

MASTER TRANSPORTATION PLAN

FOR THE

CITY OF DUNES CITY, OREGON

Acknowledgements

This document constitutes the work of many volunteers in Dunes City, but would not have been made possible if not for the dedication, hard work and diligence of Mr. Gary Baker, Dunes City's Contract Director of Roads.

The original Master Road Plan was adopted by Dunes City in 2004 after several years work by the Road Commission, Planning Commission, City Council and many other volunteers.

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CHAPTER ONE – INTRODUCTION

Section 1.1 – Overview

Section 1.2 – The Plan

Section 1.3 – Mission / Vision Statement

**Section 1.4 – Compliance with Oregon Transportation
Planning Rule (TPR)**

Section 1.5 - Summary

Chapter 1 - Introduction

Section 1.1 - Overview

Situated on the Central Oregon Coast, Dunes City is located in Lane County Oregon amongst trees and lakes, and provides a myriad of recreational activities as well as numerous shoreline and vista properties for a very quiet community of approximately 1,500 residents. The City's motto is: *"It's Simply Paradise!"* Located six (6) miles south of Florence, Oregon, it is surrounded by ocean beaches, sand dunes, nature trails, camping areas, and prime locations for hunting, fishing, various water sports, crabbing, clamming and other outdoor activities. The City and all of its natural resources are managed by teams of volunteers under the guidance of a City Council (also volunteers) and a small compensated City Staff.

Currently the total area represented within the City limits is 3.5 square miles of which 2.7 is occupied by land and the remaining 0.8 square miles by water. The elevation is an average of 30 feet above sea level. The city was incorporated in 1963.

The City of Dunes City Comprehensive Plan Section F details transportation policies. Policy F14 states that the "City will develop a master transportation plan that includes an inventory of existing streets, bike and pedestrian ways and their condition, prioritizes needed improvements, and estimated costs".

The document that follows, referred to as the Dunes City Master Transportation Plan, created initially in June, 2000 with a final presentation in 2004, is an update of the original, and represents the latest version of this dynamic and this now to be "perpetually current" document.

Current Road System

The primary focus of the Master Transportation Plan is to evaluate, map and develop a future plan for roads within the Urban Growth Boundary (UGB). Section 1.2 of this document describes the earlier adoption and intent relating to the assessment and evaluation of the previously existing street system conducted in January 2000. Chapter 3.0 Section 3.3 describes in greater detail subsequent street inventories and the establishment of a formal Computerized Pavement Management System (CPMS), completed in 2009 and updated as recently as March 2012. This information contains the most recent and accurate condition for the entire paved street network as well as the recommended pavement maintenance strategies and associated costs estimated over the next six (6) years to maintain the system at its current good to excellent condition level. Complete information regarding the street system conditions, inventories and additional data regarding its characteristics, maintenance plan, and pavement condition indices is also available in the aforementioned Chapter 3, Section (3.3) of this MTP and also in the Appendix.

Recent Significant Accomplishments

Information currently contained in this MTP covering specific street condition and maintenance strategies as noted above, is detailed in Chapter 3, Section 3.3 of this MTP. Important to note is that over the past three (3) years following the development and implementation of this formal computerized pavement management system, the City has been able to utilize the system for more effective maintenance planning. In addition, the presence of such a system and organized planning mechanism has assisted the City in securing new transportation funding that otherwise may not have been available.

Additionally, the new approaches currently underway in the City with respect to pavement maintenance strategies are proving to demonstrate very good and cost-effective performance to date. This matter is discussed more thoroughly in Section 3.3 as well.

Challenges Confronting Our Transportation System Today

The City is often referred to as a rural suburban style community. Low density development dispersed throughout much of the City has helped to promote the car-orientated transportation network that we have today. This development pattern has served the community adequately in the past, but as fuel prices, congestion and concerns for air quality increase, residents, businesses, and visitors are beginning to look for alternatives to driving. Moving people and goods by way of the City's road and highway network will continue to be the predominant method of travel in the near future, but development of alternative modes is a key component to the future of transportation in Dunes City.

Section 1.2 - The Plan

Acknowledgements

Special thanks are extended to everyone contributing to the Dunes City Master Transportation Plan from a goal in the year 2000, to the final presentation in the year 2004. It was expected the Master Transportation Plan would continue to evolve as the formal representation of road planning for Dunes City.

Lane Council of Governments (LCOG) participated in the development of the Dunes City's Master Transportation Plan and their efforts were greatly appreciated by Dunes City officials.

Considerable appreciation is expressed to all of the volunteers who have given generously of their time, ideas, and expertise in the development of the original Master Transportation Plan and also this updated 2012 version.

Adoption and Intent of Plan

A copy of all land use applications shall be provided to the Road Commission Secretary to allow the Road Commission adequate time to review the application and make a timely recommendation to the Planning Commission. That importance is elevated with the adoption of this Master Transportation Plan. New development presents a key opportunity to adopt policies that ensure:

- New development is supported with adequate infrastructure and road networks;
- Development requirements allow and encourage designs that reduce the impact and demand on the infrastructure;
- The cumulative effect of individual projects on the neighborhood and City-wide road systems are identified and infrastructure needs are met with the construction of those projects.
- Land use and transportation planning are coordinated and complementary, creating a proactive approach to meeting the future transportation needs of the community.
- Continuation of the requirement for transportation modeling and impact studies in conjunction with major development proposals or land use plans to demonstrate the infrastructure needs created by that development.
- Evaluation of funding options for the infrastructure needs created by new developments.
- Incorporation of Transportation Planning efforts as a major component in the development of the City's Strategic Growth Areas and other special area planning efforts.
- Continued efforts to implement transportation policies that reduce cut-through traffic and calm traffic in and through neighborhoods, while ensuring connectivity for pedestrian and bicycle users and emergency vehicles.
- When developing and updating the City's Capital Improvement Program, review this plan for conformity. If the project and the plan are inconsistent, amend the plan or redesign the project to meet the goals of the plan.
- Evaluation of projects' impact on quality of life and aesthetics for surrounding and proposed land uses.
- Outlining of criteria to be used to develop and prioritize an approach for upgrading the existing transportation system in conjunction with aging infrastructure maintenance needs, where needed, and to support redevelopment activity requirements, including those identified in Strategic Growth Area Plans.
- Street classifications, general alignments and street network as identified in previous and subsequent Strategic Growth Area Implementation Plans are adopted by reference as part of this Master Transportation Plan and subsequent amendments.

Section 1.3 – Mission / Vision Statement

The Dunes City Road Commission serves to enhance the City's quality of life by providing the public with a safe, convenient, efficient, economical and aesthetically pleasing street system for the transportation of people and goods.

Section 1.4 – Compliance with Oregon Transportation Planning Rule

In April 1991, the Oregon Land Conservation and Development Commission (LCDC), with the concurrence of the Oregon Department of Transportation (ODOT), adopted the Transportation Planning Rule (TPR) to implement the Statewide Planning Goal 12. The basic purpose of the TPR is “*to provide and encourage a safe, convenient and economic transportation system*” in Oregon. Underlying objectives of the TPR are to:

- Reduce the reliance of travelers on the private automobile;
- Encourage the use of other modes of travel;
- Maximize the use of transportation facilities and services through efficient transportation system management; and
- Reduce and manage the demand for travel through more efficient forms of development that minimize the need for travel and better integrate land use and transportation decisions.

The TPR required local jurisdictions to prepare and adopt a Transportation Systems Plan by May 8, 1997 (Section 660-12-055 (2)). The Plan must identify transportation facilities and services adequate to meet identified state, regional and local transportation needs for the next twenty (20) years. The TPR includes very specific requirements, along with recommendations for the preparation of these transportation plans. Requirements vary depending on the size of the community, whether the study area is part of a Metropolitan Planning Organization (MPO), and whether there is public transportation.

Section 1.5 – Summary

As mentioned previously, the plan that follows represents an update of the Master Road Plan document originated in the year 2000. It is anticipated that this Master Transportation Plan will undergo continued updates as time, events and circumstances dictate.

The information contained herein relative to the current CPMS alone will be subject to revision most likely on an annual basis, and the same will hold true for other infrastructure elements that are inventoried and management plans that are adopted for them as well. Information listed in the Appendix section of the MTP will also be updated on a regular basis. The plan, as currently structured, however, represents the most up-to-date information available regarding policies, goals and objectives and general guidelines.

CHAPTER TWO – TRANSPORTATION IN DUNES CITY – YESTERDAY, TODAY AND TOMORROW

Section 2.1 – Key Issues We Face Today

Section 2.2 – Transportation Policies

Section 2.3 – Future Considerations

Chapter 2 - Transportation in Dunes City Yesterday, Today and Tomorrow

Section 2.1

Key Issues We Face Today

Many outside forces have contributed to the issues we face in today's transportation systems including:

- Increased fuel costs
- Increased congestion
- Aging of the "baby-boomer" generation
- Increased awareness of environmental issues
- Push for healthier communities and lifestyles
- Change in land use demands
- Decreased roadway construction funding
- Funding gaps
- Increased competition

Development of alternative modes for example, could be a key consideration to the future of transportation in Dunes City and surrounding areas. The following plan builds upon the existing and proposed road network by encouraging greater use of alternative transportation modes such as cycling, and walking. In addition, this plan looks at long-range policies that will help meet the transportation demands of the future by attempting to minimize the need for costly construction projects, bridges, and right-of-way acquisition. Utilizing cost effective computerized maintenance management systems, technology, changing commuting behavior and patterns, and focusing on the relationship between land use development and transportation needs are a part of the comprehensive approach noted in the development of this Master Transportation Plan.

Section 2.2 – Transportation Policies

Coordination

- ✓ The City should develop a coordinated approach to the operation, development, and maintenance of jointly managed streets.
- ✓ The City should identify methods to ensure coordination with Lane County and the Oregon Department of Transportation, for development and other activities and decisions related to transportation facilities in their jurisdiction.
- ✓ The applicable Lane County Transportation System Plan goals and policies and requirements of Lane County Code Chapter 15, Roads, shall apply to Lane County Roads.
- ✓ Lane County shall be consulted in a timely manner regarding any development or other activities that involve Lane County Roads.

Protection of Road Facilities

- ✓ The City should protect the function of existing and planned streets as identified herein.
- ✓ The City should consider impacts on existing or planned street facilities in all land use decisions.
- ✓ The City should protect the function of existing or planned streets through application of appropriate land use regulations.
- ✓ The City should consider the potential to establish or maintain pedestrian ways, paths or bikeways, when considering any public easement or rights-of-way.
- ✓ The City should require the dedication of rights-of-way for planned streets as identified in the Master Transportation Plan.
- ✓ Land development should not encroach into the setbacks required for future street expansion.

Access Management

- ✓ (See DCC Chapter 155)

Layout and Design of Transportation Facilities

- ✓ (See DCC Chapter 155)

Maintenance

- ✓ Maintenance and repair of existing streets shall continue to be the highest priority.

Bicycle Facilities

- ✓ Bicycle safety devices and signage should be considered, where appropriate.

Pedestrian Facilities

- ✓ The City should identify high-priority areas and construct improvements in these areas.

Road Improvement Policies

- ✓ On an annual basis, the Road Commission shall solicit and consider comments from the general public regarding the need for new streets and the repair of existing streets. Utilizing the priorities established in Chapter 3, Section 3.8 of this Master Transportation Plan and comments from the general public, the Road Commission shall make recommendations to the Budget Committee and the City Council regarding annual expenditures for the construction, repair or modification of streets.

Section 2.3 – Future Considerations (Reserved)

CHAPTER THREE – MOTORIZED ELEMENT

Section 3.1 – City Street System (Map)

Section 3.2 – Functional Classifications

Section 3.3 – CPMS/Maintenance Considerations

Section 3.4 – Current Goals and Objectives

Section 3.5 – Construction / Usage and Access Standards

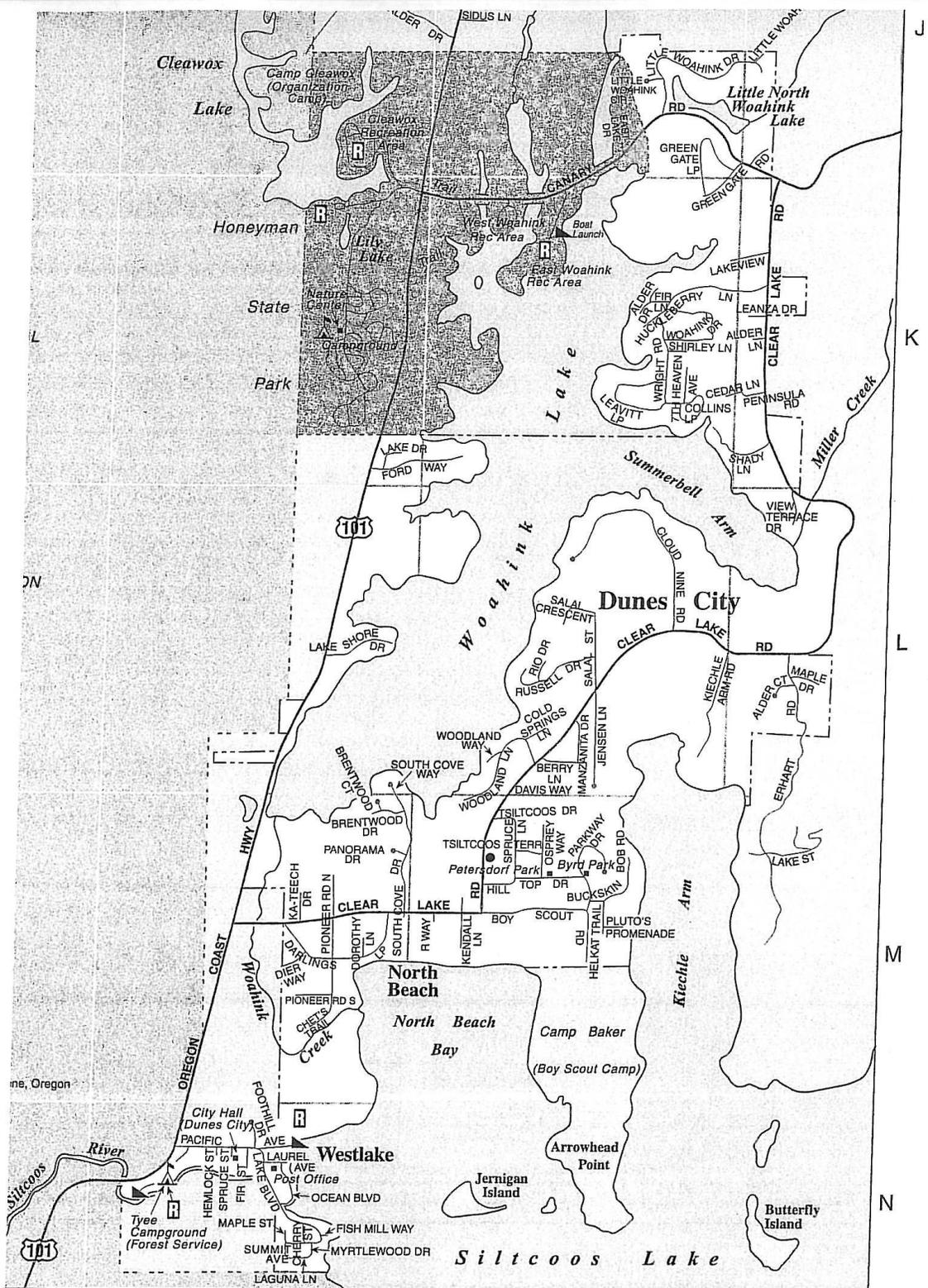
Section 3.6 – Naming / Renaming Streets

Section 3.7 – Future Road Systems

**Section 3.8 – Maintenance and Construction in
Dunes City Rights-of-Way**

Chapter 3 – Motorized Element

Section 3.1 – City Street System (Map)



Section 3.2 – Functional Classifications

People travel every day to work, shop and do many other chores. Everyone wants to get to their destination quickly, safely and hopefully with few traffic jams. We do not understand roads - - why there are so many cars and why it's always jammed up – especially when we are in a hurry! A good transportation system makes a good city.

Roadways are classified generally speaking, by their primary function (or purpose) which varies between mobility and land access. They are typically divided into groupings by level and the character of service they are intended to provide. Traffic volume, roadway size, design parameters and standards, and connectivity are all factors considered.

What is a transportation system? Simply it's the manner in which roads connect to each other, their geometry and the way they are aligned with reference to land use. Large cities comprise many kinds of roads, while smaller cities, such as Dunes City, typically have fewer road types (categories or class).

A road system can be comprised of a number of road classes – such as Expressways, Highways, Trunk Roads, Arterial Roads, Collector Roads, Local Streets, Lanes, and Cul-de-sacs. Such a hierarchical classification system allows Traffic/Transportation Engineers and Planners to properly design roads. Each class (category) of road has certain design guidelines. These guidelines ensure safety, ease of maneuverability and therefore dictate the cost of construction.

Roadways have two functions to provide mobility and to provide access. From a design perspective, these functions can be incompatible since high or continuous speeds are desirable for mobility, while low speeds are more desirable for land access. Arterial facilities emphasize a high level of mobility for through movement; local facilities emphasize the land access function; and collectors offer a balance of both functions.

Functional classification has commonly been mistaken as a determinate for traffic volume, road size, urban design, land use and various other features that collectively are the elements of a roadway, but not its function. For example, the traffic on a roadway can be more directly related to land uses and because a roadway carries a lot or a little traffic does not necessarily determine its function. The traffic volume, design (including access standards) and size of the roadway are outcomes of function, but do not define function.

Function can be best defined as connectivity. Without connectivity, neither mobility nor access can be served. Roadways that provide the greatest amount of connectivity are the highest level facilities. Arterials can be defined by regional level connectivity. These routes go beyond the city limits in providing connectivity and can be defined into two groups: principal arterials (typically state routes) and arterials. The movement of persons, goods and services depends on

an efficient arterial system. Collectors can be defined by citywide or district wide connectivity. These routes span large areas of the city but typically do not extend significantly into adjacent jurisdictions. They are important to city circulation. The past textbooks on functional classification then define all other routes as local streets, providing the highest level of access to adjoining land uses. These routes do not connect at any significant regional, citywide or district level.

Recent work in the area of neighborhoods and their specific street needs provides a fourth level of functional classification – neighborhood route. In many past plans, agencies defined a minor collector as a neighborhood collector; however, use of the term collector is not appropriate. Collectors provide citywide or large district connectivity and circulation. There is a level between collector and local streets that is unique due to its level of connectivity. Local streets can be cul-de-sacs or short streets that do not connect to anything. Neighborhood routes are commonly used by residents to circulate into or out of their neighborhood. They have connections within the neighborhood and between neighborhoods. These routes have neighborhood connectivity, but do not serve as citywide streets.

The Dunes City road system includes a combination of City-owned facilities, Lane County roads, and private roads. The roadway classification system in Dunes City was developed considering the future road connections as described above. The classification system for Lane County roads was obtained from Lane County Public Works staff. The roadway classification system for Dunes City includes three levels of roads: major collector, minor collector, and local roads as described below. Highway 101, a State facility, is outside this classification system. This classification system will assist the City in prioritizing road construction and maintenance projects and to provide better planning as development occurs.

Major Collector

A major collector is intended to serve traffic from local roads and minor collectors to the arterial system. Individual accesses are allowed but minimized to protect system capacity and traffic safety. Within Dunes City, Canary Road and Clear Lake Road, both county facilities, are considered major collectors.

Minor Collector

A minor collector is intended to provide access to abutting properties and to serve local access needs of neighborhoods, including limited through traffic. New development that generates a significant volume of traffic should be discouraged from locating on minor collectors that serve residential areas. The majority of these roads are City-owned facilities. Pacific Avenue however is a county facility. Minor collectors identified in Dunes City include: Huckleberry Lane, Wright Road, Peninsula Road, Salal Street, Erhart Road, Kiechle Arm Road, Woodland Lane, Hilltop Drive, Southcove Drive, Brentwood Court, and Lake Boulevard (Lane County).

Local Roads

A local road is intended to provide direct property access and is not intended to serve through traffic. All other roads in Dunes City not identified in the previous categories are considered local roads.

Section 3.3 – CPMS/Maintenance Considerations

The following information summarizes the background associated with the development of a Computerized Pavement Management System (CPMS) that was implemented in the year 2009 for the City of Dunes City, Oregon.

Background

At the direction of the Dunes City Council and the Road Commission, Archetype Consultants, developed and implemented a formal Network Level Computerized Pavement Management System for Dunes City Oregon. Program objectives included:

- Conditional assessment (inventory) of the entire street network.
- Determination of the current condition of all segments within the street system.
- Quantification of maintenance and rehabilitation needs/strategies for all street segments.
- Development of a five-year street maintenance program and associated budget requirements based on critical prioritization and optimization criteria.
- Identification of the current overall value of the street system expressed in terms of total replacement cost.
- Identification and use of the most cost effective street rehabilitation and maintenance practices recommended for implementation in the city as part of this new planning mechanism.

The report that follows indicates information associated with the first generation CPMS inventory and system development completed in March 2009 and also includes the most current information available regarding the present condition of the entire Dunes City street network developed through updated inventories and work completed over the past three years.

Discussion of Asphalt Pavements

Conventional asphalt concrete pavements consist of asphalt concrete surfacing with aggregate layer(s) underneath. Full depth pavements are made up entirely of asphalt concrete. All pavements fail from repetitive loadings of vehicles for which they were designed, coupled with age of the pavement surface, weathering, and other environmental factors. Sometimes pavements fail prematurely due to loadings in excess of original design. As a pavement progresses throughout the various stages of its performance life, it typically exhibits “distress signals” of various types. The types and severity of distress, the rate at which they first appear, and the rate at which they grow are all important parameters to a Pavement Engineer in determining the proper course of remedial action.

In addition, consideration should also be given to excessive landscape water, poor drainage or “ponding” (standing water or “bird baths”) when dealing with asphalt pavement. Water is one of the greatest

detriments to pavement performance. When water is allowed to enter into the pavement structure, it will significantly contribute to the destruction of the structural integrity of the pavement. Landscaped medians, edge curbs and borders should have positive means of preventing water from entering the pavement structure.

Good construction practice can alleviate many drainage problems. Additional strength in the form of asphalt overlays can be added to streets experiencing increases in traffic. Cracks that develop can be filled, and periodically the entire surface of the street can be sealed with a thin coat of asphalt mixed with crushed aggregate (i.e. chip seal or equivalent) to make it more water resistant. ***Ditches along the side of roads should be kept mowed, cleared and drains unclogged.*** In addition, communities can adopt subdivision control ordinances to assure adequate pavement construction by developers. Truck routing regulations can restrict truck traffic to arterials, and tighter utility regulations can result in better coordination of utility cuts and better restoration when the surface must be compromised.

By every evaluation, our roads and streets are deteriorating faster than we can repair them. The question is: “WHY?” From the moment they are built, pavements begin deteriorating, but not by the same amount each year. Indeed, with routine maintenance a pavement may “ride” well for many years. At a critical point however, the materials begin to lose their ability to resist water and carry weight. The pavements crack and “suddenly fall apart.” But age isn’t the only problem. Since many of our roads and streets were built earlier, many of them have passed the end of their design life, depending on how they have been maintained. Traffic that is too heavy for the pavement’s design can cause fatigue cracks in streets after many repeated trips over the pavement. For example, ice that will support a young skater may develop fatigue cracks under the weight of an automobile, or worse, break apart. Similarly, a street designed for residential traffic may suffer fatigue cracks when it becomes a local transit route or when it starts carrying construction traffic.

In a general sense, the amount of traffic has dramatically increased over time, shortening the effective life of our pavements. Growth in the number of vehicles has surpassed population growth by over 50% during the past four decades. But far more damaging has been the fact that the number of trucks on our roads has tripled in the past 20 years, and that growth rate is expected to continue. It is now estimated that a typical 18-wheel semi trailer truck has the equivalent loading effect of between 3,000 and 6,000 passenger vehicles. The effect of this weight increase in terms of decreasing pavement life span has been estimated to be between 10% for thick pavements such as those on highways, to 90% for the thin pavements on local roads and streets.

Inflation has severely eroded the buying power of the maintenance dollar. Just to stay even with inflation, (let alone keep up with accelerating deterioration) local revenues dedicated to street maintenance are severely challenged. Indeed, some states and municipalities who depend on flat rate gasoline tax revenue have seen revenue decrease with increased fuel conservation.

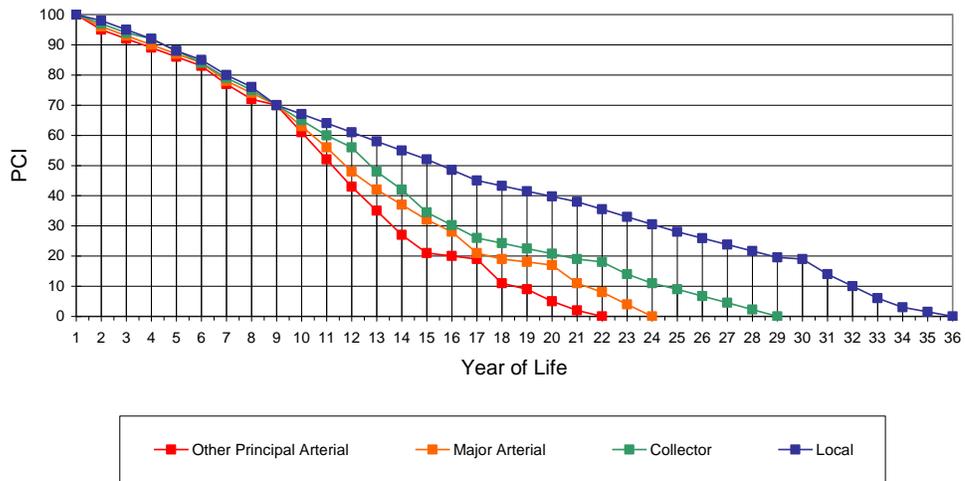
Facing the squeeze of higher costs, less revenue, and citizen resistance to tax increases; many public agencies have chosen to make “low profile” budget cuts. Often, street maintenance has been deferred. Seal coats, for example, may have been postponed, allowing more water to seep into the sub-base, thereby accelerating a deterioration rate already fueled by increased age and traffic. Thus, in many municipalities the vicious cycle of accelerating deterioration begins.

Referring to the pavement deterioration curve that follows in Table 1, it becomes clear that those who carry out low-cost rejuvenation and resurfacing before rapid deterioration begins, extend the pavement life for a fraction of the cost compared to those who wait “just a couple of years or longer.” Ask: “Why do agencies wait?” and the answer is typically - - to save funds. Clearly, repairing good roads is more cost effective, but what about the long term? Won’t several overlays or seal coats add up to the cost of a rehabilitation effort? Ft. Collins, Colorado for example years ago compared two maintenance strategies: One involved high quality maintenance coupled with “appropriately timed” overlays, the other involved delaying overlays several years and then carrying out rehabilitation. Their analysis found the second strategy to be four times as expensive as the first.

Table 1

Typical Pavement Life Cycle

Curve Deterioration Comparison by Functional Classification



Deferring maintenance has been a popular solution during periods of revenue shortfall, and now local governments are facing the consequences. The street for which an overlay was deferred now needs complete rehabilitation at five times (or more) the cost.

Research and field experience have repeatedly shown that over the long run, maintaining good roads costs substantially less per year than allowing roads to deteriorate to the point that major rehabilitation is

needed. WHY? The cost of a rehabilitation effort in time and materials is substantially higher than the cost of routine maintenance and timely overlays. For example, it is estimated that the cost of routine maintenance of a good pavement is about 15 cents per square foot or less, whereas the cost of rehabilitating a failed pavement can be as much as \$6.00 - \$9.00 or greater per square foot.

Why Pavement Management Systems?

As maintenance costs rise and the demand for governmental services increase, it is apparent that there exists a need for more effective street maintenance responses. This demand has caused public works agencies to seek management systems that can serve to plan and control maintenance work, and in turn, provide for maximum utilization of available resources. This planning and controlling translates into efficient production of government services.

In the past, street maintenance has been handled in a variety of ways. Typically, governmental agencies had maintenance staff conduct annual reviews of the street system, identifying those segments requiring maintenance/repair and schedule the annual work program around those findings within a constrained budget. In most instances, this approach constituted what is referred to as a “worst first” approach, meaning that only those pavement areas in poor shape would receive the limited funding available for maintenance purposes. In recent years, a noticeable shift in approach has occurred within agencies (including Dunes City) beginning to understand the necessity for preventive maintenance techniques, as well as addressing the needs of the more severely distressed pavements. With this in mind, management systems have been developed to assist the user through more effective planning in maintaining the public works infrastructure. The most common type of system currently in use is what is referred to as a Pavement Management System (PMS). A variety of different types of systems are available, offering varying levels of sophistication. Most important is the need to have in place some type of street network inventory and condition assessment, since funding eligibility requires at least quantification of that nature. The Federal Highway Administration has mandated that public agencies have a Pavement Management System (PMS) in place in order to be eligible for Federal funding.

To best understand the need for maintaining streets, it is first important to be familiar with the characteristics of pavement performance. For this discussion, we will deal with asphalt concrete pavement (AC) since its use is far more widespread in this area than Portland Cement Concrete (PCC). A new asphalt pavement, when properly designed and constructed, is expected to last approximately twenty (20) years. Many factors however, can greatly influence this pavement life as mentioned previously, such as traffic conditions, drainage, periodic maintenance, the quality of construction, whether the design was adequate for the anticipated traffic loads, and if quality materials were used in the construction, etc. Therefore, these many variables are rather critical to the successful performance of any pavement segment and, unfortunately, in most cases, one or more are a negative factor in virtually every situation, enhancing the possibility of premature pavement failure more often than not. Assuming that a section of pavement has been properly designed and constructed according to quality guidelines, the importance of continual maintenance of the pavement at regular intervals cannot be overstated.

Past practices have found many municipalities simply “building and forgetting” their streets, which in turn means that without periodic maintenance, the pavement, when subjected to the normal weathering process, begins to deteriorate sooner than expected, particularly in areas subject to extreme temperatures.

To prevent this occurrence, it is critically important to provide routine preventive maintenance, and at least attempt to seal coat pavements regularly, extending the normal life cycle well beyond the design life of twenty (20) years. Certainly other factors can lead to premature failure, such as design inadequacy, possibly happening when a pavement is subjected to heavier loads than its original design could foresee. In most cases however, some type of regular treatment to the street network pays huge dividends to an agency if the maintenance program is implemented properly. The suggested approach to accomplishing this goal is to establish a Pavement Management System (PMS) to plan and budget the necessary work on the pavement system in an intelligent and well-thought-out manner.

A Pavement Management System (PMS) provides a municipality with a tool to effectively manage its fiscal resources in order to properly maintain pavements. Such a program provides data regarding the condition of the various pavement segments throughout the municipality to determine costs for rehabilitation, reconstruction, and/or the steps required to achieve a desired level of service.

The program should also provide for the continued preventative maintenance of those pavements once they are rehabilitated to an acceptable level. Typically, the entire pavement system of a jurisdiction cannot be rehabilitated in a single year due to fiscal restraints; therefore, the program must account for deterioration of those pavements not receiving rehabilitation immediately.

Levels of Pavement Management Systems

Pavement Management Systems and activities can be characterized by the administrative level at which they occur, either at the network or project level. A project level system is characterized predominantly by technical design and maintenance concerns for individual project level pavement segments. Thus, systems at this level require detailed information on individual pavement sections and projects. A network level system is characterized primarily by policies and procedures at the programming and budgeting level, and involves large groups of individual projects and usually includes all the streets in the jurisdiction. Here decisions are made at the program rather than project level. The systems at this level use “average” data on the total system rather than detailed data on individual pavement segments. Network level systems can be used to address such questions as: “What should my overall budget for major maintenance be three years from now?” “How much should be budgeted for the entire thin overlay program this year?”

Historically, most formal PMS development has occurred at the project management level; however, there has been extensive management development geared towards maintaining the condition of an entire pavement system at an acceptable level while minimizing maintenance and rehabilitation costs. An even more recent trend incorporates project-level analysis within a network management framework.

A visual network inventory, which can be conducted at a very low cost, can be used to identify the locations within the system that require project level or more comprehensive study. This allows an agency to evaluate every section of pavement visually and then comprehensively evaluate only the sections that require additional data or investigation. Naturally, every segment within the system can receive project level analysis, if desired; however, this additional expense is frequently unnecessary.

Framework for a Pavement Management System

Pavement management is not a new concept - - management decisions are made as part of normal operations every day in street departments throughout the nation. The idea behind a pavement management system is to improve the efficiency of this decision making process, expand its scope and provide feedback, and insure the consistency of decisions made throughout an agency's system.

An organization must decide how to spend its available and frequently limited funds most wisely. Through the use of a Computerized Pavement Management System, (CPMS), evaluations of budgets and priorities can be established not only for today's considerations, but future ones as well, based on the entire system. It is not only the problem, but also the magnitude of the problem that a Pavement Management System addresses.

It is clear that the current condition of a pavement system is the result of design, construction, previous maintenance, budgets, traffic loads and environment. It is also clear that the current condition is a result of decisions made in previous years, and that decisions made now will have an effect on the future condition of the pavements. Thus, current decisions should be made in the light of both their immediate effects and their expected future effects.

Naturally, the need for implementation of CPMS is not as apparent if unlimited budgeting for rehabilitation is available. Therefore, proposed actions should be carefully evaluated not only with regard to current needs and costs, but also with regard to future consequences. A preventive maintenance program as well as major maintenance and rehabilitation program should be designed to provide the maximum life at the lowest long-term costs.

The prediction of future consequences of present actions may be made formally through the use of comprehensive pavement evaluation systems such as deflection analysis, or they may be made through the combination of subjective ratings, engineering judgment, and categorized system performance models that are all utilized in computerized system performance programs. It is possible to make accurate network decision predictions using either approach. Annual or semi-annual monitoring of the pavement allows for updating the performance cycles of the pavement, should unexpected changes in predicted variables such as traffic or environment affect the predicted life cycle of the system. In this way, through a series of periodic inspections, a system can be kept updated and accurate rather than requiring the use of sophisticated deflection equipment and theoretical prediction models to project for a period of ten to twenty years.

The overall objective therefore, of a system framework should be to develop and implement a Computerized Pavement Management System that meets the pavement management system requirements previously discussed and allows for improved cost-effective management of a City's entire street system. This is what has been done in Dunes City.

Initial Development and Current CPMS Status

The City through the assistance of the consulting firm Archetype Consultants initiated a Network Level condition survey of all streets within the city's jurisdiction in February and March, 2009. This inventory was conducted on a visual basis using the data collection techniques outlined in the Metropolitan Transportation Commission (MTC) Pavement Management System approach.

Once Inventories were completed, discussions were held with City staff to identify and review the information compiled and to designate desired methods of prioritizing the setting of critical limits (action points) which determine when maintenance and/or rehabilitation are required for each street segment based on its condition.

Each street section was assigned a Pavement Condition Index (PCI) reflecting its current condition. The PCI ranges from “0” (failed) to “100” (excellent).

The following photos reflect the various condition ranges noted above.



PCI Range 0 – 29
Hemlock Street – PCI 27 (Has been rehabilitated in 1st year program)
Current PCI - 97



PCI Range 30 – 49
Pioneer Road – PCI 42



PCI Range 50 – 65
Huckleberry Lane – PCI 65



PCI Range 66 – 100
Ka-Teech Drive - PCI 83

Once the PCI was calculated and assigned for each street segment, score ranges were established for each classification of street. The time for the next treatment action was then determined. Scenarios for various treatment strategies were developed, and costs for each treatment strategy were assigned. A five (5) year plan was then developed on an unconstrained budget basis, indicating when each street segment required maintenance and/or rehabilitation along with the associated costs for each.

Once the unconstrained five (5) year budget needs were identified, the recommended program was then adjusted to allow for some additional geographic and/or maintenance priorities, and also the rearrangement of scheduling to allow for balancing of budgets throughout the plan years.

Initial results were presented to the city staff and priorities discussed with an eventual preliminary five (5) year plan developed.

The initial recommended five-year program indicated a need for approximately \$550,000 (\$544,137) to successfully rehabilitate and/or maintain the City street network pavement system over the following five years. The plan as shown below was based on an unconstrained budget approach, (as noted previously) with each street segment receiving some type of treatment including either major rehabilitation or preventative maintenance over the five-year period. It was understood that current budget constraints and funding levels would likely not allow such an ambitious approach, and thus the plan was adjusted to meet

budget allowances, understanding that delaying maintenance could result in greater overall costs at a later date. The initial plan called for the following amounts per year:

<u>Year (FY)</u>	<u>Expenditure</u>
Year 1 (2009/2010)	\$ 51,069
Year 2 (2010/2011)	\$ 94,719
Year 3 (2011/2012)	\$ 22,655
Year 4 (2012/2013)	\$268,347
Year 5 (2013/2014)	\$107,347

Total five (5) year initial program needs 2009.....\$544,137.00

Total newly revised six (6) year program needs 2012 ...\$234,304.00¹

Current Plan/Program Status

Since the development of the initial system, the city has experienced great progress in the further expansion and implementation of the program, and as a result the adoption of new, very cost effective maintenance strategies and associated results as noted above*. These new concepts combined with the effective nature of this CPMS planning tool have further improved the overall (and individual street PCI's) network condition, while at the same time providing a vehicle for new Federal and State of Oregon funding. Grants received to date have supported a high percentage of the cost for the maintenance and rehabilitation of the recent street network needs identified through the CPMS. In fact, over the past three years, these new funds have covered a large part of the maintenance activities completed within the street network such that the entire system is now in a preventative mode, with no rehabilitation backlog, a very rare occurrence for any municipality, regardless of the size of the street system.

The entire network has been re-inventoried annually over the past three years, to measure the effectiveness of these new maintenance techniques, and to identify the reliability of the deterioration prediction models that were initially built into the computerized system. At the present time, the slurry seals that have become a vital part of the new maintenance program are performing very well, as are those streets that have been repaired during this time frame with more expensive strategies such as overlays, and removal and replacement sections, crack filling and the like.

The information that follows lists general summary information regarding the **current system**. **Also included in the Appendix section of the MTP** is information relating to updated PCI's for all streets, specific deterioration curves for the City of Dunes City, maintenance needs for each street segment, the new six (6) year budget and other relevant information.

¹. This number is an estimate that has not been finalized.

Fast Facts

One of the first questions an agency asks about its street system is: “What size is our system?” and “What is it worth?” The following information represents the latest data regarding the current Dunes City system.

- **Street Classifications** – the following classifications were developed for the Dunes City street system: Further information regarding functional classifications may be found in Chapter 3, Section 3.2

<u>Class</u>	<u>Example</u>
Minor Collector	Huckleberry Lane
Local	Jensen Lane

- **System Size** – **10.32 centerline miles**, often referred to as dual lane miles.
- **Replacement Cost Value (MTC valuation)** –

<u>Class</u>	<u>Example</u>
Minor Collector	\$1,809,601
Local	\$3,480,264
TOTAL SYSTEM VALUE \$5,289,865	

- **Overall Pavement Condition (PCI) – Entire Street Network** - The current overall weighted average PCI for the entire street network is 82.7 which is in the excellent category. The overall PCI in 2009, when the CPMS and inventory process were initiated was 74.66, with many candidate streets requiring significant rehabilitation, beyond simply surface sealing. Considerable progress however, has been realized over the past three years through a dynamic process, and thus the entire street network is presently in a preventative maintenance condition with current projections suggesting only sealcoat (slurry seal) treatments for all streets over the next six (6) years.

Important to note is that many of the streets receive very light traffic, which is certainly a consideration in terms of the overall PCI average. It is also important to realize that the initial surveys are based entirely on visual evaluations, and there always exists the possibility of structural deficiencies in some streets that have not yet surfaced. Structural integrity is extremely important for certain; however, weathering of the surface alone is another major factor in pavement life, and thus surface treatments which provide weatherproofing of pavements (on a regular basis) is essential. That is why it is so critically important to allow for expenditures on streets in good condition to extend their life cycle since they represent such a large part of the overall network. The streets requiring the more costly rehabilitation can be dealt with as funds

will permit. In doing so the City will be able to substantially reduce future street maintenance costs, and continue to enjoy a system that will rank in the good to excellent categories well into the future years.

It is important to understand that the current CPMS framework is ultimately flexible, and can be adjusted according to City budget constraints, with consideration given to the possible consequences of delaying rehabilitation and/or maintenance if necessary. It is critical however, that some type of preventative maintenance program be nevertheless continued to extend the life of the street network and optimize its life expectancy.

The discussion that follows addresses once again each of the two approaches to pavement management (mentioned earlier) in greater detail.

Discussion

It is necessary to recognize that a Pavement Management System is simply a planning and decision tool. This tool quantifies needs and identifies cost-effective treatments to apply at any given time to meet desired levels of service. The system should be viewed as a dynamic (subject to change) planning mechanism, designed to provide street network evaluation and general quantification of needs. Its intent is not to be interpreted in a literal sense and, in fact, the CPMS should be utilized as a guide which can be adjusted according to decision-makers. It is well documented that good roads cost less:

- If maintained at a reasonable level of service, and
- If responsive to preventive maintenance.

An effective Pavement Management System should take into account a preventive maintenance component that, in effect, finds an agency working on streets in “good” condition rather than “poor” condition in order to extend the eventual life expectancy and ultimately improve the overall network condition. The relatively low cost of working on streets in good condition pays huge dividends over a longer period of time. Additionally, by moving this preventative pavement maintenance work up in the cycle, it allows the City additional time to focus on raising the necessary revenue to address the more expensive rehabilitation of the “backlog” or the pavements in poor condition. Grouping of projects also lowers the unit cost of each action or treatment type.

Should the City be able to fund the program needs as currently stated, the overall condition of the street network will remain in the “Very Good” to “Excellent” condition categories while also facilitating an on-going program to provide high levels of service at reduced costs. Assuming the City cannot increase revenues or maintain a steady revenue stream to fund the recommended levels, priority should then be given to the roads listed as minor collectors, the streets that carry the greatest amount of traffic. If the program is not fully funded, the likelihood of never “catching up” is very good, particularly given the anticipated increased levels of traffic in future years.

An important decision that will have to be reached between City Council, Road Commission Staff, and the general public is: “What is the minimum acceptable level of service that can be tolerated?” Should the City choose to accept a lower level of service, then the plan can be adjusted accordingly, but not without experiencing some consequences from delayed maintenance. The current plan, as presented,

addresses the maintenance and rehabilitation of 100% of the street system over the next six (6) years. If implemented, the overall street system will continue to remain in very good condition overall with the “backlog” (poor to failed condition) virtually eliminated, (as is now the case) and thus the city will be in a position to enjoy the benefits of a street system that focuses entirely on “preventive” rather than “catch-up” or “no hope” maintenance management.

Next Steps - “Plan the Work and Work the Plan”

Once an agency implements a Pavement Management System, it must be monitored and adjusted periodically. Additionally, there is a continual need to provide the necessary level of commitment to keep the data current and dynamic. The following are some recommended “Next Steps” for Dunes City.

1. At a minimum, **the entire street network should be re-inventoried** on a regular schedule, usually every 1 to 2 years. **Since the inception of the CPMS this has proven to be the case for the city to date.**
2. Given the challenges that all agencies face continually, regarding deficiencies in funding, the City should **continue** an aggressive campaign to **identify and secure new funding sources** for street maintenance purposes. It is important that this effort be continued, particularly given the success experienced over the past two years in securing funds that have literally supported the maintenance and rehabilitation of the system. This success has provided the excellent results that now exist and will continue for years ahead through the goal to fund in full the recommended program at any point in time well into the future. Potential sources can include:
 - **Increased Development Impact Fees** to be identified through new studies;
 - **Expanded Gas Tax Revenues** - - At the present time the City should receive its “fair share” and do whatever necessary to become a “voice” in that regard;
 - **Various Federal and State Funding Sources** - - Active participation in discussions with both ODOT and Lane County to receive its fair share;
 - **Grant Funding Possibilities** through assignment of key staff or consultant resources to identify sources and file applications as has been the case over the past two years.
 - **Development of a Street Cut Utility Fee Ordinance** if street utility cuts are an issue within the City.

All of these potential funding sources and others are identified and discussed in Chapter 6, Section 6.1 of this MRP.

3. **Assignment of new staff dedicated to complete responsibility for the road system.** Over the past three years the City has utilized consultant resources to assist with both the development and maintenance of the current street inventories and the associated CPMS data base. The current CPMS was developed on a pro-bono basis by Gary Baker/ Archetype Consultants, and its development has aided the City over the past 3 years in acquiring over \$125,000 in new funding to support maintenance and rehabilitation needs. Mr. Baker has continued to provide the City with various consultant services and in fact has served as an interim Director of Roads as needs have dictated. This on-call arrangement has provided the City with necessary input and follow up services, including grant writing, CPMS updates, and other advice as requested relative to Road Commission issues and challenges. Additionally the firm, the Dyer Partnership has also been an integral part of the recent annual pavement maintenance programs providing both engineering design and inspection services of the work performed.

4. **Stringent Street Design Parameters and Construction Standards** combined with inspection / testing of all new construction, to ensure the installation of high quality pavements.
5. **Utilization of New Maintenance / Rehabilitation Techniques.** The new Six (6) Year Plan as presented may not include utilizing all of the latest techniques in pavement maintenance. The recent incorporation of slurry seals as a new maintenance strategy serves as a good example. Discussions should be held with representatives from other jurisdictions as well as the County and ODOT to keep up to date on the latest techniques and success stories from surrounding jurisdictions.

Final Comments

In summary, the City of Dunes City has now taken the first vital step toward effective management of the street infrastructure. Careful consideration should be given to the impact of future development on the City's street network, particularly as it applies to the increased volumes of traffic (particularly of a construction nature). Future development should contribute its "fair share" to the street maintenance management program and the incorporation of other infrastructure elements such as bike and pedestrian improvements, as well as the development of maintenance management systems for other components of the public works infrastructure. The same holds true for utility companies who work within the street network right-of-way.

Additionally, it would be advisable to have discussions with adjacent communities to work toward "piggy-backing" or combining annual respective maintenance / rehabilitation programs, thus creating greater volumes per unit of work with corresponding reductions in cost.

The tables and charts providing detailed information on each street segment, and the overall network can be found, as noted earlier in the Appendix of this MTP. The information provided represents the most current available following the latest inventories conducted in February and March 2012. These will be updated at least yearly.

It will be noted that the recommended annual budgets are driven by the PCI's and the determinations associated with the stated action tables (prediction models). They can be easily adjusted to create more balanced budgets, or rearranged geographically per year as desired. The latter "neighborhood approach" may provide cost saving benefits and is worthy of consideration as the City embarks upon the new program each year.

Section 3.4 - Current Goals and Future Objectives

This Section contains the Dunes City goals and policies to direct production of the Master Transportation Plan. Development of the Master Transportation Plan was guided by a series of broad objectives. From these goals came the more specific policies. The seven street system goals as originally written may never be fully achieved in their entirety, but they do provide a target towards which Dunes City can strive. Dunes City policies give the detailed basis for a consistent course of action to move the community toward its goals. It is anticipated that these goals and objectives will be continually updated to reflect the latest thoughts and plans with respect to specific projects, funding considerations and a variety of other related factors.

Master Transportation Plan Goals

- **Transportation Balance** - Provide for a balanced street system to give mobility to all segments of the community.
- **Quality of Life** - Enhance the City's quality of life by providing an efficient, safe, convenient, economic, and aesthetically pleasing street system for the movement of people and goods.
- **Alternative Mode** - Provide safe and convenient options for bicycling and walking.
- **Connectivity** - Create an interconnected street plan to support existing and future land uses.
- **Minimize Negative Impacts** - Maximize benefits and minimize negative effects of the street system on the social, economic, and natural environment.
- **Safety** - Create a safe and efficient street system.
- **Financially Sound** - Create a street system that is financially feasible, cost-effective and acceptable, while minimizing administrative costs.

Annual Considerations

1. Cost savings
2. Short term
3. Long term
4. Implementation
5. Strategies

Section 3.5 – Construction / Usage and Access Standards

(See DCC Chapter 155)

Section 3.6 - Naming/Renaming Streets

1) Process for Naming or Renaming a Street or Private Road:

Dunes City will follow the procedures that are set in ORS 227.120.

2) Prior to Beginning This Process, but after Receiving a Request or Petition to Name or Rename a Street, Follow the Steps Below:

- ✓ Contact Lane Council of Governments (LCOG), (541) 682-4452. LCOG is a member of a committee that includes a representative of the Post Office and E911. They will quickly review the proposal to see if there are other identical or similar streets in the 911 districts, if the spelling is correct or confusing, and if there are any other reasons for concern.
- ✓ Determine whether there is a majority of people on the affected street that concur with the proposed name or name change.

3) Dunes City Application Process Requires a Non-Refundable Fee and the Following Information: {Special Note – If proposal is rejected, fee is not refunded}

- ✓ Name of Applicant
- ✓ Location of road by description or map
- ✓ Legal status of road, if known
- ✓ Existing name of road
- ✓ Proposed road name
- ✓ Reason for request
- ✓ Petitions associated with the request, if any.

4) If the Road Naming or Renaming is Approved, Dunes City Hall will Notify the Following Organizations in Addition to Those Agencies Required by Statute:

- ✓ Internal Departments: Building, Water and Planning - 997-3338
- ✓ Lane County Rural Addressing Program: 1-541-682-3700
- ✓ Post Offices: Florence - 997-9406 or 1-800-275-8777 Westlake - 997-8678
- ✓ Telephone Company: Qwest - 1-800-603-6000
- ✓ Fire District: Siuslaw Valley Fire and Rescue - 997-3212
- ✓ School District: Siuslaw School District - 997-2651
- ✓ Local Power Company: Central Lincoln PUD - 997-3414
- ✓ State Department of Forestry: 997-8173
- ✓ Police (Sheriff and State): OSP - 1-800-452-7888 Lane County Sheriff - 997-8472
- ✓ ODOT-Highway Department: 1-503-986-4000
- ✓ Lane County Boundary Commission: 1-541-682-4425

Note: When a new subdivision is proposed, and the proposal goes through the Road Commission and Planning Commission, the fee is waived, as the name of the new road is included in the subdivision application process.

Section 3.7 – Future Road Systems

Proposed Future Road System

The future road system includes the general location of future road alignments. The MTP is meant to serve as a guide as undeveloped parcels develop within the community. The exact location of these roads will be determined at the time of development. In general, the proposed

street plan strives to provide connections between the existing road networks across larger undeveloped parcels.

Section 3.8 – Maintenance and Construction in Dunes City Rights-of-Way

The Dunes City Council, Planning Commission, and the Road Commission jointly discussed the need for the City to establish a written policy for road maintenance and construction of all public roads controlled by the City as outlined herein.

General Responsibilities

Dunes City is responsible for the maintenance, construction, and upgrading of all public rights-of-way under the regulatory control of Dunes City as defined in Chapter 90 of the Dunes City Code.

Priorities

Public rights-of-way projects shall be prioritized in the following order: (1) maintenance, (2) upgrading of existing streets and (3) new construction. Proposed projects are to be considered in this prioritized sequence on a case-by-case basis based on need and availability of funds, and are to be carried out in a timely fashion.

- **First Priority - Street Maintenance**

Maintenance of streets shall include:

- Patching, surface sealing and/or overlaying streets that have deteriorated; clearing or construction of drainage ditches and culverts.
- Brushing/limbing above paved or traveled portion of rights-of-way to a height of fourteen feet (14') where necessary, mowing all public rights-of-way as required, power sweeping paved public streets the full width of the blacktop after grading where necessary, and removal of dangerous trees that are in public rights-of-way. Equipment in City Streets: When it is necessary for a City contractor to traverse a City street with lug equipment, the contractor shall take adequate measures to protect City streets.

- **Second Priority - Upgrading of Streets**

Upgrading shall include the improvement of existing driveway aprons to developed properties, widening and/or straightening of streets.

- Widening and straightening of any street shall not be performed without professional input of surveying, engineering and drawings to allow citizen comments for the basis of contractor proposal bidding.

- Dunes City will construct driveway aprons for properties established prior to 1990. All other property owners will be required to meet appropriate driveway standards, including aprons.
- **Third Priority - Construction of New Streets**
 - Construction standards for new streets shall meet the requirements of the City Engineer. Any requests for modification of such standards for reasons of topography, etc., shall be decided by the City on a case-by-case basis.
 - All costs for construction of streets, roadbeds, or improvements to public rights-of-way incurred by a property owner prior to approval of such Dunes City road project, shall not be reimbursed by the City to the payor.

Addition of New Streets to Dunes City That Will Require Dunes City to be Responsible for Permanent Maintenance

Dunes City shall maintain new streets only if the street is a Dunes City public street. Methods for transferring responsibility for maintenance to Dunes City include, but are not limited to, the following procedures:

- **Purchase of a right-of-way** by the City for the express purpose of constructing a street on that right-of-way.
- **Acceptance of the donation of a right-of-way** that the City has determined should be made into a public street.
- **Acceptance of the donation of a private street** that meets Dunes City street standards.

Emergency Events and Other Annual Fund Set Asides

- **Emergency/Unforeseen Events**
 - Every Dunes City Road Fund Budget will have an expenditure line item established for unforeseen emergencies.
- **Road Project Proposals**

The Road Commission, prior to February 1st of each year, shall recommend road projects and estimated costs to the City Council and Budget Officer for inclusion and consideration in that fiscal year's proposed budget.

Street Vacation

Street and right-of-way vacations shall be approved by the Dunes City Council, with a recommendation from the Road Commission. The Road Commission and the City Council shall use the provisions of ORS 271.005 through 271.230 in their consideration of a vacation request.

Unenumerated Nuisance Defined

Dunes City Code Chapter 91.10 (B) – Nuisances Declared; Unenumerated Nuisances states: “In addition to the nuisances specifically enumerated in this chapter, every other thing, substance, or act that is determined by the Council to be injurious or detrimental to the public health, safety, or welfare of the city is declared a nuisance and may be subject to City initiated abatement or penalty as provided in this chapter.”

CHAPTER FOUR – BEYOND ROADS

Section 4.1 – Bike Paths

Section 4.2 – Pedestrian and Other System Facilities

Section 4.3 – Street Lights

Section 4.4 – Culverts

Section 4.5 – Other Infrastructure Needs / Considerations

Chapter 4 – Non-Motorized Element

Section 4.1 – Bike Paths

Introduction

“Biking is the life.” With the price of gas rapidly rising, smog, congestion, and all the rest, why do we need more cars on the road? It’s a refrain being heard across the United States as advocates push for more bike paths and the cities begin or continue to build them. In that direction however, care must be given to replacement and preservation of such natural and social amenities as trees, landscaping, and historical sites. Strong consideration should also be given to providing facilities for pedestrians as well as bicyclists. Cycling, especially, is an extremely fast-growing form of personal transportation and recreation. In 1971, the so-called “Bike Bill” was passed by the Legislature. This bill provides that not less than 1% of the gas tax monies received each year shall be used for the construction of bicycle paths.

Bicycle and pedestrian programs are one type of transportation control measure (TCM) which can be used to reduce air emissions associated with transportation. Traffic congestion and air quality objectives would benefit from shifting low-occupancy vehicle trips of any purpose to bicycling and walking.

Until the 1970’s, bicycling was considered strictly a recreational activity. In the early 1970’s, as bicycling underwent a renaissance and the country faced its first oil crisis, bicycling received a lot of attention not only as an attractive recreational activity, but as a viable commute alternative. Many communities developed bicycle plans and built facilities. Similar to bicycling, the idea of walking as a means of transportation was not widely recognized as an alternative to using an automobile, but is becoming more popular. Planners are beginning to incorporate criteria for bicycle travel and pedestrian circulation into the requirements for new developments.

Benefits

Bicycle and pedestrian programs may include a wide array of elements amenable to a community’s characteristics (e.g., topography, population, existing infrastructure) and the budget of the administering agency. Some common types of bicycle and pedestrian facilities include the following:

- Routes, lanes and paths
- Sidewalks and walkways
- Plans and maps

A shift of automobile trips to either bicycle or walk trips has a direct, positive impact on the environment as emissions are reduced by 100 percent. Bicycling and walking realistically can substitute for relatively short trips which make up approximately 60 percent of all trips, generally less than five miles in length.

Biking and walking are cost-effective solutions for society at large. Society and individuals benefit from every commute trip shifted from single occupancy vehicles to bicycles or walking because of reductions in the following:

- Vehicle expenses
- Costs associated with municipal services devoted to vehicle traffic
- Air, noise, and water pollution
- Resource consumption
- Land use impacts
- Waste disposal

Investments in bike and pedestrian paths can be investments in both recreation and the commuter. Dollars spent for facilities may reduce the overall cost of a community's programs. Trails can offer economic benefits by raising the value of property adjacent to once idle land.

To the degree that bike and pedestrian programs provide benefits to individuals, these benefits also accrue to the companies whose employees walk or bike to work because these employees tend to miss fewer work days.

Costs for developing, maintaining and operating a bicycle program may include the following:

- Land acquisition
- Bike lane construction
- Bike path construction
- Publications
- Signage and striping
- Maintenance
- Enforcement
- Educational materials

Biking programs may be used in transportation management as primary modes, feeder modes (media to connect with transit or ridesharing modes), or circulation (movement within an area such as an activity center or employment development).

Since the enactment of the Intermodal Surface Transportation and Efficiency Act (ISTEA) of 1991, there has been an impetus for increased spending on bicycle and pedestrian projects. Unfortunately, a major barrier to implementation can be missing links, (e.g., non-continuous bike routes or lanes along a commute and walking corridors). Other factors that have limited bicycling include lack of safe routes to work destinations, conflicts with traffic laws that give

preference to autos, and lack of facilities to accommodate these activities (e.g., bike racks or access to showers).

Settings that facilitate successful programs include the following:

- Places with short travel distances between residential areas and key trip attractions;
- Areas with high concentrations of people under age 40;
- Areas with compatible infrastructure that can be modified into appropriate facilities.

People with severe income limitations may have to walk or bike out of necessity. One study which surveyed bicycle commuters, found that 23 percent of those commuting by bicycle had annual incomes less than \$7,500 where those with incomes between \$30,000 and \$50,000 comprised only 1 percent of the group. An interesting observation is that the percentage of bicycle commuters increased to 7 percent when incomes exceeded \$50,000. Although cost savings are generally not a major reason people choose to bike or walk, (i.e., people cite exercise as the top reason for commuting by bike followed by enjoyment, environmental concerns, and cost savings) bicycle and pedestrian programs increase equity by providing more low-cost travel options. Even people who do not apply high values to their leisure time will gain from trading their increased travel time for decreased travel costs.

Bike Trail Benefits:

Over the last few decades, the benefits of bike trails have become more obvious. Besides being pleasant places to go bicycling, studies are showing that bike trails offer the following benefits:

- Landscaped bike paths improve air quality
- Bike trails promote health
- Trails reduce crime
- Bike trails mitigate/lower summer heat
- Cycleways improve property values
- Multi use trails spur tourism revenue
- Bikeways prompt economic growth, improve job satisfaction and worker productivity
- Bike trails boost community pride and appeal

Another measure of the move toward biking is the growth of Thunderhead Alliance – a National coalition of state and local bike and pedestrian organizations that help strengthen local advocacy groups. They have grown from 12 member organizations in 1996 to 128 coalitions in 49 states. The alliance’s “Complete the Streets Campaign” has helped win legislation in 23 cities and nine states, requiring that streets be designed to be safe and accessible for all users.

The group is working with organizations in other states as well to lobby Congress for a federal complete-streets policy.

Next Steps

The City may wish to consider beginning to develop a long term city-wide bicycle action plan that emphasizes improved connectivity and also indicates funding opportunities. With that in mind, a number of bicycle strategies have been identified and are listed from most important to least important:

- Connect key bicycle corridors to schools, parks, recreational uses and activity centers (public facilities, commercial areas, etc.)
- Bicycle corridors that connect neighborhoods
- Bicycle corridors that commuters might use

A Bicycle Master Plan builds off state policy from the Transportation Planning Rule that suggests all arterial and collector roads have bikeways. A bicycle Action Plan can consist of projects that the city could actively try to fund over the next ten years. With an action plan, a substantial bicycle network could eventually be initiated and allow attention to move toward master plan projects. A bicycle plan will require incremental implementation. As programs arise, projects on the Master Plan should be integrated into project development. Many of the projects could be elements of multi-modal street improvement projects. The City, through its Capital Improvement Program, joint funding with other agencies (County, State) and development approval could then implement these projects.

Section 4.2 - Pedestrian and Other System Facilities

Trails

The cost of developing trails varies according to land acquisition costs, new structures needed, the type of trail surface, the width of the trail, and the facilities that are provided for trail users.

Acquisition costs for a trail corridor also vary enormously. For example, railroads have donated abandoned corridors to government agencies or non-profits organizations. They have also offered them for sale at nominal prices; however, these corridors are often valuable real estate and may have to be bought at market prices. There are many examples of creative ways that communities have acquired corridors. Organizations such as the Rails to Trails Conservancy have documented many of these examples and have catalogued the many benefits of rail trails. These include promoting tourism and economic development, cleaning up abandoned industrial sites while preserving the nation's industrial heritage, creating linear parks and open space, and promoting healthy lifestyles. Trails can provide natural areas for native plant species. For example, Capital Crescent Trail, in suburban Maryland and the District of Columbia, has preserved a corridor for potential future trail use that could never have been pieced together again if it had been lost to development when railroad operations first ceased.

Walkways

Annually, around 4,500 pedestrians are killed in traffic accidents with motor vehicles in the United States. Pedestrian lives lost while “walking along the roadway” account for almost 8 percent of these deaths. Many of these tragedies are preventable. Providing walkways separated from the travel lanes could help to prevent up to 88 percent of these “walking along roadway accidents.”

Walkways can be created either by providing stabilized or paved surfaces separated from the roadway, or by widening paved shoulders. These treatments can not only improve the safety of pedestrians, but also make pedestrian trips more viable.

Sidewalks

Sidewalks separated from the roadway are the preferred accommodation for pedestrians. Sidewalks provide many benefits including safety, mobility, and healthier communities. In addition to reducing walking along roadways, sidewalks reduce other pedestrian crashes. Roadways without sidewalks are more than twice as likely to have pedestrian related accidents as sites with sidewalks on both sides of the street.

Providing walkways for pedestrians dramatically increases how well pedestrians perceive their needs are being met along roadways. The wider the separation between the pedestrian and the roadway, the more comfortable the pedestrian facility.

By providing facilities that are more comfortable, we can increase the number of trips made by walking, particularly in areas with mixed land uses. Providing sidewalks, widened paved shoulders, or stabilized shoulders can increase the transportation options for individuals who may not be able to drive a car. Additionally, by moving pedestrians off the travel lanes, motorist operations are improved and capacity increased.

Research indicates that people will walk for recreational purposes if a facility is provided. Recreational walking is one of the easiest ways for people to get the recommended allotment of physical exercise each day. Moderate exercise, such as walking, contributes to both physical and mental wellbeing.

The most important existing pedestrian need is a well-connected pedestrian system within a half-mile grid and connectivity to key centers (parks, schools, retail, etc.). Needs include safe crossings of large arterial streets which act as barriers to pedestrian movement, as well as an inventory of local street sidewalk locations in order to complete a detailed sidewalk connectivity

plan. A number of pedestrian strategies have been identified and they are listed from most important to least important:

- Connect key pedestrian corridors to schools, parks, recreational uses and activity centers (public facilities, commercial areas, etc.)
- Fill in gaps in network where some sidewalks exist
- Pedestrian corridors to transit stations and stops
- Signalized pedestrian crossings
- Pedestrian corridors that connect neighborhoods
- Improve streets having sidewalks on one side to two sides
- As development occurs include construction of sidewalks by developers as a requirement
- Pedestrian corridors that commuters might use
- Reconstruct all existing substandard sidewalks in the City

A Pedestrian Master Plan is an overall plan and summarizes the desired framework plan. The more specific, shorter-term Action Plan projects that the City can identify the higher priority needs when funding becomes available. As development occurs, streets are rebuilt, and other opportunities (such as grant programs) arise, projects on the Master Plan should be pursued as well. In addition, all development projects should include an inventory of local street sidewalk conditions in order to populate the City database of sidewalk locations whenever possible.

Paved Shoulders

Paved shoulders provide numerous safety benefits for motorists and pedestrians. Installing or widening paved shoulders has the following benefits:

- Provides a stable surface off of the roadway for pedestrians to use when sidewalks cannot be provided.
- Reduces numerous accident types
- Improves roadway drainage
- Increases effective turning radii at intersections
- Reduces shoulder maintenance requirements
- Provides emergency stopping space for broken-down vehicles
- Provides space for maintenance operations
- Provides space for variable message signs
- Provides an increased level of comfort for bicyclists.

Section 4.3 – Street Lights (Reserved)

Section 4.4 – Culverts (Reserved)

Section 4.5 – Other Infrastructure Needs / Considerations

Components such as traffic signals (where necessary or warranted), traffic control signage, striping, drainage facilities, curb, gutter and sidewalk, etc., can all benefit from a planning

mechanism that identifies future needs and projects which can then be incorporated into a computerized infrastructure management plan similar to that which now exists for the street network.

It will be noted that in addition to information presented in Sections 4.1 and 4.2 of this MTP for Bike and Pedestrian Path Planning, there exists as well, a need for consideration of developing maintenance management inventories and systems for other infrastructure elements.

Because of the advancements in technology, GIS applications and the creation of the Roadside Features Inventory Programs has combined this information and thus created a single source for data retrieval. The data is more accurate, the ability to analyze and maintain the data increases exponentially and it saves an agency time and money.

Project Benefits:

- Implementing data definitions, values and formats
- Having reliable data collection methods and procedures; maintaining particular standards with minimal variation
- Increasing the efficiency of project development through consistent data collection and reporting
- Using the data to fulfill environmental requirements and inventory management
- Uses program management to strategically spend safety, unstable slopes, and major electric and drainage dollars
- Environmental regulatory compliance and inventory management.

Inventorying of roadside facilities along streets and highways is becoming an important issue for infrastructure management by public works administrators. With increasing demands to regulate ever growing traffic densities together with shrinking budgets, traditional methods of highway inventorying are simply too inefficient. In addition, it is important to be able to quantify roadside maintenance costs in order to develop future budgets.

Highway facilities, using signs as an example, may be subject to regulations or specifications in terms of their size, positioning, or visibility. Consequently, to verify that a single sign is appropriately situated may require manual measurements of the sign's position with respect to a mileage reference marker, and the object indicated by the sign. The offset from the edge of the highway, and the height of the sign above the pavement may also be important to measure these parameters is a time consuming and costly manual exercise. Furthermore, it may be necessary from time to time to verify that the sign has not deteriorated to the point where its visibility is compromised, or become vandalized, or damaged in some fashion. From the viewpoint of protection from future litigation, a pictorial record of compliance may be prudent.

All this effort is costly in terms of man-hours and dollars, requiring not only the time to make these measurements, but also the time involved to travel to and between sites. In addition there is risk to worker safety when working and parking vehicles on the highway shoulders. And, after

all of that, the data collected from this intensive investigation (of a single sign) needs to be entered in some type of database management system.

To adequately address the need for inventory and measurements, systems are being utilized including those that are for the most part automated and proving to be very useful.

Sign Inventory and Management Systems (SIM)

A Sign Inventory and Management (SIM) system is an area of asset management that focuses specifically on creating an inventory of traffic signs throughout a municipality in order to facilitate a practical and cost effective means of assessing and managing these assets. The SIM program should:

- Be simple to use;
- Be simple to modify to meet municipal needs;
- Provide for straight-forward data collection; and
- Provide for straight-forward data retrieval (filtering).

There are numerous SIM programs available either commercially or through other governmental agencies. These programs have a wide range of functions and costs that should be considered so that the most appropriate program is selected to meet each municipality's needs. It is also possible for a public agency to alternatively develop its own system as well.

What is one reason to use a SIM program? According to the most recent edition of the Federal Highway Administration (FHWA)'s Manual on Uniform Traffic Control Devices (MUTCD), agencies have until January 2012 to establish and implement a sign assessment or management method to maintain minimum levels of sign retro reflectivity. A SIM system includes features to help agencies manage their signs' maintained retro reflectivity levels to comply with FHWA's standards. The compliance date for regulatory, warning, and ground-mounted guide signs is January 2015, and for overhead guide signs and street name signs the compliance date is January 2018.

In general, municipalities need to complete the following tasks:

- Develop an initial sign inventory
- Establish an asset management system (preferably automated)
- Implement a network-wide sign history database

Why is a traffic sign inventory important?

- Worn street signs create a safety hazard for drivers
- Inventories allow for a proactive traffic sign replacement and maintenance schedules

Benefits of a sign inventory:

- Confidence that asset records are up-to-date and accurate

- Create asset-specific maintenance and replacement schedules
- Clearly identify asset lifecycles for each type of sign
- Online visibility to entire footprint of street sign assets
- Better data allows you to maintain compliance to changing regulations and mandates

Critical components of sign inventory:

- Sign basics
- Sign location
- Sign position
- Sign characteristics
- Sign history
- Sign retro reflectivity evaluation
- Sign post characteristics
- Sign summary
- Sign Maintenance

Preventative maintenance - Inspection components just discussed will identify sign and sign support deficiencies that may require appropriate repair or replacement. In addition, there are certain preventive maintenance activities that may be needed to keep signs and their supports fully functional; they include:

- Sign cleaning
- Vegetation control
- Anti-theft measures
- Sign support adjustments

In summary - Timely detection of and response to maintenance needs are critical elements of an effective sign management system. This can be accomplished through periodic inspections of the city's signs to ensure they are still there, are needed, and are performing as intended both day and night.

To achieve the desired goal of quality sign maintenance in Dunes City, a comprehensive sign management system should be developed soon. With this in mind, the critical elements of a sign management system should include:

- Inventory – a manual or computer-based database of signs installed on all roads.
- Inspection – a program for scheduled inspection of signs.
- Preventive Maintenance – activities that will ensure that signs will attain their full service life.
- Repair and Replacement - a program and process for either repairing or replacing non-functional signs.
- Reporting and Record Keeping – a process for keeping record of all maintenance activities.

When these elements are in place and followed, Dunes City can be assured that the signs on their roads are functional and meet the needs of the road users as well as having developed and implemented another system for the maintenance and repair of yet again an additional critical component of the Public Works infrastructure

CHAPTER FIVE – Dunes City Road Department Job Descriptions

Section 5.1 – Road Commission (See DCC Chapter 32)

Section 5.2 – Road Commission Secretary

Section 5.3 – Director of Roads

Section 5.4 – City Engineer (Reserved)

Section 5.1 - ROAD COMMISSION
(See Dunes City Code Chapter 32)

Section 5.2 - ROAD COMMISSION SECRETARY Position Description

INTRODUCTION:

This position is that of Road Secretary for the Dunes City Roads Department. The position is to provide service in the areas outlined under Responsibilities and Duties.

RESPONSIBILITIES AND DUTIES:

The responsibilities and duties of this position are varied in scope. The intent of this description is to outline the routine tasks to be performed by the Road Secretary at the time, and in the situation, that the case dictates.

The following functions are the responsibility of this position:

- 1) In early October, remind the Road Commission of the timeline for fiscal year road projects.
- 2) Establish and maintain complete records and files on all matters relating to Dunes City roads.
- 3) Consult at least two times weekly with the Road Commission Chairperson.
- 4) Any road related permits and applications will be routed through the Road Secretary.
- 5) Establish a good working relationship with the citizens of Dunes City. Keep a record of requests, by citizens, regarding roads and road related problems and refer such to the Road Commission Chairperson.
- 6) Attend each Road Commission meeting as the Road Secretary and take the minutes.
- 7) Perform other related tasks as necessary and as may be directed by the City Recorder, Mayor or Road Commission Chairperson.
- 8) Maintain the Dunes City Master Transportation Plan binders by keeping them up-to-date.
- 9) With the assistance of the City Engineer and Road Commission Chairperson, prepare the necessary documentation for bid work and submit same to the Road Commission for their review and input.
- 10) Work with the Director of Roads on follow-up of work performed by various sources.
- 11) Keep the Dunes City Road Commission minutes log up-to-date.
- 12) Keep accurate time records.

Section 5.3 - DIRECTOR OF ROADS Position Description

I. INTRODUCTION:

This position is that of the head of the Dunes City Roads Department. It is to provide services and supervision in the areas outlined under responsibilities and duties.

II. RESPONSIBILITIES AND MAJOR DUTIES:

The responsibilities and duties of this position are varied and wide in scope. The intent of this position description is to outline the major areas and to leave the more routine tasks to be determined by the Director of Roads at the time, and in the situation, that the case dictates.

The following functions are the responsibility of this position:

- 1) Prepare necessary documentation, reports and updates to the Pavement Management System to keep the Road Commission and City Council informed.
- 2) Prepare bids and supporting documentation with help from the Road Commission, Road Commission Chairperson and Road Secretary.
- 3) Review the preparation of advertisements for road bids as prepared by the City Recorder and submit the same to Road Commission and Road Commission Chairperson for their review and input.
- 4) At the first of the year, for budget purposes, determine the need for road repair, maintenance, surfacing, patching and other related services. Report the findings to the Road Commission Chairperson and Road Commission no later than the January meeting. The Commission will then make its recommendations to the City Council for their approval regarding the recommended road work and allocation of funds for the coming fiscal year.
- 5) Determine the need for brushing and clearing at least twice a year (Spring and Fall).
- 6) Establish, with the help of the Road Secretary, complete records and files, on all matters relating to Dunes City roads.
- 7) The Director of Roads and the Road Commission Chairperson may have the delegated authority to order street signs, traffic signs, culverts, etc. and other related miscellaneous road supplies.
- 8) Establish a good working relationship with the citizens of Dunes City. Keep a record of requests by citizens regarding roads and road related problems and refer such to the Road Commission, if such requests cannot be handled by the Director of Roads.
- 9) Supervise and follow-up on work performed by various sources. If work is not acceptable, submit a dated report, in writing, to the City Recorder for the Dunes City Council's attention.
- 10) Perform other related tasks as may be directed by the City Recorder, Mayor and Road Commission Chairperson.

**Section 5.4 – CITY ENGINEER
(Reserved)**

CHAPTER SIX – FINANCING

Section 6.1 – Funding Sources

Chapter 6 – Financing

Section 6.1 – Funding Sources

Introduction

The following list identifies possible Federal, State, county, local, and private sources to fund various transportation improvements. The purpose of this list is to serve as guide to assist the City in identifying appropriate sources. This list will be updated frequently to reflect any changes to current funding mechanisms, new opportunities that arise and on-going legislative actions.

Federal Funding Sources

Some Federal funding programs, as currently exist in the MTP, are administered by the State. Those programs are listed in this Section.

\$ - Intermodal Surface Transportation Efficiency Act (ISTEA)

Funding through the Intermodal Surface Transportation Efficiency Act was targeted toward improvements that demonstrated beneficial impacts towards implementing a region's STP, enhanced the multi-modal nature of the transportation system, and met local land use, economic, and environmental goals. Funding categories created by ISTEA were intended to provide an area with more discretion in allocating Federal transportation funds to projects from highway improvements to transit improvements, management systems, and non-vehicular modes such as bicycle and pedestrian improvements. The ISTEA funding program was terminated and replaced by the Transportation Equity Act (TEA) and most recently by SAFETEA-LU which builds on this firm foundation, supplying the funds and refining the programmatic framework for investments needed to maintain and grow our vital transportation infrastructure.

SAFETEA-LU addresses the many challenges facing our transportation system today – challenges such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment – as well as laying the groundwork for addressing future challenges. SAFETEA-LU promotes more efficient and effective federal surface transportation programs by focusing on transportation issues of national significance, while giving state and local transportation decision makers more flexibility for solving transportation problems in their communities.

SAFETEA-LU continues a strong fundamental core formula program emphasis coupled with targeted investment, featuring:

- **Safety** – SAFETEA-LU establishes a new core Highway Safety Improvement Program that is structured and funded to make significant progress in reducing highway fatalities. It creates a positive agenda for increased safety on our highways by almost doubling the funds for infrastructure safety and requiring strategic highway safety planning, focusing on results. Other programs target specific areas of concern, such as work zones, older drivers, and pedestrians, including children walking to school, which further reflect SAFETEA-LU's focus on safety.
- **Equity** – The new Equity Bonus Program has three (3) features – one tied to Highway Trust Fund contributions and two (2) that are independent. First, building on TEA-21's Minimum Guarantee concept, the Equity Bonus program ensures that each state's return on its share of contributions to the Highway Trust Fund was to be at least 90.5 percent in 2005 building toward a minimum 92 percent relative rate of return by 2008. In addition, every state is guaranteed a specified rate of growth over its average annual TEA-21 funding level, regardless of its Trust Fund contributions. Selected states are guaranteed a share of apportionments and High Priority Projects not less than the state's average annual share under TEA-21.
- **Innovative Finance** – SAFETA-LU makes it easier and more attractive for the private sector to participate in highway infrastructure projects, bringing new ideas and resources to the table. Innovative changes such as eligibility for private activity bonds, additional flexibility to finance infrastructure improvements, and broader TIFIA and SIB loan policies, will all stimulate needed private investment.
- **Congestion Relief** - Tackling one of the most difficult transportation issues facing us today – congestion – SAFETEA-LU gives states more flexibility to use road pricing to manage congestion, and promotes real-time traffic management in all states to help improve transportation security and provide better information to travelers and emergency responders.
- **Mobility and Productivity** – SAFETEA-LU provides a substantial investment in core federal-aid programs, as well as programs to improve interregional and international transportation, address regional needs, and fund critical high-cost transportation infrastructure projects of national and regional significance. Improved freight transportation is addressed in a number of planning, financing, and infrastructure improvement provisions throughout the Act.
- **Efficiency** – The Highways for Life pilot program in SAFETEA-LU will advance longer-lasting highways using innovative technologies and practices to speed up the construction of efficient and safe highways and bridges.

- **Environmental Stewardship** – SAFETEA-LU incorporates change aimed at improving and streamlining the environmental process for transportation projects. These changes, however, come with some additional steps and requirements on transportation agencies. The provisions include a new environmental review process for highways, transit, and multimodal projects, with increased authority for transportation agencies, but also increased responsibilities (e.g., a new category of “participating agencies” and notice and comment related to defining project purpose and need and determining the alternatives). A 180-day statute of limitations is added for litigation, but it is pegged to publication of environmental actions in the Federal Register, which will require additional notices. Limited changes are made to Section 4(f). There are several delegations of authority to States, including delegation of Categorical Exclusions for all states, as well as a 5-state delegation of the USDOT environmental review authority under NEPA and other environmental laws. The air quality conformity process is improved with changes in the frequency of conformity determinations and conformity horizons.

\$ - American Recovery and Reinvestment Act (ARRA)

Over the past two years, the American Recovery and Reinvestment Act has supported Oregon’s economy including funding hundreds of transportation-related projects around the state. ARRA provides local governments in Oregon about \$100 million in highway program funding in which Dunes City was an earlier recipient. Metropolitan planning organizations, cities over 5,000 that are not in a MPO, and counties are in charge of selecting projects to compete for this funding. Jurisdictions that did not receive an annual allocation of Surface Transportation Program funds competed for funding under a small cities grant program that awarded nearly \$5 million to 52 projects.

\$ - Highway Enhancement System (HES)

This Federal Highway Administration program provides funding for safety improvements on public roads.

\$ - Surface Transportation Program (STP)

Funding for transportation enhancement activities is provided under the Surface Transportation Program of the ISTEA. These enhancement activities include the provision of facilities for pedestrians and bicycles. Ten percent of each State’s share of STP funds is to be set aside for transportation enhancements. These funds are dispersed through ODOT’s regional offices. The project must be included in the State Transportation Improvement Program (STIP) to receive STP funds. This is the most flexible of the funding programs and can fund improvements on any highway except those with a functional classification of local street or rural minor collector. These roads are now collectively referred to as Federal-aid routes. Transit capital improvement projects are also eligible for funding through this category. Each eligible city is sub-

allocated a portion of the State's STP funds. The project sponsor must request inclusion of the project in the annual Transportation Improvement Program.

\$ - Transportation Enhancement Program

The State is required to set aside a portion of its STP funds for projects that will enhance the cultural and environmental values of the State's transportation system. Projects need to demonstrate a link to the intermodal transportation system. It funds enhancements such as mitigation of water pollution due to highway runoff, landscaping or other scenic beautification, bicycle/pedestrian projects, historic preservation, acquisition of scenic easements and scenic or historic sites, archaeological planning and research, and preservation of abandoned railway corridors.

\$ - Highway Bridge Replacement and Rehabilitation Program (HBRR)

The Highway Bridge Replacement and Rehabilitation Program provides funding for the replacement and rehabilitation of structures regardless of functional classification. A portion of the HBRR Program is allocated for the improvement of structures under the jurisdiction of cities and counties. Bridges under local jurisdiction are added to the program based on a selection process agreed upon by the Oregon Department of Transportation (ODOT), the League of Oregon Cities, and the Association of Oregon Counties. A technical ranking system, based on sufficiency rating, cost factor, and the load capacity is applied to proposed projects, and those that rank highest statewide receive top-priority funding.

\$ - Timber Receipts

The U.S. Forest Service (USFS) and Bureau of Land Management (BLM) in the past have shared revenue from timber receipts with counties in Oregon. Lane County then shares with the cities within the county through a county/city road partnership agreement. The share of forest revenues is no longer directly tied to the level of timber harvests. The USFS revenues have permitted Lane capital improvements to improve its road system. Funds from this source have been suspended, but could come back in the future.

\$ - Community Development Block Grants (CDBG)

Community Development Block Grants are administered by the Department of Housing and Urban Development and accessed through the State. Although CDBG funds could be used for transportation projects in eligible areas cities, these funds have traditionally been used for other types of infrastructure projects such as curb, gutter and sidewalks.

\$ -Land and Water Conservation Fund

This grant program is administered by ODOT. Funds are derived under Public Law 88-578 from the National Park Service, Department of the Interior. Grants are available for

the acquisition of land and the development of public outdoor recreation facilities. Grants are limited to 50 percent of the total project cost. The cities and counties are responsible for the remaining project cost. Bicycle/pedestrian paths have been funded under this program in instances where they have been shown, as needed, in connection with outdoor recreation activities.

\$ - Local Rail Freight Assistance (LRFA)

Rail freight improvement projects compete nationally for scarce Federal Local Rail Freight Assistance program funds that must be matched by State, local, or private sources. LRFA provides grants to rehabilitate low-density branch and short line railroads, allowing them to provide cost effective rail freight service to communities.

State Funding Sources

\$ - Oregon Department of Transportation (ODOT)

+ State Transportation Improvement Program (STIP)

ODOT allocates State and Federal funding for transportation projects in the STIP. The STIP is a staged, multi-year, statewide, intermodal program of transportation projects. The STIP is not a funding source; rather it is a project prioritization and scheduling document developed through various planning processes that involve local and regional governments and transportation agencies. Aeronautics, rail, public transit, bicycle/pedestrian, and highway projects are included. Public meetings are held throughout the State prior to adoption by the Oregon Transportation Commission (OTC). The adopted STIP lists projects by ODOT's regions. These regional offices are responsible for administration and disbursement of the funds.

+ State Highway Fund (also known as gas tax)

The State of Oregon collects gas tax revenues, vehicle registration fees, and weight mile taxes on freight carriers.

ODOT, through the Department of Revenue, receives these revenues and disperses a portion of them to individual cities and counties based on their percentage of statewide population. The Oregon constitution limits the use of these funds to capital projects within rights-of-way. ODOT uses its allocation for maintenance and to fund capital projects in the STIP. Cities may use funds for local streets, bike lane, and sidewalk upgrades, maintenance, and new construction. A reasonable amount of this fund (at least 1 percent) must be spent on bicycle and pedestrian facilities.

ODOT administers an annual grant program for bicycle and pedestrian projects using Highway Fund money. This grant program funds projects that cost up to

\$100,000 and is based on a 20 percent local match. It is for bicycle and pedestrian projects within road rights-of-way or for bicycle maps.

✚ Access Management Program

Approximately \$500,000 is set aside each year to address access management issues, including the evaluation of existing approach roads to State highways. Over the years, many approach roads have become unsafe due to higher speeds and increased traffic volumes. The program identifies those locations, determines necessary mitigation, prioritizes improvements, and corrects problems.

✚ Local Government Fund Exchange

This program helps local governments make the most effective use of limited transportation funding. To reduce their administrative burden, local governments can agree to develop their projects with State funds, which are easier to administer, while the State uses the local governments' Federal funds for State projects. This program allows flexibility in spending.

✚ Community Transportation Program (CTP)

The Community Transportation Program provides money to fund public and special needs transportation in small cities and communities throughout the State. The program is financed by a combination of State, Federal, and local matching funds. The program is a unified project application, review, and selection process for discretionary funds. These funds are made available under the Federal Transit Act, Elderly Persons with Disabilities Program, the Non-Urbanized Area Formula Program, and the Special Transportation Fund.

✚ Special Transportation Fund (STF)

The *Special Transportation Fund for the Elderly and Disabled* (ORS 391.800 - 391.830) revenues are collected through the State cigarette tax and distributed based on a formula that considers the elderly population in poverty. The funds that come into Lane County, for example, are then allocated to the rural districts based on population and service needs according to the STF Advisory Committee. The STF is the only dedicated revenue source in the State of Oregon for specialized transportation for the elderly and disabled. This funding source has been declining over the years due to the reduction in the amount of cigarette tax collected. There is awareness that new sources of revenue are needed. Acting on behalf of the Lane Transit District (LTD), Lane Council of Governments oversees and coordinates with providers to operate services funded through STF.

✚ Rail Freight Program

Although ODOT does not own or operate any rail lines, the ODOT Rail Freight Program assists in the rehabilitation of publicly and privately owned rail lines through planning and the administration of Federal and State funded programs.

✚ State Rail Rehabilitation Fund

The fund was established by the State legislature to be used for rail line acquisition, track rehabilitation, improvement of rail properties, planning, or any other method of reducing the costs of lost rail service. However, this program has never received an allocation of funds.

\$ - Oregon Economic Development Department (OEDD)

✚ Special Public Works Funds

The State of Oregon, through lottery proceeds passed through the OEDD, has provided grants and loans to local government to construct, improve, and repair public infrastructure in support of local economic development and job creation. The application of this funding source for transportation improvements is limited. Funds for rail projects are also available through the OEDD. Projects must compete with other public works projects submitted by local and State agencies. As of 1996, OEDD had administered approximately \$4.5 million in lottery funds to develop three rail projects.

✚ Immediate Opportunity Fund

ODOT funds the Immediate Opportunity Fund through an annual \$5 million allotment from the State Motor Vehicle Fund. OEDD administers the fund. The funds are set aside to provide OEDD the opportunity to respond quickly to transportation improvements that demonstrate a significant benefit to economic development and job creation. The program has been expanded recently to include alternate modes that reduce vehicle miles traveled (VMT) and for new technologies that improve commerce or safety. The maximum amount available for a single project is \$500,000. A key factor in determining eligibility for funds is whether an immediate commitment of funds is required to influence the location, relocation, or retention of a firm in Oregon. Funding is reserved for cases where an actual transportation problem exists, and where a location decision hinges on immediate commitment of road construction resources.

\$ - Grants and Loans

There are a variety of State and Federal grant and loan programs available, most with specific requirements relating to economic development or specific transportation issues. Most programs require a match from the local jurisdiction as a condition of approval. Grant and loan programs cannot be considered a

secure long-term funding source because they are highly competitive and subject to change. Most of the programs available for transportation projects are funded and administered through ODOT or the Oregon Economic and Community Development Department (OECDD).

✚ **The Transportation and Growth Management Program (TGM)** promotes urban planning and design that results in compact development and pedestrian, bicycle, and transit-friendly options for local communities.

Each biennium, approximately \$6.7 million is allocated by the legislature for grants to local governments. Grant assistance is available in three categories:

1. Implementing the Transportation Planning Rule by preparing Transportation System Plans and developing ordinances and appropriate street design standards.
2. Planning for land use and transportation alternatives such as downtown development planning and designation of special transportation areas.
3. Coordinating and implementing urban growth management strategies including development of intergovernmental agreements and special area plans.

✚ **State Bicycle and Pedestrian Grants** such as ODOT's Bicycle and Pedestrian Program administers two grant programs to assist in the development of walking and bicycling improvements: local grants and Small-Scale Urban Highway Pedestrian Improvement (SUPI) programs. For both of these grants, cities that have adopted plans with identified projects will be in the best position. Cities and counties can apply for local grants for bicycle and pedestrian projects within the right-of-way of local streets. Local Grants up to \$100,000 are shared 80% State / 20% local. Projects that consider the needs of children, elderly, disabled, and transit users are given special consideration. There must be support for the project from local elected officials. Examples of eligible projects include:

- completing short missing sections of sidewalks,
- ADA upgrades,
- crossing improvements (e.g., curb extensions, refuges, crosswalks), and
- intersection improvements (e.g., islands and realignment).

✚ **The Special Transportation Fund (STF)** Program maintains, develops, and improves transportation services for people with disabilities and people over 60 years of age.

✚ **The Special Small City Allotment (SCA)** Program is restricted to cities with populations under 5,000. Unlike some other grant programs, no locally funded match is required for participation. Grant amounts are limited to

\$25,000 and must be earmarked for surface projects (drainage, curbs, sidewalks, etc.). The program allows jurisdictions to use the grants to leverage local funds on non-surface projects if the grant is used specifically to repair the affected area. (The city recently received one of these grants)

✚ **The Oregon Transportation Infrastructure Bank (OTIB)** is a project financing tool for Oregon communities to help meet the need for transportation system maintenance and improvements. As a project financing tool, the OTIB works much like a private bank. It provides project loans and a range of credit enhancement services to help finance eligible transportation projects. Eligible projects are projects that meet federal-aid highway criteria or meet the definition of transit capital projects. Eligible agencies are cities, counties, port districts, other special districts, state agencies, tribal governments, and private entities. The benefits include faster project completion, savings on maintenance costs by replacing worn facilities sooner, advancing high-priority federal funds to eliminate the 4-6 year waiting period for grants, and advancing other projects that have future sources of funding identified. Proposed projects must meet the ITIB selection criteria, including the ability to repay the loan. The OTIB has approved loans varying in size from \$170,000 to \$5 million.

\$ - Lane County Funding Sources

✚ **Lane County Road Fund**

The Road Fund finances a variety of programs related to the County's road and bridge system. Revenues for the Road Fund come from two major sources, National Forest Receipts and transfers from the State Highway Fund. Federal and State statutes govern the use of Road Fund revenues, restricting expenditures to specific road-related activities. Road Funds have been used to perform preservation, modernization and system operation activities on County roads. *Road Funds have also been shared with other agencies for County/City Road Partnership, gravel road paving, economic development and specific road construction projects.*

✚ **Economic Development Assistance Program (EDAP)**

Economic Development Assistance Program is funded through the County Road Fund. Funds may be used to improve the marketability of *for sale* industrial properties or to improve access to existing industrial businesses. The goal of EDAP is to create family-wage jobs that directly benefit local communities. The future of this funding source is in question due to the county's diminishing share of Federal timber receipts.

Local / City Funding Sources

Many cities throughout the world, United States, and Northwest have gone through this same process. Funds are always limited, and projects compete with each other. With good planning, a long-term vision, strong community and agency support, and a willingness to share costs, many fine projects can get built. Often, the key funding sources is the creativity and inventiveness of the community itself.

+ City Transportation Fund

This is a set of funds from the City's share of the State Motor Vehicle Fund and the Federal timber receipts allocated through Lane County.

+ Gas Tax Revenues

In Oregon, the state collects gas taxes, vehicle registration fees, overweight and over height fines, and truck taxes and returns a portion of the revenues to cities and counties. Oregon cities typically use their state gas tax allocation to fund street construction maintenance. However, these funds can be used to make any transportation-related improvements only within the public right-of-way, including sidewalks, intersection upgrades for pedestrians, and bicycle lanes. State statute (ORS 366.514) requires that if there is a need for walkways or bikeways, then the governing jurisdiction shall expend a reasonable amount of the gas tax revenues to construct the needed facilities. The statute also requires that sidewalks be built when new streets are constructed or existing streets are reconstructed.

+ System Development Charges

System Development Charges (SDCs) are becoming an increasingly popular way to fund public works infrastructure needed for new development. The objective of SDCs is to allocate portions of the costs associated with capital improvements to the developments that will increase demand on transportation, sewer, or other public systems. Although SDCs have proven an effective tool in funding items like road widening or intersection upgrades triggered by the increases in traffic linked to a certain new development, they are not usually used to make general infrastructure improvements.

+ Local Improvement Districts

Oregon Statutes allow the creation of several different kinds of local funding districts to finance different kinds of improvements to main streets. Some of these districts can fund capital improvement projects like sidewalk enhancements, while others support smaller projects and program activities.

\$ - Debt Financing

+ General Obligation Bonds

Bonds are sold by the municipal government to fund public infrastructure and other improvements, and are repaid with property tax revenue. Voters must approve general obligation bond sales.

+ Revenue Bonds

Bonds are sold by the City and repaid with revenue from an enterprise fund, which has a steady revenue stream such as a water or sewer fund. The bonds are typically sold to fund improvements in the system that is producing the revenue. They are a common means to fund large, high cost, capital improvements that have a long useful life.

+ User Fees

In general, the users pay based on their use of, or impact on, the system.

+ Local Gas Tax

The City or County could implement a local gas tax, in addition to the existing revenues from the State gas tax. Several cities and counties in Oregon have a local gas tax. Given the current anti-tax atmosphere, it may be difficult to get voter approval on a local gas tax.

+ Local Vehicle Registration Fee

Counties can implement a local vehicle registration fee. A portion of the County fee would be allocated to cities in Lane County. The fee would provide a stable and reasonable funding source, but is unlikely to receive local support.

+ Street Utility Fee

Similar to a water or sewer utility fee, a fee would be assessed in the City for use of streets. Implementing a street utility fee would require voter approval and political support would likely be low. A street utility fee is another option but implementation can be a political challenge.

+ Special Assessments

Assessments pay for on-site or adjacent public improvements. The property owners directly benefit from the improvement.

+ Local Improvement District

The property owners, who will benefit from the improvements, pay an assessment of the project cost. In Dunes City, this approach is usually taken for sidewalk improvements or street widening.

+ Agreement for Improvements

It does not always make sense for a land divider or property owner to install the required improvements (including streets and sidewalks) at the time of development. If that is the case, one must execute and file with the City an agreement to pay for future improvements. Dunes City keeps these agreements in

files organized by street and will pull them at the time of a capital improvement project.

\$ - Private Developers

The majority of local streets and sidewalks are paid for at the time of development by the developer who includes the cost in the sales price of the homes or properties. This also applies to bikeways, bicycle parking, and transit facilities. In this way, the benefiting users are paying for the cost of the system installation. The City is then responsible for maintaining improvements within the public rights-of-way.

CHAPTER SEVEN – ENVIRONMENTAL CONSTRAINTS AND CONSIDERATIONS

Section 7.1 – Environmental Constraints

Section 7.2 – Topography

Section 7.3 – Wetlands and Riparian Areas

Chapter 7 – Environmental Constraints and Considerations

Section 7.1 - Environmental Constraints

Existing natural resource information was reviewed and compiled to assist in identifying problem areas for future road construction. Digital information available includes soils, topography, wetlands, waterways, and riparian areas.

- **Soils**

Soils within the Dunes City UGB were identified using the Soil Survey of Lane County published by the USDA Natural Resource Conservation Service in 1987. Soil types found in the UGB are shown in the table below. Soil type can be a significant factor in determining the cost and feasibility of new road construction. Roads have an all-weather surface and carry automobile and light-truck traffic all year. They have a base of cut or fill soil material, and a flexible or rigid surface. Soil factors that affect the ease of excavating or grading a new road include depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope. Soil strength and shrink-swell potential also affect traffic-supporting capacity. Within Dunes City, the primary soil limitations include slope, depth to a cemented pan, and high water table.

Section 7.2 - Topography

Woahink Lake serves as a central figure in the topography of Dunes City. In general, the land area separating Woahink Lake from Siltcoos Lake is higher in the middle and slopes down toward the lake margins. The highest elevations are along the east side of Woahink Lake. Topographic considerations may limit road construction in localized areas.

Section 7.3 - Wetlands and Riparian Areas

The presence of wetlands may influence the extent of development and road construction. A wetlands inventory and assessment was completed for Dunes City in 1996 as part of the Dunes City Local Wetlands and Riparian Area. Wetland and riparian area resources were mapped over a parcel base to aid in assessing future road locations. Wetland resources are regulated by the Division of State Lands at the State level and the Army Corps of Engineers at the Federal level.

Filling in an area in the wetlands requires approval from the Army Corp of Engineers and the Division of State Lands.

A total of 48 wetlands were identified in the project area, totaling 228 acres. Many of the wetland areas are associated with tributary streams to Woahink Lake, Little Woahink Lake, and Siltcoos Lake. Some of these areas extend outside the UGB.

The study also inventoried and assessed the presence of riparian areas. In general, riparian areas within the UGB are well defined by topography and confined to narrow, relatively steep banked ravines. Riparian areas also exist around the edge of the three lakes.

Other hydrologic features in the study area include the Siltcoos River, Woahink Creek, Gibbs Creek and several unnamed tributaries.

CHAPTER EIGHT – MTP AMENDMENT PROCEDURE

Section 8.1 – Procedure for Updating the Master Transportation Plan

Section 8.1 – Procedure for Updating the Master Transportation Plan

This document, the Dunes City Master Transportation Plan, contains the procedures and the data necessary to satisfy the current community transportation needs relating to Policy F14 of the Comprehensive Plan.

The MTP is regularly revisited and amended to reflect new infrastructure and planning. An MTP amendment review incorporates a wide variety of information including technical analysis and input from the Road Commission, Planning Commission, Director of Roads and travel demand modeling. All data and policies are compiled prior to formulating a Staff recommendation to the Road Commission.

Amendments to the Master Transportation Plan are reviewed by the Planning Commission before adoption by the City Council.