Pryor Creek Bicycle/Pedestrian Master Plan

Prepared for the City of Pryor Creek

LANDPLAN CONSULTANTS INCORPORATED

Bicycle/Pedestrian
Master Plan

Table of Contents

Executive Summary i

Overview i
How This Plan Was Developed i
Key Recommendations of the Plan iii
How Much Will It Cost to Develop the Bicycle/Pedestrian System iv
What's the Next Step in the Process viii

Chapter 1
The Benefits of Bicycle/Pedestrian Systems 1

Introduction 1
Transportation Benefits 1
Air Quality Benefits 3
Health & Recreation Benefits 3
Economic Benefits 3
Water Quality & Benefits 4
Plant & Animal Benefits 4
Quality of Life Benefits 5
Safety Benefits 5
Education Benefits 5

Chapter 2
Evaluation of Existing Conditions 7

Introduction 7
Description of the Study Area 7
Existing Attractions 8
Existing Transportation System 20
Pipeline Systems 20
City Owned Property 20
Existing Bicycle/Pedestrian Facilities 20

Chapter 3
Vision, Goals & Objectives **23**
Introduction 23
Vision 23
Goals & Objectives 23

Chapter 4
Design Guidelines **27**
Introduction 27
Bicycle/Pedestrian Development Corridors 27
Regional Trail Types 30
Bicycle/Pedstrian Components 33
Signage 39
On Street Linkages 41
Sidewalk Linkages 45
Additional Guideline Sources 47

Chapter 5
Description of Proposed Bicycle/Pedestrian System **49**
Introduction 49
Proposed Off-road Multi Use Trails 49
Proposed On-road Bicycle/Pedestrian Linkages 53
Proposed Bike Routes 57

Chapter 6
Funding Sources **59**
Introduction 59
Federal Public Funding Sources 59
State Public Funding Sources 63
Local Sources of Public Funding 64
Local Private Funding Sources 65

Chapter 7
Implementation Plan **69**
Overview 69
Building the Pryor CreekBicycle/Pedestrian System 69
Phasing Strategy for the Pryor Creek Bicycle/Pedestrian System 70
Trail Phasing 71
Linkage Phasing 72
Estimated Costs for Facility Development 73
Typical Costs for Off-Road Trail Facilities 73
Developing the Bicycle/Pedestrian Master Plan 74
Operations and Management 76
City of Pryor Creek Bicycle/Pedestrian System Governance Structure 77
Public Private Partnerships 79

Chapter 8
Operations, Maintenance & Management 81

Overview....81
Pryor Creek Bicycle/Pedestrian System Map Policy....81
Public Access Easement Policy....81
Private Construction of Bicycle/Pedestrian Policy....82
Right of Public Access and Use of Bicycle/Pedestrian Lands Policy....82
Bicycle/Pedestrian Naming Policy....82
Fencing and Vegetative Screening Policy....82
Adopt-a-Trail Program Policy....82
Management Agreements....83
Cross Access Agreements Policy....83
Land Management....83
Safety and Security....84
Bicycel/Pedestrian Rules and Operation Regulations....85
Bicycle/Pedestrian Ordinance....85
Emergency Response Plan....86
Risk Management Plan....87
Liability....89

Map Index

Route Plan Map 1....v
Phasing Plan Map 2....vi
Location Map 3....9
Existing Conditions Map 4....11
Regulatory Flood Plain Map 5....13
2010 Population Dot Density Map 6....17
Schools, Parks and Public Facilities Map 7....21

Pryor Creek

Bicycle/ Pedestrian Master Plan

Executive Summary

Overview

The Pryor Creek Bicycle/Pedestrian System offers recommendations for improving community access to outdoor resources by building a network of off-road multi-use paved trails and on-street bicycle facilities. The purpose of this Master Plan is to address the bicycle/pedestrian needs of community residents related to recreation, transportation, and economic pursuits. The plan addresses policies, programs, and physical improvements that should be implemented to improve access to recreation resources and improve transportation efficiency throughout the community. It identifies 41 corridors throughout and around Mayes County that should be developed in the next 15 years. The Pryor Creek Bicycle/Pedestrian Master Plan was developed by the City of Pryor Creek in association with a steering committee of citizens, a trail planning consultant, and residents of the area. It responds to specific needs that were defined by residents through a series of public workshops. This executive summary describes the process that was used to prepare the Pryor Creek Bicycle/Pedestrian Master Plan, as well as the major findings and recommendations of the plan.

How This Plan Was Developed

In April 2015, the City of Pryor Creek employed a bicycle/pedestrian facilities planning consultant, LandPlan Consultants, Inc. of Tulsa, Oklahoma, to begin work with a steering committee to prepare the Pryor Creek Bicycle/Pedestrian Master Plan. The consultant began their work with an extensive field analysis and evaluation of existing physical features, economic factors, and social issues that served to define both opportunities and constraints for trail development throughout the city. Of special interest in the planning process were the number of “attractors” or destinations that could be accessed and served through trail facility development. The consultant closely examined a variety of corridors of land that extend throughout the City of Pryor Creek including waterways / flood plain, abandoned railroads, electrical transmission lines, and roadways. Of particular interest to local residents were the issues of energy conservation / environmental impact, and safety, especially as it applies to the safety of trails that use that parallel roadways.

Involving Pryor Creek Residents

The consultant worked very closely with the Pryor Creek Bicycle/Pedestrian Master Plan Steering Committee during the past six months in preparing this master plan. The consultant has also conducted public workshops, public meetings, and has worked jointly with the City of Pryor Creek to ensure the proposed bicycle/pedestrian system enhances the quality of life for city residents.

Thursday, May 7th 2015, the first public workshops was facilitated by the consultant to invite the public to participate in the planning process. Meetings were held in Pryor Creek at the City Community Center. At this meeting, residents defined appropriate goals, objectives and policies for improving access to outdoor resources throughout the region. Participants were asked to describe issues and concerns related to trail development. They were also provided with an opportunity to define, on maps of the city, specific areas where they currently walk, ride a bike, hike, and rollerblade, as well as areas where they would like to see trail improvements made. The results of this workshop and the consultant's efforts were summarized in a series of reports, termed "Draft Chapters," and provided to Pryor Creek and the steering committee for review and comment. Results were also described in a series of newsletters that were published by the consultant and widely distributed throughout the City of Pryor Creek.

Monday, June 5th 2015, the trail consultant presented an overall project update with examples of trail projects throughout Oklahoma. This material was presented in a Bicycle/Pedestrian Open House that was hosted at the Pryor Creek Recreation Center. During the Open House portion of the presentation, the public and committee members were presented alternative trail alignments and examples of other constructed samples. After the Open House portion of the meeting, guests were invited to an open design charrette where attendees were encouraged to voice concerns, offer input, and draw corridors they felt were beneficial to the community. The consultant also presented a draft network of corridors of land that would serve as the basis for a city-wide bicycle/pedestrian system. Workshop participants were asked to comment on the results of the prior meeting and carefully critique the initial network of proposed corridors. In addition, a Draft Route Plan was also presented for review and comment. The results of these workshops were again summarized in "Draft Chapters".

The presentation / discussion to follow covered the proposed Route Plan, proposed Phasing Plan, and design guidelines / operations and maintenance suggestions for the city-wide bicycle/pedestrian system.

Defining the Pryor Creek Bicycle/Pedestrian System

Using the information gathered during the public workshops and other available information, the consultant worked for six months to define a comprehensive city-wide system of bicycle/pedestrian corridors that would support a variety of uses and meet the needs that were described by residents. A draft of this proposed Route Plan was presented to the steering committee for initial review and comment. Drafts of the plans and chapters were also reviewed by the City of Pryor Creek staff. From the comments received, the consultant revised aspects of the initial draft Route Plan producing a final implementation plan and this executive summary.

Key Components of this Plan

The "draft chapters" produced by the consultant during the past six months make up the eight chapters of this plan. Chapter One, The Benefits of Bicycle/Pedestrian Systems, defines the wide range of benefits to Pryor Creek that would come as a result of implementing the bicycle/pedestrian plan. Chapter Two, Evaluation of Existing Conditions, defines the background data collected by the consultant. Chapter Three, Vision, Goals and Objectives, reflects the input of city residents and establishes the basis for many of the recommendations provided within the plan. Chapter Four, Design Guidelines, offers development criteria for building various types of bicycle/pedestrian facilities recommended throughout the plan. Chapter Five, Description of Proposed Bicycle/Pedestrian System, describes the corridors that make up the Pryor Creek Bicycle/Pedestrian System. Chapter Six, Funding Resources, describes a variety of local, state and federal sources of funding for developing pedestrian facilities. Chapter Seven, Implementation Plan, recommends how the Pryor Creek Bicycle/Pedestrian System should be developed during the next fifteen years. Chapter Eight, Operations and Management, describes the needed elements to successfully manage and maintain the Pryor Creek Bicycle/Pedestrian System.

Key Recommendations of the Plan

This Plan recommends the implementation of a 43.47 mile network of multi-use trails and linkages throughout the City of Pryor Creek as depicted on the Route Plan (Map 1). The system is extensive and comprehensive, and at the same time provides a realistic program for satisfying the needs of local residents regarding access to outdoor resources and linkage to popular destinations. Building the system will take many years. The overall system is divided into three phases as depicted in the Phasing Plan (Map 2). In the Near-Term phase (0-5 years), it is envisioned that local government agencies will work in partnership with neighborhoods and private sector organizations to develop an estimated 2.49 miles of trail projects. Near-Term projects would begin development in Calendar Year 2016. During the Mid-Term phase (5-10 years), an additional 4.31 miles of trail projects would be developed, and the Long-Term (10-15 years) phase envisions that the remaining 5.25 miles of trail projects would be implemented.

How Much Will It Cost to Develop the Plan

Near-Term trail projects are estimated to cost somewhere between $1.1 - $1.7 million to fully develop. The projects included in the Near-Term phase include the Elliott Street Trail North and the 9th Street Trail. Each of these projects will require a more detailed corridor alignment/design development study to determine the availability of land, location of trail facilities, and the public and financial resources that are available to support project development. These conceptual planning studies can and should begin right away, beginning in 2016 with the highest priority project corridors.

A generalized unit cost estimate for the development of each corridor is provided in Chapter Seven. Chapter Six lists sources of funding that have been used locally, throughout the State of Oklahoma, and nationally, to build and maintain bicycle/pedestrian corridor projects.

Trails Cost

The following cost estimates for trail facilities are general in nature and based on State of Oklahoma averages for multi-use trails constructed over the last five years. More detailed cost estimates should be prepared as site specific plans are developed for each corridor.

Since a detailed evaluation of the recommended trails has not been performed by the consultant team, a detailed evaluation of each corridor must be completed prior to designating the corridor. A detailed evaluation might indicate the need for utility relocation, easement agreements, purchase of land, difficult grading challenges, bridges, drainage culverts, or large amounts of selective clearing.

Near Term Trails Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
1	1	Elliott Street Trail North	1.51	$ 581,510.42	$ 830,729.17
2	2	9th Street Trail	0.98	$ 343,437.50	$ 490,625.00
		TOTAL NEAR TERM CORRIDORS	**2.49**	**$ 924,947.92**	**$ 1,321,354.17**

Mid Term Trails Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
3	6	Pryor Creek West City Trail	0.76	$ 331,853.69	$ 474,076.70
4	3	Highway 20 East City Trail	3.55	$ 1,243,825.76	$ 1,776,893.94
		TOTAL MID TERM CORRIDORS	**4.31**	**$ 1,575,679.45**	**$ 2,250,970.64**

Long Term Trails Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
5	4	US 69 South City Trail	3.43	$ 1,922,560.61	$ 2,746,515.15
6	5	US 69 North City Trail	1.82	$ 826,410.98	$ 1,180,587.12
		TOTAL LONG TERM CORRIDORS	**5.25**	**$ 2,748,971.59**	**$ 3,927,102.27**

All costs based on 2015 dollars.

What's the Next Step in the Process

This master plan will be reviewed and approved by the Pryor Creek City Council. Once it becomes an official component of the Comprehensive Plans, the projects that are defined herein will be eligible for development. The City of Pryor Creek encourages local governments, private businesses and residents to become partners in the development of the Pryor Creek Bicycle/Pedestrian System.

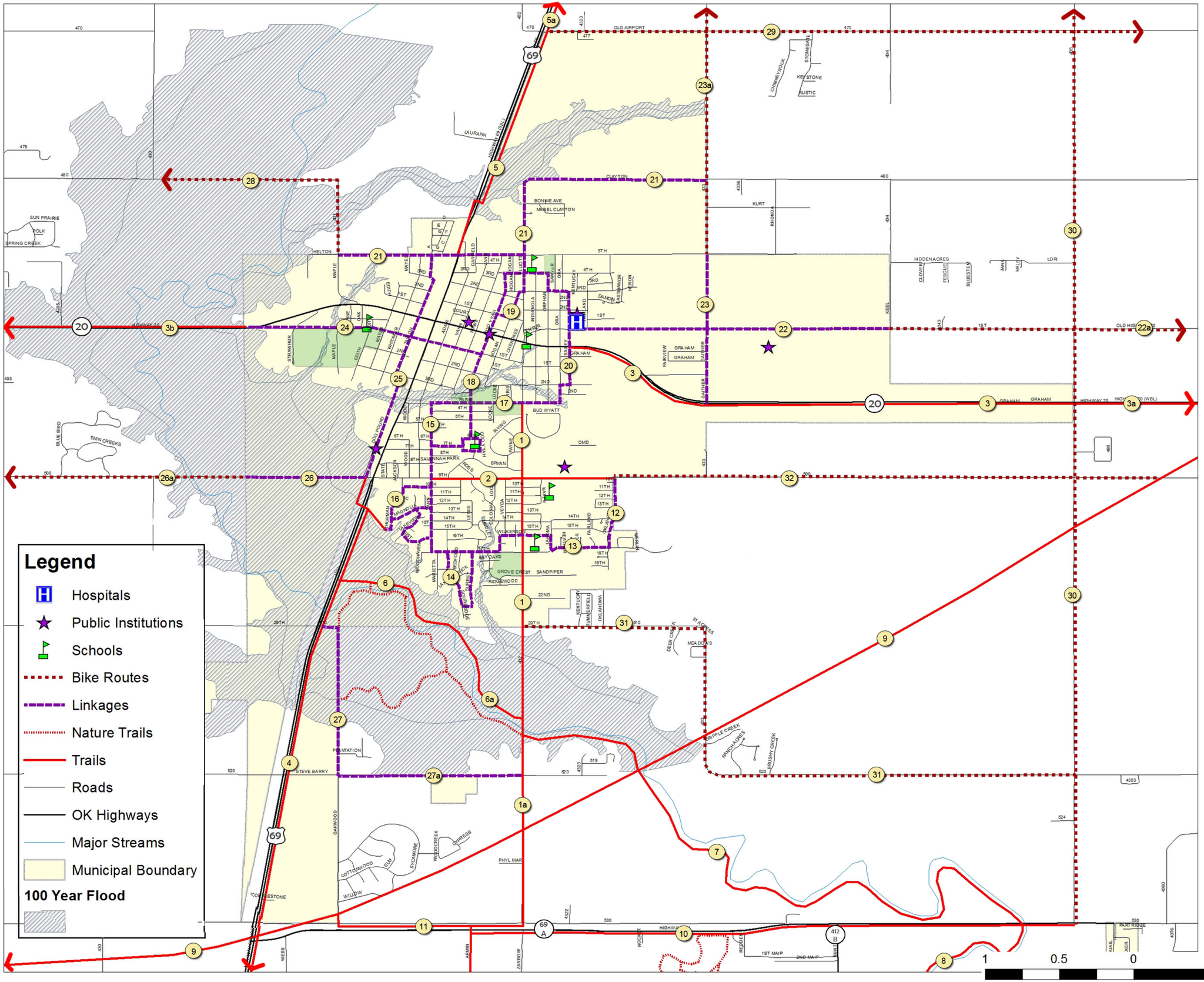
You can show your support for this plan by encouraging the implementation of specific segments. For further information on how you can become involved, you can contact the City of Pryor Creek City Hall, your local public officials, running club, walking club, or cycling club.

Pryor Creek Bicycle / Pedestrian Master Plan

City of Pryor Creek, Oklahoma
October 2015

Route Plan

1	Elliott Street Trail North	Trail	Pryor Creek
1a	Elliott Road Trail South	Trail	Mayes Co.
2	9th Street Trail	Trail	Pryor Creek
3	Highway 20 East City Trail	Trail	Pryor Creek
3a	Highway 20 East County Trail	Trail	Mayes Co.
3b	Highway 20 West	Trail	Mayes Co.
4	US 69 South City Trail	Trail	Pryor Creek
4a	US 69 South County Trail	Trail	Mayes Co.
5	US 69 North City Trail	Trail	Pryor Creek
5a	US 69 North County Trail	Trail	Mayes Co.
6	Pryor Creek West City Trail	Trail	Pryor Creek
6a	Pryor Creek West County Trail	Trail	Mayes Co.
7	Pryor Creek East Trail	Trail	Mayes Co.
8	Pryor Creek South Trail	Trail	Mayes Co.
9	Waterline Trail	Trail	Mayes Co.
10	Highway 69A Trail	Trail	Mayes Co.
11	Highway 68A Spur	Trail	Mayes Co.
12	Oklahoma Street Linkage	Linkage	Pryor Creek
13	17th Street Linkage	Linkage	Pryor Creek
14	Surrey Linkage	Linkage	Pryor Creek
15	Vann Linkage	Linkage	Pryor Creek
16	Thurman Linkage	Linkage	Pryor Creek
17	Park Street Linkage	Linkage	Pryor Creek
18	Coo Y Yah Linkage	Linkage	Pryor Creek
19	Hogan Linkage	Linkage	Pryor Creek
20	Bailey Linkage	Linkage	Pryor Creek
21	Clayton/5th Linkage	Linkage	Pryor Creek
22	Old Highway 20 City Linkage	Linkage	Pryor Creek
22a	Old Highway 20 Bike Route	Bike Route	Mayes Co.
23	Gaither Linkage	Linkage	Pryor Creek
23a	Gaither Bike Route	Bike Route	Mayes Co.
24	1st Street Linkage	Linkage	Pryor Creek
25	Dog Pound/Taylor Linkage	Linkage	Pryor Creek
26	West 9th Street Linkage	Linkage	Pryor Creek
26a	East 500 Rd Bike Route	Bike Route	Mayes Co.
27	Oakwood Linkage	Linkage	Pryor Creek
27a	Barry Linkage	Linkage	Mayes Co.
28	Maple Bike Route	Bike Route	Mayes Co.
29	Old Airport Road Bike Route	Bike Route	Mayes Co.
30	True/Carbide Bike Route	Bike Route	Mayes Co.
31	29th/East 530 Bike Route	Bike Route	Mayes Co.
32	East 9th Street Bike Route	Bike Route	Mayes Co.



Map 1

LANDPLAN CONSULTANTS INCORPORATED

Pryor Creek Bicycle / Pedestrian Master Plan

City of Pryor Creek, Oklahoma
October 2015

Phase Plan

1	Elliott Street Trail North	Trail	Pryor Creek
1a	Elliott Road Trail South	Trail	Mayes Co.
2	9th Street Trail	Trail	Pryor Creek
3	Highway 20 East City Trail	Trail	Pryor Creek
3a	Highway 20 East County Trail	Trail	Mayes Co.
3b	Highway 20 West	Trail	Mayes Co.
4	US 69 South City Trail	Trail	Pryor Creek
4a	US 69 South County Trail	Trail	Mayes Co.
5	US 69 North City Trail	Trail	Pryor Creek
5a	US 69 North County Trail	Trail	Mayes Co.
6	Pryor Creek West City Trail	Trail	Pryor Creek
6a	Pryor Creek West County Trail	Trail	Mayes Co.
7	Pryor Creek East Trail	Trail	Mayes Co.
8	Pryor Creek South Trail	Trail	Mayes Co.
9	Waterline Trail	Trail	Mayes Co.
10	Highway 69A Trail	Trail	Mayes Co.
11	Highway 68A Spur	Trail	Mayes Co.
12	Oklahoma Street Linkage	Linkage	Pryor Creek
13	17th Street Linkage	Linkage	Pryor Creek
14	Surrey Linkage	Linkage	Pryor Creek
15	Vann Linkage	Linkage	Pryor Creek
16	Thurman Linkage	Linkage	Pryor Creek
17	Park Street Linkage	Linkage	Pryor Creek
18	Coo Y Yah Linkage	Linkage	Pryor Creek
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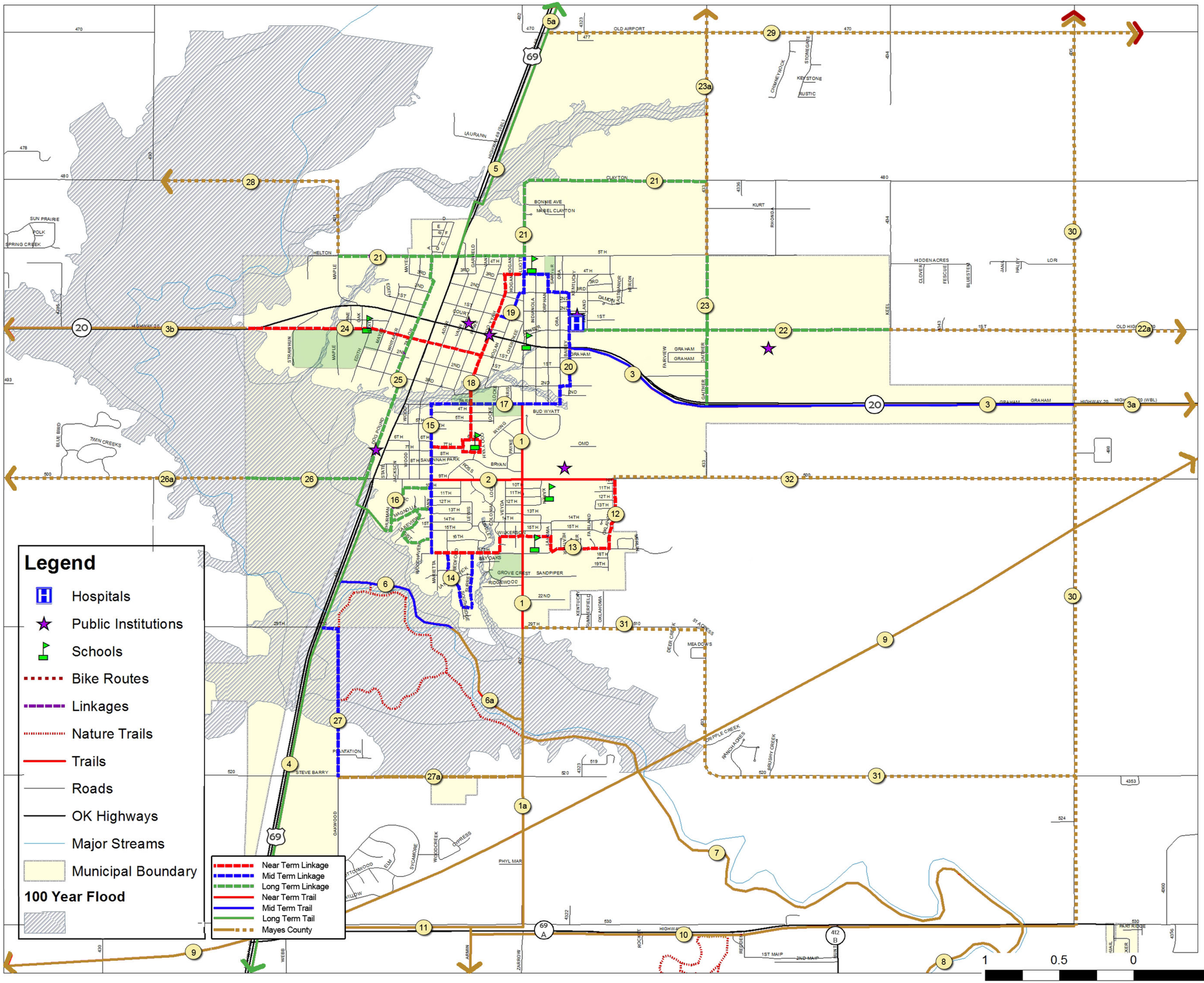
32	East 9th Street Bike Route	Bike Route	Mayes Co.



Map 2

LANDPLAN CONSULTANTS INCORPORATED

Chapter 1

Bicycle/Pedestrian Master Plan

The Benefits of Bicycle/Pedestrian Systems

Introduction

A multi-objective Bicycle/Pedestrian System for Pryor Creek can address and resolve many community issues that affect the future environmental and economic health of the area. Trails and bikeways have been implemented by other communities to provide recreation, alternative transportation, control flooding, improve water quality, protect wetlands, conserve habitat for wildlife, and buffer adjacent land uses. Greenways typically incorporate varying types and intensities of human use, including trails for recreation and alternative transportation. Trails have also been shown to increase the value of adjacent private properties as an amenity to residential and commercial developments. These and other benefits of a Pryor Creek Bicycle/Pedestrian System are described in the following text.

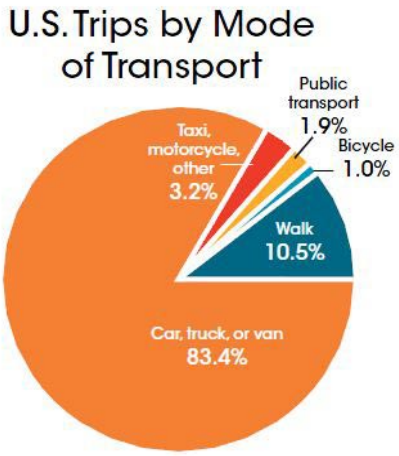
Transportation Benefits; Reduced Emissions & Energy Conservation

Bicycling and walking can take the place of automobile trips to work as well as other destinations such as ATMs.

In past years, most American communities have grown in a sprawling, suburban form as a result of dependence upon the automobile as the sole means of transportation. Americans have abandoned some traditional forms of transportation (such as passenger train service), and have been slow to improve other forms of transportation (bicycle and pedestrian networks, bus systems, local train service). In order to provide relief from congested streets and highways in Pryor Creek and air quality problems associated with congestion, future transportation planning and development should focus on providing an alternate choice in the mode of travel to local residents. These mode choices should offer the same benefits and appeal currently offered by the automobile: efficiency, safety, comfort, reliability and flexibility.

Today, there is a lot of focus on the impact we have on the environment. Cars are a major source of the pollution that is contributing to the environmental problems we have today. Especially in large cities, the number of cars driven by people commuting to work every day have a huge environmental impact. Most people in the United States use their cars to make even short trips of a mile or less, causing major pollution damage. Motor vehicle emissions represent 31

percent of total carbon dioxide, 81 percent of carbon monoxide, and 49 percent of nitrogen oxides released in the U.S. "The Green Commuter, a publication of the Clean Air Council".



Source: NHTS 2009 (Graph above) and ACS 2007-2009 (ranking to right) **Notes:** (ranking to right) This ranking is based on the share of commuters who bicycle and walk to work in cities. The city with the greatest percent of commuters who bicycle or walk is ranked #1. The 51st position is the city with the least percentage of people who commute by bicycle or foot. View this data on pages 45 and 47 of this report. (1) For details and reliability of state and city level NHTS estimates, please see Appendix 3, page 202.

Oil, coal, and natural gas are collectively known as fossil fuels. These fuels are non-renewable resources within the Earth's crust that are being depleted faster than the millions of years that take them to form. There are a number of problems associated with fossil fuels, most of which stem from the by-products created when they are burned to create energy. Chief among those by-products are carbon dioxide and nitrous oxide, greenhouse gases that are major contributors to global warming. Largely because of coal and petroleum combustion, the amount of carbon dioxide and nitrous oxide in the air today are thirty-five percent and eighteen percent higher, respectively, than they were before the industrial era. The estimated levels of remaining reserves of crude oil, if continued to be depleted at the current rate, are expected to last about 43 more years. Transportation of all types that are dependent on oil, account for more than 25 percent of the world's commercial energy use and motor vehicles account for nearly 80 percent of that. 60 percent of the pollution created by automobile emissions happens in the first few minutes of operation, before pollution control devices can work effectively. According to the Nationwide Personal Transportation Survey, 25 percent of all trips are made within a mile of the home, 40 percent of all trips are within two miles of the home, and 50 percent of the working population commutes five miles or less to work. Yet more than 82 percent of trips five miles or less are made by personal motor vehicle. Since "cold starts" create high levels of emissions, shorter car trips are more polluting on a per-mile basis than longer trips. A short, four-mile round trip by bicycle keeps about 15 pounds of pollutants out of the air we breathe (WorldWatch Institute).

Commuting to work using a bike or on foot has become very popular among young, hip, environmentally minded adults. It's popularity is growing among other adults as well due to the health benefits. Commuting to work and completing errands by bike or foot can seriously reduce the amount of pollution that is damaging the environment. Commuting to work by bike or foot and using a bike or walking to run errands and shop reduces pollution, reduces oil and gas use which has environmental benefits and can also save money.

Multi-use trail corridors throughout Pryor Creek can serve as extensions of the roadway network, offering realistic and viable connections between origins and destinations such as offices, universities, schools, libraries, parks, shopping areas, and tourist attractions. Off-road trail facilities are most effective for certain travel distances. National surveys by the Federal Highway Administration have shown that Americans are willing to walk as far as two miles to a destination, and bike as far as five miles. It is easily conceivable that destinations can be linked to multiple origins throughout the region through a system of off-road trails.

Cycling and walking are viable alternatives to the use of private cars or public transport, and are completely emission free forms of getting from 'A' to 'B'. They are as of yet the only readily available modes of transport that produce absolutely no emissions other than, arguably, biodiesel. Additionally, when you consider the very low cost of walking and cycling and the health benefits, there really is every incentive for the environmentally aware individual to maximize the use of both in their everyday routine.

Air Quality Benefits

Ozone Alert for Tulsa County July 15, 1998

Bicycle/pedestrian facilities utilized as alternative transportation corridors could serve to reduce traffic congestion helping to improve local air quality. Since the majority of automobile trips are less than two miles in length, offering viable alternative transportation choices through trails would encourage people to bicycle and walk more often, especially on short trips, thereby reducing traffic congestion and automobile emissions. Although Pryor Creek is able to meet air quality standards at present, the region could have problems with high ozone levels at some point in the future. The development of alternative transportation facilities will help ensure the continuation of "attainment" status by improving air quality.

Health & Recreation Benefits

Bicycle/pedestrian facilities provide a place for family outings as well as personal fitness training.

Bicycle/pedestrian facilities encourage more people to walk or bike to short distance destinations, which improves the health of residents. Studies have shown that as little as 30 minutes a day of moderate intensity exercise (such as bicycling, walking, in-line skating or cross-country skiing) can significantly improve a person's mental and physical health and prevent certain diseases. Providing opportunities for participation in these outdoor activities, close to where people live and work, is an important component of promoting healthy life styles for residents of Pryor Creek.

The President's Commission on Americans Outdoors released a report that profiled the modern pursuit of leisure and defined the current quality of life for many Americans. Limited access to outdoor resources was cited as a growing problem throughout the nation. The Commission recommended that a national system of greenways could provide all Americans with access to open space resources.

Economic Benefits

Bicycle/pedestrian facilities often serve to increase property values for adjacent land owners.

Bicycle/pedestrian facilities offer numerous economic benefits to Pryor Creek, including higher property values, increased tourism and recreation related revenues, and cost savings for public services. Trails have been shown to raise the value of immediately adjacent properties by as much as 5 to 20 percent. Many home buyers and corporations are seeking real estate that provides direct access to public and private trail systems. Trails are viewed as amenities by residential, commercial and office park developers who in turn are realizing higher rental values and profits. Additionally, greenways in the Pryor Creek area can also save local tax dollars by utilizing resource-based strategies for managing community storm water and hazard mitigation, thus placing into productive use landscapes that would not normally be developable in a conventional manner.

The development of bicycle/pedestrian facilities could work to enhance the tourism industry in Pryor Creek. Tourism is currently ranked as the number one economic force in the world. In several states, regional areas, and localities throughout the nation, greenways have been created to capture the tourism potential of a regional landscape or cultural destination. The State of Missouri, for example, spent $6 million to create the 200-mile Katy Trail, which, in its first full year of operation, generated travel and tourism expenditures of more than $6 million.

Bicycling and walking projects create 11-14 jobs per $1 million spent, compared to just 7 jobs created per $1 million spent on highway projects. Cost benefit analyses show that up to $11.80 in benefits can be gained for every $1 invested in bicycling and walking.

Water Quality and Benefits

Trails corridors, by protecting linear open space, can improve water quality and reduce the impacts of flooding down stream.

Greenway trail corridors often preserve wooded open spaces along creeks and streams which absorb flood waters and filter pollutants from storm water. Flooding has historically been a problem in many parts of Pryor Creek. In some instances, buildings and other land uses have encroached into flood prone areas. By designating floodplains as greenways, these encroachments can be better managed, and in some cases, replaced with linear open space that serves as an amenity to local residents and businesses whose property lies adjacent to the greenway, as well as providing important flood water storage capacity.

As a flood control measure, greenway corridors serve as primary storage zones during periods of heavy rainfall. The protected floodplain can also be used during non-flood periods for other activities, including recreation and alternative transportation. In conjunction with existing storm water management policies and programs implemented in the area, greenway lands can be established as development occurs.

Greenway trail corridors also serve to improve the surface water quality of local rivers and creeks. The floodplain forests and wetlands contained within greenway corridors filter pollutants from storm water. These pollutants are not removed if storm water is collected in pipes and discharged directly into local streams and rivers. Improving surface water quality in streams not only benefits local residents, but also numerous forms of wildlife that depend on streams for their habitat.

Plant and Animal Benefits

Greenway trail corridors can protect important plant and animal habitat.

Greenway trail corridors can serve as viable habitat for many species of plants and wildlife. Trail corridors can provide essential food sources and, most importantly, access to water that is required by all wildlife. Additionally, greenway trail corridors in Pryor Creek could become primary migratory corridors for terrestrial wildlife, serving to help maintain the integrity of many plant and animal gene pools. Some wildlife biologists have extolled greenways as future “gene-ways” and determined that migration routes are essential to maintaining healthy wildlife populations. Greenways can also serve as “gene-ways” for plant species, which migrate with changes in climate and habitat. These “gene-ways” often follow river and stream corridors that have long served as transportation routes for animals and humans. Greenways in Pryor Creek can be targeted as a primary habitat for many species of plants and animals. Programs can be established to not only protect the valuable existing forested and wetland areas of the area, but also to reclaim and restore streams to support higher quality habitat.

Quality of Life Benefits

Bicycle/Pedestrian facilities can serve as community gathering places for organized events.

Communities with bicycle/pedestrian facilities and high levels of walking and bicycling are rated as some of the best places to live in America. Residents enjoy an increased quality of life defined by a greener, safer, and more interactive community. Successful trail projects across the United States have served as new "main streets," where neighbors meet, children play, and community groups gather to celebrate. For cities and towns large and small, these bicycle/pedestrian facilities have become a cultural asset and focal point for community activities. Some communities sponsor "trail days" to celebrate the outdoors and local traditions. Various walking and running events are also held on trails to support charity or extend traditional sporting events. Additionally, many civic groups adopt segments of bicycle/pedestrian facilities for cleanup, litter removal and environmental awareness programs.

Safety Benefits

Populated facilities are safe.

Many Americans are concerned with crime. Some of the most successful deterrents to criminal activity have involved increased neighborhood awareness by citizens and participation in community watch programs. Bicycle/pedestrian facilities have proven to be an effective tool to encourage local residents to participate in neighborhood watch programs. Some bicycle/pedestrian facilities have even been developed as part of efforts to deter criminal activity in a neighborhood. Crime statistics and reports from law enforcement officials have shown that parks and greenway trails are typically land uses with the lowest incident of reported criminal activity. As a recreation resource, alternative transportation corridor, or area where fitness activities can take place, most bicycle/pedestrian facilities provide a much safer and more user-friendly resource than other linear corridors, such as local roads. Trails typically attract local residents, who use the facility frequently, creating an environment that is virtually self-policing.

Education Benefits

Trails can serve as classrooms for children of all ages.

Trails could enhance and protect many of the natural and cultural resources in Pryor Creek. Interpretive displays and outdoor classrooms along trails can provide information to people of all ages on such topics as hydrology, history, ecology and the use of recycled materials. These educational elements of trails will serve to increase awareness and appreciation of important local resources. Opportunities exist for local schools to educate students about the natural environment along greenway trail corridors.

Chapter 2

Bicycle/Pedestrian Master Plan

Evaluation of Existing Conditions

Introduction

This chapter of the Bicycle/Pedestrian Master Plan inventories and evaluates the environmental features, cultural features, and attractions of the City of Pryor Creek. This evaluation will serve as a basis for developing a system of trails and bikeways that meet the recreation, transportation, and economic needs of the local residents. By evaluating the existing conditions, corridors and destinations can be defined and later preserved through future city planning policies.

Description of the Study Area

Pryor Creek is located in Mayes County and is comprised of an area of approximately 6.5 square miles. Located 50 miles east of Tulsa, Pryor Creek enjoys the conveniences of a large city as well as the amenities of a smaller community.

As of 2010, Pryor Creek has grown to include a total population of approximately 9,539 people. Like most areas, dependence on the automobile for transportation has influenced growth trends and patterns. Strip shopping centers, fast food restaurants, and other automobile oriented land uses have emerged along the main thoroughfares. Opportunities for choosing a mode of transportation other than the automobile have decreased due to longer distances between origins and destinations, a lack of facilities that support alternative modes of transportation, and barriers to walking and biking such as wide arterial roadways and highways.

Pryor Creek has already begun to lose open space and the rural character that defines portions of the city. The Pryor Creek Bicycle/Pedestrian Master Plan will examine ways to preserve corridors of land that provide outdoor recreational resources and transportation alternatives close to where people live and work. These corridors can link neighborhoods to the larger environmental outdoor resources as well as to primary everyday destinations.

Pryor Creek's most identifiable environmental features include Pryor Creek, the Neosho River, Lake Hudson and the inclusion of all their floodplains. These waterways and floodplains naturally preserve green space within Pryor Creek due to restricted development (see Regulatory Floodplain Map 5). Although rivers and creeks generally create barriers for bicycle and pedestrian travel, these features alone often preserve many acres of potential locations for bicycle and pedestrian trails. Pryor's relatively mild winters and warm summers make most of these areas potentially accessible year round.

The terrain within the Pryor Creek City Limits is moderate to hilly with an average elevation of 630 feet. The lowest elevations are found along the 100 year flood plain located throughout the Pryor Creek City Limits.

Large scale man-made features that cross Pryor Creek's landscape include railroads and highways. The Union Pacific Railroad running north and south through Pryor Creek is located adjacent to U.S. Highway 69. In the center of town, running north south, Highway 69 intersects highway 20. Due to the large amount of City within the 100 year flood plain, the city tends to develop along these two highways spreading further away from the central portion of Pryor Creek to the north and east.

Existing Attractions

The following are public and private origins and destinations that are most likely to attract people who might choose to walk or ride a bicycle to accomplish a task. These destinations, or attractions, are divided into several categories.

Lakes and Rivers

Pryor Creek has the benefit of close proximity to one of Oklahoma's most scenic local lakes, Lake Hudson. This scenic spot is a favorite among boaters, there is also plenty of fishing, camping, and hiking spots. Several other large lakes in the area include Spavinaw Lake, Oologah Lake, and Grand Lake. Grand Lake is one of Oklahoma's top recreational lakes.

Lake Hudson

Downtown

Pryor Creek's downtown area is located along Highway 69 and serves as an attraction that provides tourists as well as the community many unique places to shop. At the intersection of Highway 20 and Highway 69, the downtown area continues east for several blocks before transitioning into residential areas.

Urban Activity Corridors

Pryor Creek has a couple of urban activity corridors within its boundary. An example of this type of corridor is along highway 69 and highway 20 in the center of downtown. Along these corridors reside a variety of restaurants, retail centers, and strip business centers. Heading north and south along Elliott Street, there is another corridor featuring restaurants, health care, schools, parks, and community facilities. Urban activity corridors generally do not accommodate walking or bicycling due to the high speed, heavy automobile traffic and lack of sidewalks. However, these corridors provide a majority of desired goods and services to both residents and tourists. Therefore, off-road pedestrian/bicycle routes are needed as one solution to accessing these corridors in a safe manner.

Downtown Pryor Allred 5 Theater

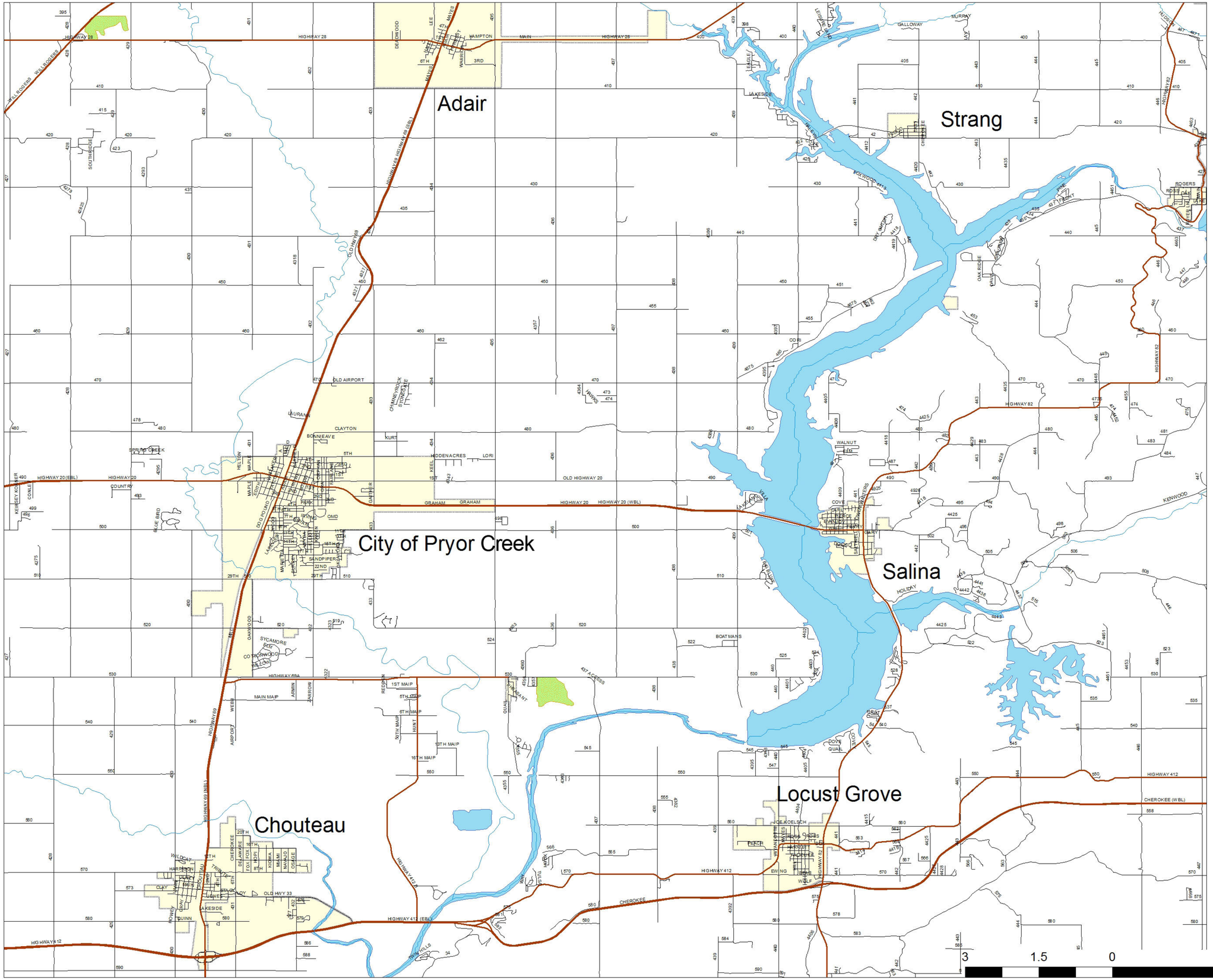
Residential Neighborhoods

The majority of residential neighborhoods within Pryor Creek appear to be located east of highway 69. The southern portion of town appears to be newer and has a slightly higher density of residents. Located on the southern side of town, several apartment complexes house dense groups of Pryor Creek's residents.

Pryor Creek Bicycle / Pedestrian Master Plan

Prepared for City of Pryor Creek
May 2015

Location Map



Legend

- Roads
- OK Highways
- Major Streams
- Lakes
- Municipal Boundary
- Golf Course

Map 3

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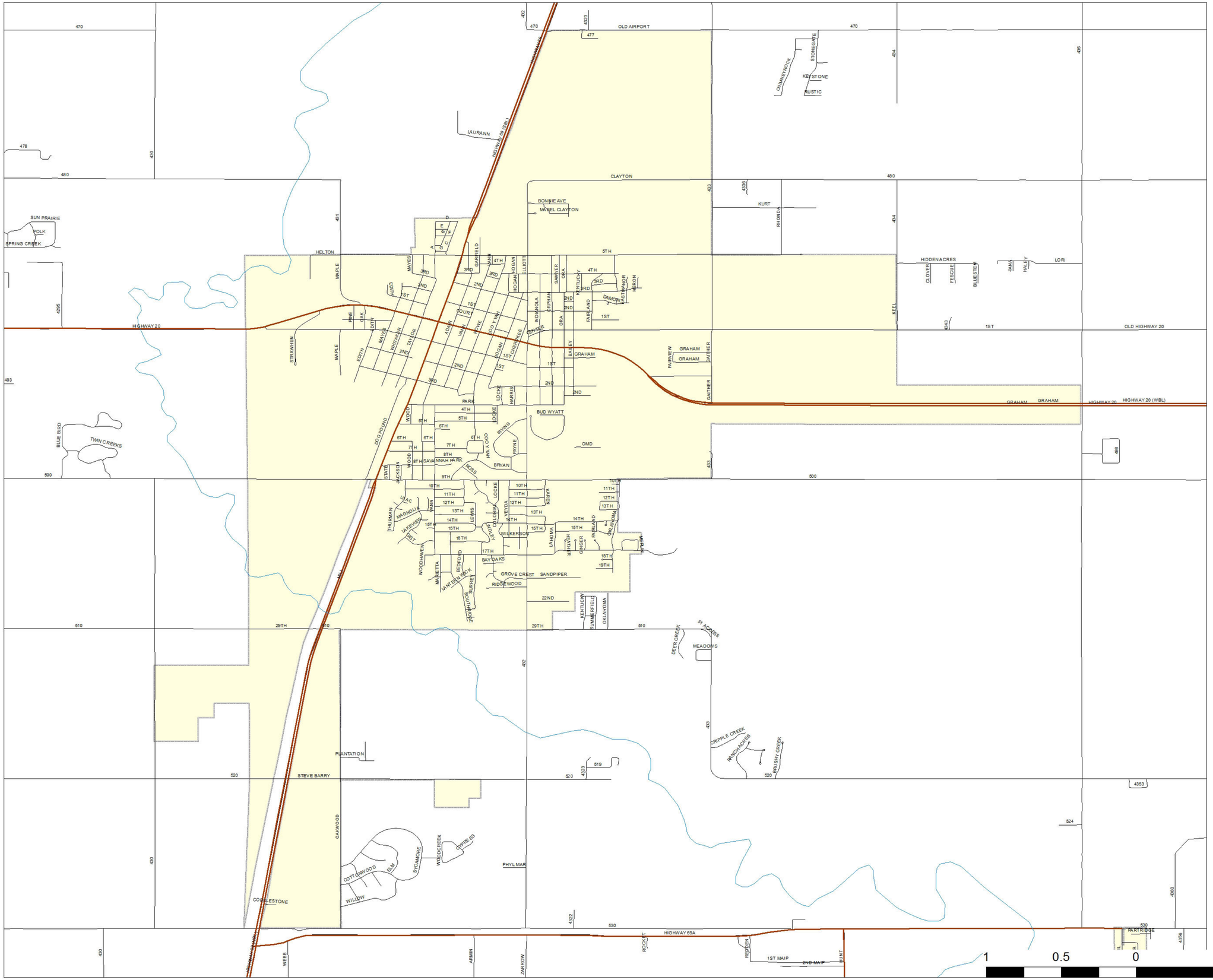
Pryor Creek Bicycle / Pedestrian Master Plan

Prepared for City of Pryor Creek
May 2015

Existing Conditions Map



Legend

- Roads
- OK Highways
- Major Streams
- Municipal Boundary

1 0.5 0 1 Miles

Map 4

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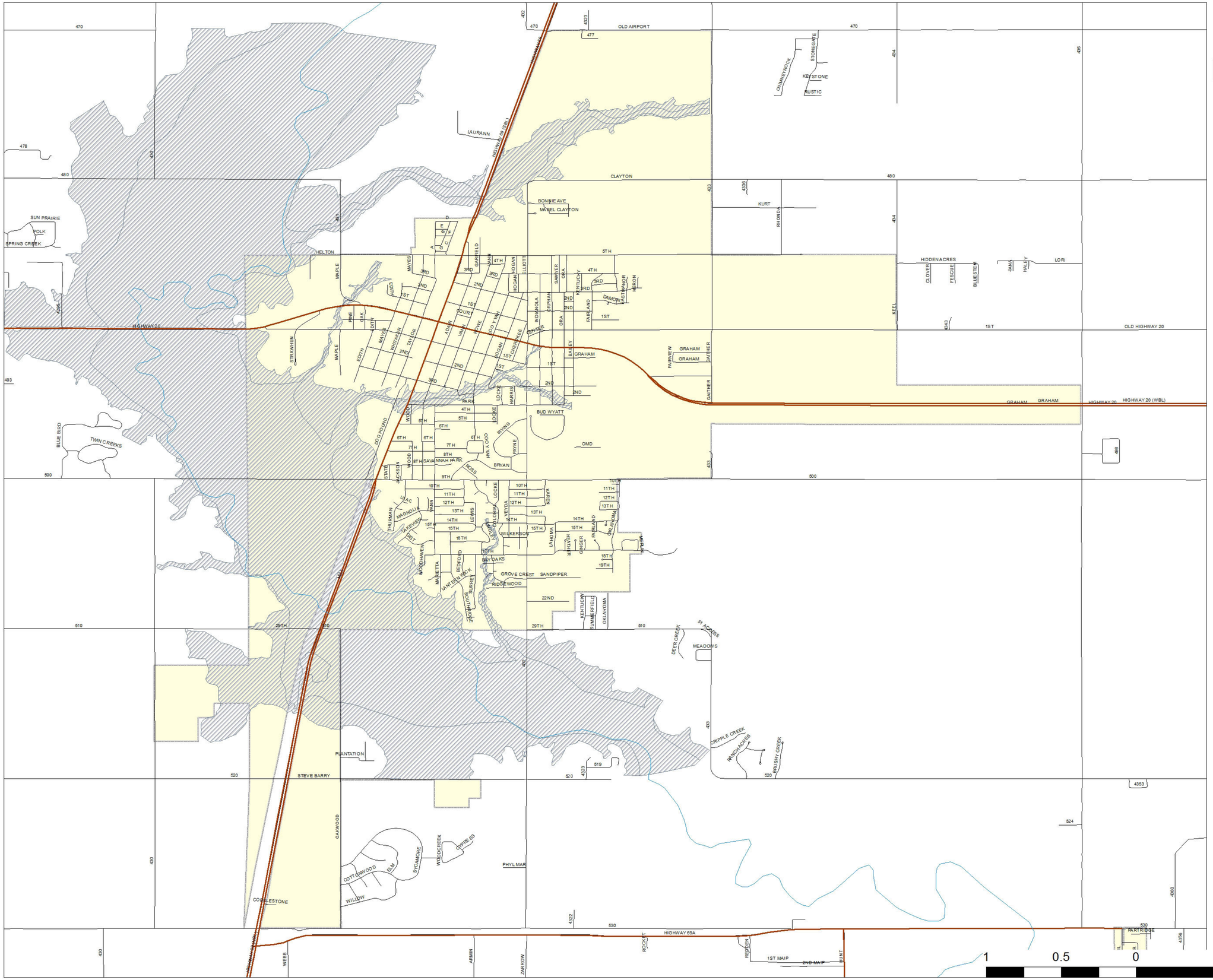
Pryor Creek Bicycle / Pedestrian Master Plan

Prepared for City of Pryor Creek
May 2015

Regulatory Flood Plain Map



Legend

- Roads
- OK Highways
- Major Streams
- Municipal Boundary

100 Year Flood

1 0.5 0 1 Miles

Map 5

LANDPLAN CONSULTANTS INCORPORATED

In order for a trail system to best serve the people of Pryor Creek, access to and from residential neighborhoods must be provided. This can be accomplished by providing off-road trails through and between neighborhoods winding along creeks and public right-of-ways. Older residential neighborhoods and historic neighborhoods can serve as destinations to many tourists as well as citizens.

Whitaker Park

Community/Neighborhood Parks

Local parks typically serve as primary destinations for many residents in Pryor Creek although pedestrian and bicycle access to these areas is generally limited to sidewalks or not available at all (see Origins and Destinations Map 7). The following is a list of parks within or near Pryor Creek. Any of these parks would be greatly enhanced by providing pedestrian/bicycle trails and sidewalks to connect and possibly wind through the park:

Bobby Buck Park

Whitaker Park

Centennial Park

Pryor Sports Complex

Rogers State University

Schools, Colleges, and Vocational Schools

Schools serve as primary destinations for a large portion of Pryor Creek's population, from children to adults. A pedestrian/bicycle trail or route could create a safer environment for children and adults who wish to walk or bike to the following schools:

Pryor Junior-Senior High School

Pryor Junior High School

Pryor Elementary School

Osage Elementary School

Lincoln School

William Bradford Christian School

Pryor High School

Jefferson Elementary School

OSU-Okmulgee Branch

Rogers State University

Thomas J. Harrison Pryor Public Library

Other Public/Private Facilities, Special Use Areas and Attractions

There are many public facilities and special use areas in Pryor Creek. They are scattered throughout the area and are currently accessed primarily by automobile. Making connections to the pedestrian system will provide residents and tourists with an alternative way of accessing the following facilities:

Public Facilities

Mayes County Child Support	Mayes County Clerk
Mayes County Commissioners	Mayes County DHS
Mayes County Election Board	Mayes County OSU Extension
Thomas J. Harrison Pryor Public Library	Mayes County Solid Waste
Pryor Creek Administration	Pryor Creek Animal Control Office
Pryor Creek City Clerk	Pryor Creek City Hall
Pryor Creek Cemetery Department	Pryor Creek Fire Department
Pryor Creek Human Resources	Pryor Creek Recreation Center

Pryor Creek Recreation Center

Special Use Areas and Attractions

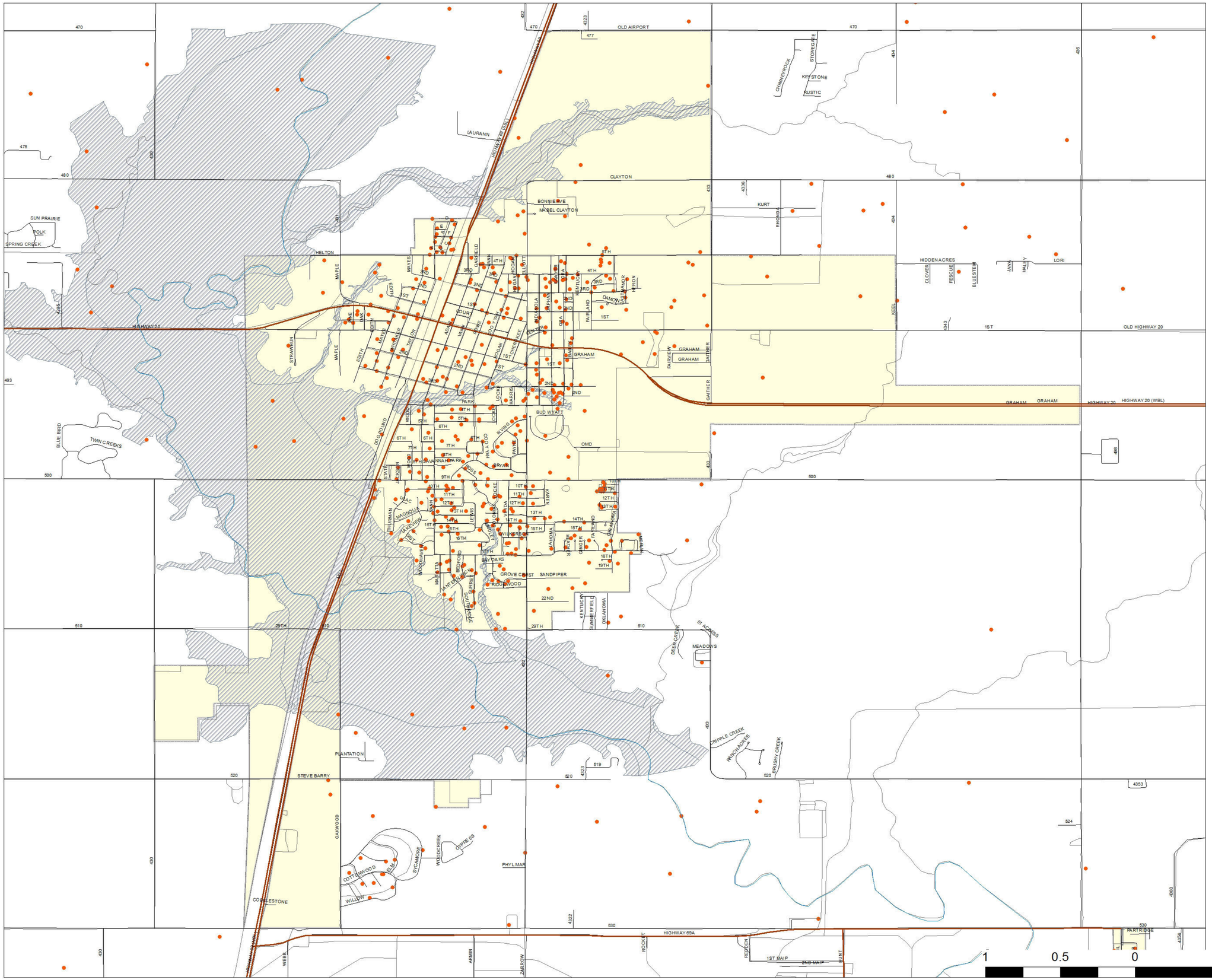
Coo-Y-Yah Museum	Rabbit Gallery
Pryor Creek Recreation Center	Moore Farms Rustic Weddings
Catch the Fever Music	Katy Railroad Depot
Pryor Creek Golf Course	Lake Hudson

Coo-Y-Yah Museum

Pryor Creek Bicycle / Pedestrian Master Plan

Prepared for City of Pryor Creek
May 2015

Population Dot Density Map



Legend

- Roads
- OK Highways
- Major Streams

Census Data

- 1 Dot = 20 People
- Municipal Boundary

100 Year Flood

Map 6

LANDPLAN CONSULTANTS INCORPORATED

Mill Creek Shopping Center

Shopping Centers/Facilities

Shopping centers in Pryor Creek are generally oriented towards the automobile. Large parking lots with little or no space for walking or for storing a bike deter walking or bicycling. These places serve as major destinations for many people. Providing pedestrian/bicycle facilities might encourage the customer who would like to walk or bike to a shopping center. Pryor's main shopping centers are located on Highway 69 just south of Highway 20 and east and west along Highway 20. Several of Pryor's retail/restaurants are listed below:

Goldie's Patio Grill
Mill Street Market
Wallgreens
Maurices
Cherry Berry
Burger King
Empire Buffet
KLA Mart Warehouse
Bill & Ruth's
O'Reilly Auto Parts
Arvest Bank
Pryor Creek Conoco
Palmers Glass
Pryor Creek Lumber
Taco Bell
Hibbert Sports
Stage
Dollar Tree
Pizza Hut
Sonic
Allred 5 Theater
McDonalds
Arbys
El Humilde Mexican
Charlie's Chicken
Maggie's Mexican Kitchen
Mike's Tire & Car Care

Alliance Health Hospital

Hospitals and Medical Centers

Many hospitals and medical centers often provide little or no pedestrian/bicycle access to the facilities. Medical workers and patients could benefit from the development of off-road facilities for exercise and transportation to the Alliance Health Hospital.

Mid America Industrial Park

Major Employers

Employee offices and plants serve as destinations everyday to Pryor Creek's residents. A pedestrian/bicycle trail or route could allow employees to walk or ride to work, which would improve their health and the air quality. Employers could provide bicycle parking and shower facilities to encourage pedestrian and bicycle commuting. Employers would in turn benefit from a more alert and healthy work force. The following is a list of major employers within Pryor Creek:

GRDA	Google
Walmart	American Castings
Pryor Public Schools	Alliance Health Hospital
HEM Saw	Cabot
DuPont	Berry Plastics

Existing Transportation System

With the improvement and addition of existing and new roadways, the opportunity exists to include pedestrian facilities within the rights of way from the preliminary phase. By implementing them into the design and construction of the roadways, the bicycle/pedestrian facilities will become an integrated amenity rather than an after thought and may be constructed at a significantly lower cost.

Pipeline/Water Supply Corridors

Since access to pipelines and water supply corridors must be maintained at all times, the easements are typically not developable for general construction. However, if a public use easement could be obtained, these corridors might be used for bicycle/pedestrian facilities. The existing City of Tulsa water supply pipeline corridor is located south of the city limits and is wide enough to accommodate a trail.

City Owned Property

Pryor Creek owns approximately 250 acres of the land within the city's limits. Of that 250 acres, approximately 80 acres are within City parks. Some of this property could be used for recreational uses like trail heads which can provide parking, trail access points, and support facilities.

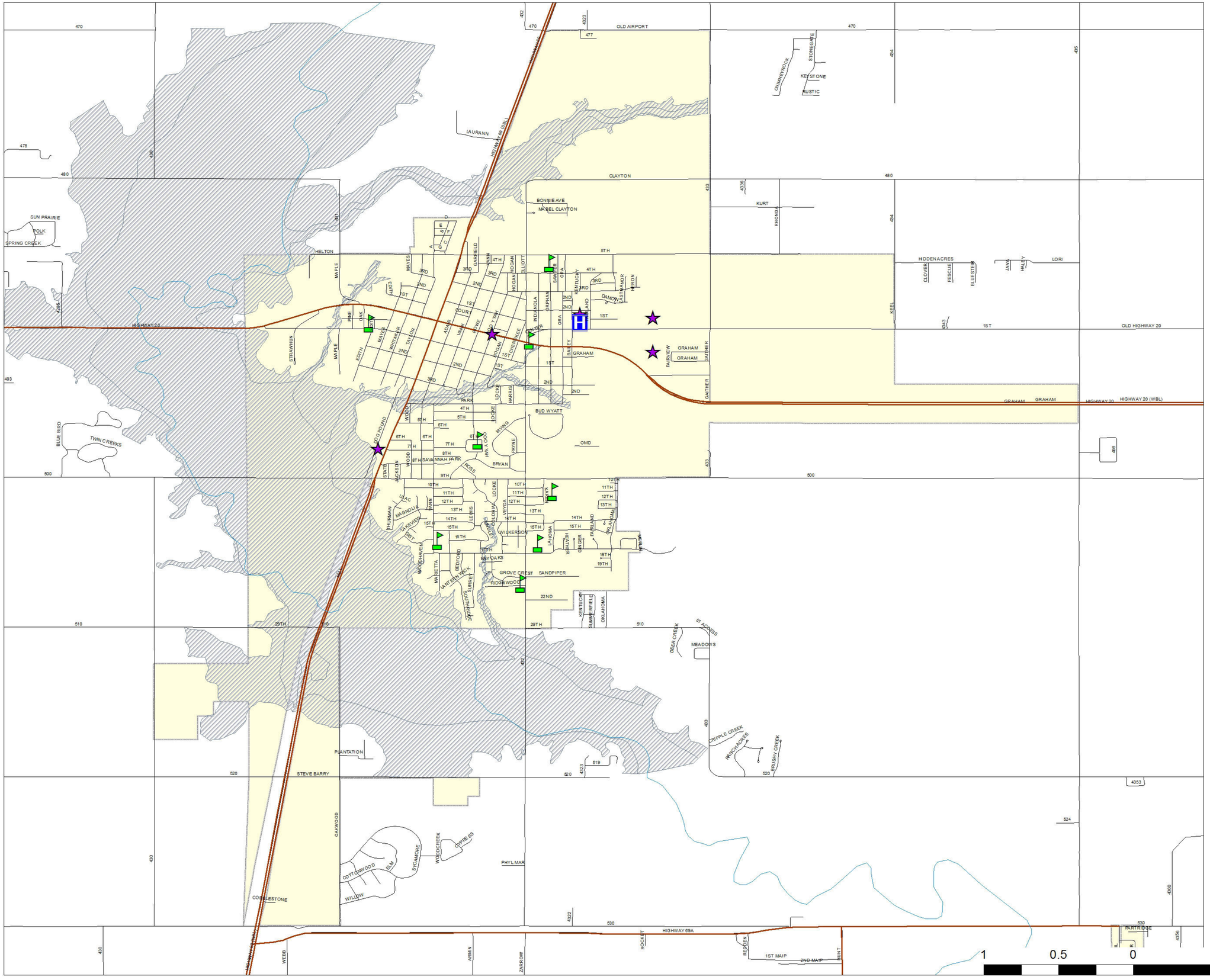
Existing Trails Facilities

Pryor Creek currently has existing pedestrian trails at Whitaker Park, Centennial Park, and Bobby Buck Park. There are no shared or multi-use trails available.

Pryor Creek Bicycle / Pedestrian Master Plan

Prepared for City of Pryor Creek
May 2015

Origins and Destinations Map



Legend

- Hospitals
- Public Institutions
- Schools
- Roads
- OK Highways
- Major Streets
- Municipal Boundary

100 Year Flood

1 0.5 0 1 Miles

Map 7

LANDPLAN CONSULTANTS INCORPORATED

Chapter 3

Bicycle/Pedestrian Master Plan

Vision, Goals and Objectives

Introduction

The following is the vision statement crafted for Pryor Creek as an overall guide to developing the proposed bicycle/pedestrian facilities system. Goals which support this vision, and a series of objectives that would be implemented to achieve each goal, are also presented. The vision, goals and objectives were publicly discussed and refined to reflect the needs and desires of local residents. This was accomplished through a public workshop which took place on May 7, 2015. Over a dozen local residents attended this meeting in Pryor Creek.

Vision

Pryor Creek's Bicycle/Pedestrian System will provide safe and convenient facilities for walkers, joggers, bicyclists, in-line skaters, and wheelchair users. The bicycle/pedestrian facilities will connect residential areas to significant outdoor recreation areas, lakes, and parks. The system will offer citizens an enhanced alternative to automobile travel, providing routes to popular destinations, including employment centers, retail establishments, tourist attractions, medical facilities, parks and schools. Since bicycle/pedestrian facilities promote nonpolluting forms of transportation, the system will improve air quality and reduce congestion in the area. Greenway trail corridors will also improve water quality and reduce the impacts of flooding by preserving floodplain lands and streamside buffers. The local economy will also benefit from bicycle/pedestrian facilities development through increased tourism revenues, property values and business attraction. In all, the Pryor Creek Bicycle/Pedestrian System will make the region a cleaner, greener and better place to live, work and play for generations to come.

Goals and Objectives

The following goals and objectives serve to support the vision statement. Goal categories are representative of the benefits outlined in the previous chapter. Goals are not listed in order of priority.

Workshop participants

Environment

Goal: Greenway trail corridors in Pryor Creek will enhance the local environment by improving air and water quality, conserving floodplain ecosystems, restoring riparian habitat and protecting wildlife habitat.

Objectives:

- Reduce vehicle emissions
- Improve the visual quality of the city through the planting of native trees and other indigenous plant materials such as wildflowers
- Improve air quality and reduce noise levels by promoting non-motorized forms of transportation
- Align trails to minimize the impact on the environment
- Promote the preservation establishment of greenbelt areas to reduce erosion and improve water quality
- Promote environmental awareness through the Adopt-A-Trail program
- Protect environmentally sensitive lands to support plant and animal habitat

Workshop participants watch presentation on the benefits of bicycle/pedestrian facilities

Transportation

Goal: Trail corridors will provide more opportunities for alternative transportation facilities for residents and visitors to the City of Pryor Creek.

Objectives:

- Utilize future and existing highway corridors for trail development
- Link neighborhoods, parks, businesses, lakes, schools, libraries, public attractions, the College and shopping centers within the city
- Provide access to public transportation
- Uses wide shoulders, share the road facilities, or marked bike lanes to provide needed linkages between bicycle/pedestrian facilities
- Provide connections between trails
- Provide bicycle parking at appropriate locations
- Provide ADA accessibility

Safety

Goal: Trails will be designed and managed so as to maximize safety and security of users.

Objectives:

- Provide good lighting in secluded areas and high usagebicycle/pedestrian facilities that are open at night
- Provide trail corridors with high visibility from adjacent roads and land uses

Bicycle/Pedestrian route discussions during the initial trails workshop

- Provide safe crossings at intersections with roadways
- Design trails that accommodate a variety of users and reduce user conflicts
- Provide emergency access to trails
- Restrict unauthorized motorized vehicle access
- Provide a code of conduct for trail users
- Construct bicycle/pedestrian facilities to national standards for user safety
- Minimize the potential for user conflicts through proper design, education and maintenance

Recreation/Fitness

Goal: Bicycle/pedestrian corridors will improve opportunities for safe and close-to-home recreation in Pryor Creek.

Objectives:

- Preventative health care reduces long term costs
- Promote health/fitness benefits of bicycle/pedestrian facilities use
- Provide trails for a variety of users including runners, walkers, strollers, bicyclists, hikers, skaters, and wheelchair users
- Provide areas for rest and socialization along trails
- Provide recreation trail amenities such as distance markers, drinking fountains, fitness stations, benches, litter receptacles and lighting where appropriate
- Link recreation destinations such as parks and other landmarks within Pryor Creek
- Provide trail heads at schools, parks, and other locations where parking, restrooms and other facilities currently exist
- Provide bicycle/pedestrian facilities for the elderly and handicap users
- Investigate soft surface trail treads for runners
- Provide alignments through existing trees or plant trees for shade

Maintenance and Management

Participants review potential bicycle/pedestrian corridors

Goal: Trails in Pryor Creek will be properly managed and maintained to increase user safety and enhance the quality of facilities.

Objectives:

- Set an example for high quality trail maintenance
- Design trails and amenities for low maintenance and vandal resistance
- Promote "Adopt-A-Trail" program to assist with certain types of ongoing citizen maintenance
- Identify a single agency responsible for bicycle/pedestrian facilities maintenance and fund adequately
- Uniformly maintain all bicycle/pedestrian facilities by developing a maintenance program which ensures that corridors are inspected and maintained on a regular schedule
- Provide litter receptacles at appropriate intervals along the trail
- Ensure high quality construction to reduce long term maintenance costs

Existing Trails at Centennial Park

Economic

Goal: Trails in Pryor Creek will improve the economic health of the area increasing property values and potentially providing tourism revenue.

Objectives:

- Link major employers with retail areas, residential areas, schools and major attractions
- Promote economic incentives for property owners who donate land for trails
- Develop high quality bicycle/pedestrian facilities to promote as a tourist activity
- Increase values of adjacent property by developing high quality bicycle/pedestrian facilities
- Emphasize Pryor Creek's trails as a quality of life magnet to attract new business
- Improve the city's image through the development of quality bicycle/pedestrian facilities
- Provide bicycle/pedestrian facilities which anticipate future development and growth trends
- Encourage developers to include trails/access in future development

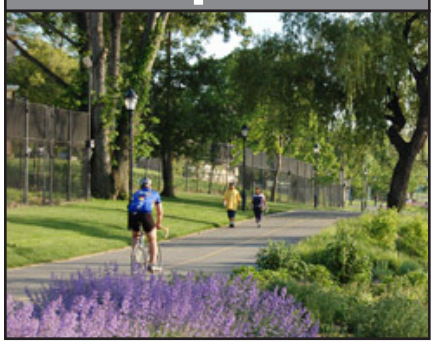
Education

Goal: Bicycle/Pedestrian corridors will highlight and enhance significant historical and natural resources in the area. Users and potential supporters will be made aware of the bicycle/pedestrian facilities system and its rules and benefits.

Objectives:

- Promote the education of Pryor Creek's residents to the value of trails through school programs and other citywide promotions;
- Promote the education of motorists, bicyclists, and other bicycle/pedestrian facilities users about safe behavior and proper conduct
- Promote education of Pryor Creek's youth about the benefits of bicycle/pedestrian facilities
- Establish signage along the trails to educate the public about local ecology, history, geology and wildlife
- Coordinate with Pryor Creek's schools to utilize the trails for educational purposes
- Educate motorists that bicyclists have a right to use the road

Chapter 4



Bicycle/Pedestrian Master Plan

Design Guidelines

Introduction

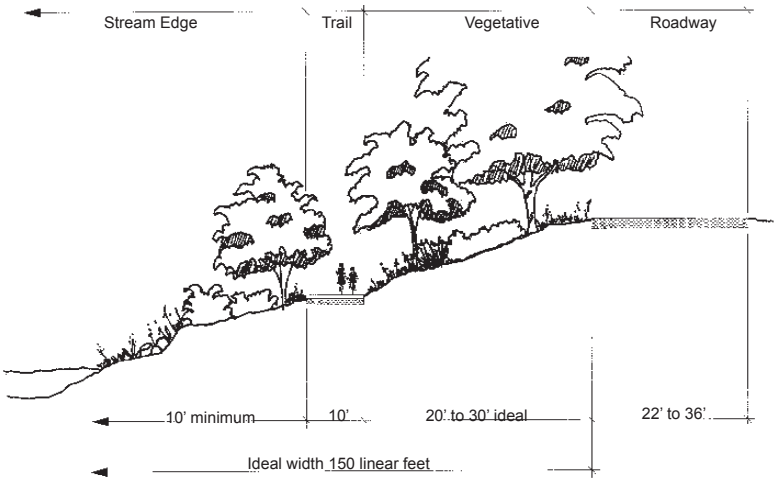
Bollards mark the entrance to a trail in Skiatook, Oklahoma

This chapter provides guidelines to both public and private entities for the development of bicycle/pedestrian facilities throughout Pryor Creek. The guidelines herein are based on the best practices in use throughout the United States, as well as accepted national standards for bicycle/pedestrian facilities.

The general attributes of the Pryor Creek Bicycle/Pedestrian System have been determined through the master planning process. These attributes include, but are not limited to: 10' wide (minimum) paved trails with a center line stripe, a comprehensive signage system, grade separated crossings where feasible, safe at grade crossings where necessary, and trail heads with drinking fountains, benches, and landscaping at appropriate intervals. Share the road bicycle facilities with accessible sidewalks are a very important aspect of this bicycle/pedestrian master plan.

These guidelines should be used with the understanding that each bicycle/pedestrian facilities project is unique, and that design adjustments may be necessary in certain situations in order to achieve the best results. Such projects should be evaluated on a case-by-case basis, in consultation with local or state bicycle and pedestrian coordinators, a qualified landscape architect, and/or an engineer.

Trail Development Corridors



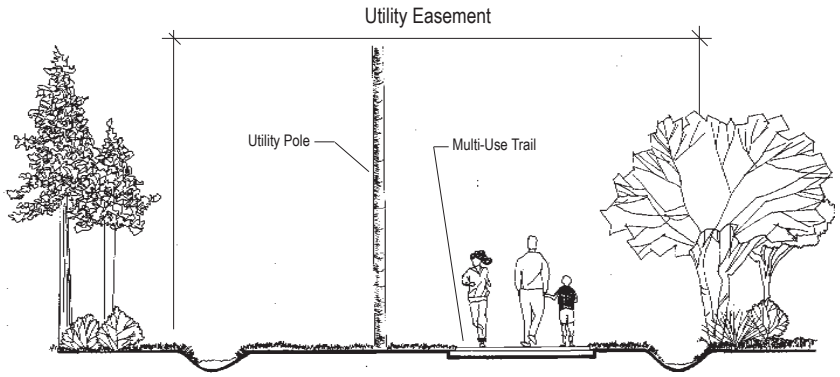
Typical Cross Section: Trail Within A Floodway

There are several different corridor types that can potentially serve as trail development corridors. These include floodways, utility easements, drainage easements, abandoned railroad corridors, existing railroad corridors, and expressway or turnpike rights-of-way. Trail development planning in each of these corridor types must consider the unique set of variables that each type presents. The following section contains information on trail development within different corridors.

Floodway Trail with Buffer Zone

The design of trails developed within floodplains must consider the preservation of buffer zones adjacent to streams. These vegetated buffers are important in preserving water quality and wildlife habitat. These

vegetative zones work to filter pollutants from stormwater runoff before it reaches streams or rivers. Preserving these buffers also serves wildlife by providing important habitat adjacent to streams and rivers. This habitat preservation is especially important in urban settings where habitats are threatened. The graphic on previous page illustrates how trails should be developed within floodplain areas, including minimum width requirements.



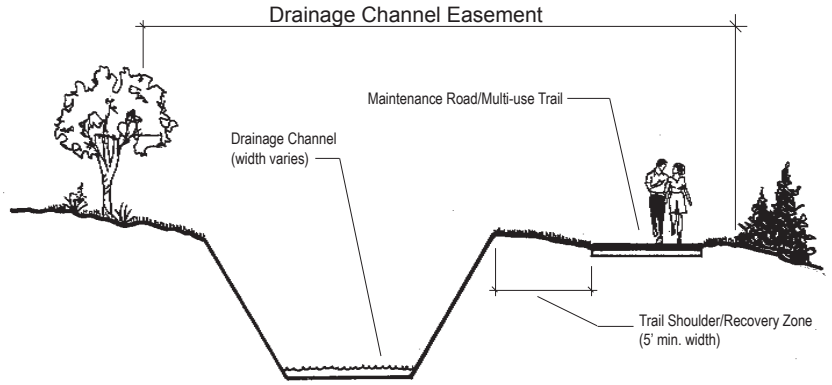
Typical Cross Section: Utility Easement Trail

Utility Easement Trail

Utility corridors, similar to railroad corridors, can be utilized for multi-use trail development. Trails can be successfully implemented within overhead electric, sewer, fiber optic, cable and gas line easements. Typically, the utility line is placed under, or parallel to, the trail tread. These utility easements can accommodate both paved and unpaved trail treads and can serve a variety of users. Like all multi-use trails, there should be a 2-foot minimum (3-foot preferred) shoulder separating the trail tread from any utility structure. These trails need to be designed to withstand the weight of maintenance vehicles used to service the utility line.

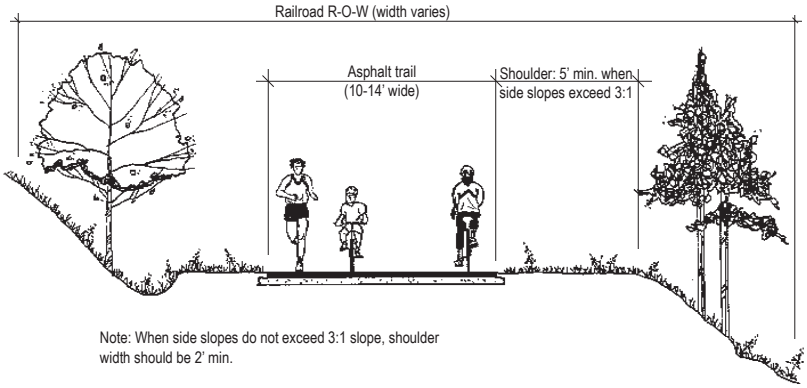
Drainage Easement Trail

Networks of drainage ways present a unique opportunity for trail development. Many drainage ways have an existing adjacent unpaved pathway or road that serves as maintenance vehicle access. Often these maintenance roads can double as multi-use trails with little or no improvements, while others may require more development. While some drainage ways have no existing maintenance road, there is often adequate easement width to accommodate multi-use trails. Trails utilizing drainage easements should be placed as far away (5' suggested min.) from the channel as the easement allows. This will provide a recovery zone between trail users and the channel if a cyclist should lose control on the trail. Drainage easement trails that are part of the network should be paved. In some instances, an unpaved trail can be developed as Phase I of trail development, and paved at a later date.



Typical Cross Section: Drainage Easement Trail

These trails should be developed in close coordination with Public Works in order to establish a safe and user friendly trail environment without obstructing maintenance access to the channel. These trails should be built to withstand the periodic use of heavy trucks and maintenance vehicles.



Typical Cross Section: Trail Within an Abandoned Railroad Right-Of-Way

Abandoned Railroad R-O-W

One popular movement in this country is the conversion of abandoned railroad corridors into multi-use trails. These corridors can be ideal for recreation and transportation facilities, as the grades required for railroad use provide slopes that are well within range for ADA accessible, transportation-oriented trails. They can also be excellent locations for paved and unpaved trails due to the existence of a continuous linear right-of-way. Additionally, railroad structures, such as trestles and historic depots, along the corridor can be adapted for trail use as bridges, concession stands and information centers.

A design issue that may especially affect rail trails is that of side slopes, due to the drainage swales that are typically found along many railroad routes. As with any multi-use trail, proper slopes must be developed adjacent to the trail to ensure the safety of users. A minimum 2 foot wide shoulder (3 feet is preferred) should be in place between the edge of trail and top of bank when the slope is less than 3:1. If the slope is greater than 3:1, there must be a 5' wide shoulder between the edge of trail and top of bank. If this is not possible, a railing must be installed that is at least 2 feet away from the edge of trail. This railing, according to current AASHTO standards, should be 54 inches in height. However, the AASHTO guidelines that are soon to be released indicate a minimum railing height of 42 inches.

Trails and Active Railroad Corridors

Another method of utilizing railroad corridors for trail development is rails-with-trails—installing a trail within a railroad right-of-way, adjacent to active tracks. This strategy has been successfully employed in many communities. Proper design is key to developing a safe facility for trail users and minimizing liability risks for the railroad. According to a study of 37 rail-with-trails completed by the Rails-to-Trails Conservancy, these facilities typically include the following design features:

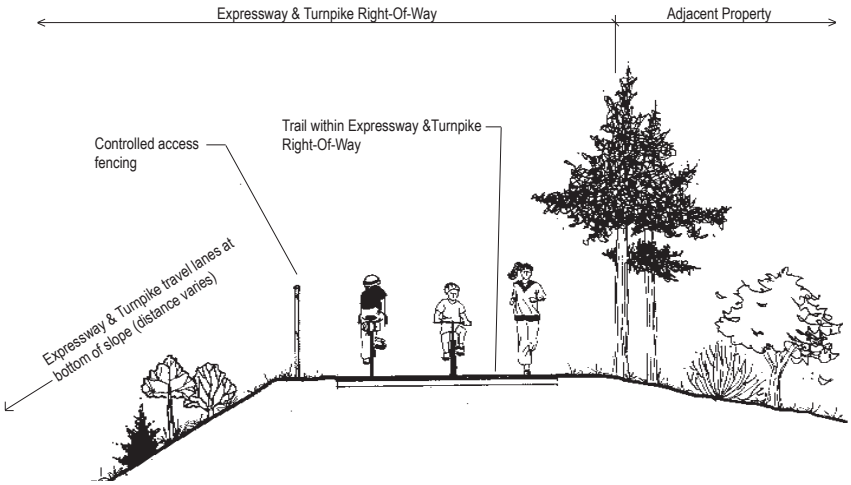
- Grade separation which isolates the active track from the trail
- A buffer between the tracks and trail
- Few at-grade trail/track crossings
- Fencing or vegetative screening which serves as an attractive barrier
- Warning and explanatory signs posted

Expressway & Turnpike R-O-W Trail

Expressway and turnpike rights-of-way are excellent trail corridor resources because they are linear, well separated from the roadway, and intersect with relatively few driveways and cross streets.

The Oklahoma Turnpike Authority (OTA) has supported the concept of trails utilizing the right-of-way space located outside controlled access fencing. For example, the recently constructed 12.5 mile Creek / Broken Arrow South Loop Turnpike Trails in Tulsa and Broken

Trail within Turnpike R-O-W



Typical Cross Section: Expressway & Turnpike R-O-W Trail

Arrow, Oklahoma is located within the Turnpike corridor. This trail is separated from the turnpike by controlled access fencing. In addition, the Oklahoma Department of Transportation has recently agreed to the placement of a paved multi-use trail within the US 169, US 75, and I-244 corridors in Tulsa, Oklahoma.

Trail Types

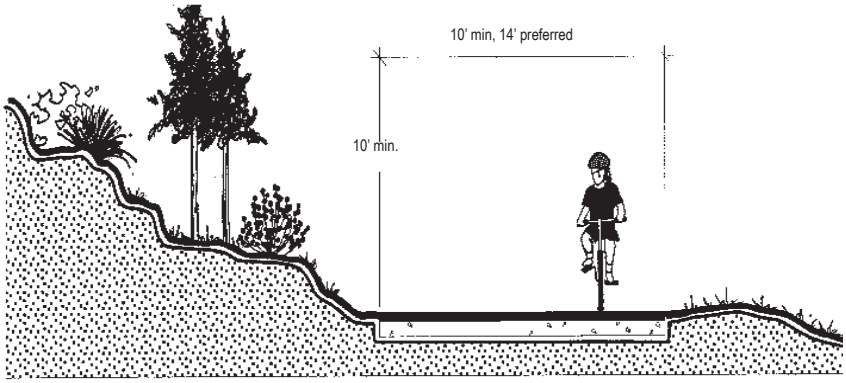
Each of the aforementioned trail development corridors can be host to one of many different trail types. Some of these trail types include, but are not limited to: hiking trails, unpaved or paved multi-use trails, boardwalk trails, and multiple tread trails. These trail types are described in the following section.

Paved Multi-use Trails

Typical pavement design for paved, off-road multi-use trails should be based upon the specific loading and soil conditions for each project. These trails, typically composed of asphalt or concrete, should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles. In areas prone to frequent flooding, it is recommended that concrete be used for its excellent durability.

One important concern for asphalt multi-use trails is the deterioration of trail edges. Installation of a geotextile fabric beneath a layer of aggregate base course can help to maintain the edge of a trail. It is also important to provide a 2' wide graded shoulder to prevent trail edges from crumbling.

The minimum width for two-directional trails is 10', however 14' widths are preferred where heavy traffic is expected. Centerline stripes should be considered for paths that generate substantial amounts of pedestrian traffic. Possible conflicts between user groups must be considered during the design phase, as cyclists often travel at a faster speed than other users.



Typical Cross Section: Paved Multi-Use Trail

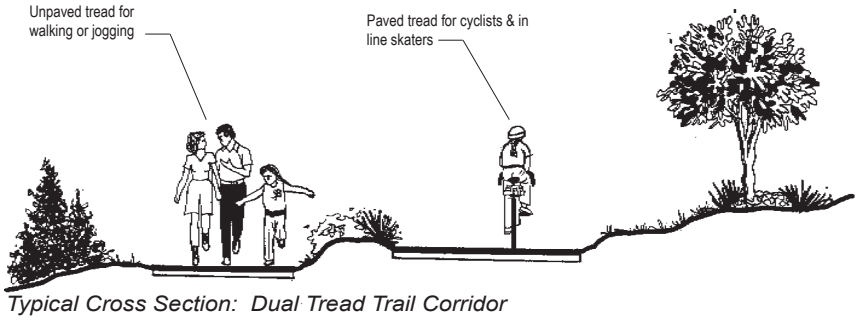
Asphalt concrete is a hard surface material that is popular for a variety of rural, suburban and urban trails. It is composed of asphalt cement and graded

aggregate stone. It is a flexible pavement and can be installed on virtually any slope.

Concrete surfaces are capable of withstanding the most powerful environmental forces. They hold up well against the erosive action of water, root intrusion and subgrade deficiencies such as soft soils. Most often, concrete is used for intensive urban applications. Of all surface types, it is the strongest and has the lowest maintenance requirement if it is properly installed.

Dual Tread Trail

On trail corridors where anticipated usage is high, or user conflict is a concern, dual or multiple trail treads may be desired. Multiple treads allow for multiple use within the same right-of-way but on separate treads. This generally requires a wider right-of-way to accommodate the diversity of users. For example, a hard surfaced trail could be developed for bicycle use, a walking or jogging path could meander along an unsurfaced earth trail, and a boardwalk could be extended into riparian areas. With proper signage to direct trail users, all of these trail treads could be developed parallel to one another within a given corridor.



Typical Cross Section: Dual Tread Trail Corridor

For example, River Parks Trail in Tulsa has dual treads on the eastern side of the Arkansas River. Its high usage and frequent user conflict problems have been alleviated through dual tread development. Dual trail treads provide one tread exclusively for wheeled users and leave one for pedestrians and joggers, therefore eliminating user conflicts between these trail user groups.

Boardwalk Trails

Boardwalks, or wood surface trails, are typically required when crossing wetlands or poorly drained areas. While boardwalks can be considered multi-use trails, the surface tends to be slippery when wet, and so is not well suited for wheeled users. Boardwalks intended for use by bikes, pedestrians, in-line skaters, etc. should be a minimum of 14’ wide. However, boardwalk trails limited to pedestrian use can be as narrow as 8’.

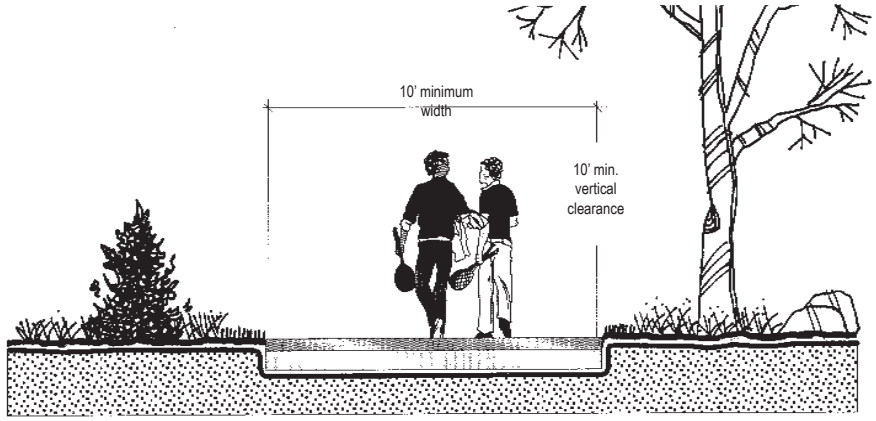
Wood surfaced trails are usually composed of wooden planks or lumber that forms the top layer of a bridge, boardwalk or deck. The most commonly used woods for trail surfacing are exposure- and decay- resistant species such as pine, redwood, fir, larch, cedar, hemlock and spruce. Wood is a preferred surface type for special applications because of its strength and comparative weight, its aesthetic appeal and versatility. Synthetic wood, manufactured from recycled plastics, is now available for use as a substitute in conventional outdoor wood construction. While these products are more expensive than wood lumber, recycled plastic lumber lasts much longer, does not splinter or warp and will not discolor.

Unpaved Multi-Use Trail

The unpaved multiuse path is intended to accommodate a variety of users, including walkers, joggers, bicyclists, and others. These pathways, intended for use in upland environments,

do not withstand the effects of flooding well. While cheaper to install, unpaved trails typically have higher maintenance costs than paved trails and require more frequent repairs. Careful consideration should be given to the amount of traffic the specific trail will generate, as these surfaces tend to deteriorate with excessive use. These trails should also meet all other standards within this manual, and within AASHTO's Guide for the Development of Bicycle Facilities (1999).

Materials that can be used to surface a trail include natural materials, soil cement, graded aggregate stone, granular stone, and shredded wood fiber. The soft surface materials are less expensive to install and compatible with the natural environment, however, they do not accommodate certain users, such as in line skaters and disabled persons. Soft surface trails are preferred, however, by some runners and mountain bicyclists. Soil cement will support most user groups, though bicyclists and horseback riders should only have restricted use. Soil cement surfaces last longer if installed on top of a properly prepared subgrade and subbase.



Typical Cross Section: Unpaved Multi-Use Trail

Graded aggregate stone material suitable for trail surfacing includes colored rock, pea gravel, river rock, washed stone and coarse sand. This surface will often need to be kept in place with wood or metal edging. Because it is a loose, uncompacted surface, graded aggregate stone is limited in application to flatter slopes.

Granular stone includes a broad range of aggregate stone, such as limestone, sandstone, crushed rock, pit gravel, chat, cinders, sand and fine gravel. This is one of the best surface types for greenway trails because it can be densely compacted and is compatible with the natural environment. If properly constructed, granular stone can support bicycle and wheelchair accessible trail development. This type of trail surface serves well as a base for future paving.

Shredded wood fiber is usually composed of mechanically shredded hardwood and softwood pulp, pine bark chips or nuggets, chipped wood pieces, or other by-products of tree trunks and limbs. This type of surface is favored by joggers and runners, equestrians and walkers because it is soft and blends shredded wood fiber decays rapidly and must be installed on flat subgrades.

Footpath/Hiking Trail

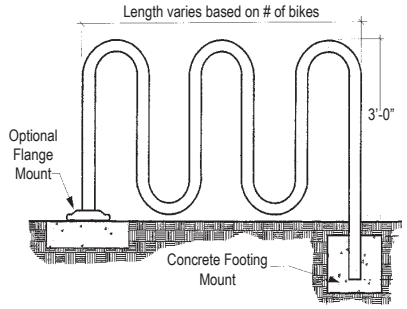
Footpaths or hiking trails are designed to accommodate pedestrians and are not intended for cyclists or other wheeled users. These natural surface trails typically make use of dirt, rock, soil, forest litter, snow, ice, pine mulch, leaf mulch and other native materials for the trail surface. Preparation varies from machine-worked surfaces to those worn only by usage. This is the most appropriate surface for ecologically sensitive areas.

These pathways, often very narrow, sometimes follow strenuous routes and may limit access

to all but skilled users. Some hiking trails may permit equestrian use. Construction of these trails mainly consists of providing positive drainage for the trail tread and should not involve extensive removal of existing vegetation. These trails vary in width from 3' to 6' and vertical clearance should be maintained at 9' (12' when equestrian use is allowed).

Trail Components

In addition to trail width and surface type, there are many other trail components that should be considered during facility design to ensure safe, well designed trails. The following design guidelines address features such as bike racks, site furnishings, landscaping, lighting, and signage. While these components will not be required on all trail facilities, they should be considered in the design of each facility.



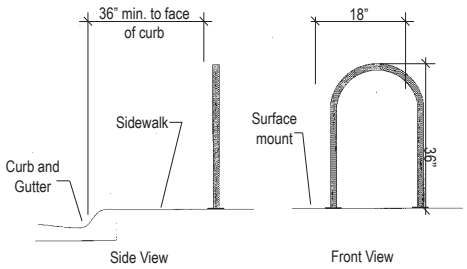
Typical "Loop" Bike Rack Design

Bike Racks

It is important to choose a bicycle rack design that is simple to operate. Bicycle racks should be designed to allow use of a variety of lock types. It may be difficult initially to determine the number of bicycle parking spaces needed. Bicycle racks should be situated on-site so that more racks can be added if bicycle usage increases.

The designs shown have proven popular and effective in numerous communities. They are inexpensive to fabricate locally, easy to install, vandal resistant, and work well with the popular high-security locks. In addition, they can be installed as a single unit on a sidewalk, or in quantity, as at a major recreation center.

The location criteria included below are a mix of those developed by the cities of Denver and Seattle for siting bicycle racks, and are recommended for Pryor:

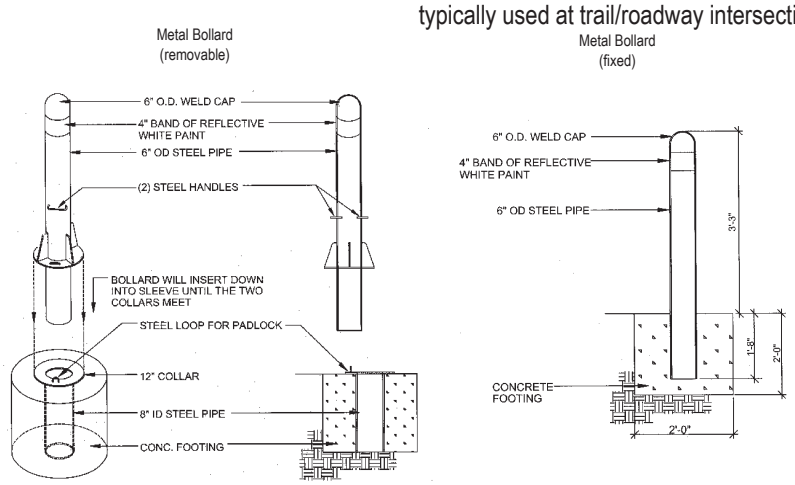


Typical "Inverted U" Bike Rack Design

- Racks should be located within 50' of building entrances (where bicyclists would naturally transition into pedestrian mode).
- Racks should be installed in a public area within easy viewing distance from a main pedestrian walkway, usually on a wide sidewalk with five or more feet of clear sidewalk space remaining (a minimum of 24" clear space from a parallel wall, and 30" from a perpendicular wall).
- Racks should be placed to avoid conflicts with pedestrians. They are usually installed near the curb and at a reasonable distance from building entrances and crosswalks.
- Racks can be installed at bus stops or loading zones (only if they do not interfere with boarding or loading patterns and there are no alternative sites). Many communities across the Country including Phoenix, AZ, Portland, ME and Denver, CO and Tulsa Oklahoma, have installed racks on their buses to facilitate bike-on-transit travel.

Bollards

Bollards are intended to provide separation between vehicles and trail users, and are typically used at trail/roadway intersections. They are available in a variety of shapes, sizes, and colors and come with a variety of features. Lighted bollards are intended to provide users a minimum levels of safety and security along trails which are open after dark. Bollards should be chosen according to the specific needs of the site and should be similar in style to the surrounding elements. The graphic illustrates a typical bollard often used in Oklahoma. Typical bollard spacing is 5' on center.

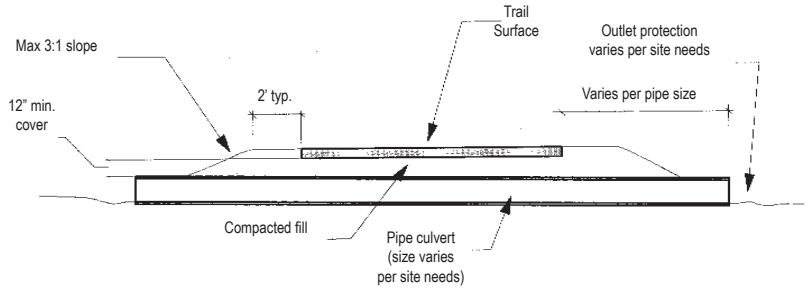


Typical Bollard Design

The contractor is to provide proper footings and anchors for bollard installation, according to manufacturers specifications. Typical construction materials for bollards include painted steel or aluminum, with halogen or metal halide lights in weather tight casings and / or a 4" band of reflective white paint. Removable bollards can be installed to provide trail access for emergency and maintenance vehicles.

Trail Culverts

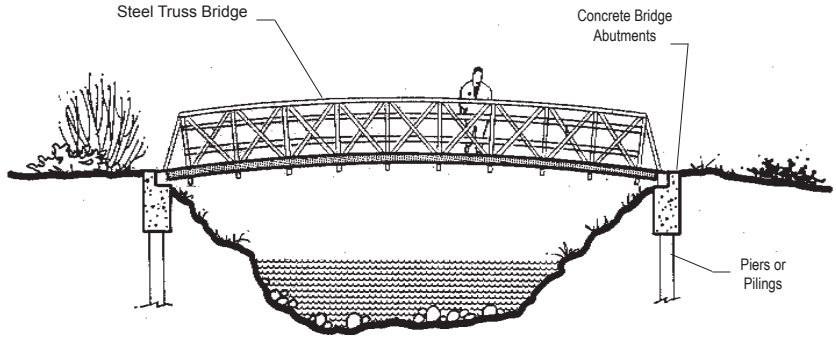
Installation of trail culverts is important to insure proper stormwater drainage, trail user safety, and longevity of the trail surface. Pipe length, diameter, and material specifications will vary depending on specific site needs. Two materials typically used for trail culverts are reinforced concrete pipe (typically required when the trail is within roadway or utility easements), and High Density Polyethylene (HDPE) recycled plastic pipe. Plastic pipes are typically less expensive on a per foot basis. The included graphic outlines proper installation parameters for trail culverts.



Typical Cross Section: Trail Culvert

Bridges

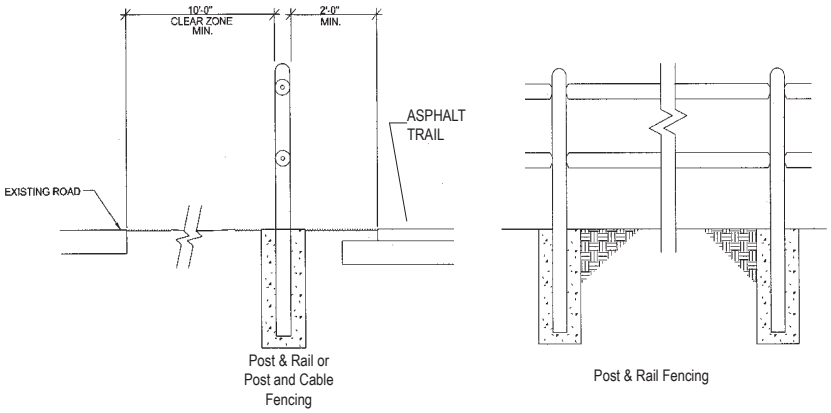
Bridges are an important element of almost every trail project. They are required at crossings of larger drainage or water ways and can sometimes be used to cross roadways. The type and size of bridges can vary widely depending on the trail type and specific site requirements. Some bridge types often used for multi-use trails include suspension bridges, prefabricated span bridges (illustrated), and concrete bridges. When determining a bridge design for multi-use trails, it will be important to consider the issue of emergency vehicle access. Trail bridges intended for occasional vehicular use must be designed to handle such loads safely.



Typical Prefabricated Steel Span Bridge

Fencing

Fencing and railings are often needed on trail projects for safety purposes or to serve as barriers. They can consist of many different materials and, depending on the specific site needs, can be a variety of heights. Many different fence types, including post and rail, chain link, post and cable, and lumber privacy fences, can be used to create a barrier between the trail and adjacent properties. Safety railings often consist of pipe railings, or treated lumber rails. The need for fencing or safety railings on trail projects will vary and should be determined on a site by site basis. Some locations where fencing or railings may be needed include: along elevated pathways or boardwalks, along expressway/turnpike trails, along trails with steep side slopes, and trails in close proximity to parking lots or roadways. Aesthetics should be carefully considered when determining a type of fence or railing. The materials used should blend with those used in the surrounding area.



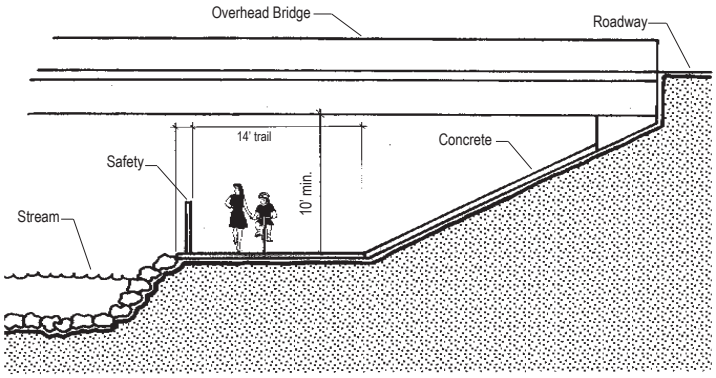
Typical Trail Fencing

Trail Underpasses

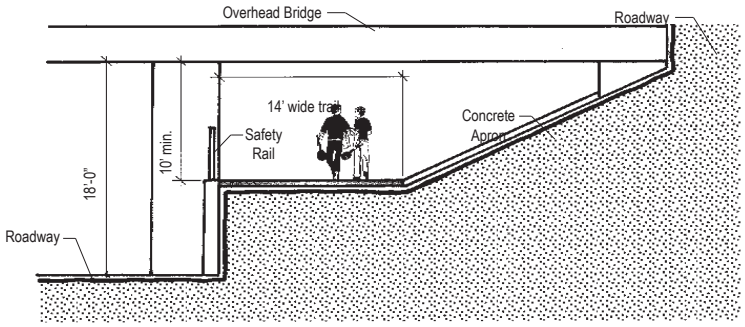
Trail underpasses can be used to avoid undesirable at-grade intersections of trails and roadways. These underpasses typically utilize existing overhead roadway bridges or culverts under the roadway that are large enough to accommodate trail users. There are several key issues that must be addressed in the design of a roadway underpass:

1. The vertical clearance of the underpass must be at least 10'
2. The width of the underpass must be at least 14'
3. Proper drainage must be established to avoid pooling of stormwater inside the underpass
4. It is recommended that underpasses be lighted for safety.

Roadway underpasses that utilize box culverts can sometimes be installed as part of a roadway improvement or construction project at greatly reduced cost.

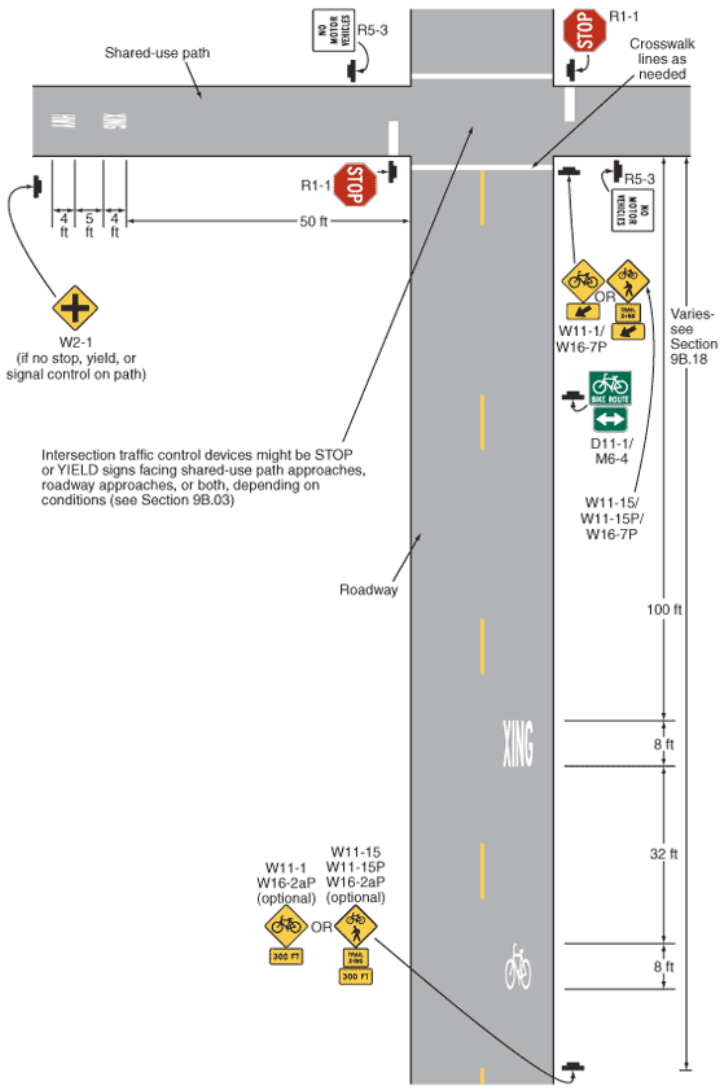


Typical Trail Underpass Adjacent to a Stream



Typical Trail Underpass Adjacent to a Roadway

Trail Underpass with Railing



Typical At-Grade Trail/Roadway Intersection

Trail/Roadway Intersections

Trail/Roadway intersections can be dangerous conflict areas if not carefully designed. For at-grade intersections, there are several primary design objectives:

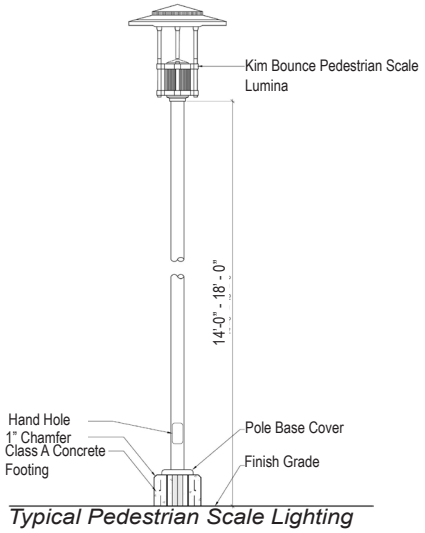
1. Site the crossing area at a logical and visible location;
2. Warn motorists of the upcoming crossing;
3. Inform trail users of the upcoming intersection; and
4. Maintain visibility between trail users and motorists.

Intersections and approaches should be on relatively flat grades. In particular, cyclists should not be required to stop at the bottom of a hill. If the intersection is more than 75 feet from curb to curb, it is preferable to provide a center median refuge area, per ADA (Americans with Disabilities Act) or ANSI (American National Standards Institute) standards. If crossing traffic is expected to be heavy, it may be necessary to provide a traffic signal that can be pedestrian/cyclist activated.

The accompanying graphic illustrates a typical trail/roadway intersection and shows the proper placement of signage, bollards, and pavement markings.

Trail Lighting

Particularly during winter months, when trips to and from work are made in the dark, adequate lighting can make the difference in a person's choice to bicycle or walk. However, due to liability and security concerns, many off-road bicycle paths are closed at night, and therefore unlit. Lighting for multi-use trails should be considered on a case-by-case basis, with full consideration of the maintenance commitment lighting requires. Included here is an example of a popular pedestrian-scale light fixture that could be used in a trail environment.



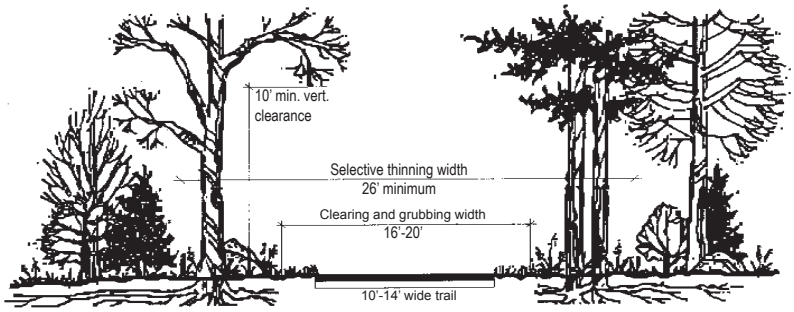
Typical Pedestrian Scale Lighting

The city should provide a system to illuminate the trail with either cobra type or post top fixtures. General spacing for the cobra heads is approximately 150 feet between fixtures, but will vary depending on site conditions. The spacing for the post top fixtures is generally closer than the cobras, but both can provide an average of 0.5 footcandles with a min. of .02 footcandles on the trail.

Vegetative Clearing

Vegetative clearing refers to the amount of vegetation removal that is required for various

levels of trail development. The amount of vegetative clearing required for any one trail will depend on the type of trail being developed. While footpaths or hiking trails require little or no vegetation removal, paved pathways may require more.



Typical Vegetative Clearing Dimensions

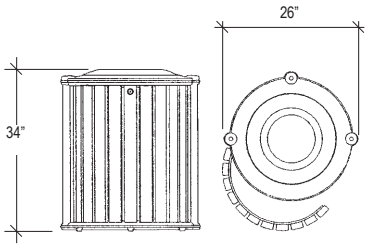
Single-tread, multi-use trails are the most common type of trail in the nation. These trails vary in width, can accommodate a wide variety of users, and are especially popular in suburban and urban areas. While the vegetative clearing needed for these trails varies with the width of the trail, the graphic outlines typical requirements.

Landscape Plantings

The amount of landscaping needed for trails will vary from project to project. While some projects will require little or no plantings, others may require it for vegetative screening, habitat restoration, erosion control or aesthetics.

Trees and shrubs are important to greenways and trails for both aesthetic and environmental reasons. Not only do they contribute to the appearance of a trail, their shade cools the environment for trail users and provides habitat for wildlife. When choosing trees and shrubs for use in greenway corridors, it is recommended that indigenous and well adapted species be used. This will reduce the need for chemical and water applications as a part of long term maintenance. Generally, most indigenous and ornamental trees are acceptable for planting near a trail. The use of certain trees that drop debris and have aggressive surface roots should be avoided in close proximity to the trail.

Site Furnishings

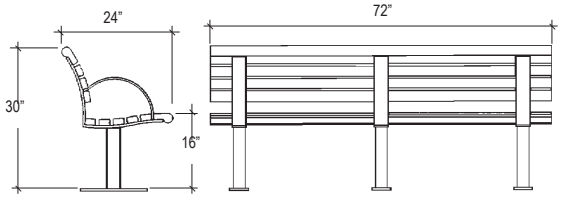


Note: Trash Receptacle set on concrete, positioned at least 3' off edge of trail

Typical Trail Litter Receptacles

Litter receptacles are recommended along most trails. They can be attractive as well as functional and should be selected based on the amount of trash expected, overall maintenance program of the trail, and types of users. Litter receptacles need to be accessible to both trail users and maintenance personnel. At a minimum, 22-gallon or 32 gallon containers should be located at each entranceway and at each bench seating area. They should be set back three feet from the edge of the trail. The location of additional litter receptacles will depend upon the location of concessions, facilities adjacent to the trail and areas where trail users tend to congregate.

Benches along trails allow users to rest, congregate or contemplate. Trail benches should comfortably accommodate the average adult. They should be located at the primary and secondary entrances to the trail and at regular intervals, and should be set back three feet from the trail edge on a concrete pad.



Note: Bench set on concrete, positioned at least 3' off edge of trail

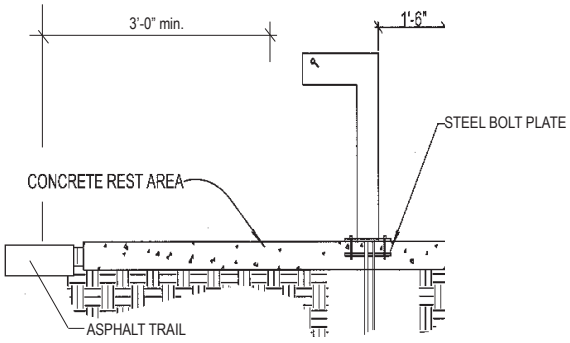
Typical Trail Bench

The included graphics illustrate a bench and litter receptacle that are manufactured using recycled plastic lumber instead of conventional treated wood lumber. Prefabricated furnishings may also use painted or vinyl coated metal. These prefabricated units cost more initially but last longer and require little or no maintenance.

Drinking Fountains

Drinking fountains are important amenities for this trail system, given the hot summer seasons in Pryor. Fountains are typically located at major trail heads and trail entrances, and at regular intervals (approximately 1-1.5 miles on heavily used trails, and 3-5 miles on more remote trails) along the trail.

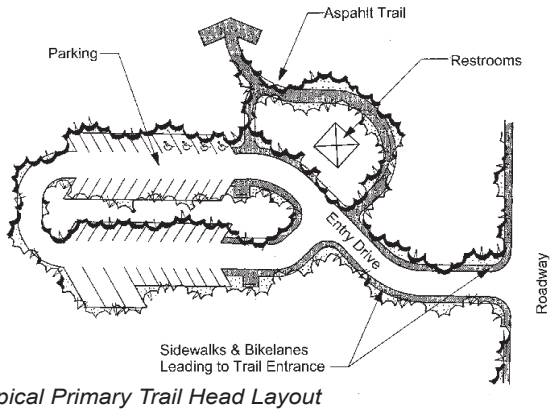
Drinking fountains should be set back at least 3' from the trail edge, and should be wheelchair accessible. They should also be designed and installed to be freeze proof. Drinking fountains with water bottle fillers are also desirable.



Typical Drinking Fountain

Trail Heads

Trail heads will be required throughout the trails system to provide easy access to the trails. Typically trail heads fall into two categories: primary and secondary. Primary trail heads usually provide a wide range of amenities including: parking, restrooms, drinking fountains, picnic areas, benches, litter receptacles, lighting, all types of signage, and bike racks. Restroom buildings at primary trail heads can often serve a dual purpose and provide storage space for supplies and maintenance equipment needed to service the trail. Primary trail heads are typically found at key destination points or trail endpoints but can also be incorporated into existing municipal parks when trail routing is suitable. Along heavily used trails in densely populated areas, primary trail heads should be provided every five miles.

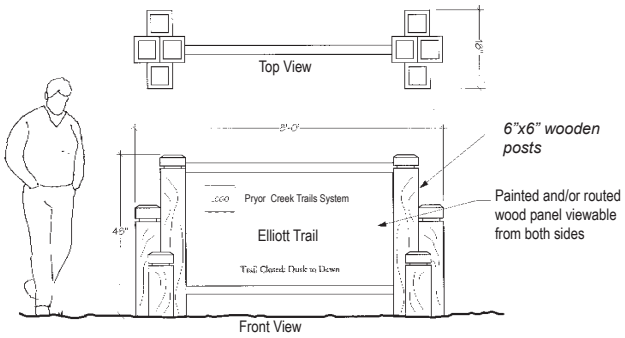


Typical Primary Trail Head Layout

Secondary trail heads are needed more frequently than primary trail heads, and do not provide as wide a variety of amenities. Typically, secondary trail heads are characterized as rest stops located between major destination points and can include such amenities as: signage, benches, trash receptacles, picnic tables, and sometimes parking. These trail heads are often placed at or near major roadway intersections, or periodically along longer trail segments. On more popular trails, secondary trail heads should be provided every 1-2 miles.

Signage

A comprehensive signage plan throughout the trail system will be needed to ensure that information is provided to trail users regarding the safe and appropriate use of all facilities. Trail signage is typically divided into information signs, directional signs, regulatory signs, and warning signs. Trail signage should be developed to conform to the Manual on Uniform Traffic Control Devices (MUTCD) and the American Association of State Highway Transportation Officials (AASHTO) manual.

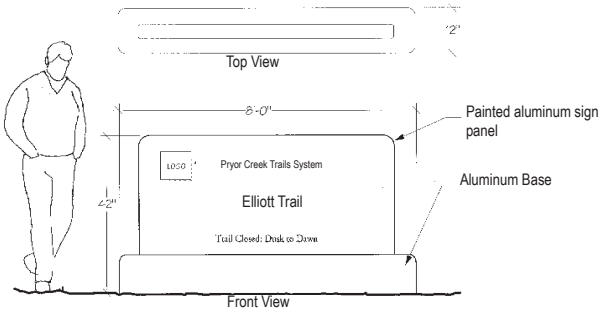


Entry Sign with Wood Post Base

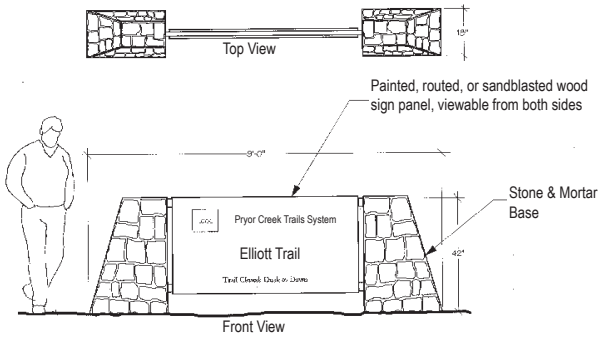
Included in this section are graphics that illustrate some typical trail signage types. The different signage types can be constructed using one of several different base designs. Shown here are three different sign base types including: wood posts, stone, and aluminum. Each of these bases can be adapted for use with each sign type, including entry signs, informations signs, directional signs, etc. This will allow different communities to choose different sign base types while the actual signage panels will remain uniform throughout the region.

Major Entry Signage

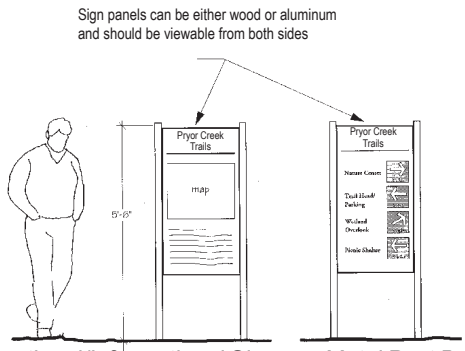
Major entry signage is typically placed at trail heads and trail/roadway intersections. These signs are typically the largest of all signage types, and designed to be seen from a vehicle as well as by trail users. These signs typically include the trail name and often include a map of the trail and the surrounding area.



Entry Sign with Aluminum Base



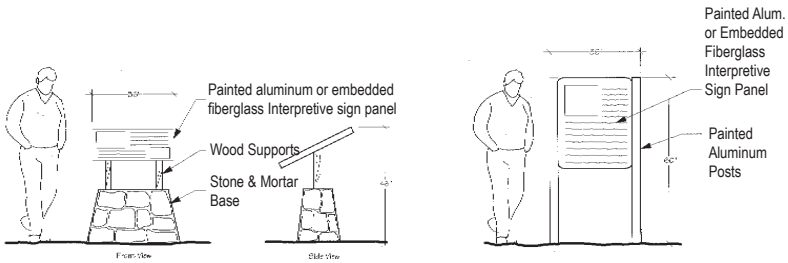
Entry Sign with Stone Masonry Base



Directional/Informational Signs on Metal Post Base

Directional/Informational Signage

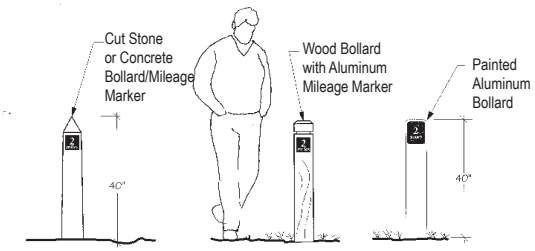
Directional and informational signage is typically found at trail heads, as well as trail/trail and trail/roadway intersections. This type of signage is typically built at a pedestrian scale and is no more than 40" high. The information often provided on these signs includes: maps, trail rules and regulations, trail etiquette, mileage to destinations, directions to destinations, and directions to amenities such as restrooms or water fountains. The included graphic shows a directional/informational sign mounted on metal posts. The same panel will also work well mounted on wood posts or a stone base.



Educational/Cultural Signs on Stone Masonry & Metal Post Bases

Educational/Cultural Signage

Educational or cultural signage is used when an element or feature with educational or cultural merit exists within or in close proximity to a trail corridor. These elements may include but are not limited to wetland or other environmental features, and historical structures or locations. These signs are designed to be viewed by pedestrians, can be mounted either vertically or angled, and may include photos, maps, and text information.



Bollard Style Mileage Markers

Distance Markers

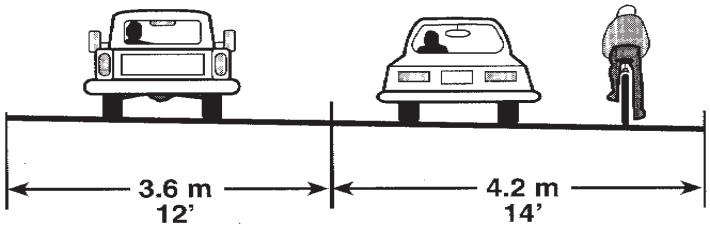
Distance markers typically consist of a post or a pavement marking displaying the distance from the beginning of the trail to the mileage marker. These are usually placed in 1/2 mile and 1 kilometer increments to indicate to the trail user how far they have traveled. The standard for the Pryor Creek Bicycle/Pedestrian System is 1/2 mile posts and kilometer pavement markings. The graphic to the left illustrates bollard style mileage markers using three different construction materials including concrete, wood, and metal.

Regulatory and Warning Signs

Regulatory & Warning Signage

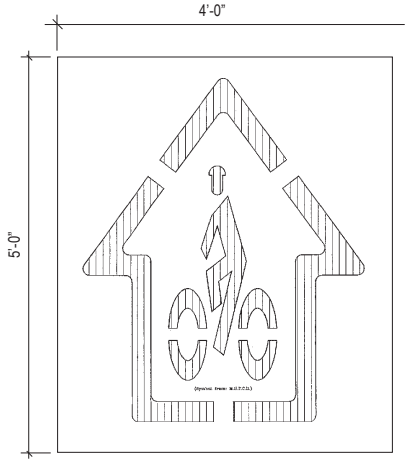
Regulatory and warning signs display rules, regulations and warnings regarding trail use and include standard signs such as stop, yield, sharp turn, etc. Like all trail signage, these signs should conform to the Manual on Uniform Traffic Control Devices (MUTCD). These signs are typically mounted on either wood or metal posts.

On Street Linkages



Wide Outside Curb Lane

In order for a trail system to function as a complete component of the overall transportation system, proper linkage with the roadway system is required. Since it is not possible to provide off-road trails to every destination in the community, on-road facilities must be used as linkages to "fill in the gaps". The following guidelines offer ways to safely link the trail system with on road bicycle and pedestrian facilities.



Pavement Marking to be Used With Wide Outside Lanes

"3 Feet Please" Signage

R4-11

W11-1 / W16-1

"Share The Road" Signage

Wide Curb Lanes

There are three types of on-road bicycle facilities: wide curb lanes, paved shoulders, and bike lanes. Wide curb lanes, or outside lanes, are wider than the standard 12' travel lane and can provide more space for cyclists and easier passing for motorists. Under most conditions, automobiles and bicycles can coexist in a 14' wide curb lane, without the need for the motorist to move into the next adjacent lane to pass a cyclist.

Location and Width

Wide curb lanes best accommodate advanced cyclists, as these riders are more comfortable operating directly in traffic. The wide curb lane is always the furthest right-hand lane, and should optimally be 14' - 16' wide, not including the gutter pan (curb lanes that are wider than 16' are not recommended). Wide curb lanes are not required to have curb and gutter.

In order to achieve the extra space needed for a 14' wide outside lane, the roadway may either be physically widened or restriped to reduce the lane width of inner lanes and increase the width of outer lanes. Re-striping proposals should be reviewed by a traffic engineer to ensure adequate safety for the motorists as well as bicyclists.

Signage

There is no special "wide curb lane" sign, however on high volume urban arterials, the designer may choose to install "Share the Road" warning signs (standard bicycle warning plate with a subplate stating SHARE THE ROAD). Passed into Oklahoma law in 2011, the "3 Feet Please" law states that when overtaking and passing a bicycle proceeding in the same direction, a person driving a motor vehicle shall exercise due care by leaving a safe distance between the motor vehicle and the bicycle of not less than three (3) feet until the motor vehicle is safely past the overtaken bicycle. Another sign option is "bicycles may use full lane" (R4-11) sign ion lieu of share the road signs.

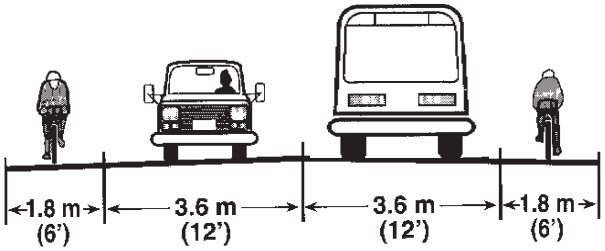
Intersection Design

When wide curb lanes approach intersections with turning lanes, the 14' wide lane should continue through the intersection as the outside through-lane.

Design Issues

Acceptance: Bicycle programs in numerous communities have found that less experienced bicyclists seldom see a difference when wide curb lanes are provided. Therefore, if the desired outcome is greater numbers of bicyclists or a visible "Pro Bicycle" statement, this option will not satisfy the need.

Traffic speeds: Wider curb travel lanes may tend to increase motorist speeds. Whether a marginal increase in speeds is important in a particular situation should be a subject for analysis.



Min: 3.5 m (5') against curb, parking or guardrail, 1.2 m (4') open shoulder

Paved Shoulders

Paved Shoulders for Bicycle Use

Paved roadway shoulders are not only an excellent way to accommodate bicycles, they are also beneficial to the motoring public. Paved shoulders eliminate problems caused when the pavement edge begins to deteriorate, therefore extending the life of the road surface and requiring less maintenance. Paved shoulders also provide a breakdown area for motor vehicles.

Location and Use

Paved shoulders for bicycles serve the needs of all types of cyclists in rural areas. In urban areas, paved shoulders may be preferable to riding in a traffic lane for advanced cyclists on arterial roadways with high speeds (over 45 mph). Paved shoulders in rural areas have the additional benefit of providing an area for pedestrian use where sidewalks are not present.

Width

Shoulders should be a minimum of 4' wide to accommodate cyclists, depending upon the speed and volume of motor vehicle traffic. Paved shoulders for bicycles can be designed according to typical roadway cross sections for bicycle lanes, with the exception of pavement decals or bicycle lane signage.

Although 4' of width is preferable, certainly any additional shoulder width is preferable to none at all. Shoulders that are 2'-3' wide can improve conditions and are recommended in cases where 4' widths cannot be achieved. However, shoulders less than 4' wide should not be designated as bicycle facilities. "Share the Road" signs would be acceptable in these locations, as they would serve to warn motorists of the likely presence of bicyclists.

Rumble strips are not recommended where shoulders are used by cyclists unless there is a minimum clear path of 1' from strip to the travel way, 4' from the strip to outside edge of paved shoulder, or 5' to adjacent guard rail, curb or other obstacle. Rumble strips should only be installed when an adequate unobstructed width of paved surface remains available for bicycle use.

As with bicycle lanes, paved shoulders should have the same pavement thickness and subbase as the adjacent roadway, and should be regularly swept and kept free of potholes.

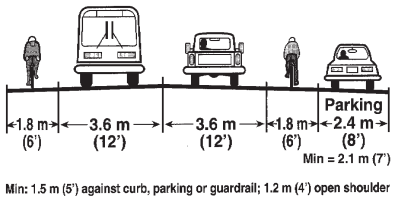
R7-9
12” X 18”

R7-9a
12” X 18”

R3-16
24” X 30”

R3-17
24” X 30”

Bike Lane Signage



Bike Lanes

Signage

Paved shoulders can include standard bicycle route warning signs, as shown on the previous page. As described above, these “Share the Road” signs may be installed on roads with paved shoulders that are less than 4’ in width.

Bike Lanes

Bicycle lanes in Pryor Creek should conform to the standards in AASHTO’s Guide for the Development of Bicycle Facilities (1999). Bicycle lanes are an on-road type of facility. They should not be separated from other motor vehicle lanes by curbs, parking lanes, or other obstructions. General standards for width, striping, and intersections are provided below.

Location and Use

Bicycle lanes serve the needs of experienced and inexperienced bicyclists in urban and suburban areas, providing them with their own travel lane. Bicycle lanes are always located on both sides of the road (except when they are constructed on one-way streets). By this design, cyclists are encouraged to follow the rules of the road, which require them to travel in the same direction as adjacent motor vehicle traffic.

Width

The minimum width of bike lanes should be 4’, exclusive of the gutter pan. On roads with parallel parking, bike lanes should be a minimum of 5’ wide, and should be installed adjacent to the motor vehicle lanes, rather than between the parking lane and the curb. Along streets in Pryor with higher motor vehicle speeds (45 mph or greater) and traffic volumes, 6’ wide bike lanes are recommended.

Signage

The MUTCD specifies standard signage for bicycle lanes. According to section 9B-8, the R3-16 sign should be used in advance of the beginning of a designated bicycle lane to call attention to the lane and to the possible presence of bicyclists (see graphic this page). The MUTCD requires that the diamond lane symbol be used with both the R3-16 and R3-17 signs. According to Section 9B-11 of the MUTCD, the R7-9 or R7-9a signs can be used along streets where motorists are likely to park or frequently pull into the bike lane.

Striping

Bicycle lane stripes should be solid, 6” wide white lines. Care should be taken to use pavement striping that is skid resistant. Bicycle-shaped pavement symbols and directional arrows should be placed in the bicycle lane to clarify its use. Pavement letters that spell “ONLY BIKE” are also highly recommended. Symbols should be installed at regular intervals, immediately after intersections, and at areas where bicycle lanes begin.

Bike lane striping at intersections is challenging. Traffic has a tendency to mix at intersections: motorists who are turning right must cross paths with cyclists who wish to continue straight, and cyclists who wish to turn left must cross into left-hand turn lanes. Several intersection striping patterns are provided by AASHTO’s Guide for the Development of Bicycle Facilities (1999) and the MUTCD.

D11-1
24" X 18"

D1-1b (L)
24" X 6"

Bike Route Signage

Bicycle Routes

A bicycle route is a "suggested way" for a cyclist to get from a point of origin to a destination. Bike routes do not necessarily require physical improvements in order to accommodate bicyclists, given that they meet minimum safety criteria in their present condition (see below). Bike routes can be preferable for bicycling for a number of reasons including directness, scenery, less congestion and lower speed limits.

Location and Use

Bicycle routes may be used by all types of cyclists. In urban areas they are most often designated on collector or residential streets with low traffic volumes, and are typically used to direct cyclists to a destination within the community, or to provide a through-route for bicyclists. In rural areas, bike routes are most often designated on roadways that are popular touring routes for recreational cyclists, or long-distance commuting routes for advanced cyclists.

Safety Criteria

A street does not necessarily have to be physically widened in order to be designated as a bicycle route. A road with standard 12' wide lanes (or less) can be designated as a bike route with the appropriate signage, given that each condition below is met:

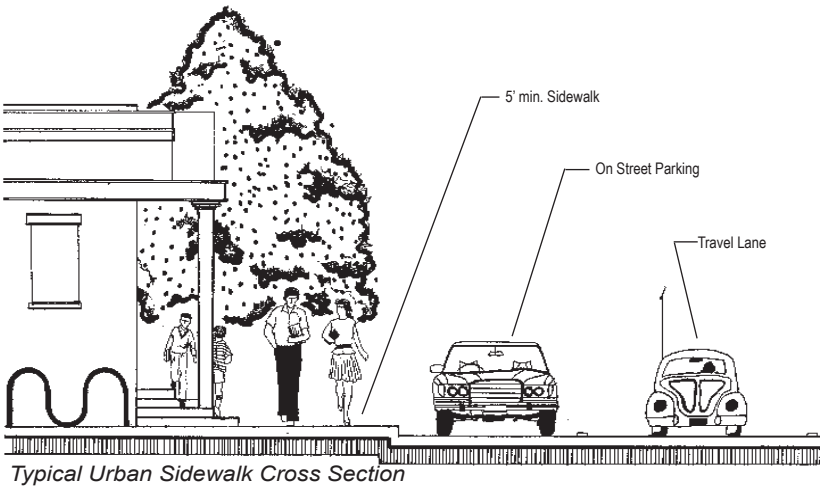
- In its present state (or with planned improvements), the roadway sufficiently accommodates cyclists. The evaluation should take into account roadway width and traffic volumes. Candidate bike routes should have good sight distances and adequate pavement conditions. In addition, traffic should not regularly exceed posted speed limits.
- All bicycle hazards have been removed from the roadway or otherwise remedied, including unsafe drainage grates and angled railroad crossings.
- The bicycle route is designed as one segment within an interconnected system of bicycle facilities.
- Traffic signals are either timed or are activated by bicycles.

Signage

Bicycle route signage should be used according to the standards in the MUTCD, which provides several choices in styles. Bicycle route signs should be placed at all areas where new traffic enters the roadway. In urban areas, it is helpful to include directional arrows and captions that indicate nearby destinations, particularly at intersections.

Sidewalks

Sidewalks are a critical need in Pryor Creek. They not only encourage walking, but they also improve the safety of pedestrians. An individual's decision to walk is as much a factor of convenience as it is the perceived quality of the experience. Therefore, pedestrian facilities should be designed with the following factors in mind:



Typical Urban Sidewalk Cross Section

- Sufficient width: Sidewalks should accommodate anticipated volumes based on adjacent land uses and should at a minimum allow for two adults to walk abreast (5' min.).

- Protection from traffic: High volume and/or high speed (>35 mph) motor vehicle traffic creates dangerous and uncomfortable conditions for pedestrians. Physical (and perceptual) separation can be achieved through a combination of methods: a planting strip with trees, a raised planter, bicycle lanes, on-street parallel parking, and others.

- Street trees: Street trees are an essential element in a high quality pedestrian environment. Not only do they provide shade, they also give a sense of enclosure to the sidewalk environment which enhances the pedestrian's sense of security.

- Pedestrian-scaled design: Large highway-scale signage and lighting reinforces the general notion that pedestrians are out of place. Signage should be designed to be seen by the pedestrian. Street lighting should likewise be scaled to the level of the pedestrian (14' tall), instead of providing light poles that are more appropriate on high-speed freeways.

- Continuity: Pedestrian facilities are often discontinuous, particularly when private developers are not encouraged to link on-site pedestrian facilities to adjacent developments and nearby sidewalks or street corners. New development should be designed to encourage pedestrian access from nearby streets. Existing gaps in the system should be placed on a prioritized list for new sidewalk construction.

- Clearances: Vertical clearance above sidewalks for landscaping, trees, signs and similar obstructions should be at least 8'. In commercial areas and the downtown, the vertical clearance for awnings should be 9'. The vertical clearance for building overhangs which cover the majority of the sidewalk should be 12'.

- Conformance with national standards: Sidewalk design should be consistent with Americans with Disabilities Act requirements and/or ANSI requirements. Specific guidance is provided by the Architectural and Transportation Barriers Compliance Board's American's with Disabilities Act Accessibility Guidelines.

Sidewalk Obstacles

Street furniture and utility poles create obstacles to pedestrian travel when located directly on the sidewalk. At a minimum there should be 5' of clear sidewalk width to allow wheelchairs to pass. Where possible, utilities should be relocated so as not to block the sidewalk. Benches should not be sited directly on the sidewalk, but set back at least 3'.

The design of new intersections or re-design of existing intersections presents an opportunity to improve pedestrian circulation. Street furniture located near intersections can block sight lines. In general, the designer should consider the impact on sight distance for all features located in the vicinity of roadway intersections.

Sidewalk Pavement Design

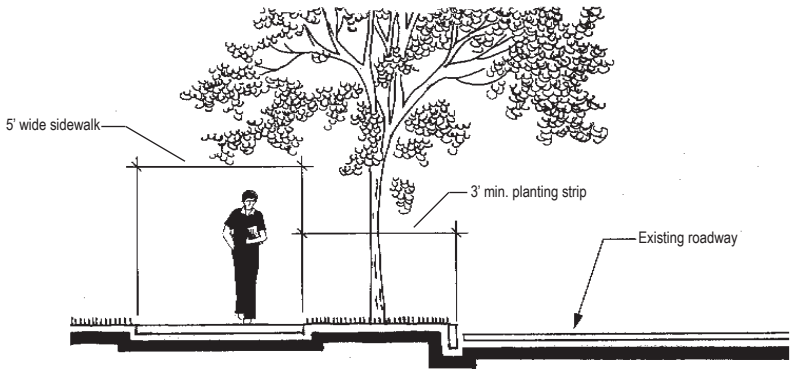
Sidewalks and roadside pathways should be constructed of a solid, debris-free surface. Regardless of the type of surface chosen, it must be designed to withstand adequate load requirements. Standard depth of pavement should consider site specific soil conditions, and is therefore left to local discretion. Brick and concrete pavers are popular materials for more decorative sidewalks. The use of stylized surfaces is encouraged, however they must be installed properly or they will deteriorate over time.

Sidewalk Width and Setback Guidelines

It is important to note that there are some areas that warrant wider sidewalks than the minimum 5 feet. For example, sidewalks in and around local colleges must accommodate a much higher volume of pedestrians, and therefore warrant additional width. The recommendations below are based upon standards used by pedestrian-friendly communities in the U.S.

By following the recommendations below, Pryor Creek can ensure that basic needs of pedestrians are addressed in developing areas. In existing residential and commercial areas that lack sidewalks, new sidewalk construction (independent of new development) should occur first in locations that demonstrate the highest need.

Sidewalks on local streets in residential areas: Five foot wide sidewalks are recommended on at least one side of the street, with a 3' wide planting strip. The planting strip may need to be slightly wider to accommodate the roots of street trees, if they are included in the design. Sidewalks are not necessary on cul-de-sacs that are less than 500' in total length.



Typical Residential Area Sidewalk Cross Section

Sidewalks on collector streets in residential and commercial areas: Five foot wide sidewalks are recommended on both sides of the street. Another option is to install a 6' wide sidewalk on just one side of the street (in this case, the sidewalk should be installed on the side that generates the most activity). A 5' wide planting strip is recommended.

Sidewalks on arterial streets in residential and commercial areas: Six foot wide sidewalks are recommended on both sides of the street, with 8' wide planting strips.

Sidewalks on streets within 2000' of schools: Width and setback should be based on the specific roadway type as described above. For all roadway types, however, sidewalks should be installed on both sides of the road, and should include well-marked crosswalks and school crossing signs.

Sidewalks on streets with no curb and gutter: The setback requirements in this section are based on roadway cross sections that include curb and gutter. Sidewalks located immediately adjacent to "ribbon pavement" (pavement with no curb and gutter) are not recommended. However, if no other solution is possible, sidewalks adjacent to ribbon pavement have a much greater setback requirement, depending on roadway conditions. Engineers should consult the AASHTO Policy on Geometric Design of Highways and Streets for more specific guidelines.

Sidewalks in rural areas: In most rural areas, the low volume of pedestrians does not warrant sidewalk construction. In most cases, 4'-6' wide paved shoulders can provide an adequate area for pedestrians to walk on rural roadways, while also serving the needs of bicyclists. Exceptions should be made in areas where isolated developments such as schools, ballparks, or housing communities create more pedestrian use. For example, motorists might regularly park along a rural road to access a nearby ballpark. A sidewalk may be warranted in this circumstance so that pedestrians can walk separately from traffic. Sidewalks in rural areas should be provided at a width based on anticipated or real volume of pedestrians, with 5' being the minimum width.

Additional Guideline Sources

Facility design is a broad topic that covers many issues. This chapter provides guidelines for design development, and is not a substitute for standards. For more in-depth information and design development standards, the following publications should be consulted:

Greenways: A Guide to Planning, Design and Development. Published by Island Press, 1993. Authors: Charles A. Flink and Robert Searns

Trails for the Twenty-First Century. Published by Island Press, 1993. Edited by Karen-Lee Ryan, Rails-to-Trails Conservancy

Guide to the Development of Bicycle Facilities. Updated in 1999 by the American Association of State Highway Transportation Officials (AASHTO). Available from FHWA or AASHTO.

Manual on Uniform Traffic Control Devices (MUTCD). Published by the U. S. Department of Transportation, Washington, DC

Mountain Bike Trails: Techniques for Design, Construction and Maintenance. Published by Bike-Centennial, Missoula, MT

Construction and Maintenance of Horse Trails. Published by Arkansas State Parks

Universal Access to Outdoor Recreation: A Design Guide. Published by PLAE, Inc., Berkeley, CA, 1993

PedSafe: Pedestrian Safety Guide and Countermeasure Selection System. Published by Federal Highway Administration, 2004

How to Develop a Pedestrian Safety Action Plan. Published by Federal Highway Administration, Revised March 2009

Universal Access to Outdoor Recreation: A Design Guide. Published by PLAE, Inc., Berkeley, CA, 1993

Designing Sidewalks and Trails for Access: Part Two - Best Practices Design Guide. Published by U.S. Department of Transportation, Washington, DC, 2001

In all cases, the recommended guidelines in this report meet or exceed national standards. Should these national standards be revised in the future and result in discrepancies with this chapter, the national standards should prevail for all design decisions.

Other useful web sites for information include:

Rails-to-Trails Conservancy - www.railtotrails.org

National Park Service - www.nps.org

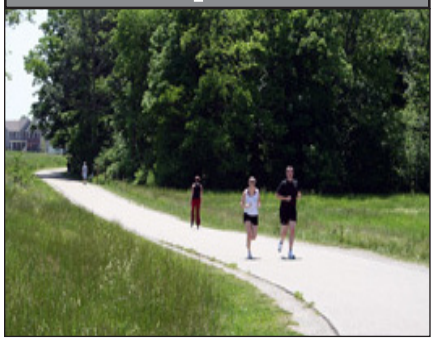
U.S. Department of Transportation - www.walkinginfo.org and www.bicyclinginfo.org

Trails and Greenways Clearinghouse - www.trailsandgreenways.org

National Bicycle and Pedestrian Clearinghouse - www.bikefed.org/clear.htm

Greenways Incorporated - www.greenways.com

Chapter 5



Bicycle/Pedestrian Master Plan

Description of Proposed Bicycle/Pedestrian Facilities System

Introduction

This chapter provides descriptions of the 22 specific trails and linkages that have emerged from the City of Pryor Creek Bicycle/Pedestrian Master Plan. These corridors were selected based on their potential to accommodate pedestrian facilities, as well as their location as part of the overall trail system. The proposed system which totals 43.47 miles provides access to all public schools, parks, neighborhoods, retail, medical, employment and recreation areas. An additional 20 trails, linkages, and bike routes have been included from the Mayes County Trails Master Plan. For descriptions please see the Mayes County Trails Master Plan.

Several key goals established by the citizens at the initial public workshop were to provide connections between the Pryor Recreation Center and MidAmerica Industrial Park. In an effort to reduce the dependency on automobiles and fossil fuels, an overall goal was to provide a corridor within 1/8th miles of every home of the residents within Pryor Creek.

Proposed Off-road Multi Use Trails

Six off-road multi use trails have been identified as part of the City of Pryor Creek Bicycle/Pedestrian Master Plan. These proposed trails total length is approximately 12.05 miles. These trails would be aligned along roadways with ample rights-of-way that would accommodate a bicycle/pedestrian trail, along the edges of creeks within the floodplain, or within existing utility or railroad rights-of-way. The trail corridors identified in this plan should be considered the spine of the trail system and should accommodate bicycles, in line skaters, joggers, as well as pedestrians. Additional trails, such as nature trails or trails with alternative surfaces for horseback riding, jogging, or mountain biking, are considered secondary to the overall trail system and may be identified in the future. In addition, feeder trails providing connections to the main trail system or serving a particular destination such as a trail around a park or neighborhood would also be identified in the future. Corridors are not listed in priority order and are shown graphically on the Trail Route Plan (Map 1) which is located in the executive summary.

Proposed Trails

Elliott Road Trail North

1. Elliott Street Trail North is a proposed trail in central Pryor Creek. The trail begins at the intersection of 9th Street and Elliott Street and continues south to the City Limits line at 29th Street. This trail will utilize existing Right of Way and will connect several schools, parks, and citizens. Starting at Park Street, the trail will head south on Elliott Street and be located on the east side of the street. Currently there is an existing sidewalk and plenty of ROW for a widened trail. Once at the intersection of 9th Street and Elliott Street, the trail will cross to the west side of Elliott and continue south until 29th Street.

1a. Elliott Road Trail South (see Mayes County Trails Master Plan)

9th Street Trail

2. 9th Street Trail is a proposed trail in central Pryor Creek. This trail starts at the intersection of Oklahoma Street and 9th Street. The trail continues west to Vann Street and is located on the north side of the road in the existing ROW. This trail connects the Recreation Center, High School, and local residents. The trail will transition into a Bike Route heading to the east from the intersection of 9th Street and Oklahoma Street. The trail also intersects the Elliott Road Trail. This intersecting trail system serves as the spine for several linkages in the central part of Pryor.

Highway 20 East City Trail

3. Highway 20 East City Trail is a proposed trail in eastern Pryor Creek that begins at the Intersection of Highway 20 and Bailey Street. The trail continues east along Highway 20 and is located on the south side of the highways within the ROW. This segment of the Highway 20 Trail terminates at True Road and will continue east in the Mayes County Trail Master Plan. Several additional Linkages and Bike Routes will connect to this trail.

3a. US 69 South City Trail (see Mayes County Trails Master Plan)

3b. Highway 20 West (see Mayes County Trails Master Plan)

4. US 69 South City Trail is a proposed trail in southern Pryor Creek that begins at the intersection of Highway 69A and Highway 69. This trail will serve as a connection between the downtown area of Pryor Creek and Mid America Industrial Park. The Trail will be located on the east side of Highway 69 and will continue north to one of the Pryor Creek bridges at which point it will cross under Highway 69 and continue north on the west side of the highway. The trail will terminate at Dog Pond Road at which point it will continue with Linkages.

US 69 South City Trail

4a. US 69 South County Trail (see Mayes County Trails Master Plan)

5. US 69 North City Trail is a proposed trail in northern Pryor Creek that begins at the intersection of 5th Street and Highway 69. The trail will be located on the west side of Highway 69 and continue north until it reaches the existing bridge at which point the trail will turn east under the roadway. Once on the east side of Highway 69 the trail will continue north to Old Airport Road. The US 69 North City Trail will serve as a connection to Clayton / 5th Linkage, US 69 North County Trail, and Old Airport Road Bike Route.

5a. US 69 North County Trail (see Mayes County Trails Master Plan)

Pryor Creek West City Trail

6. Pryor Creek West City Trail is a proposed trail in southern Pryor Creek that begins on Highway 69 just north of the Pryor Creek bridge. The trail will closely follow the creek and terminate at the City Limits. The Pryor Creek West County Trail will serve as the connection to the Pryor Creek West County Trail. Both portions of the trail are located within the 100 year flood plain. The existing nature trail will connect to the Pryor Creek West City Trail.

6a. Pryor Creek West County Trail (see Mayes County Trails Master Plan)

7. Pryor Creek East Trail (see Mayes County Trails Master Plan)

8. Pryor Creek South Trail (see Mayes County Trails Master Plan)

9. Waterline Trail (see Mayes County Trails Master Plan)

10. Highway 69A Trail (see Mayes County Trails Master Plan)

11. Highway 69A Spur (see Mayes County Trails Master Plan)

Existing Highway 20

Proposed Highway 20 Trail

Proposed Linkages

Sixteen on-road bicycle / pedestrian linkages have been identified totaling approximately 19.36 miles. These corridors have the potential to be converted to accommodate on-road bike facilities. These corridors also contain room within the rights-of-way for the addition or improvement of sidewalks. The access to important destinations that these links provide will help tie the City of Pryor Creek Bicycle/Pedestrian Master Plan together into a complete system. The destinations identified within the following descriptions are located within an eighth of a mile (660') of the linkages.

12. Oklahoma Street Linkage is a proposed linkage located in south Pryor Creek. The link begins at the intersection of 9th Street and Oklahoma Street and continues south to 14th Street. The link connects to the 17th Street Linkage, 9th Street Trail, and East 9th Street Bike Route. Destinations served include Pryor High School, Pryor Creek Recreation Center, Lincoln Elementary School, and Prairie Village Apartments.

17th Street Linkage

13. 17th Street Linkage is a proposed linkage located in south Pryor Creek. The link begins at the intersection of Oklahoma Street and 17th Street. The link heads west along 17th Street and terminates at Vann Street. Destinations served include Pryor High School, Lincoln Elementary School and Centennial Park. The link also serves as a connection to Vann Linkage, Oklahoma Street Linkage, Surrey Linkage, and intersects Elliott Road Trail North.

14. Surrey Linkage is a proposed linkage located in south Pryor Creek. The link begins at the intersection of 17th Street and Surrey Drive. The link heads south along Surrey Drive through residential development and loops north at Southridge Drive and terminates at 17th Street. This link only connects to 17th Street Linkage. Destinations served include Centennial Park.

Vann Linkage

15. Vann Linkage is a proposed linkage located in central Pryor Creek. The link begins at the intersection of 17th Street and Vann Street. The link then heads north to the intersection of Vann Street and Park Street. The link serves as a connection to Park Street Linkage, Thurman Linkage, 17th Street Linkage, Coo Y Yah Linkage, and 9th Street Trail. Destinations served include Jefferson Elementary and Whitaker Park.

16. Thurman Linkage is a proposed linkage located in southern Pryor Creek. The link begins at the intersection of Vann Street and Gist Drive. The link then meanders through residential development and terminates at the intersection of 10th Street and Vann Street. Vann Linkage and US 69 South City Trail are the only connections served by the link.

Park Street Linkage

17. Park Street Linkage is a proposed linkage located in central Pryor Creek. The link begins at the intersection of Park Street and Vann Street. The link follows Park Street to the east until it terminates at Ora Street. The link serves as a connection to Vann Linkage, Coo Y Yah Linkage, Elliott Street Trail North, and Bailey Linkage. Destinations served include Whitaker Park, Thunderbird Youth Academy, and Jefferson Elementary School.

18. Coo Y Yah Linkage is a proposed linkage located in central Pryor Creek. The link begins at the intersection of 7th Place and Vann Street. The linkage follows 7th Place east to Jefferson Elementary School, circles the school then heads north along Coo Y Yah Street, turning east on 4th Street. The link terminates at the intersection of 4th Street and Elliott Street. This linkage serves as a connection to Oklahoma Street Linkage, Park Street Linkage, First Street Linkage, Hogan Linkage, Bailey Linkage, and Clayton / 5th Street Linkage. Destinations served include Jefferson Elementary School, Whitaker Park, Pryor Junior High School, and Roosevelt Elementary School.

19. Hogan Linkage is a proposed linkage located in southwest Pryor Creek. The link begins at the intersection of Highway 20 and Hogan Street and continues north along Hogan Street turning east on 3rd Street then continuing north on Elliott Street before ending on 4th Street where it meets the trail head for Creek Rail Trail. This link serves as the connection between the Creek Rail Trail and Highway 20 Linkage.

Bailey Linkage

20. Bailey Linkage is a proposed link located in central Pryor Creek. The link begins at the intersection of Park Street and Ora Street and continues north on Ora Street to 2nd Street, turns east to Bailey Street. The linkage then continues north to 3rd Street where it then turns west until Orphan Street. Once at Orphan Street, the linkage heads north to 4th Street. The linkage then follows 4th Street west to the intersection of 4th Street and Elliott Street where it terminates. The linkage serves as a connection Hogan Linkage, Old Highway 20 City Linkage, Highway 20 East City Trail, and Park Street Linkage. Destinations served include Thunderbird Youth Academy, Whitaker Park, Alliance Health Hospital, several churches, and Roosevelt Elementary School.

21. Clayton / 5th Linkage is a proposed linkage located in north Pryor Creek. The linkage begins at the intersection of Maple Street and 5th Street and continues east along 5th to the intersection of 5th and Elliott Street. The linkage then travels north to Clayton where the linkage turns east again and terminating at Gaither Road. The linkage serves as a connection to Maple Bike Route, Dog Pound / Taylor Linkage, US 69 North City Trail, Hogan Linkage, and Old Highway 20 Bike Route. Destinations served include Roosevelt Elementary School.

Old Highway 20 City Linkage

22. Old Highway 20 City Linkage is a proposed linkage located in eastern Pryor Creek. The linkage begins at the intersection of Bailey Street and 1st Street and continues east to the intersection of 1st Street and N 4340 Road. The linkage serves as a connection to Bailey Linkage, Gaither Linkage, and Old Highway 20 Bike Route. Destinations served include Integris Mayes County Medical Center and Mayes County Fair Grounds.

23. Gaither Linkage is a proposed linkage in eastern Pryor Creek. The linkage begins at the intersection of Highway 20 and Gaither Road and continues north to 5th Street. The linkage serves as a connection to Highway 20 East City Trail, Old Highway 20 Linkage, and Gaither Bike Route. Destinations served include Alliance Health Hospital and Mayes County Fair Grounds.

1st Street Linkage

24. 1st Street Linkage is a proposed linkage in western Pryor Creek. The linkage beginning at the intersection of Highway 20 and 1st Street and continues east along 1st Street and terminates at Coo Y Yah. The linkage serves as a connection to Highway 20 West Trail, Dog Pound / Taylor Linkage, and Coo Y Yah Linkage. Destinations served include Pryor Tigers Football Stadium and park, Washington Elementary School, and Bobby Buck Park.

25. Dog Pound / Taylor Linkage is a proposed linkage in central Pryor Creek. The linkage begins at the intersection of Dog Pound Road and 3rd Street and continues north to 5th Street where it terminates. The linkage serves as a connection to US 69 South City Trail, West 9th Street Linkage, 1st Street Linkage, and Clayton / 5th Street Linkage. There are no destinations served directly within 1/8th of a mile.

26. West 9th Street Linkage is a proposed linkage in western Pryor Creek that begins at the intersection of Dog Pound Road and 9th Street. The linkage continues west to the city limits where it transitions into East 500 Bike Route. The linkage serves as a connection to US 69 South City Trail and Dog Pound / Taylor Linkage. There are no destinations served directly within 1/8th of a mile.

27. Oakwood Linkage is a proposed linkage in south Pryor Creek. The linkage begins on the east side of Highway 69 and 29th Street. The linkage continues east for a short bit before turning south on N4310 Road and terminates at Steve Berry Boulevard. The linkage serves as a connection to Berry Linkage, US 69 South City Trail, and nature trails. There are no destinations served directly within 1/8th of a mile.

27a. Berry Linkage (see Mayes County Trails Master Plan)

Existing 17th Street

Proposed 17th Street Linkage

Proposed Bike Routes

Eight Bike Routes have been identified in the Mayes County Trail Master Plan. These corridors have the potential to be converted to accommodate share the road bike facilities and connect to several of the Pryor trails and linkages.

Old Highway Bike Route

22a. Old Highway 20 Bike Route (see Mayes County Trails Master Plan)

23a. Gaither Bike Route (see Mayes County Trails Master Plan)

26a. East 500 Road Bike Route (see Mayes County Trails Master Plan)

28. Maple Bike Route (see Mayes County Trails Master Plan)

29. Old Airport Road Bike Route (see Mayes County Trails Master Plan)

30. True / Carbide Bike Route (see Mayes County Trails Master Plan)

31. 29th / East 530 Bike Route (see Mayes County Trails Master Plan)

32. East 9th Street Bike Route (see Mayes County Trails Master Plan)

Existing 9th Street

Proposed 9th Street Bike Route

Chapter 6

Bicycle/Pedestrian Master Plan

Funding Sources

Introduction

The most successful method of funding trails is to combine private sector funds with funds from local, state and federal sources. Many communities involved with bicycle/pedestrian facilities implementation will seek to leverage local money with outside funding sources to increase resources available for trail acquisition and development. To implement bicycle/pedestrian facilities in Pryor Creek, local advocates and government staff should pursue a variety of funding sources. Funding for specific trails may involve a variety of sources. Local governments and project sponsors should review available sources to determine the best funding for specific projects based on funding availability, application deadlines, and probability of success. The funding sources listed in this chapter represent some of the bicycle/pedestrian facilities funding opportunities that have typically been pursued by other communities.

Funding sources for bicycle and pedestrian facilities and programs can be found at all levels of government as well as in the private sector. Prior to the 1990's, only a few million dollars a year of federal funds were being invested in bicycle or pedestrian facilities. Starting with the passage of ISTEA (the Intermodal Surface Transportation Efficiency Act) in 1992, hundreds of millions of dollars are now being spent annually on bicycle, pedestrian and trail facility development. Millions more are spent regularly on planning, safety and promotion programs.

Federal Public Funding Sources

Several federal programs offer financial aid for projects that aim to improve community infrastructure, transportation, housing, and recreation programs. Some of the federal programs that can be used to fund bicycle/pedestrian facilities in Pryor Creek include:

Moving Ahead for Progress in the 21st Century (MAP-21)

On June 29, 2012 the U.S. Congress passed a new 27-month federal transportation bill. The three core trail and active transportation programs from SAFETEALU—Transportation Enhancements (TE), Safe Routes to School (SRTS) and the RTP—are merged under a new Transportation Alternatives program. The term Transportation Enhancements is replaced by "Transportation Alternatives."

Transportation Equity Act for the 21st Century (TEA21)

A primary source of past federal funding for bicycle/pedestrian facilities is was the Transportation Equity Act of 1998 (TEA21), formerly the Intermodal Surface Transportation Efficiency Act (ISTEA). ISTEA provided millions of dollars in funding for pedestrian transportation projects across the country and provided millions more as TEA21.

There were many sections of TEA21 that support the development of pedestrian transportation corridors. The Oklahoma Department of Transportation (ODOT) utilized funding from many of these subsets of TEA21. Those sections that apply to the creation of trails and greenways include:

Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU)

On August 10, 2005, President George W. Bush signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). With guaranteed funding for highways, highway safety, and public transportation totaling $244.1 billion, SAFETEA-LU represents the largest surface transportation investment in our Nation's history. This superseded the TEA21 legislation.

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.

Surface Transportation Program (STP) Funds

These funds can be used for bicycle/pedestrian facilities construction or non-construction projects such as brochures, public service announcements, and route maps. The projects must be related to pedestrian transportation and must be part of the Long Range Transportation Plan.

Two primary subsets of these funds are Statewide STP funds and the Urbanized Area STP funds. ODOT is responsible for programming the Statewide STP funds which total approximately $70 million a year. ODOT programs most of these funds for the state highway system. Additionally, TEA21 expanded the use of STP Safety set-aside funds to include bicycle improvements. Hazard Elimination (part of this set-aside) funds can also now be used for pedestrian public pathways, trails and bicycle/pedestrian facilities.

National Highway System (NHS)

A state may spend NHS funds on "construction of bicycle transportation facilities on land adjacent to any highway on the National Highway System (other than the Interstate System)". Oklahoma receives approximately $65-$70 million per year for the NHS program. Two types of projects are covered by this source. First, trail facilities can be constructed as an incidental part of a larger NHS project, such as the trail facilities built along I-70 in Colorado. These facilities are constructed at the same time as the larger project. Second, facilities that are constructed adjacent to an NHS route, but are built as an independent project, are also eligible.

Transportation Alternatives

Ten percent of Oklahoma's annual STP funds (approximately $10-$12 million per year) are available for Transportation Alternatives, which include projects such as trails, greenways, sidewalks, signage, bikeways, safety education and wildlife undercrossings. A portion of these funds are available to all cities and counties in the State of Oklahoma. There are several key requirements that projects must meet in order to receive these funds:

1. Approval of MPO is required for projects located within their transportation planning area.
2. Funds require a 20% cash match. Other federal funds can be used for the match in some circumstances. In-kind services and donated properties are not eligible as matches.
3. Professional design and planning fees are eligible for Enhancement funding, but cannot be used as a match.
4. The sponsor is responsible for preparing construction documents and bid documents. The sponsor will also be responsible for environmental clearances, bidding the project, and construction inspections in accordance with FHWA guidelines.
5. Land acquisition, if any, must be in accordance with federal requirements (sponsoring agencies are required to follow certain procedures in acquiring lands, and must follow these procedures if they intend to apply for Enhancement funds).
6. Application deadlines are set periodically by ODOT. ODOT has set a application deadline of January in odd numbered years.

These requirements reflect MAP21 legislation and draft rules prepared by ODOT. For more information, contact Chad Meisenburg, the Special Projects Branch Manager at the Department of Transportation, at (405) 521-6781.

National Recreational Trails Fund Act (NRTFA)

A component of ISTEA and TEA21, the NRTFA is a funding source to assist with the development of non-motorized and motorized trails. The Act uses funds paid into the Highway Trust Fund from fees on non-highway recreation fuel used by off-road vehicles and camping equipment. This money can be spent on the acquisition of easements and fee simple title to property, trail development, construction and maintenance.

Through state agencies, "Symms Act" grants are available to private and public sector organizations. NRTFA projects are 80 percent federally funded, and grant recipients must provide a 20 percent match. Federal agency project sponsors or other federal programs may provide additional federal share up to 95 percent. Local matches can be in the form of donations of services, materials or land. Projects funded must be consistent with the Statewide Comprehensive Outdoor Recreation Plan. (See Oklahoma Recreational Trails Fund Program under "state funding sources" later in the chapter.)

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The CMAQ program was created to reduce traffic congestion and improve air quality. Funds are available to communities designated as "non-attainment" areas for air quality, meaning the air is more polluted than federal standards allow. Funds are also available to "maintenance" areas, former non-attainment areas that are now in compliance. Funds are distributed to states based on population and the severity of air quality problems. A 20 percent local match is required. ODOT currently receives $10-$11 million per year of CMAQ funds from the Federal Highway Administration. In 2011, Oklahoma received $10,534,074 in funds from the Federal Highway Administration.

Community Development Block Grant Program

The Community Development Block Grant (CDBG) program enables rural Oklahoma communities to finance a variety of public infrastructure and economic improvements and helps promote job growth as a result of these improvements. CDBG funds are provided by the federal government and managed by the Oklahoma Department of Commerce to help ensure Oklahoma's most critical needs are addressed.

Each year, the U.S. Department of Housing and Urban Development (HUD) provides to Commerce about $17 million in CDBG funds that finance economic and infrastructure programs for rural Oklahoma communities in the form of grants.

In 2009, Commerce awarded funding for 150 new projects in rural Oklahoma totaling $14.16 million. Thousands of projects in hundreds of communities across the state have been funded and completed since the state began administering the program in 1982.

Land and Water Conservation Fund (LWCF) Grants

This federal funding source was established in 1965 to provide park and recreation opportunities to residents throughout the United States. Money for the fund comes from the sale or lease of nonrenewable resources, primarily federal offshore oil and gas leases and surplus federal land sales. Since the origin of the program in 1965, over $3.7 billion has been apportioned. More than 40,000 projects have been approved to assist state and local efforts to acquire land and develop facilities for public outdoor recreation purposes. The federal investment has been matched by state and local contributions for a total LWCF grant investment of over $7.4 billion.

LWCF funds are used by federal agencies to acquire additions to National Parks, Forests, and Wildlife Refuges. In the past, Congress has also appropriated LWCF moneys for so-called "state-side" projects. These "state-side" LWCF grants can be used by communities to acquire and build a variety of park and recreation facilities, including trails and greenways.

"State-side" LWCF funds are annually distributed by the National Park Service through the Oklahoma State Tourism and Recreation Department. Communities must match LWCF grants with 50 percent of the local project costs through in-kind services or cash. All projects funded by LWCF grants must be used exclusively for recreation purposes, in perpetuity. Funding for this program has not been available for several years, although funds could be allocated in the future.

Watershed Protection and Flood Prevention (Small Watersheds) Grants

The USDA Natural Resource Conservation Service (NRCS) provides funding to state and local agencies or nonprofit organizations authorized to carry out, maintain and operate watershed improvements involving less than 250,000 acres. The NRCS provides financial and technical assistance to eligible projects to improve watershed protection, flood prevention, sedimentation control, public water-based fish and wildlife enhancements, and recreation planning. The NRCS requires a 50 percent local match for public recreation, and fish and wildlife projects.

Telephone: (202) 720-3534
http://www.nrcs.usda.gov

Urban and Community Forestry Assistance Program

The USDA provides small grants of up to $10,000 to communities for the purchase of trees to plant along city streets and for trails and parks. To qualify for this program, a community must pledge to develop a street tree inventory; a municipal tree ordinance; a tree commission, committee or department; and an urban forestry-management plan.
Contact Mark Bayes at (405) 521-3864 for more information.

State Public Funding Sources

The State of Oklahoma has two primary sources of trail funding. Both the MAP21 and Recreational Trails Fund Program are funded through federal initiatives, but distributed by the State of Oklahoma.

Oklahoma Department of Transportation

See Transportation Alternative Program (page 61).

Oklahoma Recreational Trails Fund Program

The Oklahoma Recreational Trails Fund Program was created to expand moneys funded by the National Recreational Trails Fund Act (NRTFA). This act was part of TEA21 (page 66).

The NRTFA is a state administered federal aid program managed through the Federal Highway Administration in consultation with the Department of the Interior. Half of the funds available to states are allocated equally among eligible states. The other half of the funds are allocated in proportion to the amount of non-highway recreational fuel use in each eligible state. The state can grant these funds (approximately $500,000 per year) to both private and public sector organizations. In Oklahoma, NRTFA projects are 80 percent federally funded, and grant recipients must provide a 20 percent match. Projects funded must be consistent with the Statewide Comprehensive Outdoor Recreation Plan (SCORP). Interested parties should contact Susan Henry with the Oklahoma State Tourism and Recreation Department at (405) 230-8490 or email Susan at shenry@oklahomaparks.com.

Oil Revenues

In the past, oil royalties and the stripper well oil overcharge refund have been used for development of the Avery Drive bike lanes in the Tulsa Metro Area. This could be another valuable source of funding for trails, although funding is limited. It is administered through the Oklahoma Department of Commerce.

Local Sources of Public Funding

Many local governments have obtained funding for trail projects through local initiatives. Public support for projects is essential to the success of local public funding sources. Therefore, information on the benefits of a proposed trail system should be distributed prior to implementing such initiatives.

Local Sales Taxes

In the past, local sales taxes have been a successful means of raising funds for a variety of capital improvement projects in cities across the state. In the City of Tulsa, every five years, voters decide whether to renew the 3rd penny sales tax which generates more than $60 million per year. In 2006, Tulsa voters approved the most recent sales tax extension, which included $2.4 million for trail development to the year 2010. Other cities in Oklahoma have implemented similar programs.

San Diego County residents voted to impose a ½-cent sales tax for transportation purposes. Out of those funds ($171 million in year 2000), $1 million is set aside for bicycle projects. The tax is administered by the San Diego Association of Governments and was scheduled to expire in 2008.

Bond Referendums

The City of Tulsa and other communities have successfully placed propositions on local ballots to support trail development. In 1989, $600,000 of G.O. bond funds were issued and used as a match for ISTEA funds. This resulted in more than $2.5 million for the design and construction of trails in Tulsa. The Charlotte-Mecklenburg County, North Carolina, area passed four consecutive referendums that generated more than $3 million for greenways. Guilford County, North Carolina, also passed a referendum that appropriated $1.6 million for development of the Bicentennial Trail. Since bond funding relies on the support of the voting population, an aggressive education and awareness program will need to be implemented prior to any referendum vote.

The City of Albuquerque, New Mexico, and Bernalillo County, both have a 5% set-aside of street bond funds, which go to trails and bikeways. For the City, this has amounted to approximately $1.2 million every two years for these facilities. Last year, the City voters passed a ¼ cent gross receipts tax for transportation, which includes approximately $1 million per year for the next ten years for trail development. In addition, many of the on-street facilities are being developed as a part of other road projects and are incorporating the bike facilities in the roadway budget for new roads, or when a resurfacing project is planned.

Local Capital Improvements Program

Some local governments have initiated a yearly appropriation for greenway and trail development in the capital improvements program. In Raleigh, North Carolina, greenways continue to be built and maintained, year after year, due to a dedicated source of annual funding, that has ranged from $100,000 to $500,000, administered through the Parks and Recreation Department.

Local Private Funding Sources

Many communities have solicited trail funding from a variety of private sources, including corporations and other conservation-minded benefactors. As a general rule, local businesses and individuals will have a greater interest in and will be more likely to fund local projects. These local sources should be approached first, before seeking funds outside the community.

Local Businesses

Local industries and private businesses may agree to provide support for development of trails in Pryor Creek through:

- donations of cash for a specific trail segment or trail head which will lead to a specific local business/mall

- donations of services by corporations to reduce the cost of trail implementation, including equipment and labor to construct and install elements of a trail

• reductions in the cost of materials purchased from local businesses which support trail implementation and can supply essential products for facility development

This method of raising funds requires a great deal of staff coordination. One example of a successful endeavor of this type is the Swift Creek Recycled Greenway in Cary, North Carolina. A total of $40,000 in donated construction materials and labor made this trail an award-winning demonstration project. (Some materials used in the "recycled trail" were considered waste materials by local industries!)

Also, local businesses should keep in mind that trails do mean sales. A study done in Manayunk, PA estimated that the trail impact in Manayunk generates business revenue in excess of $2.5 million dollars annually. This represents an average of $15.05 per trail user within the 73.4% spending range, or an average of $10.30 per trail user.

Trail Sponsors

A sponsorship program for trail amenities allows for smaller donations to be received both from individuals and businesses. The program must be well planned and organized, with design standards and associated costs established for each amenity. Project elements which may be funded can include wayside exhibits, benches, trash receptacles, entry signage, and picnic areas. Usually, plaques recognizing the individual contributors are placed on the constructed amenities or at a prominent entry point to the trail.

Volunteer Work

Community volunteers may help with trail construction, as well as fundraising. Potential sources of volunteer labor in Pryor Creek could include high school or college students, user groups (running, walking and cycling clubs), local historical groups, neighborhood associations, local churches, conservation groups, school groups, local civic clubs such as Kiwanis, Rotary and Lions Clubs, and United Way Day of Caring.

A good example of a volunteer greenway program is Cheyenne, Wyoming, which generated an impressive amount of community support and volunteer work. The program has the unusual problem of having to insist that volunteers wait to begin landscaping trails until construction is completed. A manual for greenway volunteers was developed in 1994 to guide and regulate volunteer work. The manual includes a description of appropriate volunteer efforts, request forms, waiver and release forms, and a completion form (volunteers are asked to summarize their accomplishments). Written guidelines are also provided for volunteer work in 100 year floodplains.

To better organize volunteer activity, Cheyenne developed an "Adopt-a-Spot" program. Participants who adopt a segment of trail are responsible for periodic trash pick-up, but can also install landscaping, prune trail-side vegetation, develop wildlife enhancement projects, and install site amenities. All improvements must be consistent with the Greenway Development Plan and must be approved by the local Greenway Coordinator. Adopt-a-Spot volunteers are allowed to display their names on a small sign along the adopted section of trail.

"Buy-a-Foot" Programs

"Buy-a-Foot" programs have been successful in raising funds and awareness for trail projects across the country. Under local initiatives, citizens are encouraged to purchase one linear foot of the trail by donating the cost of construction. An excellent example of a successful endeavor is the High Point Greenway "Buy-a-Foot" campaign, in which linear greenway "feet" were sold at a cost of $25 per foot. Those who donated were given a greenway T-shirt and a certificate. This project provided an estimated $5,000 in funds.

Chapter 7

Bicycle/Pedestrian Master Plan

Implementation Plan

Overview

The Pryor Creek Bicycle/Pedestrian System offers tremendous potential to improve the quality of life for community residents. The system will improve access to outdoor resources, link people to their favorite destinations, stimulate economic growth, expand opportunities for education, and shape community growth into the 21st Century. All of this is possible as the system is successfully developed during the coming years. The key to this success is implementation. This chapter describes a strategic plan for building, managing, and operating the Pryor Creek Bicycle/Pedestrian System.

Building the Pryor Creek Bicycle/Pedestrian System

Preparation of this Master Plan is only the initial step in the future development of the Pryor Creek Bicycle/Pedestrian System. More detailed design work is required before actual facilities are constructed and residents are able to use the corridors. Therefore, the continued involvement of citizens, businesses, and neighborhoods is vital to the ongoing development of a successful design. Utilizing the process of involving those citizens directly affected by the proposed bicycle/pedestrian facilities during the conceptual design phase is strongly recommended. This section of the chapter and Chapter 4, Design Guidelines are intended to provide a step-by-step process for building segments of the Pryor Creek Bicycle/Pedestrian System.

Each corridor and/or segments of each corridor will require a more detailed site design to determine the appropriate alignment. Additionally, the location of bicycle/pedestrian amenities, such as furniture, bicycle storage, landscaping, drinking fountains, parking, and lighting need to be defined and located throughout the corridors.

This Master Plan proposes the development of an interconnected system of asphalt/concrete paved multi-use trails within each of the 22 corridors defined in Chapter 5: Description of Bicycle/Pedestrian System. Detailed site plans and design development documents should be prepared for all trail segments. Staff resources and/or professional design consultants with previous experience in bicycle/pedestrian facilities design and construction should be employed to prepare the necessary detailed design documents for each of the corridors.

Phasing Strategy for the Pryor Creek Bicycle/ Pedestrian System

With limited trail resources and over 12 miles of proposed multiuse trails, it is important to determine a logical order for the implementation of the corridors. In an effort to evaluate each corridor objectively, the following criteria were developed to assist in determining the order of development for the next 10 to 15 years. The consultant worked closely with the Pryor Creek Bicycle/Pedestrian Master Plan Steering Committee to identify and utilize the most critical evaluation factors for future development of corridors. The Steering Committee devoted a substantial amount of time and effort toward the development of these criteria and reached a consensus regarding the relative importance of each. The following section defines the terminology utilized in the evaluation of the proposed corridors.

Schools Served: corridors which connect schools offer the communities a safe opportunity for children to walk or ride their bikes and can serve as logical trail heads. The higher the number of schools served by a corridor the higher the ranking. For this evaluation the population within one-eighth mile of the corridor was used.

Parks Served: corridors which connect major parks and recreation destinations can offer the public a safe opportunity to access these facilities and they can serve as trail heads. The higher the number of parks and recreation destinations served by a corridor the higher the ranking.

Right of Way Availability: the availability of rights of way or easements to construct corridors is a critical cost and timing factor. If right of way or easements cannot be secured voluntarily to construct a trail within a corridor, the corridor cannot be built unless rights can be purchased. Purchasing right of way can be very expensive and in many cases can make constructing a trail cost prohibitive. Corridors which have necessary right of way in the public domain have the highest ranking.

Near Term Phase: is used to describe those corridors for which the design can be started within two years and constructed within a period of 5 years. Most trails in this category have high scores in the first three evaluation criteria.

Mid Term Phase: is used to describe those corridors for which design can commence within the next five years and constructed within 10 years.

Long Term Phase: is used to describe those corridors for which design can commence within the next 10 years and constructed within 15 years.

Trail Phasing

With 12 miles of proposed trails within Pryor Creek, the first question is inevitably, "Which trail gets built first?" The following "Trail Phasing Evaluation Matrix" applies the above criteria to each of the 9 proposed trail corridors. Each corridor is objectively compared to all other corridors with the resulting ranking order established for all trails. The various phases described in the following matrix are meant to provide a relative time frame only and are not absolute. The process of implementing trails within the city will be dynamic, and as opportunities arise and conditions change corridors may be developed in a different order than indicated in the phasing matrix.

The 6 trail corridors were grouped into three implementation phases: Near Term, Mid Term, and Long Term Phases.

Trail Phasing Evaluation Matrix

RANK	ID	NAME	ROW AVAILABILITY	TOTAL SCHOOL SCORE	TOTAL PARKS SCORE	CONNECTION TO EXISTING TRAIL	TOTAL SCORE	PHASE	LENGTH	TOTAL PHASE LENGTH
1	1	Elliott Road Trail North	4	2	2	4	**12**	Near Term	1.51	
2	2	9th Street Trail	4	1	1	0	**6**	Near Term	0.98	**2.49**
3	6	Pryor Creek West City Trail	4	0	1	0	**5**	Mid Term	0.76	
4	3	Highway 20 East City Trail	4	1	0	0	**5**	Mid Term	3.55	**4.31**
5	4	US 69 South City Trail	4	0	0	0	**4**	Long Term	3.43	
6	5	US 69 North City Trail	4	0	0	0	**4**	Long Term	1.82	**5.25**

Linkage Phasing

With 19 miles of proposed on-street bicycle/pedestrian linkages within Pryor Creek, developing priorities for implementation is needed. The following spreadsheet applies the same criteria utilized for trails to each of the 18 various on-street bicycle/pedestrian linkage corridors. Since each on-street linkage is within existing or proposed road rights of way, all corridors received the maximum score on right of way availability. The 16 corridors were grouped into three implementation phases: Near Term, Mid Term Phases, and Long Term Phases.

Linkage Phasing Evaluation Matrix

RANK	ID	NAME	ROW AVAILABILITY	TOTAL SCHOOL SCORE	TOTAL PARKS SCORE	CONNECTION TO EXISTING TRAIL	TOTAL SCORE	PHASE	length	
1	18	Coo Y Yah Linkage	4	3	1	0	**8**	Linkage Near Term	1.76	
2	13	17th Street Linkage	4	1	1	1	**7**	Linkage Near Term	0.98	
5	24	1st Street Linkage	4	1	1	1	**7**	Linkage Near Term	1.30	
3	12	Oklahoma Street Linkage	4	1	1	1	**7**	Linkage Near Term	1.45	**5.49**
4	15	Vann Linkage	4	1	1	0	**6**	Linkage Near Term	1.00	
6	14	Surrey Linkage	4	1	1	0	**6**	Linkage Near Term	0.80	
7	19	Hogan Linkage	4	2	0	0	**6**	Linkage Near Term	0.53	
8	17	Park Street Linkage	4	0	1	1	**6**	Linkage Mid Term	0.71	
9	20	Bailey Linkage	4	1	1	0	**6**	Linkage Mid Term	1.16	
12	27	Oakwood Linkage	4	0	1	1	**6**	Linkage Mid Term	1.08	**5.28**
10	21	Clayton/5th Linkage	4	1	0	0	**5**	Linkage Mid Term	2.50	
11	25	Dog Pound/Taylor Linkage	4	0	1	0	**5**	Linkage Mid Term	1.60	
13	16	Thurman Linkage	4	0	0	0	**4**	Linkage Long Term	1.12	
14	22	Old Highway 20 City Linkage	4	0	0	0	**4**	Linkage Long Term	1.74	
15	23	Gaither Linkage	4	0	0	0	**4**	Linkage Long Term	1.01	
16	26	West 9th Street Linkage	4	0	0	0	**4**	Linkage Long Term	0.62	**8.60**

Estimated Costs for Facility Development

The consultant has prepared cost estimates for all of the corridors defined within this Master Plan. The cost estimates are general in nature and are based on national industry or State of Oklahoma averages. A listing of the industry averages that were used to determine "low" or "high" estimates are provided on the following pages. The purpose of these cost estimates is to provide general guidance for the purpose of budgeting and developing trail segments. The estimates are reliable to the extent that a general expectation can be derived from their use. Specific site development factors unique to each corridor will influence final design development costs. More detailed costs should be developed as a part of corridor specific conceptual plans. Final construction cost estimates should be based on final design plans.

Typical Costs for Off-Road Trail Facilities

Preliminary construction cost budgets are provided in tabular form on pages 74 and 75 of this Chapter for the Near-Term, Mid-Term and Long-Term trail projects. The unit costs defined below and on the following pages are provided for budgeting purposes only. Adjustments will have to be made to these costs on a project-by-project basis to compensate for changes in unit price trends over time.

Category/Description of Facility	Unit	Unit Costs
Trail Treads		
6-foot Bare Earth Hike/Mtn. Bike Trail	linear feet	$6.50
8-foot Bare Earth Equestrian Trail	linear feet	$8.50
8-foot Woodchip Pedestrian Trail	linear feet	$13.00
10-foot Soil-Cement Trail	linear feet	$15.00
10-foot Aggregate/Stone Trail	linear feet	$25.00
10-foot Asphalt Multi-Purpose Trail	linear feet	$55.00
10-foot Concrete Multi-Purpose Trail	linear feet	$70.00
10-foot Wood Deck/Boardwalk Trail	linear feet	$650.00
Signage		
Information Signs	each	$2,500.00
Direction Signs	each	$500.00
Warning Signs	each	$500.00
Mile/Kilometer Markers	each	$350.00
Decorative Kiosks	each	$3,500.00
Furniture/Furnishings		
Benches	each	$1,000.00
Trash Receptacles	each	$800.00
Security Bollards	each	$1,200.00
Bicycle Racks	each	$900.00
Fencing (Board-on-Board)	linear feet	$20.00

Gates	each	$2,7500.00
Emergency Phones	each	$1,000.00
Drinking Fountains	each	$5,500.00
Restrooms	each	$120-$200,000.00
Landscaping	per mile	$50,000.00
Lighting	per mile	$90-$150,000.00

Parking Lots	**Unit**	**Gravel Lot***	**Asphalt Lot**
10 cars	each	$8,500.00	$18,000.00
20 cars	each	$17,000.00	$36,000.00
40 cars	each	$34,000.00	$72,000.00

*Gravel lots are prohibited in some jurisdictions

Developing the Trails Master Plan

If the momentum generated by the Pryor Creek Bicycle/Pedestrian Master Plan is sustained over the next 15 years, the opportunity exists to implement a total of 12 miles of multiuse trails. The phased development breaks down as follows: Near-Term projects consisting of 2.49 miles of multiuse trails; Mid-Term projects consisting of 4.31 miles of multiuse trails; and the Long-Term projects totaling 5.25 miles of multiuse trails.

Trails Cost

The following cost estimates for trail facilities are general in nature and based on State of Oklahoma averages for multiuse trails constructed over the last five years. More detailed cost estimates should be prepared as site specific plans are developed for each corridor.

Near Term Trails Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
1	1	Elliott Street Trail North	1.51	$ 581,510.42	$ 830,729.17
2	2	9th Street Trail	0.98	$ 343,437.50	$ 490,625.00
		TOTAL NEAR TERM CORRIDORS	**2.49**	**$ 924,947.92**	**$ 1,321,354.17**

Mid Term Trails Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
3	6	Pryor Creek West City Trail	0.76	$ 331,853.69	$ 474,076.70
4	3	Highway 20 East City Trail	3.55	$ 1,243,825.76	$ 1,776,893.94
		TOTAL MID TERM CORRIDORS	**4.31**	**$ 1,575,679.45**	**$ 2,250,970.64**

Long Term Trails Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
5	4	US 69 South City Trail	3.43	$ 1,922,560.61	$ 2,746,515.15
6	5	US 69 North City Trail	1.82	$ 826,410.98	$ 1,180,587.12
		TOTAL LONG TERM CORRIDORS	**5.25**	**$ 2,748,971.59**	**$ 3,927,102.27**

All costs based on 2015 dollars.

Bicycle / Pedestrian Linkages Cost

The on-street bicycle/pedestrian linkages identified as a part of the Bicycle/Pedestrian Master Plan are intended to provide linkages between various off street trails and sidewalks allowing greater access to the trail and sidewalk system. The cost estimates for these types of facilities are general in nature and based on national industry or State of Oklahoma averages. The estimate includes items such as share the road signs, bike route signs, bicycle activated traffic signals, on street share the road pavement markings, replacement of drainage grates, and other minor street construction items.

Since a detailed evaluation of the recommended linkages has not been performed by the consultant, a detailed evaluation of each corridor must be completed prior to designating the corridor for on-street use. A detailed evaluation might indicate the need for additional pavement width to provide a designated striped bicycle lane for safety reasons. In some cases it might be necessary to reduce the vehicular speed limit prior to designating a particular corridor for on-street use.

Near Term Linkage Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
1	18	Coo Y Yah Linkage	1.76	70,590.91	105,886.36
2	13	17th Street Linkage	0.98	39,083.33	58,625.00
5	24	1st Street Linkage	1.30	51,856.06	77,784.09
3	12	Oklahoma Street Linkage	1.45	58,030.30	87,045.45
		TOTAL NEAR TERM CORRIDORS	**5.49**	**$ 219,560.61**	**$ 329,340.91**

Mid Term Linkage Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
4	15	Vann Linkage	1.00	40,075.76	60,113.64
6	14	Surrey Linkage	0.80	31,909.09	47,863.64
7	19	Hogan Linkage	0.53	21,219.70	31,829.55
8	17	Park Street Linkage	0.71	28,212.12	42,318.18
9	20	Bailey Linkage	1.16	46,356.06	69,534.09
12	27	Oakwood Linkage	1.08	43,280.30	64,920.45
		TOTAL MID TERM CORRIDORS	**5.28**	**211,053.03**	**316,579.55**

Long Term Linkage Cost

Rank	ID	NAME	LENGTH (mi)	LOW COST	HIGH COST
10	21	Clayton/5th Linkage	2.50	100,098.48	150,147.73
11	25	Dog Pound/Taylor Linkage	1.60	64,151.52	96,227.27
13	16	Thurman Linkage	1.12	44,871.21	67,306.82
14	22	Old Highway 20 City Linkage	1.74	69,484.85	104,227.27
15	23	Gaither Linkage	1.01	40,378.79	60,568.18
16	26	West 9th Street Linkage	0.62	24,901.52	37,352.27
		TOTAL LONG TERM CORRIDORS	**8.60**	**$ 343,886.36**	**$ 515,829.55**

All costs based on 2015 dollars.

Operations and Management

Operating, maintaining and managing the Pryor Creek Bicycle/Pedestrian System will require a coordinated effort among city departments, private sector organizations and individuals. Key elements of the operation and management program include trail access easements, trail facility operational policies, land management, safety and security, trail rules and regulation, an emergency response plan, and a risk management plan. This information is defined in greater detail in Chapter 8 of this report.

Maintenance and management of all trail segments will be the responsibility of Pryor Creek and its partners. It is anticipated that these maintenance and management duties can be shared among trail supporters in the public and private sectors.

Maintenance and management of the Pryor Creek Bicycle/Pedestrian System will require the City to establish an operations budget for that purpose. The following maintenance and management costs are provided as a guide to establishing a budget for the operation, maintenance and management of trail segments within the Pryor Creek Bicycle/Pedestrian System. It may be possible to substantially lower the cost of maintaining one mile of paved trail through the development of an Adopt-a-Trail Program. Volunteers have been proven effective in performing some of the routine maintenance activities that are listed below. Savings of 50% of the estimated cost per mile defined below are possible through a coordinated and well run Adopt-a-Trail Program, and some of these costs are already being covered along highways, roads and parks and other areas. A pilot Adopt-a-Trail Program is recommended to be implemented by the Pryor Creek Community Department to determine local effectiveness.

Typical Maintenance Costs (For a 1-Mile Paved Trail)

Drainage and storm channel maintenance (4 x/year)	$800.00
Sweeping/blowing debris off trail tread (24 x/year)	$1,600.00
Pick-up and removal of trash (24 x/year)	$1,600.00
Weed control and vegetation management (10 x/year)	$1,450.00
Mowing of 3-ft grass safe zone along trail (24 x/year)	$1,850.00
Minor repairs to trail furniture/safety features	$500.00
Maintenance supplies for work crews	$400.00
Equipment fuel and repairs	$1,800.00
Estimated Maintenance Costs Per Mile of Paved Trail	**$10,000.00**

Re-Surfacing

Re-Surfacing of Asphalt Trail Tread (10 year cycle)	$70,000-75,000/mile

Pryor Creek Bicycle/Pedestrian Trust Fund

A Pryor Creek Bicycle/Pedestrian Trust Fund should be established to help pay for some of the costs for maintenance and management of Pryor Creek trail segments. The Fund would be established by soliciting funds from both public and private sector sources. The principal balance of the fund would provide two benefits: 1) the interest generated from the fund would

be used to aid in the funding of annual maintenance activities; 2) in the event of expensive short term maintenance needs, the principal balance could be tapped to support these activities.

Pryor Creek Bicycle/ Pedestrian System Governance Structure

Implementing the Pryor Creek Bicycle/Pedestrian System will require a coordinated effort among city departments and private sector groups, organizations and agencies. The Plan presented in this report is ambitious, yet it is very achievable. Other communities have accomplished similar efforts. The following chart summarizes the trail systems of other communities and defines the current management structure.

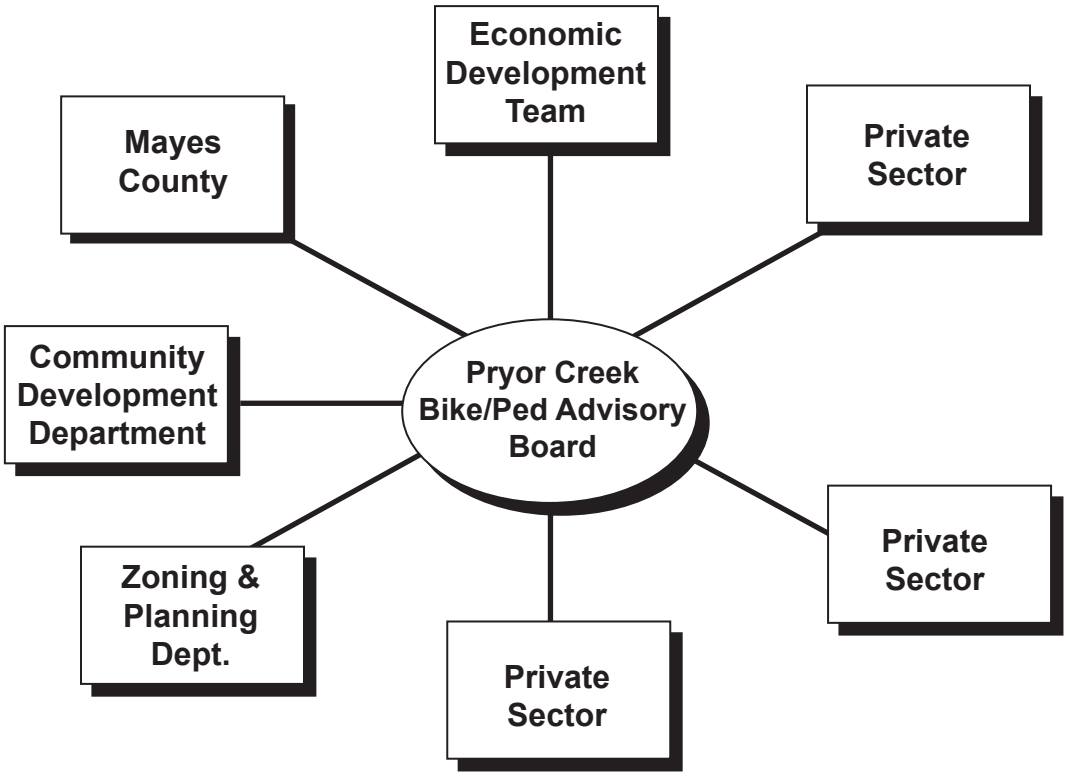
As illustrated by the following chart, the bicycle/pedestrian system proposed within Pryor Creek is smaller in size to some other systems in operation in other American communities. One thing that all successful systems have in common, however is a lead authority with the responsibility for implementing, operating and maintaining their system. The Community Development Department should be the lead authority assisted by the Pryor Creek Bicycle/ Pedestrian Advisory Board, which supports the development and operation of the trails system. This advisory board will support the cooperation and coordination of activities, resources and development objectives. A management structure is important to guide the process of implementation. Wilburton has approved their Bicycle Pedestrian Master Plan, but is still determining who the land manager is going to be.

Name of Metro Area	Size of System	Land Developer/Manager
Tulsa Trails System	60-mile system in one county	Public-private partnership led by the River Parks Authority non-profit group supported by local governments
Oklahoma City Trails System	70-mile system in three counties	Public-private partnership, led by Oklahoma City Metropolitan Trails Council, where both sectors serve as developers and managers of system
Edmond Trails System	22-mile system in two counties	Private-public partnership led by Edmond Leisure Services Department. Management is by public agencies.

Pryor Creek Bicycle/Pedestrian Advisory Board

The Pryor Creek Bicycle/Pedestrian Advisory Board would be established to make development, operations and maintenance recommendations to the Community Development Department. The Parks Department would have the responsibility to coordinate all needed services for the Pryor Trails System. The advisory board should have representation from the Community Development Department, Mayes County, Stormwater Management, and should include a minimum of 3 private sector appointees as depicted in the following graphic.

Bicycle/Pedestrian Advisory Board



Public Private Partnerships

The Pryor Creek Bicycle/Pedestrian System will require the services of the local agency and non-governmental staff in order to be successful. However, in order to successfully keep pace with the multitude of development, operation and management requirements of this bicycle/pedestrian system, the private sector will be called upon to share the burden and participate in the development and stewardship of the trails system where appropriate. The following are some suggestions for how the City and the private sector can assist with the implementation of the Pryor Creek Bicycle/Pedestrian System.

Role of the City

Pryor Creek should assist with the detailed planning, design and development of the Pryor Creek Bicycle/Pedestrian System. The Community Development Department should assist the Pryor Creek Bicycle/Pedestrian Advisory Board with the staffing and operations during its term of existence. The Community Development Department can also assist the advisory board with information, coordination, communication, implementation and management services. The City can take on the responsibility for completing detailed design development plans for individual segments of the bicycle/pedestrian facilities system and can review detailed design plans prepared by private developers for compliance to the approved design guidelines. They can also implement management plans for each segment, in partnership with private sector groups. The City should make applications for funding in accordance with the recommendations defined in Chapter Six of this Plan and aggressively pursue local, public, foundation and federal funding sources.

Role of the Private Sector

The private sector has a vital role to play in the design, development, management, operations and maintenance of the Pryor Creek Bicycle/Pedestrian System. The private sector includes developers, businesses, merchants, corporations, civic organizations and individuals. The private sector has a wealth of resources to offer toward the implementation of the Pryor Creek Bicycle/Pedestrian System and will be the primary beneficiaries of a successfully developed and managed system. The following defines three specific private sector roles, and then suggests generic roles that other organizations and groups might have in the development of the Pryor Creek Bicycle/Pedestrian System.

Private developers should be required to construct the trails identified on the Bicycle/Pedestrian Route Plan (Map 1) when a segment is within their proposed development. The design should be in conformance with the design guidelines iterated in Chapter 4 of this report to ensure a consistent level of service is maintained throughout the system. The responsibility of operations and maintenance should be negotiated on a case by case basis, but in all instances should be maintained at the same level as the overall bicycle/pedestrian system.

Local businesses and corporations might consider sponsoring a segment of bicycle/pedestrian facilities for development. Under trail naming guidelines a 50% or greater contribution of the total value of trail segment or trail head construction would enable the sponsored trail to be named after the business or an individual. Businesses and corporations might also consider

a gift or donation of construction material, finished products that could be used on the trail, or labor to help build the trail. Additionally, businesses and corporations could provide reduced cost materials, finished products, machinery and/or labor to assist in project development. Employers can provide incentives for employees who commute using the trails system. Among the incentives are bike racks, showers, lockers and cash reimbursements in lieu of employer paid parking subsidies.

Role of Civic Organizations

Local civic groups and organizations, including the Junior League, Boy Scouts, Girl Scouts, Garden Clubs, YMCA's, YWCA's, to name a few, can play a vital role in the development and management of the Pryor Creek Bicycle/Pedestrian System. Civic organizations and user groups can contribute the time and labor of their members to assisting the Community Development Department with staffing events, adopting segments for maintenance and management, sponsorship of trail segments for construction of trail tread, boardwalks, education exhibits and rest areas. There are endless ways in which local civic groups can become involved with the Pryor Creek Bicycle/Pedestrian System, and the best way is to match the goals and objectives of the organization to the needs of the system.

Role of Pryor Creek Residents

Pryor residents interested in the development and management of the Pryor Creek Bicycle/Pedestrian System can offer their time, labor and expertise to the Pryor Creek Bicycle/Pedestrian Advisory Board or the Community Development Department. Individuals might partner with a friend or neighbor to volunteer their services as Deputy Trail Rangers, to help patrol trails during the daytime. Individuals could volunteer to plant native trees, shrubs and groundcovers along the trail to improve the appearance of a newly developed trail segment. Individuals could volunteer to keep a particular stretch of trail segment clean of debris, litter and trash. All volunteer efforts should be recognized by the Pryor Creek Bicycle/Pedestrian Advisory Board through an appropriate community-wide program.

Chapter 8

Bicycle/Pedestrian Master Plan

Operations, Maintenance & Management

Overview

Over the course of time a variety of operational and management issues will be encountered that are important to the successful management and operation of the Pryor Creek Bicycle/Pedestrian System. The following policies are defined to assist the City and the Community Development Board in responding to typical trail implementation issues. More specific problems and issues may arise during the long-term development of the bicycle/pedestrian system that result in additional policies being considered and adopted.

Pryor Trails System Map Policy

The official Pryor Creek Bicycle/Pedestrian System Map as prepared by LandPlan Consultants, Inc. of Tulsa, OK. was approved by the Pryor Creek City Council and is on display at City Hall. The Community Development Department is vested with the responsibility of keeping the map current with respect to completed trail segments, and additions or deletions to the overall system. The official map illustrates three important aspects of the Pryor Creek Bicycle/Pedestrian System: One, trail corridors that warrant further study for early implementation; two, corridors that are part of the mid term phase of development; and three, corridors that are part of the longer term phased development strategy.

Public Access Easement Policy

The majority of land that is included within the Pryor Creek Bicycle/Pedestrian System corridors is currently owned by the city, but some land is owned by private individuals. For those lands that are in private ownership and developed, the City of Pryor Creek will negotiate with the property owner(s) for the use of their land for trail purposes. For planned corridors within the limits of proposed subdivisions, the City should require that corridor easements are provided by the developer during the platting process. For planned trails through those properties which are platted and currently undeveloped, the City should require a public access easement as a part of the site plan review process. Pryor Creek or certain non-profit organizations can accept donation of public access easements for the Pryor Creek Bicycle/Pedestrian System that is contained within the corridors defined on the official Route Plan Map in accordance with existing policies and codes pertaining to the acquisition of parkland, transportation corridors and land for water and wastewater facilities. The City should consider requiring public access provisions in all new easements.

Private Construction of Trails Policy

Construction of planned corridors within all new development should be considered the responsibility of the developer. In the same way that a developer is required to construct utilities to his site, he should be responsible for building bicycle/pedestrian corridors through his development which are a part of the Pryor Creek Bicycle/Pedestrian System. The developer should be required to conform to trail design standards as iterated in Chapter 4 "Design Guidelines".

Right of Public Access and Use of Trails Lands Policy

The general public shall have free access to and use of all bicycle/pedestrian lands that are owned by the City of Pryor Creek. All access and use is governed by existing local city policies and shall also be governed by the Pryor Creek Bicycle/Pedestrian Ordinance. The use of all bicycle/pedestrian facilities is limited to non-motorized uses (except maintenance vehicles), including hiking, bicycling, running, jogging, wheelchair use, skateboarding, rollerblading, mountain biking, and other uses that are determined to be compatible with Pryor Creek bicycle/pedestrian facilities.

Trail Naming Policy

The majority of corridors within the Pryor Creek Bicycle/Pedestrian System shall be named for the significant natural or cultural features that are found within the trail corridor. Trails can be named after an individual or individuals if these persons are truly distinguished within the community, or if these persons have contributed a gift equal to more than 50% of the value of trail development within that corridor segment.

Fencing and Vegetative Screening Policy

The City should work with landowners on an individual basis to determine if fencing and screening is required and appropriate. The City may agree to fund the installation of a fence or vegetative screen, however, it shall be the responsibility of the adjacent property owner to maintain the fence or vegetative screen in perpetuity, including the full replacement of such fence or screen in the event of failure or deterioration due to any circumstances.

Adopt-a-Trail Program Policy

An Adopt-a-Trail Program should be established by the Community Development Board to encourage community groups, families, businesses, school groups, civic clubs and other organizations to join in managing the Pryor Creek Bicycle/Pedestrian System. The Community Development Board will need to work closely with the City of Pryor Creek to ensure that all Adopt-a-Trail Program groups manage and maintain trails in a manner that is consistent with other land use objectives. The Community Development Board should develop written agreements for each Adopt-a-Trail entity and keep a current record of this agreement on file with the City. Adopt-a-Trail entities will be assigned a specific section of the Pryor Creek Bicycle/Pedestrian System, defined by location or milepost. The activities of each organization shall be monitored by the City. Agreements for management can be amended or terminated at any time by either party, giving 30 days written notice.

Management Agreements

Management Agreements should be established between the City and private organizations wishing to assist with the management of designated segments of the Pryor Creek Bicycle/ Pedestrian System. The objective of these agreements is to define areas of management that are compatible with existing land management activities, especially where the Pryor Creek Bicycle/Pedestrian System intersects with public or private properties and/or rights-of-way. Management agreements spell out specific duties, responsibilities and activities of the City and public or private organization that wishes to assist the City with management activities. They can be amended or terminated at any time by either party, giving 30 days written notice.

Cross Access Agreements Policy

The City can use cross access agreements to permit private landowners that have property on both sides of a trail corridor access to and use of a trail corridor to facilitate operation and land use activities. Adjacent landowners generally have the right to use the access at any time. However, access cannot block the right-of-way for trail users other than for temporary measures such as permitting livestock to cross, or transporting equipment. Adjacent landowners are responsible for acts or omissions which would cause injury to a third party using the trail. If a landowner must move products, materials, livestock or equipment across the trail on a regular basis, appropriate signage will be installed to warn users of the trail to yield for such activities.

Crossing of abandoned or active rail lines, utility corridors and/or roads and highways will require the execution of agreements with companies, local, state or federal agencies and organizations that own the rights-of-way. These crossings must provide clearly controlled, recognized, and defined intersections in which the user will be warned of the location. In accordance with the American Association of State Highway Transportation Officials (AASHTO) and the Manual on Uniform Traffic Control Devices (MUTCD), the crossing will be signed with appropriate regulatory, warning and information signs.

Land Management

Bicycle/pedestrian facilities should be maintained in a manner that promotes safe use. All bicycle/pedestrian facilities shall be managed by the City of Pryor Creek. Trail heads, points of public access, rest areas and other activity areas should be maintained in a clean and usable condition at all times. The primary concern regarding maintenance should always be public safety. Trail Maintenance should include the removal of debris, trash, litter, obnoxious and unsafe man-made structures, and other foreign matter so as to be safe for public use. Removal of native vegetation should be done with discretion, removal of exotic species should be accomplished in a systematic and thorough manner. The objective in controlling the growth of vegetation should be to maintain clear and open lines of sight along the edge of the trail, and eliminate potential hazards that could occur due to natural growth, severe weather or other unacceptable conditions.

All bicycle/pedestrian surfaces should be maintained in a safe and usable manner at all times. Rough edges, severe bumps or depression, cracked or uneven pavement, gullies, rills and washed out treads shall be repaired immediately. Volunteer vegetation occurring in the tread of the trail should be removed in such a manner so that the trail surface is maintained as a continuous, even and clean surface. The Parks Department shall strive to minimize the

number of areas where ponding water occurs, however they cannot be held liable for public use through areas of casual or ponded water.

Property owned or used by the City for the Pryor Creek Bicycle/Pedestrian System should be maintained in a condition that promotes safety and security for trail users and adjacent property owners. To the extent possible, the property should also be maintained in a manner that enables the trail corridor to fulfill multiple functions (i.e. passive recreation, alternative transportation, stormwater management and habitat for wildlife). Vegetation within each trail corridor should be managed to promote safety, serve as wildlife habitat, buffer public trail use from adjacent private property (where applicable), protect water quality, and preserve the unique aesthetic values of the natural landscape. To promote safe use of the trail system, all vegetation should be clear cut to a minimum distance of three (3) feet from each edge of a trail. Selective clearing of vegetation should be conducted within a zone that is defined as being between three (3) to ten (10) feet from each edge of a trail. At any point along a trail, a user should have a clear, unobstructed view, along the centerline of a trail, 300 feet ahead and behind his/her position. The only exception to this policy should be where terrain or curves in a trail serve as the limiting factor. The City or its designated agents shall be responsible for the cutting and removal of vegetation. Removal of vegetation by an individual or entity other than the City or its designees should be deemed unlawful and subject to fines and/or prosecution.

Safety and Security

Safety is a duty and obligation of all public facilities. In order to provide a standard of care that offers reasonable and ordinary safety measure, the City should develop and implement a Safety and Security Program for all segments of the Pryor Creek Bicycle/Pedestrian System. This program should consist of well defined safety and security policies: the identification of bicycle/pedestrian facility management, law enforcement, emergency and fire protection agencies; the proper posting, notification and education of the user policies; and a system that offers timely response to the public for issues or problems that are related to safety and security. Safety and security of the Pryor Trails System will need to be coordinated with local law enforcement officials, local neighborhood watch associations, and Adopt-a-Trail organizations.

Important components of the safety and security program should include:

1) Work with law enforcement agencies in the City to establish a Pryor Creek Bicycle/Pedestrian Safety and Security Committee that can meet regularly to discuss management of the system.
2) Prepare a Trail Safety Manual and distribute this to management agencies and post it at all major trail heads.
3) Post User Rules and Regulations at all public access points.
4) Work with the management agencies to develop Trail Emergency Procedures.
5) Prepare a Safety Checklist for the system, and utilize it monthly during field inspection of trail facilities.
6) Prepare a Trail User Response Form for complaints and compliments and provide copies at all trail heads.
7) Work with management agencies to develop a system for accident reporting analysis.

8) Conduct a regular Maintenance and Inspection Program, and share the results of these investigations with all management agencies.
9) Institute a Site Design and Facility Development Review Panel, made up of city departments so that all design development recommendations can be reviewed prior to installation.
10) Coordinate other Public Information Programs that provide information about trail events and activities that city residents can participate in.
11) Conduct an ongoing evaluation of trail program objectives. It would be best to have this evaluation conducted by Community Development Board and local trail user groups.

Trail Rules and Operation Regulations

The Pryor Creek Bicycle/Pedestrian System shall be open 365 days a year to any person wishing to use the facilities for transportation or recreation purposes — subject to the terms of the Pryor Creek Bicycle/Pedestrian Ordinance that governs all use. No organization shall be permitted to use any portion of the Pryor Creek Bicycle/Pedestrian System for a commercial purpose unless written permission has been obtained from the City. The City should always discourage the general public from using any segment that is under construction. Bicycle/pedestrian segments shall not be considered officially opened for public use until such time as a formal dedication ceremony and official opening has been completed. Individuals who use segments that are under construction, without written permission from the City shall be deemed in violation of this access and use policy and treated as a trespasser.

The Pryor Creek Bicycle/Pedestrian System shall be operated like all other parks within the local jurisdiction, open for public use from sunrise to sunset, 365 days a year, except as specifically designated. Individuals who are found to be using unlighted facilities after dusk and before dawn should be deemed in violation of these hours of operation and treated as trespassers. Where trails are lighted for nighttime use, the rules established within the Pryor Creek Bicycle/Pedestrian Ordinance shall govern permitted uses and activities.

Trail Ordinance

Multiuse conflict is a national problem for community and regional trail systems. Typically, conflicts are caused by overuse of a trail, however, other factors may be problematic including poorly designed and engineered trail alignments, inappropriate user behavior, or inadequate facility capacity. The most effective conflict resolution plan is a well conceived safety program that provides the individual user with a Code of Conduct for the Trail, sometimes called a Trail Ordinance. Several communities across the United States have adopted progressive trail ordinances to govern public use and keep trails safe for all users. The following Rules and Regulations shall be implemented for the Pryor Creek Bicycle/Pedestrian System. These rules should be displayed both on brochures and information signs throughout the trails system.

1) Be Courteous: All Trail users, including bicyclist, joggers, walkers, wheelchairs, skateboarders and skaters, should be respectful of other users regardless of their mode of travel, speed, or level of skill. Never spook animals; this can be dangerous for you and other users. Respect the privacy of adjacent landowners!

2) Keep Right: Always stay to the right as you use the Trail, or stay in the lane that has been designated for your user group. The exception to this rule occurs when you need to pass another user.
3) Pass on the Left: Pass others going in your direction on their left. Look ahead and behind to make sure that your lane is clear before you pull out and around the other user. Pass with ample separation. Do not move back to the right until you have safely gained distance and speed on the other user. Faster traffic should always yield to slower oncoming traffic.
4) Give Audible Signal When Passing: All users should give a clear warning signal before passing. This signal may be produced by voice, bell or soft horn. Voice signals might include “Passing on your left!” or “Cyclist on your left!” Always be courteous when providing the audible signal - profanity is unwarranted and unappreciated.
5) Be Predictable: Travel in a consistent and predictable manner. Always look behind before changing position on the trail, regardless of your mode of travel.
6) Control Your Bicycle: Lack of attention, even for a second, can cause disaster - always stay alert! Maintain a safe and legal speed at all times.
7) Do Not Block the Trail: When in a group, including your pets, use no more than half the trail, so as not to block the flow of other users. If your group is approached by users from both directions, form a single line or stop and move to the far right edge of the trail to allow safe passage by these users.
8) Yield when Entering or Crossing Trails: When entering or crossing the trail at uncontrolled intersection, yield to traffic already using the other trail.
9) The Use of Lights: (where permitted) When using the trail after dawn or before dusk be equipped with proper light. Cyclists should have a white light that is visible from five hundred feet to the front, and a red or amber light that is visible from five hundred feet to the rear. Other trail users should use white lights (bright flashlights) visible two hundred fifty feet to the front, and wear light or reflective clothing.
10) Do not Use this Trail Under the Influence of Alcohol or Drugs: It is illegal to use this trail if you have consumed alcohol in excess of the statutory limits, or if you have consumed illegal drugs. Persons who use a prescribed medication should check with their doctor or pharmacist to ensure that it will not impair their ability to safely operate a bicycle or other wheeled vehicle.
11) Clean-up Your Litter: Please keep this trail clean and neat for other users to enjoy. Do not leave glass, paper, cans or any other debris on or near the trail. Please clean up after your pets. Pack out what you bring in - and remember to always recycle your trash.
12) Keep Pets on Leashes: All pets must be kept on secure and tethered leashes. Keep pets off of adjacent private property. Failure to do so will result in a fine.
13) Prohibition on Camp Fires: Fires, for any purpose, are prohibited within the Trails System. Any person caught lighting a fire for any purpose will be prosecuted to the fullest extent of the law.

Emergency Response Plan

In order to effectively patrol the Pryor Creek Bicycle/Pedestrian System and respond to the potential for fire, floods and other natural or human-caused disasters, Pryor Creek shall adopt a Emergency Response Plan. This plan defines a cooperative law enforcement strategy for the

segment based on services required and those that are typically provided by police, sheriff, fire and EMS agencies. Specifically, all trails shall be provided with an address system that denotes specific locations along the length of a trail corridor. A site plan that illustrates points of access to each trail corridor shall be produced and kept on file. Each trail shall be designed to permit access for law enforcement, fire and EMS agencies and vehicles that are not in excess of 6.5 tons gross vehicle weight.

The emergency response plan shall also define the agencies that should respond to 911 calls, and provide easy to understand routing plans and access points for emergency vehicles. Local hospitals should be notified of these routes so that they may also be familiar with the size and scope of the project. The entire bicycle/pedestrian system shall be designed and develop to support a minimum gross vehicle weight of 6.5 tons.

Risk Management Plan

The purpose of a Risk Management Plan is to increase safety for the users of the Pryor Creek Bicycle/Pedestrian System and reduce the potential for accidents to occur within the system or on lands adjacent to the system. While it is impossible to guarantee that all risk will be eliminated by the completion of a Risk Management Plan, implementation of a plan is in fact a critical step that is necessary to reduce liability and improve safety. A Risk Management Plan establishes a methodology for bicycle/pedestrian facility management that is based on current tort liability and case law in the United States related to the development, operation and management of public use trail lands and facilities.

The ultimate responsibility for managing the Pryor Creek Bicycle/Pedestrian System, as defined within this Plan, rests with Pryor Creek. Pryor Creek is considered the Risk Management Coordinator for the system. A Risk Management Plan has as its major goals:

1) Risk Identification: determining where risk (threat to safety or potential loss) exists within the corridor.
2) Risk Evaluation: conducting appropriate examination of areas defined as a risk and determining the factors that contribute to risk.
3) Risk Treatment: defining and implementing an appropriate solution to the area of risk in accordance with one of the four options:
    a) risk avoidance--prohibiting use of a risk area.
    b) risk reduction--limit use of area and repair risk area immediately.
    c) risk retention--obtain waivers from all potential users of the risk area.
    d) risk transfer--transfer risk area (property) to an agency better suited to manage the area.

The following sixteen step plan should be considered for implementation by the City of Pryor Creek in establishing Risk Management Plans for the Pryor Creek Bicycle/Pedestrian System.

1) Develop a policy statement about risk management
2) Conduct a needs assessment of Pryor Creek as an organization.

3) Determine goals and objectives for risk management - what is acceptable and not acceptable management levels.
4) Develop specifications for site and facility development.
5) Establish a clear and concise program for risk management.
6) Define supervision and responsibility for risk management.
7) Define appropriate rules and regulations that govern the use of the bicycle/pedestrian system.
8) Conduct routine/systematic inspections and investigations of the bicycle/pedestrian system.
9) Develop an accident reporting and analysis system.
10) Establish procedures for handling emergencies.
11) Develop appropriate releases, waivers and agreements for use and management.
12) Identify best methods for insuring against risk.
13) Develop a comprehensive in-service training program for employees of Pryor Creek.
14) Implement a public relations program that can effectively describe the risk management program and activities.
15) Conduct periodic reviews of the Risk Management Plan by outside agents to ensure that the plan is up to date.
16) Maintain good legal and insurance representation.

Liability

The design, development, management, and operation of the Pryor Creek Bicycle/Pedestrian System must be carefully and accurately executed in order to provide a resource that protects the health and welfare of the public. Liability may occur when a facility has been under designed to handle its intended volume of use, when management of the facility is poor, or when unexpected accidents occur because thebicycle/pedestrian facilities manager failed to recognize the possibilities of a potentially hazardous situation. To reduce the possibility and exposure to liability, the City should have in operation the following measures prior to opening the first segment:

1) a thorough Maintenance Program that provides the appropriate duty or level of care
2) a Risk Management Plan that appropriately covers all aspects of the system, and as necessary adjacent landowners;
3) a comprehensive working knowledge of public use laws and recent case history applicable in Oklahoma.

Existing municipal insurance programs should be adequate to protect the City from financial loss that might occur through the development and operation of a bicycle/pedestrian system. Trails are no greater liability to the community than park and recreation resources. The City should review their current policies and check coverages to be certain that all aspects of its policies are up to date.

Pryor Creek should exercise reasonable care in the design and construction of all bicycle/pedestrian facilities to reduce hazardous, public nuisance and life threatening situations. Recreational Use Statutes in Oklahoma serve to reduce the exposure to liability that adjacent landowners might expect to realize from the proximity of the bicycle/pedestrian facility to private property. In fact, it is very difficult to find any case law in the United States where an adjacent property owner has been sued because a trail user strayed onto the adjacent private property and fell victim to an accident that was caused by the adjacent landowner. Some landowners have claimed that their insurance rates would go up because of the presence of a trail abutting their property. Once again, there is no case history among insurance companies to support this claim — provided the landowner has not gone out of their way to create an attractive nuisance and lure trail users onto their property.

It is also important that the City not charge a fee to use any portion of the Pryor Creek Bicycle/Pedestrian System facility, because typically this may impact the way in which the recreational use statutes in Oklahoma apply to the use of the system. A voluntary donation applied to the bicycle/pedestrian system, will generally not affect the recreational use statute.