

City of Rapid City Bikeway / Walkway Plan

Introduction

The City of Rapid City Bikeway / Walkway Plan is a component of the Transportation Element of the Comprehensive Plan for the City of Rapid City and the Long Range Transportation Plan for the Rapid City Area Metropolitan Planning Organization. Its purpose is to facilitate alternative transportation modes through an evaluation of the current Bikeway / Walkway System, review of the needs of system users, adoption of standards for system improvements, and identification of proposed extensions and additions to the system.

Bikeway planning is not new to Rapid City. As a result of the 1972 flood, a greenway was created along Rapid Creek and a bikepath was planned and constructed. Additions to the initial bikepath occurred in the late 1970's and early 1980's.

In 1979, the transportation planning process became more formalized, and bikeway planning was a component of that process. In 1982, the initial bikeway planning effort was expanded with the adoption of the Bikeway Plan which addressed the results of a user survey, discussed design standards, and offered general goals and objectives.

Throughout the 1980's, a core group of bicyclists met periodically to address specific bicycle and pedestrian issues such as school crossings, dangerous storm drain grates, feeder routes, and bikeway signage. In early 1992, the City of Rapid City and the Executive Policy Committee of the Rapid City Area Metropolitan Planning Organization recognized the formation of a Bike Walk Run Task Force. The purpose of the task force is to improve, expand, and promote the safe use of the community's bikeway / walkway facilities.

Goals and Objectives

- 1) Promote bicycling and walking as a means of reducing traffic congestion and pollutants from automobile emissions.
 - a) Support accommodations for bicyclists at places of employment.
- 2) Relieve vehicle movement and parking congestion in the Central Business District.
 - a) Support a downtown bicycle storage facility.
- 3) Promote a bikeway / walkway system which serves all major trip generators.
 - a) Complete sections of the bikeway / walkway system to achieve system continuity.
 - b) Develop walkways between neighborhoods to improve circulation and reduce pedestrian traffic along major roadways.
 - c) Map out a corridor bikeway system that links schools with neighborhoods, parks, the greenway, major employers, and shopping centers.
- 4) Promote bicycle and pedestrian safety.
 - a) Identify hazardous locations on roadways and the bikeway / walkway system and work to mitigate the problems.

- b) Assist with the Rapid City Police Department bicycle safety programs.
- c) Promote the use of bicycle helmets.
- d) Increase motorist awareness of the needs and rights of bicyclists and pedestrians.
- 5) Integrate the transit and bikeway systems.
 - a) Evaluate the use of bicycle racks on Rapid Transit buses.
 - b) Develop bicycle storage facilities at the Milo Barber Transportation Center and at key transit stops.
- 6) Enhance the transit / pedestrian interface.
 - a) Assure all transit stops are lit and secure.
 - b) Provide benches / shelters at key transit stops.
- 7) Assist with the formulation and adoption of design standards.
 - a) Promote the adoption of road design standards which encourage bicycling.
 - b) Assist with the design of major road intersections to ensure safe crossing for bicyclists and pedestrians.
 - c) Review all project plats and plans for compatibility with a comprehensive bikeway / walkway system.
- 8) Adopt the role of an advocacy group for bicycling and walking.
 - a) Work with bicycle groups across the state on favorable legislation and SDDOT policies on bikeway development and funding.
 - b) Participate in local, state, regional, and national conferences on bicycling and intermodal travel.
- 9) Establish a program to conduct traffic counts and surveys of bicycle and pedestrian activity at key locations throughout the community.
- 10) Inventory and catalog funding sources and methods for bikeway planning and system improvements.
- 11) Promote the use of alternative easements and right of ways, such as drainageways, for bikeway / walkway corridors.
- 12) Promote the construction of sidewalks along school routes, commercial activity centers, and high volume and high speed roadways.

Definitions

BICYCLE. A vehicle having two tandem wheels, either of which is more than 16” in diameter, or having three wheels in contact with the ground, any of which is more than 16” in diameter, propelled solely by human power, upon which any person or persons may ride.

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

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

BICYCLE PATH. A bikeway physically separated from motorized vehicle traffic by an open space or barrier, either within the highway right of way or within an independent right of way.

BICYCLE ROUTE. A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number.

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

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

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

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

ROADWAY. The portion of the highway, including shoulders, for vehicle use.

SHARED ROADWAY. Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles regardless of whether such facility is specifically designated as a bikeway.

SIDEWALK. The portion of a highway designated for preferential or exclusive use by pedestrians.

System Components

The Rapid City Bikeway / Walkway System is made up of all bike paths, sidewalks, and roadways within the community. While bike lanes are considered a bikeway component, there are no designated bike lanes in Rapid City at this time.

All streets and roads in Rapid City, with the exception of Interstate 90 and Interstate 190, are considered part of the Bikeway System, as bicycles are considered vehicles and may legally travel on any roads which do not have a minimum speed requirement. However, most streets and roads do not represent a reasonable option for all bicyclists. Many young, elderly, or inexperienced riders need an extensive network of sidewalks and bikepaths to enable them to travel about the community.

All sidewalks within Rapid City are a part of the Walkway System. Sidewalks within the Central Business District may not be used by bicyclists. Only those sidewalks outside of the Central Business District can be considered a part of the Bikeway System.

Unimproved trails are a part of the Bikeway / Walkway System. At the present time, there are no recognized unimproved trails in Rapid City. With the advent of the mountain bike, trails have emerged on public and private lands throughout the community. An interest exists in formally recognizing and authorizing the use of trails for hiking and mountain biking.

Bicycle Path

The Rapid Creek Biway is the principal component of the Rapid City Bikeway System. The biway is an eight foot wide concrete path that parallels Rapid Creek through the center of the community. It was constructed as a part of the greenway rebuilding effort after the 1972 Rapid City flood, and is 12.2 miles in length.

The Rapid Creek Biway serves as the principal arterial of the bikeway system in the community. Additional paths serve as the collector routes that feed into the biway.

The College Park bikepath is an eight foot sidewalk along the east side of Lemmon Street from College Park at Van Buren Street to Monroe Street. The path then follows the Haines Avenue drainage from the intersection of Lemmon Street and Monroe Street to Rapid Creek.

The Haines Avenue bikepath is an eight foot concrete sidewalk on the west side of Haines Avenue. It runs from Omaha Street to the north side of the Haines Avenue / Interstate 90 interchange. South of Omaha Street, the path is discontinued to Columbus Street due to the Central Business District.

The Fifth Street bikepath, which serves the Robbinsdale neighborhood, is an eight foot concrete sidewalk on the east side of Fifth Street from Columbus Street to Cleveland Street. From Cleveland Street to Texas Street, a distance of approximately 4,600 feet, a five foot concrete sidewalk exists along the east side of Fifth Street. The eight foot concrete sidewalk resumes from Texas Street to Minnesota Street, which is the current terminus of Fifth Street.

The Minnesota Street bikepath is an eight foot concrete sidewalk that extends east from Fifth Street along the north side of Minnesota Street to Parkview Drive. A short spur turns south along the west side of Parkview Drive to Parkview Pool. From Parkview Drive to Odde Drive, the sidewalk is a five foot concrete path. At Odde Drive, the bikepath continues as an eight foot concrete path to the east end of LaCroix Links golf course.

In Rapid Valley, the Twilight Drive bikepath, an eight foot concrete sidewalk, is along the north side of the street from Shadow Drive east to Reservoir Road.

The Sheridan Lake Road bikepath runs along the east side of the road from Rapid Creek to Jackson Boulevard. South of Jackson Boulevard, the path switches to the west side of

the road, and extends south to the edge of the Rapid City limits. The entire path is an eight foot concrete sidewalk.

The Park Drive bike path is situated on the east side of Park Drive from Jackson Boulevard to Western Avenue. This portion of the path was constructed following the 1972 flood. The eight foot concrete sidewalk then continues along the west side of Park Drive to Corral Drive.

The Corral Drive bikepath serves the Corral Drive Elementary School and Southwest Middle School student populations. The eight foot concrete sidewalk along the north side of Corral Drive connects the Sheridan Lake Road and Park Drive bikepaths.

Another eight foot concrete path constructed to serve a student population is the Range Road bikepath, a curbside path along the south side of the street. It runs from Stevens High School to West Middle School, and in addition to the two public schools, the path also serves the Black Hills Workshop facilities.

Additionally, eight foot asphalt bikepaths have been constructed in two community parks. The Robbinsdale Park bike path is composed of two loops that connect East Oakland Street on the north end of the park to East Fairmont Boulevard on the south end. In Mary Hall Park, the path begins at Brookside Drive and West South Street at the west end of the park and connects to the main bikepath at Canyon Lake Drive.

The Transportation Planning Department, along with Public Works, Engineering, and the Bike Walk Run Committee, has identified locations of future additions to the bikeway network. These additions include extensions of the existing Rapid Creek Biway, bike paths, bike routes, designated bike lanes, and off-road bike trails. See the attached map for the proposed location of the additions.

Signage

Signage for bike paths or routes is limited in Rapid City. The signage employed generally consists of a yield bicycle sign, a bike route sign, a crosswalk caution sign, or a bicycle warning sign. These signs are not employed at all locations, nor are they spaced in a consistent manner.

Traffic Counts

The Rapid City Engineering Department regularly conducts motor vehicle traffic counts throughout the community. Bicycle and pedestrian counts are not included in this program. In July of 1994, counts were performed at some of the busier bicycle and pedestrian segments of the Rapid Creek Biway. The counts showed an average of 40 users per hour on a summer weekday.

Journey To Work

Commuting to work is addressed in the United States Census of Population. In the 1990 Census of individuals who reported working in Rapid City, 83.35% indicated they traveled to work alone in a car. Individuals who walked to work totaled 2.2% and bicyclists totaled 0.23%. Of those who walked or bicycled to work, 67% made the trip in under 10 minutes, while 81% commuted less than 15 minutes.

For the 2000 Census, 84.05% of workers traveled alone by car, while individuals who walked to work totaled 2.1% and bicyclists totaled 0.2%. Of the workers who walked or bicycled, 52% traveled less than 10 minutes, 64% traveled less than 15 minutes, and 93% made the trip in under 35 minutes. The average travel time for pedestrians was reported to be 12.8 minutes, and bicyclists reported an average trip of 23.8 minutes.

Workers in the 18-24 age range had the highest percentage of commuters who walked or bicycled, with 4.8%, followed by those under 18, with 2.3%. Workers 25-44 totaled 1.9%, while workers 45-64 reported 1.6%, and those in the 65-74 age range totaled 1.5%

Accident Report

The type and severity of accidents involving bicycles and motor vehicles can help to identify problem locations and recurring causes of accidents. From 1998 through 2002 there were 98 accidents reported in Rapid City involving bicycles and motor vehicles. The number of accidents per year ranged from 17 to 25 with the year 2000 reporting the highest incidence. Previous years have reported totals as high as 31 accidents. Since there is no measure of bicycle ridership in Rapid City, accident rates per bicycle mile traveled can not be calculated.

Children and young adults were most likely to be involved in accidents between bicycles and motor vehicles. Of the 98 reported accidents, 47% involved a bicyclist under the age of 16, and 63% involved a rider under the age of 21. Only 5% of the bicyclists involved in reported accidents were over the age of 50.

The causes of accidents were numerous and varied. The main contributing factor involved in accidents was failure to yield. This occurs when a vehicle pulls out or turns in front of a bicyclist who is legally in the roadway, or a bicyclist moves in front of a vehicle that has the legal right of way. These accidents generally result from a lack of understanding of the laws regarding bicycle travel on roadways, motorists not seeing bicyclists, or bicyclists ignoring motor vehicles. Other causes for accidents include illegally riding in the roadway, exceeding safe speed, defective or inoperative brakes, failure to obey a traffic control device, and Driving Under the Influence.

Bicycle / motor vehicle accidents occur in all parts of Rapid City. However, there are some corridors and locations where accidents are concentrated. The greatest number of accidents was located in and around the Central Business District, especially along Mount Rushmore Road from Omaha Street to South Street. Other problem locations

include Haines Avenue between North Street and Disk Drive, West Main Street from Cross Street to 44th Street, and the East Boulevard / East North Street corridor. Detailed evaluations of these and other problem locations are warranted to determine if conditions that contribute to high accident rates exist. See the attached map for all accident locations.

Needs Assessment

The potential for bicycling within a community is a function of the ease with which residents can travel to their destinations by bicycle. The demand for transportation is created by the location of residential areas and the location of trip generators, which are generally places to work, shop, learn, and play. The choice of walking or riding a bicycle to reach a destination is affected by the distance and ease of the trip and the availability, speed, comfort, and cost of the transportation mode.

Rapid City is a relatively small, dense city which can be traversed by bicycle in less than one hour. Due to excellent street, parking, and traffic control systems, one can traverse the city by car in a matter of minutes. If speed and the ease of travel are the sole criteria used in making the travel mode choice, the automobile will be the usual choice. However, as automobile congestion increases, and speed and parking options decrease, the bicycle becomes a more attractive travel option. Other considerations such as vehicle cost, fuel cost, environmental impact, and physical fitness can impact the travel mode choice as well.

The complex linkages that occur between residences and trip generators can be estimated by using travel demand modeling techniques which project roadway traffic counts based on land use by Traffic Analysis Zone. A land use based analysis reflects the traffic demand regardless of the mode of travel. Travel demand forecast modeling can be used to determine where facilities may be constructed or upgraded to accommodate bicycle and pedestrian travel.

Standards Of Design

Bicycle and pedestrian facilities are an integral component of the transportation system. While paths within parks may serve a purely recreational function, paths or walks along streets and bike lanes or routes within the street are transportation corridors. For user safety, maintenance ease, and liability protection, strict design standards are required.

The most comprehensive standards for bicycle and pedestrian facilities are published by the American Association of State Highway and Transportation Officials (AASHTO). The 2001 edition of A Policy on Geometric Design of Highways and Streets provides standards for bicycle and pedestrian facilities. The policy suggests that sidewalks shall be at least four feet but not more than eight feet in width. A minimum two foot clear space is recommended between the sidewalk and the curb. In the case of curbside sidewalks, the width should be increased by two feet to compensate for the lack of a clear space.

The City of Rapid City has adopted standards for sidewalk construction in Chapter 12.16 of the Municipal Code. The standards affirm the four foot minimum width, but do not meet the AASHTO standards for curbside walks. The City of Rapid City standards call for a five foot width, while the AASHTO standards recommend six feet.

Vertical clearance is addressed in Chapter 12.40 of the Municipal Code, stating that where trees overhang a sidewalk, they must be trimmed to a minimum of seven feet. The Manual on Uniform Traffic Control Devices also references seven feet as a minimum height for signs above sidewalks.

An extensive system of standards on bicycle facility design appears in the Guide for the Development of Bicycle Facilities published by AASHTO in 1999. The guide addresses system planning, design improvements for roadways and bicycle paths, and operation and maintenance. Many of the statements regarding facility design are presented as recommendations. It is up to the local governing agencies to adopt specific standards for bikeway / walkway systems.

In selecting the appropriate type of bicycle facility to be constructed, AASHTO identifies a number of factors to be considered including:

- 1) Recreational or utilitarian purpose of the facility
- 2) Types of barriers to be bridged or traversed
- 3) Net impact on the occurrence of accidents
- 4) Convenience or directness of the route
- 5) Type and frequency of access required
- 6) Aesthetics of the route
- 7) Protection of path users
- 8) Possibility of delays
- 9) Types of conflicts with motorists and other users
- 10) Ease of maintenance
- 11) Required pavement surface quality
- 12) Effects of truck, bus, and recreational vehicle traffic
- 13) Presence of on-street parking
- 14) Traffic volumes and speeds
- 15) Costs and available methods of funding
- 16) Consistency with bicycling laws
- 17) Characteristics of existing bridges and structures
- 18) Frequency and condition of intersections

Traffic Control Standards

As with the general design of bikeway and walkway facilities, the design and placement of traffic controls for bikeway users and motorists who intersect the bikeway must be clear and applied in a uniform manner. The Manual on Uniform Traffic Control Devices, 1988 edition (MUTCD), is generally recognized as the standard for traffic control. Part

IX of the MUTCD specifically addresses bicycle facilities, stating that traffic control devices must do the following to successfully perform their function:

- 1) Fulfill a need
- 2) Command attention
- 3) Convey a clear and simple message
- 4) Command respect of roadway users
- 5) Provide adequate time for proper response

This manual should be considered a guide to be employed by a qualified traffic engineer to make decisions on the selection and placement of traffic control devices. In certain cases, a full engineering study may be required to determine the appropriate traffic control devices to be used.

A commonality exists between signs used to direct motorists along a roadway and bikeway signs, with the latter generally smaller in size. A number of special purpose bikeway signs are recognized, while others may be designed or selected to address specific needs.

Signs are structures and need to be placed so that they do not represent hazards for bicyclists, pedestrians, and motorists. Generally, bikeway signs are to be constructed with the edge of the sign from three to six feet from the side of the path, and the base of the sign face at four to five feet above the path grade. When signs are placed overhead, a minimum clearance of seven feet above the path must be maintained.

In addition to signs, pavement markings must be standardized and applied in a consistent manner. The markings identified in the MUTCD are the desired method for conveying lanes, hazards, crossings, and directional separators.

Storm Water Grates and Inlets

Storm water grates and inlets have historically posed problems for bicyclists. As greater emphasis is placed on bicycle or shared lanes, consideration must be given to ensure that conflicts with storm sewer facilities do not occur.

Storm water grates with vents which are parallel with the curb and the direction of bicycle travel can trap wheels, causing damage to the bicycle and injury to the rider. Grates with vents that are transverse to the curb and the direction of bicycle travel are recommended to address this problem.

