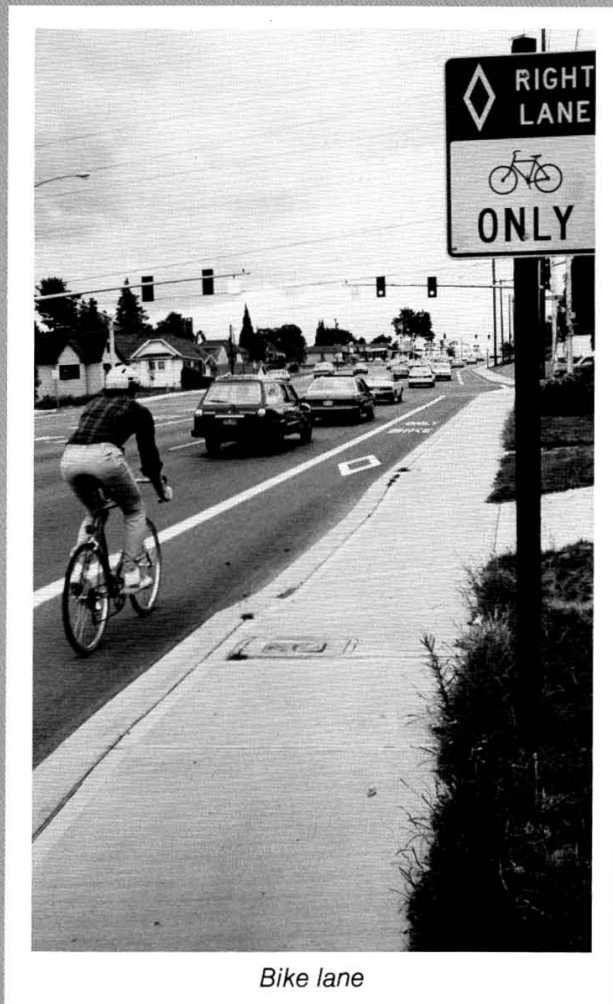
Many existing gravel shoulders have sufficient width and base to support shoulder bikeways. Minor excavation and the addition of 3 to 4 inches of asphalt is all that is required to provide sufficient shoulder bikeways.

**FIGURE 1
MINIMUM WIDTHS FOR SHOULDER BIKEWAYS**



Bike Lanes

Bike lanes should always be considered in urban areas (over 5,000 population) and also in rural areas when there are more than 50 bicyclists a day (see Chapter 9). The minimum width for a bike lane is 4 feet or 5 feet from the face of a curb or guardrail (see Figure 2). The desirable width of a bike lane is 6 feet. There must be a clear riding zone of 4 feet if there is a longitudinal joint between the pavement and a concrete curb and gutter section. If parking is per-



Bike lane

mitted, the bike lane should always be placed between the parking area and the travel lane and have a minimum width of 5 feet. Bike lanes in excess of 6 feet in width are undesirable as they encourage riding two abreast and also may be mistaken for a motor vehicle lane.

Bike lanes should always be one-way facilities and on the right hand side of the roadway, except for one-way streets where the bike lane may be placed on either the right or the left side of the roadway.

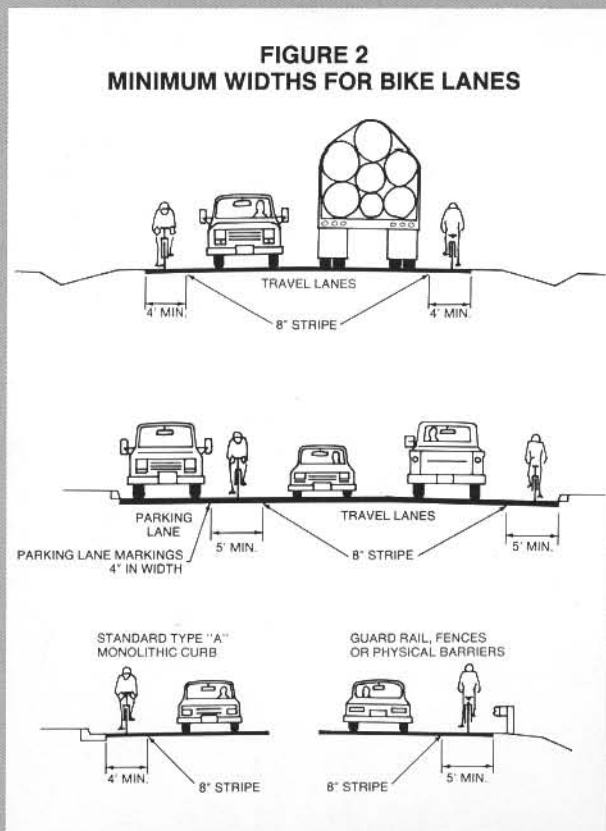
Where there are right-turn or left-turn only lanes for motor vehicles, care must be taken to follow the AASHTO guidelines to place the bike lane between the turn lane and outside motor vehicle lane. A bike lane should always be signed and marked with pavement stencils and an 8-inch stripe.

Bike Paths

Bike paths can provide excellent bicycle facilities under certain circumstances. They are especially good where the bike path is isolated from motor vehicles such as along parkways or streams. Special care must be taken to limit the number of at-grade crossings with cross streets or driveways. Poorly designed bike paths can put a cyclist in a position where the driver of a motor vehicle does not expect him. Bike paths should not run immediately parallel and adjacent to roadways. Some of the problems involved are: 1) a portion of the bicycle traffic is forced to ride against the automobile traffic which is contrary to the rules of the road; 2) intersections, cross streets and driveways are of particular concern since they often put the cyclist in a position where a driver of a motor vehicle does not expect him; 3) where a bike path begins or ends, a cyclist may cross the road in advance and ride against the traffic flow to reach the bike path and may continue down the road against the traffic flow. Wrong way riding is a major cause of bicycle/motor vehicle accidents.

Where a bike path is parallel and adjacent to a roadway, there should be 5-foot minimum width (see Figure 3) separating them or else a physical barrier of sufficient height should be installed (see Railings, Fences and Barriers).

Under most conditions, a minimum 10-foot wide bike path is desirable for two-way traffic; however, under certain conditions, it may be necessary to widen the path to 12 feet, because of high bicycle volumes or multiple use between bicyclists, pedestrians and joggers. In some instances a minimum width of 8 feet can be adequate where usage is expected to be low. This width should only be used where there is minimum pedestrian use and with proper horizontal and vertical alignment, which assures good sight distances. Also, the inside of curves should be widened. One-way bike paths should have a minimum width of 5 feet.



At least a 2-foot shy distance on both sides of a bike path is necessary for safe operation; however, 3 feet or more is desirable. Clearance to overhead obstructions should be a minimum of 8 feet, and 10 feet is desirable.

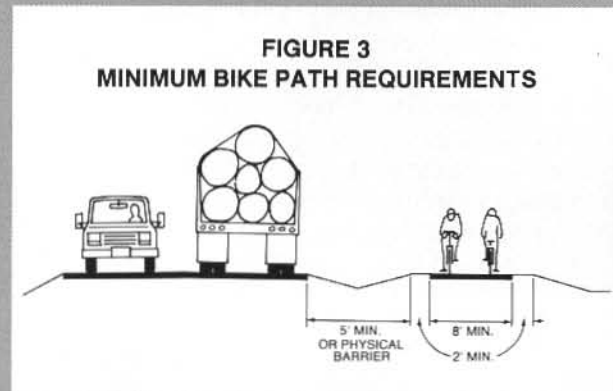
When constructing bike paths parallel to freeways, every effort should be made to provide safe, direct and free flowing bicycle travel along and across the freeway.

The use of concrete surfacing for bike paths has proven to be the most suitable for long-term use. Using modern construction practices, they provide a smooth ride with low maintenance costs. Concrete bike paths can be placed with a slip form paver, cross broomed and the crack control joints saw cut. They are nearly as economical to build as asphalt paths, yet do not become brittle, cracked and rough with age or become deformed by roots and weeds as often happens with asphalt concrete.



Separated bike path

For more discussion on design criteria, such as grades and alignment, refer to the AASHTO "Guide for Development of New Bicycle Facilities, 1981."

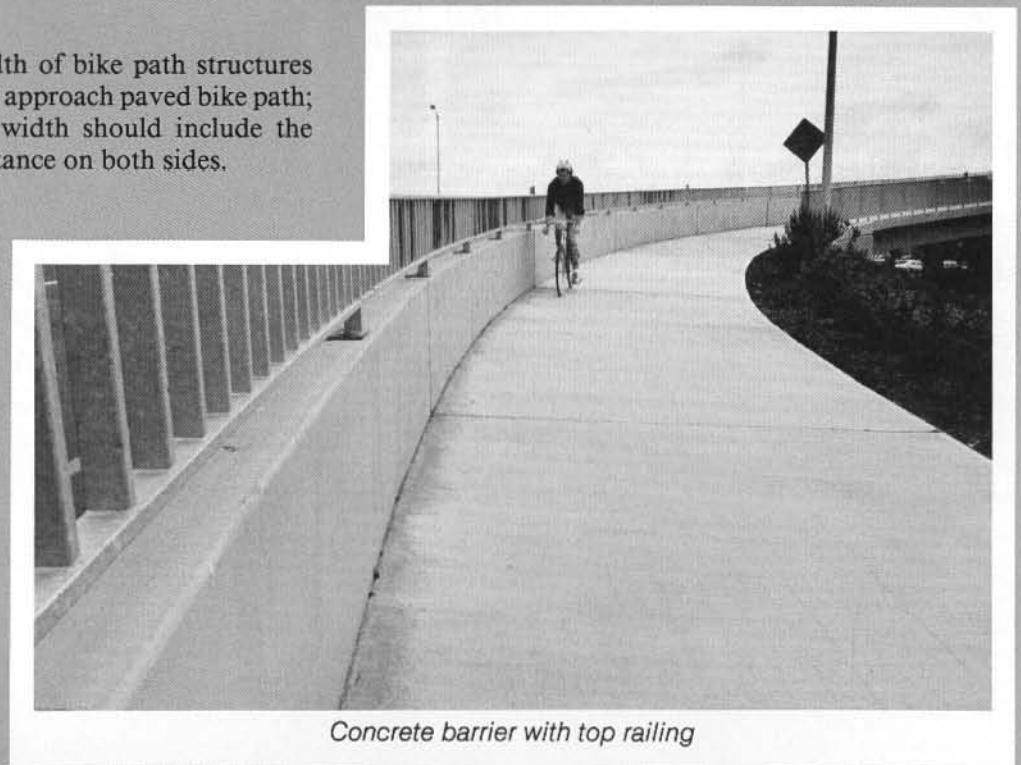


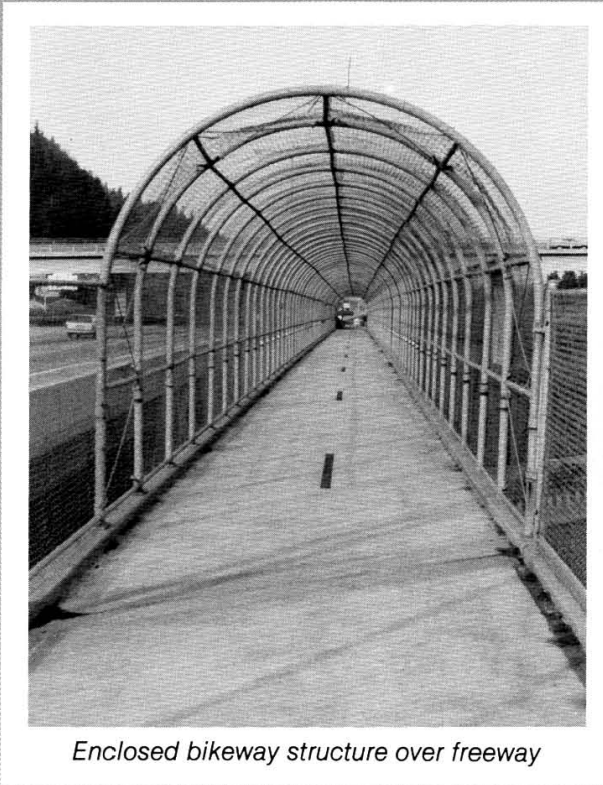
Structures

The minimum clear width of bike path structures should be the same as the approach paved bike path; and the desirable clear width should include the minimum 2-foot shy distance on both sides.

Railings, Fences and Barriers

There is often a need for fence or railing treatment along a bikeway for safety considerations. This would include eliminating access to high speed highways, or providing protection along steep side slopes or adjacent to deep waterways. The minimum height should be 4.5 feet which keeps a cyclist from toppling over it. Openings should not exceed 6 inches in width. Where concrete shoulder barriers are used, some type of fence treatment may be necessary on top of the barrier to achieve the required height. This can be achieved by adding tube railing or chain link fencing. Where a high, vertical fence could pose a problem to a cyclist's hand, a smooth rub rail should be installed at a height of 3 feet.





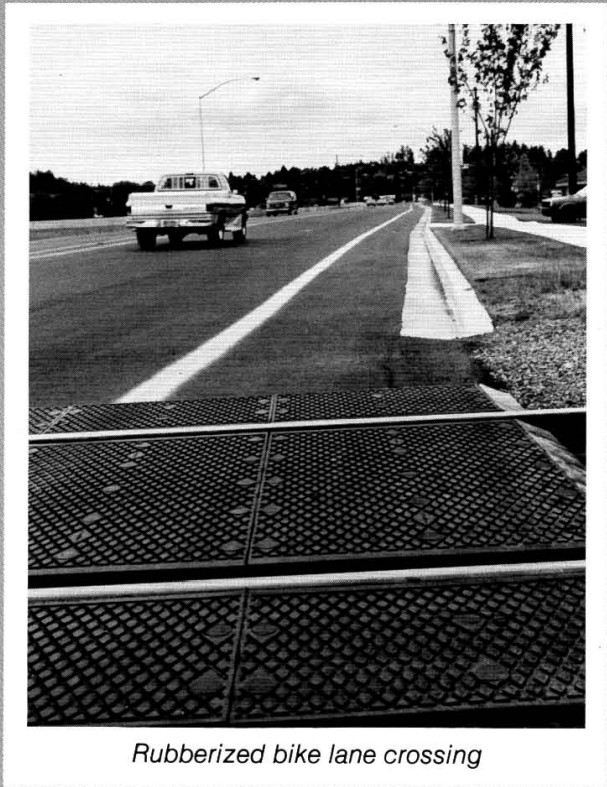
Enclosed bikeway structure over freeway

At-Grade Railroad Crossings

Special care must be taken wherever a bikeway crosses an at-grade railroad crossing. The open flange area between the rail and the roadway surface can pose a serious hazard to the cyclist since it can catch a bicycle tire causing the rider to be thrown off the bicycle. This hazard is kept to a minimum when the bikeway crosses at 90 degrees to the crossing. If there is a severe skew angle, special attention must be given to the bikeway (see Figure 4) to improve the angle of approach.

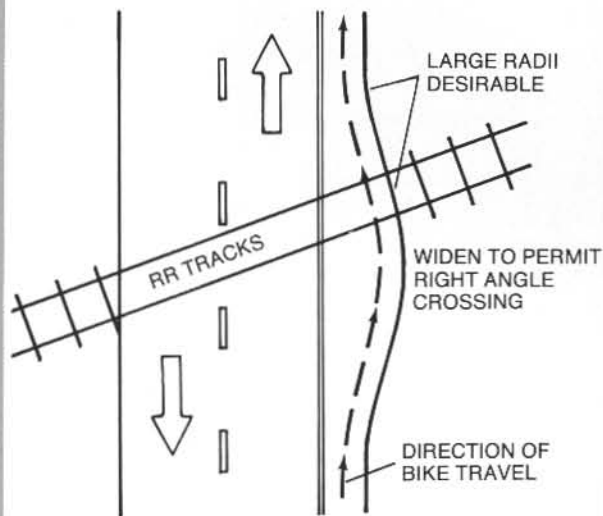
Another solution is to use a rubberized crossing to keep the crossing smooth, and the flange depth and width to a minimum. If pavement is used, it must be maintained to prevent a ridge buildup next to the rails. Timber crossings may prove to be smoother in some circumstances.

Advance warning signs should be installed at all railroad crossings to warn the cyclist of the crossing. Typical signing for a bike path is shown in Figure 5. All bikeways should have pavement stencils in the bikeway to warn bicyclists.



Rubberized bike lane crossing

**FIGURE 4
BIKEWAY RAILROAD CROSSING**

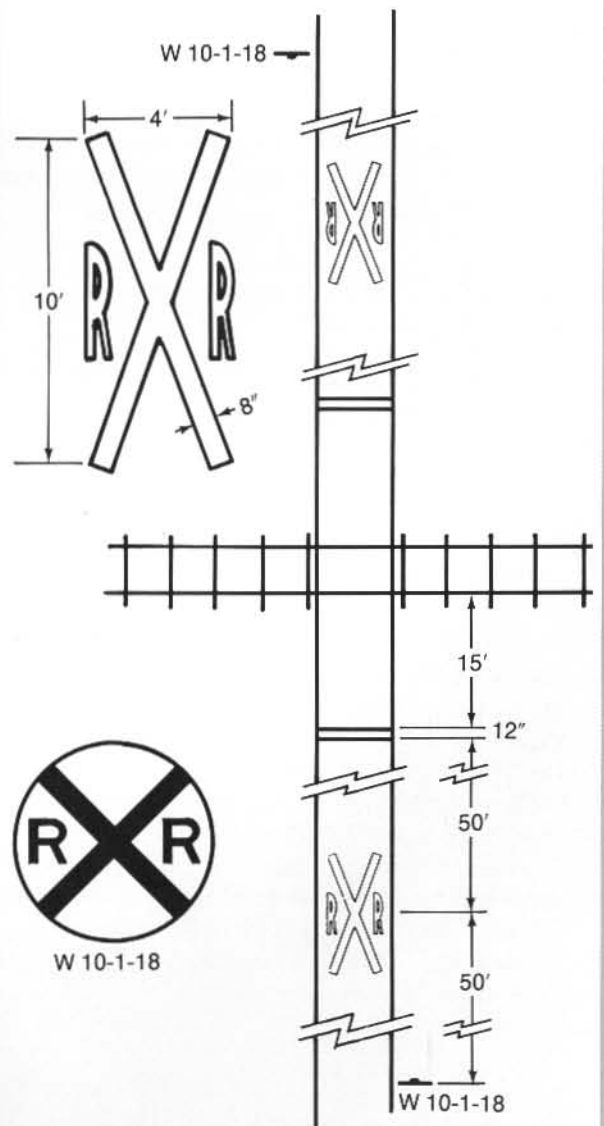


Typical Pavement Structural Sections

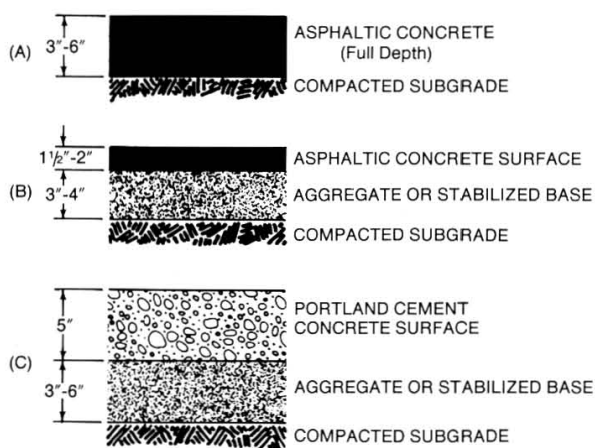
Bikeways should be constructed with adequate drainage to prevent washouts, flooding and silt infiltration onto the bikeway. All vegetation, including roots, should be removed in the preparation of the subgrade. Special care is needed to control new growth, such as the use of soil sterilization or lime treatment of the subgrade.

Bikeways should be designed with sufficient surfacing structural depth for the subgrade soil type to support light maintenance vehicles and possible emergency vehicles. Figure 6 illustrates typical surfacing designs for subgrades meeting normal compaction and moisture specifications. If the bikeway must be constructed over a very poor subgrade (wet and/or poor material), treatment of the subgrade with lime, cement or geotextile fabric should be considered.

**FIGURE 5
RAILROAD CROSSING SIGNING
FOR BIKE PATH**



**FIGURE 6
TYPICAL PAVEMENT DESIGNS**



Ramps

Some bicycle ramps that are constructed need to meet specifications for wheelchair use. The maximum slope for a ramp without a level landing is 1:20 or 5 percent. This may be increased to 1:12, or 8.3 percent, with the addition of level landings at every 30" (max.) change in elevation. Landings must be a minimum of 5' in length. There must be a level landing at the bottom and top of each run.

If the total vertical rise is less than 9', a maximum slope of 1 in 10, or 10 percent, may be used; however, one level landing is required when the rise is between 4.5' and 9'.¹

¹Federal Register, Volume 49, Number 132/August 76, 1984/Notices

Barrier Posts

Barrier posts may be used to limit vehicle traffic on a bike path; however, when placed in a bike path, they become a hazard to the cyclist. Often a cyclist does not expect them and they may be hard to see. When used, they should be spaced wide enough for easy passage by bicyclists. Other solutions to discouraging motor vehicles should be examined. The most obvious would be adequate signing to inform the motorist. One successful method used in Eugene is for the bike path to branch into two narrower bike paths just before it reaches the roadway. This makes it more difficult for the motor vehicle to access the bike path.

Drainage Grates

Care must be taken to make sure that drainage grates are bicycle safe as required by ORS 810.150. If not, a bicycle wheel may fall into the slots of the grate causing the cyclist to be thrown off the bicycle. Replacing existing grates or welding thin metal straps across the grate perpendicular to the drainage slots may be required. Also, pavement overlays should taper into drainage inlets so they do not cause an abrupt edge at the inlet.

Secure Bicycle Parking

Secure bicycle parking racks should be provided at public bicycle destination points. They should be designed so they do not bend wheels or damage other bicycle parts. Bicycle thefts are common and bicyclists need parking racks which provide good security. Bike racks should be tamper-proof or accommodate the new high security U-shaped bike locks. Covered parking should be considered for those bicyclists who ride in all weather conditions.

CHAPTER 9: SIGNING AND STRIPING

*RELEVANT GOALS AND OBJECTIVES:
(from Chapter 5)*

GOAL 2 *Provide and maintain a safe, convenient and pleasing bicycle environment.*

OBJECTIVE *Adopt design standards and policies which promote safe, convenient and pleasing bicycle facilities that encourage bicycle transportation.*

OBJECTIVE *Provide uniform signing and marking of all bikeways on the State highway system.*

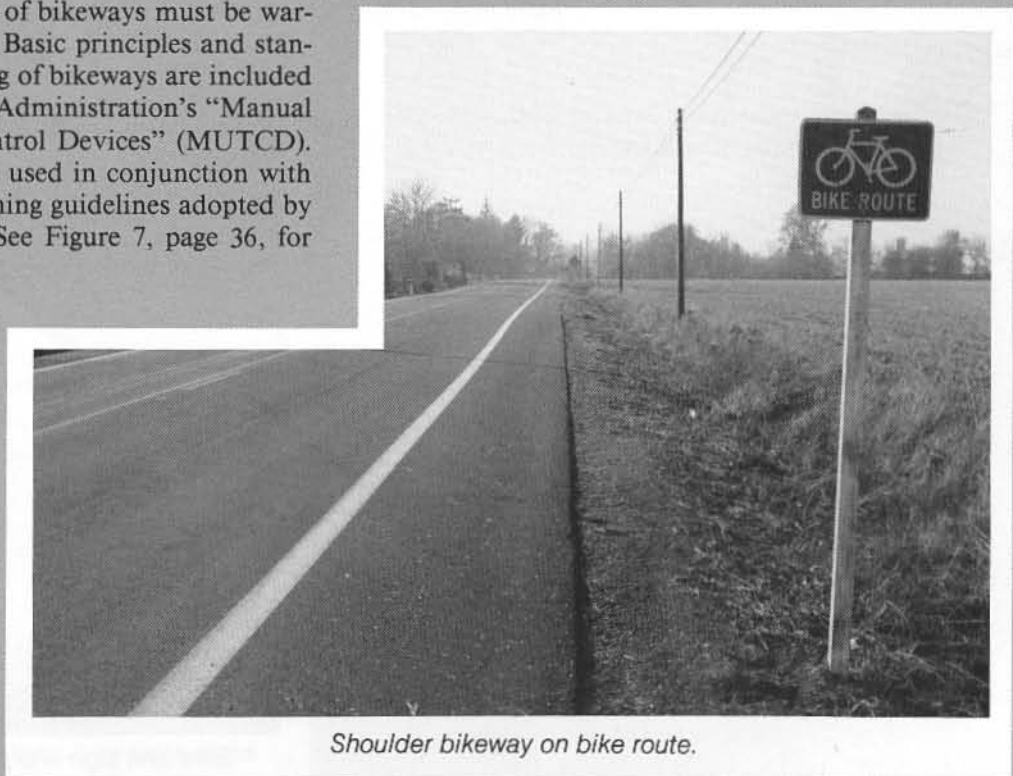
INTRODUCTION

Signing and marking of bikeways must be uniform and consistent if bikeways are to command the respect of the public and provide safety to the users. All signing and marking of bikeways must be warranted by use and need. Basic principles and standards for uniform signing of bikeways are included in the Federal Highway Administration's "Manual on Uniform Traffic Control Devices" (MUTCD). The MUTCD should be used in conjunction with the following bicycle signing guidelines adopted by the Highway Division. See Figure 7, page 36, for typical bikeway signs.

BICYCLE ROUTE SIGNING GUIDELINES

A. Designated bicycle routes should be signed and marked using the following general guidelines:

- 1. NO SIGNING:** When bicycle use is less than 20 bikes a day.
- 2. BIKE ROUTE SIGNING (Shared Roadway & Shoulder Bikeway):** When bicycle use is significant (20-50 bikes a day) install BIKE ROUTE SIGN (D11-1). If shoulder is less than 3 feet wide, also install BIKE SIGN (W11-1) with a rider "ON ROADWAY". Use normal 4-inch shoulder stripe.



Shoulder bikeway on bike route.

3. **BIKE LANE SIGNING:** In all urban areas, and rural areas where bicycle use exceeds 50 bikes a day, designate a portion of the roadway as a BIKE LANE if a 4* to 6 feet width of roadway is available for bicycle use. (If over 6 feet of roadway is available for bicycle use, sign as a BIKE ROUTE only).

BIKE LANE DESIGNATION:

- a. Use 8-inch Bike Lane Stripe.
- b. Paint Diamond-shaped pavement symbol with "BIKE ONLY" legend.
- c. Install BIKE LANE SIGNS (R3-16 and R3-17).

*Minimum width and must be wider under certain conditions.

NOTE: Bicycle use should be representative of average daily use during the three months of highest use.

B. General guidelines for placement and spacing of signs (See MUTCD):

- 1. **BIKE ROUTE SIGN (D11-1)** should be placed at the beginning of a designated bike route and after every major intersection. In rural areas, maximum spacing should be every 10 miles. "BEGIN" and "END" supplemental plaques should only be used at the actual beginning or end of a designated bicycle route and are optional.
- 2. **BIKE SIGN (W11-1)** should be used with the appropriate rider ("XING", "ON ROADWAY"). Sign W11-1 should be 30"x30", unless a traffic investigation or review recommends a 48"x48" size.

- a. **W11-1 with "Xing"** should be in advance of a point where a bikeway crosses the roadway. If the point of crossing is a controlled intersection, this signing may not be needed.
- b. **W11-1 with "ON ROADWAY"** should be used where the shoulder is less than 3 feet wide. This signing should be in advance of the roadway condition. If the roadway condition is continuous, a rider "NEXT XX MILES" may be used.

3. **BIKE LANE SIGN R3-16** should be used in advance of a marked bike lane. Where appropriate, the message "ENDS" may be substituted for "AHEAD".



Bike lane sign and pavement markings

4. **BIKE LANE SIGN R3-17** should only be used in conjunction with the diamond-shaped preferential lane pavement symbol on marked bike lanes. It should be erected after significant intersections and should have a maximum spacing of 1000 feet in urban areas and 1 mile in rural areas.

BIKE PATH SIGNING GUIDELINES

Bike path signs serve three basic purposes: Regulating bike path usage, directing bicyclists along pre-established routes, and warning of unexpected conditions. Because of a bicyclist's lower line of sight, the bottom of the signs should be about 5 feet above the bike path. If a secondary sign is mounted below another sign, it should be a minimum of 4 feet above the path. The signs should have a maximum practical lateral clearance from the edge of the bike path, but should be at least 2 feet. The basic principles and standards for the signing and marking of separated bike paths are contained in the MUTCD.

General Bike Path Signing Guidelines

- A. **Bike Route Sign (D11-1):** Bike Route signs are used to identify bike paths or routes and should be installed at access points to bike paths. They are also used with appropriate arrow and message signs to direct bicyclists to bike paths or to indicate a change in the direction of a bike path or route.
- B. **Regulatory Signs:** Regulatory signs are used to inform bicyclists, pedestrians and motorists of traffic laws or regulations. They are erected at the point where the regulations apply. Common regulatory bike path signs are:

Motor Vehicle Prohibition (R5-3)
Stop (R1-1)
Yield (R1-2)



Directional bike route signs

C. **Warning Signs:** Warning signs are used to inform bicyclists of existing or potentially hazardous conditions on a bike path. They should be used in advance of the condition. Common warning signs are:

- Turn & Curve Signs (W1-1, 2, 4, 5, 6, 7)
- Intersection Signs (W2-1, 2, 3, 4, 5)
- Stop Ahead (W3-1)
- Hill (W7-5)
- Slippery When Wet (W8-10)
- Railroad (W10-1)

Heavy Use Bike Path Control Guidelines

The following guidelines should be used to provide additional signing and control on bike paths which are receiving heavy multiple use by bicyclists, pedestrians and joggers.

A. **Striping:** Where there is heavy multiple use, a broken yellow center line stripe may be used to separate the travel into two directions. (The MUTCD recommends a 3-foot centerline paint segment with 9-foot gaps between segments. A 10-foot segment and a 30-foot gap are also very effective.) Through curves and areas of poor sight distance, a solid centerline stripe should be used.

B. **Signing:** An effective sign used on some heavily used bike paths reads "KEEP RIGHT, PASS LEFT." This helps to reduce directional conflicts and provides safer passing areas for the faster users. Other effective signs read "USE BELL OR VOICE WHEN PASSING" and "BICYCLISTS, THIS IS A MULTI-USE PATH, REDUCE SPEED, WATCH FOR PEDESTRIANS."

C. **Improvements:** If an existing bike path is too narrow to handle user volumes, the bike path can be widened to provide the necessary capacity. Also a jogger/pedestrian path may be constructed along side the bike path to accommodate joggers and pedestrians.

FIGURE 7
TYPICAL BIKEWAY SIGNS



CHAPTER 10: OPERATION AND MAINTENANCE

RELEVANT GOALS AND OBJECTIVES: (from Chapter 5)

GOAL 1 *Provide a statewide bicycle system which is integrated with other transportation systems, that has desirable 6-foot wide (min. 4-foot) paved shoulders in rural areas to accommodate residential and visiting bicyclists.*

OBJECTIVE *Integrate the consideration of bicycle routes and facilities into all planning, design, construction and maintenance activities of the State Highway Division.*

GOAL 2 *Provide and maintain a safe, convenient and pleasing bicycle environment.*

OBJECTIVE *Establish expenditure priorities for the construction, maintenance and operation of bicycle facilities from the 1 percent State Highway Funds set aside by ORS 366.514 for establishing bikeways and footpaths.*

OBJECTIVE *Provide uniform signing and marking of all bikeways on the State highway system.*

OBJECTIVE *Adopt maintenance practices which maintain bikeways in a generally smooth, clean and safe condition.*

INTRODUCTION

The proper operation and maintenance of bikeways is frequently lost in the urgency to plan and develop new bikeway facilities. Adequate operation and maintenance of existing bikeways is necessary to protect the investment of public funds and to continue the safe enjoyment and service of these facilities.

OPERATION AND MAINTENANCE

Bikeways will always be subject to collecting debris and falling into disrepair. To counteract this, a regularly scheduled inspection and routine maintenance program should be established. Travelway litter, including broken glass and gravel, is the most hazardous of problems demanding regular pick up and sweeping. Often during winter icy conditions, it is not cost effective to sweep bikeways frequently to remove sanding materials; however, they should be swept after the winter season ends or after major storms in high bicycle use areas. A smooth surface, free of potholes and large bumps, should be provided and care should be taken to eliminate other physical hazards. Vegetation encroaching into and under the bikeway is both a nuisance and a hazard. Trees, shrubs and other vegetation and their roots should be controlled to provide adequate clearances and sight distances.

Attention should be given to maintaining the full paved width and not allowing the edges to ravel. Signs and pavement markings should also be inspected regularly and kept in good condition.

Trash receptacles should be placed along bike paths at convenient locations. Seeded and sodded areas in the vicinity of bike paths should have a regular schedule of mowing and debris pickup.

If winter conditions warrant snow removal, it should be in the form of plowing, since deicing agents and abrasives can damage bicycles and bikeways. Law enforcement is usually necessary to prevent unauthorized motor vehicles from using a bike path which reduces damage to the path and provides a safer environment for path users.

Neglected maintenance will render bicycle facilities unridable and they may become a potential legal liability. Cyclists who continue to use them will be risking damage to their equipment and themselves due to the hazardous conditions, but most will choose not to use the bikeway at all.

To assure adequate maintenance of bikeway facilities, the government agency with maintenance responsibility should conduct routine inspections and establish a regular maintenance budget. This will help to guarantee the condition of the route and encourage cyclists to make regular use of it.



Bike path maintenance vehicle

CHAPTER 11: SAFETY, EDUCATION AND ENFORCEMENT

RELEVANT GOALS AND OBJECTIVES: (from Chapter 5)

GOAL 3 *Encourage and support bicycle safety, education and enforcement programs.*

OBJECTIVE *Advocate the development of bicycle safety and education programs aimed at all ages, to improve bicycle skills, observance of traffic laws and overall safety.*

OBJECTIVE *Monitor and analyze bicycle accident data in order to devise ways to improve bicycle safety.*

INTRODUCTION

Engineering, education and enforcement are the three major constituents of bicycle safety. In Oregon, the quality of engineering on bikeways has been very good and the number of facility related bicycle accidents have been few. As long as the facilities are maintained as outlined in Chapter 10, there should continue to be no major problems in this area. Education and enforcement, however, are areas that need special attention. State bicycle funds are not eligible for these activities; but, federal safety funds are available to the Oregon Traffic Safety Commission.

BICYCLE/MOTOR VEHICLE ACCIDENTS

Education and enforcement could significantly reduce bicycle/motor vehicle accidents. Of the 860 bicycle/motor vehicle accidents that took place in 1986, 45 percent took place at intersections while a lower but still significant 26 percent were a result of bicycles or motor vehicles entering or leaving the roadway at a mid-block location. Thirteen percent of the 1986 accidents resulted from wrong-way bicycle riding. Eight percent were caused by the cyclist or motorist turning or swerving. The other 8 percent of the accidents were caused by miscellaneous movements.

The majority of these accidents were due to bicyclists or motorists disobeying the law, whether intentionally or out of ignorance. Education would certainly curtail unintentional infractions of the law, while stricter enforcement would limit both intentional and unintentional infractions.

EDUCATION

Bicyclists especially need to know the vehicle laws which pertain to them and they also need to develop good bicycling skills. This will help them to safely co-exist with motorists. Education of bicyclists assists in obtaining these skills and knowledge. Comprehensive bicycle safety education requires a program designed for each age group with emphasis on errors commonly committed by that group. On-bike training is an important element of such a program. Education is also needed on the safety value of helmets and other protective measures.

At present, only a few Oregon communities have a comprehensive bicycle education program, while others have elements of one. Limited funds, lack of personnel expert in cycling, and lack of a person or agency directly responsible for bicycle education are the primary reasons. In some communities, volunteer service groups or police departments do some education, but support materials are often not well developed. Usually, only elementary school age children are selected as the target group.

The 1987 Legislature took a big step forward in the passage of Senate Bill 514 (ORS 802.325) which requires that the Oregon Traffic Safety Commission establish a bicycle safety program (see Appendix A for a copy of this statute). This program should help to educate school age children, adult bicyclists, motorists, parents and law enforcement personnel.



Police safety education

ENFORCEMENT

Law enforcement is a necessary component of bicycle safety. As with any law, lack of enforcement leads to a general disregard of the law. Some communities have had difficulty in getting the police to enforce the motor vehicle code with bicyclists. Discussions with bicycle coordinators have led to the conclusion that the lack of enforcement is partly caused by insufficiently trained police forces who are not aware of the importance of citing bicyclists. Also, there are the practical problems in citing bicyclists, since some lack positive identification, such as a driver's license.

Frequent contact between local bicycle advisory committees and the police can highlight the need for enforcement and identify problem areas. Significant violation problems that have been identified by the bicycling community include: running stop signs and traffic signals, riding the wrong way on a street and riding at night without lights. Use of bicycles or motorcycles rather than police cars by traffic patrols makes the contact with bicycle offenders easier. Community education and support of enforcement efforts builds respect between bicyclists and motorists.

Appendices

APPENDIX A

PARTIAL LISTING OF OREGON STATUTES PERTAINING TO BICYCLES AND HOUSE BILL 1700

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366.112 Bicycle lane and path advisory committee; members, terms, duties and powers; meetings. (1) There is created in the Highway Division of the Department of Transportation an advisory committee to be appointed by the Governor to advise the division regarding the regulation of bicycle traffic and the establishment of bicycle lanes and paths. The committee shall consist of eight members including an employe of a unit of local government employed in land use planning, a representative of a recognized environmental group, a person engaged in the business of selling or repairing bicycles, a member designated by the Oregon Recreation Trails Advisory Council, and at least one member under the age of 21 at the time of appointment. Members of the advisory committee shall be entitled to compensation and expenses as provided by ORS 292.495.

(2) The members shall be appointed to serve for terms of four years each, except the members first appointed. The terms of the first appointed members shall be fixed so that the terms of half the members shall expire in two years and half in four years, commencing July 1, 1973. Vacancies on the committee shall be filled by appointment by the Governor for the unexpired term.

(3) The committee shall meet regularly four times a year, at times and places fixed by the chairman of the committee. The committee may meet at other times upon notice by the chairman or three members of the committee. The Highway Division shall provide office space and personnel to assist the committee as requested by the chairman, within the limits of available funds. The committee shall adopt rules to govern its proceedings and may select officers it considers necessary. [1973 c.716 §1]

Note: 366.112 was enacted into law by the Legislative Assembly but was not added to or made a part of ORS chapter 366 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

366.460 Construction of sidewalks within highway right of way. The department may construct and maintain within the right of way of any state highway or section thereof sidewalks, footpaths, bicycle paths or trails for horseback riding or to facilitate the driving of livestock. Before the construction of any of such facilities the department must find and declare that the construction thereof is necessary in the public interest and will contribute to the safety of pedestrians, the motoring public or persons using the highway. Such facilities shall be constructed to permit reasonable ingress and egress to abutting property lawfully entitled to such rights.

366.514 Use of highway fund for footpaths and bicycle trails. (1) Out of the funds received by the department or by any county or city from the State Highway Fund reasonable amounts shall be expended as necessary to provide footpaths and bicycle trails, including curb cuts or ramps as part of the project. Footpaths and bicycle trails, including curb cuts or ramps as part of the project, shall be provided wherever a highway, road or street is being constructed, reconstructed or relocated. Funds received from the State Highway Fund may also be expended to maintain footpaths and trails and to provide footpaths and trails along other highways, roads and streets and in parks and recreation areas.

(2) Footpaths and trails are not required to be established under subsection (1) of this section:

(a) Where the establishment of such paths and trails would be contrary to public safety;

(b) If the cost of establishing such paths and trails would be excessively disproportionate to the need or probable use; or

(c) Where sparsity of population, other available ways or other factors indicate an absence of any need for such paths and trails.

(3) The amount expended by the department or by a city or county as required or permitted by this section shall never in any one fiscal year be less than one percent of the total amount of the funds received from the highway fund. However:

(a) This subsection does not apply to a city in any year in which the one percent equals \$250 or less, or to a county in any year in which the one percent equals \$1,500 or less.

(b) A city or county in lieu of expending the funds each year may credit the funds to a financial reserve or special fund in accordance with ORS 280.100, to be held for not more than 10 years, and to be expended for the purposes required or permitted by this section.

(c) For purposes of computing amounts expended during a fiscal year under this subsection, the department, a city or county may record the money as expended:

(A) On the date actual construction of the facility is commenced if the facility is constructed by the city, county or department itself; or

(B) On the date a contract for the construction of the facilities is entered with a private contractor or with any other governmental body.

(4) For the purposes of this chapter, the establishment of paths, trails and curb cuts or ramps and the expenditure of funds as authorized by this section are for highway, road and street purposes. The department shall, when requested,

provide technical assistance and advice to cities and counties in carrying out the purpose of this section. The division shall recommend construction standards for footpaths and bicycle trails. Curb cuts or ramps shall comply with the requirements of ORS 447.310. The division shall, in the manner prescribed for marking highways under ORS 810.200, provide a uniform system of signing footpaths and bicycle trails which shall apply to paths and trails under the jurisdiction of the department and cities and counties. The department and cities and counties may restrict the use of footpaths and bicycle trails under their respective jurisdictions to pedestrians and non-motorized vehicles.

(5) As used in this section, "bicycle trail" means a publicly owned and maintained lane or way designated and signed for use as a bicycle route. [1971 c.376 §2; 1979 c.825 §1; 1983 c.19 §1; 1983 c.338 §919]

366.790 Authorized use of appropriation to cities; report by cities to Legislative Assembly. (1) Money paid to cities under ORS 366.785 to 366.820 shall be used only for the purposes stated in sections 3 and 3a. Article IX of the Oregon Constitution and the statutes enacted pursuant thereto including ORS 366.514.

(2) Cities receiving moneys under ORS 366.785 to 366.820 shall report during each Legislative Assembly the expenditures of those moneys in each of the following areas:

(a) Maintenance;

(b) Public improvements as defined in ORS 279.011; and

(c) Administration. [Amended by 1961 c.653 §2; 1971 c.376 §5; 1985 c.565 §65; 1987 c.899 §4]

447.310 Standards for curbing. (1) The standard for construction of curbs on each side of any city street, county road or state highway, or any connecting street, road or highway for which curbs and sidewalks have been prescribed by the governing body of the city or county or Department of Transportation having jurisdiction thereover, shall require not less than two curb cuts or ramps per lineal block to be located on or near the crosswalks at intersections. Each curb cut or ramp shall be at least 48 inches wide, where possible, and a minimum of 36 inches wide where a 48-inch width will not fit, at a slope not to exceed one-inch rise per 12-inch run. If a 12:1 slope will not fit, an 8:1 slope is acceptable if so constructed as to allow reasonable access to the crosswalk for physically handicapped persons.

(2) Standards set for curb cuts and ramps under subsection (1) of this section shall apply whenever a curb or sidewalk is constructed or replaced at any point in a block which gives reasonable access to a crosswalk. [1973 c.176 §1; 1975 c.468 §1]

801.025 General exemptions; exceptions. Except as otherwise specifically provided in the vehicle code, the provisions of the vehicle code do not apply to the exemptions described in this section. This section exempts all of the following partially or completely as described:

(1) Persons, motor vehicles and other equipment employed by the United States, this state, any county, city, district or other political subdivision or a public utility are exempt from the vehicle code while on a highway and working or being used to service, construct, maintain or repair the facilities of the utility, or to persons, motor vehicles and other equipment while operated within the immediate construction project as described in the governmental agency contract if there is a contract, in the construction or reconstruction of a street or highway when the work is being done in an area that is signed in accordance with the manual adopted under ORS 810.200. This subsection does not provide an exemption under the following circumstances:

(a) For provisions relating to serious traffic offenses.

(b) To the persons and vehicles when traveling to or from the facilities or construction project.

(2) Devices moved exclusively on stationary rail tracks are exempt from the vehicle code.

(3) Devices that are powered exclusively by human power are not subject to those provisions of the vehicle code that relate to vehicles. Notwithstanding this subsection, bicycles are generally subject to the vehicle code as provided under ORS 814.400. [1983 c.338 §5; 1985 c.16 §5]

Note: The amendments to 801.025 by section 139, chapter 447, Oregon Laws 1987, take effect July 1, 1989. See section 143, chapter 447, Oregon Laws 1987. The text is set forth for the user's convenience.

801.025. Except as otherwise specifically provided in the vehicle code, the provisions of the vehicle code do not apply to the exemptions described in this section. This section exempts all of the following partially or completely as described:

(1) Persons, motor vehicles and other equipment employed by the United States, this state, any county, city, district or other political subdivision or a public utility or telecommunications utility are exempt from the vehicle code while on a highway and working or being used to service.

construct, maintain or repair the facilities of the utility, or to persons, motor vehicles and other equipment while operated within the immediate construction project as described in the governmental agency contract if there is a contract, in the construction or reconstruction of a street or highway when the work is being done in an area that is signed in accordance with the manual adopted under ORS 810.200. This subsection does not provide an exemption under the following circumstances:

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801.150 "Bicycle." "Bicycle" means a vehicle that:

(1) Is designed to be operated on the ground on wheels;

(2) Has a seat or saddle for use of the rider;

(3) Is designed to travel with not more than three wheels in contact with the ground;

(4) Is propelled exclusively by human power; and

(5) Has every wheel more than 14 inches in diameter or two tandem wheels either of which is more than 14 inches in diameter. [1983 c.338 §22]

801.155 "Bicycle lane." "Bicycle lane" means that part of the highway, adjacent to the roadway, designated by official signs or markings for use by persons riding bicycles except as otherwise specifically provided by law. [1983 c.338 §23]

801.160 "Bicycle path." "Bicycle path" means a public way, not part of a highway, that is designated by official signs or markings for use by persons riding bicycles except as otherwise specifically provided by law. [1983 c.338 §24]

801.590 "Vehicle." "Vehicle" means any device in, upon or by which any person or property is or may be transported or drawn upon a public highway and includes vehicles that are propelled or powered by any means. [1983 c.338 §109]

802.325 Traffic Safety Commission bicycle safety program; contents; fees. (1) The Traffic Safety Commission shall establish a bicycle safety program that complies with this section to the extent moneys are available for

such program. The program established may include the following:

(a) Bicycle safety promotion and public education.

(b) Advice and assistance for bicycle safety programs operated by government or nongovernment organizations.

(c) Classroom instruction and actual riding instruction necessary to teach safe and proper operation of bicycles.

(d) Bicycle education and information that assist police agencies in the enforcement of bicycle laws.

(e) Other education or safety programs the commission determines will help promote the safe operation of bicycles, promote safe and lawful riding habits and assist in accident prevention.

(f) The commission may charge a fee for services provided under the program. Any fee charged by the commission under this paragraph shall be established by rule and shall not be in an amount that will discourage persons from participating in safety programs offered by the commission under this section.

(2) The commission shall act as a liaison between government agencies and advisory committees and interested bicyclist groups.

(3) The commission may accept donations and solicit grants to enable the commission to carry out the functions of this section. [1987 c.683 §2]

810.020 Regulating use of throughway. (1) Each road authority may prohibit or restrict the use of a throughway in its jurisdiction by any of the following:

(a) Parades.

(b) Bicycles or other nonmotorized traffic.

(c) Motorcycles or mopeds.

(2) Regulation under this section becomes effective when appropriate signs giving notice of the regulation are erected upon a throughway and the approaches to the throughway.

(3) Penalties for violation of restrictions or prohibitions imposed under this section are provided under ORS 811.445.

(4) The commission shall act as road authority under this section in lieu of the department. [1983 c.338 §146]

810.030 Imposition of restrictions on highway use; grounds; procedure; penalties. (1) A road authority may impose restrictions described under this section on its own highways as the road authority determines necessary to do any of the following:

(a) Protect any highway or section of highway from being unduly damaged.

(b) Protect the interest and safety of the general public.

(2) Restrictions that may be imposed under this section include any of the following:

(a) Prohibition of the operation of any or all vehicles or any class or kind of vehicle.

(b) Imposing limits on any weight or dimension of any vehicle or combination of vehicles.

(c) Imposing any other restrictions that the road authority determines necessary to achieve the purposes of this section. This paragraph does not grant authority to impose speed restrictions.

(3) Any restrictions or limitations imposed under this section must be imposed by proper order. The restrictions or limitations are effective when appropriate signs giving notice of the restrictions or limitations are erected. A sign giving notice of a restriction or limitation in an order shall be maintained in a conspicuous manner and shall be placed at each end of the highway or section of highway affected by the order and at such other places as is necessary to inform the public.

(4) Penalties are provided under ORS 818.130 for violation of restrictions imposed under this section. [1983 c.338 §147; 1985 c.16 §46]

810.090 Bicycle racing. Bicycle racing is permitted on any highway in this state upon the approval of, and under conditions imposed by, the road authority for the highway on which the race is held. [1983 c.338 §153]

810.150 Drain construction; compliance with bicycle safety requirements; guidelines. (1) Street drains, sewer drains, storm drains and other similar openings in a roadbed over which traffic must pass that are in any portion of a public way, highway, road, street, footpath or bicycle trail that is available for use by bicycle traffic shall be designed and installed, including any modification of existing drains, with grates or covers so that bicycle traffic may pass over the drains safely and without obstruction or interference.

(2) The department shall adopt construction guidelines for the design of public ways in accordance with this section. Limitations on the applicability of the guidelines are established under ORS 801.030. [1983 c.338 §159]

811.050 Failure to yield to bicycle on bicycle lane. (1) A person commits the offense of failure of a motor vehicle operator to yield to a bicycle on a bicycle lane if the person is operating a motor vehicle and the person does not yield the right of way to a person operating a bicycle or moped upon a bicycle lane.

(2) This section does not require persons operating mopeds to yield the right of way to bicycles if the mopeds are operated on bicycle lanes in the manner permitted under ORS 811.440.

(3) The offense described in this section, failure of a motor vehicle operator to yield to a bicycle on a bicycle lane, is a Class B traffic infraction. [1983 c.338 §698; 1985 c.16 §336]

811.055 Failure to yield to bicyclist on sidewalk. (1) The driver of a motor vehicle commits the offense of failure to yield the right of way to a bicyclist on a sidewalk if the driver does not yield the right of way to any bicyclist on a sidewalk.

(2) The driver of a motor vehicle is not in violation of this section when a bicyclist is operating in violation of ORS 814.410. Nothing in this subsection relieves the driver of a motor vehicle from the duty to exercise due care.

(3) The offense described in this section, failure to yield the right of way to a bicyclist on a sidewalk, is a Class C traffic infraction. [1983 c.338 §702; 1985 c.16 §340]

811.395 Appropriate signals for stopping, turning, changing lanes and decelerating. This section establishes appropriate signals, for purposes of the vehicle code, for use when signals are required while stopping, turning, changing lanes or suddenly decelerating a vehicle. This section does not authorize the use of only hand and arm signals when the use of signal lights is required under ORS 811.405. Vehicle lighting equipment described in this section is vehicle lighting equipment for which standards are established under ORS 816.100 and 816.120. Appropriate signals are as follows:

(1) To indicate a left turn either of the following:

(a) Hand and arm extended horizontally from the left side of the vehicle.

(b) Activation of front and rear turn signal lights on the left side of the vehicle.

(2) To indicate a right turn either of the following:

(a) Hand and arm extended upward from the left side of the vehicle. A person who is operating

a bicycle is not in violation of this paragraph if the person signals a right turn by extending the person's right hand and arm horizontally.

(b) Activation of front and rear turn signal lights on the right side of the vehicle.

(3) To indicate a stop or a decrease in speed either of the following:

(a) Hand and arm extended downward from the left side of the vehicle; or

(b) Activation of brake lights on the vehicle.

(4) Change of lane by activation of both front and rear turn signal lights on the side of the vehicle toward which the change of lane is made.

[1983 c.338 §635; 1985 c.16 §314]

811.435 Operation of motor vehicle on bicycle trail; exemptions; penalty. (1) A person commits the offense of operation of a motor vehicle on a bicycle trail if the person operates a motor vehicle upon a bicycle lane or a bicycle path.

(2) Exemptions to this section are provided under ORS 811.440.

(3) This section is not applicable to mopeds. ORS 811.440 and 814.210 control the operation and use of mopeds on bicycle lanes and paths.

(4) The offense described in this section, operation of a motor vehicle on a bicycle trail, is a Class B traffic infraction. [1983 c.338 §643]

811.440 When motor vehicles may operate on bicycle lane. This section provides exemptions from the prohibitions under ORS 811.435 and 814.210 against operating motor vehicles on bicycle lanes and paths. The following vehicles are not subject to ORS 811.435 and 814.210 under the circumstances described:

(1) A person may operate a moped on a bicycle lane that is immediately adjacent to the roadway only while the moped is being exclusively powered by human power.

(2) A person may operate a motor vehicle upon a bicycle lane when:

(a) Making a turn;

(b) Entering or leaving an alley, private road or driveway; or

(c) Required in the course of official duty.

(3) An implement of husbandry may momentarily cross into a bicycle lane to permit other vehicles to overtake and pass the implement of husbandry. [1983 c.338 §645]

811.490 Improper opening or leaving open of vehicle door; penalty. (1) A person commits the offense of improper opening or leaving open a vehicle door if the person does any of the following:

(a) Opens any door of a vehicle unless and until it is reasonably safe to do so and it can be done without interference with the movement of traffic, or with pedestrians and bicycles on sidewalks or shoulders.

(b) Leaves a door open on the side of a vehicle available to traffic, or to pedestrians or bicycles on sidewalks or shoulders for a period of time longer than necessary to load or unload passengers.

(2) The offense described in this section, improper opening or leaving open a vehicle door, is a Class D traffic infraction. [1983 c.338 §655; 1985 c.16 §320]

811.525 Exemptions from requirements for use of lights. This section establishes exemptions from ORS 811.515 and 811.520. The exemptions under this section are in addition to any exemptions under ORS 801.025. The exemptions established under this section are partial or complete as described in the following:

(1) ORS 811.515 and 811.520 shall not be construed to prohibit the use of additional parts and accessories on any vehicle not inconsistent with the provisions of those sections.

(2) Except for the provisions relating to exempt-vehicle safety lighting equipment, ORS 811.515 and 811.520 do not apply to any of the following:

(a) Road machinery.

(b) Road rollers.

(c) Farm tractors.

(d) Antique motor vehicles that are maintained as a collector's item and used for exhibitions, parades, club activities and similar uses, but not used primarily for the transportation of persons or property.

(3) Whenever motor and other vehicles are operated in combination during the time that lights are required, any lighting equipment, except the taillight, which by reason of its location on a vehicle of the combination would be obscured by another vehicle of the combination, need not be lighted. This subsection shall not affect the requirement that lighted clearance lights be displayed on the front of the foremost vehicle required to have clearance lights nor the requirement that all lights on the rear of the rearmost vehicle of the combination be lighted.

(4) Lighting equipment on bicycles shall be lighted as required under ORS 815.280.

(5) Parked or stopped vehicles are not required to display parking lights if the road authority for the highway provides by ordinance or resolution that no lights need be displayed upon a vehicle parked on the highway in accordance with legal parking regulations where there is sufficient light to render clearly discernible any person or object within a distance of 500 feet from the highway.

(6) Nothing under ORS 811.515 and 811.520 limits the ability to use the following lights with any other lights during the day or at night:

- (a) Public vehicle warning lights.
- (b) Pilot vehicle warning lights.
- (c) Tow vehicle warning lights.
- (d) Police lights.

(7) Requirements for use of motorcycle and moped headlights are under ORS 814.320. [1983 c.338 §661; 1985 c.16 §324; 1985 c.71 §8]

811.550 Places where stopping, standing and parking prohibited. This section establishes places where stopping, standing and parking a vehicle are prohibited for purposes of the penalties under ORS 811.555. Except as provided under an exemption in ORS 811.560, a person is in violation of ORS 811.555 if a person parks, stops or leaves standing a vehicle in any of the following places:

(1) Upon a roadway outside a business district or residence district, whether attended or unattended, when it is practicable to stop, park or leave the vehicle standing off the roadway. Exemptions under ORS 811.560 (1) and (7) are applicable to this subsection.

(2) On a shoulder, whether attended or unattended, unless a clear and unobstructed width of the roadway opposite the standing vehicle is left for the passage of other vehicles and the standing vehicle is visible from a distance of 200 feet in each direction upon the roadway or the person, at least 200 feet in each direction upon the roadway, warns approaching motorists of the standing vehicle by use of flagpersons, flags, signs or other signals.

(3) On the roadway side of a vehicle stopped or parked at the edge or curb of a highway. Exemptions under ORS 811.560 (7) are applicable to this subsection.

(4) On a sidewalk. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(5) Within an intersection. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(6) On a crosswalk. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(7) Between a safety zone and the adjacent curb or within 30 feet of points on the curb immediately opposite the ends of a safety zone, unless a different length is indicated by signs and markings. For purposes of this subsection the safety zone must be an area or space officially set apart within a roadway for the exclusive use of pedestrians and which is protected or is so marked or indicated by adequate signs as to be plainly visible at all times while set apart as a safety zone. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(8) Alongside or opposite a street excavation or obstruction when stopping, standing or parking would obstruct traffic. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(9) Upon a bridge or other elevated structure upon a highway. Exemptions under ORS 811.560 (4) to (8) are applicable to this subsection.

(10) Within a highway tunnel. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(11) On any railroad tracks or within seven and one-half feet of the nearest rail at a time when the parking of vehicles would conflict with railroad operations or repair of the railroad tracks. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(12) On a throughway. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(13) In the area between roadways of a divided highway, including crossovers. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(14) At any place where traffic control devices prohibit stopping. Exemptions under ORS 811.560 (4) to (7) are applicable to this subsection.

(15) In front of a public or private driveway. Exemptions under ORS 811.560 (2) and (4) to (7) are applicable to this subsection.

(16) Within 10 feet of a fire hydrant. Exemptions under ORS 811.560 (2) and (4) to (7) are applicable to this subsection.

(17) Within 20 feet of a crosswalk at an intersection. Exemptions under ORS 811.560 (2) and (4) to (7) are applicable to this subsection.

(18) Within 50 feet upon the approach to an official flashing signal, stop sign, yield sign or traffic control device located at the side of the roadway if the standing or parking of a vehicle will obstruct the view of any traffic control device located at the side of the roadway. Exemptions under ORS 811.560 (2) and (4) to (7) are applicable to this subsection.

(19) Within 15 feet of the driveway entrance to a fire station and on the side of a street opposite the entrance to a fire station, within 75 feet of the entrance. Exemptions under ORS 811.560 (2) and (4) to (7) are applicable to this subsection.

(20) At any place where traffic control devices prohibit standing. Exemptions under ORS 811.560 (2) and (4) to (7) are applicable to this subsection.

(21) Within 50 feet of the nearest rail of a railroad crossing. Exemptions under ORS 811.560 (3) to (7) are applicable to this subsection.

(22) At any place where traffic control devices prohibit parking. Exemptions under ORS 811.560 (3) to (7) are applicable to this subsection.

(23) On a bicycle lane. Exemptions under ORS 811.560 are applicable to this subsection.

(24) On a bicycle path. Exemptions under ORS 811.560 are applicable to this subsection. [1983 c.338 §669; 1985 c.21 §1; 1985 c.334 §1]

814.210 Operation of moped on sidewalk or bicycle trail; penalty. (1) A person commits the offense of operation of a moped on a sidewalk or bicycle trail if the person operates a moped upon a sidewalk, a bicycle path or a bicycle lane.

(2) Exemptions to this section are provided under ORS 811.440.

(3) The offense described in this section, operation of a moped on a sidewalk or bicycle trail, is a Class D traffic infraction. [1983 c.338 §644]

814.400 Application of vehicle laws to bicycles. (1) Every person riding a bicycle upon a public way is subject to the provisions applicable to and has the same rights and duties as the driver of any other vehicle concerning operating on highways, vehicle equipment and abandoned vehicles, except:

(a) Those provisions which by their very nature can have no application.

(b) When otherwise specifically provided under the vehicle code.

(2) Subject to the provisions of subsection (1) of this section:

(a) A bicycle is a vehicle for purposes of the vehicle code; and

(b) When the term "vehicle" is used the term shall be deemed to be applicable to bicycles.

(3) The provisions of the vehicle code relating to the operation of bicycles do not relieve a bicyclist or motorist from the duty to exercise due care. [1983 c.338 §697; 1985 c.16 §335]

814.410 Unsafe operation of bicycle on sidewalk; penalty. (1) A person commits the offense of unsafe operation of a bicycle on a sidewalk if the person does any of the following:

(a) Operates the bicycle so as to suddenly leave a curb or other place of safety and move into the path of a vehicle that is so close as to constitute an immediate hazard.

(b) Operates a bicycle upon a sidewalk and does not give an audible warning before overtaking and passing a pedestrian and does not yield the right of way to all pedestrians on the sidewalk.

(c) Operates a bicycle on a sidewalk in a careless manner that endangers or would be likely to endanger any person or property.

(d) Operates the bicycle at a speed greater than an ordinary walk when approaching or entering a crosswalk, approaching or crossing a driveway or crossing a curb cut or pedestrian ramp and a motor vehicle is approaching the crosswalk, driveway, curb cut or pedestrian ramp. This paragraph does not require reduced speeds for bicycles either:

(A) At places on sidewalks or other pedestrian ways other than places where the path for pedestrians or bicycle traffic approaches or crosses that for motor vehicle traffic; or

(B) When motor vehicles are not present.

(2) Except as otherwise specifically provided by law, a bicyclist on a sidewalk or in a crosswalk has the same rights and duties as a pedestrian on a sidewalk or in a crosswalk.

(3) The offense described in this section, unsafe operation of a bicycle on a sidewalk, is a Class D traffic infraction. [1983 c.338 §699; 1985 c.16 §337]

814.420 Failure to use bicycle lane or path; exceptions; penalty. (1) Except as provided in subsection (2) of this section, a person commits the offense of failure to use a bicycle lane or path if the person operates a bicycle on any portion of a roadway that is not a bicycle lane or bicycle path when a bicycle lane or bicycle path is adjacent to or near the roadway.

(2) A person is not required to comply with this section unless the state or local authority with jurisdiction over the roadway finds, after public hearing, that the bicycle lane or bicycle path is suitable for safe bicycle use at reasonable rates of speed.

(3) The offense described in this section, failure to use a bicycle lane or path, is a Class D traffic infraction. [1983 c.338 §700; 1985 c.16 §338]

814.430 Improper use of lanes; exceptions; penalty. (1) A person commits the offense of improper use of lanes by a bicycle if the person is operating a bicycle on a roadway at less than the normal speed of traffic using the roadway at that time and place under the existing conditions and the person does not ride as close as practicable to the right curb or edge of the roadway.

(2) A person is not in violation of the offense under this section if the person is not operating a bicycle as close as practicable to the right curb or edge of the roadway under any of the following circumstances:

(a) When overtaking and passing another bicycle or vehicle that is proceeding in the same direction.

(b) When preparing to execute a left turn.

(c) When reasonably necessary to avoid hazardous conditions including, but not limited to, fixed or moving objects, parked or moving vehicles, bicycles, pedestrians, animals, surface hazards or other conditions that make continued operation along the right curb or edge unsafe or to

avoid unsafe operation in a lane on the roadway that is too narrow for a bicycle and vehicle to travel safely side by side. Nothing in this paragraph excuses the operator of a bicycle from the requirements under ORS 811.425 or from the penalties for failure to comply with those requirements.

(d) When operating within a city as near as practicable to the left curb or edge of a roadway that is designated to allow traffic to move in only one direction along the roadway. A bicycle that is operated under this paragraph is subject to the same requirements and exceptions when operating along the left curb or edge as are applicable when a bicycle is operating along the right curb or edge of the roadway.

(e) When operating a bicycle along side not more than one other bicycle as long as the bicycles are both being operated within a single lane and in a manner that does not impede the normal and reasonable movement of traffic.

(f) When operating on a bicycle lane or bicycle path.

(3) The offense described in this section, improper use of lanes by a bicycle, is a Class D traffic infraction. [1983 c.338 §701; 1985 c.16 §339]

814.440 Failure to signal turn; exceptions; penalty. (1) A person commits the offense of failure to signal for a bicycle turn if the person does any of the following:

(a) Stops a bicycle the person is operating without giving the appropriate hand and arm signal continuously for at least 100 feet before executing the stop.

(b) Executes a turn on a bicycle the person is operating without giving the appropriate hand and arm signal for the turn for at least 100 feet before executing the turn.

(c) Executes a turn on a bicycle the person is operating after having been stopped without giving, while stopped, the appropriate hand and arm signal for the turn.

(2) A person is not in violation of the offense under this section if the person is operating a bicycle and does not give the appropriate signal continuously for a stop or turn because circumstances require that both hands be used to safely control or operate the bicycle.

(3) The appropriate hand and arm signals for indicating turns and stops under this section are those provided for other vehicles under ORS 811.395 and 811.400.

(4) The offense described under this section, failure to signal for a bicycle turn, is a Class D traffic infraction. [1983 c.338 §703; 1985 c.16 §341]

814.450 Unlawful load on a bicycle; penalty. (1) A person commits the offense of having an unlawful load on a bicycle if the person is operating a bicycle and the person carries a package, bundle or article which prevents the person from keeping at least one hand upon the handlebar and having full control at all times.

(2) The offense described in this section, unlawful load on a bicycle, is a Class D traffic infraction. [1983 c.338 §704]

814.460 Unlawful passengers on bicycle; penalty. (1) A person commits the offense of unlawful passengers on a bicycle if the person operates a bicycle and carries more persons on the bicycle than the number for which it is designed or safely equipped.

(2) The offense described in this section, unlawful passengers on a bicycle, is a Class D traffic infraction. [1983 c.338 §705]

814.470 Failure to use bicycle seat; penalty. (1) A person commits the offense of failure to use a bicycle seat if the person is operating a bicycle and the person rides other than upon or astride a permanent and regular seat attached to the bicycle.

(2) The offense described in this section, failure to use bicycle seat, is a Class D traffic infraction. [1983 c.338 §706]

814.480 Nonmotorized vehicle clinging to another vehicle; penalty. (1) A person commits the offense of nonmotorized vehicle clinging to another vehicle if the person is riding upon or operating a bicycle, coaster, roller skates, sled or toy vehicle and the person clings to another vehicle upon a roadway or attaches that which the person is riding or operating to any other vehicle upon a roadway.

(2) The offense described in this section, nonmotorized vehicle clinging to another vehicle, is a Class D traffic infraction. [1983 c.338 §707]

815.280 Violation of bicycle equipment requirements; requirements; penalty. (1) A person commits the offense of violation of bicycle equipment requirements if the person does any of the following:

(a) Operates on any highway a bicycle in violation of the requirements of this section.

(b) Is the parent or guardian of a minor child or ward and authorizes or knowingly permits the child or ward to operate a bicycle on any highway in violation of the requirements of this section.

(2) A bicycle is operated in violation of the requirements of this section if any of the following requirements are violated:

(a) A bicycle must be equipped with a brake that enables the operator to make the braked wheels skid on dry, level, clean pavement.

(b) A person shall not install or use any siren or whistle upon a bicycle.

(c) At the times described in the following, a bicycle or its rider must be equipped with lighting equipment that meets the described requirements:

(A) The lighting equipment must be used during limited visibility conditions.

(B) The lighting equipment must show a white light visible from a distance of at least 500 feet to the front of the bicycle.

(C) The lighting equipment must have a red reflector or lighting device or material of such size or characteristic and so mounted as to be visible

from all distances up to 600 feet to the rear when directly in front of lawful lower beams of headlights on a motor vehicle.

(3) Nothing contained in this section shall be construed to prohibit the use of additional parts and accessories on any bicycle not inconsistent with this section.

(4) The offense described in this section, violation of bicycle equipment requirements, is a Class D traffic infraction. [1983 c.338 §502; 1985 c.16 §260; 1985 c.69 §5]

Enrolled
House Bill 1700

Sponsored by Representatives STATHOS, THORNTON, HENDERSON,
Senator WINGARD, Representatives CROTHERS, DENSMORE,
HANNEMAN, KENNEDY, LANG, PAULUS, ROBERTS

CHAPTER.....

AN ACT

Relating to ways for public travel; creating new provisions; and amend-
ing ORS 366.515, 366.525 and 366.790.

Be It Enacted by the People of the State of Oregon:

SECTION 1. Section 2 of this Act is added to and made a part of ORS chapter 366.

SECTION 2. (1) Out of the funds received by the commission or by any county or city from the State Highway Fund reasonable amounts shall be expended as necessary for the establishment of footpaths and bicycle trails. Footpaths and bicycle trails shall be established wherever a highway, road or street is being constructed, reconstructed or relocated. Funds received from the State Highway Fund may also be expended to maintain such footpaths and trails and to establish footpaths and trails along other highways, roads and streets and in parks and recreation areas.

(2) Footpaths and trails are not required to be established under subsection (1) of this section:

(a) Where the establishment of such paths and trails would be contrary to public safety;

(b) If the cost of establishing such paths and trails would be excessively disproportionate to the need or probable use; or

(c) Where sparsity of population, other available ways or other factors indicate an absence of any need for such paths and trails.

(3) The amount expended by the commission or by a city or county as required or permitted by this section shall never in any one fiscal year be less than one percent of the total amount of the funds received from the highway fund. However:

(a) This subsection does not apply to a city in any year in which the one percent equals \$250 or less, or to a county in any year in which the one percent equals \$1,500 or less.

(b) A city or county in lieu of expending the funds each year may credit the funds to a financial reserve or special fund in accordance with ORS 280.100, to be held for not more than 10 years, and to be expended for the purposes required or permitted by this section.

(4) For the purposes of this chapter, the establishment of paths and trails and the expenditure of funds as authorized by this section are for highway, road and street purposes. The commission shall, when requested, provide technical assistance and advice to cities and counties in carrying out the purpose of this section. The division shall recommend construction standards for footpaths and bicycle trails. The division shall, in the manner prescribed for marking highways under ORS 483.040, provide a uniform

system of signing footpaths and bicycle trails which shall apply to paths and trails under the jurisdiction of the commission and cities and counties. The commission and cities and counties may restrict the use of footpaths and bicycle trails under their respective jurisdictions to pedestrians and nonmotorized vehicles.

(5) As used in this section, "bicycle trail" means a publicly owned and maintained lane or way designated and signed for use as a bicycle route.

Section 3. ORS 366.515 is amended to read:

366.515. (1) The highway fund shall be expended under the jurisdiction of the commission.

(2) Except as provided in ORS 367.236 and 366.735, the commission shall set aside from the highway fund, in the following order:

(a) An amount sufficient for the salaries and expenses of the highway department.

(b) A sufficient amount to cover the cost of operating and maintaining state highways which have been constructed or improved.

(c) Sufficient funds to meet the Federal Government appropriation and requirements of sections 6 and 8 of the Act of July 11, 1916, 39 Stat. 355, entitled "An Act to provide that the United States shall aid the states in the construction of rural post roads and for other purposes," or any federal appropriation that may be provided.

(d) The remainder shall be used for any of the purposes authorized by law.

(3) All the highway fund not otherwise specifically applied shall be expended by the commission in its discretion, except as required by section 2 of this 1971 Act, on the construction, maintenance, betterment or pavement of roads and highways within the state.

Section 4. ORS 366.525 is amended to read:

366.525. There shall be and hereby are appropriated out of the highway fund annually such sums of money as will equal 20 percent of all moneys credited to the State Highway Fund by the State Treasurer between July 1 of any year and June 30 of the following year and which have accrued from funds transferred to the highway fund by the State Treasurer under ORS 481.950, paragraph (b) of subsection (2) of ORS 484.250 and ORS 767.835. The appropriation shall be distributed among the several counties for the purposes [now] provided by law.

Section 5. ORS 366.790 is amended to read:

366.790. Money paid to cities under ORS 366.785 to 366.820 shall be used only for the purposes stated in section 3, Article IX of the Oregon Constitution and the statutes enacted pursuant thereto including section 2 of this 1971 Act.

APPENDIX B

REQUIRED 1 PERCENT BICYCLE/FOOTPATH EXPENDITURE AMOUNTS

FY 1983-87

STATE HIGHWAY DIVISION

REQUIRED 1 PERCENT BICYCLE/FOOTPATH EXPENDITURE AMOUNTS

FY 1983-87

FISCAL YEAR	REQUIRED EXPENDITURE
1983	\$ 1,334,256
1984	\$ 1,447,690
1985	\$ 1,601,327
1986	\$ 1,695,398
1987	\$ 1,811,426

OREGON CITIES
 REQUIRED 1 PERCENT BICYCLE/FOOTPATH EXPENDITURES
 FY 1983-1987

CITY	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Albany	\$ 4,129	\$ 4,230	\$ 4,908	\$ 5,319	\$ 6,232
Ashland	2,247	2,344	2,730	2,991	3,547
Astoria	1,466	1,513	1,727	1,870	2,190
Aumsville	*	*	255	280	329
Baker	1,423	1,462	1,666	1,811	2,109
Bandon	354	357	403	438	525
Beaverton	4,824	5,116	5,867	6,421	7,693
Bend	2,609	2,735	3,184	3,488	4,129
Boardman	*	*	*	*	333
Brookings	511	524	598	651	777
Brownsville	*	*	*	*	279
Burns	472	437	495	537	622
Canby	1,138	1,172	1,350	1,472	1,738
Cannon Beach	*	*	*	*	278
Canyonville	*	*	*	*	288
Carlton	*	*	*	*	283
Cave Junction	*	*	*	*	259
Central Point	939	992	1,150	1,273	1,542
Clatskanie	*	251	296	321	377
Coos Bay	2,069	2,097	2,568	2,810	3,246
Coquille	655	664	757	811	926
Cornelius	714	753	874	957	1,130
Corvallis	6,274	6,451	7,331	7,921	9,280
Cottage Grove	1,073	1,096	1,247	1,346	1,566
Creswell	277	281	322	357	419
Dallas	1,295	1,336	1,541	1,687	1,996
Dayton	*	*	*	*	314
Dundee	*	*	*	*	312
Dunes	*	*	*	*	254
Eagle Point	414	440	514	566	677
Elgin	251	262	307	334	383
Enterprise	295	310	358	391	457
Estacada	257	260	299	344	432
Eugene	15,525	15,891	18,248	20,292	23,719
Fairview	257	275	316	348	417
Florence	654	682	800	877	1,066
Forest Grove	1,761	1,797	2,046	2,234	2,640
Gladstone	1,440	1,467	1,679	1,828	2,136
Gold Beach	*	*	273	301	354
Grants Pass	2,272	2,305	2,658	2,949	3,560
Gresham	5,043	5,273	6,306	7,078	9,457
Happy Valley	*	*	259	279	327
Harrisburg	268	282	326	351	408
Subtotal	\$ 60,906	\$ 63,055	\$ 73,658	\$ 80,933	\$ 99,006

CITY	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Subtotal Forwarded	\$200,501	\$211,296	\$246,404	\$270,410	\$331,596
Vale	*	*	278	309	364
Veneta	352	361	415	446	517
Vernonia	260	269	307	329	386
Waldport	*	*	272	299	353
Warrenton	366	378	435	470	556
West Linn	1,904	1,821	2,208	2,433	2,908
Willamina	263	273	312	339	398
Wilsonville	500	515	599	681	871
Winston	482	502	579	635	761
Woodburn	1,671	1,727	2,002	2,195	2,619
Wood Village	362	382	445	493	580
TOTAL	\$206,661	\$217,524	\$254,256	\$279,039	\$341,909

NOTE: Bicycle/footpath legislation does not apply to a city in which one percent of State Highway Fund receipts in any year equals \$250 or less.

*One percent of State Highway Fund receipts equals less than \$250.

OREGON COUNTIES
REQUIRED 1 PERCENT BICYCLE/FOOTPATH EXPENDITURES
FY 1983-1987

COUNTY	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987
Baker	\$ 2,836	\$ 2,978	\$ 3,337	\$ 3,598	\$ 4,162
Benton	8,144	8,588	9,689	10,757	12,846
Clackamas	33,149	35,144	40,403	45,216	54,456
Clatsop	4,678	4,901	5,521	6,122	7,311
Columbia	5,614	5,988	6,851	7,577	8,997
Coos	9,145	9,579	10,713	11,666	13,858
Crook	2,277	2,409	2,773	3,083	3,679
Curry	3,057	3,236	3,660	4,005	4,770
Deschutes	10,416	11,187	12,946	14,614	17,664
Douglas	14,096	14,807	16,905	18,598	22,175
Gilliam	*	*	*	*	*
Grant	*	1,516	1,741	1,916	2,271
Harney	*	*	1,567	1,711	2,014
Hood River	2,773	2,921	3,306	3,622	4,287
Jackson	20,672	21,832	25,051	27,915	32,604
Jefferson	2,026	2,184	2,519	2,772	3,231
Josephine	9,285	9,898	11,337	12,596	15,070
Klamath	9,603	10,077	11,366	12,446	14,599
Lake	*	*	1,695	1,861	2,171
Lane	37,816	39,647	44,960	49,702	58,954
Lincoln	5,423	5,769	6,560	7,168	8,527
Linn	13,159	13,909	15,865	17,345	20,538
Malheur	4,686	4,998	5,668	6,236	7,263
Marion	27,794	29,528	33,811	37,654	45,136
Morrow	*	1,548	1,757	1,945	2,291
Multnomah	67,401	69,768	78,909	86,532	101,632
Polk	6,056	6,440	7,300	8,032	9,591
Sherman	*	*	*	*	*
Tillamook	3,453	3,702	4,214	4,600	5,440
Umatilla	10,030	10,564	11,891	13,057	15,307
Union	3,880	4,099	4,626	5,049	5,847
Wallowa	*	1,539	1,738	1,855	2,104
Wasco	3,726	3,944	4,417	4,785	5,527
Washington	30,914	32,915	38,121	42,860	51,561
Wheeler	*	*	*	*	*
Yamhill	8,357	8,921	10,253	11,426	13,696
TOTAL	\$360,466	\$384,536	\$441,470	\$488,321	\$579,579

NOTE: Bicycle/footpath legislation does not apply to a county in which one percent of State Highway Fund receipts in any year equals \$1,500 or less.

*One percent of State Highway Fund receipts equals less than \$1,500.

APPENDIX C

POLICY ON ELIGIBLE BIKEWAY CHARGES

FORM 81-734-1371

OREGON STATE HIGHWAY DIVISION

MANAGEMENT

POLICY STATEMENT



NUMBER	CON-1	Page 1 of 3
EFFECTIVE DATE	September 1, 1983	
AUTHORITY	ORS 366.514	
DISTRIBUTION	All Manual Holders	

APPROVED	<i>H. S. Buller</i>
SUBJECT	BIKEWAY CHARGES

PURPOSE: To identify those activities and construction items, the costs of which are to be charged to the Bicycle Trail Allotment.

INTRODUCTION: Oregon law requires that wherever highways, roads or streets are being constructed, reconstructed, or relocated, footpaths and bicycle trails will be built, including curb cuts or ramps, as part of these projects. The law further requires that the amount expended by the Commission shall never in any one fiscal year be less than one percent of the funds received from the Highway Fund.

BASIC POLICY: All eligible costs incurred by the Division will be charged to the Bicycle Trail Allotment and applied toward the one percent minimum.

POLICY GUIDELINES: The following activities and items are eligible costs.

Administration

- A. Payroll costs and expenses of the Bicycle Program Coordinator and staff
- B. Expenses incurred by the Oregon Bicycle Advisory Committee
- C. Maps and brochures related to footpaths and bikeways

- D. Special studies and reports
- E. Monitoring of bicycle accidents and volumes

Developmental

- A. Survey, design and other preconstruction activities required for development of qualifying construction
- B. Right-of-way costs, both payroll and capital expenditures, when required for footpath/bikeway construction. Included are the costs for the right-of-way to accommodate the additional roadbed width of a footpath/bikeway facility.

Construction

- A. Construction costs of:
 - 1. Independent, Class I, Bikeways (a facility separate from the roadway)
 - 2. Sidewalks
 - 3. Roadway shoulders
 - a. Portion of a roadway shoulder constructed beyond normal width to accommodate bicycles. Normal width is interpreted as being the width to which the roadway would be constructed or reconstructed without the bikeway. Use full surfacing depth when computing costs.
 - b. The roadway shoulder on projects where the construction is limited to widening to provide width to accommodate bicycles
 - 4. Curb cuts and ramps
 - 5. Items such as culvert extensions, retaining walls, excavation or embankment caused by the additional width for footpaths and bikeways. It is prorated on the basis of top surface width if #3a above; total cost if #3b above.
 - 6. Footpath/bikeways on structures. Normally costs will be prorated based on top width.

Effective Date:
September 1, 1983

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7. Physical barriers that separate autos from pedestrians/bicyclists on separated bikeways, and fences the control the movement of pedestrians/bicyclists
 8. Bikeway signing, striping and stenciling
 9. Traffic signalization items such as pedestrian signal heads, button controls and bicycle detector devices and amplifiers
 10. Illumination including tunnel illumination, installed specifically for pedestrians/bicyclists
 11. Improvement of railroad crossings for bicyclists
 12. Any other authorized betterment of footpaths and bikeways
- B. Construction engineering costs and laboratory charges prorated on the basis of construction item costs

Maintenance

- A. Costs of sweeping and patching footpaths and shoulders that have been striped and signed as bikeways
- B. Costs of maintaining drainage, signing and striping specifically for footpaths and bikeways
- C. Costs of maintaining traffic signal items and illumination for footpaths and bikeways
- D. Costs of trimming overhanging brush and trees
- E. Costs of any maintenance activity performed on a designated bikeway

RESPONSIBILITY:

The Assistant State Highway Engineer for the Technical Services Branch has the overall responsibility for the identification of eligible charges to the Bicycle Trail Allotment.

APPENDIX D

GUIDELINES FOR APPROVING PARALLEL BICYCLE ROUTES FOR FUNDING OF PRIORITY 3 BICYCLE PROJECTS

Priority 3 Funding Policy Contained in Bicycle Master Plan *“Third priority shall be the construction of independent bikeway projects on state-owned right of way or when approved by the State Highway Engineer, upon parallel routes that provide continuity to the State system.”*

A. CRITERIA FOR 100% STATE FUNDED PROJECTS ON PARALLEL ROUTES:

1. State highway bicycle route must be experiencing heavy motor vehicle traffic where it is not economically feasible to provide adequate bikeways.
2. Parallel route must provide continuous and convenient continuity to the state highway bicycle route.
3. Parallel route must be used primarily by bicyclists who normally would use the state highway bicycle route.
4. Bicycle costs to improve parallel route must be notably lower than bicycle costs to improve the state highway bicycle route.

The above criteria should be satisfied and considered along with other factors by the State Highway Engineer when approving parallel routes for the construction of Priority 3 projects funded entirely by the Highway Division.

B. CRITERIA FOR COOPERATIVELY FUNDED PROJECTS ON PARALLEL ROUTES:

1. Criteria A1, A2, and A4 above must be satisfied.
2. Bicycle use on parallel route generally serves both local bicyclists and those who normally would use the state highway bicycle route.

The State Highway Engineer and appropriate local government agency should consider the above criteria in arriving at a negotiated cooperative funding cost sharing percentage based on usage or other benefits.

APPENDIX E
PRIORITY 4 PROJECTS
APPLICATION FORM AND RATING SHEET

APPLICATION FOR FUNDING ASSISTANCE
FROM THE OREGON DEPARTMENT OF TRANSPORTATION
FOR BIKEWAY CONSTRUCTION

From _____ Date _____
(City, County)

Contact Person _____ Title _____

Address _____ Telephone _____

1. Describe the project (include small scale map and photographs). Attach sheet if necessary.

2. Length? _____

3. Estimate of total cost? _____

4. Local funds available to match (80% State/20% Local)? Yes ___ No ___

5. Is project part of a locally adopted plan? Yes ___ No ___

If yes, provide a map of adopted plan.

6. Does the project link or extend any existing bikeways? Yes ___ No ___

If yes, describe.

7. Is the proposed bikeway to be included in a larger project? Yes ___ No ___

If yes, describe project and funding sources.

8. How many daily bike trips do you anticipate? _____

What do you consider the service population to be? _____

9. Does the proposed facility lie within or immediately adjacent to existing road or street rights-of-way? Yes ___ No ___

10. Is additional right-of-way required? Yes ___ No ___

If yes, what are your plans?

11. Does an agency other than the applicant have jurisdiction of the right-of-way? Yes ___ No ___

Do they concur with your project request? Yes ___ No ___

Will they agree to maintain the bikeway? Yes ___ No ___

12. Are you prepared to hold all required hearings? Yes ___ No ___

13. What is the type of facility proposed?

Shoulder Bike Lanes _____ Separated Path _____

Shared Roadway _____ Sidewalk _____
(signing only)

14. Show typical section of roadway(s) including bikeway width. See attached guidelines.

15. What is the proposed surfacing design?

_____ inches of asphalt _____ inches of concrete
_____ inches of base rock

16. Are any structures required? Yes ___ No ___

If yes, describe.

Return Application(s) to: Bicycle Program Manager, Location Unit, Department of Transportation, Room 200 Transportation Building, Salem, Oregon, 97310.

BIKEWAY PROJECT RATING SHEET

Applicant _____ Date _____

Project _____

Contact _____ Title _____ Phone _____

Length: _____ ft. Cost: Total \$ _____ State \$ _____

_____ mile(s) Local \$ _____

		RATING								
Cost/Mile \$ _____		_____								
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">0-50M</td> <td style="width: 25%;">50-100M</td> <td style="width: 25%;">100-150M</td> <td style="width: 25%;">150+M</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> </table>	0-50M	50-100M	100-150M	150+M	3	2	1	0		_____
0-50M	50-100M	100-150M	150+M							
3	2	1	0							
Previous Priority 4 Expenditure in Jurisdiction _____		_____								
<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">None</td> <td style="width: 25%;">Low</td> <td style="width: 25%;">Medium</td> <td style="width: 25%;">High</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> </table>	None	Low	Medium	High	3	2	1	0		_____
None	Low	Medium	High							
3	2	1	0							
Part of Adopted Local Bikeway Plan or Transportation Plan with Bikeway Element	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Yes</td> <td style="width: 50%;">No</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> </tr> </table>	Yes	No	3	0	_____				
Yes	No									
3	0									
System Linkage	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Complete</td> <td style="width: 33%;">Partial</td> <td style="width: 33%;">None</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0</td> </tr> </table>	Complete	Partial	None	3	2	0	_____		
Complete	Partial	None								
3	2	0								
Potential Usage	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">High</td> <td style="width: 33%;">Medium</td> <td style="width: 33%;">Low</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> </tr> </table>	High	Medium	Low	3	2	1	_____		
High	Medium	Low								
3	2	1								
Existing Hazardous Conditions	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">High</td> <td style="width: 33%;">Medium</td> <td style="width: 33%;">Low</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> </tr> </table>	High	Medium	Low	3	2	1	_____		
High	Medium	Low								
3	2	1								
Add'l Benefits such as Schools, Commuter, Recreation, Other	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">High</td> <td style="width: 25%;">Medium</td> <td style="width: 25%;">Low</td> <td style="width: 25%;">None</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> </table>	High	Medium	Low	None	3	2	1	0	_____
High	Medium	Low	None							
3	2	1	0							
Design Standards	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Excellent</td> <td style="width: 25%;">Good</td> <td style="width: 25%;">Fair</td> <td style="width: 25%;">Poor</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> </table>	Excellent	Good	Fair	Poor	3	2	1	0	_____
Excellent	Good	Fair	Poor							
3	2	1	0							
	TOTAL	_____								

Comments: _____

APPENDIX F

SUPPLEMENTS AND EXCEPTIONS TO AASHTO GUIDELINES

DESIGN AND CONSTRUCTION OF BIKEWAYS ADMINISTRATIVE RULE

734-20-060. (1) The Department of Transportation adopts by reference The American Association of State Highway and Transportation Officials, "Guide for Development of New Bicycle Facilities" (Guide), dated October 3, 1981, to establish bikeway design and construction standards, to establish guidelines for traffic control devices on bikeways including location and type of traffic warning signs and to recommend illumination standards, all in accordance with and pursuant to ORS 366.514.

(2) The following constitute supplements and exceptions to the October 3, 1981 edition of the "Guide for Development of New Bicycle Facilities."

(a) Signing and Marking:

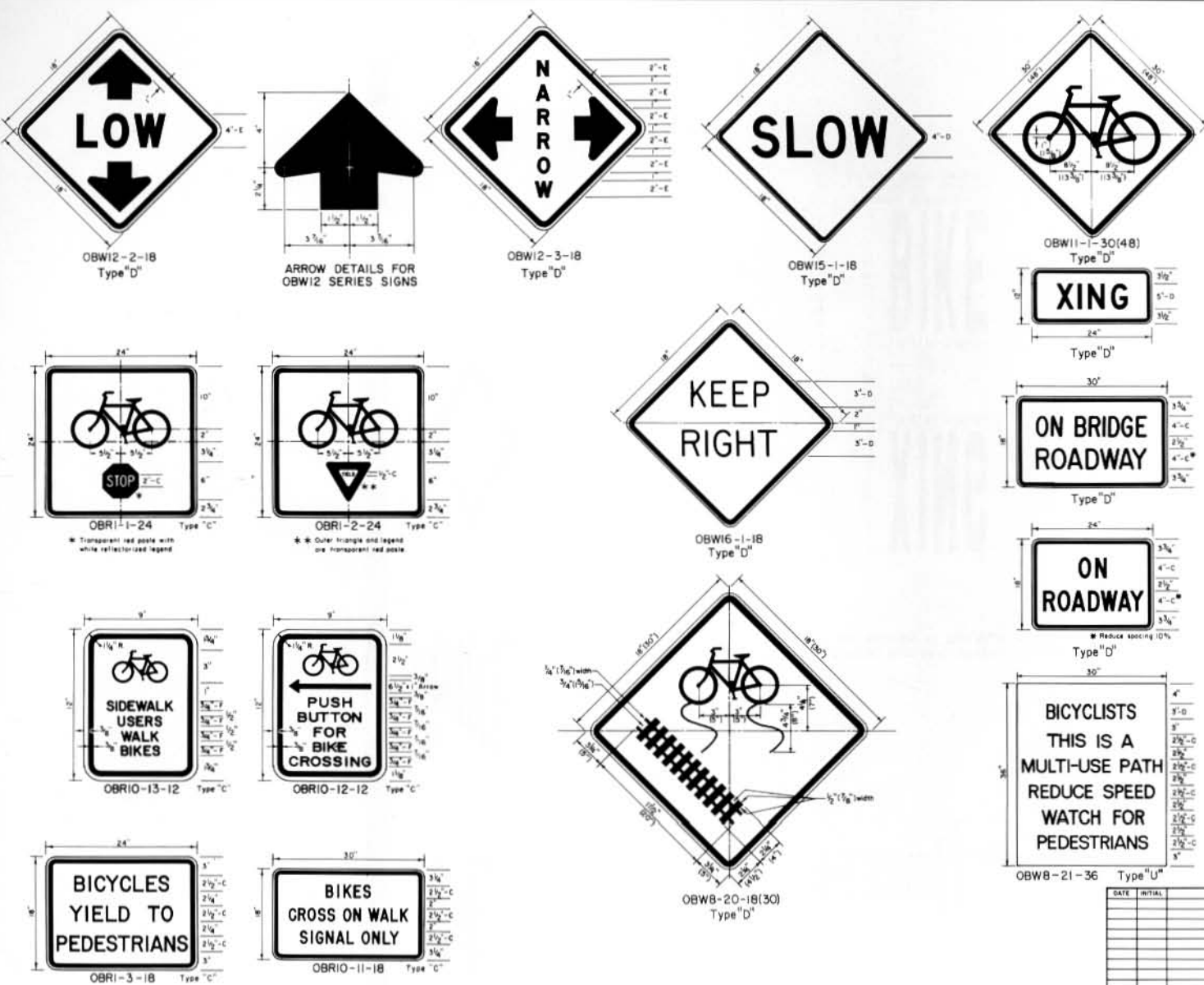
(A) All bicycle signing and markings on the State Highway System or installed on local city streets or county roads under state contract or agreement shall be in conformance with the signing and markings as shown on the current Highway Division Standard Bicycle Signing Details. Any signing or markings not shown on these drawings, but which is deemed necessary and required for the bicycle facility shall conform to the Manual on Uniform Traffic Control devices as adopted by the Oregon Transportation Commission.

(B) The standard width longitudinal painted solid line separating the vehicle travel way and a bike lane shall be a solid nominal 8-inch wide white stripe as required by OAR 734-20-055.

(C) The desirable width for a one-way bike lane on the State Highway System or installed on local city streets or county roads under state contract or agreement is 6 feet. Where 6 feet is not practical to achieve because of physical or economic constraints, a minimum width of 4 feet may be designated as a bike lane.

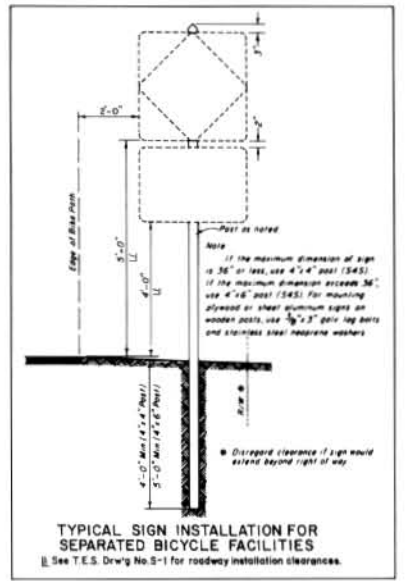
(b) Definitions:

For the purposes of this rule and the Guide, the definitions on Page 2 of the Guide shall control, rather than any conflicting statutory or rule definitions. Terms not defined in the Guide shall be given their ordinary everyday interpretation, even if defined otherwise for use in specific chapters in the Oregon Revised Statutes.



All signs on this sheet shall be the Type noted, and have reflectorized background.
 The Federal Highway Administration's standard rounded capital letter alphabets and letter spacing shall be used unless noted otherwise. For detailed sign drawings and dimensions, see the publication "Standard Highway Signs" by the Federal Highway Administration, 1971. The border, margin, and corner radii shall be as follows unless noted otherwise.

BOARD DIMENSIONS	BORDER	MARGIN	CORNER RADIUS
Either or both less than 30"	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$1\frac{1}{2}$ "
Both 30"	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$1\frac{1}{2}$ "
Both more than 30" & either less than 48"	$\frac{3}{8}$ "	$\frac{3}{8}$ "	$2\frac{1}{4}$ "
Both 48" or larger	$\frac{1}{2}$ "	$\frac{3}{4}$ "	5"



DATE	INITIAL	REVISION	OREGON STATE HIGHWAY DIVISION TRAFFIC ENGINEERING SECTION
			DATE: MARCH 1988
			TE DWG NO. S-16

APPROVED: *[Signature]*
 TRAFFIC ENGINEER

APPENDIX G
GLOSSARY OF BICYCLE TERMS

GLOSSARY OF BICYCLE TERMS

AASHTO - American Association of State Highway and Transportation Officials and including their publications.

BICYCLE - A vehicle having two tandem wheels, propelled solely by human power, upon which any person or persons may ride.

BICYCLE FACILITIES - A general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling, including parking facilities, all bikeways and shared roadways not specifically designated for bicycle use.

BICYCLE ROUTE (BIKE ROUTE) - A segment of a system of bikeways designated by the jurisdiction having authority.

BIKE LANE - A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

BIKE PATH - A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.

BIKEWAY - Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

CLEARANCE, Lateral - Width required for safe passage of a bicycle as measured in a horizontal plane.

CLEARANCE, Vertical - Height necessary for the safe passage of a bicycle as measured in a vertical plane.

CROSS SECTION - Diagrammatic presentation of the right-of-way profile which is at right angles to the centerline at a given location.

GRADE SEPARATION - Vertical isolation of travelways through use of a structure so that traffic crosses without interference.

HIGHWAY - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

LEGEND - Words, phrases or numbers appearing on all or part of a traffic control device.

MOTOR VEHICLE - This means a vehicle that is self-propelled or designed for self-propulsion.

MUTCD - Abbreviation for Manual on Uniform Traffic Control Devices approved by the Federal Highway Administration as a national standard for placement and selection of all traffic control devices on or adjacent to all highways open to public travel.

PAVEMENT MARKING - Painted or applied line(s) or legend placed on any bikeway surface for regulating, guiding or warning traffic.

PEDESTRIAN - A person whose mode of transportation is on foot. A person "walking a bicycle" becomes a pedestrian.

RECREATIONAL CYCLIST - An individual(s) who uses a bicycle for the trip enjoyment itself. Ultimate destination is of secondary importance.

RIGHT-OF-WAY - A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

RIGHT OF WAY - The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian.

ROADWAY - The portion of the highway for vehicle use.

RULES OF THE ROAD - That portion of a motor vehicle law which contains regulations governing the operation of vehicular and pedestrian traffic.

SHARED ROADWAY - A type of bikeway where bicyclists and motor vehicles share the same roadway.

SHOULDER - A portion of a highway contiguous to the roadway that is primarily for use by pedestrians, bicyclists, and emergency use of stopped vehicles.

SHOULDER BIKEWAY - A type of bikeway where bicycle travel is designated on the shoulder of the roadway.

SHY DISTANCE - The distance between the bikeway's edge and any fixed object capable of injuring a cyclist using the facility.

SIDEWALK - The portion of a highway or street designed for preferential or exclusive use by pedestrians.

SIDEWALK BIKEWAY - Any sidewalk signed and/or striped to permit cyclists to share the travel right-of-way with pedestrians.

SIGHT DISTANCE - A measurement of the cyclist's visibility, unobstructed by traffic, along the normal travel path to the furthest point of the roadway surface.

SKEW ANGLE - Less than at right angle to a bikeway. Generally an oblique angle of 45 degrees or less.

TRAFFIC CONTROL DEVICES - Signs, signals or other fixtures, whether permanent or temporary, placed on or adjacent to a travelway by authority of a public body having jurisdiction to regulate, warn or guide traffic.

TRAFFIC VOLUME - The given number of vehicles that pass a given point for a given amount of time (hour, day, year).

TRAVELWAY - Any way, path, road or other travel facility used by any and all forms of transportation.

UTILITY CYCLIST - An individual(s) who uses a bicycle primarily to reach a particular destination to purchase or deliver goods and services. Messengers are classified as utility cyclists.

VEHICLE - This means any device in, upon or by which any person or property is or may be transported or drawn upon a public highway and includes vehicles that are self-propelled or powered by any means.

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