

Rapid City Area
Metropolitan Planning Organization

BIKEWAY / WALKWAY PLAN



Prepared by:

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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 bike path was planned and constructed. Additions to the initial bike path occurred in the late subsequent years.

The creation in 1977 of a Metropolitan Planning Organization for the Rapid City Urbanized Area formalized the transportation planning process, 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 (MPO) recognized the formation of a Bike Walk Run Task Force, a subcommittee of the MPO. The purpose of the task force is to improve, expand, and promote the safe use of the community's bikeway / walkway facilities, and to recommend action to governing committees.

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 traffic 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 develop strategies 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) Assume 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 non-motorized 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 rights-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.

CENTRAL BUSINESS DISTRICT. That portion of the city bounded by and included within the limits of the following named streets: from Rapid and Apolda Streets on the north to Kansas City Street on south, both inclusive, and from Third Street on the east to West Boulevard on the west, both inclusive, and those portions of the intersecting streets and alleys included within the boundaries of such district.

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.

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

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 bike paths 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 also 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** bike path 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** bike path 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** bike path, which serves the Robbinsdale neighborhood, is an eight foot concrete sidewalk on the east side of Fifth Street from Columbus Street to Oakland Street. From Oakland 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 US Highway 16B (Catron Boulevard), which is the current terminus of Fifth Street.

The **Minnesota Street** bike path 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 bike path continues as an eight foot concrete path to the east end of LaCroix Links golf course.

The **Twilight Drive** bike path in Rapid Valley is an eight foot concrete sidewalk along the north side of the street from Shadow Drive east to Reservoir Road.

The **Sheridan Lake Road** bike path 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** bike path 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 bike paths.

The **Range Road** bike path is another eight foot concrete path constructed to serve a student population is 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 bike paths 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 bike path 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. The network was examined for deficiencies, and links were added to connect schools, parks, shopping areas, and employment centers with residential areas of the city. 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%

Crash Report

The Rapid City Area Metropolitan Planning Organization produces an annual Pedestrian/Bicyclist Crash report which examines in detail the causes and locations of crashes involving motor vehicles and pedestrians and/or bicyclists. See the report for additional information.

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. The recent development of the Rapid City Travel Demand Forecast Model and the Long Range Transportation Plan has provided tools to examine the Bikeway/ Walkway network for deficiencies.

Based on the analysis performed using the Travel Demand Forecast Model and The Long Range Transportation Plan, the Bike Walk Run Committee, along with input from the Transportation Planning Department and Public Works/Engineering, has developed a list of *committed and* priority projects. *Funding for these projects is available through various sources including Transportation Enhancement grants and allocations from the Parks and Recreation and Capital Improvements Program budgets.* These projects are as follows:

Committed Projects

-The segment bridging the gap in the Rapid Creek Biway through the Pennington County Fairgrounds, funded through a Transportation Enhancement grant and the Parks and Recreation budget.

High Priority

-The creation of bicycle lanes in the central business district on Seventh, Third, *Kansas City*, and Rapid Streets.

-A bike path segment along Fifth Street from Oakland Street to Texas Street.

-An extension of the bike path from Cambell Street east to Rapid Valley.

-The creation of bicycle lanes on Canyon Lake Drive from Sheridan Lake Road to Jackson Boulevard.

Medium Priority

-Additional segments of bike path to fill in gaps in the Stevens High School and West Middle School areas.

- A segment of bike path connecting the Deadwood Avenue area to the Rapid Creek Biway.

-A bike path along North Maple Avenue from the College Park bike path to the Rushmore Mall area.

-A bike path along Disk Drive from the Rushmore Mall area to North Haines Park.

- Segments of bike path along Minnesota Street from Parkview Drive to Odde Drive and from Robbinsdale Park to Cambell Street.

-A bike path network identified in the East Greenway Plan.

-Bike path segments in Rapid Valley in the Twilight Drive area.

-Various off-road bike trails in the Wilderness Park, Skyline Drive, and Northeast Rapid City areas.

The remaining future improvements shown on the Bicycle Paths & Routes Map are classified as Long-Term Vision projects.

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 most current 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 most current Guide for the Development of Bicycle Facilities published by AASHTO. 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 crashes
- 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 most current Manual on Uniform Traffic Control Devices (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.

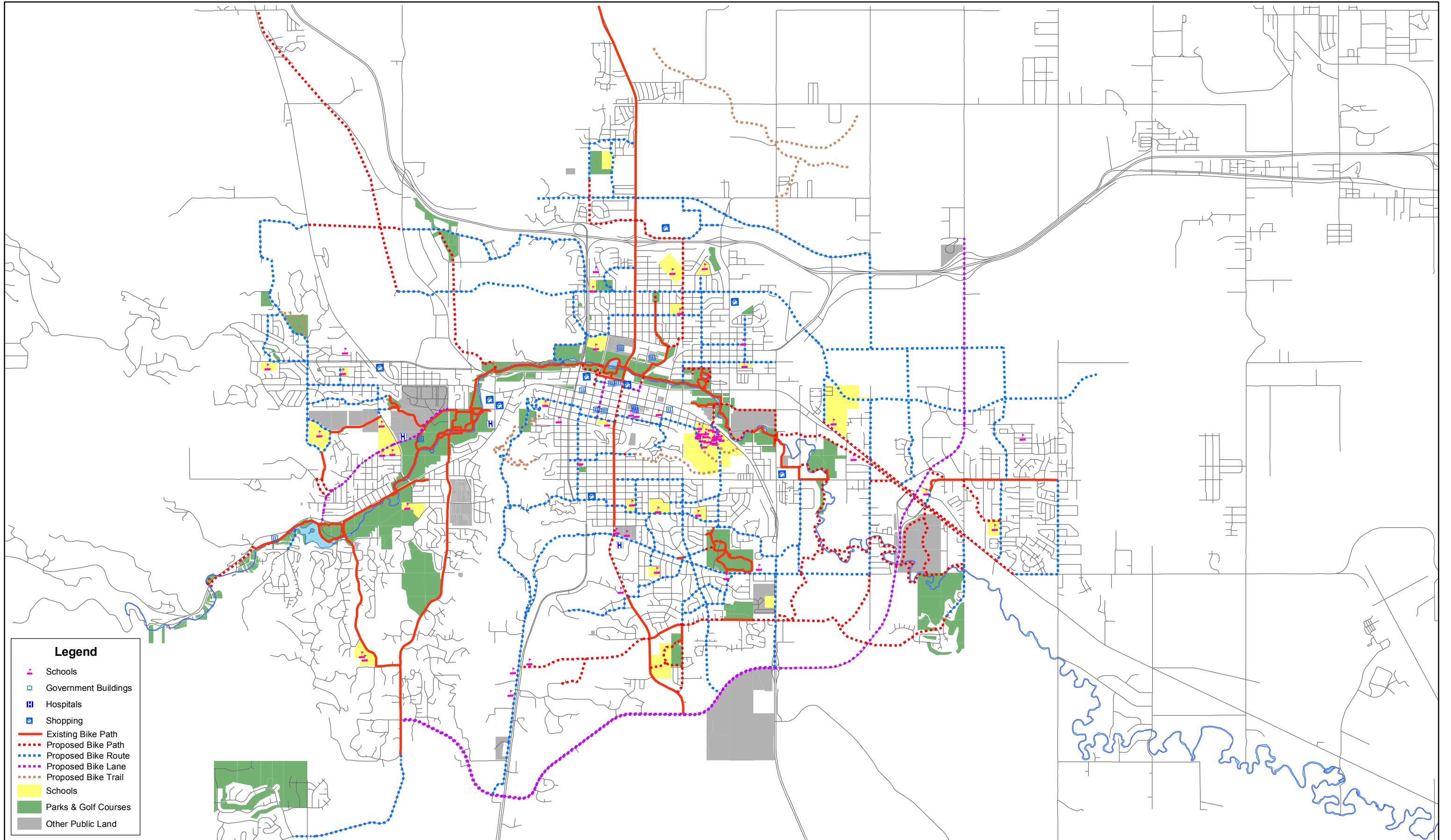
In addition to signs, pavement markings must be standardized and applied in a consistent manner. The markings identified in the MUTCD are the desired method for conveying lanes, hazards, crossings, and directional separators.

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.

Bicycle Paths & Routes
Rapid City, SD



Legend

-  Schools
-  Government Buildings
-  Hospitals
-  Shopping
-  Existing Bike Path
-  Proposed Bike Path
-  Proposed Bike Route
-  Proposed Bike Lane
-  Proposed Bike Trail
-  Schools
-  Parks & Golf Courses
-  Other Public Land

