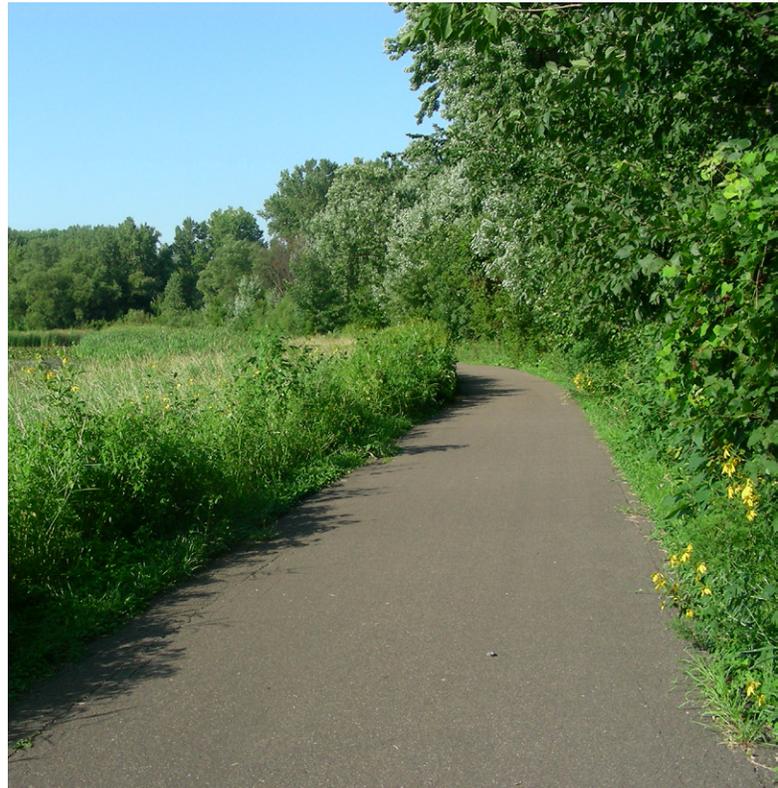


## CHAPTER 7

# Design Guidelines

### Overview

The following guidelines provide general design recommendations for various trail types and associated trail amenities within Mississippi Gorge Regional Park. Note that the guidelines are not intended to be a substitute for site-specific design and engineering that responds to local conditions, development requirements, and safety concerns. The *Minnesota Department of Natural Resources: Trail Planning, Design, and Development Guidelines* have been used in the preparation of these guidelines.





## Paved Trails

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Paved trails are designed to accommodate a variety of users, including walkers, runners, cyclists and in-line skaters. These trails are typically located along the parkways on both sides of the river, within parks, and open spaces located in the river flats. Two-way traffic is standard for the paved trails in the park. The following are design guidelines for paved trails:

- » Where space allows, provide separated trails with walkers and runners on one trail, and bicyclists and in-line skaters on another.
- » In the case of separated trails, each trail segment should be a minimum 8 foot width. Shared trails shall be a minimum 12 foot width. See Figure 7-1.
- » Provide trail markings/stripping to separate directional use and different modes of transportation.
- » Bicycling trails shall always be built closest to the roadway.
- » Provide 2 foot minimum shoulder on both sides of the trail. These can be aggregate or turf and must be clear of brush, woody materials, tall grasses, or any built objects including signs.
- » A 10 foot clear zone should be maintained above the trail and shoulder surfaces.
- » Where the trail curves and integrates with other trails or roadways, increase sight distances to ensure visibility of oncoming trail users.
- » Trail must meet ADA guidelines for accessibility.
- » Trail should be constructed of bituminous asphalt and match existing trail surfaces.
- » Paved trails should have a cross slope no greater than 2%, and a longitudinal slope no greater than 12%.
- » Where a trail follows a roadway, provide separation between the roadway edge and the trail whenever possible. The minimum setback from curb to edge of trail should be 3 feet.
- » Shared-use paved trails should be constructed such that they can bear the weight of maintenance trucks with snow removal equipment so that they can be maintained for winter use.



**Figure 7-1. Paved Trail Standards**



*Paved Sidewalk at Bohemian Flats Park*

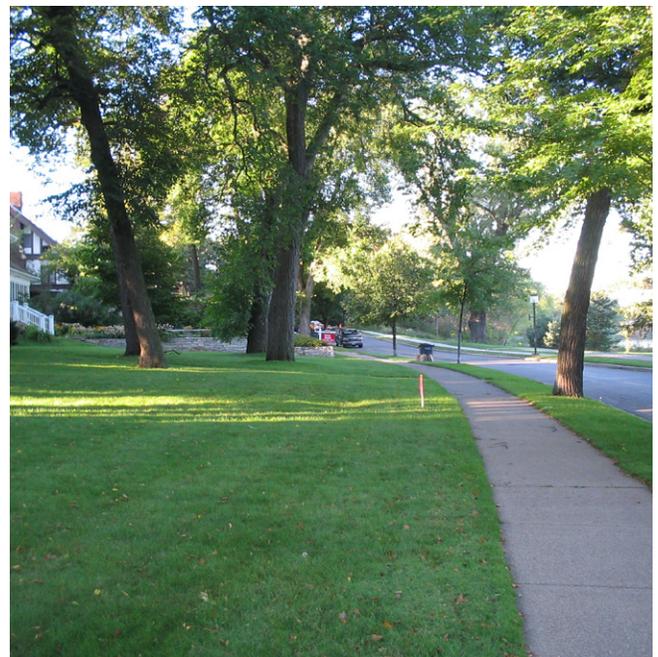
## **Paved Sidewalks**

Paved sidewalks are designed to accommodate pedestrians, including people who use mobility aids such as wheelchairs. Sidewalks may also need to be designed to bear the weight of maintenance vehicles. Sidewalks are provided within the parks and provide connections to the city sidewalk system as well as to parking areas, buildings, or destinations within the parks. The following are design guidelines for paved sidewalks:

- » Sidewalks should be 5 feet minimum in width, but 6 feet is preferred.
- » Where maintenance and/or delivery vehicles are expected to drive on a sidewalk, the minimum width should be 8 feet and the concrete should be thickened and reinforced.
- » If a sidewalk must be located adjacent to a roadway curb, the sidewalk width should be a minimum of 8 feet.
- » Sidewalks should be constructed of concrete and match existing sidewalk surfaces.
- » The texture of a sidewalk must be firm, stable and slip-resistant, generally a medium broomed finish.
- » A sidewalk must have a cross slope no greater than 2% and longitudinal slope no greater than 5%.



*Paved sidewalk example*



*Paved sidewalk example*



**Figure 7-2. Paved Sidewalks**



Existing natural surface trail



Winchell Trail

## Natural Surface Trails

Natural surface trails are typically designed to accommodate a variety of users, including walkers/hikers, cyclists, snowshoers, skiers, and trail runners, though the Community Advisory Committee recommends limiting the use of bicycles on the trails. The majority of the natural surface trails in the regional park were created by users wearing a trail over time, and not specifically designed and built using sustainability standards. Although user groups are quite varied, the process of designing trails for any of them follows the same sustainability principles and design techniques. These trails are located throughout the park, including on top of the bluff, down and along the steep bluff slopes, and along the flats. The existing trails consist of native soils and often take a direct route across the landscape resulting in trails that are too steep and are susceptible to natural forces of erosion. The following are design guidelines for installing sustainable natural surface trails or replacing unsustainable trails:

- » Natural surface trails should be designed following three key principles of sustainable trail design (according to MN DNR):
  - Trails should be shaped to reflect the landscape being traversed and respond to the many nuances of the site.
  - Design of the trail should be used to control erosion and prevent displacement of the trail tread.
  - Trail tread should be designed so it will continue to drain with limited potential for erosion even if it changes shape through years of use.
- » Trail design should take many variables into consideration including tread material, and compaction, displacement, erosion forces, types and amount of use, wet and dry conditions, topography and drainage patterns, site vegetation, tread width and grade, and user safety.
- » Trail widths will vary considerably depending on type of use and whether the trail is single use or double track and one or two directions. Trail widths should vary from 18 inches to 6 feet depending on these factors, and may have a minimum vertical clearance of 8 feet.
- » Consider providing separate trails for different trail users to avoid conflicts.
- » Trail tread should be designed to accommodate the compaction, displacement, and erosion caused by trail use.
- » Trail tread material ideally should contain natural minerals that become hard and cohesive when compacted and remains firm even when wet.
- » A “rolling grade” design pattern should be used to develop natural surface trails. This pattern incorporates a series of dips, crests, climbs, drainage crossings, and edge buffers to form a sustainable trail and minimize rain water velocity and length of flow.
- » Trails should not be built on flat ground. Always utilize a side slope to drain water off the tread and avoid the creation of a muddy depression as the trail gets worn in.
- » Traversing across steep slopes should be utilized to minimize erosion. Trails should never be built on the fall line of steep slopes. Tread should traverse slopes with a grade that is less than  $\frac{1}{4}$  of the fall line slope grade with a maximum slope of 15% unless armored with rock.
- » Please refer to the *Minnesota Department of Natural Resources Trail Planning Design and Development Guidelines for more information guiding natural surface trail design.* <http://www.leg.state.mn.us/docs/2007/other/070340.pdf>.



**Figure 7-3. Natural Surface Trails**



West River Parkway

## Trailheads

Trailheads are important points along the river gorge trail corridors because they set the stage for the trail experience and orient users in the park. Each trailhead in the park will have unique qualities and issues that must be specifically resolved to fit that particular site. At the same time, each trailhead should include uniform design elements so visitors recognize that they are entering Mississippi Gorge Regional Park and starting a very special experience. Trailheads exist in the park today but there is a lack of consistency from one to another. The goal is to create more consistency and convey a sense of quality and strong identity for the park through trailhead design. The following are design guidelines for trailheads:

- » Trailheads should be provided at points of formal public entry into the park's trail system.
- » A hierarchy of trailheads should be incorporated, with major trailheads located at significant trail entry points and minor trailheads located at less significant trail entry points.
- » Amenities and design considerations for **major** trailheads should include the following:
  - Parking facilities
  - Restroom facilities
  - Drinking fountains
  - Trail information kiosk with wayfinding maps, park information, and interpretive elements
  - Special paving/small plaza
  - Seating area
  - Bicycle parking
  - Lighting
  - Waste receptacles
  - Dog bag dispensers
  - ADA accessibility
- » Amenities and design considerations for **minor** trailheads should include the following:
  - Wayfinding signage/maps
  - Seating area
  - Bicycle parking
  - Lighting
  - Waste receptacles
  - Dog bag dispensers
  - ADA accessibility



## Trail Crossings

Trails in the park inevitably must cross other trails, roadways and driveways in or adjacent to the park/parkway system. Where trails must cross roadways, driveways, or other trails, it is important that the trail design facilitates the safest and most convenient crossing movements possible. Where there is a conflict between safety and convenience, safety should take precedence. The following are design guidelines for trail crossings:

### Roadway Crossings

Trail crossings of roadways offer design challenges, especially since trail users vary greatly, including pedestrians, bicyclists, and inline skaters among others. The following guidelines are intended to provide safe roadway crossings:

- » All road crossings should be designed to be safe; having adequate sight lines, appropriate signage and traffic control devices, and plenty of time to cross the road between traffic flows.
- » Trail crossings at intersections are favored over mid-block crossings because motorists and trail users are more aware of traffic issues at intersections.
- » Trail crossings should intersect the roadway at as close to 90 degrees as possible to reduce crossing distance and improve sight lines.
- » Where possible, consider curb extensions to reduce length of roadway crossing.
- » Utilize site lighting at roadway crossings to enhance safety.
- » Incorporate warning signs and markings to alert motorists they are approaching where trail users may be crossing or present.
- » Maintain clear sight lines. Vegetation and other obstructions should be kept clear near crossings for adequate sight distance.
- » Trails that intersect with roadways should be clearly marked and signed.
- » Curb cuts should be flared to allow trail users the ability to make safe turns onto or to exit the trail.
- » To prevent motorized traffic from inadvertently or intentionally accessing the trail, signs should be included that clearly note motorized traffic is prohibited.
- » Curb ramps must be ADA compliant.
- » Curb ramp width should match the width of the trail to avoid forcing two-way traffic into the center of the ramp.
- » Keep gutter lip as minimal as possible so as not to impede wheelchair access.
- » All road crossing improvements require review by the City of Minneapolis.



*Trail roadway crossing*



*Trail crossing parking lot entry at Bohemian Flats Park*

### **Driveway Crossings**

When trails run parallel to a roadway, driveway crossings may be encountered, particularly at parking lots in the park. Along the parkways, curb cuts and ramps for driveways should be designed to minimize disruption to trail gradients and alignments, and minimize conflicts with vehicular traffic.

- » Efforts should be made to minimize disruption to the trail grade as it crosses a driveway.
- » When a ramp is required, it should be at an accessible gradient and long enough to maintain trail flow.
- » Ramp flares and curb tapers should be kept outside the trail width to avoid narrowing the trail at crossings.
- » Driveway crossings should clearly delineate the right-of-way given to the trail user over the motorist.
- » Provide warning signage and markings to make trail users and motorists aware of the oncoming crossing.
- » Vegetation and other landscape features should be designed and maintained to allow adequate sight distance near crossings.



Roadway and trail crossing

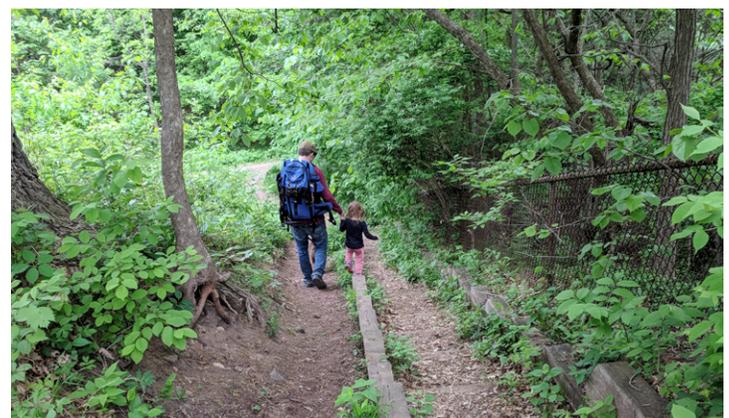
### **Crossings of Other Trails**

Trails also intersect with other trails within the park, contributing to the potential for trail user conflicts with crossing trail movement. Efforts should be made to minimize potential conflicts between trail users at trail crossings.

- » Design the trail system to minimize the number of crossings.
- » Crossings should clearly delineate the right-of-way at trail crossings. Trails with greater use/traffic should be given the right-of-way.
- » A flat grade on the trails should precede trail crossings to provide good sight distance and sufficient stopping distance for trail users, particularly bicyclists and inline skaters.
- » Vegetation and other landscape features should be designed and maintained to allow adequate sight distance near crossings.
- » Design trail crossings with adequate trail width for trail users to merge from one trail onto another. Provide additional trail width at busy crossings to reduce the potential for conflicts.
- » Provide warning signs and trail markings to let trail users know they are approaching a crossing with another trail.
- » Trail crossings should intersect at as close to 90 degrees as possible to improve sight lines and reduce potential for conflicts with other trail users.



West River Parkway



Trail at "Oak Savanna"



Wood boardwalk example

## Boardwalks

Boardwalks, or elevated trails, are typically required when crossing wetlands, poorly drained areas, and/or areas prone to flooding along the river corridor. While boardwalks can be considered multi-use trails, the surface may be slippery when wet and not best suited to wheeled users. However, they can provide a stable and creative approach to accessing- while also protecting sensitive habitat areas and wetlands for park users of all abilities. Boardwalks can be constructed in several different ways depending on site conditions. They are typically supported on piers which can be used in wet or even submerged areas. The following are design guidelines for boardwalks:

- » Boardwalks should be designed to be as wide as the trails they serve. For instance, a boardwalk that connects to an 8 foot pedestrian trail should be 8 feet wide. A boardwalk that connects to a 12 foot multi-use trail should be 12 feet wide.
- » The minimum boardwalk width should be 5 feet, to allow 2-way movement for pedestrians or wheel chairs.
- » Boardwalks must be structurally sound and designed to accommodate anticipated uses and loads.
- » They must be fabricated in a way that considers user safety.
- » Materials should be selected based on durability as well as appearance. This is especially important on nature trails, where all built structures are inherently part of the experience.
- » Natural materials are highly encouraged. Wood is a preferred surface type for boardwalk applications because of its strength, comparative weight, aesthetic appeal and versatility.
- » Pedestrian trail hand railing height must be 42 inches above the deck when a railing is required.
- » Multi-use trail railing height must be 54 inches above the deck when a railing is required.
- » On multi-use trails or boardwalks serving cyclists and requiring a railing, avoid pickets in handrails or guardrails as pickets pose a hazard for bicyclists.
- » Provide a rub rail for cyclists 33 to 36 inches above the deck if a railing is required.

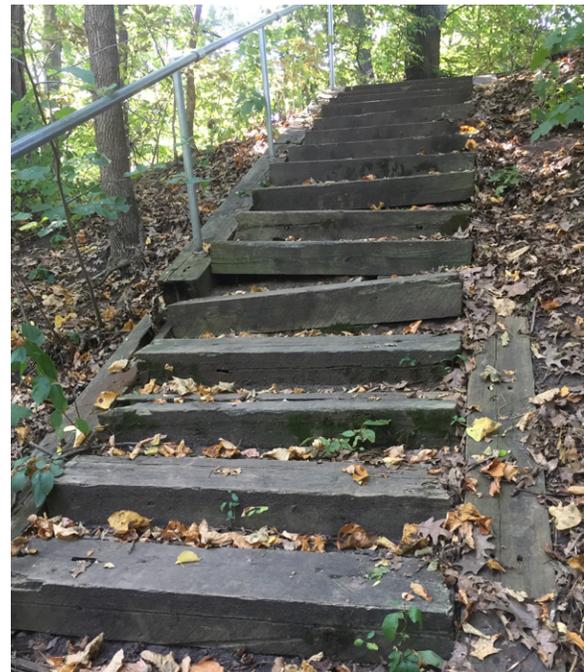


*Existing staircase at "Southeast Flats"*

## Stairways and Ramps

Stairways and ramps provide important vertical connections between parks, parkways, and trails, and access to several riverfront destinations in the park. Several existing stairways in the park were constructed in the 1930's by the Works Progress Administration (WPA) of local limestone and are of historic significance. A good example of a WPA built staircase is on the slope between Riverside Park and Annie Young Meadow. Many such stairways in the park are in need of repair or replacement. Improvements to stairways should be conducted on a case by case basis and in some cases may involve Minnesota State Historic Preservation Office (SHPO) consultation. Ramps are preferable to stairways for reasons of cost, accessibility, and year-round use (packed snow can make steps icy hazards). However, stairs are sometimes the only way to ascend steep grades and reduce erosion at desired access points. The following are design guidelines for stairways and ramps.

- » Stairways and ramps shall be designed for safety and fully meet all code requirements.
- » Existing stairways and ramps that do not meet code requirements should be brought up to code wherever feasible.
- » Locate any new stairways or ramps where they can contribute to desired trail connections, such as near bridges (i.e. Washington Avenue and Lake Street Bridges)
- » Repair any stairways and ramps that are no longer usable due to weathering and other factors. An example is the WPA stairway between Annie Young Meadow and Riverside Park.
- » Repair/restoration of historic structures should be coordinated with SHPO.
- » Stairways may be installed at desired trail locations that are no longer sustainable (steep slopes) on a case by case basis, as determined by MPRB staff.
- » Stairways and ramps should be constructed of high quality, durable, natural materials such as stone, concrete, wood and metal. The use of native or local materials is highly encouraged.
- » A consistent palette of materials and design is encouraged to strengthen the sense of identity within the park.
- » Stairways and ramps constructed in natural areas should be designed and constructed to blend in with the site.



*Existing staircase in need of repair*



## Precedent Images



## Wayfinding Signage

Wayfinding signage is an important component within the park. It orients and directs park visitors and commuters, provides park identity, and ensures that park users have a safe and enjoyable experience. There are several categories of wayfinding signage in the park, including information kiosks, park identity, trail, directional, regulatory, and interpretive signage. Each sign type plays a different role. Information kiosks provide location maps and park rules and regulations. Park identity signs let park users know they've arrived in the park. Trail signs provide trail users with important trail information, including trail access, routes and orientation, difficulty levels, and distances. Directional signs orient park users to various park and neighborhood destinations. Regulatory signs reinforce traffic laws, regulations or requirements along parkways. Interpretive signs provide educational information about the park and the river's history and environment. The following are design guidelines for wayfinding and signage.

### Information Kiosks

- » Locate information kiosks at all major trailheads and entrances into the Mississippi Gorge Regional Park.
- » Kiosks should be consistent with the Minneapolis Park and Recreation Board standard design as used in the park and parkway system. They convey a strong sense of quality, character, durability, and park identity.
- » Kiosks should include the following information:
  - Minneapolis Grand Rounds map, indicating the precise location of kiosk with the park/parkway system.
  - Detailed regional park map, depicting precise location of kiosk, location of other park features and destinations, trail map, other kiosks and trailheads, parking areas, restrooms, drinking fountains, etc.
  - Park rules and regulations.
  - Emergency contact number
  - MPRB logo
  - Grand Rounds logo
  - Interpretive information about the history and environment of the park and river gorge.

### Park Identity Signs

- » Develop a Mississippi Gorge Regional Park identity signage program that fits with and is consistent with existing MPRB park system signage.
- » Park identity signs should convey a strong sense of quality, character, durability, and park identity.
- » Locate park identity signs at major entrances into the Mississippi Gorge Regional Park.
- » Locate park identity signs at the following parks and parkways within the regional park:
  - Bohemian Flats Park
  - Annie Young Meadow
  - Riverside Park
  - East River Flats Park
  - East River Parkway
  - West River Parkway
- » Special entry landscaping should complement park entry signage and contribute to park identity.
- » Park entry signs should contain the MPRB logo.

### Minneapolis Grand Rounds Signs

- » Locate Grand Rounds signs at major trailheads and entrances into Mississippi Gorge Regional Park, and along parkways within the park.
- » Grand Rounds signage and wayfinding should be consistent with the existing historic Grand Rounds standard design as used in the park and parkway system.
- » Grand Rounds signs should contain the Grand Rounds logo.

### **Trail Signs**

- » Trail signs should be located along all paved and significant natural surface trails within the park. Note - there may be several natural surface trails created by park users that do not warrant signage.
- » Water trail signs and portage route signs should be installed along portage routes and at canoe/kayak launches.
- » Trail signs should be located so trail users can easily see and read them and then react, especially when a sign is identifying a challenging technical section or trail hazard.
- » Trail signs should be of a consistent style, character, material, size and color so trail users become familiar with them in the park.
- » Trail signs designed for shared-use paved trails should consider the more urban context, and the scale and speed of pedestrian and bicycle users.
- » Trail signs designed for natural surface trails should consider the more natural context and scale and speed of trail users, whether for pedestrian or shared-use.
- » Trailhead signage should be provided at all trail access points.
- » Major trailhead signage should be incorporated into information kiosks.
- » Minor trailhead signage should include park maps and trail routes.
- » Along paved and significant natural surface trails, orientation signs should be provided at trail intersections. A trail map with “You Are Here”, trail names, and trail mileage should be provided.
- » Whenever a trail is rated anything other than easy, trail-difficulty signs should be posted at every access point and throughout the trail system at key intersections and along the trail whenever the level of difficulty changes.
- » Consider color coding different trails within the park and keying those to the trail maps.
- » Provide trail markers along trails to provide trail identification.
- » Trail signs should use universal sign symbols whenever possible to convey a message to a broad group of users.
- » Consider dual or multi-language signs to honor the cultural history and context of the area.

### **Directional Signs**

- » Directional signs should be located at all points of access and key decision making points along a trail, including intersections and street crossings.
- » They should provide directional information to park destinations and nearby neighborhood destinations.
- » Use consistent graphics, symbols, and information detail.
- » Directional signs should be a consistent size and mounting height, designed for the user type.
- » Directional signs should contain the MPRB logo.
- » Directional signs should use universal sign symbols whenever possible to convey a message to a broad group of users.



*Park entry sign*



*Grand Rounds Directional Sign*



**Precedent Image**



Existing interpretive signs at East River Flats park show signs of deterioration



Regulatory Sign on Parkways

### **Regulatory Signs**

- » Regulatory signs should be consistent with the Minneapolis Park and Recreation Board or other jurisdictional (City, County, State or Federal) design standards (depending on the sign type) along parkways and at street intersections.
- » Regulatory signs within the park should be provided to notify park users of rules and regulations within the park.
- » Regulatory signs should be located so park users can easily see and read them.

### **Interpretive Signs**

- » Locate interpretive signs in parks and along trails at key locations, such as trailheads, overlooks, gathering areas, and special landscapes (i.e. oak savanna, floodplain forests).
- » Interpretive signs should provide educational information on the history, environment, and significant park features in the river gorge.
- » Design interpretive signs to be durable and artistically unique to convey the information.
- » Materials for sign frames should include painted metal posts with durable panels that will not sun-fade and include the MPRB logo. Sign frames should be simple in design to not detract from the significant features being interpreted. Information should be provided on the following topics:
  - Geography and Geology
  - Cultural and Historical Resources
  - Ecology
  - Restoration
  - Native Plant and Wildlife



Existing interpretive sign at the "Oak Savanna" show signs of deterioration



## Site Amenities

Site amenities enhance the park user experience by improving safety, comfort, convenience, and accessibility for all park users. Additionally, the various amenities that populate the park landscape and open spaces increase use and can contribute to the strong sense-of-place within the park. These amenities should reinforce the park's character by building on a consistent palette of park elements. Each amenity should be evaluated for long-term durability, accessibility, maintenance, sustainability, and functionality. The following are design guidelines for site amenities:

### Benches/Seating

- » Locate benches and other seating elements at overlooks, high activity areas within parks, trailheads, rest areas along trails, beaches, and other destinations within the park.
- » Benches and other seating elements should be constructed of high quality, durable materials, simple in form, with or without backs.
- » Natural materials such as wood, metal, concrete and stone are highly encouraged.
- » Benches and seat wall type, color, and materials should be consistent throughout the park to project a strong sense of identity and character.
- » Where appropriate, low walls of concrete or native limestone could be provided at seat height and width in lieu of, or in addition to, benches.
- » Offset benches a minimum of 2 feet from the edge of pathways, including shoulders.
- » Provide a concrete slab under each bench. Secure bench to slab.
- » Provide ADA accessibility to seating where feasible.
- » All proposed benches shall meet MPRB standards.



### Lighting

- » Locate safety/security lighting along parkways, and near parkway/roadway intersections, paved trail intersections, high activity areas within parks, major trailheads, picnic areas, overlooks, parking lots, formal trails/promenades, staircases, and any other park destinations where safety and security may be a concern. Generally, lighting will be located nearest the parkway, and not along the river's edge or below the bluff, except in developed parks, i.e. Bohemian Flats Park.
- » Light pole and fixture type, size, color, and material should match the existing poles and fixtures within the park/parkways today, consistent with MPRB standards.
- » Light poles, fixtures, and light sources should be consistent throughout the park to convey a strong sense of park identity and character.
- » Light fixtures should be installed at regular intervals and frequent enough and of such illumination levels to provide safe levels of light on parkways, trails, sidewalks, plazas, and activity areas without negatively impacting adjacent residential uses or natural areas.
- » All proposed light fixtures shall meet the recommendations of the International Dark Sky Association (IDA) and/or the Illuminating Engineering Society (IES).
- » All proposed light fixtures shall meet MPRB standards.



**Precedent Images**

## Precedent Images



### **Fencing and Guardrails**

- » Locate fencing and guardrails to protect park users from injury near steep bluffs, drop-offs along trails, overlooks, boardwalks, and bridges. They can also be used to protect pedestrians and bicyclists from conflicts with motor vehicles in certain situations.
- » Fencing and guardrail design and materials should be consistent throughout the park to convey a strong sense of park identity and character.
- » Fencing materials and design in high use areas such as along the parkways, urban parks, and other highly visible areas should be more formal. The existing black metal picket fencing along many portions of the park is a good example of this type of character.
- » Fencing in less formal and natural areas, such as along the Winchell Trail, should use less formal fencing and guardrail materials and design character. Here, timber and chain link fencing may be more appropriate.
- » All proposed fencing and guardrails shall meet MPRB standards.

### **Retaining Walls/Site Walls**

- » Locate retaining walls where slopes must be retained for trails or other park features.
- » Locate site walls in formal park areas and trail overlooks. They should be designed so that they can also serve as seat walls if possible.
- » As much as feasible, retaining and site walls should be constructed of high quality native stone reflective of the natural bedrock found in the river gorge.
- » Retaining and site wall design and materials should be consistent throughout the park to convey a strong sense of park identity and character.
- » Wall construction should be of the highest quality craftsmanship.
- » All proposed retaining and site walls shall meet MPRB standards.
- » Existing retaining walls within the park bearing the weight of the bluff and/or development on top of the bluff shall be maintained and monitored for stability.

### **Bicycle Racks/Facilities**

- » Locate bicycle racks near bluff top trailheads, picnic areas, overlooks, rest areas, trail intersections, access points to the river, and adjacent transit corridors and stops.
- » Locate bicycle facilities such as tire inflation and repair stations near major trailheads within the park.
- » Locate bikeshare facilities near major intersections along the parkways, and near adjacent transit corridors and stops.
- » Bike rack, tire inflation, and repair station type, color, and material should be consistent throughout the park, and constructed of durable, vandal-resistant materials.
- » Provide concrete foundation slabs under bicycle facilities and securely fasten bicycle facilities to the foundations.
- » Offset bicycle facilities from pathways and shoulders adequately enough to keep parked bicycles and repair station users from interfering with trail movement.
- » All proposed bicycle facilities shall meet MPRB standards.

## **Restrooms**

- » Locate restrooms near trailheads, recreational activity and picnic areas, and parking locations.
- » Restrooms should be located in highly visible areas to increase the perception of safety.
- » Permanent restroom buildings should be provided and/or upgraded at major activity areas such as Bohemian Flats Park, East River Flats Park, Riverside Park and Annie Young Meadow.
- » Consider the use of pit toilets where water and sanitary sewer services are not readily available.
- » Single occupancy sized portable toilets (or preferably permanent structures) should be located at supplementary locations in the park such as trailheads, overlooks, trail crossings, picnic areas, parking lots and rest areas.
- » Permanent restrooms should be constructed of consistent, high quality, natural materials such as masonry, stone, wood and metal, and reflect native materials from the region.
- » Restroom buildings should be constructed of durable, vandal resistant materials.
- » Portable restrooms should be high quality and well-maintained.
- » All restrooms should be located so that maintenance vehicles can access them.
- » All restrooms should be ADA compliant for accessibility.
- » A phone number for maintenance concerns about the restroom should be clearly posted.
- » Restrooms entrances and interiors should be well-lit.
- » All new restrooms shall comply with MPRB gender inclusion policies at time of installation of restroom.

## **Picnic Areas/Facilities**

- » Picnic facilities should be provided and/or upgraded at major activity areas such as Bohemian Flats Park, East River Park, Riverside Park, and Annie Young Meadow.
- » Picnic facilities may also be provided at less active park locations such as trailheads and rest areas.
- » Picnic facilities should be constructed of consistent, high quality, natural materials such as masonry, stone, wood, and metal, and reflect native materials from the region.
- » Picnic facilities should be constructed of durable, vandal resistant materials.
- » Parking should be available within convenient walking distance from a picnic area.
- » Depending on size of the picnic area and how many people it is anticipated to serve, amenities and design considerations for picnic areas should include some of the following facilities:
  - Picnic tables on paved surface area
  - ADA accessible routes and picnic tables
  - Shade structure or shade trees
  - Restroom
  - Barbecue grills
  - Waste and recycling receptacles
  - Seating
  - Signage
  - Bike parking
  - Drinking fountain
  - Lighting
- » Picnic areas should be well-lit.
- » Picnic areas and facilities should be well-maintained.

## **Precedent Images**



## Precedent Images



### Drinking Fountains

- » Locate drinking fountains at high activity areas and major trailheads within the park.
- » Drinking fountain type, color, and material should be consistent throughout the park.
- » Provide concrete paved area under drinking fountain, connected to adjacent pathway.
- » Offset drinking fountain at least 3 feet from adjacent pathway.
- » Provide ADA accessibility to drinking fountains.
- » All proposed drinking fountains shall meet MPRB standards and maintenance capacity.

### Waste and Recycling Receptacles

- » The size, type, and color of waste and recycling receptacles should be consistent throughout the park and based on the amount of waste expected, maintenance programs, and types of park users.
- » Waste and recycling receptacles should be accessible to park and trail users, and maintenance personnel.
- » They should be located at high use areas, including trailheads, picnic areas, rest areas, overlooks, trail intersections, and access points to the river.
- » All proposed waste and recycling receptacles shall meet MPRB standards and maintenance capacity.

### Dog Waste Dispensers

- » Dog waste dispensers should be provided periodically throughout the park for the convenience of people walking their dogs and for the purpose of keeping the park clean.
- » The size, type, and color of dog waste dispensers should be consistent throughout the park.
- » All proposed dog waste dispensers shall meet MPRB standards and maintenance capacity.



## Plantings/Landscaping

Mississippi Gorge Regional Park character is defined by not only the unique geology of the gorge, but also by the plant communities that exist within it. These include prairie, savanna, and floodplain and mesic forests, as well as forest and park landscapes that have been altered over the years for urban park and parkway development. Planting design is an integral component of park development. Planting design and landscaping should consider a number of factors including but not limited to existing plant communities, climate and erosion control, stormwater management, habitat enhancement, safety and security, and placemaking opportunities. The following are design guidelines and BMPs for planting design and landscaping in MGRP.

- » Use native trees, shrubs, grasses and perennial plant materials appropriate to the specific microclimate, soil, and moisture conditions of each area within MGRP.
- » Plant species should be grouped according to plant communities appropriate to the location within the gorge.
- » Continue to manage invasive species within the regional park according to the MPRB's natural area management policies.
- » Plant placement within MGRP should preserve and enhance views of the river and trails within the park.
- » Plant placement should not compromise the safety and security of park and trail users.
- » Selective clearing of overgrown vegetation is appropriate at designated seating areas and overlooks intended to provide river views.
- » Plant species selection, variety and pattern should establish a transition in character from the naturalistic quality of natural areas (e.g. woodlands, savanna, prairie) to more urbanized park and parkway zones.
- » Plant patterns should support views, uses, provide shade, and define spaces within the park.
- » Non-native turf grasses are discouraged in the park except where required as part of an athletic field. Clover lawns or other pollinator laws should be utilized in areas where the look of a manicured lawn is desired.
- » Rain gardens and infiltration areas are encouraged to assist in the management of stormwater runoff and infiltration.
- » Park entries and gateways should include enhanced planting and landscape design that will provide a unique aesthetic without risk of overgrowing signage or blocking visibility.
- » Shade trees should be planted and spaced to provide the maximum amount of shaded area to parking spaces and reduce heat and glare from parking lots. Species selected should be tolerant of urban conditions.
- » All proposed plantings and landscape design shall meet MPRB standards.



*Example: Prairie Restoration*



Longfellow Beach

## River Access and Views

Viewing the river gorge from various perspectives and being able to access the river are attributes that attract people to the regional park. There are several beaches in the flats along the gorge that allow park visitors to access the river, launch a canoe or watch the water. There are also several places to view the river from bluff tops, including formal overlooks and informal seating areas. Access to the water for launching a watercraft allows visitors to also view the gorge from the water. The following are design guidelines to enhance views of and access to the river.



Longfellow Beach



Bohemian Flats Park Beach

### Beaches

There are several beaches located within MGRP on both sides of the gorge. These are located in Bohemian Flats, East River Flats Park, "Southeast Flats," Longfellow Flats", and the beach commonly known as "White Sands Beach" located across the river from "Southeast Flats". These are sensitive landscapes consisting of sand deposition and riparian plant materials. They should be protected and managed as special features within the park. Many of the beach areas have been inundated with ash from informal bonfires. Measures should be taken to minimize the effects of these fires. The following guidelines provide design and management recommendations for beaches:

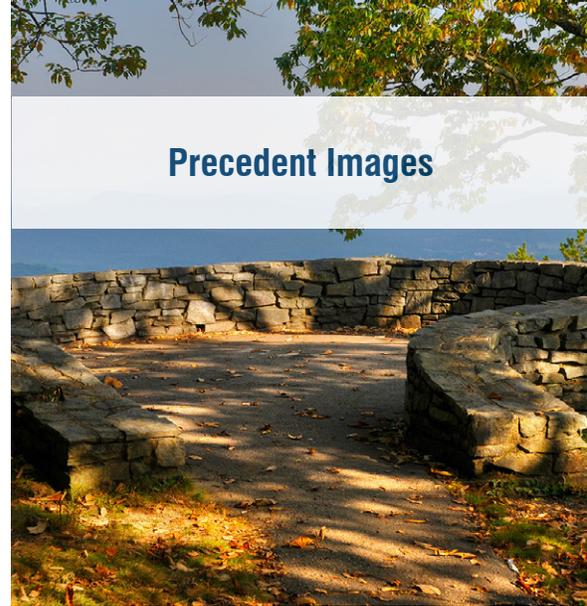
- » Measures should be taken to reduce erosion and minimize the introduction of invasive plant species.
- » Where invasive plant species exist, management strategies to remove these species should be undertaken.
- » Explore the potential to introduce designated fire pits to control the dispersion of informal fires on the beaches.
- » Waste receptacles should be located near parkway entries to beach areas to encourage park users to keep the beaches clean of debris and trash.
- » Interpretive elements that provide information about the sensitive beach landscapes and the importance of keeping the beaches clean should be included at each beach area.
- » Provide benches/seating at beach areas.

## Overlooks

Cultural and scenic overlooks exist along MGRP in several locations, ranging from formal overlooks-with site walls or guardrails, special paving, seating and signage-to informal overlooks with a bench oriented toward the river. These places function as destinations, rest areas, and places of education and orientation. Overlooks provide an opportunity to view the gorge without entering it; the only opportunity some people may have to enjoy its beauty. Unfortunately, the intended views at many of the existing overlooks on the river gorge are obscured by invasive and overgrown plantings. The following are design guidelines for overlooks:

- » Overlooks should be designed with a consistent use of materials, design components, and quality as much as possible.
- » Natural materials (stone, wood, and metal) and high quality fabrication of overlook components are highly encouraged.
- » Amenities and design considerations for formal overlooks should include the following:
  - Benches and/or seat walls
  - Guardrails if necessary for safety
  - Deck or paved area
  - Interpretive signs
  - Shade structures or shade trees
  - Waste and recycling receptacles
  - Bicycle racks
  - ADA accessibility
- » Amenities and design considerations for informal overlooks should include the following:
  - Benches and/or seat walls
  - Guardrails if necessary for safety
  - ADA accessibility
- » Removal of invasive plants and selective clearing of overgrown plants is highly encouraged at overlook locations.

## Precedent Images





*Example: Rain Garden*

## **Stormwater Best Management Practices**

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Effective stormwater management often occurs by using a holistic system management approach. This approach takes into account the effectiveness of each stormwater practice, the costs of each practice, and resulting overall cost and effectiveness rather than looking at each practice in isolation. Some individual practices may not be effective alone but, in combination with others, may provide a key function in highly effective systems.

Best Management Practices (BMPs) in the MGRP area should primarily focus on treating runoff generated within the park lands. Experience shows that the most economical way to trap/remove sediments and pollutants from runoff is at the source. The Minneapolis Park and Recreation Board is currently participating as a co-signatory on the National Pollutant Discharge Elimination System (NPDES) with the City of Minneapolis and can encourage the City as well as the University of Minnesota to find opportunities to treat runoff generated within their tributary areas before discharging into the river.

Future BMPs that treat runoff generated within MGRP are better designed as off-line systems from the existing storm sewers conveying runoff from areas outside the park. Appropriate BMPs for introduction into MGRP include:

- » Permeable Paving: a paving system designed to allow penetration of surface runoff into an engineered subsurface area for temporary storage, infiltration, or filtration.
- » Buffer Strips: linear planting arrangement of native vegetation (grasses, forbs, and shrubs) placed along the downward side between a water body and a paved or turf area.
- » Vegetated Swales: graded surface runoff conveyance planted with wet-tolerant native grasses and forbs.
- » Biofiltration or Tree Trenches: linear areas filled with engineered porous soils and planted with trees and or wet-tolerant shrubs.
- » Raingardens (infiltration basins): graded depressions constructed with engineered soils and wet-tolerant native grasses, forbs, and shrubs.
- » Filtration Basins: graded depressions constructed with an impenetrable liner, engineered soils, subsurface outlet piping to a stormsewer system, and planted with wet-tolerant grasses, forbs, and shrubs.

Precedent Images





*Healthy floodplain forest*

## **Ecological and Natural Resources**

Much of the natural ecological character of the gorge has been altered as a result of changes that impact natural river processes. Regardless of the future of the dams, steps can be taken to improve the ecological health within MGRP. In order to restore valuable natural resources, improve habitat quality, and reestablish natural river functions, a number of design guidelines for restoration work should be prioritized. These include:

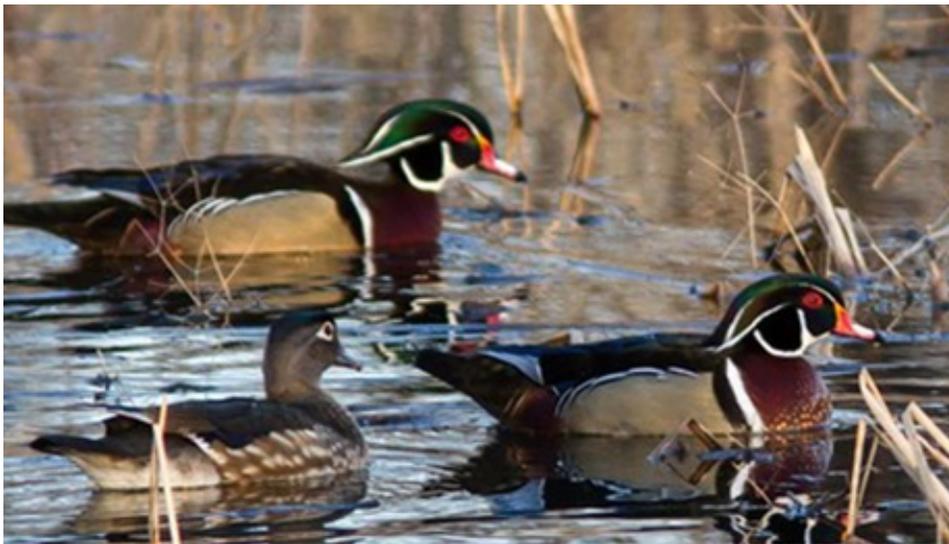
- » Restoration and improvement of habitat for native and endangered bird, reptile, mammal, fish, and mussel species.
- » Removal of invasive species where appropriate (i.e. where invasive species reestablishment can be prevented through maintenance and management).
- » Establishment, restoration, and preservation of pollinator plant species.
- » Floodplain restoration and reconnection where possible.
- » Management of floodplain to reduce erosion potential and repair degraded bank areas.

Specific ecological restoration activities could include:

- » Sediment management activities – Either passive transport, active excavation/removal, or a combination of both can be used to remove sediment impounded by the dams and expose pre-dam geomorphic features.
- » Active bank restoration and riparian plant community restoration – Bioengineering approaches can be used to develop short-term and long-term stabilization of river banks and floodplain surfaces.
- » Island restoration – This could include sculpting of island features and possible bioengineering treatments to improve stabilization and native plant revegetation.
- » Integration of natural restored areas with managed park space. This includes access for recreational activities, viewsheds, trails, and overlooks.
- » Long term vegetation management – Primarily involves invasive species management and management of forest and native grassland community cover.



Lake Street Bridge in 1907 (Source: Minnesota Historical Society)



Wood Ducks (Source: National Park Service)



Upper Mississippi River near Brainerd, MN  
(The Nature Conservancy)

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