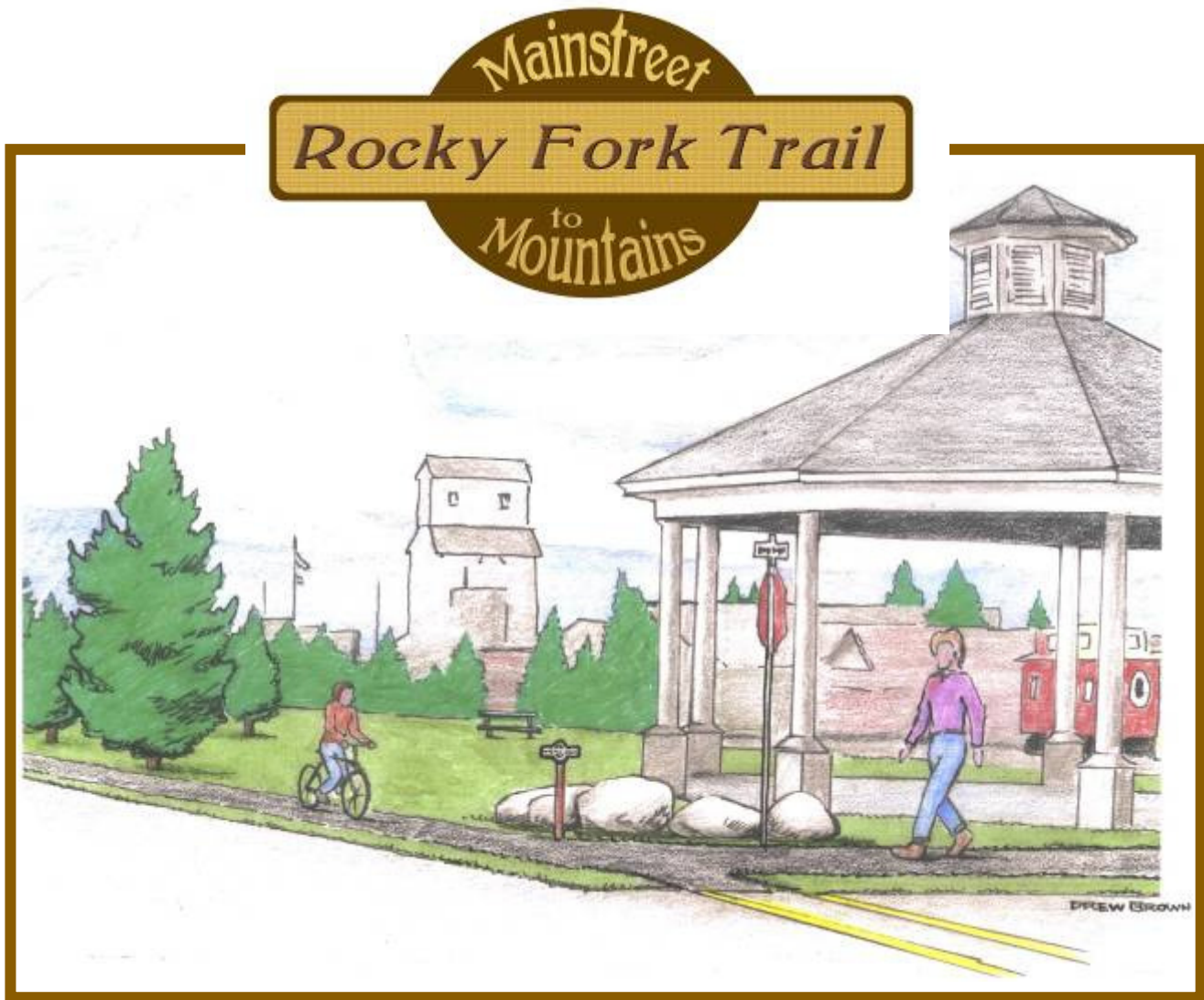


CITY OF RED LODGE COMPREHENSIVE TRAILS PLAN



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Executive Summary

Red Lodge, Montana, is home to a vibrant, active population and is a popular visitor destination. The City Council recognized a need to connect segmented trails to create a safe route to local schools, provide recreational opportunities and health benefits to the community.

The comprehensive plan was developed following an intensive four-month planning process, from January through April, 2006. The process involved obtaining input from citizens, City staff and elected officials through personal interviews, public meetings, media coverage, an electronic newsletter, and a project website.

Although the project scope was within the City limits, ideas for trails in the greater Red Lodge area were captured as a by-product of the effort. The stated goal of the process was:

“To create a conceptual guide and realistic strategy to develop a system of trails for non-motorized transportation for residents and visitor needs and interests.”

Following development of a vision for the future, four loop trails were identified within the City and an additional seven loop trail opportunities were identified in the immediate area around the City. A consensus emerged between participants about the trail opportunities for the Red Lodge area.

The proposed trail system extends across both public and private lands. Private land owner easements have not been obtained and trails crossing private property may or may not be realized. Easements and rights-of-way that permit public trails to cross private lands will need to be negotiated on an individual basis with the needs and wishes of the land owners given foremost consideration.

Making the trail system a reality will take an ongoing commitment from the City of Red Lodge along with its citizens and civic organizations, but this commitment will produce health and safety, economic, transportation, environmental, and social and cultural benefits.

A trail name contest was held during the preparation of this plan. One hundred thirty suggested names were submitted and the final name selected by the Parks Board was “Rocky Fork Trail”.

Acronyms used in this Plan

AASHTO	American Association of Safety and Highway Traffic Operators
ADA	Americans with Disabilities Act
CDC	Centers for Disease Control
CEDS	Comprehensive Economic Development Strategy
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CTEP	Community Transportation Enhancement Program
DOT	United States Department of Transportation
FHWA	Federal Highway Administration
FWP	Montana Fish Wildlife & Parks
GVLT	Gallatin Valley Land Trust
ITRR	Institute for Tourism and Recreation Research (U of Montana)
LWCF	Land and Water Conservation Fund
MCA	Montana Code Annotated
MDT	Montana Department of Transportation
MUTCD	Manual on Uniform Traffic Control Devices
NAHB	National Association of Home Builders
NAR	National Association of Realtors
RC&D	Resource Conservation and Development
RLCCE	Red Lodge Country Club Estates
RTCA	Rivers and Trails Conservation Assistance Program
RTP	Recreational Trails Program
SAFTEA	Safe and Flexible Transportation Enhancement Act
SR2S	Safe Routes to Schools
STP	Surface Transportation Program
TCSP	Transportation and Community and System Preservation Program
TEA21	Transportation Equity Act for the 21 st Century
TIIP	Tourism Infrastructure Investment Program
USDA	United States Department of Agriculture
VOC's	Volatile Organic Compounds

1. Introduction

Funding from the City's resort tax revenue was dedicated in 2005 to prepare the trails plan. A team of local contractors, Tom Kohley, Barb Beck and Allie Wood was selected to prepare the plan. The plan was researched and produced between January and April 2006, based on input received during stakeholder interviews, public meetings, and meetings with City staff.

The following vision was developed from input received at the first public meeting to guide the development of the Red Lodge Comprehensive Trail System.

Residents and visitors can choose from a range of experiences on well-maintained loop trails of varying lengths that together offer opportunities to:

- ***move safely between locations in and around the City,***
- ***view the mountains and Rock Creek,***
- ***experience both solitude and interaction,***
- ***explore nature and see wildlife,***
- ***learn about local history, and***
- ***enhance physical and mental well-being.***

Although the City limits serve as the primary focus for this project, planning participants were interested in and encouraged to submit ideas for trails in the areas immediately surrounding Red Lodge. The Carbon County Board of County Commissioners was briefed during the planning process and the ideas for County trail segments were provided to the Commissioners.

2. Background

Residents of and visitors to the City are attracted to and enjoy outdoor activities in the area. Findings of the research for the Red Lodge Comprehensive Economic Development Strategy (CEDS) in 2004 found that Red Lodge values a strong sense of place, overall quality of life, an attractive community, opportunities for outdoor recreation and cultural activities, and a scenic natural environment.

The vision statement for the future of Red Lodge found in the CEDS addresses outdoor recreation among other assets as follows, "Outdoor recreation facilities (parks, bike/pedestrian trails, etc.) have been expanded and upgraded in the Red Lodge area serving both local residents and visitors."

The benefits of developing, adopting and implementing a comprehensive trails plan are many. Health and safety, environmental, economic, transportation, and social and cultural benefits can be expected for local residents and visitors.

Although there are no statistics specific to the City, the Institute for Tourism and Recreation Research at the University of Montana has studied Montana trail users. The institute found that 75% of Montana households walk for recreation, 35% of Montana residents bicycle and 15% of Montana residents ride horses. Twenty-seven percent of

visitors to Montana hike while in Montana. These non-residents also participate in watching wildlife, shopping and visiting historic sites. (Nickerson, Montana ITRR, 2004)



Figure 2.1. Red Lodge residents enjoy walking their dogs along airport road.

Health and Safety Benefits

Trails are constructed for a variety of purposes including transportation and recreation. Getting regular exercise on trails offers a myriad of health benefits. Easily accessible, well-maintained trails can make it attractive for people to be physically active. A comprehensive trails system offers the following health and safety benefits:

- Provide fitness opportunities that are safer than walking or biking along a state highway
- Provide convenient safe non-motorized travel within the community
- Connect parks, schools, commercial and recreational areas
- Provide routes that will be safer for children to travel by foot and bicycle
- Provide a safe means for area visitors to explore the community outside of their vehicles

Residents and visitors are regularly seen walking and running outside in all four seasons. Much of the walking and running occurs along Highway 212, while cycling occurs on Highways 212 and 78, and up the Ski Run/West Fork Road. Many people also walk on City streets, along Airport Road, the road to the Fairgrounds, and within the golf course and Remington Ranch.

In a recent study conducted by the United States Department of Agriculture (USDA), “Residents in recreation areas are probably more likely to be involved in outdoor activities than non-metro areas, which may also promote better overall health.” (USDA Recreation, Tourism, and Rural Well-Being, 2005) Additionally, the study of 311 recreation counties, of

which Carbon was one, found that 32% of the recreational counties were retirement destination places. The greater Red Lodge area appears to fit this finding. Many baby boomer retirees desiring to delay the aging process are physically active. As a group they are seeking year round outdoor recreational opportunities.

According to the Centers for Disease Control, scientific evidence from the *Guide to Community Preventive Services* shows that providing access to places for physical activity, such as trails, increases the level of physical activity in a community.

Environmental Benefits

According to the Federal Highway Administration, bicycling and walking are the two major non-fuels-consuming, non-polluting forms of transportation in the United States. The greatest environmental benefit of bicycling and walking is the bypass of the fossil fuel system. "To the extent that bicycling and walking displace trips that would otherwise have involved use of motor vehicles, they enable society to reduce consumption of fossil fuels and the associated pollution and other environmental damage." (Federal Highway Administration Case Study #15, *The Environmental Effects of Bicycling and Walking*, 1993)

Specific environmental impacts produced by vehicles that are reduced through walking and bicycling trips include carbon monoxide, carbon dioxide, nitrous oxides, and Volatile Organic Compounds (VOC's). Nationally, the Federal Highway Administration estimated that in 2000, bicycling would displace the need for the use of between 340 to 3,050 million gallons of gas and walking would reduce gasoline consumption by from 410 to 2,050 million gallons. While Red Lodge is not presently experiencing air quality problems, compromised air quality is a part of the community's industrial history, and the excellent air quality enjoyed today is valued by residents.

Although difficult to measure, one additional benefit of increasing walking and bicycling while decreasing vehicle use is countering land use sprawl. Walking and bicycling are facilitated by and facilitate higher density land use nearby city centers.

Every year, numbers of small mammals, deer and even moose and bear are hit by vehicles on the highways around Red Lodge. By replacing the vehicle trips of nearby rural residents to and from town with walking and cycling trips, the number of fatal wildlife-vehicle crashes on the West Fork Road and Highway 212 north and south of Red Lodge could potentially be reduced.

Economic Benefits

According to the Parks and Trails Council of Minnesota, the positive economic impacts to communities with trail systems can be significant. Nationally, trail-related expenditures range from less than \$1 per day to more than \$75 per day, depending on distance covered. "Generally, it's been found that a trail can bring at least one million dollars annually to a community, depending on how well the town embraces the trail." (The Economic and Social Benefits of Trails, Parks and Trails Council of Minnesota, 2005)

In addition to expenditures by users for such things as purchases of walking and cycling gear, bicycles, meals and other incidentals, trails have a positive effect on real estate values. In Seattle, properties near the most popular trail sold for an average of 6% more

than comparable property elsewhere. Real Estate agents when surveyed reported using trails as a selling feature when selling homes near trails. (ibid) In 2001, the National Association of Home Builders and the National Association of Realtors conducted a survey of recent home-buyers. The survey asked about the importance of 18 community amenities and trails came in second only to highway access. Thirty-six percent of those surveyed selected walking, jogging or biking trails as either "important" or "very important." Sidewalks, parks and playgrounds ranked next in importance. (www.Americantrails.org)

According to the Parks and Trails Council of Minnesota, trail users average 48 years of age and have annual household incomes between \$35,000 and \$75,000. This demographic has the potential to benefit the community economically given that tourism is a major component of the local economy and the second largest employer in Red Lodge, following health care. (Red Lodge Comprehensive Economic Development Strategy, 2004)

Carbon County has been classified by the USDA as a recreation County. In their study of recreation counties, Richard Reeder and Dennis Brown of the USDA Economic Research Service, found that recreation counties grew by 20% during the 1990's nearly three times as fast other rural counties." (USDA Recreation, Tourism, and Rural Well-Being, 2005) Reeder and Brown who studied 311 recreation counties in the continental United States, went on to state that "Rural counties with ski resorts were the wealthiest, healthiest, and best educated places in the study." A City trail system would further enhance the standing of the County as a recreation location conferring and reinforcing the economic benefits identified in the study.

According to the Comprehensive Economic Development Strategy of the Beartooth Resource Conservation & Development (RC&D), "The many opportunities in outdoor recreation also serve as a drawing card to prospective businesses." Although a City trail system would be only one piece of the area's outdoor recreation attraction, environmentally conscious businesses that valued the ability of their employees to commute without vehicles could be enticed to Red Lodge in part because of a quality trail system. Independent business people, often referred to as Lone Eagles, are able to locate anywhere with internet connectivity have already chosen Red Lodge--in large part due to the recreational opportunities. An appealing trail system could enhance this phenomenon.

Transportation Benefits

According to the Resource Team Assessment Report, recreational trails are a good way to connect the community without requiring people to get in their cars to go from one part of town to another. (Resource Team Assessment Report for Red Lodge, Montana, 2004)

Many trail systems in urban areas, such as the Mid-Town Greenway in Minneapolis are designed to facilitate the flow of commuter traffic to and from work. The most likely scenario for Red Lodge would be commuters within the community who could easily walk or cycle to jobs in the City. Although Red Lodge businesses employ residents of Bearcreek, Belfry, Luther, Roberts and other communities, it is likely only a small number of individuals would take advantage of cycling to commute from these communities to their jobs in town due to the distances between the communities, safety considerations of riding on state highways without bike lanes, winter weather and the potential for inclement weather during other seasons.

Many residents in areas immediately surrounding Red Lodge (from one to five miles) have expressed support for trails to connect their residential subdivisions with the commercial area of the City. This support would suggest that such connecting trails could be utilized to replace some vehicle trips to town.

Visitors to and residents of Red Lodge frequently access trails and other recreational opportunities on nearby lands outside the City limits. This trails plan identifies opportunities to link the community to these public lands and other recreational lands and attractions that are in close proximity. Some examples of the opportunities to link the City with other recreation experiences include:

- Hiking and cross-country skiing on lands managed by the Custer National Forest along the West Fork and Main Forks of Rock Creek,
- Wildlife viewing and hiking on Montana Fish, Wildlife and Parks' Silver Run Elk Management Area south of Red Lodge,
- Cross-country skiing at the Red Lodge Nordic Center north and west of the City,
- Wildlife viewing at the Beartooth Nature Center's proposed location north of the City, and
- Downhill skiing and hiking at Red Lodge Mountain ski area west of Red Lodge.

Transportation-related and environmental benefits from increasing bicycle and walking trips include reduced vehicle accidents and reduced traffic noise and road/space congestion. Assuming the trails system can replace some vehicle trips by encouraging safe walking and biking, the parking situation is enhanced for both locals and visitors. Additionally the wear and tear on City streets is reduced by the number of miles for which alternative transportation is used.

Social and Cultural Benefits

“Because of their linear design, trails act as a meeting place for the community. Trails foster community involvement, and corresponding pride, in addition to providing an opportunity to interact with people of varying backgrounds, and experiences.” (The Social, Health and Heritage Benefits of Trails, Go for Green Active Living Program of Canada) Examples of this in Red Lodge include peer groups who currently “walk the highway” for exercise. Such opportunities allow people to interact in a positive environment and help knit a community together.

In nearby Gallatin Valley, the Gallatin Valley Land Trust found that “Healthy communities have many different components, including opportunities for recreation, alternative transportation, scenic greenways, and access to nature. These qualities support a community's economy and its quality of life.” (<http://gvltr.org/trails>)

Given the combination of wages and housing costs, many young families in Red Lodge have little disposable income for entertainment and recreation. The Red Lodge Comprehensive Economic Development Strategy (CEDS) pointed out that Red Lodge is perceived as weak in activities for children. Walking, cycling, cross-country skiing or in-line skating along a trail system in and around town could provide much-needed affordable opportunities for families. Additional opportunities for interpretation about the natural environment along the trails can create environmental awareness, encourage stewardship and enhance the recreational experience of children and families.

The historic downtown, historic neighborhoods and remnants of the community's mining past are a source of great pride as well as both economic and aesthetic assets. A more pronounced trail in the historic downtown area could feature these assets, raising awareness of the past and drawing the appreciation of visitors.

3. Authority and Guiding Documents

Two types of local planning documents provide guidance and authority for preparing this plan; policy and regulatory documents. Policy documents define a vision and goals or strategies to accomplish that vision. The primary policy documents consulted for direction in preparing this plan were the Red Lodge Growth Policy, the Red Lodge Comprehensive Economic Development Strategy and the Carbon County Growth Policy. Policy documents are not regulatory.

Regulatory documents that support the above policy statements include the City of Red Lodge's Development Code (currently being revised) and the Carbon County Subdivision Regulations. Language from these documents as it relates to a comprehensive trails system in and around Red Lodge is summarized below. All of the documents clearly support the need for residents to have access to recreational facilities.

Red Lodge Growth Policy

The Growth Policy, prepared in 2001, updated the 1995 Red Lodge City Master Plan to bring it into compliance with state statutes. Montana statute directs that "after adoption of the Growth Policy, the City council must be guided by and give consideration to the general policy and pattern of development set out in the Growth Policy..." (MCA 76-1-605)

The Growth Policy for the City contains seven goals with corresponding strategies for implementation. The Growth Policy suggests two types of strategies for realizing the goals in the plan, investment and regulation. The community entrances, open space, future land use, infrastructure and City services goals each contain direction relevant to the trails plan.

Introductory language for the open space goal states "The City should also begin to develop a trail system that links the parks, other open space areas, and residential neighborhoods."

Community Entrances Goal

Table 3.1. Community entrance strategies identified in the Red Lodge Growth Policy that pertain to trails.		
Strategy	Language	Comments
E	The City of Red Lodge should seek funding to construct a pedestrian and bicycle trail on the strip of municipal land that parallels US 212 on the north edge of the City. This trail, which can be safely separated from traffic, will provide a starting point for future construction of a trail system.”	The City has an opportunity to work with the Montana Department of Transportation now while upgrades are being planned.
G	The City must work with the Montana Department of Transportation to help provide safe access to the new trail (E) and Coal Miners Park by installing a safe pedestrian crossing on US 212.	Development of the trails plan will be done in coordination with MDT.
I	The design of the trails and landscaping proposed for the north entrances should be coordinated with the streetscaping plan for the Central Business District. (6C)	No streetscaping plan has been developed.
K	The Red Lodge Development Code will ensure that development does not destroy the visual dominance of riparian vegetation along Rock Creek, scar slopes overlooking the City, or create nuisances in residential areas.	Any trail located along the creek or on the slopes overlooking town will need to be visually subordinate.

Open Space Goal

“Rock Creek and its associated riparian corridor are an important asset and unifying feature of the local landscape. Its flow connects Red Lodge with the mountains, and offers a potential linkage through the City.” (p.30)

Table 3.2. Open space strategies identified in the Red Lodge Growth Policy that pertain to trails.		
Strategy	Language	Comments
E	The City should acquire the wide riparian zone along Rock Creek, west of the sewage treatment plant to buffer the lagoons, protect wildlife habitat, and provide low impact recreation. It should also attempt to acquire undeveloped riparian lands south of the City.	Proposed development is providing the City with the opportunity to make this a reality.
F	The City of Red Lodge will construct the pedestrian and bicycle trail system. Work will begin with the trail construction project currently scheduled for Lion’s park. The second priority should be to build the trail (and install the complementary landscaping) along the City-owned strip at the north entrance. The focus can then shift to Rock Creek. The Parks and Open Space Board should develop a map showing existing and planned trail systems.	This project will result in a map of the planned trail systems.

Future Land Use Goal

Although there are no strategies under this goal that specifically refer to trails, the future land use goal identifies potential development areas. One of these areas is the Island at Rock Creek Subdivision (known as the Kiely subdivision) east of Rock Creek. The Growth

Policy states that the “required park dedication should be along the creek.” The park dedication could be in the form of a trail along the creek and in fact this had been discussed with the developer from the inception of the subdivision.

Infrastructure and City Services

“All subdivisions should dedicate park space or provide cash-in-lieu of dedication, as provided by state law.” The trail system could be furthered by this provision either through the dedication of trails for the park space or the use of monies in the cash-in-lieu fund to purchase land for trails or trail easements and rights-of-ways.

Municipal Lands Goal

Table 3.3. Municipal lands strategies identified in the Red Lodge Growth Policy that pertain to trails.		
Strategy	Language	Comments
A	The City of Red Lodge must determine which of its parcels are needed for municipal functions and future needs....	For the purposes of establishing a comprehensive trail system, no land or interest in land should be lost until a determination is made that the land is not needed for the trail system.

Red Lodge Comprehensive Economic Development Strategy (CEDS)

The preparation of the Comprehensive Economic Development Strategy was undertaken and completed in 2004 as a cooperative effort to clarify a vision for the City’s future, establish priorities and goals, and identify ways to measure the results of successful implementation of the strategy.

Although the vision statement does include expanded and upgraded outdoor recreation facilities, the CEDS document has no specific goal addressing parks or trails. Without mentioning trails or parks, the strategy identifies a top priority as “lack of adequate infrastructure”--and funding for it--in the City. The Beartooth Highway, golf course, ski hill, fishing, hunting, skiing, rock climbing, camping, rafting, mountain biking, wildlife viewing and other sports are listed as attractions of the Red Lodge area. A comprehensive trails system would increase the opportunities associated with a number of these attractions and provide linkages between them.

Carbon County Growth Policy

The Carbon County Growth Policy was adopted in 2001. Participants to the planning process developed a “desired future” statement that included five bulleted points. Two of the five points relate indirectly to trails.

- Carbon County remains a good place to live as evidenced by good schools, high levels of community involvement, small family farms, low crime rates, clean air and water, open spaces and scenic vistas, abundant wildlife, and friendly people.

- Local governments in Carbon County are working in harmony with each other for the benefit of all County residents, especially in the areas of land use, services, and public infrastructure.

The first goal in the plan reads in part “Ensure land uses are appropriate on the lands for which they are proposed...” Objective 1.7.B. states “Encourage developers to dedicate to the property owners’ association open space, wildlife habitat, and/or riparian areas within or in close proximity to each major subdivision or development to comply with parkland requirements. Accept cash-in-lieu of parkland only in cases where the size of development makes it infeasible to set aside lands which will effectively retain open space or provide for wildlife habitat.”

Red Lodge Development Code

The purpose of the Red Lodge Development Code adopted in 1997 as Ordinance 828 “is to promote the health, safety, and general welfare of the people of Red Lodge by implementing the regulatory strategies of the Red Lodge Master Plan.” The development code established seven zoning districts and four overlays. Each of the districts and overlays has specific requirements for development.

Multi-Family Residential Zoning District

Table 3.4. Red Lodge development code pertaining to trails.		
Section	Language	Comments
9.6.4	For developments that have twelve (12) or more dwelling units the landscaping plan shall provide for onsite usable and adequate recreational facilities which will meet the needs of occupants.	Trails could in part meet recreational needs of occupants.

Related Requirements of Overlay Districts

Table 3.5. Red Lodge development code overlays pertaining to trails.		
Overlay	Requirement	Comments
Airport Safety	Trees and structures less than 30 feet in height are allowed	Any trails/improvements around the airport must meet this requirement.
Rock Creek	Encourages developers to leave riparian areas in their natural condition	The Rock Creek riparian area has been identified as a desirable trail location.
Skyline	Contains height limitations for the skyline areas surrounding Red Lodge	Any trails in this overlay must be sensitive to visual quality.

Additional language in the development code references continuing agricultural operations (16.2.2) “No development shall be permitted to adversely impact the operation of an existing irrigation system.” This will need to be addressed in any instances where trails might be proposed either along irrigation ditches or crossing ditches.

Section 16.3.8.1 directs “Developments shall provide approved hard surface (concrete or asphalt) sidewalks along all street frontages and/or an effective system for off-street pedestrian circulation. Where applicable, the pedestrian circulation system shall include trails identified in the open space policy statement of the Red Lodge Master Plan.”

Standards are provided for sidewalks in Section 16.3.8.2. Sidewalks for pedestrians must be a minimum of four feet wide. Sidewalks for pedestrians and bicycles must be a minimum of ten feet wide, although we recommend that bicycle paths be separated from pedestrian walkways where possible.

Table 3.6. Article 17, Additional Performance Standards for Land Divisions as noted by Article 17 of the Red Lodge Development Code.		
Section	Language	Comments
17.5	“As required by 76-3-621, MCA and the Red Lodge Master Plan Strategy 9.J., residential subdivisions shall dedicate land or provide a cash donation in lieu of dedication for parks.	Most subdivisions in the City have provided cash rather than parkland.
17.5.1	11% of the total area of residential lots of one-half acre or smaller in size, 7.5% of the total area of residential lots of one-half to one acre in size, 5% of the total area of residential lots of one to three acres in size, and 2.5% of the total area of residential lots of three to five acres in size shall be dedicated for parks except;	Most of the subdivisions in the City have smaller lots.
17.5.2	Where the small size of the parcel to be dedicated, topography, location, or other circumstances (see 4. below) make dedication infeasible, the Council may accept a cash donation. Cash donations shall be for the fair market value of the undivided, unimproved land. Such donations shall be paid into a separate fund and used only for the acquisition of park land or the development and maintenance of existing parks, but no more than 50% of the cash donated may be used for park maintenance.	In most instances, the size of the parcel is an issue that makes cash donation the preferred means for meeting the parkland requirements.
17.5.3	In subdivisions developed pursuant to a development agreement the parks dedication for the entire subdivision shall accompany the first final plat filed.	
17.5.4	The location of the land dedicated as a park shall be approved by the City Council in accordance with the following guidelines. Where these guidelines cannot, in the discretion of the City Council, be met, a cash donation shall be required.	The Council has an opportunity to require trail dedication to meet this requirement or to receive cash that could be used for the trail system.
17.5.4.1	Slopes, wetlands, and other areas that cannot be developed for active recreation shall not be accepted as fulfilling all of a developer’s dedication requirement, but such areas may be included as part of a larger, functional park.	The trail system will tie with existing and proposed parks and other public assets.
17.5.4.2	The proposed park shall either be large enough for development as a useful neighborhood park—at least six acres—or a smaller, but integral part of the City’s overall open space and parks system.	Trails can be part of the City’s overall open space and parks system.
17.5.4.3	The proposed park shall be within one-half mile of the majority of the lots to be served.	Trails can be within, surrounding or in close proximity to the subdivisions.
17.5.4.4	The proposed park shall be safely accessible by pedestrians coming from the lots to be served, but be located where it will not channel traffic onto local residential streets.	Safe pedestrian access will be part of the overall trails plan.
17.5.4.5	Where possible, the proposed park should be connected to the existing or proposed pedestrian/bicycle trails.	The trails will connect with known or proposed parks.

Carbon County Subdivision Regulations

Subdivision regulations are authorized by Montana's Subdivision and Platting Act, Title 76, Chapter 3, MCA. "The purpose of these regulations is to promoting public health, safety and general welfare by regulating the subdivision of land; to prevent the overcrowding of land; to lessen the congestion in the streets and highways; to provide for adequate light, air, water supply, sewage disposal, parks and recreation areas, ingress and egress, and other public requirements..." (76-3-102, MCA) The County subdivision regulations are updated regularly to stay current with state law. They were most recently updated in 2005.

Language in the County subdivision regulations relevant to a trail system is found in the Parkland section (IV-A-15) and the Open Spaces section (IV-D-4). The parkland section details the requirements a developer must satisfy with respect to parkland, dedicating either cash or land to the governing body, in this case the County. Park land or cash-in-lieu is required for major residential subdivisions in the County. The parkland dedication requirement ranges from 2.5% to 11% of the land proposed to be divided, depending on the lot or parcel sizes. Developments with larger lots require less corresponding parkland. In the past, most developers of lands surrounding Red Lodge have donated cash-in-lieu of parklands.

The Open Spaces section of the regulations requires a developer to provide a minimum of 1/9th of the platted area of a planned unit residential development for common open space or provide cash-in-lieu.

Other Plans

The Red Lodge Coal Miners Park Trail Application is sometimes referred to as the "Red Lodge Trails Plan." The document was a grant application submitted to Montana Fish, Wildlife and Parks. Rather than being a comprehensive trail system plan, the application contained a hand-drawn map that was developed with minimal public involvement. Nevertheless, the work done to prepare the application serves as a useful building block for this comprehensive effort. The trail system envisioned in this grant application formed an open-ended loop. It began with a trail paralleling U.S. Highway 212 from Two Mile bridge to the south, splitting to access both Lion's and Coal Miners Parks, proceeding from Coal Miners Park south along the west and then east sides of Rock Creek along the east side of the City, cutting north and west across the City and up to the West Bench, following airport road to the north and ending in the Country Club Estates (the golf course.)

Future Policy and Administration Considerations

There are several areas at the City and County levels in which minor policy changes could support development and implementation of the trails system. Existing language does not prohibit trails, but by specifically mentioning trails in the parkland requirement sections of the regulations, developers may be more inclined to consider and design trail solutions to meet their requirements.

- The County subdivision regulations could be revised to specifically allow for the dedication of trail easements to satisfy parkland requirements.

- Developers could be allowed to satisfy parkland dedication requirements by purchasing easements for trails identified in the Comprehensive Trail Plan that are near enough to benefit the development's residents, but lie outside the boundaries of the development.
- Trails should be added to the park requirements "permitted uses" under each zoning category in the Red Lodge Development Code (Article 17).
- Trail standards could be added to both the Red Lodge Development Code and the County Subdivision regulations.
- Because many of the City trails rely on sidewalks, it is important that these walkways are constructed and maintained to high standards to ensure safe travel. Both the City and property owners with sidewalks will need to fulfill their maintenance responsibilities. Active and consistent enforcement of sidewalk ordinances will help promote safe, clean walkways.
- New City ordinances will need to be drafted and adopted designating trails as non-motorized.
- The resort tax ordinance could be re-worded so that a percentage of the annual revenue is dedicated to trail construction and maintenance.
- Finally, action by the state legislature is needed to address liability issues associated with the use of ditch easements for trails. Ditch service roads are in many cases ideal trail routes because of location and grade, however, there is currently no incentive and there is significant disincentive for ditch companies to cooperate in locating trails near their ditches. Through a statutory mechanism that shifts liability from the ditch company to the appropriate local government, trails could be encouraged along ditches. Wyoming has similar regulations.

4. Existing Trails

Red Lodge has few designated trails. One of most prominent trails is located at Coal Miners Park and extends 0.6 miles on the reclaimed city landfill (Figure 4.1). This is a soft surface trail consisting of a compacted sand and gravel base material. The trail was initially constructed in 1994 with assistance from the Montana Conservation Corps. Since then the trail has become eroded and overgrown with grass and weeds. In 2003, the City applied for and received funding from the Recreational Trails Program to restore the trail. Plans are now in place to begin restoration of the trail during the summer of 2006.

In 2002, a 500 foot trail segment was constructed from the end of McGillan Street to Rodeo Grounds Road. The trail provides direct access to the top of the West Bench near the airport entrance. The trail utilizes an existing City street right-of-way and does not cross private property. The trail bed consists of crushed asphalt and is lined with rocks and boulders.

There is also a 500 foot asphalt trail leading from the affordable housing apartment at the top of brewery Hill to Highway 78. This trail was constructed as part of the apartment development and may have been constructed in lieu of sidewalks.

Several other foot paths exists in Lions Park, Rock Creek Park, and along Highway 212 south from the Meeteetse Trail Road to Point of Rocks (formally known as the bridle trail). None of these paths have been maintained and most have been overgrown with grass and are difficult to navigate.



Figure 4.1. The trail located in Coal Miners Park.

5. Plan Development

The City, the Parks and Recreation Board, and the consulting team desired wide public participation in the planning process to ensure the best ideas were captured, the plan reflected the desires of the residents and the plan was realistic.

The goals of the public process were to:

1. Ensure that anyone with an interest in the trails plan was aware of the effort and had the opportunity to participate, regardless of whether they were able to attend meetings.
2. Provide the participants to the process with the knowledge and tools to develop the best possible ideas.
3. Produce the highest quality plan possible.
4. Produce a realistic plan that the City and its citizens can implement.

Public participation was encouraged during all stages of the planning process through the following channels.

Interviews with key stakeholders

Over 20 stakeholders were interviewed at the start of the project. Stakeholders were asked for their ideas about the trail system. Those interviewed represented the Parks and Recreation Board, City Public Works, City Council Land Use Committee, Carbon County planning department and Board of County Commissioners, Beartooth Recreation Trails Association, recreation and main street business owners, Carbon County Museum and Historical Society, Beartooth Hospital and Health Center, Forest Service, McKee Engineering, Red Lodge Surveying, and others.

Public meetings

Three public meetings were held at City Hall. Each was publicized in the Carbon County News and through flyers placed around town. Meeting agendas were posted on the project web site prior to each meeting. The meetings were designed to be highly interactive and included development of the vision, location of potential trail routes, and prioritizing actions or projects needed to implement the comprehensive trail plan.



Figure 5.1. Community members draw proposed trail locations at the second public meeting in Red Lodge.

Presentations to civic groups

Presentations were made to the Beartooth Recreational Trails Association, Chamber of Commerce, Lion's Club, Rotary, Kiwanis, and the Boys and Girls Club during February and March. Discussion occurred following the presentations.

Newspaper articles

News releases were submitted to the local paper of record, the Carbon County News. The News printed articles on the project all but two weeks of the four-month planning process. The Local Rag also printed the public meeting schedule.

Email Newsletter

An electronic newsletter called "Pathways" was developed and distributed via email during the project. Five issues were mailed out during the planning process to participants of the interviews and public meetings.

Web site

A project web site was developed and incorporated into the City's official website (www.cityofredlodge.com). Meeting announcements, agendas, summaries, maps and photos were posted on the website. The draft plan was also posted on the website during the public comment period.

Briefings of City officials

The City Planning Board, Parks Board and the City council were briefed during the planning process. Close coordination was maintained with the City planner and public works director.

Other

Six large landowners and developers were contacted by phone and briefed about the trail planning process. Project members contacted and/or attended meetings of Montana Department of Transportation projects on Highways 78 and 212 to ensure that segments of the proposed trails system could be considered and incorporated into highway planning.

Public Comment

The draft plan was made available online and at City Hall and the public library. The comment period was open for two weeks. Four public comments were received incorporated into the final plan were appropriate.

Mapping

An inventory of important City features was compiled and mapped using a Geographic Information System (GIS). Mapped features included existing trails, schools and daycares, City parks, residential subdivisions, natural features and a variety of other civic nodes that the proposed trail system would ideally connect (Table 4.1). These features were combined with topographic and high resolution aerial base maps to produce large format, color maps that were used extensively throughout the project and public meetings.

Table 4.1. Community features that were mapped within a GIS for the Red Lodge Trail plan.

Existing Trails and Footpaths

- McGillan Street trail
- Affordable housing trail
- Coal Miners Park trail
- Rock Creek Park trail
- Lions Park trail
- Downtown historic walking tour

Schools, Daycares and Clubs

- Red Lodge High School
- Roosevelt Middle School
- Mountain View Elementary School
- Beartooth Day Care Center
- Boys & Girls Club

City Parks & Recreation Facilities

- Lions Park
- Field Park
- Fin Park
- Coal Miners Park
- Rock Creek Park
- Skateboard Park
- Pride Park
- City swimming pool
- Palisades Campground

City/County Subdivisions

- Red Lodge Country Club Estates
- Remington Ranch
- Tipi Village
- Canyon Ranches
- Two Mile Bridge
- Canyon View

Other Civic Nodes

- Carnegie Library
- Civic Center
- Chamber of Commerce
- Post Office
- Beartooth Hospital & Health Center
- County Fairgrounds
- Rodeo Grounds
- Red Lodge Cemetery
- Red Lodge Airport
- Senior Citizens Center
- Beartooth Industries
- Beartooth Nature Center
- Red Lodge Mountain Golf Course
- Red Lodge Mountain Ski Resort
- Carbon County Historical Society & Museum
- Carbon County Arts Guild & Depot Gallery
- Red Lodge Nordic Center
- Silver Run Elk Management Scenic Overlook

Natural Features

- Rock Creek
- East and West Bench

City/County Infrastructure

- Sewer lines
- Water lines
- Storm water lines
- Natural gas lines
- City limit boundary
- City and County land parcels
- City streets and County roads
- Ditch and Canal systems

6. Proposed Trails System

The proposed trail system for the Red Lodge area consists of 11 trail segments. Four of these segments fall mostly within the City limits, while the other seven exist outside the City but within Carbon County (Figure 5.1). Some of these segments overlap with one another to form loops. Each segment is given a descriptive name for the purpose of identification and summary of trail information for this plan (Table 5.1). The trail segment names are not intended to be a formal designated name.

Table 5.1. Proposed trail segments for Red Lodge including their geographic extent and distance in miles.		
Trail Segment	Geographic Extent	Trail Distance (Mi)
Airport Alley	City	2.5
Historic Downtown Trails	City	4.5
Rock Creek Pathway	City	10.6
West Rim Loop	City	3.8
Bridle Trail	County	2.5
Brophy Mine Ride	County	8.3
Clear Creek Loop	County	15.6
Meadow Overlook	County	5.1
Meeteetse Pinnacles	County	13.4
Palisades View	County	7.7
Remington Rim	County	6.1

Each trail segment is described below with an accompanying map denoting the proposed trail use and features that exist (or should be developed) along the trail. The map symbols and the features they represent are listed in Table 5.2. The large format map in Appendix E uses red symbols to illustrate trail users and blue symbols for trail features.

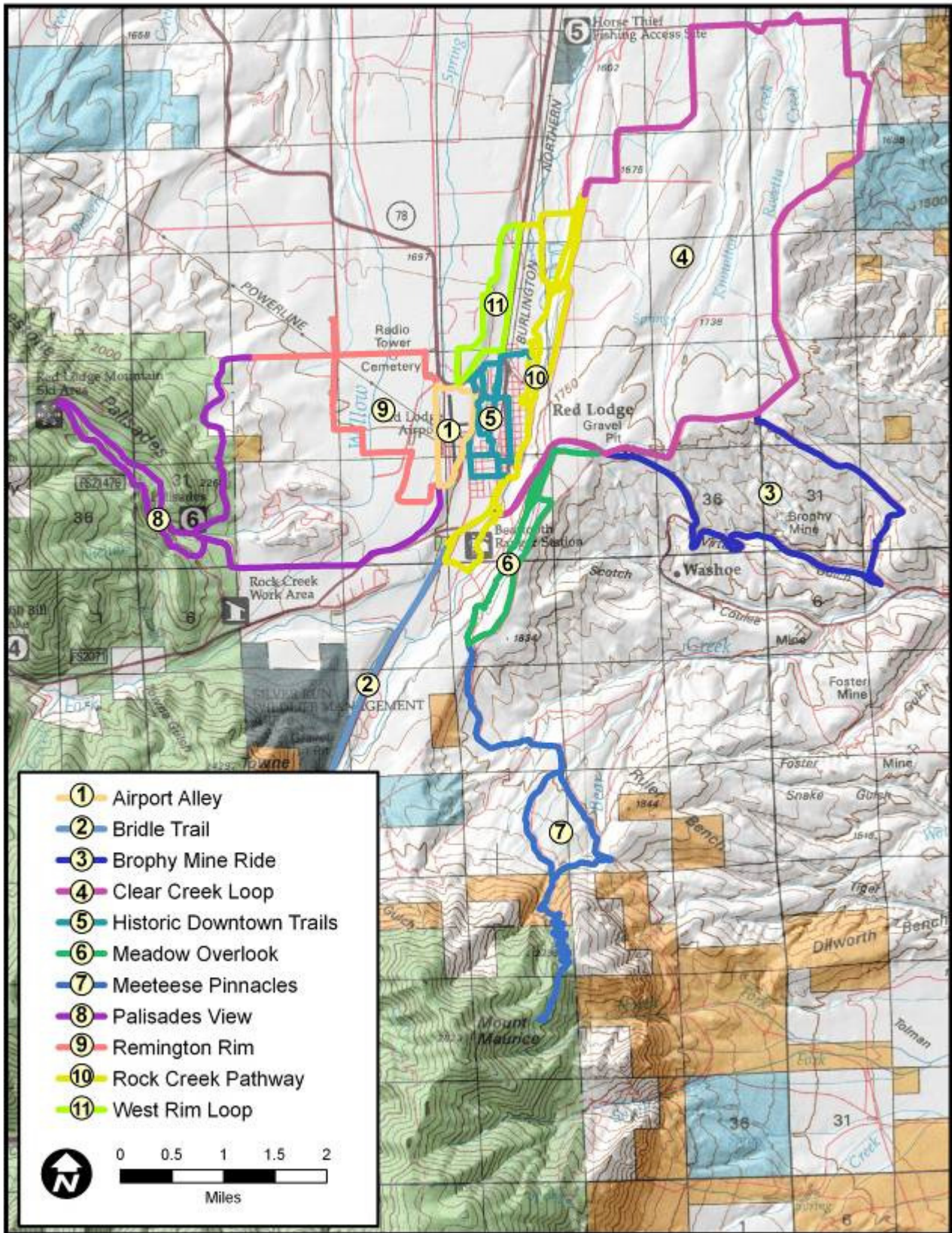

















Figure 5.1. Map of proposed Red Lodge trail system

Trail Surfaces

The type of expected trail use (foot, bike or equestrian) normally dictates the recommended surface material of the trail. For example, if the trail is for equestrian users, then the trail should be constructed of a soft, natural material rather than asphalt or concrete to prevent injury to the horse. However, this plan advocates that all the trails be *initially* constructed as a soft surface trail, with the exception of Lions Park and trails following City streets. This trail building strategy would allow trails to be developed more quickly at less initial cost. If the trail receives adequate use and upgrades to the surface (such as asphalt) are warranted, the City should pursue additional funding to convert the trail to a more permanent hard surface.

Trail Segments

The trail segments described below are part of a proposed trail system for Red Lodge and surrounding area. The maps depict trails across both public and private lands. Private land owner easements have not been obtained and trails crossing private property may or may not be realized. Easements and right-of-ways that permit public trails to cross private lands will need to be negotiated on an individual land owner basis.

Trail Use	
	Walk/Run/Hike
	Mountain Bike
	Cross Country Ski
	Equestrian
	Rollerblade/Skateboard
	Accessible
Trail Features	
	Trailhead without Parking
	Trailhead with Parking
	Camping
	Information
	Viewpoint (bench or trail shoulder)
	Fishing Access
	Restrooms
	Historical Interpretation
	Natural Interpretation
Table 5.2. Map symbols for trail use and trail features.	

Airport Alley

Trail Use: walk/run/hike, bike, and equestrian

Distance: 2.5 miles

Description: This proposed trail segment circles the Red Lodge airport, rodeo and fair grounds. The trail parallels Rodeo Ground Road and White Avenue on the east side and Highway 78 on the north. The western edge of the loop follows closely along the Pryde and Harra ditches. The roads in this area are heavily used by walkers and runners.

Features: City owned land exists along the edge of the West Bench to provide a scenic overlook of Red Lodge as well as link into the existing McGillen Avenue trail that leads down from the West Bench. We recommend that the City pursue the development of the proposed City park in the northwestern corner of the loop (parkland dedicated as part of the Remington Ranch subdivision) which could provide necessary trailhead amenities such as parking, restrooms, and picnic area.

Opportunities: The proposed trail traverses City and County lands and along street/highway right-of-ways, so no private land easements would need to be obtained. Agreements and/or easements with the County would likely be needed to route the trail west of the fairgrounds. There is also the possibility that the Montana Department of Transportation (MDT) may provide funding for a portion of this trail as part of the Highway 78 reconstruction effort scheduled for 2010. Parking of horse trailers would be discouraged along Rodeo Ground Road to avoid road crossing conflicts between horses and vehicular traffic.

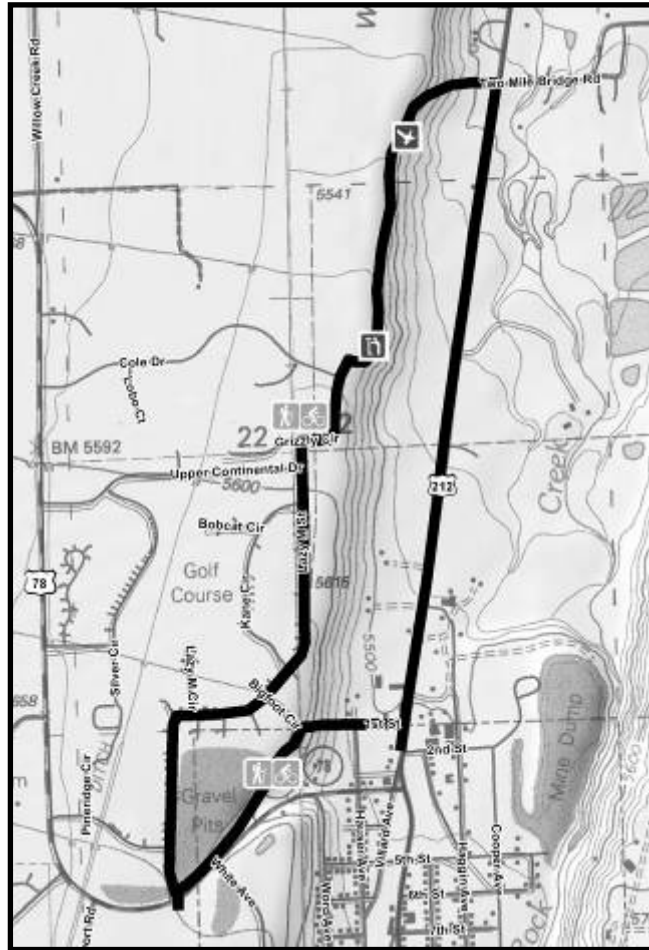


West Rim Loop

Trail Use: walk/run/hike and bike

Distance: 3.8 miles

Description: The West Rim Loop trail segment is located on the north end of the City. The trail follows Highway 212 north to Two Mile Bridge Road then turns west and climbs the West Bench at or near the site of the future medical campus. The trail continues along the edge of the West Bench southward until it reaches the developed portion of the Red Lodge Country Club Estates. At that point the trail follows existing streets within the development such as Pineridge Road, Grizzly Circle and Lazy M Street until it reached the intersection of Highway 78 and Lazy M Street. Streets within the development are 38 feet in width and provide sufficient room for pedestrian and bike travel. The proposed trail links back to Highway 212 by following the perimeter of the gravel pit, along the midslope of the West Bench and connecting into a utility easement extension from 1st Street. This portion of the trail would serve as an alternate pedestrian/bike path down Brewery Hill, but may be difficult to construct due to steep slope and artesian springs. Concern has been raised by nearby home owners about the unstable ground and possible intrusion of privacy.



Features: The trail extends more than one half mile along the edge of the West Bench and provides excellent scenic views of the Rock Creek floodplain. View points with benches should be constructed along this area to provide trail users with viewing and possible resting opportunities. The northwest portion of the trail borders sloping parkland that has been dedicated as part of the Red Lodge Country Club Estates. Much of the sloping parkland is wet due to naturally occurring springs which may present a challenge to constructing a trail up the steep slope. However, the springs have also promoted the growth of deciduous trees and shrubs along the slope which provide good habitat for birds and bird viewing opportunities.

Opportunities: The northern portion of the trail borders the proposed Diamond C Links subdivision (67 acres) which is currently under review by the City planning office. There is an opportunity to work with the developer and Red Lodge Grizzly Peak, Inc. to plan and design this portion of the trail before development occurs. However, the design and exact location of the trail will need to be sensitive to golfers and home owners in the area. Concern has already been raised about trail maintenance, liability and possible conflicts with golfers in this area. These issues will need to be addressed in more detail prior to trail site planning.

Another trail building opportunity exists along Highway 212. Reconstruction of the highway is scheduled for 2112+ and the MDT is considering a parallel pedestrian/bike trail along the highway from Two Mile Bridge to the intersection of Highway 78 (Bruce Barrett, MDT, Pers. Comm.).

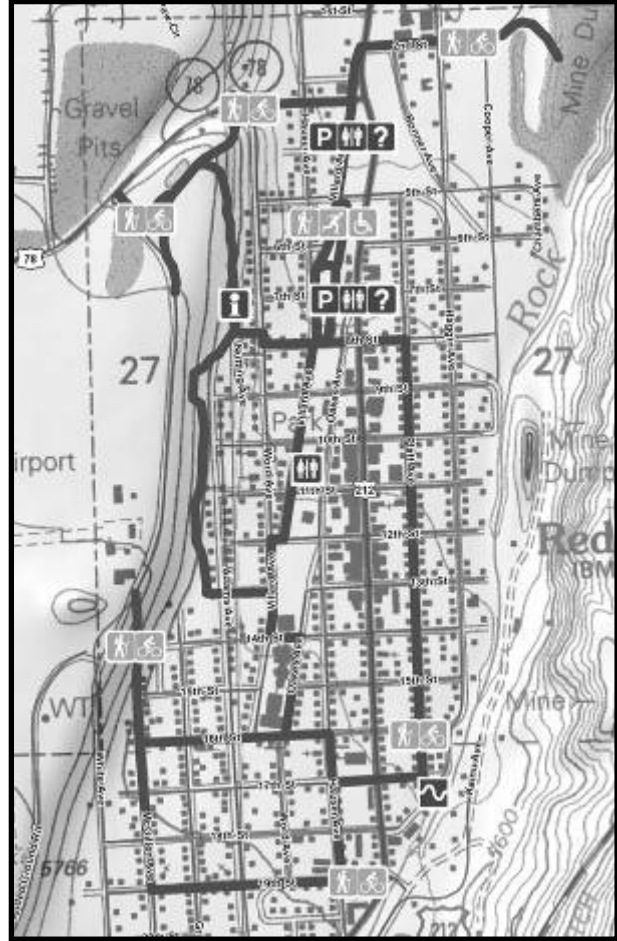
Historic Downtown Trails

Trail Use: walk/run/hike and bike

Distance: 4.5 miles

Description: This trail is located in the City's downtown area between 2nd and 17th Streets north-south and the West Bench and Platt Avenue east-west. The trail predominantly follows existing City streets and sidewalks with the exception of Lions Park and along the base of the West Bench, which would require trail construction.

Features: Many of the City's facilities and attractions are accessible by the proposed trail in this area including the arts guild, library, historical museum, civic center, swimming pool, nature center and four parks. Developed trailheads are proposed at the Chamber of Commerce visitor center and Lions Park. The Chamber already has an outdoor kiosk that could provide maps of the trail system and would serve as a starting point for visitors. This plan also recommends that the City further develop the newly constructed restrooms at Lions Park to include a display board on the side of the restrooms to promote the trail system and parking lots for trail/park users.



Opportunities: Approximately half of this trail follows the existing historic walking tour promoted by the Carbon County Historical Society. Coordination between the Historical Society and the City should be pursued to develop and promote both the walking tour and the trail system.

Part of this trail has been identified as an important transportation corridor for children. The corridor extends approximately 12 City blocks from 2nd Street to 14th Street along North Hauser and Villard Avenues. The trail along this corridor connects many facilities including the Chamber of Commerce, Lions, Field and the skateboard parks, Boys and Girls Club, Beartooth Children Center, Brown Field and the Civic Center and the High School. We recommend that this corridor be given highest priority to improve safe travel for children.

Recommended improvements within the North Hauser/Villard corridor include the construction of new hard surface trails or sidewalks on the east side of the street between 3rd and 9th Streets and 11th and 13th Streets, new striped crosswalks between street intersections and new signage for crosswalks and speed limit restrictions.

In addition, this plan recommends that the City remove parking along the east side of the North Hauser/Villard corridor and make a new eight foot, striped bike lane as illustrated in

Figure 6.1. This bike lane, in combination with the new sidewalks, would encourage safe travel for both young pedestrians and bicyclists in a heavily used corridor. Conversion to a one-way street as well as closing off the entire block between 9th and 10th Streets was also considered but is not recommended at this time.

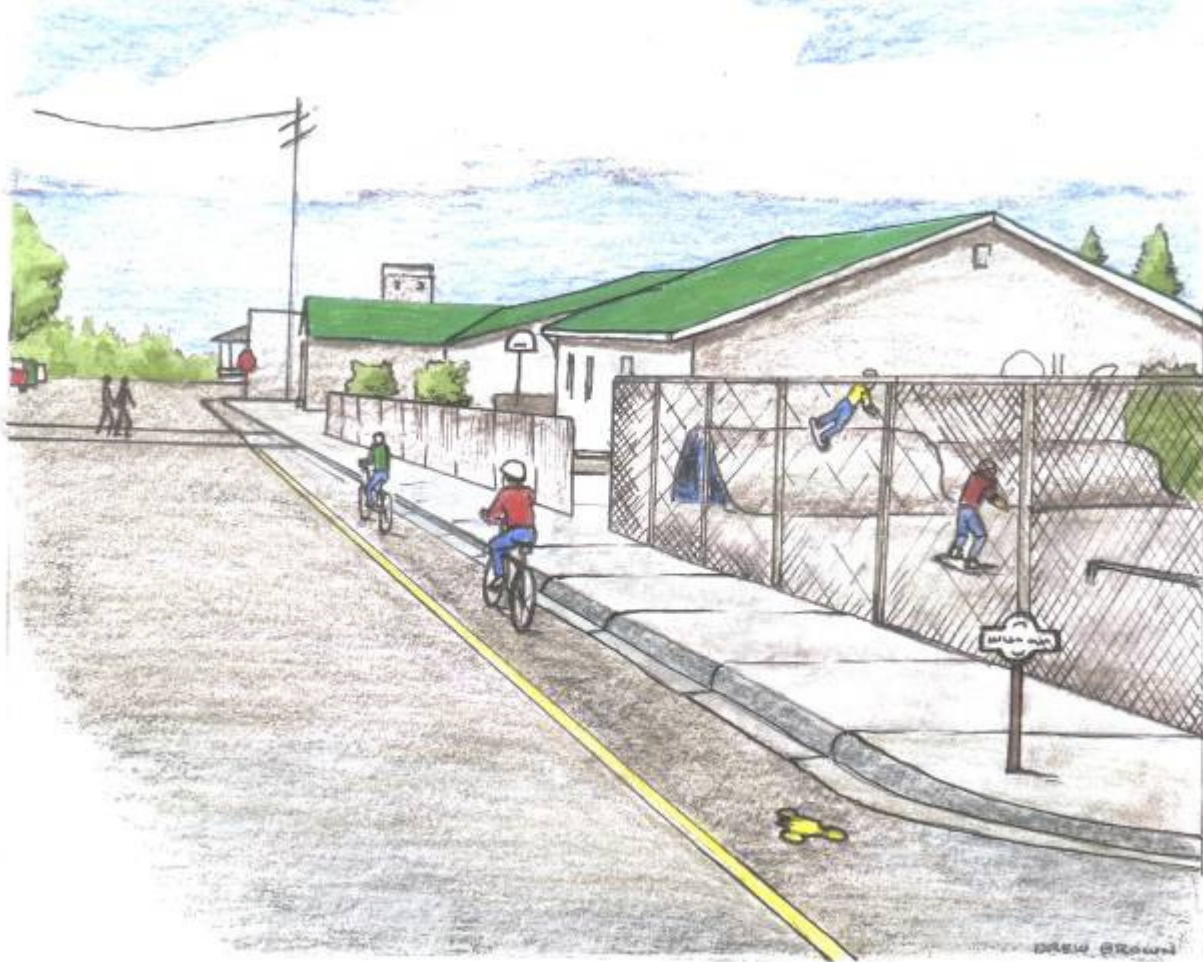


Figure 6.1. An illustration of the proposed bike lane for North Hauser and Villard Avenues.

We also recommend that the City planning department work with the MDT to ensure that a highly visible crosswalk be constructed at the intersection of Highways 78 and 212 as part of the re-construction effort. Several possibilities exist to increase safety at this intersection including 1) an elevated crosswalk made of different road material such as brick, 2) an underpass, and 3) a roundabout.

We recommend that the City enforce both sidewalk and parking ordinances along this trail to improve walkways and to clear paths for bicycle travel. It is also recommended that crosswalks be developed at road intersections along the trail where they do not already exist.

The City has an opportunity to work with the MDT in the planning stages of the Highway 78 reconstruction to ensure a safe alternate route along Brewery Hill. MDT officials have publicly stated their desire to construct a pedestrian/bike path that would promote travel along Brewery Hill but not directly adjacent to Highway 78. MDT has cited environmental and engineering constraints as a deterrent to adding a pedestrian/bike path adjacent to the road corridor.

This plan suggests two possible alternate routes to avoid a pedestrian/bike path directly adjacent to Highway 78/Brewery Hill (Figure 6.2). The first is to loop around the affordable housing apartments located at the top of the hill, then traverse the West Bench south and have the trail connect to the downtown area via 8th and 13th Streets. This path takes advantage of the topography, but would require several private land owner easements. The other option is to construct a trail from the affordable housing apartments down to the intersection of Highway 78 and Word Avenue. This option reduces the number of private land crossings, but would be very difficult to construct due to the slope of the hill along Word Avenue. Further investigation into private land easements and engineering of the trail is needed in this area.



Figure 6.2. Trail options for Brewery Hill (Highway 78). The light blue colored trail is part of the Historic Downtown Trail. The Airport Alley trail is shown in orange and the West Bench Overlook Trail is green.

Another trail opportunity in the downtown area is the construction of a hard surface trail around Lions Park. At the time of this writing, grant funds are being pursued through the Red Lodge Area Community Foundation for the construction of this trail and amenities such as benches and signs. A proposed sketch of the trail encompassing Lion's Park is provided in Figure 6.3.

If funded, we recommend that an eight to ten foot wide hard surface trail (asphalt or concrete) be constructed to allow walking/jogging, bicycles, wheelchairs, strollers, and in-line skating/skateboarding. Appropriate signage would need to be constructed to outline rules and promote safety amongst the different users.

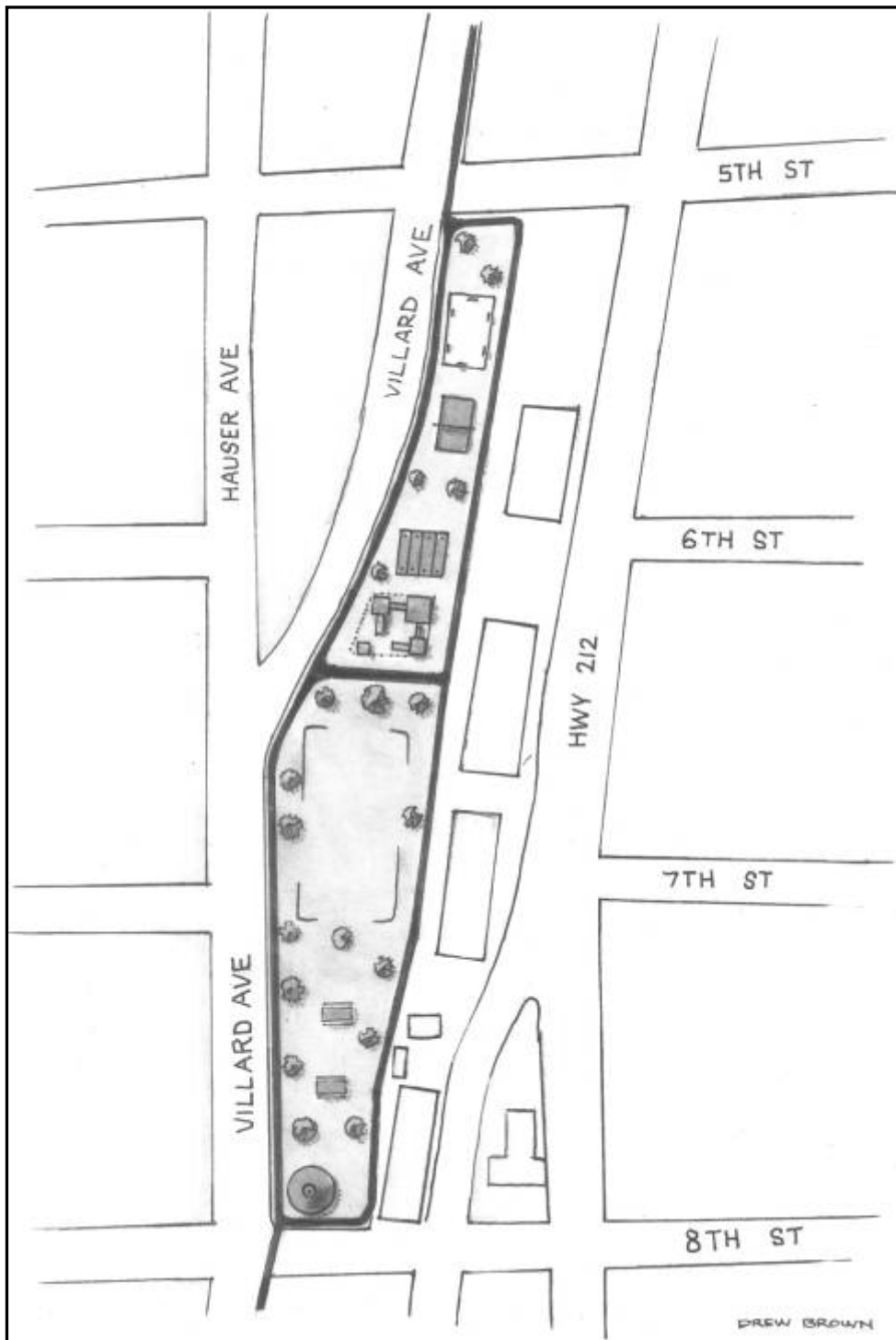


Figure 6.3. An illustration of Lions Park with a hard surface path around the perimeter with north and south linkages to trail system.

Yet another opportunity exists in the downtown area with a private land owner who has expressed interest in the possible donation of land along the West Bench for a trail and/or dog park. See map in Appendix E for exact location.

Rock Creek Pathway

Trail Use: walk/run/hike and bike

Distance: 10.6 miles

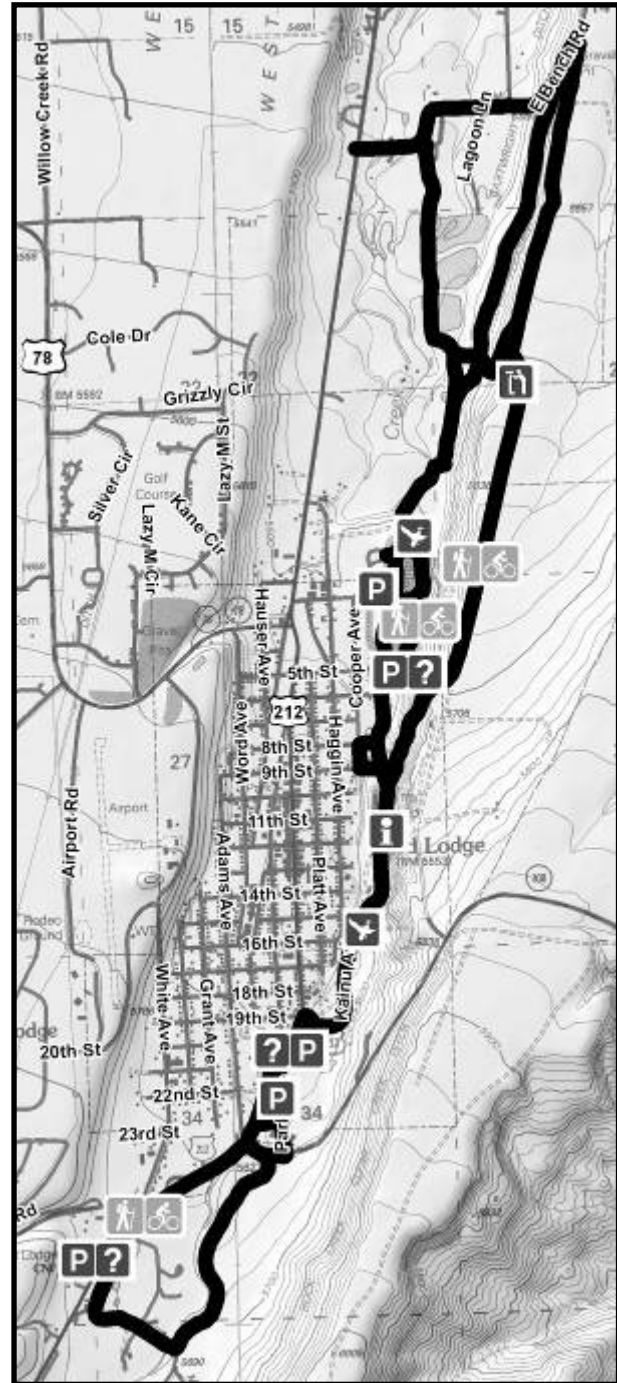
Description: The proposed trail parallels Rock Creek from Two Mile Bridge Road at the north end to Meeteetse Road at the south end with several smaller loops in between.

Features: Several opportunities for natural and historical interpretation as well as scenic views exist along this trail segment (see Map in Appendix E). An especially significant historical interpretation opportunity exists at the Island at Rock Creek subdivision beneath the East Mine portal.

Trailheads with parking are recommended at the north and south ends of Coal Miners Park, Rock Creek Park and at the intersection of Broadway and Hauser Avenues where a vehicle pullout already exists. The pullout already contains informative signs about the history of Red Lodge and could be expanded to include a display board with information and a map of the trail system.

Opportunities: The trail segment requires three river crossings. At the south end, the trail could utilize the existing bridge at 19th Street, just north of Rock Creek Park. The trail must also cross again at 9th or 8th Street. A new bridge is being constructed at 9th Street as part of the Island at Rock Creek subdivision. The trail could utilize that bridge, or a new pedestrian/bike bridge could be constructed across 8th street. The bridge at 8th Street is preferred because 1) it would separate pedestrian/bike traffic from vehicle traffic; 2) it would keep the trail segment closer to Rock Creek, and 3) avoid routing the trail along City streets. The drawbacks to this alternative are the cost of a new foot bridge and the possible loss of a popular swimming hole at the old 8th Street bridge footings.

The third river crossing is proposed at the north end of Coal Miners Park and could possibly utilize an existing bridge which supports an abandoned City sewer pipe. We recommend that an engineer examine the trestle to determine if the piers are structurally sound and whether the trestle could be converted into a foot/bike bridge for the trail system.



The City will need to work closely with the developer of Island at Rock Creek, Mr. Bill Kiely, to ensure a trail is secured along this property, which is a key piece to the overall trail system. Mr. Kiely has expressed enthusiasm for developing a trail along his development that would tie into his dedicated parkland located onsite. Mr. Kiely, the City and the Historical Society can work cooperatively to promote the historical mining features of this area.

Likewise, the City and County will need to work with the developer of the recently proposed subdivision near Two Mile Bridge. This subdivision, if approved, could provide an easement for a trail from Two Mile Bridge Road along the west side of the sewer lagoons and ultimately link to Coal Miners Park. Two alternate trails have also been identified in this area to link Two Mile Bridge Road and Coal Miners Park. One of these would utilize the service roads along the Paradise Ditch and the fiber optic line. The other would utilize a County road right-of-way that has never been developed on top of the East Bench. A public trail easement with the adjacent private land owner would need to be explored further.

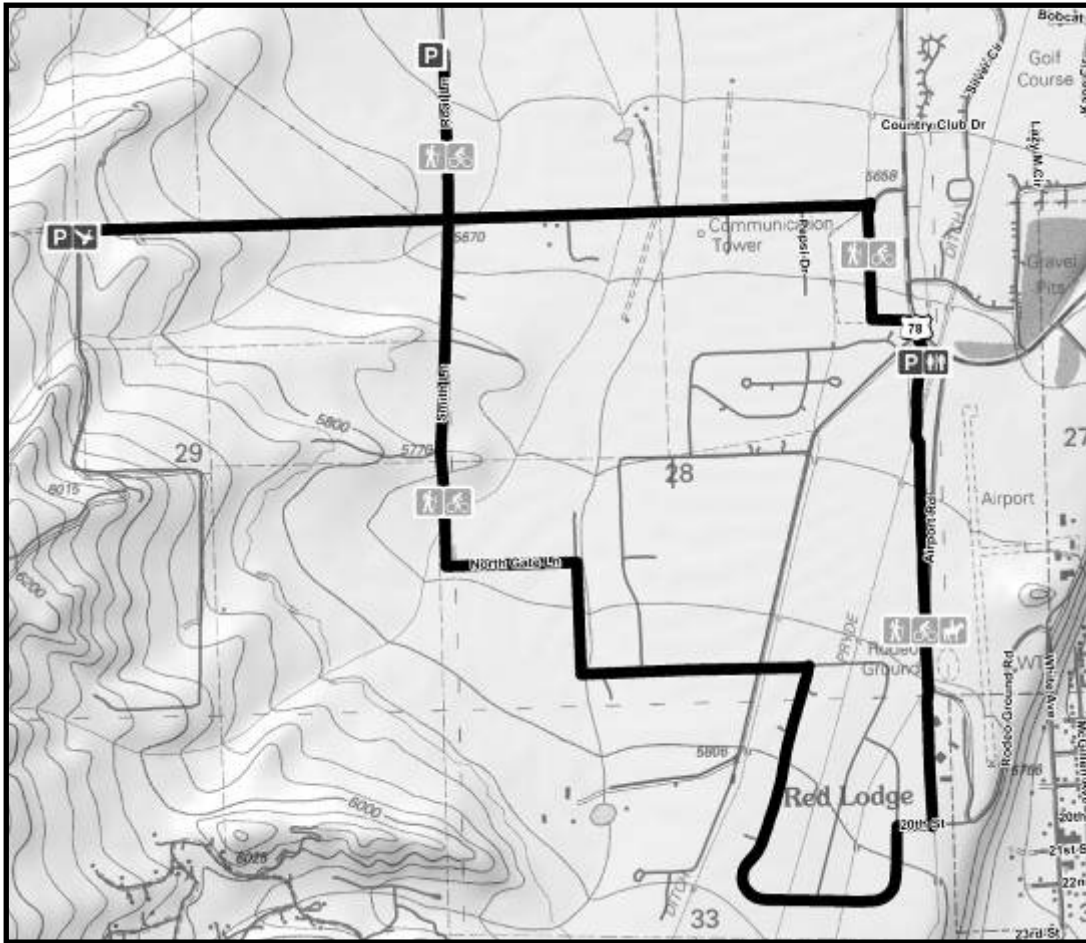


Meadow Overlook

Trail Use: walk/run/hike and bike

Distance: 5.1 miles

Description: The Meadow Overlook trail begins at Highway 308 and travels southward on dirt roads to the intersection of Meeteetse Road and loops back along the Rock Creek / Clear Creek Ditch. The trail offers some of the most scenic views of the City, Beartooth and Pryor Mountains. The trail is located on privately owned lands and is posted with no trespassing signs. Public trail easements would have to be obtained from both the land owner and the ditch company for this trail segment to be opened for public use.



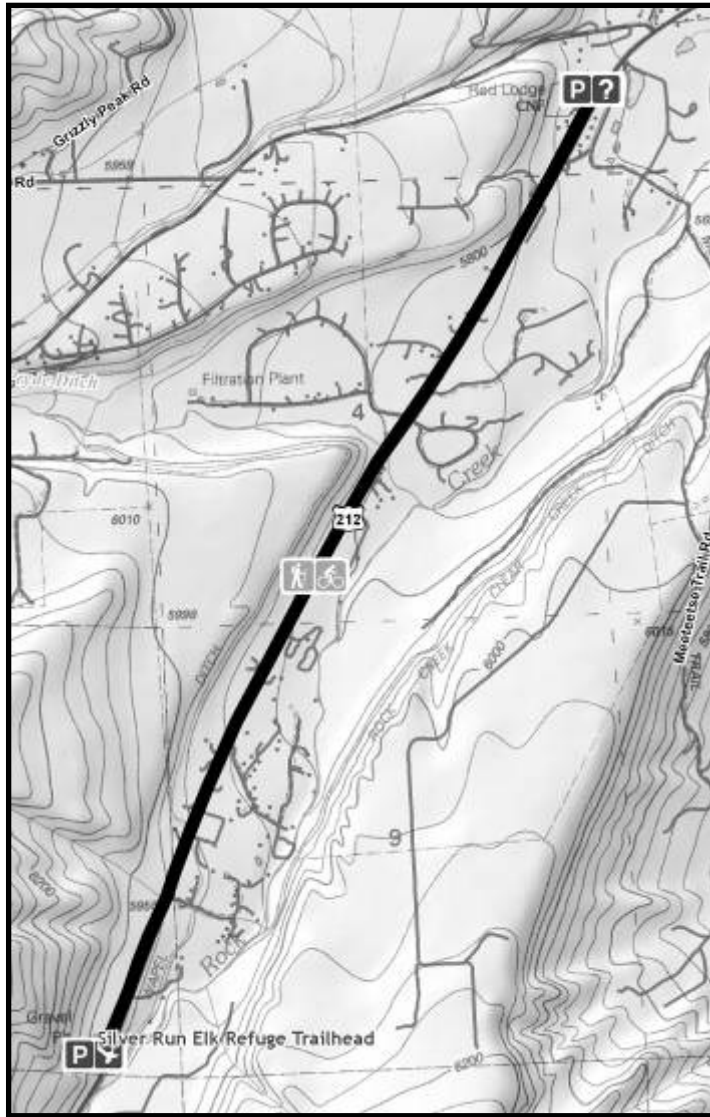
Remington Rim

Trail Use: walk/run/hike and bike

Distance: 6.1 miles

Description: The Remington Rim trail follows existing roads in the Remington Ranch subdivision and along Fox and Smith roads. It shares a portion of trail on the east with the Airport Alley trail along the Harra and Pryde ditches. The trail connects to the Red Lodge Area Nordic Center just north of Fox Road. The trail also extends to the end of Fox Road where it connects with the Palisades View trail segment.

This trail segment uses the shoulder of existing dirt and gravel roads. The roads through Remington Ranch are private and an easement would likely be needed to formally define the roads as part of the trail system. Signs are posted at the subdivision entrance stating that visitors are welcome, but dogs must be on a leash.

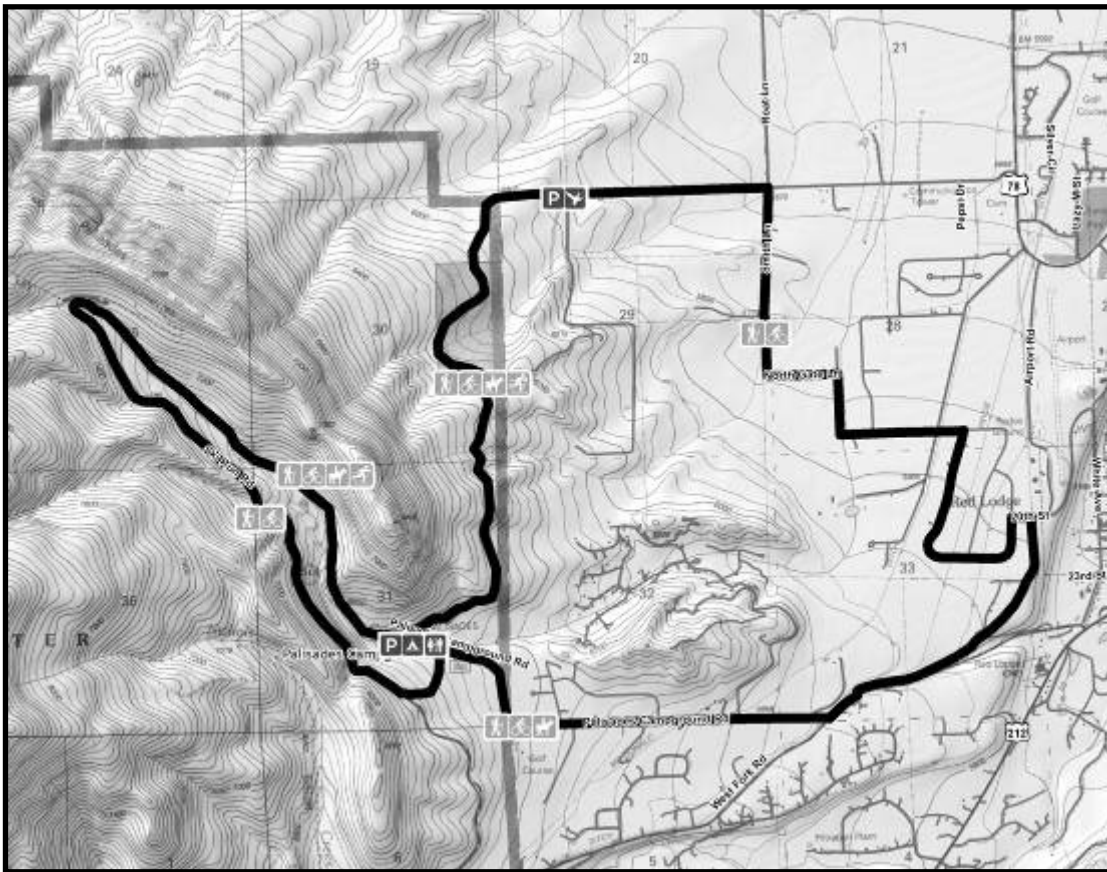


Bridle Trail

Trail Use: walk/run/hike, bike and equestrian

Distance: 2.5 miles one way, 5 miles as a loop trail

Description: The trail begins at the US Forest Service Ranger District Office and extends south-southwest along Highway 212 on the east side of the Highway. The City Public Works Director, Skip Boyer, has stated that an existing right-of-way exists for the trail on the east side and that the trail was once maintained. We recommend the re-establishment of the Bridle Trail to allow alternative transportation along Highway 212 without having to walk or bike on the highway shoulder. The proposed trail would terminate at the Silver Run Elk Refuge parking lot. The Montana Department of Fish, Wildlife and Parks allows public access on the Silver Run Elk Management Unit during the summer and fall months. The unit is closed to the public from December 15th through May 15th annually.



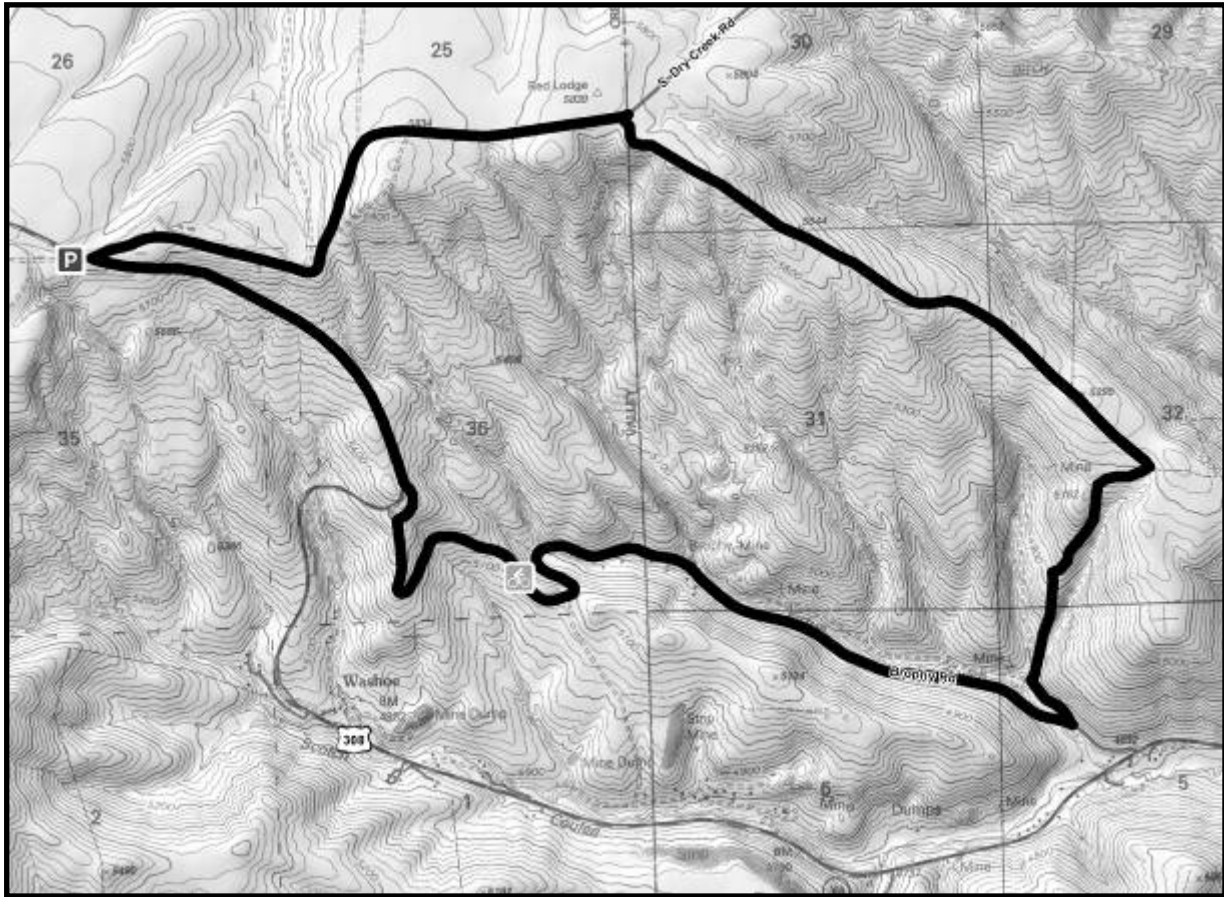
Palisades View

Trail Use: walk/run/hike, bike, and in some areas cross-country ski and equestrian

Distance: 7.7 miles

Description: The Palisades View trail shares a common trail segment with the Remington Ranch Trail along the east. At the north end, the trail extends from Fox Road and enters the Custer National Forest. The trail travels south along the boundary of the National Forest until it reaches Palisades campground. A private inholding within the Forest must be crossed to complete this segment. The campground would serve as a trailhead, providing parking, camping and seasonal restrooms. From the campground, the trail extends northward along Willow Creek where the Forest Service currently maintains a trail. The trail extends to the lower parking lot of the Red Lodge Mountain resort, and then travels back down to the campground along Ski Run Road. This section of the trail would require coordination with the Forest Service and Red Lodge Mountain to address safety and trespass concerns.

The trail continues along the shoulder of Palisades Campground Road to the intersection of the West Bench Road. The proposed route of the trail veers from the road and follows the Harra Ditch into the Canyon View Subdivision. The trail parallels the private roads in the subdivision until it reaches City owned lands south of the airport and ultimately ties into the Airport Alley trail. Easements would need to be obtained from the owners of the Canyon View subdivision and the ditch company controlling the Harra ditch. This section of the trail would provide a safe, alternate route down from the steep and narrow West Fork road; a concern raised by many members of the community.

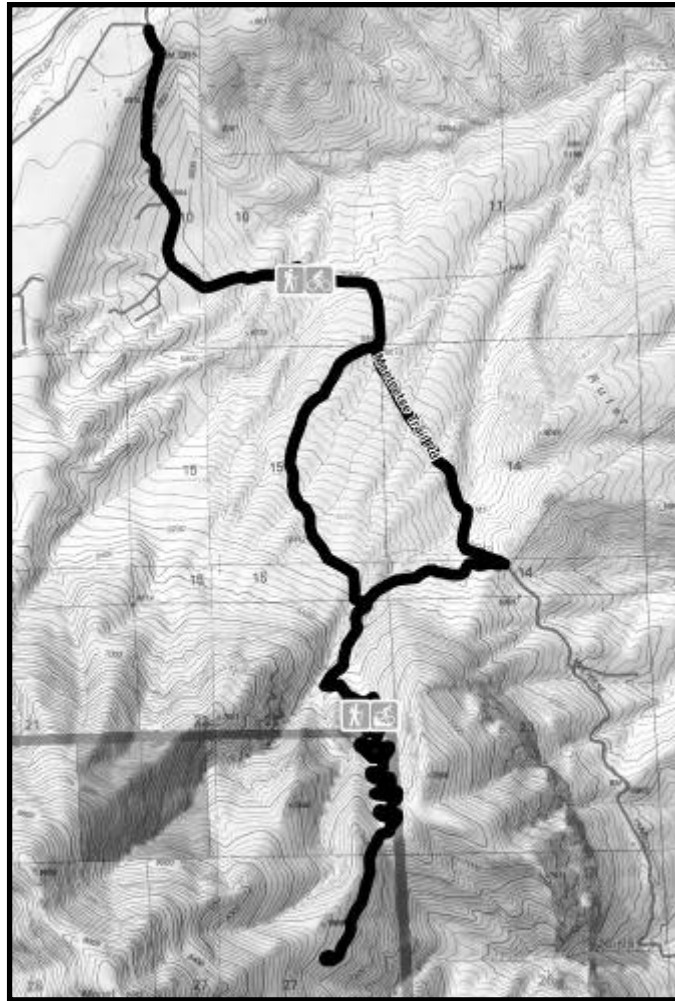


Brophy Mine Ride

Trail Use: Primarily mountain bike

Distance: 8.3 miles

Description: The Brophy Mine Ride trail originates at the parking lot at the top of the Bearcreek Hill on Highway 308. The proposed trail head is also shared by the Meadow Overlook trail. The trail follows the shoulder of Highway 308 until it reaches the turn off and entrance to the Brophy Mine Road. The trail follows the Brophy Mine Road to a point near the intersection of Highway 308, but instead turns northward, up a private two track road and connects into the South Dry Creek Road and back to the trailhead off Highway 308. The trail uses mostly state highway and County roads, but may require an easement from the Wolf Creek Ranch to travel on the two track up the Dry Creek hill.



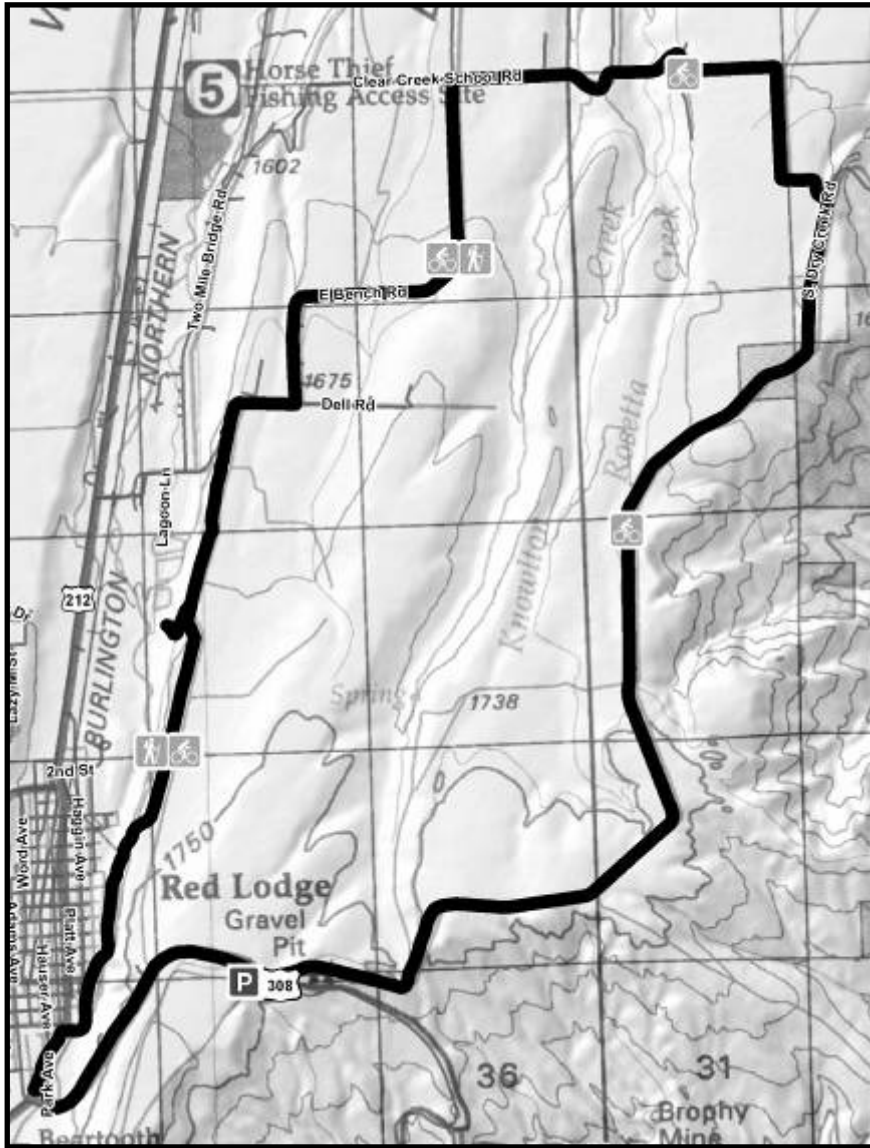
Trail Segment: Meeteetse Pinnacles

Trail Use: walk/run/hike and bike

Distance: 13.4 miles

Description: The trail begins at the top of the East Bench along the Meeteetse Trail Road and follows the road until it reaches the saddle between Mount Maurice and Ruler Bench. At which point, the trail travels east along a two track until it connects to the Face of the Mountain trail on the Custer National Forest. Trail users can choose to head up the Face of the Mountain trail to the point where it is no longer visible, or circle back to the Meeteetse Trail Road. The land between Meeteetse Trail Road and the Custer National Forest is managed by the Bureau of Land Management (BLM) and Wolf Creek Ranch. The dirt road crossing the Wolf Creek Ranch may require an easement for public access. We recommend that the County, Forest Service and the local land owner coordinate efforts to develop a trail head at the start of the Face of the Mountain trail. Signage along with dirt roads is also recommended to make the trail course more visible to the public.

It was suggested by a few citizens that the trail extend farther east along Meeteetse Trail Road to provide access to nearby BLM lands for additional hiking, biking and horseback riding opportunities.



Trail Segment: Clear Creek Loop

Trail Use: walk/run/hike and bike

Distance: 15.6 miles

Description: This trail extends nearly 16 miles along the edge of Dry Creek Hill and circles the Clear Creek drainage. The trail follows the shoulder of South Dry Creek Road, Clear Creek School Road, East Bench Road and ultimately ties into the Rock Creek Pathway at Two Mile Bridge Road. Because the trail uses existing County roads, no easements would need to be obtained (except for trails included in the Rock Creek Pathway). We recommend that trail signs be placed every two to three miles and at road intersections to prevent people from turning onto the wrong road and to remind trail users that off-road travel is not permitted.

Trail Name

In February of 2006, the City Parks Board organized a contest to name the trail system. The contest was advertised in the Carbon County News and through the trail plan website. One hundred and thirty suggested names were submitted through the website and drop boxes located at City Hall and the post office. Through a democratic process, the Parks Board whittled down the names and ultimately chose the following name for the trail system; Rocky Fork Trail.

7. Implementation

Adoption of this plan is merely the first step in making the City's comprehensive trail system--and the vision of the citizens--a reality. The extent to which City, not-for-profit, volunteer and private resources are dedicated to implementation will determine the progress of implementation. While private and not-for-profit resources will be important for implementation, the commitment of the City itself is the most critical piece.

Getting the trails on the ground will require a variety of activities (and the corresponding skills) including but not limited to:

- Negotiation of easements,
- Trail design,
- Construction,
- Budgeting and fund raising,
- Grant Writing
- Coordination within City government between the Public Works and Planning Departments, Parks and Recreation Board, Planning Board, City Council Committees, Law Enforcement and City Administration
- Coordination with external partners such as Carbon County, Lion's Club and other not-for-profits, and organizations with project funds to grant
- Review of policy and development of suggestions for new policy or policy changes,
- Monitoring, and
- Plan maintenance and revision.

In larger communities, parks and recreation functions are organized and staffed under departments with these responsibilities. We recommend that the Red Lodge City Council Lands and Public Works committees jointly determine the appropriate administrative "home" for the Red Lodge trails program, identify internal fund source(s), and establish expectations for an annual budget.

Priorities

So, now that the proposed trail system has been identified, "How do we begin to implement this plan?" Public meeting participants ranked the various trail segments in priority order without specific criteria but keeping in mind a number of considerations. These considerations included increasing safety of movement in the City, ease of accomplishment, amount of anticipated use, and other considerations.

The Historic Downtown Trails and the Rock Creek Pathway ranked as the top two priority trails of the four trails within the City (Table 6.1). However, this prioritization is somewhat simplistic from an implementation standpoint. Each of the trails can be logically broken out into a number of segments, parts or projects and ultimately the completion of the trail system will result from completion of projects for many different segments of each trail.

In addition to the trail priorities identified by the public, this plan also examined the land ownership, cost and current opportunities of each trail segment.

Land Ownership

One of the greatest challenges to developing a trail system for Red Lodge is the need to acquire permission to locate trails on private lands. Easements allowing public access will need to be negotiated on an individual land owner basis and may require substantial time and effort to secure. For this reason, trails located on City or County lands or through public right-of-ways were given higher priority to those crossing privately own land.

A Geographic Information System was used to overlay a map of the proposed trails with a map of land parcels developed by the State Department of Revenue. A visual assessment was used to determine if trails were located predominantly on private or public lands or right-of-ways. The results of this assessment are listed in Table 6.1.

Cost

Estimating the cost of trail construction can be difficult without site specific considerations. As a general reference, this plan used cost estimates provided by local contractors (see Appendix B). However, factors such as unexpected physical obstacles, fluctuating cost of materials, and the possible need to purchase easement across private lands, make it impossible to provide an accurate estimate. For these reasons, this plan assigned the following categorical cost estimate to each trail; Low (\$10,000 to \$50,000), medium (\$50,000 to \$150,000) and high (above \$150,000). It behooves the City to include trails on the surface of utility corridors to reduce expense and to provide a public use for property that might otherwise remain idle, weed infested and detract from adjacent properties.

Current Opportunities

Several proposed and ongoing developments, specifically Island at Rock Creek, Diamond C Links on the north end of the Red Lodge Country Club Estates, and in the Two Mile Bridge area offer opportunities to work with developers to get trails in place. Island at Rock Creek developer, Bill Kiely intends to construct a trail across his development during the summer of 2006. Dedicating trail easements may follow with the other two proposed developments.

The Montana Department of Transportation (MDT) is proposing upgrades to both U.S. Highway 212 and Montana Highway 78 in the next three to ten years. In association with the Highway 78 project, MDT has made a verbal commitment to work with the City to locate a pedestrian trail from the West Bench into the City. In association with the U.S. 212 project, MDT is considering construction of a pedestrian/bike way parallel to and on the north side of the highway that would extend from the northern City limits south into the City.

The City was the recipient of \$23,000 in grant funds from the Montana Department of Fish, Wildlife and Parks. These funds are to be used in 2006 in the Coal Miners Park area. Additional grant funds are being pursued through the Red Lodge Area Community Foundation as of the writing of this plan. If obtained, these funds would be used in Lion's Park.

Table 6.1. Considerations for trail development priority around Red Lodge Montana.

Trail Segment	Public Rank	Land Ownership Considerations	Cost*	Opportunities
City Trails				
Historic Downtown Trails	1 (Tie)	Located predominately along City street right-of-ways. Portions of trail along West Bench on privately owned lands.	High	Highway 78 reconstruction; RLACF grant for Lions Park
Rock Creek Pathway	1 (Tie)	Located mostly on private lands except for City parks and City owned land near the City sewer treatment facility	High	Island at Rock Creek subdivision; Two Mile Road subdivision; available MT-FWP grant money
Airport Alley	3	Located exclusively on City and County lands. Also uses City/County road right-of-ways.	Medium	Highway 78 reconstruction project; Parkland dedication at northwest corner of airport.
West Rim Loop	4	Approximately 60 percent of trail located along City street or highway right-of-way. The remaining 40 percent on privately owned lands.	Medium	Highway 212 reconstruction project; Diamond C Links Subdivision
County Trails				
Clear Creek Loop	1	Located mostly on County roads, except for portion along Rock Creek which is mostly private.	Low	
Meeteetse Pinnacles	2	Located mostly on County roads. Less than 10 percent located on private land.	Low	West Fork Road improvements
Bridle Trail	3 (Tie)	Located exclusively along state highway right-of-way	Medium	Highway 212 reconstruction project
Meadow Overlook	3 (Tie)	Located exclusively on private land and private roads	Low	
Brophy Mine Ride	5	Approximately 30 percent located on private land. The remaining portion located along County of state highway.	Low	
Remington Rim	6	Majority of trail follows private subdivision roads.	Low	
Palisades View	7	Approximately 15 percent located on private; 35 percent on federal and 50 percent on County roads.	High	

* Estimated costs of Low (\$10,000 to \$50,000), medium (\$50,000 to \$150,000) and high (above \$150,000)

Based on the information compiled, the recommended approach is to pursue the completion of various trail segments with the Historic Downtown Trail and Rock Creek Pathway taking priority. In that way, the largest number of potential trail users can be served and the City can take advantage of current known opportunities. The specific priorities for the City are as follows:

Historic Downtown Trail

- 1) Paving and associated improvements to Lions' Park.
- 2) Creation of the kid corridor (sidewalks, bike lanes, crossings, etc.)
- 3) Improve sidewalk condition and sign the rest of the downtown area.
- 4) Create additional interpretation of historic points of interest.
- 5) Working with Montana Department of Transportation and private land owners, finalize the location for the segment that descends from the West Bench to the City near Brewery Hill.

Rock Creek Pathway

- 1) Work with Bill Kiely to construct the trail through Island at Rock Creek Subdivision.
- 2) Work with developer of Two Mile Bridge area to dedicate trail easements.
- 3) Coordinate trail with planned City accessible fishing pond.
- 4) Construct trail tread on City-owned property such as Rock Creek Park.
- 5) Finalize locations for creek crossings; begin planning of creek crossings and bridge design.
- 6) Identify interpretive opportunities.
- 7) Approach private landowners and enter into negotiations.

Airport Alley

- 1) Develop a park plan for the parkland dedicated by Remington Ranch along Highway 78.
- 2) Work with Carbon County to finalize trail location and design on top of the West Bench.
- 3) Identify needed trail enhancements such as benches, hitching posts, signs, trash receptacles, restrooms, parking and interpretation opportunities.
- 4) Construct the trail.

West Rim Loop

- 1) Work with developer of Diamond C Links to secure easement along bench on north end of Red Lodge Country Club Estates.
- 2) Work with Beartooth Hospital and Health Center on location for trail to descend West Bench to the medical campus.
- 3) Work with Montana Department of Transportation on the bike path to parallel Highway 212.
- 4) Develop safe crossings of Highways 78 and 212.
- 5) Construct, sign trail.

The Clear Creek Loop and Meeteetse Pinnacles trails were ranked as the highest priority project outside the City.

On-going costs

Great concern was expressed by the public during the planning process that the trail system be properly operated and maintained over time. To do this, the City must plan for the continued operations and maintenance needs of the trail system.

Operational needs include: trash collection, debris removal and condition monitoring. According to the Public Works Director, City Public Works' employees could be utilized for this work. Public Works employees' time must be planned at no less than \$40/hour when all costs to the City are considered.

Maintenance work on trails includes both ongoing or recurring maintenance (light maintenance) and periodic larger capital investment or heavy maintenance. This may include weed abatement, brush removal, tread repair, bridge maintenance, and drainage improvements. Routine maintenance will protect the initial investment in the trail as well as ensuring safe and enjoyable use by the public.

The standard industry practice for protecting infrastructure investments is to use a percentage of the initial investment as the amount of money that will be needed annually for upkeep of the facility. A conservative estimate for a trail system would be 3% of the initial investment. For example, if the initial investment in the paved trail in Lions' Park is \$15,000, maintaining that trail will cost an annual average of \$450 over the lifetime of that trail.

Using a method such as this to generate an estimate for ongoing maintenance needs can help inform decisions on trail surfacing and other related improvements as the City implements the trail system. The City should weigh the total cost of ownership (design, construction, maintenance, etc) when making final decisions on trail segments.

Monitoring

This plan is intended to guide development of a comprehensive trail system in Red Lodge. Part of the implementation of any plan is monitoring progress and making course corrections as necessary.

The City should monitor the following on a semi-annual basis:

- The trail's physical condition.

The City should monitor the following on an annual basis:

- The amount of use by trail segment
- The condition of any trail amenities such as trash receptacles, benches and signs
- The number and nature of user conflicts
- Number of law enforcement calls
- Conflicts with wildlife
- Construction costs
- Operations and maintenance costs
- Overall progress in implementing the plan.

The City should monitor the following on a case by case basis:

- Health and safety incidents such as accidents, injuries.

8. Maintaining the Plan

The time horizon for this plan is ten years. However, an annual review of progress should be conducted.

We recommend that during the regularly scheduled City Parks and Recreation Board meeting each April, the plan be reviewed. The meeting should be publicized in the Carbon County News and public comment invited. The planning and public works departments and the City Council Public Works and Land Use Committees should be asked for input and any revisions deemed necessary by the Board should be made.

Major revision of the plan may be indicated prior to the ten-year anniversary if any of the following occurs:

- The trails envisioned in the plan are substantially in place.
- A significant unforeseen opportunity for the trails system presents itself.
- Major problems arise during implementation.
- The financial situation of the City changes drastically (loss of resort tax and/or other revenue streams to support the system, or a large influx of financial resources to expand the system, for example.)
- Changes in statute affecting plan implementation.
- Litigation affecting plan implementation.

In January 2016, the City should plan to revise the comprehensive trail plan. While the responsibility officially falls to the mayor and council, the work will likely be carried out by the City Planner in cooperation with the City Public Works Director. The work should be overseen by the Parks and Recreation Board with input from the appropriate City council committees, the City Planning Board and the public.

Appendix A. Potential Funding Sources

This appendix outlines some of the possible funding sources for the City's trail system. Where available, a link to website is provided for more information.

Many of the federal funding programs listed below are part of the Transportation Equity Act for the 21st Century (TEA-21). This act, signed into law on June 9, 1998, is the most significant funding program for non-motorized transportation. TEA-21 continues the integration of bicycling and walking into the transportation mainstream that began with the Intermodal Surface Transportation Efficiency Act (ISTEA), the previous funding program, which expired in 1997. TEA-21 increases communities' ability to invest in projects that enhance the safety and practicality of non-motorized modes of travel.

With the exception of National Recreational Trails Fund, bicycle projects must be "principally for transportation, rather than recreation purposes" and must be in the transportation plan study area to seek TEA-21 related funding.

<http://www.fhwa.dot.gov/tea21/>

Surface Transportation Program (STP)

(STP) funds may be used for either the construction of bicycle facilities and walkways, or non-construction projects (such as maps, brochures and public service announcements) related to safe bicycling and walking. Modifying sidewalks to comply with ADA is also an eligible use of these funds.

TEA-21 sets aside 10% of each state's annual STP funds for Transportation Enhancement Activities. In Montana, this is referred to as the Community Transportation Enhancement Program or CTEP. These funds may be used for "provision of facilities for pedestrians and bicyclists" and the "preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails)." Also eligible are safety education activities for pedestrians and bicyclists.

Another 10% of each state's STP funds are set aside for safety. Hazard Elimination funds can be used to address bicycle and pedestrian safety issues. Each state is required to implement a Hazard Elimination Program to identify and correct locations that may constitute a danger to motorists, bicyclists and pedestrians. Hazard Elimination funds can be used for pedestrian and bicyclist public pathways and trails, as well as traffic calming projects.

<http://www.mdt.mt.gov/business/ctep/>

Transportation, Community, and System Preservation (TCSP)

The TCSP Program is a comprehensive initiative of research and grants to investigate the relationships between transportation, community, and system preservation plans and practices and identify provide sector-based initiatives to

improve such relationships. States, metropolitan planning organizations, local governments, and tribal governments are eligible for discretionary grants to carry out eligible projects to integrate transportation, community, and system preservation plans.

Section 1117 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFTEA-LU, Public Law 109-203) authorized the TCSP Program through FY 2009. A total of \$270 million is authorized for this Program in FY's 2005-2009. <http://www.fhwa.dot.gov/tcsp/>

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

CMAQ funds may be used for either the construction of bicycle and pedestrian facilities, or non-construction projects (such as maps, brochures and public service announcements) relate to safe bicycling and walking.

<http://www.fhwa.dot.gov/environment/cmaqpgs/>

National Recreational Trails Fund (RTP)

The RTP is administered by the Montana Fish, Wildlife & Parks (FWP) at the state level, while the Federal Highway Administration (FHWA) provides program oversight at the federal level. The RTP is currently funded by the federal program entitled "Safe Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users" (SAFETEA-LU).

RTP grant applicants (sponsors) can include federal, state, County or municipal agencies, private associations and clubs. RTP grants may not exceed 80% of the total of an individual project. This is a reimbursement program. After approval of all required documentation, FWP will reimburse the sponsor for 80% of the actual documented costs incurred.

This is probably one of the best sources for funding the City's trail system. Here are some important items to consider if applying for funds.

1. Any applicant with an RTP grant approved prior to 2003 that has not yet completed that grant is not eligible to apply for an FY 2007 grant. The Coal Miners Trail grant was funded in 2003 and has not yet been completed.
2. Requirements of the grant include soliciting public input to the proposed project through a legal ad in a daily newspaper with widest circulation in the immediate project area. The legal ad must run for at least one day. The public comment period must be open for at least 30 days. Red Lodge would need to prepare the public input solicitation by the end of May 2006.
<http://fwp.mt.gov/parks/grants/rtp/default.html>

Land & Water Conservation Fund (LWCF) Local Community Grants

The Land and Water Conservation Fund Act of 1965 established a federal grants program encouraging a full partnership between national, state, and local governments in planning and funding outdoor recreation projects. The LWCF is

administered by Montana State Parks, a division of FWP. Since 1965, Montana has received over \$33 million for outdoor recreation. However, LWCF funding for any year is always contingent upon an appropriation from the U.S. Congress. In the past decade, the funding distributed to the state side of the program dropped to zero in 1995, 1996, 1997, 1998, and 1999. Funding was resumed in 2000. <http://fwp.mt.gov/parks/grants/lwcf/default.html>

Rivers, Trails, and Conservation Assistance Program (RTCA)

The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is the community assistance arm of the National Park Service. RTCA staff provides technical assistance to community groups and local, State, and federal government agencies so they can conserve rivers, preserve open space, and develop trails and greenways. The RTCA program implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America <http://www.nps.gov/rtca/>

Safe Routes to Schools (SR2S)

Safe Routes to School is an international movement designed to reach communities. The goal, simply stated, is to increase the number of children safely walking and biking to school. Federally funded SRTS Programs are new. Once Montana has a Safe Routes to School Coordinator in place, Red Lodge should contact that person with inquires about procedures, policies and funding. <http://safety.fhwa.dot.gov/saferoutes/index.htm>

National Scenic Byways Program

Funds from the Scenic Byways program may be used for construction of bicycle and pedestrian facilities along scenic byways. The Beartooth Highway was designated as an All-American Road and has received funding from this program. <http://www.bywaysonline.org/>

Rural Economic Development Grants

These grants can be used for projects that, among other things, create jobs, promote long-term improvements in economic development, reduce unemployment rates, and include a community-based economic development program. Many well planned community-oriented transportation projects can do all of the above. <http://www.rurdev.usda.gov/rbs/busp/redg.htm>

Job Access and Reverse Commute Grants

These grants are available to support projects including bicycle-related services, designed to transport welfare recipients and eligible low-income individuals to and from employment. This grant may be applicable if Red Lodge moves forward with its affordable housing development. <http://www.fta.dot.gov>

Highway Safety Programs

The State and Community Highway Safety Grants place a priority on pedestrian and bicyclist safety. A state is eligible for these grants by submitting a Performance Plan and a Highway Safety Plan. The Highway Safety Research and Development program provides funding for research, development, demonstrations and training to improve highway safety (including bicyclist and pedestrian).

Resource Conservation and Development Funds

This program, administered by the US Natural Resources and Conservation Service, provides 50% matching funds for recreation projects, including parks and land acquisition. The funding is available to state and local government and non-profit organizations.

State General Fund

General funds from the state budget can be used for trail implementation. This source would require strong statewide public interest and political support. Other Montana communities, such as Whitefish, have been successful in requesting direct appropriations for trail funding as part of the Highway Bill.

Tourism Infrastructure Investment Program (TIIP)

This program, administered by Travel Montana at the State Department of Commerce, funds tourism-related infrastructure. This could potentially include city trails related to visitor attractions. Applicants must be a non-profit organization.

<http://travelmontana.state.mt.us/ourprograms/trsmdevelop/2006faq.shtm>

National Trails Fund

The American Hiking Society created the National Trails Fund in 1998; the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. <http://www.americanhiking.org/alliance/fund.html>

Community Assistance Program (CAP)

The National Forest Foundation (NFF), chartered by Congress, engages America in community-based and national programs that promote the health and public enjoyment of the 192-million-acre National Forest System, and administers private gifts of funds and land for the benefit of the National Forests. This program may provide funding to connect the City trail system to trails located in Custer National Forest. http://www.natlforests.org/consp_05_cap.html

Foundations

Grants are available from a number of foundations and organizations. Some of these are: the American Conservation Association, A Territory Resource, The Nature Conservancy, Liz Clairborne-Art Ortenberg Foundation, W.K. Kellogg Foundation, Harder Foundation and Jessie Smith Noyes Foundation.

Montana Conservation Corps (MCC)

The Montana Conservation Corps is another resource that should be considered for construction of the City's trail system. MCC does not provide funding for trail projects, but will provide volunteer staff for service projects such as trail building, fencing, trail maintenance, re-vegetation, habitat enhancement and other community projects. <http://www.mtcorps.org>

Bikes Belong Coalition

Bikes Belong Coalition is sponsored by members of the American Bicycle Industry and accepts requests for funding of up to \$10,000 for facility, capacity, and education projects. The City of Billings recently received \$5,000 towards construction of the Big Ditch Trail. <http://bikesbelong.org>

Complete Streets

This program does not provide funding for non-motorized transportation projects, but it is an excellent resource for the concept of properly designed, multi-use streets. Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street.

www.completestreets.org

Local Funding

Local funding for the trail system will be necessary for construction, maintenance and as match for state/federal grant opportunities. This money could come from City and County parkland dedication funds (cash in lieu), capital improvement funds and possible future trail use fees once the system is in place.

The City administers a three percent resort tax (Ordinance Number 833 and amendments) which could also be instrumental in the funding of a City trail system. The revenue generated from this tax is used to offset the impact of visitors and improve city infrastructure. Seventy nine percent (79%) of the tax revenue is appropriated to City infrastructure which includes parks and sports recreational facilities

We recommend that the City budget the full allowable amount of the resort tax for parks each year in response to budgets submitted by the Parks Board. Consideration should also be given to dedicating a specific portion of the resort tax revenues to trail construction and maintenance.

City or County residents could also petition to create a City or County park district that would establish a property tax mill levy for the operation and maintenance of parks and trails within the district (see <http://data.opi.mt.gov/bills/mca/7/16/7-16-2411.htm>).

Appendix B. Trail Standards and Specifications

The purpose of this section is to outline general standards for trail design and construction. These standards are mainly based on the 1999 guidelines from the American Association of System Highway and Transportation Officials (AASHTO) for the development of bicycle facilities and the Forest Service Trail Management Handbook, FSH 2309.18. Trail standards from other references are explicitly noted.

These guidelines will illustrate typical trail design and construction practices and may not apply to every situation. Specific design should be developed for each trail segment. The trail standards do not cover cross country skiing trails due to the relative lack of consistent snow in the Red Lodge area.

The proposed trail system for the City has two basic components; trails that are physically separated from motorized traffic by open space or a barrier and routes that are incorporated into the existing road-right always.

Trails

Trail specifications (e.g., tread width, clearing and height widths) vary between different user groups such as pedestrians, bicyclist, wheelchairs, joggers and other non-motorized users. Listed below are some general AAASHTO guidelines for these different user groups

Trails located on an independent alignment and have their own right-away should be situated away from streets, roadways and highways whenever possible. They can be narrow in width and managed for hiking or a wider shared trail that is used by a variety of users. The trail surfacing can be either soft or hard.

Hiking trails should be at least four to five feet wide, but depending on amount of use and type of use widths, can vary between two and six feet. Educational or interpretive trails should be wide enough to accommodate small groups, especially at points of interest.

Four feet is the minimum width to accommodate bicycle traffic. A wider trail will be required if it is to be managed for bicyclists. Most bike trail widths are between eight to ten feet depending on whether the trail will accommodate one or two-directional travel, the volume and type of traffic and if there are frequent opportunities for passing in a safe manner. AAASHTO recommends a minimum of six foot width for a one-way, mixed-use trail and a minimum of 10 feet for two-way mixed-use trails.

Trails for horse use should be between three and six feet wide. A multiple use trail with heavy traffic should be 10 feet wide. If substantial use by bicycles, joggers, skaters, and pedestrians is expected, and/or the grades are steep, a twelve foot wide trail is recommended.

Trails developed near a road should have a minimum separation of five feet. If the separation is less than five feet a suitable divider or barrier of 42 inches in height should be considered.

Trail Corridors

The trail corridor is the full area including the trail tread and the area above and to the sides of the tread from which brush and limbs must be removed (Figure B2). The clearing width should be at least two feet wider than the trail on either side of the actual trail path. A wider clearing path should be considered for trails adjacent to a canal, ditch or if the down hill slope is steeper than a one to three ratio.

The clearance height should be at least eight feet for hiking and biking trails and ten feet for equestrian trails. In cleared areas, cut all brushy vegetation flush with the ground. Clear all hazards adjacent to and above the trail. Strategically located fallen logs and large rocks can be left in place to discourage vehicular use and add to the natural variety of the trail. On trails that will be used by groups, make small clearings (turnouts) adjacent to points of interest that will allow group instruction.

Design Speed

The design speed, horizontal alignment, sight distance and curves for hikers and horse travel are negligible but these design elements are important for bike use. In general, 15 miles per hour should be used on unpaved trails where bicyclists tend to ride more slowly (and cannot stop as fast without skidding or sliding on a loose surface). If bike speed exceeds 15 mph, avoid curves of less than 50 degree radius, and switch backs of less than 35 degree radius.

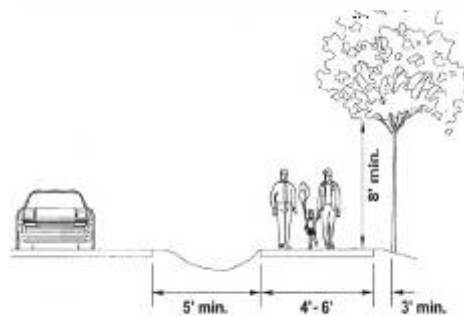
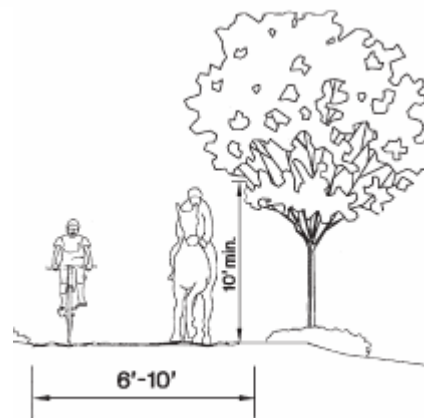
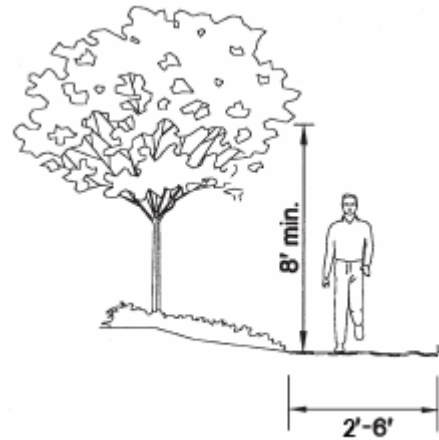


Figure B1. Drawings from the Trail and Non-Motorized Design Standard City of Sammamish

On paved trails, 20 miles per hour is the minimum design speed. If the downgrade exceeds four percent of the speed design or where strong prevailing tail winds exist, a design speed of 30 miles per hour is recommended.

The horizontal alignment is the lean of the bicyclist while negotiate a corner or a turn. If the bicyclist pedals through a sharp turn and leans too far, the pedal will strike the ground because of the sharp angle lean. Generally the bikes' pedal will strike the ground when the lean angle reaches about 25 degrees. The maximum lean angle should not exceed 20 degrees.

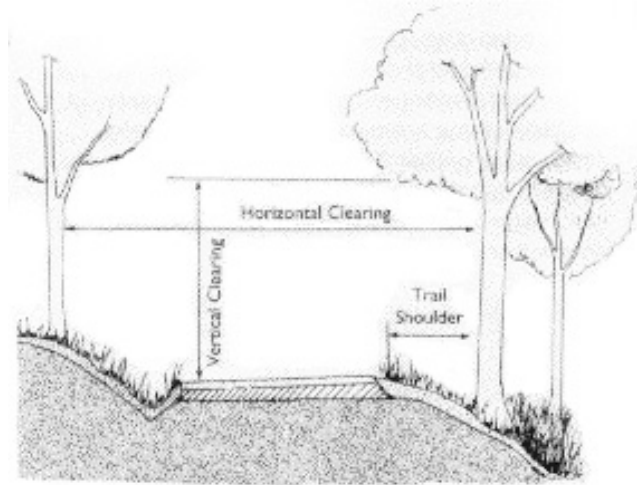


Figure B2. Example of a trail corridor (source: North Carolina Cooperative Extension Service)

Sight distance is the amount of distance a cyclist needs to stop or slow down to avoid a collision or crash and is an important consideration for trail design. The recommended sight distance is 35-60 feet for bikes traveling at 10 mph, 85-130 feet at 15 mph, and 130-200 feet for 20 mph.

Please refer to the Guide for the Development of Bicycle facilities (AASHTO 1999) for more detail on design speed, horizontal alignment, sight distance and curves. In general, very few structures will be required for the City's trail system. However, there is potential for the construction of bridges, retrofitting existing bridges, or installing culverts. These specialized tasks need to be designed and facilitated by qualified personnel.

Routes

A portion of the Red Lodge trail system uses existing roads where the roadway is open to both bicycle and motor vehicle travel. There are no specific bicycle standards for most shared roadways; they are simply the roads as constructed.

Factors to consider in a shared roadway include gradient, alignment, paved surface width, pavement condition, traffic volume and speed, and dust on unpaved surfaces. Shared roadways are suitable for residential areas with low motor vehicle traffic volume and average motor vehicle speeds of less than 30 mph. Lower operating speeds or increased road width is recommended for shared roadways less than 12 feet.

Shared roadways function well on local streets and minor collectors, and on low volume rural roads and highways. Where high volume is combined with hills,

poor sight distance, narrow pavement or motor vehicle speeds 50 mph or greater, some improvement should be considered to better accommodate bicyclists.

There are many ways in which bicycles can be accommodated on roadways and other rights of way. Red Lodge roadways can be improved upon to provide safe travel for bikes through signing, widening outside lanes, and paving shoulders and designating bike lanes. Shared lanes do not usually require any special signing for bicyclists. However shared roadways can be signed to indicate a preferred bike route.

Signing

A signed, shared roadway is a shared roadway with posted bicycle route signs. Some signed, shared roadways are numbered and others are named. Adequate signing and marking are essential on shared roadways. Some examples are as follows:



Figure B3. Examples of shared roadway signs

The Manual on Uniform Traffic Control Devices (MUTCD) provides additional information on sign standards.

The following are three suggestions for improvements that can be made where traffic volumes or speeds make it prudent to do so. The improvements allow bicyclists and motorists to operate parallel to each other in the same lane without coming too close and without motorists having to change lanes to pass the bicyclists.

Width is the most critical variable affecting the ability of a roadway to accommodate bicycle travel. This width can be achieved by providing wide outside lanes, paved shoulders or both.

Wide Outside Lane

A wide outside lane is recommended where there is inadequate width to provide the required bike lanes or shoulder bikeways. Wide outside lanes are located at the right-most through traffic lanes and wider than 12 ft. This lane is closest to the curb and gutter of a roadway. Wide outside lanes can be retrofitted to projects where there are severe physical constraints, and where all other options have been pursued, such as removing parking or narrowing travel lanes. The wide outside lane allows motorists to pass slower moving bicyclist more safely and without changing lanes.

The width of a wide outside lane typically ranges from 13 to 16 ft, measured from the lane line to the curb face (or the edge line on open section roadways).

Wide outside lanes require the less maintenance than paved shoulders. The sweeping effect of passing motor vehicles and routine highway maintenance is usually enough to keep the lane free of debris and in good condition for bicycling.

Paved Shoulders

Adding or improving paved shoulders often can be the best way to accommodate bicyclists. The road shoulders should be at least four feet wide to accommodate bicycle travel. Shoulder width of five feet is recommended from the face of guardrail, curb or other roadside barriers. If motor vehicle speeds exceed 50 mph, additional shoulder width should be planned.

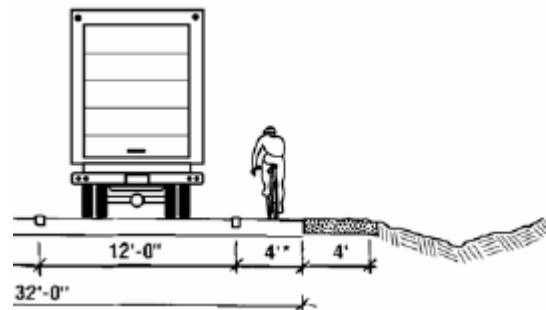


Figure B4. Recommend paved shoulder widths. Source: Trail and Non-Motorized Design Standard City of Sammamish

Bicycle Lane

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

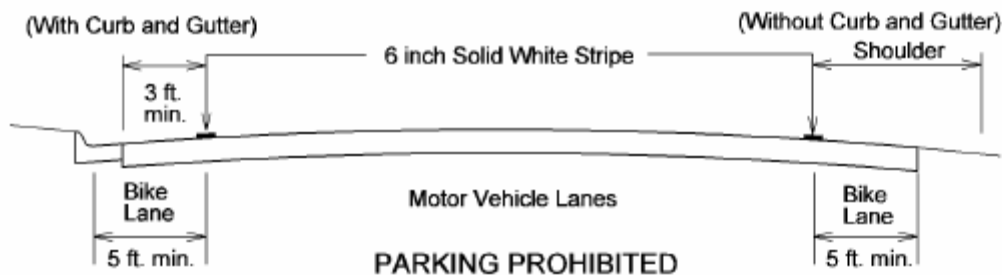


Figure B5. Recommended bicycle lane widths. Source: AASHTO For the Development of Bicycle Facilities. 1999

For roadways with no curb and gutter, the minimum width of a bicycle lane should be four feet. For roadways with curb or guardrail, the recommended bicycle lane width is five feet from the face of the curb or guardrail to the bicycle lane stripe. If parking is permitted, the bicycle lane should be placed between the parking area and the travel lane and have a minimum width of five feet.

Since bicyclists usually tend to ride a distance of 32-40 inches from a curb face, it is very important that the pavement surface in this zone be smooth and free of structures. Drain inlets and utility covers that extend into this area may cause bicyclists to swerve, and have the effect of reducing the usable width of the lane. Where these structures exist, the bicycle lane width may need to be adjusted accordingly.

For more detailed recommendations concerning design specification refer to the Guide for the Development of Bicycle Facilities (AASHTO, 1999).

Trail Design Construction and Parameters

Before construction of each trail segment it is important to complete a trail survey. The trail survey should consider the user type and the experience that it will be providing and should answer the following questions;

- What features should be highlighted and what areas should be avoided?
- Is the trail providing a recreation experience or meeting transportation needs?
- Will the trail accommodate the physically challenged?
- Will the trail be a multiuse trail?
- Should the trail have a hard surface, natural surface trail or a combination?
- What features will be needed and what can the landscape accommodate?

It is important to understand the basic soil type the proposed trails will overlay. Red Lodge has nearly level to gently sloping, well drained soils (Carbon County Soil Survey, 1975). These soils formed in loamy alluvium overlaying sands and

gravels on high outwash terraces. Dominant material is gravelly to very cobbly clay loam, and sand, gravel, to gravelly sand and, cobblestones. The AASHTO system classifies these gravelly soils of high bearing strength which are generally favorable for trail construction.

The trail alignment establishes the grade, the user experience and maintenance needs. The trail alignment goal is to provide for a safe and enjoyable experience while getting from point A to B. This can be achieved by taking advantage of the contour of the hillside and incorporating the topography and land form. By following the topography the trail will gently curve and bend around obstacles creating a more enjoyable trail experience and blend better in the landscape.

Where the trail climbs or falls the alignment should incorporate the elevation contours traversing the slope rather than following the fall line or going straight up and down. This is true even when the slope is within the grade restriction. The trail should avoid long straight shots which become boring and monotonous and sharp curves which can be a safety hazard and a maintenance challenge. The trail alignment should follow the natural topography which takes advantage of grade changes to create natural drainages.

Trail grade is one of the most basic and important components in designing any type of trail. The trail grade influences the trail length, accessibility, drainage and maintenance requirements. Generally, the trail grade should fall within the 2% to 8% range. Long sustained grades (any grade that remains the same for more than 1,000 feet) even within the two to eight percent range can become tiring and monotonous to users so it is recommended to gently undulate the grade to provide natural drainage and to provide for variation.

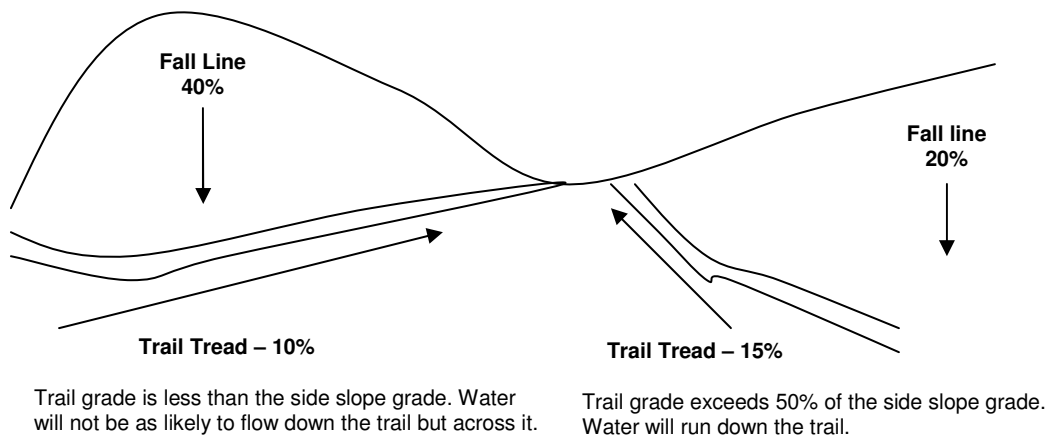


Figure B6. Trail grade recommendations. Source: Building Better Trails-Designing, Constructing and Maintaining Outstanding Trails, International Mountain Bike

Sustained grades should generally not exceed 10%, although this limit may be exceeded for short distances (up to 150 feet). Grades up to 20% can be maintained only in the right soil types and with certain mitigation measures, such

as limiting steep sections to 50 linear feet, the addition of water diversions and flat resting areas after long pitches. Steeper trail sections will require additional drainage structures.

Grades on recreation trails should fall within the two to eight percent range. On some trails the five percent recommendation can not be met due to landscape. The following guide restriction and grade lengths are listed in Table B1.

Table B1. Recommended grade length restrictions by slope class (Source: AASHTO)	
Slope	Grade Length
0-5%	Unlimited
5-6%	for up to 800 feet
7%	for up to 400 feet
8%	for up to 300 feet
9%	for up to 200 feet
10%	for up to 100 feet
11+%	for up to 50 feet

As a rule of thumb, the trail grade should not exceed half the grade of the hillside or sideslope that the trail is traversing. For example, if the proposed trail crosses a hillside with a sideslope of 20%, the trail grade should not exceed 10%. If the grade does exceed half the sideslope it is no longer on contour and is considered a fall-line trail. Fall line trails are prone to erosion and excessive wear.

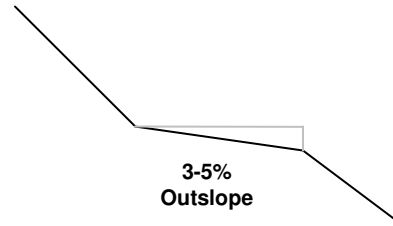
The cross slope is the natural slope of the ground measured at right angles to the centerline of the trail, or the adjacent slope. The slope of the hill determines the amount of excavation needed to construct the trail. The cross slope is important for determining what type of trail construction is appropriate.

Table B2. Descriptions of Slope Grades. Descriptions from the Trail Construction and Maintenance Notebook Missoula Technical Development Center (USDA-FS), 1996.	
Slope	Grade Description
0-2%	Nearly Level
3-6%	Gently Sloping
7-12%	Moderately Sloping
13-18%	Moderately Steep
18-25%	Steep
>= 26%	Very Steep

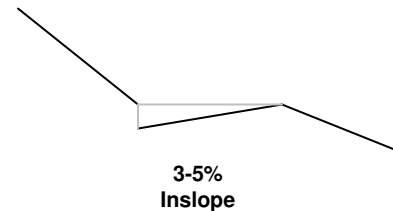
Drainage

Proper drainage is one of the most important factors affecting any trail. Surface and subsurface water along the trail poses problems for construction and maintenance. Good drainage facilitates efficient removal of excess water from the trail to prevent erosion. On flat trails water tends to pool creating muddy sections. On steeper trails water runs down the trail causing erosion problems. Drainage can be handled through a variety of techniques such as, outsloping, insloping, crowning, grade reversals, dips, ditches, and water bars. The steeper the trail, the more drainage features will be required.

Outsloping is when the tread is constructed or shaped so the outside or downhill side of the trail is lower than the inside or bank side. The tread should slope slightly outward between two to five percent downhill so water runs off the trail instead of running down the tread.



Insloping is when the tread is constructed or shaped into the banks. The inside of the trail tread is higher than the outside. Insloping is common on cut/fill trails where banks are steep and a parallel ditch is present.



Crowning is raising the center of the trail so water is continuously drained toward both sides. This is only effective if the water has a place to drain to. If the trail is crossing a flat area with no cross slope, the trail needs to be raised three to six inches (or more) above the surrounding ground to ensure water drains off the trail surface.

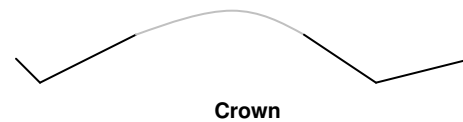


Figure B7. Examples of trail tread construction to promote drainage.

The grade reversals are designed to use a reversal in grade to force water off the trail without the need for any other structure. The grade reversal takes advantage of natural dips in the trail. These need to be planned into the trail when it is first laid out. The grade of the trail is reversed for about 10 to 15 ft, then "rolled" back over to resume the descent. The dip, which uses existing terrain as the control point for the grade reversal, is a natural part of the landscape. Water collected from the hillside is not intercepted and carried by the tread.

Grade dips are a natural drainage feature that uses grade reversal to move water from the trail. Grade dip utilizes the natural undulations of the landscape. A grade dip can be described as a funnel where the cone shape is out sloped 10% to 20% from the trail tread. If used on a bike trail, the funnel shape should be at least nine feet to accommodate the length of the bike. To provide adequate drainage a minimum cross slope of two percent should be maintained.

Other considerations to ensure adequate drainage include: 1) slope the trail in one direction rather than having a crown in the middle of the trail, 2) ensure a smooth surface to prevent ponding and ice formation, 3) place a ditch on the upside of a trail constructed on the side of a hill, 4) place drainage grates, utility covers, and similar features out of the travel path of bicyclists, and 5) preserve natural ground cover adjacent to the trail to inhibit erosion.

Typically crown for pavement is shaped at two percent. On unpaved surfaces, the crown is shaped at four to six percent with the shoulders slightly steeper.

Lateral drains are broad ditches parallel to the trail that collect water above the trail and drains it below the trail. A lateral ditch is often used to divert concentrated or heavy flows that can reach the trail from the upslope area. In wet boggy areas, lateral ditches may be needed on both the up and downhill sides.

Water bars are constructed out of wood or rocks. Water moving down the trail is turned by contact with the waterbar and is directed off the lower edge of the trail. It is important to understand how to construct and maintain waterbars.

As a rule of thumb water-bar spacing is based on soil type and trail slopes. The soils in Red Lodge are basically well drained. Below is a chart that can be used to determine the spacing of waterbars.

Table B3. Recommended frequency of cross drains by soil type. Source: Trail Construction and Maintenance Notebook Missoula Technical Development Center (USDA-Forest Service), 1996							
Frequency of Cross Drains							
Material Type	Grade (Percent)						
	2	4	6	8	10	12	15
Clay-Loam	500'	350'	200'	150'	100'	50'	*
Clay or Clay-Gravel	-	500'	300'	200'	150'	100'	75'
Gravel (rounded rock)	-	-	750'	500'	350'	250'	150'
* Grades not recommended in this material - Generally no diversion required for soil stability							

Bench Cuts

Most trails at one time or another will traverse a hillside. When this occurs the trail will need to be excavated into the side of the hill. This is commonly referred to as a bench cut. There are two basic designs known as “full bench” and “partial bench” (or cut and fill).

Full bench construction requires that the full width of the tread be excavated down to mineral soil. Full bench trailbeds provide a stable and durable tread. It produces a greater backslope that needs to be graded to mimic the crossslope.

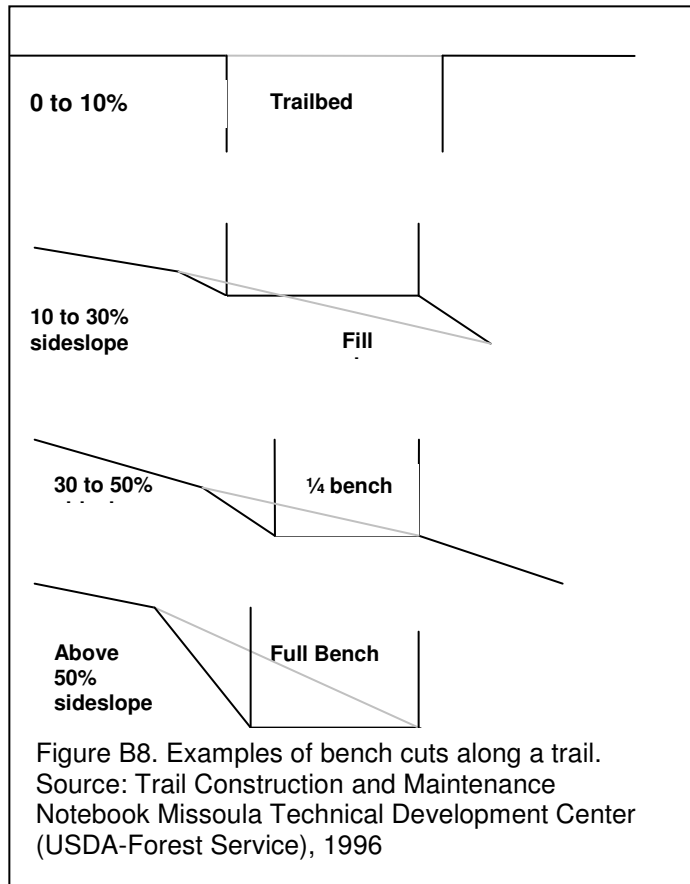
A partial or balanced bench construction uses soil excavated from the hill as fill material for part of the trail

tread. Partial bench trailbeds are suitable on cross slopes up to 30% and in areas where the soils are stable to use as fill and the vegetative materials are suitable for planting on the fill slope. Often Partial benches are created due to space limitation. As a result crib walls are often needed to hold and support the tread surface. Cribbing is expensive to build and maintain and should be avoided.

If trails must traverse steep slopes, switchbacks or steps may be required. Both have considerable drawbacks and alternative routes should be carefully evaluated. Switchbacks are designed to reduce trail grades by lengthening the trail. Switchback turns (or landings) must be located on stable soils to reduce erosion. Favor flat benches or areas with the least slope for landings.

Surface Type

Several factors need to be considered in determining a trail surface such as initial capital cost, maintenance and long term durability, existing soil and environmental conditions, availability of materials, anticipated use and functionality, funding sources, and aesthetics.



It is very important to do a soil survey for the section of trail to be installed. Some will require considerable preparation and other sections will need excavation and the delivery of new subgrade material. Local engineers and contractors should be consulted to determine the amount of subgrade work needed before surfacing is completed.

Every trail has a profile that is made up of three parts. The bottom layer is the subgrade which is the earth surface or prepared bed. The second tier is the course layer or foundation, the last part which most people see is the tread or surface material.

Native trails, consisting of compacted topsoil, have little to no distinction between the subgrade, course layer and tread. The subgrade of aggregate trails will most likely remain in tact, but the course layer and surfacing will be replaced with imported materials such as crushed rock or limestone. All three components will be altered with the construction of hard surface trails.

Trail surface type can be broken down into two categories; soft and hard surface trails. There are a wide variety of surfacing materials that fall within these two categories including commercial soil stabilizers, geotextile confinement systems, chip seal, crushed limestone, glassphalt (recycled glass in asphalt), organic surfaces, such as bark mulch and wood planner shavings, and agricultural by-products (filbert shell), wood boardwalk, asphalt and concrete. Considerations for both soft and hard surfacing are listed below.

Soft Surface

Considerations for designing soft surface trails are trail usage type, grades and alignments, water, and drainage. Soft trails are suitable for hikers and walkers, but have limitations for bikers. Natural or aggregate surfacing can be designed and constructed to meet most American with Disabilities Act (ADA) specification but due to the soft surface is generally not considered fully accessible.

Natural surface trails are the most basic and least obtrusive. They are undeveloped or primitive trails that capitalize and incorporate native materials from the site during construction and fit well within the landscape. Usually natural surface trails are best suited to users that are seeking a more natural experience and have a low to moderate volume of traffic. Depending on the soils and grade these trails can be as durable as aggregate (gravel) and hard surface trails suitable for mountain bike and horse use. Grades should be below 10%.

Aggregate surface trails are more developed than natural surface trails but still have an undeveloped feel. The trail surfacing is usually imported aggregate or gravel material comprised of a rock source which is crushed into irregular angular particles that interlock and bind into a firm matrix. Aggregate surfacing provides a smooth firm and durable surface that is suitable for a wide arrange of uses. If built properly aggregate trails can meet the ADA Accessibility Guidelines.

In general, when using aggregate, grades should be kept as minimal as possible. Grades above 5% should be used only when absolutely necessary and not exceed 8%. Trail tread grades over six percent will require significantly more maintenance since they tend to unravel or erode over time. If trails are steeper than 8%, harder more stable surfacing materials should be considered.

The aggregate surfacing can be laid directly on the subgrade if the soil will not absorb the crusher fines. In some sites a base course of 12 inch thick well-compacted pit run gravel will need to be placed before the trail surface can be applied. The subgrade should be compacted to 70% or better. Aggregate trails use material that has particles ranging from a fine dust up to 3/8" (3/8" minus). The surface material can be placed directly on the trail at two to six inches deep and compacted.

During construction the trail will need to be shaped, wetted and vibratory compacted. If the surface of the trail becomes loose and un-compacted over time it can often be reshaped, wetted and compacted again, (as long as the fines have not sifted to the bottom and the larger particles floated to the top). Poor compaction can be the result from a lack of fines to bind particles together, improper wetting and compacting, lack of angularity, lack of precipitation, trail grades greater than six percent, and/or inadequate amounts of natural soil cements in the parent material. Some "refreshing" of trail material is required on a routine basis.

Aggregate trails can be a precursor to a hard surface trail. Both asphalt and cement trails can be laid directly on top of aggregate trail. As the trail system is planned and developed in Red Lodge, thought should be given to whether the aggregate trail may one day be a hard surface trail. The subgrade preparation and base course should meet the specifications for hard surface trails.

Hard Surface

Hard Surface trails are highly developed with an urbanized feel to them. These trails can accommodate the widest variety of user groups and are suited for high use. The trail is usually capped with asphalt or concrete. Hard surface trails should meet ADA standards. Design considerations for hard surface trails are type of use, grades, alignments, and subgrade soils. Proper drainage and sub-grade compaction, adequate pavement thickness and pavement compaction are the key elements to consider in building quality asphalt or concrete trails

The life span of asphalt trails is between 15 and 30 years. This surface type is softer than concrete so hikers and runners usually prefer it. However, it has greater maintenance requirements than cement trails.

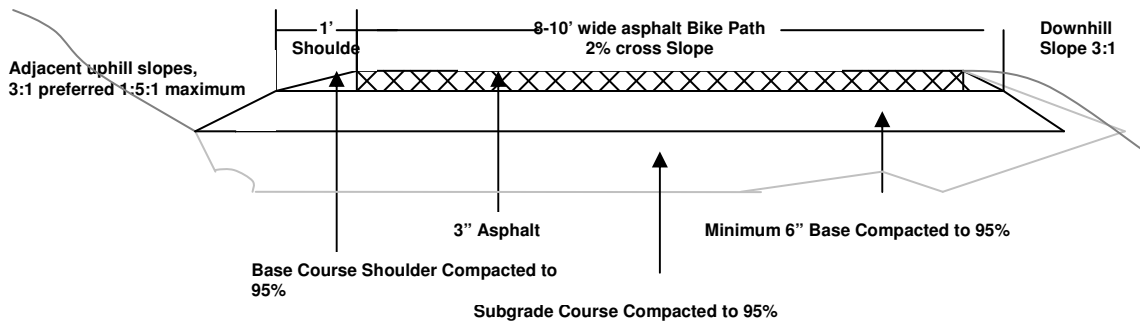


Figure B9. Cross section of a typical asphalt trail

Asphalt trails require a base course even on good subgrade. A minimum six inches of either one and a half inch minus or three quarter inch minus aggregate crushed stone faces and fines should be used for the base course. If the subgrade is poor the trail base should be thicker. The subgrade and base course must be dry and free of frost when the asphalt is laid.

The surfacing should be a minimum of three inches of asphalt if the subgrade is good. A thicker application will be needed if the subgrade is poor. The asphalt, base course and subgrade material should be compacted. The AASHTO recommends compaction to 95% of maximum density obtained at optimal moisture content.

Concrete surfacing can be used in a variety of situations and is very versatile. The initial cost can be high but long term maintenance cost is very low. Consideration should be given how a concrete fits into the landscape. This trail type is not suitable for equestrian use.

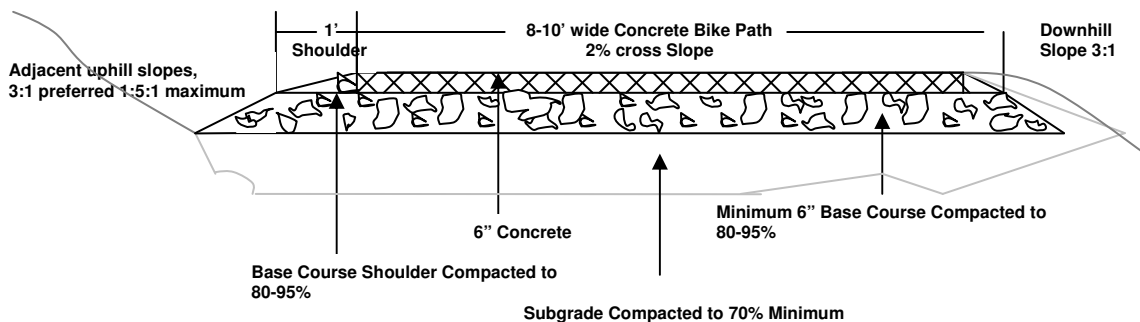


Figure B10. Cross section of a typical concrete trail

Concrete trails usually have a life span of 30 to 50 years. If the concrete path is not subjected to vehicle traffic four inches of reinforced 3,000 psi concrete over six inches of compacted porous base course of river or pit run gravel is recommend. Reinforced 4,000 psi concrete is recommended for driveways,

approaches, or streets with vehicle traffic. In some cases where the subgrade is considered good, the concrete can be poured directly on the subgrade if compacted to 85%-90%. In this case, the subgrade needs to be graded and large rocks removed to provide for a level foundation before the surfacing material is applied.

If the trail is going to be situated in poor subgrade (clay, damp or poorly drained soils) a minimum six inch base of compacted road base or other suitable porous base should be used with a geotextile. If this surfacing type is chosen further specification will need to be developed. It is important to work with people who know concrete and how to handle it.

Accessible Trails

We recommend that the Red Lodge trail system provide maximum accessibility for the widest variety of user groups where feasible. Accessible trails benefit not only people with mobility impairments, but older adults, and families with young children. Designing a trail to accommodate bicyclists inherently creates a facility which is accessible to mobility impaired individuals.

The following specification for accessible trail design was taken from the U.S Department of Transportation Federal Highway Administration "Designing Sidewalks and Trails for Access." For more details refer to "Final Report of the Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas" compiled by the Architectural and Transportation Barriers Compliance Board (Access Board).

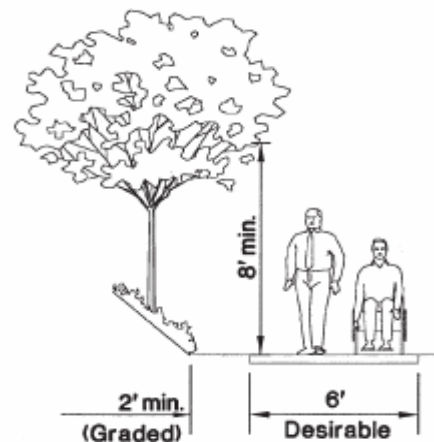


Figure B11. Trail widths and clearing distances for accessible trails. Drawings from the Trail and Non-Motorized Design Standard City of Sammamish

Accessible trails are generally paved with asphalt or concrete, but may also use prepared surfaces such as aggregate or soil stabilizing agents mixed with native soils or aggregates. Critical features to consider for accessible trails include grade, cross slope, width, surface, and vertical clearance.

The maximum grade for an accessible trail should be less than five percent for any distance. Grades can be greater than five percent, but rest areas should be placed at 50 feet maximum intervals above these higher grade sections. The average maximum grade shall be permitted to be eight percent if it is not feasible to comply. Where maximum grades exceed this recommendation, shorter

sections with higher maximum grades are acceptable if rest areas are placed closer together and cross-slopes are less than five percent.

Cross slopes should not exceed three to five percent for any distance. Rolling dips and grade dips should be gradual. Rapidly changing grades or dips can flip chairs backwards. Cross slopes can exceed five percent for very short distances, but only if the running grades are kept to less than five percent and rest areas are provided.

The minimum tread width for an accessible trail is 36 inches, but passing space should be provided at a width of five feet at least every 300-1000 feet. The clearing width may be reduced to 32 inches where it is not feasible.

Surface material on an accessible trail must be firm enough to resist deformation by the indentation and rotation of wheels. Protruding obstacles should not exceed one inch and gap openings (cracks, etc.) should be less than three quarter inches if oriented perpendicular to travel or less than one half inch if parallel to the direction of travel.

Tread obstacles may be a maximum of two to three inches where running grades and cross slopes are five percent or less or where it is not feasible.

Trail Construction Costs

Cost estimates are variable and dependent on many factors. The amount of preparation work, material quantity, type, and availability, project locality, distance to closest course, and labor cost just to name a few. The cost estimates listed in Table B4 provide a general cost estimate for trail construction by lineal foot. These are only estimates and may quickly become dated and irrelevant. We recommend that local contractors provide bids to prior to any onsite planning of trails.

Table B4. Cost estimates for the construction of trails. Figures based on estimates provided by local contractors in April 2006.					
Trail Surface	Width	Excavation	Subgrade	Material Depth	Linear foot cost
Native	6 feet	None	N/A	N/A	\$0.75
Aggregate	6 feet	None	N/A	3 inch	\$0.75-\$1.00
Asphalt	6 feet	9 inches	6 inch aggregate	3 inch	\$19.00
Concrete	6 feet	10 inches	6 inch aggregate	4 inch	\$51.00

Appendix C. References

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