

## Trail Management Features

Some trails require management features to enhance user experience, provide privacy and security to adjacent property owners, or to sustain the life span of the trail.

### ACCESS MANAGEMENT TRAILHEADS

Trailheads provide essential access to the trail system and can include many amenities in one location: automobile parking, bicycle parking, restrooms, drinking fountains, trash and recycle receptacles, dog waste stations, bicycle repair stations, and trail wayfinding and informational signage.

There is no prescription for the frequency of trailheads. Conduct user counts, vehicle counts, and surveys across the trail network at peak hours of use to determine parking demand. Consider locating trailheads with consideration to other available public facilities or through partnerships with owners of existing parking areas. When locating trailheads in or adjacent to neighborhoods streets, work with property owners to install no parking signs if desired, and to minimize impacts during construction and daily use.

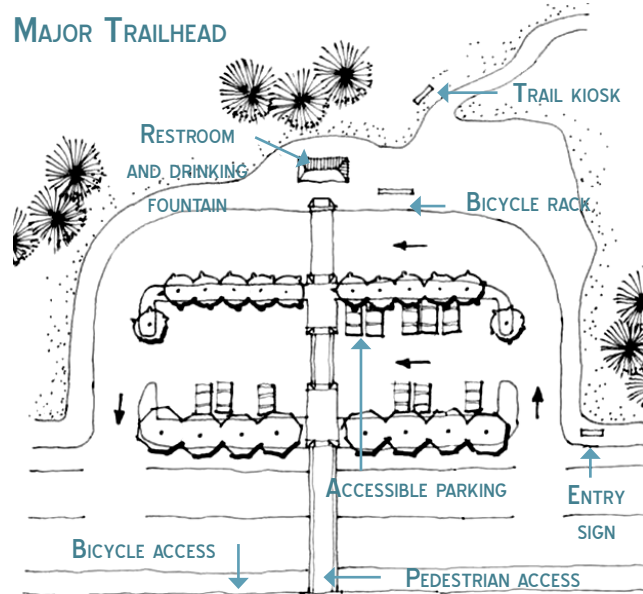
### MAJOR TRAILHEADS

Major trailheads should be established near large residential developments, commercial developments, and transportation nodes, making them highly accessible to the surrounding community and to the trail system. A major trailhead could include all of the items mentioned previously plus additional facilities, such as shelters, picnic areas, and more extensive parking.

### GUIDANCE

- Major trailheads can provide parking for 10-40 vehicles, depending on availability of land and anticipated level of use of the trail.

- Consider 300 to 350 square feet for each parking space.
- Major trailheads will typically have a large paved parking lot that accommodate passenger vehicles and large vehicles year round. Consider locating larger lots in existing disturbed areas to minimize environmental impacts.
- Major trailheads should provide emergency and maintenance vehicle access and turnaround.
- Place ADA accessible parking spaces near the site's accessible route, at a rate of one accessible space per 25 standard spaces. Parking spaces and access aisles should not exceed 2 percent slope in any direction.
- Parking lot surfaces should never exceed 5 percent slope in any direction.
- Where major trailheads are located near neighborhoods, provide user access from local streets crossing the trail. Where trails cross neighborhood streets, "No Parking" signs may be desirable to minimize impact on the neighborhood.
- Reduce the visual intrusion of large parking areas by using vegetative screening.
- Consider one-way vehicle circulation within parking areas to minimize road width.
- Refer to current setbacks and other requirements.

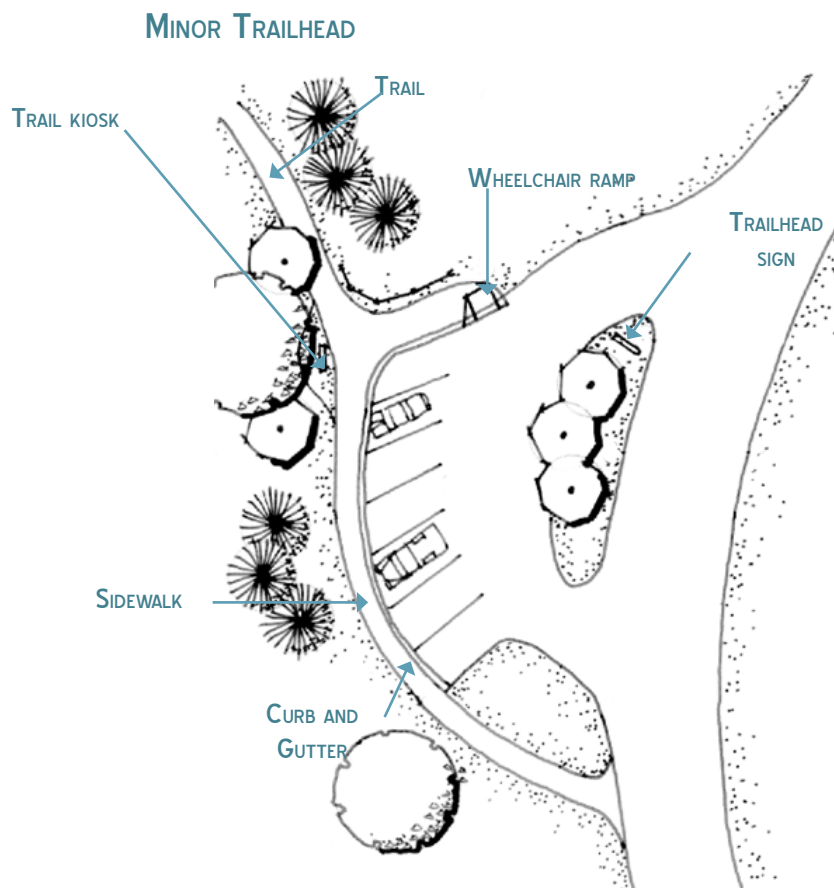


## MINOR TRAILHEADS

Minor trailheads are trail access points with very minimal infrastructure. They can occur at parks and residential developments. Some minor trailheads could include a small parking lot for five to six passenger vehicles. In addition to vehicle parking, minor trailheads may include drinking fountains, benches, trash and recycling receptacles, an information kiosk, and signage about the trail network.

## GUIDANCE

- Minor trailheads can provide parking for up to ten vehicles. The parking area may be asphalt or gravel, as long as ADA requirements are met
- Minor trailheads should provide emergency and maintenance vehicle access.
- Minor trailheads should be ADA accessible and provide at least one accessible space near the accessible route.
- Provide adjacent wayfinding signage that directs trail users to minor trailheads.



## TRAIL EDGE DEFINITIONS

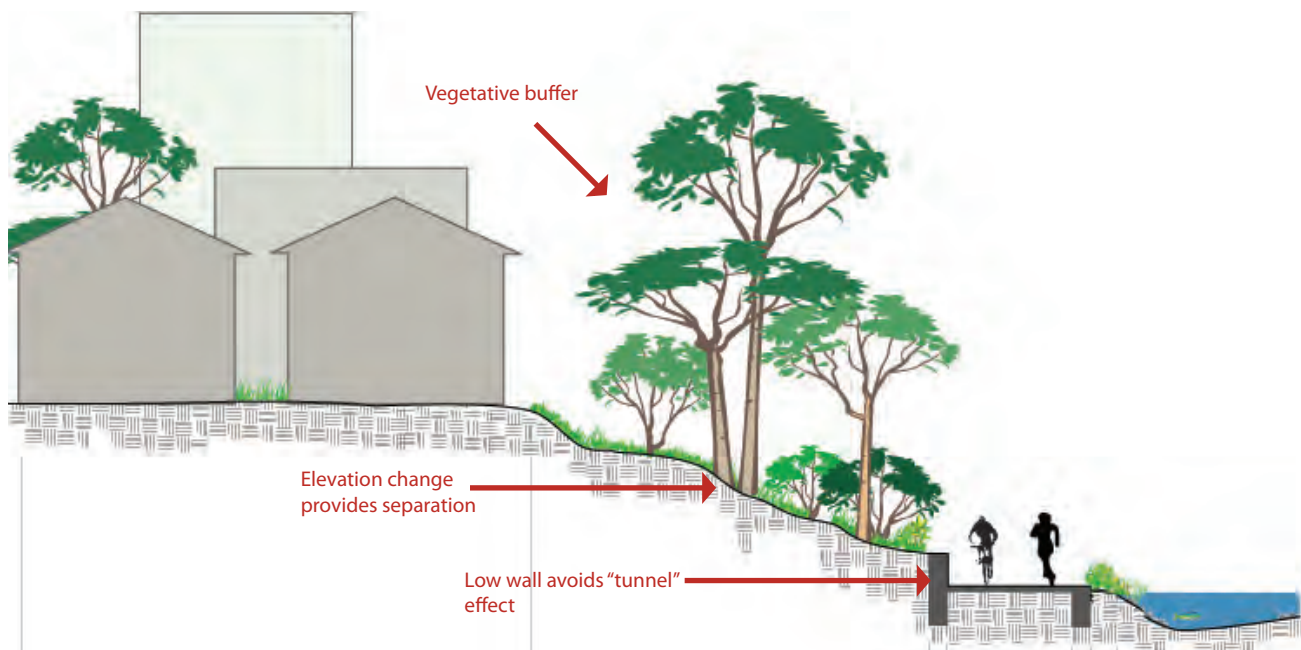
Vegetation, topography, ditches, fencing, railings, or walls may be used to clearly mark trail edges. Such features serve multiple purposes, including:

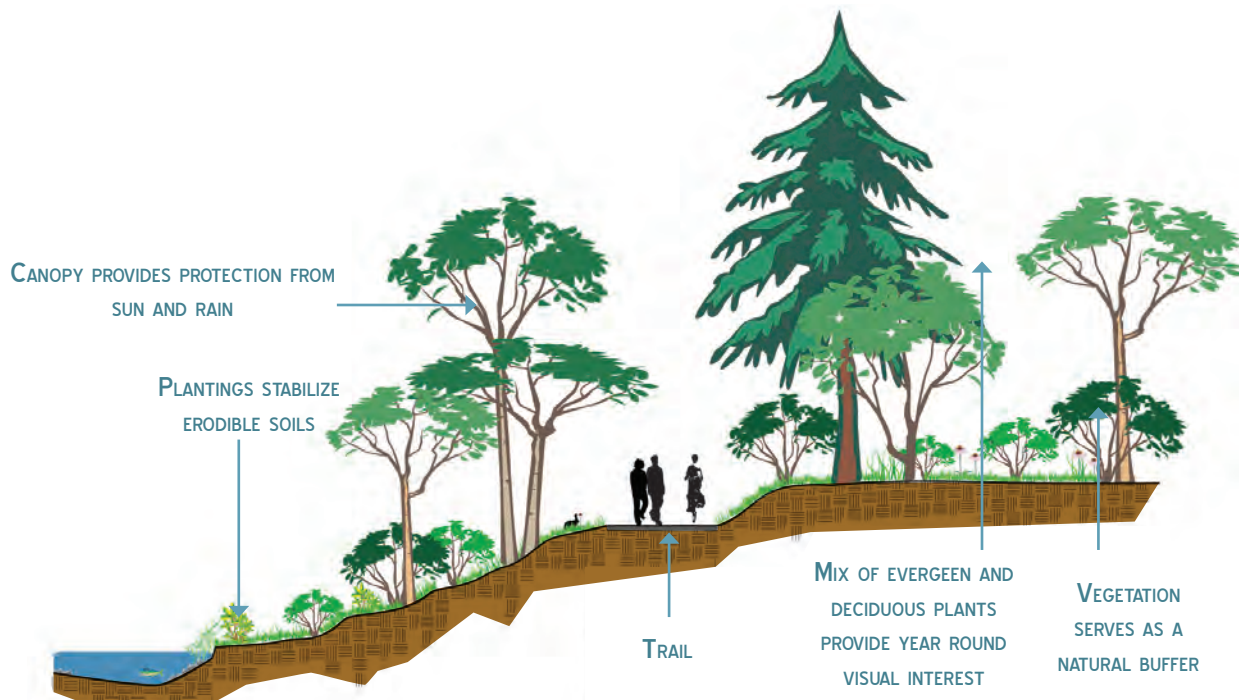
- Providing visual separation/privacy screens
- Delineating public space from private property adjacent to the trail
- Discouraging the development of unauthorized foot trails
- Separating users from hazardous drop-offs or adjacent non-compatible land use

Wildlife passage and safety for trail users are important factors in determining appropriate trail edge treatments. Although the public often perceives fencing as a means of providing safety by prevention of unwanted access, fencing that blocks visual access completely can have the opposite effect by impairing informal trail surveillance (see CPTED guidelines for more information).

## GUIDANCE

- If separation is desired purely for privacy reasons, native vegetation buffers or the use of topography are recommended where possible.
- For physical separation aimed at preventing trespassing or guarding against hazardous slopes, consider the use of topography, ditches, semi-transparent fencing or railings, and hostile vegetation.
- Fencing should strike a balance between adjacent residents' privacy and informal surveillance of the trail. Permeable fencing of four feet tall or less can provide a barrier sufficient to denote property boundaries or to deter most access. Opaque fencing or walls can degrade the experience of trail users, obscure views, and create a "tunnel" effect that creates the effect of users feeling "trapped."
- Railings on bridges, boardwalks, and at the edges of steep slopes should be provided.





### VEGETATIVE SCREENING

The presence or absence of vegetation and the type of vegetation present in a trail corridor affects habitat quality, the trail's effectiveness as a wildlife corridor, ecological sustainability, and the aesthetic experience for the trail user. Trails are more effective at providing wildlife habitat and corridors when they have native trees and shrubs present. Trees and shrubs can also shade users from sun and shelter users from rain. When possible, protecting, preserving, and maintaining existing native vegetation when constructing trails through riparian corridors is the first choice for creating separation between the trail and adjacent properties. Vegetative buffers create a natural privacy screen, provide habitat for wildlife, and stabilize erodible soils.

### GUIDANCE

- In locations where trees and shrubs are lacking and can be planted, native species are the most ecologically sustainable choice. As a group, native species require less maintenance than horticultural plantings and often provide wildlife with a food source.
- To achieve an open line of sight, groundcover and shrub height should be a maximum of 24 inches above ground level.

- Topography and soil moisture regime largely determine where different plant species occur.
- Tree canopies should not obstruct trail illumination.
- Select and place trail vegetation to provide seasonal comfort: shade in the warmer months and sunlight in colder months.
- Select native landscaping material that can deter users from using unauthorized foot trails, access points, or exits (e.g. vegetation with thorns).
- Follow CPTED requirements.

### MAINTENANCE AND ESTABLISHMENT

- Larger plants require more water to survive than seeds and smaller plants. Plant seeds and/or plants either right before or during the rainy season to take advantage of seasonal rainfall (spring and fall).
- Remove all competing invasive vegetation and or mulch regularly to conserve water.
- Trees should be trimmed to provide a minimum of 8 feet of vertical clearance within trail circulation.
- Fertilizing native plants is only necessary in extreme cases when the condition of the soil is still in need of repair.



Bollards are physical barriers designed to restrict motor vehicle access to trails. Sometimes physical barriers are still ineffective at preventing access, and can create obstacles to legitimate trail users. Alternative design strategies use signage, landscaping, and curb cut design to reduce the likelihood of motor vehicle access.

## GUIDANCE

- Bollards should be a minimum height of 40 inches and a minimum diameter of 4 inches.
- Bollards should be set back from the roadway edge a minimum of 20 feet.
- When more than one post is used, an odd number of posts spaced 6 feet apart is desirable.

- Posts should be permanently reflectorized for night time visibility and painted a bright color for improved daytime visibility.
- Striping an envelope around the post is recommended.
- Lockable, removable bollards allow entrance by authorized vehicles. Where used, the top of the mount point should be flush with the path surface.
- Flexible bollards and posts are designed to give way on impact and can be used instead of steel or solid posts.
- “No Motor Vehicles” signage (MUTCD R5-3) may be used to reinforce access rules.
- Vertical curb cuts should be used to discourage motor vehicle access.
- Consider targeted surveillance and enforcement at specific intrusion locations.



## MUTCD R5-3

### CLARIFIES PERMITTED ACCESS



NO  
MOTOR  
VEHICLES

**BOLLARD  
SETBACK  
20 FT**

SPLIT TREAD INTO TWO SECTIONS  
IN ADVANCE OF THE CROSSING.

## FENCES, GATES, AND LARGE STONE BARRIERS

Barrier design depends on an area's intended use, native materials, and character. Some barriers, such as bollards, keep vehicle on a road or in a parking lot, while gates and fences serve as deterrents for access to a trail or road for all users.

### FENCES

The function of a fence is to act as a boundary or barrier to a trail, and can be made from a variety of sources such as post, boards, wire, or railing. Fences are designed to keep people and stock in or out of an area, but generally are not strong enough to withstand vehicular impact. Common fence types include:

- **Split Rail Fence:** Split rail fences are desirable from a cost and aesthetic standpoint; however, in isolated locations they may be prone to vandalism.
- **Rolled Wire Boundary Fence:** A rolled wire boundary fence also is a cost effective solution. Generally, this fence disappears from sight from a distance. Therefore, when constructing this fence install appropriate signage or flagging to ensure trail users recognize the location of the fence.



EXAMPLE SPLIT RAIL FENCE ALONG A TRAIL

### GATES

Gates are commonly used to deny passage during specific periods, such as at night or during specific seasons. Gates generally swing open and should be secured to a fence or large natural feature to prevent people from navigating around them. Gates can also be used to block snowmobile, motorcycle or ATV access, while leaving room for pedestrian and wheelchair access. Common gates types include:

- **Right-Angle Gates:** A right-angle gate creates a passageway for pedestrians and stock. This type of gate is generally constructed from wooden or steel posts with wooden or pipe rails.
- **Steel Road Gates:** Steel road gates prevent vehicle or ATV entry to roads, trails, administrative roads, and campgrounds. Consider using large rocks and berms to block entry around the gate.
- **Steel Trail Gates:** Steel trail gates limit access of 4 wheel vehicles and ATVs while allowing motorcycle access. For safety reasons, this gate must be visible at the trailhead and as one approaches it while riding.
- **Non-motorized Trail Barrier Gate:** Non-motorized trail barrier gates are located at trail access points to allow pedestrian and stock access to pass through. Flank the gate with a steel rail fence to prevent people from skirting the gate.

### LARGE STONES

Large stones are difficult to drive over, and when placed in succession, can act as a natural looking barrier. 200 to 400 pound stones are commonly placed 2-4 feet apart to allow pedestrian or bicycle access but deter motor vehicles. When possible, use native stones to complement the natural aesthetics of the trail.

## ENVIRONMENTAL MANAGEMENT

### DRAINAGE AND EROSION CONTROL

Drainage and erosion control is necessary to maintain a stable trail system and low maintenance facility. Excessive soil erosion near a trail is usually the result of water collecting and flowing along the trail edge or onto the surface with enough volume and velocity to carry away soil. This results in a degraded trail area and potential impacts to adjacent or downstream water resources. When managing stormwater along all trails, use dispersed infiltration systems such as vegetated swales, over engineered stormwater control structures such as storm drains, and catch basins for reduced maintenance and improved aesthetic.

### GUIDANCE FOR PAVED SURFACES:

- A 2 percent cross slope will resolve most drainage issues on a paved trail and should be used for both the tread and its shoulders. A maximum 1:6 slope is used for the shoulders although 2 percent is preferred. For sections of cut where uphill water is collected in a ditch and directed to a catch basin, water should be directed under the greenway trail in a drainage pipe of suitable dimensions.
- Following land contours helps reduce erosion problems, minimizes maintenance, and increases comfort levels on all greenway trail classifications.
- Provide low groundcover vegetation up to the edge of the trail to prevent erosion on shoulders.

### GUIDANCE FOR NATURAL SURFACES:

- Erosion will occur on natural surface trails. Natural surface trails should be designed to accommodate erosion by shaping the tread to limit how much erosion occurs and to maintain a stable walkway and tread. The goal is to outslope the trail so that water sheets across, instead of down, its tread.
- Contour trails are also outsloped 5 percent from the face of the ridge to aid in sheeting water off the trail during rain events. These trails disperse and shed water in a non-erosive manner.
- Avoid fall line trails when possible.
- Designing trails with rolling grades is the preferred way to build sustainable natural surface trails. "Rolling grade" describes the series of dips, crests, climbs, and drainage crossings linked in response to the existing landforms on the site to form a sustainable trail.
- Frequent grade reversals (grade dips, grade brakes, drain dips, or rolling dips) are a critical element for controlling erosion on sustainable trails. A general rule-of-thumb is to incorporate a grade reversal every 20 to 50 linear feet along the trail to divide the trail into smaller watersheds so the drainage characteristics from one section won't affect another section.



EXAMPLE OF A SILT SOCK CONTROLLING DRAINAGE  
ALONG A RIPARIAN GREENWAY TRAIL CORRIDOR



## BOARDWALKS

Boardwalks are structures that bridge over sensitive natural or inundated areas while limiting the potential for environmental impact. They are typically used when crossing small creeks and wetlands. Boardwalks range in length and can span as little as 10 feet or stretch for longer distances depending on site conditions. Bridges are used where greater span lengths are required and when the objective is to reduce base flood elevations. Boardwalks are usually constructed of timber, concrete, or recycled plastic decking. Recycled systems such as Trex® are popular for their material durability, however they have structural limitations. Modular concrete boardwalk systems are gaining popularity due to their low-impact installation methods and durability within wet areas. Permatrak™ is a system being used in some communities and by the National Park Service.

## GUIDANCE

- Boardwalk clear span width should be a minimum of 10 feet when no rail is used. A 12 foot width is preferred in areas with higher anticipated use and whenever railings are used.
- A 6 inch curb rail is recommended, however, a 42 inch guardrail is required at locations where there is a 30 inch or greater difference in the low water bridge elevation and the ground elevation below. Maximum opening between railing posts is 4 inches.
- Boardwalks should be designed to structurally support 5 tons of capacity.
- Evaluation of boardwalk footings should include uplift as well as loading consideration for flood events.
- Consult a structural engineer for member sizing and post footing design. The foundation normally consists of marine-grade timber posts or auger piers (screw anchors). Screw anchors provide greater support and durability.
- Give consideration to minimize slippery decking surfaces following storm events. A topcoat of non-skid paint, sandy compounds, or a light asphalt overlay can be effective on timber decking. Concrete is the most reliable non-skid surface.
- Local, state and federal permits will be required where a boardwalk is located within wetlands. Any construction in wetlands is subject to regulations and should be avoided.





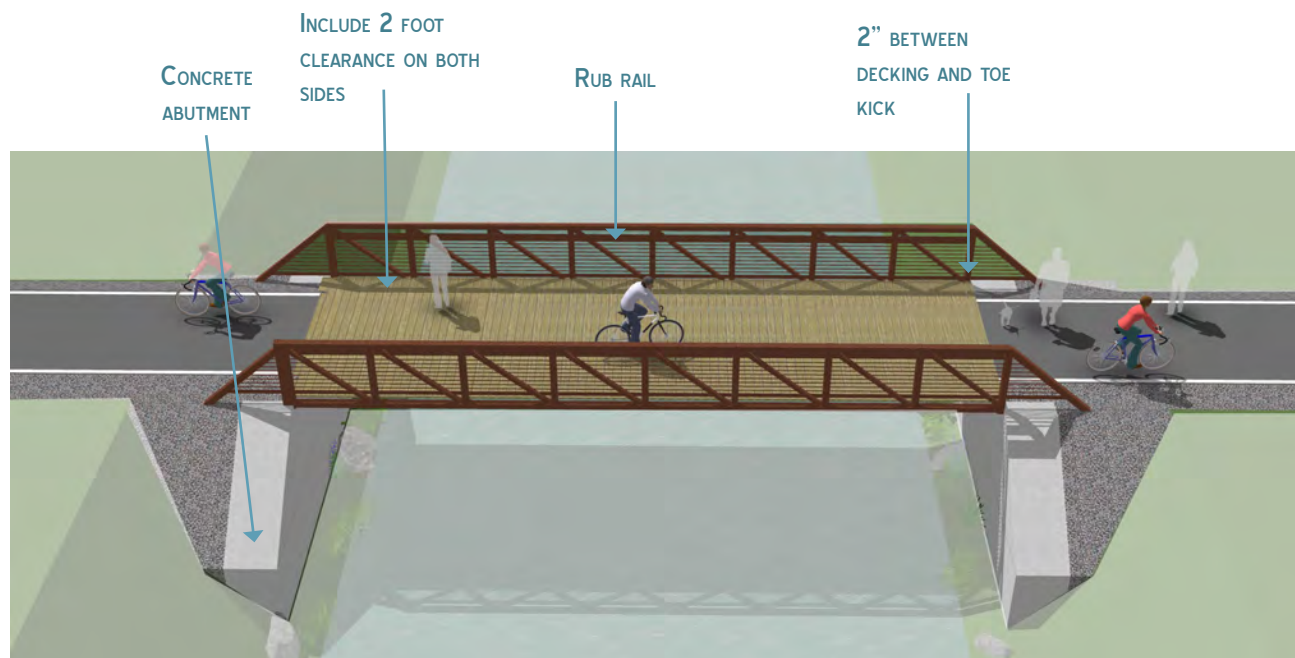
## BRIDGES

Trail bridges are most often used to provide user access over natural features such as streams and rivers, where a culvert is not an option or the span length exceeds 20 feet. The type and size of bridges can vary widely depending on the trail and specific site requirements. Bridges often used for trails include suspension bridges and prefabricated clear span bridges. When determining a bridge design for trails, it is important to consider emergency and maintenance vehicle access.

Trails that are poorly designed through water features can impact wetlands and streams, and become conduits for delivering sediments, nutrients, and pathogens to the watershed. Trails that cross streams can exhibit bank and streambed erosion if not properly constructed.

## GUIDANCE

- The clear span width of the bridge should include 2 feet of clearance on both ends of the bridge approach for the shoulder.
- Bridge deck grade should be flush with adjacent trail tread elevation to provide a smooth transition. Any gap between bridge deck and trail tread should be covered with steel plate.
- Railing heights on bridges should include a 42 inch minimum guard rail, and 48 inches where hazardous conditions exist.
- A minimum overhead clearance of 10 feet is desirable for emergency vehicle access. Maximum opening between railing posts is 4 inches.
- A trail bridge should support 10 tons for 10 foot wide trails, and 20 tons for wider than 10 feet for emergency vehicle access.
- Bridges along trails that allow equestrian use should be designed for mounted unit loadings.
- When crossing small headwater streams, align the crossing as far upstream as possible in the narrowest section of stream channel to minimize impact.
- Trail drainage features should be constructed to manage stormwater before the trail crosses the watercourse (see Drainage and Erosion guideline).
- All abutment and foundation design should be completed and sealed by a professional structural engineer licensed in the State of New York.
- All trail bridges will require local building permits, stormwater and land disturbance permits, floodplain development permits, and FEMA approval. Length and height of the bridge cords are governed by the width of the floodway and impacts to the base flood elevation of streams.



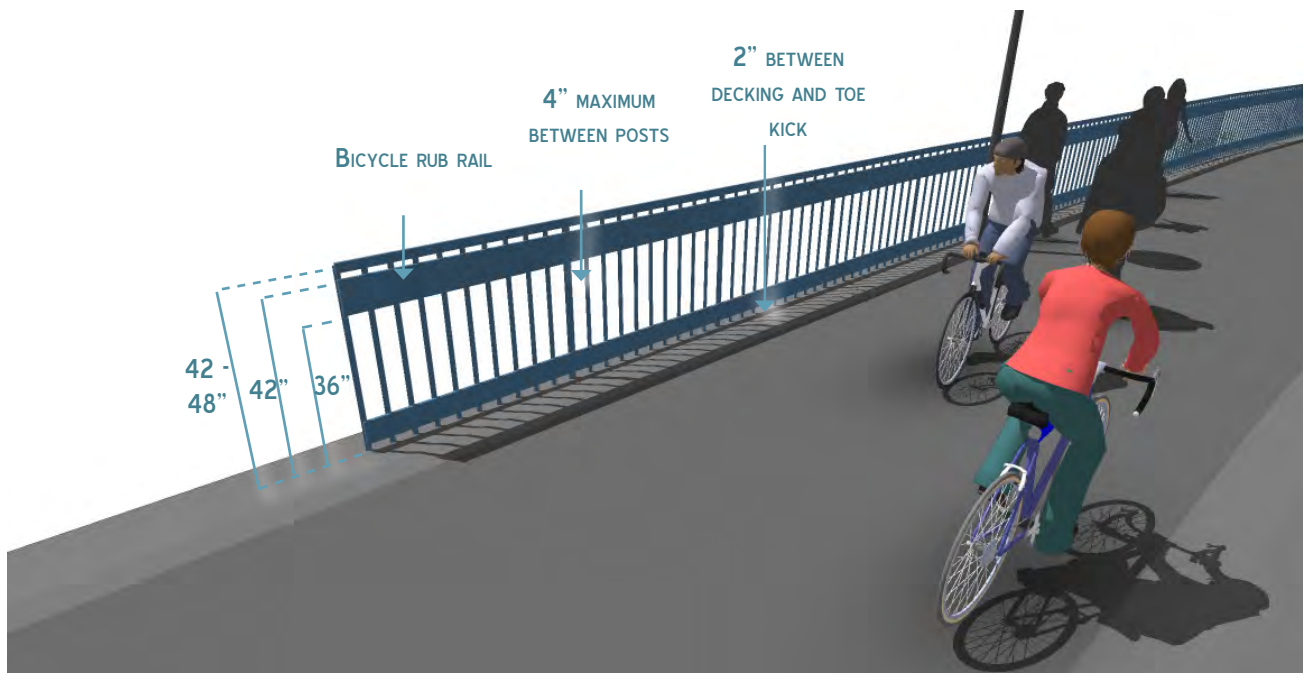
## SAFETY MANAGEMENT

### FENCING AND RAILINGS

Railing and fences are important features on bridges, some boardwalks, or in areas where there may be a hazardous drop-off or incompatible adjacent land uses.

### GUIDANCE

- At a minimum, railings and fences should consist of a vertical top, bottom, and middle rail. Picket style fencing should be avoided as it presents a safety hazard for bicyclists.
- Railings should be at least 42 inches above the finished grade, and up to 48 inches where more hazardous conditions exist, such as a bridge over a highway.
- Openings between horizontal or vertical members on railings should be small enough that a 6 inch sphere cannot pass through in the lower 27 inches. For the portion of railing higher than 27 inches, openings may be spaced such that an 8 inch sphere cannot pass through.
- Use durable fencing and railing materials, such as vinyl or recycled plastic, for reduced maintenance and sustainability.
- The middle railing functions as a 'rub rail' for bicyclists and should be located 33 to 36 inches above the finished grade.
- Local, state, and/or federal regulations and building codes should be consulted to determine when it is appropriate to install a railing and comply with current standards.



## Intersections

### OVERVIEW

At-grade roadway crossings can create potential conflicts between trail users and motorists, however, well-designed crossings can mitigate many operational issues and provide a higher degree of safety and comfort for users. In most cases, at-grade trail crossings can be properly designed to provide a reasonable degree of safety and can meet existing traffic and safety standards. Generally speaking, trail facilities for bicyclists require additional considerations due to the higher travel speed of bicyclists versus other trail users.

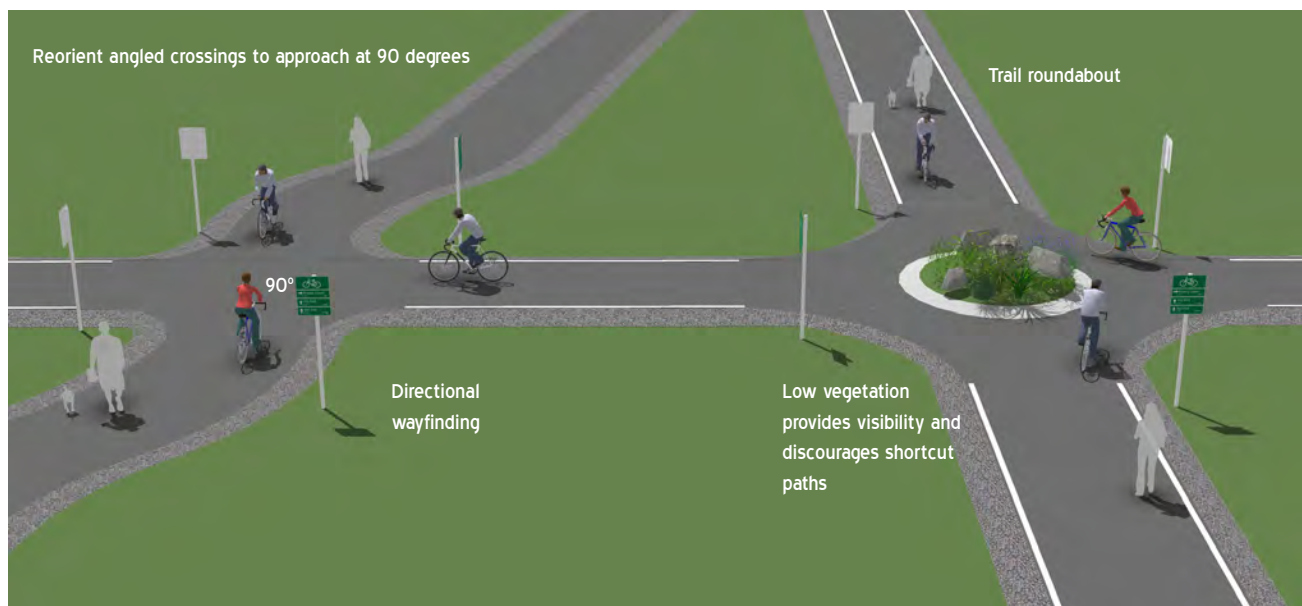
Special consideration must be given when delineating at-grade trail crossings. The sign types, pavement markings, and treatments will vary based on the roadway type the trail crosses. Proper signage and pavement markings alerting trail users of at-grade crossings must also be utilized. Care must be taken not to place too many signs at crossings lest they begin to lose their visual impact.

## INTERSECTIONS WITH OTHER GREENWAY TRAILS

At the intersection of two trails, users should be aware that they are approaching an intersection and of the potential for encountering different user types from a variety of directions. This can be achieved through a combination of regulatory and wayfinding signage and unobstructed sight lines.

### GUIDANCE

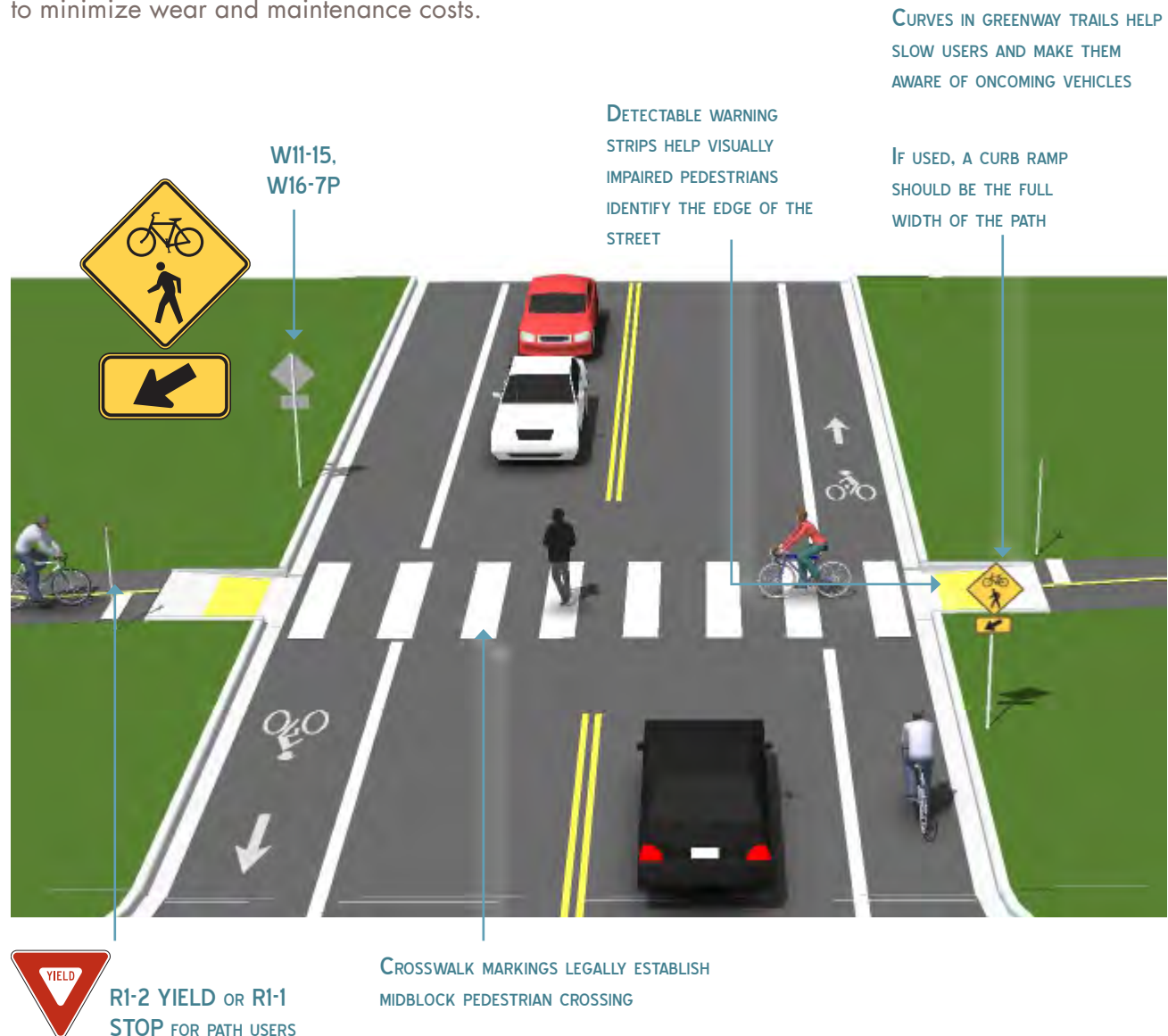
- Trails should be aligned to intersect at 90 degree angles when possible.
- Sight lines should be clear for all users, as determined by expected user speeds
- Consider off-setting the trail intersection and creating two three-way intersections rather than one four-way intersection.
- A roundabout may be a viable design option to slow speeds and clarify expected operation.
- Include directional signage at intersections.
- If a roundabout design is used, consider the use of landscaping with low growing (no more than 24 inches high) and minimally spreading native shrubs and groundcover that require little maintenance and provide clear sight lines.
- Other material can be used within roundabouts such as boulders and public art to discourage shortcut paths through the central island as long as clear sight lines under 36 inches are maintained.



## UNSIGNALIZED MARKED ROADWAY CROSSINGS

A marked/unsignalized crossing typically consists of a marked crossing area, with signage and other markings to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, trail traffic, use patterns, vehicle speed, road type, road width, and other safety issues such as proximity to major attractions.

When space is available, using a median refuge island can improve user safety by providing pedestrians and bicyclists space to perform the safe crossing of one side of the street at a time. Locate markings out of wheel tread when possible to minimize wear and maintenance costs.





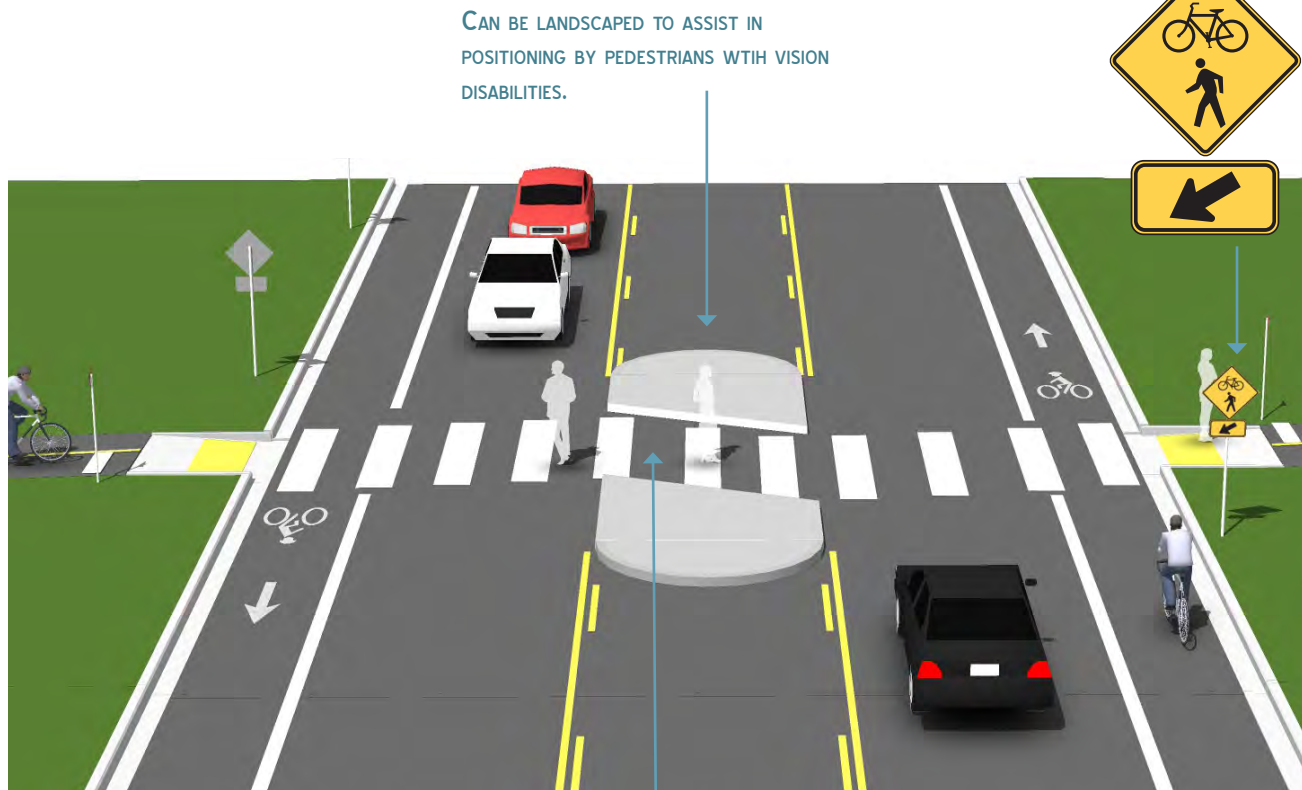
## MEDIAN REFUGE ISLANDS

Median refuge islands are located at the mid-point of a marked crossing and help improve trail user safety by directing crossing in one direction of traffic at a time. Refuge islands minimize user exposure by shortening crossing distance and increasing the number of available gaps for crossing.

### Guidance

- Appropriate at signalized or unsignalized crosswalks.
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- If a refuge island is landscaped, the landscaping should not compromise the visibility of trail users crossing in the crosswalk. Consider the use of landscaping with low growing, minimally spreading native shrubs and ground cover that require little maintenance and are no higher than 18 inches.
- Refuge islands may collect road debris and may require somewhat frequent maintenance.
- The approach nose should be highly visible.

W11-15, W16-7P



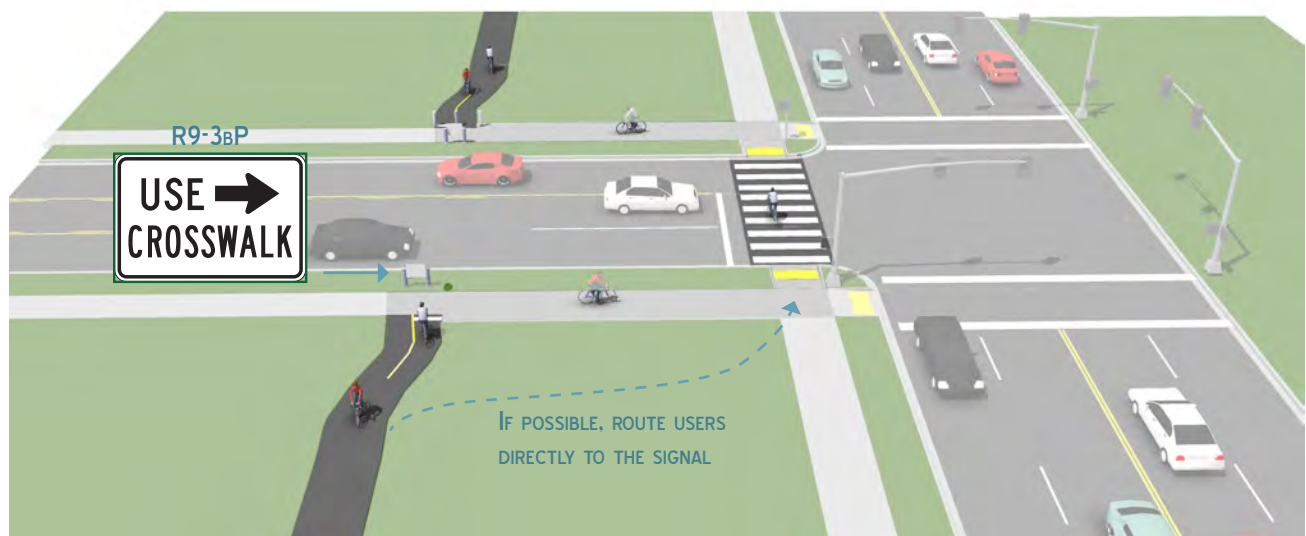
CUT THROUGH MEDIAN ISLANDS ARE PREFERRED OVER CURB RAMPS, TO BETTER ACCOMMODATE BICYCLISTS.

## SIGNALIZED CROSSINGS

Signalized crossings provide the most protection for users through the use of a red-signal indication to stop conflicting motor vehicle traffic.

Trail crossings within approximately 400 feet of an existing signalized intersection with crosswalks are typically diverted to the signalized intersection to avoid traffic operation problems when located so close to an existing signal.

If possible, route users to signalized crossing. If no crossings are in vicinity, use appropriate crossing treatment. Any signal or "hawk" specific to greenway crossings has to be evaluated to have met FHWA warrants for the appropriate control device.

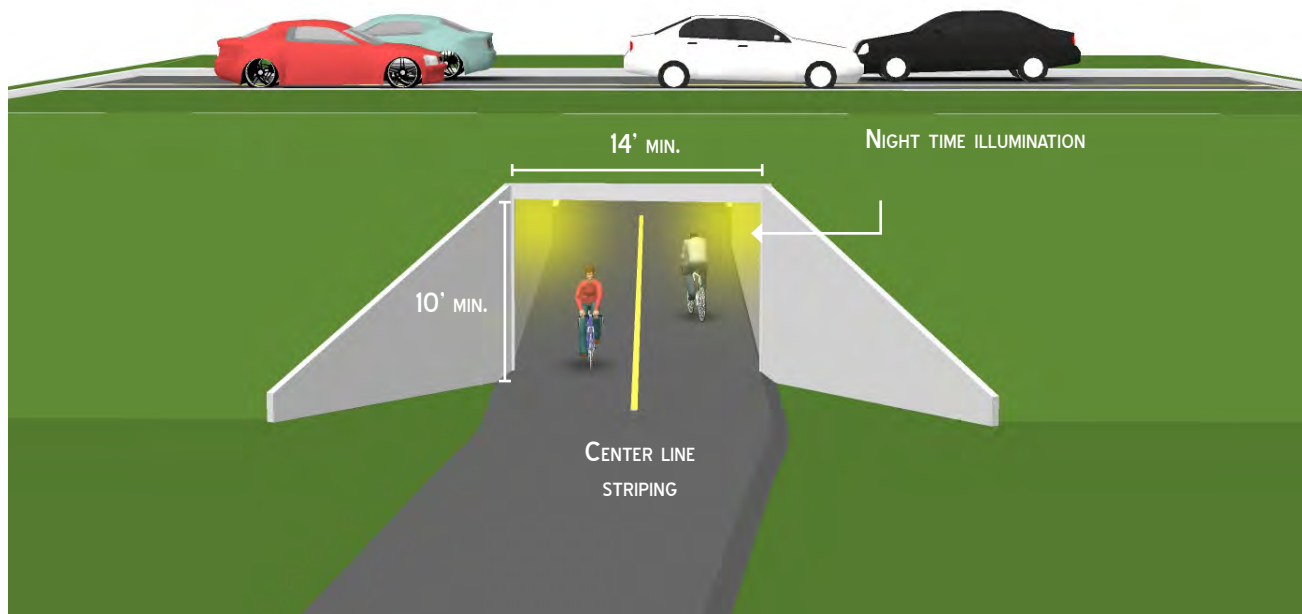


## TRAIL UNDERPASSES

Trail underpasses provide critical system links by joining areas separated by barriers such as railroads and roadway corridors. Safety is a major concern with underpasses. Trail users may be temporarily out of sight from public view and may experience poor visibility conditions within the underpass.

### GUIDANCE

- Fourteen foot minimum width, greater widths preferred for lengths over 60 feet.
- The underpass as well as the trail approach should have a centerline stripe even if the rest of the trail does not have one.
- Underpasses work best with favorable topography when they are open and accessible, and exhibit a sense of safety.
- Underpasses should have a daytime illuminance minimum of 10 foot-candles achievable through artificial and/or natural light provided through an open gap to the sky between the two sets of highway lanes, and a night time level of 4 foot-candle.
- Proper drainage must be established to avoid pooling of stormwater, however, some underpasses can be designed to flood periodically. Where appropriate, incorporate trench drains at the tunnel entrance to intercept water. Provide a 2% minimum longitudinal slope for positive drainage.
- Post advanced warning signage on opposite ends of the underpass approach with information on visibility, and other safety regulations.
- Headwalls with wing walls are required at both ends of the tunnel.
- Convex mirrors should be provided at blind corners and at the approaches to underpasses with poor sight lines.



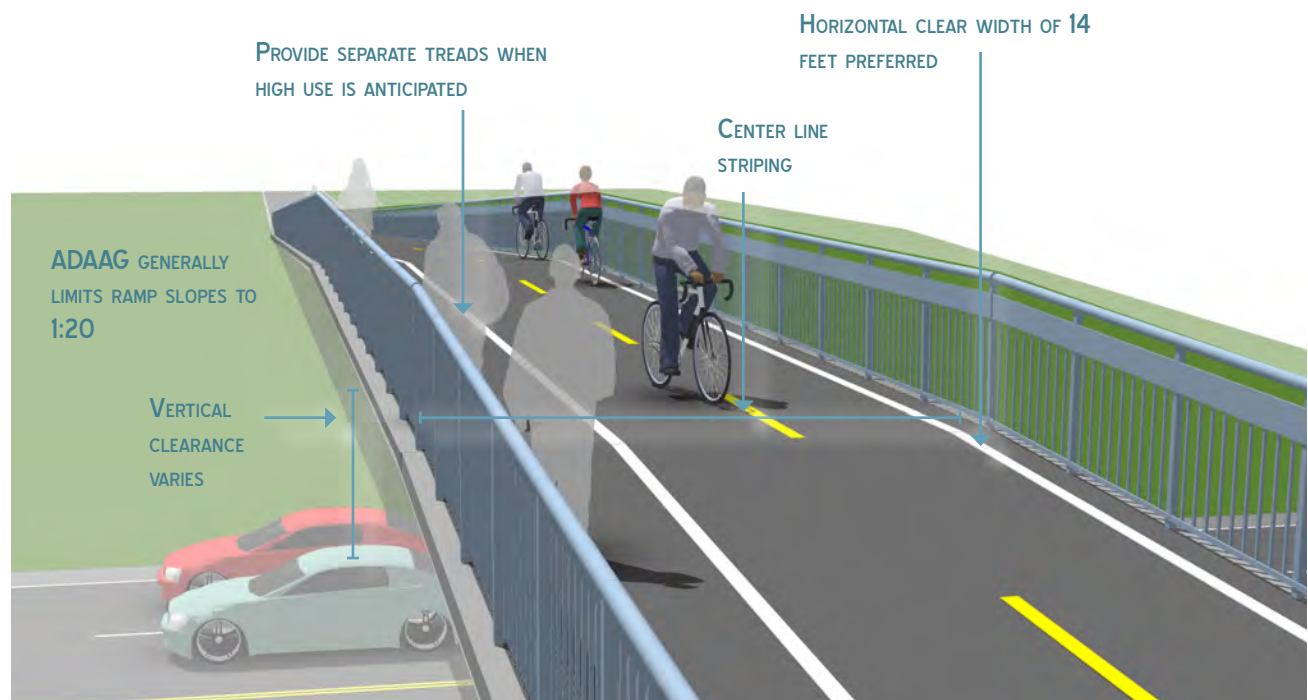
## TRAIL OVERPASSES

Trail overpasses are most often used to provide user access over large man-made features such as highways and railroads. Safety should be the primary consideration in overpass design.

Specific design and construction specifications will vary for each overpass and can be determined only after all site-specific criteria are known. A 'signature' bridge should be considered in areas of high visibility, such as over major roadways. While often more expensive, a more artistic overpass will draw attention to the Genesee-Finger Lakes Regional Trail system, and could serve as a regional landmark. Trail overpasses are prohibitively expensive and should only be placed in areas of substantial need.

### GUIDANCE

- Ten foot minimum clear width, 14 feet preferred. A separate 5 foot pedestrian area may be provided for facilities with high anticipated use.
- Ten foot minimum vertical clearance on overpass decking. Vertical clearance from bridge cords to roadway will vary based on roadway type.
- Overpass decking should include centerline striping.
- Always consult a structural engineer before completing bridge design plans, before making alterations or additions to an existing bridge, and prior to installing a new overpass.
- ADAAG strictly limits ramp slopes to 5 percent (1:20) with landings at 400 foot intervals, or 8.33 percent (1:12) with landings every 30 feet. See Accessible Greenway Trail Design guidelines for more information.
- Handrails must be of uniform height, no less than 34 inches and no more than 38 inches in height from the finish surface of the ramp slope. Refer to local or state jurisdiction for guardrail specifications.
- Vertical woven wire curved fencing can be installed to protect both users and motorists below. Refer to local specifications for material and vertical height requirements.





## Amenities

### OVERVIEW

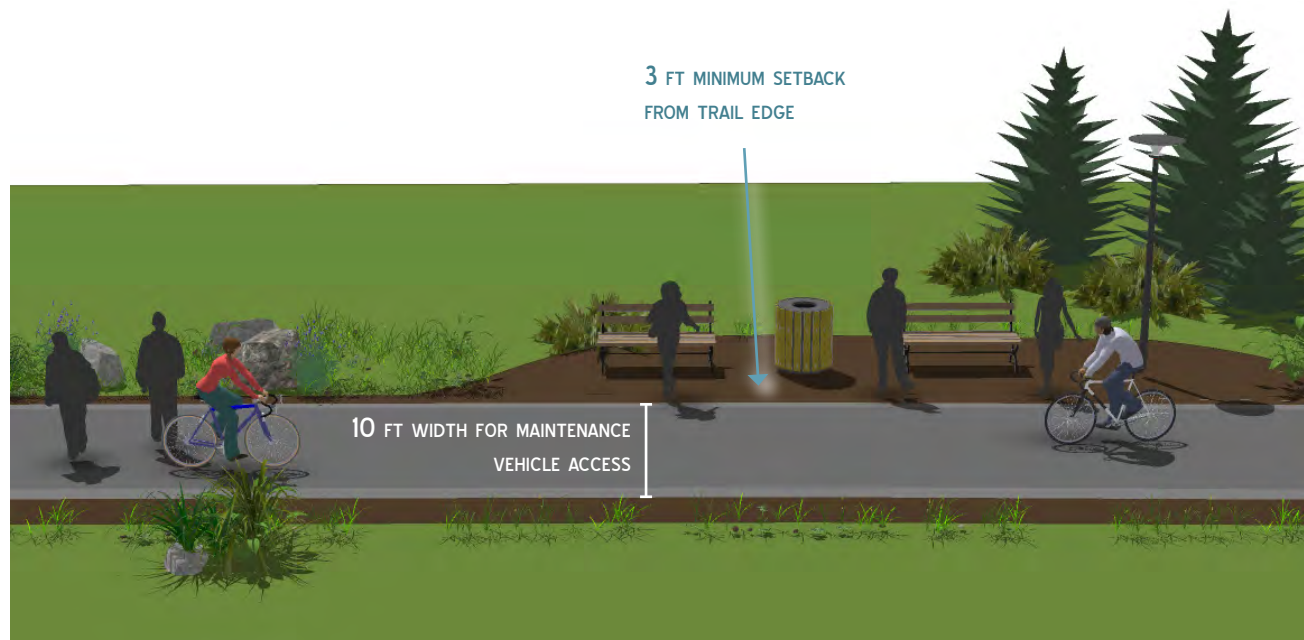
When designing functional, attractive, and inviting trails, the small details matter. Elements such as a lighting fixtures, public art, benches, and other amenities help create a unique identity for each trail within the Genesee-Finger Lakes System. It is important that these details work together to create a complete experience for all users.

### TRASH AND RECYCLING RECEPTACLES

Trash and recycle receptacles provide for proper maintenance and appearance of the trail system. For recycling receptacles, signage should be provided indicating what recyclables are accepted. Consider including educational signage about the importance of recycling and the environmental benefits.

### GUIDANCE

- Locate receptacles at each trailhead and each seating area (one per every one picnic table, one per every two benches).
- In areas with adequate sunlight, consider compacting receptacles for trash and recyclables that use smart technology (such as Big Belly®).
- Placement of other receptacles will depend upon the location of concessions, facilities and areas of group activities.
- Receptacles need to be accessible to maintenance personnel and trail users.
- Receptacles should be selected using the following criteria:
  - Expected trash/recycling amount
  - Maintenance and collection program requirements
  - Types of trail classification
  - Durability
  - Animal proof
- Receptacles should be set back a minimum of 3 feet from the edge of the trail.



## RESTROOMS

Public restrooms are one of the most critical building amenities because they need to be responsive to a wide range of human needs and abilities. Careful consideration should be given to a number of factors before locating restrooms, including available land, size of trailhead, existing restroom facilities within the within the trail system, utility availability, and user need.

Prior to undertaking any restroom building design, consultation with a structural and civil engineer, state building codes, health and safety codes, ADAAG and Public Rights-of-Way Accessibility Guidelines (PROWAG) standards, and local development codes is required. The space required for each restroom building depends on the number of toilets to be provided.

Restrooms require considerable maintenance and service. Access to these resources should be a strong consideration when planning for restroom buildings.

## GUIDANCE

- Local, state, and federal codes take precedence for all restroom facilities.
- Prioritize location of restrooms at trailheads within existing parks and review gaps for placement at other trailheads or locations within the system.
- Restroom structures should be located adjacent to vehicular access points for security, maintenance, and access to water and sewer (unless they are self-composting).
- Restrooms should also make use of natural light and ventilation to the extent possible.
- Place bicycle parking close to restroom structures so that bicyclists do not impede trail access. Inadequate bicycle parking encourages informal propping of bicycles at or against restroom buildings.
- Provide restroom facilities that are durable and resistant to vandalism.
- Always provide restroom facilities outside of floodprone areas.
- Where other restroom facilities are available within the park and greenway trail system, use wayfinding signage along trails to direct users appropriately.
- Composting toilets should be considered in remote areas or where utility connections are unavailable.



EXAMPLE OF TYPICAL PARK RESTROOM

## DRINKING FOUNTAINS

Drinking fountains provide opportunities for users to replenish fluids and potentially extend their trip. Access to City water service must be available.

### GUIDANCE

- Locate drinking fountains at least 5 feet from trail edge.
- Locate drinking fountains near restrooms, at trailheads, parks and other public gathering places along the trail.
- Standard and accessible fountains should be installed to accommodate all trail users.
- Consider grouping amenities together (seating, bicycle parking, drinking fountains, and bicycle repair stations) at a rest stop or comfort station.
- Drinking fountains should be placed on a well-drained surface (2 percent sloped concrete slab).
- Consider the use of durable and vandalism-resistant materials such as steel, or stone.
- Drinking fountains must be ADAAG compliant.

## BICYCLE REPAIR STATIONS

Bicycle repair stations are small kiosks designed to offer a complete set of tools necessary for routine bicycle maintenance.

Popular locations for placement include major or minor trailheads and rest stops along trails.

### GUIDANCE

- Bicycle repair station tools are secured by high security cables, but will still be an attractive target for theft. Proper placement of kiosks in areas of high activity is one key strategy to reduce potential vandalism.
- Consider grouping repair stations together with other amenities (seating, bicycle parking, and drinking fountains) at a rest stop along Genesee-Finger Lakes Trails.



## BICYCLE PARKING

Bicycle parking should be as convenient as the majority of automobile parking and should be easily accessible from the associated trail. Entrances and exits should be designed to minimize conflict with trail user traffic patterns.

Bicycle parking should be located on a hardscape surface and not be located directly in front of other trail amenities. Ideal rack location should be parallel along the trail approach. Parking should be located no more than 25 feet from ingress/egress and at least 5 feet from the edge of trail to avoid traffic conflict. Location should be highly visible.

Consideration should be given to avoid emergency ingress/egress, service access, and vehicular conflict areas.

## GUIDANCE

- Locate bicycle racks at restrooms, select trailheads, points of interest, and rest stops.
- The bicycle rack should support the bicycle in at least two places, preventing it from falling over.
- The bicycle rack should allow locking of the frame and one or both wheels with a U-lock.
- When installing racks on concrete surfaces, use 3/8 inch anchors to plate mount. Shim as necessary to ensure vertical placement.
- When installing racks on pavers or other non-stable surfaces, embed into base. Core holes no less than 3 inches in diameter and 10 inches deep.
- Ensure the rack is securely anchored to ground.
- Consider bicycle racks that resist cutting, rusting, and bending or deformation.



MUTCD D4-3



SIGNAGE MAY BE DESIRED TO DIRECT USERS TO BICYCLE PARKING AREAS



## SEATING

Seating along trails provides a place for users to rest, congregate, contemplate, or enjoy art, nature, and interpretive elements throughout the trail system. Benches can be designed to create identity along the trail or be strictly utilitarian. Picnic tables provide places for trail users to congregate for meals or to relax.



## GUIDANCE

- Locate benches and other site furniture a minimum of 3 feet from the edge of the trail.
- Locate benches along the trail where appropriate, or where there is a demand by users. Providing seating at one mile gaps is the goal. Seating within 1/2 mile of trailheads is recommended.
- Provide benches and picnic tables in areas that provide interesting views, are close to an interpretive element, and offer shade or shelter from seasonal winds.
- Drainage should slope away from the bench and the trail.
- Locate benches a minimum of 4 feet from restrooms and drinking fountains and a minimum of 2 feet from trash and recycling receptacles, lighting poles, and sign posts.
- Wheelchair access should be possible at some picnic tables and alongside benches. Provide access with a hardened surface such as concrete or asphalt.
- Seating should be securely anchored to the ground. Consider durable materials or native materials such as boulders that are vandalism-resistant.



EXAMPLE OF TYPICAL PARK BENCH ALONG TRAIL

## PUBLIC ART AND SCULPTURES

Public art engages the community through artists' work and creates a memorable experience for trail users. Art and sculpture can create an identity for the trail and strengthen the emotional connection between the trail system and its users. Depending on the scale and form, it can become an "event" in itself and serve as a public attraction.

Public art can be aesthetic and/or functional, and double as sitting or congregational areas. Memorable installations can act as landmarks and serve as valuable wayfinding tools. Public art can be a device for telling a compelling and memorable story about the trail and area history.

## GUIDANCE

- Artists can be commissioned to provide art at one or multiple locations along trails.
- When appropriate, artists could be engaged as part of the corridor planning and development process.
- Artists should be encouraged to produce artwork in a variety of materials for sites along the corridor.
- When appropriate, consider developing trail furnishings and amenities with artistic intent. Key locations such as turns or landscape changes could be areas to highlight through the inclusion of public art. Consider how to provide continuity between elements while maintaining the unique styles of multiple artists.
- Provide art displays on trails with anticipated high use and user exposure.
- Consider community based art and temporary installations.



NORTH CAROLINA ART MUSEUM PARK



TROUT RUN TRAIL IN IOWA

## LIGHTING

Lighting for trails should be analyzed on a case-by-case basis with full consideration of the maintenance commitment lighting requires. In general, lighting is not appropriate for trails in remote areas, trails with low use, or where there is little to no development.

Lighting can improve visibility along the trail and intersection crossings at night for commuters. If a trail is determined to be unlit and closes at sun down, extended hours for commuters should be considered, particularly during winter months when trips to and from work are often made before sunrise and after sunset. Lighting may also be necessary for day-time use in greenway tunnels and underpasses.

## GUIDANCE

- Recommended locations for lighting include the following:
  - Trailheads and parking areas
  - Restroom facilities
  - Major trailhead intersections to use as a navigation aid
  - Entrances and exits of bridges and underpasses and in tunnels
  - Street crossings
- Low-cost light emitting diodes (LED) offer a wide range of light levels and can reduce long term utility costs.
- Design lighting levels appropriate to each situation.
- Trail lighting should be at pedestrian scale.
- Solar powered lighting is available where utility collection is difficult or when alternative energy sources are desired.
- Avoid light fixtures at eye level that could impair visibility.
- Dependent upon trail hours, consider uses in urban and/or commercial land use areas.

LIGHTING SPACING ALONG GREENWAY TRAILS DEPENDS ON THE TYPE AND INTENSITY OF LIGHTS. 30-50 FT SPACING IS COMMON FOR PEDESTRIAN SCALE LIGHTING.



## Signage and User Regulation

### REGULATORY SIGNS

Regulatory signs give a direction that must be obeyed, and apply to intersection control, speed, vehicle movement and parking.

#### GUIDANCE

- Smaller scale signs or plaques may be used for trail applications.
- See the National MUTCD and New York Supplement to the MUTCD for requirements.



R1-1



R1-2



R5-3



R9-7



R15-8

### ETIQUETTE SIGNS

Informing trail users of acceptable etiquette is a common issue when multiple user types are anticipated. Yielding the right-of-way is a courtesy and yet a necessary part of a safe trail experience. The message must be clear and easy to understand. The most common trail etiquette systems involve yielding of bicyclists to pedestrians.

#### GUIDANCE

- Trail etiquette information should be posted at access points and periodically along the trail.





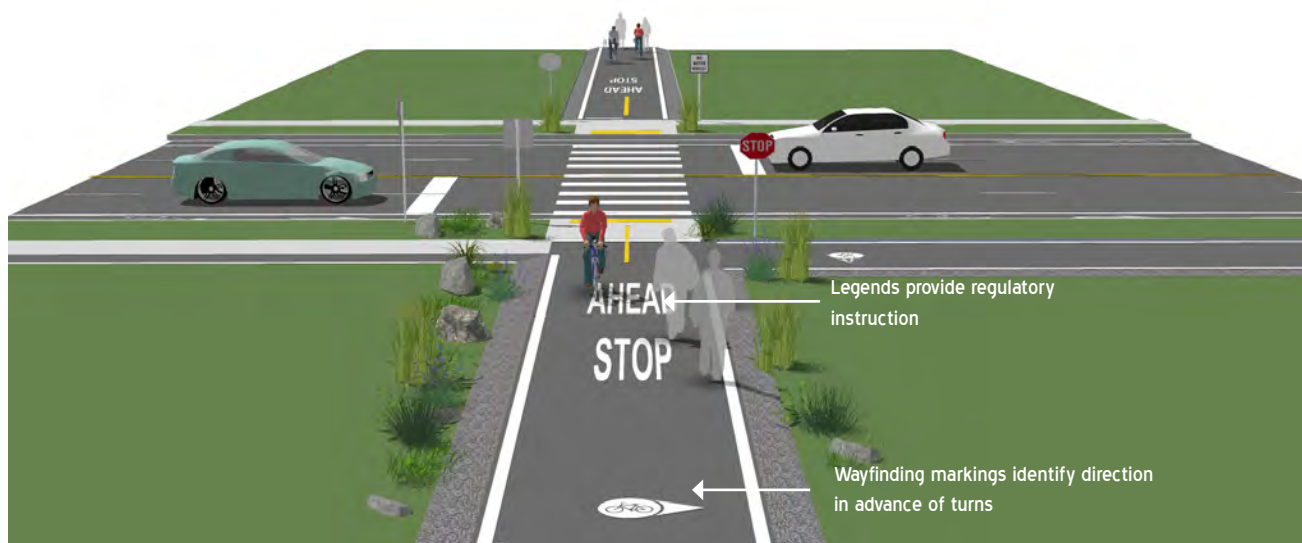
## PAVEMENT MARKINGS

Pavement markings are commonly used to reinforce signs along a trail, but they should not be used to replace signs altogether. Center line striping is the most common form of pavement marking, but warning, regulatory, and directional messages can be used. Use pavement markings sparingly and only where necessary to attract additional attention to a possible problem area.

## GUIDANCE

- Place warning markings prior to critical stopping or turning points.
- High visibility thermoplastic material is the most durable and visible. Use white or yellow.
- Pavement markings to consider include "Stop," "Yield," and "Slow."
- Place messages at trail access points, prior to roadway intersections or bridges, or near intersections with converging trails.
- When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
- Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.
- Non-slip or non skid pavement marking or striping materials should be used in all cases when trails are wet.
- Consider using at road intersections for road name identification.

### EDGE LINES, CENTERLINES AND STOP LINES CLARIFY POSITIONING



## INFORMATIONAL KIOSKS AND MESSAGE CENTERS

Kiosks and message centers provide trails users with information to orient themselves, learn of areas of interest, read the rules and regulations of the trail system, and find the hours of operation.

Kiosks are often located at major trail heads and should be located in an attractive setting near the main portal to encourage visitors to read the panels before hiking or while waiting for others. Kiosks and directional signage often employ a unified design per trail or region for branding, encouragement, and familiarity purposes.

## GUIDANCE

- Install kiosks at each major and minor trailhead.
- The entire trail system, rules and regulations, and ADAAG accessibility advisories should be included on each kiosk.
- When locating kiosks next to parking facilities, set the units back far enough from traffic and protect the support posts or structure with appropriately sized barriers.
- Provide ADA access using established guidelines for visual height, clearance, and surface type where kiosks are located.
- Evaluate the use of emerging technology options for implementation of trail information and messages as part of the signage program.



INFORMATION KIOSK FOR THE GENESEE RIVERWAY TRAIL

## DESTINATION/DIRECTIONAL SIGNS

The ability to navigate through a city is informed by landmarks, natural features, and other visual cues. Wayfinding signs throughout the trail system indicate:

- Direction of travel
- Location of destinations
- Location of access points

These signs increase users' comfort and accessibility to the trail network. Wayfinding signage can serve many purposes including:

- Helping to familiarize users with the trail system
- Helping users and emergency responders identify locations, in case of emergency on the trails.
- Helping users identify the best routes to destinations
- Helping overcome a "barrier to entry" for people who do not use the trail system
- Helps users find access points to the trail system

Wayfinding signs also visually cue motorists that they are driving near a trail corridor and should use caution. Signs are typically placed at key locations leading to and along routes, including the intersection of multiple routes.



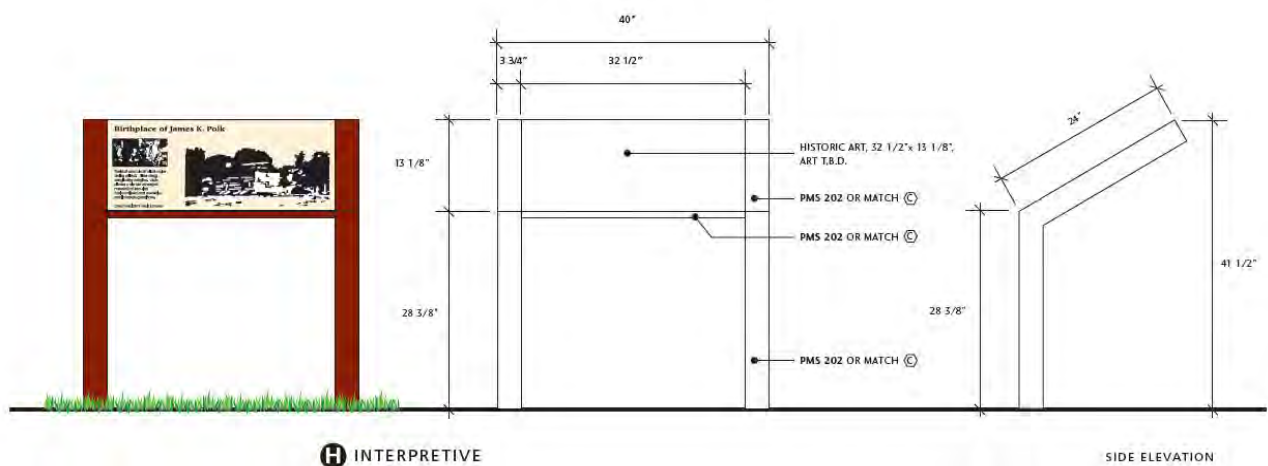
**DIRECTIONAL SIGNAGE IN THE FINGER LAKES  
NATIONAL FOREST**

## INTERPRETIVE SIGNS

Interpretive displays provide trail users with information about the surrounding environment or site, wildlife, vegetation, history and the significance of cultural elements. Interpretive displays may also be combined with public art and sculpture opportunities along the trail.

### GUIDANCE

- Consider the character of the trail and surrounding elements when designing these signs.
- Work with experts specific to the information you are conveying on the signs such as historians, ecologists, or artists.
- Separate interpretive signage panels from the main trail circulation so that users can stop and not impede traffic.
- Consider including interpretive signage at rest stops or areas of congregation.
- Panels must be ADA accessible.
- Consider use of technology for interpretation.





## Additional Trail Design Resources

Many national and state agencies have set forth exemplary design guidelines, standards and recommendations for bikeways and trails. In addition to the Regional Trails Initiative Phase 3 Design Guidelines, future trail implementors, such as architects, engineers, developers and land planners are strongly encouraged to consult the following documents:

*Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials (AASHTO): Updated, 2012.

*The New York Statewide Trails Plan*, New York State Office of Parks, Recreation, and Historic Preservation: 2010.

*Manual on Uniform Traffic Control Devices (MUTCD)*, U.S. Department of Transportation, Federal Highway Administration: 2009.

*Bicycle Facilities and the Manual on Uniform Traffic Control Devices*, FHWA: 2011.

*Designing Sidewalks and Trails for Access: Part I of II: Review of Existing Guidelines and Practices*, FHWA: 1999.

*Designing Sidewalks and Trails for Access: Part II of II: Best Practices Design Guide*, FHWA: 2001

*Conflicts on Multiple-Use Trails, Synthesis of the Literature and State of the Practice*, FHWA: 1994.

*Guide for the Planning, Design and Operation of Pedestrian Facilities*, American Association of State Highway and Transportation Officials (AASHTO): 2004.

## Glossary of Terms

The following list is comprised of common terms, acronyms, and concepts used in greenway and trail planning, design and operation.

**AASHTO** – American Association of State Highway and Transportation Officials

**Accessible route** – A continuous route on private property that is accessible to wheelchair users and those with disabilities. There must be at least one accessible route linking the public sidewalk, greenway trail, and parking area.

**ADA** – Americans with Disabilities Act of 1990; broad legislation mandating provision of access to employment, services, and the built environment to those with disabilities.

**ADAAG** – Americans with Disabilities Act Accessibility Guidelines published by the U.S. Access Board.

**At-grade crossing** – A junction where greenway trail or sidewalk users cross a roadway over the same surface as motor vehicle traffic, as opposed to a grade-separated crossing where users cross over or under the roadway using a bridge or tunnel.

**Audible pedestrian signals** – Pedestrian signal indicators that provide an audible signal to assist visually impaired pedestrians in crossing the street.

**Bicycle facilities** - A general term used to describe all types of bicycle-related infrastructure including greenway trails and other provisions to accommodate or encourage bicycling, including bike racks and lockers, greenway trails, and showers at employment destinations.

**Clearance interval** – The length of time that the DON'T WALK indication is flashing on a pedestrian signal indication.

**Clearance, lateral** – Width required for safe passage of users as measured on a horizontal plane.

**Clearance, vertical** – Height required for safe passage of users as measured on a vertical plane.

**Crosswalk** – Any portion of a roadway at an intersection or elsewhere that is distinctly indicated

for pedestrian crossing. Where there are no pavement markings, there is a crosswalk at each leg of every intersection, defined by law as the prolongation or connection of the lateral lines of the sidewalks.

**Curb ramp** – A combined ramp and landing to accomplish a change of level at a curb in order to provide access to pedestrians using wheelchairs. Also known as a wheelchair ramp.

**Directional signs** – Signs typically placed at road and greenway trail junctions (decision points) to guide users toward a destination or experience.

**Geometry** - The vertical and horizontal characteristics of a transportation facility, typically defined in terms of gradient, radius, and superelevation.

**Grade separation** - Vertical separation of travelways through use of a bridge or tunnel so that traffic conflicts are minimized.

**Grade-separated crossing** – A bridge or tunnel allowing pedestrians and bicyclists to cross a major roadway without conflict.

**Greenway** - Linear, natural areas that are primarily unassigned open space, providing valuable buffers, environmental preserves, or wildlife corridors.

**Trail or Greenway Trail** – A paved or unpaved right-of-way that permits more than one type of user.

**Medians** – Area in the center of the roadway that separates directional traffic; may provide a striped crossing and halfway point for pedestrians (also can be effective traffic calming design). Medians may be level with the surrounding roadway or “raised” using curb and/or gutter. Medians may include landscaping, concrete, paint/stripping or any combination thereof.

**MUTCD** – Manual on Uniform Traffic Control Devices

**NACTO** - National Association of City Transportation Officials

**Pavement marking** – An assortment of markings on the surface of the pavement that provide directions to motorists and greenway trail users as to the proper use of the road or greenway trail (the MUTCD determines these standard markings).

**Pedestrian** – a person afoot; a person operating a pushcart; a person riding on, or pulling a coaster wagon, sled, scooter, tricycle, bicycle with wheels less than 14 inches in diameter, or a similar conveyance; a person on roller skates, skateboard, wheelchair or child in a stroller.

**Pedestrian signal indication** – the lighted WALK/DON'T WALK (or walking man/hand) signal that indicates the pedestrian phase.

**Refuge islands** – Corner raised triangles or medians, used by pedestrians and bicyclists at intersections or mid-block crossings for assistance with crossing wide streets, especially where motor vehicle right turn lanes exist.

**Right-of-way (ROW)** - The right of one vehicle, bicycle or pedestrian to proceed in a lawful manner in preference to another vehicle, bicycle, or pedestrian. Also the strip of property in which a transportation facility or other facility is built.

**Sidewalk** – An improved facility intended to provide for pedestrian movement; usually, but not always, located in the public right-of-way adjacent to a roadway. Typically constructed of concrete.

**Sight distance** - The distance a person can see along an unobstructed line of sight.

**Traffic control devices** - Signs, signals or other fixtures, whether permanent or temporary, placed on or adjacent to a travelway by authority of a public body having jurisdiction to regulate, warn, or guide traffic.

**Traffic volume** - The number of vehicles that pass a specific point in a specific amount of time (hour, day, year).





## Appendix B: Operations and Maintenance



## Overview

Operations and maintenance refers to specific day-to-day tasks and programs performed to assure resources and facilities are kept in their intended condition for the longest practicable time at the best cost. The process begins with long-term sustainable trail planning, implemented through sound design and durable construction, but can only be assured of success through long-term operations and maintenance. As such, a sustainable, long-term operations and maintenance plan for the regional trails network is described below. As a component to this RTI, it is intended to provide the entities responsible for maintaining the greenway and trail network guidance on trail-supportive policies and practice that they should consider as they operate and maintain the trails that they own. For the Genesee-Finger Lakes region, trail-owning organizations include the state of New York, municipalities, and not-for-profit entities.

In many cases, counties, cities, towns, and villages own the trail and will primarily serve as the entities responsible for maintenance. The municipal focus is important because resources are extremely limited at the local level and the participation of community groups, residents, business owners, developers and other stakeholders are essential to augment the limited local funds available to meet long-term needs. The role of each entity is discussed later in this section. This section provides general information about operations and maintenance best practices. Each agency can use the information provided as a guide for their particular role in the task.

### **GUIDING PRINCIPLES FOR EFFECTIVE OPERATIONS AND MAINTENANCE**

The regional trail system should be viewed and maintained as a public resource. Indeed it will

become infrastructure similar to the street system or utility networks, serving the community for generations to come. The following guiding principles will help assure the preservation of a first class system:

- Good maintenance begins with sound planning and design.
- Foremost, protect life, property and the environment.
- Promote and maintain a quality outdoor recreation and transportation experience.
- Develop a management plan that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals.
- Maintain quality control and conduct regular inspections.
- Include field crews, police and fire/rescue personnel in both the design review and on-going management process.
- Maintain an effective, responsive public feedback system and promote public participation.
- Be a good neighbor to adjacent properties.
- Operate a cost-effective program with sustainable funding sources.

### **RESOURCE STEWARDSHIP AND ENHANCEMENT**

A well-managed trail system is critical to the long-term success of this plan. This includes stewardship, the oversight of resources, and operations and maintenance activities such as monitoring the condition of greenways and ancillary facilities; monitoring the impact of growth on facilities; and long-term application of policies—such as land-use and development measures—in accordance with the objectives of this plan. Stewardship might range from cleaning up litter to assuring that a project does not visually scar the surrounding landscape.



The stewardship process must consider both private sector—such as land subdivision and development—and public sector activities—such as the construction of roads and utilities. In pursuit of this, coordination among agencies at the local, regional, state, and federal level is vital to assure that these activities are supportive of the plan and complementary to each other. Long-term stewardship also calls for the enduring commitment of agency staff, elected officials and concerned citizens all working together. This suggests the need for a shared community vision and value system centered on the protection of greenway, trail, bicycle, pedestrian, and outdoor recreational resources. This plan and similar plans can help coordinate and guide that action.

## Routine and Remedial Operations

The following describe the general routine and remedial operations responsibilities for all network facilities. Routine operations refer to the daily activities required to oversee a trail system. Remedial operations refer to activities required to sustain the quality of the greenway and trail network.

### ROUTINE OPERATIONAL TASKS

#### SYSTEMATIC RISK MANAGEMENT ASSESSMENT

Safety is central to all maintenance operations, and is the single most important greenway, trail, bicycle, and pedestrian facility maintenance concern. The local jurisdictions should implement a safety program that includes the following preventative measures:

- Schedule and document inspections to determine the amount of use, location, age, type of construction, and condition of railings, bridges, trail surfaces, signage, etc. Follow-up with the appropriate corrective measures in a timely manner.
- Evaluate and remove or move all obstacles or objects that could impede facility usage such as debris, rumble strips within proposed bikeways (to be relocated closer to the vehicular travel lane), etc. and provide solutions such as alternative routing, removal of obstacle, etc.
- Implement a database management system with police for tracking the specific locations and circumstances of all incidents, such as vandalism, and create a safety follow-up task force to address any problems that develop.
- Implement an emergency response protocol working with law enforcement, EMS agencies, and fire department that includes mapping of access points, design of trails and access roads (to accommodate up to 6.5 tons), and an “address system” such as mile markers to identify locations for all off-road greenway facilities. On-road facilities should make use of the existing street names and adjacent property addresses. Where appropriate, 911 emergency phones should be installed in remote areas. Each local emergency response office/unit should have an up-to-date map of all greenway and trail facilities within the local jurisdiction.

### INTER-AGENCY DESIGN REVIEW

Coordination between and commitment of agencies responsible for greenway and trail facilities is crucial to complete the following routine maintenance tasks. In addition to department managers, planners, designers and engineers, police and fire/rescue, and field maintenance personnel should be consulted in the design and review process. Coordination should occur at a local level through carrying out the following tasks:

- Establish a coordinating committee with representatives from each of the participating agencies and stakeholders.
- Identify an entity to provide on-going oversight, coordination, and leadership for the overall network.
- Review critical public and private sector projects that might impact the greenway, bicycle, and pedestrian projects as they come on line
- Pursue grants and cooperative agreements.
- Monitor operations and maintenance and other advocacy functions now and over the years to come.
- Review accident and crime reports and take the necessary upfront actions, on a case by case basis, to assure that greenway, bicycle, and pedestrian facilities do not deteriorate due to safety concerns, crime, or from fear of criminal activity.

### ACCURATE AND ORGANIZED RECORD KEEPING

Good record-keeping techniques are essential to a comprehensive operations and maintenance program. This information can be used to eliminate overlap or gaps in maintenance services provided, identify levels of use, and prioritize management needs:

- Daily activities
- Schedule of routine (and remedial) maintenance tasks

- Hazards, incidents, safety issues observed and action taken
- Inspection reports
- Annual maintenance budget, pursuing various funding sources
- Projected costs for subsequent years (short-term, medium term, and long-term)
- Internal working database for existing, planned, or proposed projects for greenway and trail system

### REMEDIAL OPERATIONAL TASKS

#### PROGRAM DEVELOPMENT

- Update informational signage (rules and regulations) to communicate proper usage of all network facility types.
- Update directional signage to integrate greenway, bicycle, and pedestrian systems and as new projects are implemented.
- Update user maps to reflect any additions or changes to the systems or overall network and also reference the connections between greenway, bicycle, and pedestrian facilities.

#### GENERAL OPERATIONS

- Provide contact information and institute a local agency response for facility users to report questions, comments, concerns, or complaints regarding the network, and a feedback phone number and website address.
- Continue to provide and establish new public education and citizen participation programs for network users.
- Pursue development of an easy to use management manual and training program and incorporate it into existing and new maintenance programs and procedures within the participating agencies.

### **Maintenance of Pedestrian and Bicycle Facilities within Roadway Rights-of-Way**

Task	Frequency	Comments
Regular Inspection	2 times/year	Includes all on-road bikeways, identify needed repairs of pavement signs, markings, etc
Shoulder and bike lane sweeping	2 times/year	All roadways with bicycle facilities
Shoulder and bike lane repairs	As needed	Repair of road surface, including potholes, cracks or other problems on bicycle facilities
Median island and curb extension repairs	As needed	Repair of curb and gutters, removal of debris
Shoulder and bike lane resurfacing	During regular roadway repaving	Ensure that pavement width is maintained or increased during repaving projects
Debris removal from shoulders	As needed	Remove debris from roadways shoulders and bike lanes such as limbs, silt, and broken glass
Snow and ice removal	As needed	Plow snow off of roadway shoulders and bike lanes, and require property owners to shovel sidewalks
Pedestrian signals	As needed	Replace burned out or broken pedestrian signal heads; adjust pedestrian signal timing to accommodate MUTCD standard pedestrian walking speed
Signs and markings	As needed	Repair or replace pedestrian and bicycle warning signs, bicycle route signs, crosswalk markings, bicycle lane markings, and any other similar facilities identified during inspection
Vegetation control	During regular roadway maintenance	Mow grass and trim limbs and shrubs 2 feet back from sidewalk edge
Litter removal	6 times/year	Could be completed with volunteers

## Routine and Remedial Maintenance: Bicycle & Pedestrian Facilities

The following section describes general routine and remedial maintenance responsibilities for all pedestrian and bicycle facilities. The previous table provides a task list for facilities within the roadway rights-of-way.

Maintenance tasks for facilities such as pedestrian signals, crosswalks, bicycle lanes, and roadway shoulders are identified in the table presented starting on page F-6. These types of pedestrian and bicycle facilities are provided within the roadway rights-of-way and should be maintained by either the New York State Department of Transportation (NYSDOT) or the Public Works Department of local jurisdictions. A local agency staff member should be designated as the main contact for the maintenance of pedestrian and bicycle facilities in the roadway rights-of-way. This staff member should coordinate with the appropriate departments to conduct maintenance activities in the field. Funding for an ongoing maintenance program should be included in the operating budget or Capital Improvements Program for each municipality.

Note that the schedule is intended to provide general guidance for routine and remedial maintenance activities. The frequency of pedestrian and bicycle facility maintenance within the roadway rights-of-way will vary. Maintenance needs will depend upon many factors, including pavement surface type, the use of paint or thermoplastic for markings, and traffic volumes. Local jurisdictions and/or NYSDOT should make immediate repairs to any on-road pedestrian and bicycle facilities that are damaged or have hazardous conditions. The local staff member in charge of maintenance should set up a free maintenance hotline for people to provide information about spot maintenance needs in the urban area.

## Routine and Remedial Maintenance: Greenway and Trail Facilities

The remainder of this section focuses on general routine and remedial maintenance responsibilities for all greenway and trail facilities.

### ROUTINE MAINTENANCE DEFINED

Routine maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, weed and dust control, trail sweeping, sign replacement, tree and shrub trimming, and other regularly scheduled activities. Routine maintenance also includes minor repairs and replacements such as fixing cracks and potholes or repairing a broken hand railing.

### REMEDIAL MAINTENANCE DEFINED

Remedial Maintenance refers to correcting significant defects in the network, as well as repairing, replacing or restoring major components that have been destroyed, damaged, or significantly deteriorated from normal usage and old age. Some items ("minor repairs") may occur on a five to ten year cycle such as repainting, seal coating asphalt pavement or replacing signage. Major reconstruction items will occur over a longer period or after an event such as a flood. Examples of major reconstruction remedial maintenance include stabilization of a severely eroded hillside, repaving a trail surface or a street used for biking, or replacing a footbridge. Remedial maintenance should be part of a long-term capital improvement plan.

### ROUTINE MAINTENANCE TASKS

The following tasks should be performed on a regular basis to keep all network facilities in good, usable condition. Maintenance tasks should be conducted more frequently for greenway, bike, and pedestrian facilities where use is the most concentrated. Methods such



as pedestrian and bicycle counts, sketch plan analysis methods for estimating pedestrian and bicycle demand, public survey results, and public meeting comments can be used to determine which resources are the most heavily used and may require the most maintenance attention. The frequency of required maintenance tasks should be established as new facilities are implemented and should be reviewed and updated annually to reflect any changes in usage, safety issues, etc.

### **FACILITY MAINTENANCE**

Basic housekeeping of greenway and trail facilities will ensure that the network is clean and functional and will also improve the life of each facility. Volunteer efforts should be utilized in the performance of the following:

- Sweeping
- Trash removal

### **VEGETATION MANAGEMENT**

To maintain a high quality network, regular attention should be given to the surrounding landscape, both natural and man-made. This not only improves the aesthetic quality of the network but also improves the users' sense of safety, as well. Vegetation management tasks include the following:

- Tree and shrub trimming and pruning
- Mowing of vegetation
- Mulching and edging
- Invasive species control

### **REMEDIAL MAINTENANCE TASKS**

The following tasks should be performed on an as needed basis to keep network facilities in good, usable condition. The table below depicts the average life of each facility type, as well as general ancillary facilities, with normal wear and tear. The repair or replacement of existing facilities should be reflected in a projected budget for future maintenance costs.

<b>Longevity of Facilities</b>	
Mulch	2 - 3 years
Granular Stone	7 -10 years
Asphalt	7 - 15 years
Concrete	20+ years
Boardwalk	7 - 10 years
Bridge/Underpass/Tunnel	100+ years

### **FACILITY REPAIR OR REPLACEMENT**

All facilities will require repair or replacement at one time or another. The time between observation and repair/replacement will depend on whether the needed repair is deemed a hazard, to what degree the needed repair will affect the safety of the user, and whether the needed repair can be performed by an in-house maintenance crew or if it is so extensive that the needed repair must be done by outside entities or replaced completely. Some repairs are minor, such as repainting or resurfacing bicycle lanes and can be done in conjunction with other capital projects, such as repaving the adjacent street. The following are facility repair or replacement activities:

- Replenish gravel, mulch, or other materials
- Repaint/restripe/stain
- Repave/seal
- Replace asphalt or concrete
- Remove encroaching debris along paved trail/sidewalk edges
- Regrade to prevent or eliminate low spots and drainage issues
- Add culverts, bridges, boardwalks, retaining walls, etc. to prevent or eliminate drainage/erosion issues
- Reroute trail, if necessary, to avoid environmentally sensitive or overused areas and any safety issues

### SEASONAL MAINTENANCE

Seasonal tasks should be performed as needed. When conditions cannot be improved to provide for safe use, the facility should be closed to prevent the risk of injury to facility users. Designated maintenance crews will remove leaf debris, snow, and ice, etc. from all network facilities as soon as possible. Leaf debris is potentially hazardous when wet and special attention should be given to facilities with heavier usage. Ice control and removal of ice build-up is a continual factor because of the freeze-thaw cycle. Ice control is most important on grade changes and curves. Ice can be removed or gravel/ice melt applied. After the ice is gone, leftover gravel should be swept as soon as possible.

### WINTER MAINTENANCE

This activity takes place after snowstorms and periodically between storms to condition the snow surface for a variety of winter activities. Snow clearing or grooming machine operators, who are most familiar with the segments in their care, should identify and report any additional maintenance needs while they are in the field. Paved multi-use pathways require significant

public investment and should be used to their fullest potential year-round. Determining the highest and best winter use for the region's paved multi-use pathways is a subjective decision that can change over time. Fortunately, the fleeting nature of snow allows for significant flexibility and creativity in dealing with it from storm to storm and season to season.

The decision to clear, groom, or leave a trail unmaintained should be the result of a public decision making process involving state, county and local officials, residents, and stakeholders. The decision will necessarily be based on the demand for different activities on each segment and the physical and budgetary constraints associated with winter pathway maintenance. Any changes to winter maintenance operations along paved paths should be made by early spring so that the appropriate changes can be made to maps and signage in time for the upcoming winter season.

### HABITAT ENHANCEMENT AND CONTROL

Habitat enhancement and control can improve aesthetics, help prevent erosion, and provide for wildlife habitat. Habitat control involves mitigation of damage caused by wildlife. The following activities and tasks should be utilized to enhance and control wildlife habitats:

- Plant vegetation, such as trees and shrubs
- Take preventative measures to protect landscape features from wildlife, such as installing fencing around sensitive or newly planted materials
- Apply herbicide to eliminate any problem plant species
- Apply herbicide to maintain facility edges and prevent encroaching vegetation, such as along trails and sidewalks
- Deter interaction between facility users and facility inhabitants, such as feeding the wildlife, etc.

## Administration and Jurisdictional Responsibilities

The following are suggested roles for the core types of stakeholders involved in maintenance or operations. Actual roles may vary depending on how this Plan is implemented over time and ongoing level of interest and involvement by specific stakeholders.

### OPERATION RESPONSIBILITIES BY

#### DEPARTMENT

##### GENESEE TRANSPORTATION COUNCIL MPO

To the extent that it is consistent with its core duties and its mission, staff from the MPO should assume the responsibilities of the trails and greenway coordinator for this plan. Duties would include working with affected and interested stakeholders to implement the recommendations included in this Plan, helping those stakeholders to apply for funding and in-kind support, and coordinating with local and regional jurisdictions as well as NYSDOT, in undertaking these initiatives. The staff person or person(s) envisioned to perform these duties can also work with other MPO staff and volunteer stakeholders to update and publish new local trail and bicycling maps, create and make available to the public GIS layers pertinent to active transportation including bicycle and pedestrian facilities such as trails, coordinate education, enforcement, and encouragement programs, monitor the use and safety of pedestrian and bicycle facilities, and work with adjacent communities and regional

organizations to coordinate pedestrian and bikeway linkages and to facilitate improvements to bicycle and pedestrian safety-supportive infrastructure.

##### PARKS AND RECREATION DEPARTMENTS

Duties for the Park and Recreation Department of each jurisdiction would include carrying out the recommendations from this Plan, applying for funding, maintaining softscape trails and conducting routine maintenance of hardscape trails, trail planning and design, trail construction, and overseeing the safety and operations of all greenway facilities. Staff should also conduct tasks such as updating and publishing new maps, creating and updating GIS layers of all trail facilities, proposing future alternative routes, and working with adjacent communities/counties to coordinate linkages. Staff should also play a role in education and encouragement programs.

##### PUBLIC WORKS DEPARTMENTS / ENGINEERING

The Public Works and/or Engineering Director of each jurisdiction should continue to oversee the construction and remedial maintenance of all hardscape trail, bicycle, and pedestrian facilities. One member of the local staff should handle facility development and construction (including posting bicycle route signs) among his/her other responsibilities. Staff should work with NYSDOT to develop a schedule for routine maintenance and a means of identifying locations for spot maintenance improvements.

## NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT)

NYSDOT should continue to design and build on-road facilities along with maintaining pedestrian and bicycle facilities within the roadway rights-of-way that are owned by the state (with the exception of sidewalks subject to local maintenance agreements). This includes paved shoulders, bicycle lanes, crosswalks, pedestrian signals, and sidewalks on main roadways not subject to local maintenance agreements. NYSDOT should work with the Public Works Departments of local jurisdictions to develop a schedule for routine maintenance and a means of identifying locations for spot maintenance improvements.

## POLICE DEPARTMENTS/SHERIFF'S DEPARTMENTS

All local police officers should go through training courses so that they are up to date with the most current laws governing bicyclists and pedestrians in New York. Specific laws can be found here: <http://www.safeny.ny.gov/bike-vt.htm>. Bikelaw.com ([www.bikelaw.com](http://www.bikelaw.com)) provides assistance for conducting bicycle-specific legal training for police officers.

## VOLUNTEERS

Services from volunteers, student labor, and seniors, or donations of material and equipment may be provided in-kind, to offset construction and maintenance costs. Formalized maintenance agreements, such as adopt-a-trail/greenway or adopt-a-highway can be used to provide a regulated service agreement with volunteers. Other efforts and projects can be coordinated as needed with senior class projects, scout projects, interested organizations, clubs or a neighborhood's community service to provide for the basic needs of the proposed networks. Advantages of utilizing volunteers include reduced or donated planning and construction

costs, community pride and personal connections to the local trail, greenway, bicycle, and pedestrian networks. Volunteers should be trained or supervised in the topic area in which they are working.

## Maintenance Responsibilities by Facility Type

Maintenance responsibility will continue to be with the Parks and Recreation Departments and the other departments of local jurisdictions depending on the type of facility to be maintained and whether or not it is routine or remedial. A number of other jurisdictions and entities, homeowner associations, and business groups will also have roles in maintaining specific facilities in the pedestrian, bicycle, and trail networks. Local jurisdictions would benefit from creating citizen groups, such as the local coalitions, that could ultimately play an important role in local coordination and advocacy. A recommended maintenance schedule is included in the tables presented earlier in this section.

## NATURE TRAIL

These spaces would be maintained by local Parks and Recreation crews or by homeowner associations where appropriate, for dedicated areas added into the system by new development.

## GREENWAY TRAIL

The local Parks and Recreation and other departments will continue to be the key agencies in the maintenance of facilities along roads, utility corridors, and stream corridors. The Parks and Recreation Department/Division, or where appropriate, homeowners associations, should conduct routine maintenance of trails and greenways. Public Works/Public Services/Community Services should be responsible for remedial maintenance of hardscape components.



### **ON-ROAD BICYCLE FACILITIES**

This system should be maintained by local Public Works/Highway Departments, NYSDOT, and patrolled by local Police Departments. A key to continued success will be the establishment and acceptance of bicycle facility operations and maintenance guidelines and proper training of both supervisory and field personnel regarding on-road bicycle facility upkeep. There should also be interagency coordination and user feedback protocols that assure timely response to citizen complaints and suggestions, including a website and toll-free hotline for pedestrian and bicycle maintenance requests. Bicycle route signs should also be maintained by NYSDOT, depending on the types and locations of facilities.

### **PEDESTRIAN FACILITIES (ON-ROAD SIDEWALK/SIDEPATH)**

Major sidewalk repairs are made by the Public Works/Highway Departments of local jurisdictions. Routine sidewalk maintenance should also be performed by the adjacent property owners and tenants, as prescribed by local ordinances. This may include individual owners, business and resident associations and special districts, as applicable.

### **TRAILHEADS AND FEATURE AREAS**

These areas are to be maintained by the local Public Works/Community Services and Parks and Recreation Departments or the respective homeowners associations, if appropriate.

### **OTHER ANCILLARY FACILITIES**

Special furnishings and amenities such as benches and signage will be the responsibility of the appropriate jurisdictional entity such as the local Public Works/Community Services and Parks and Recreation Departments.

### **TRAILS AND GREENWAYS**

While local jurisdictions bear the responsibility for the majority of trail and greenway planning, operations, and maintenance, funding can be increased to assist in these efforts. In order to increase the revenue generated for operations and maintenance of local greenway facilities and to encourage volunteers, the development of local coalitions for trails and greenways in each jurisdiction should be encouraged.

Many communities form a local coalition to assist the local jurisdiction in promoting and advocating for trail and greenway development. Groups can sponsor events that raise funds for the trail system and host community forums and meetings that increase awareness. They can sponsor events, such as hikes and races, which encourage residents of the community to use the local trails and greenways more often. Many groups operate under a non-profit, 501c3 status so that they can receive contributions from individuals and private sector groups.

## Operations and Maintenance Program Costs

Annual operations and maintenance costs vary, depending upon the facility to be maintained, level of use, location, and standard of maintenance. Operations and maintenance budgets should take into account routine and remedial maintenance over the life cycle of the improvements and on-going administrative costs for the operations and maintenance program. The section below provides an overview of approximate costs for basic bicycle, pedestrian and greenway trail operations and maintenance services. The estimates include field labor, materials, equipment and administrative costs. While actual costs will vary depending upon a number of factors, such as future labor rates, the estimates can provide a general idea of potential operations and maintenance obligations.

### ROUTINE OPERATIONS AND MAINTENANCE COSTS

#### NATURE TRAILS

Annual maintenance costs range from nominal to \$2,000 per mile/year depending on usage and level of development. For example, East Bay Regional Park District in California has estimated \$1,000 per mile/year. Volunteers may absorb all or part of this function.

#### TRAILS AND GREENWAYS

Crew sizes tend to range from 0.5 to 5 full time employees (FTE's) per 10 miles of off-street trail. Annual routine maintenance costs may range from less than \$3,000 to over \$7,000 per mile. Routine cleanup and monitoring of facility conditions should be handled by volunteers and maintenance crews.

#### ON-ROAD BICYCLE FACILITIES

It is assumed that the local Public Works Departments and NYSDOT Maintenance Division will be able to maintain the on-roadway

bicycle facility system. Some provision should be made however for regular inspections per year, to include minor repair or replacement of signs, vegetation grooming and other items that an inspector could remedy in the field. Additional attention should be paid to any potholes or other pavement damage. Some additional sweeping will be required where bicycle lanes and wider shoulders are provided along roads.

#### PEDESTRIAN FACILITIES (ON ROAD SIDEWALK/ SIDEPATH)

In many cities, the Public Works Department maintains sidewalk facilities on locally owned streets. Local property owners or Homeowner Associations (HOAs) could be made more responsible for routine maintenance of sidewalks with the municipal Public Works Departments responsible for more significant repairs. Crosswalks, pedestrian signals, curb ramps, median crossing islands, and other pedestrian facilities should be maintained by Public Works and NYSDOT, depending on rights-of-way ownership. It is recommended that NYSDOT maintain all sidewalks on NYSDOT rights-of-way when not covered by a local maintenance agreement. Maintaining these pedestrian facilities is an important part of maintaining the complete rights-of-way for all users. NYSDOT should maintain sidewalks and pedestrian crossing facilities on major roadways in areas outside the jurisdiction of the local municipalities. Cracks, surface defects, tree root damage, and other problems should be identified on a regular basis and fixed to ensure that sidewalks remain accessible to all types of pedestrians.

### REMEDIAL OPERATIONS AND MAINTENANCE COSTS

#### NATURE TRAILS

For purposes of this study, remedial work on non-paved trails will be assumed to be negligible, since volunteers may accomplish much of this work. There may be some administrative costs associated with this.

### TRAILS AND SIDEPATHS

A 7-to-15-year life is assumed for asphalt and crushed fine trails after which an overlay may be required. A complete resurfacing after 20-25 years is anticipated. Concrete is assumed to last twice as long. Bridges, tunnels, retaining walls and other heavy infrastructure are assumed to have a 100-year life or longer.

### ON-ROAD BICYCLE FACILITIES

Remedial work for on-road bicycle facilities includes asphalt repaving (5' on either side of the street for a two-way bike route, total 10' width) along with curb and gutter, sewer-grate and manhole repair. Pothole and crack repair are considered routine. Pavement markings, such as bicycle lane lines, bicycle stencil markings, and edge lines should be re-installed when other roadway pavement markings are improved. Since this work is done as part of the current street maintenance regime the cost is assumed to be covered.

### PEDESTRIAN FACILITIES (SIDEWALK)

Sidewalks should be constructed with concrete, which requires replacement in 50 to 75 years. A rough cost estimate for a linear mile of concrete sidewalk could be provided by the municipal Public Works Departments, including the base material, concrete, and construction work. Costs for design and Rights-of-Way (ROW)/easement purchases should also be considered.

## Funding the Operations and Maintenance Program

Identifying funding sources, creating funding sources, and sustaining reliable funding over the long-term is critical to the overall success of operations and maintenance and, ultimately, the success and growth of the regional greenway and trail network. Several types of funding sources can be identified and a combination of these might offer the best solutions. The following are potential sources for operations and maintenance.

### BUDGET ALLOCATIONS

These are funds coming directly from existing agency and department programs as part of annual budget contributions. Typically this is the base revenue source for operations and management. Note that on most projects around the nation, private donors or other potential partners will want to see a strong long-term public side commitment to management as a condition of awarding grants for capital trail improvements and management programs.

### MULTI-OBJECTIVE PARTNERSHIPS

Most trails serve multiple public and private benefits including access for floodway and ditch upkeep, utility access, street maintenance, and enhancement of adjacent private properties. This may pose a number of opportunities for task sharing and cost sharing among the various beneficiaries, particularly with respect to storm drainage management along river, creek, and wetland corridors.

## IN-KIND SERVICES

In-kind services involve people, such as volunteers, youth and student labor, and seniors to provide routine maintenance practices to network facilities. In-kind services may also include donations of material and equipment. Another consideration is the Adopt-a-Trail program, which works with service clubs, scouts, school groups, businesses and others. Adopt-a-Trail programs should include credit signage and written agreements with the adopting group. Note, however, that volunteer and in-kind participation will likely meet only a fraction of the operations and maintenance needs and funding of these programs may be sporadic. The management program will still need a base of trained professionals and proper equipment. Use of in-kind services requires staff time for coordination.

## CREATING AN ENDOWMENT

An endowment is a set-aside account held strictly to generate revenue from investment earnings. The endowment could be held by a non-profit and could be established for the region, rather than for a single municipalities trail system. Funding of the endowment could come from a percent of capital grants and from an endowment campaign. The endowment could also be funded by bequests and deferred giving such as donations of present or future interests in stocks or real estate. To have an effective impact, the endowment should have several million dollars in its "corpus" (asset holding). This endowment could be built up gradually in tandem with project development. Contributions to the fund would be solicited from greenway advocates, businesses, civic groups, and other foundations. Special events could be held whose sole purpose is to raise capital money for the endowment. The resulting fund would support

long-term operations and maintenance of the trail system and can also be used in the acquisition of high-priority properties that may be lost if not acquired by private sector initiative.

## EARNED INCOME AND USER FEES

Local jurisdictions should work with their local non-profit advocacy group to capture and direct fees and revenues that are derived from greenway events and activities into an account that can be dedicated to operating and managing the greenway system. Revenues could be used to support the endowment. User fees for amenities of the greenway system or user permits for trail and open space facilities can add to the revenue stream. Leasing trail rights-of-way for fiber-optic and other utility corridors can also generate earned income. For example, Grand Forks, North Dakota has demonstrated that a properly operated greenway can generate upwards of \$250,000 in direct revenues annually for use in offsetting the cost of operations and maintenance costs.





# Appendix C: Funding Sources

## Funding

### OVERVIEW

When considering possible funding sources for bicycle, pedestrian, and trail projects in the Genesee/Finger Lakes region, it is important to remember that not all construction activities or programs will be accomplished with a single funding source. It will be necessary to consider several sources of funding, that when combined, will support full project completion. Funding sources can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. The following narrative outlines the most likely sources of funding from the federal, state, and local government levels as well as from the private and non-profit sectors. Note: this section reflects the funding available at the time of writing. Funding amounts, fund cycles, and even the programs themselves may change over time.

### FEDERAL FUNDING SOURCES

Federal funding is typically directed through state agencies to local governments either in the form of grants or direct appropriations, independent from state budgets. Federal funding typically requires a local match of five percent to fifty percent, but there are sometimes exceptions; the recent American Recovery and Reinvestment Act stimulus funds did not require a match. The following is a list of possible Federal funding sources that could be used to support construction of pedestrian and bicycle improvements.

**DEVELOPING A RELIABLE AND INNOVATIVE VISION FOR THE ECONOMY ACT (DRIVE)**  
The “Developing a Reliable and Innovative Vision for the Economy Act,” or DRIVE Act, which was approved 65 to 34 July 30 by the U.S. Senate, would reauthorize the federal highway and public transportation programs

for a six-year period, fiscal years 2016-21. It authorizes a total of \$273.4 billion from the Highway Trust Fund for highway investment, a \$28 billion increase compared to maintaining FY 2015 funding. About half of the increase would support two new proposed initiatives—a National Freight Program and a program of Assistance for Major Projects. The remainder would provide small annual increases in core highway program funding. An additional \$2.7 billion would be authorized from the general fund subject to congressional appropriation.

More information: [http://www.artba.org/Media/PDFs/drive\\_act.pdf](http://www.artba.org/Media/PDFs/drive_act.pdf)

### TRANSPORTATION ALTERNATIVES

MAP-21 collapsed the Transportation Enhancement Program, Safe Routes to School and the Recreational Trails Program into a comprehensive Transportation Alternatives Program. The most significant DRIVE Act modification to this program changes its funding from 2 percent of annual apportionments to a flat \$850 million per year. The DRIVE Act would also expand eligible recipients for funds to include nonprofits responsible for administration of local transportation safety programs and would require annual reports from state and local planning organizations on the number of project applications and awards.

### PARTNERSHIP FOR SUSTAINABLE COMMUNITIES

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to “improve access to affordable housing, more transportation options, and lower transportation costs while protecting



the environment in communities nationwide.” The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure (“Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health”).

The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including TIGER grants). New York jurisdictions should track Partnership communications and be prepared to respond proactively to announcements of new grant programs. Initiatives that speak to multiple livability goals are more likely to score well than initiatives that are narrowly limited in scope to pedestrian improvement efforts.

For more information: <http://www.sustainablecommunities.gov/> or <http://www.epa.gov/smartgrowth/partnership/>

Resources for Rural Communities: [http://www.sustainablecommunities.gov/pdf/Supporting\\_Sustainable\\_Rural\\_Communities\\_FINAL.PDF](http://www.sustainablecommunities.gov/pdf/Supporting_Sustainable_Rural_Communities_FINAL.PDF)

#### **COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM**

The Community Development Block Grant (CDBG) program, administered by the U.S. Department of Housing and Urban Development (HUD), provides annual grants on a formula basis to local governments and states. The

program is designed to ensure decent affordable housing, to provide services particularly to low- and moderate-income residents, and to create jobs through the expansion and retention of businesses. Bicycle and pedestrian projects, including trail projects, that can be demonstrated to benefit low- and moderate-income communities can qualify for CDBG funds.

For more information: [http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/comm\\_planning/communitydevelopment/programs](http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs)

#### **RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM**

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program providing technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation funds available. Projects are prioritized for assistance based on criteria including conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments. This program may benefit trail development in the region indirectly through technical assistance, particularly for community organizations, but should not be considered a future capital funding source.

For more information: <http://www.nps.gov/nrcr/programs/rtca/>

### **NATIONAL SCENIC BYWAYS DISCRETIONARY GRANT PROGRAM**

The National Scenic Byways Discretionary Grants program provides merit-based funding for byway-related projects each year, utilizing one or more of eight specific activities for roads designated as National Scenic Byways, All-American Roads, State scenic byways, or Native American tribe scenic byways. The activities are described in 23 USC 162(c). This is a discretionary program; all projects are selected by the US Secretary of Transportation.

Eligible projects include construction along a scenic byway of a facility for pedestrians and bicyclists and improvements to a scenic byway that will enhance access to an area for the purpose of recreation. Construction includes the development of the environmental documents, design, engineering, purchase of right-of-way, land, or property, as well as supervising, inspecting, and actual construction.

For more information: <http://www.bywaysonline.org/grants/>

### **ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANTS**

The Department of Energy's Energy Efficiency and Conservation Block Grants (EECBG) may be used to reduce energy consumptions and fossil fuel emissions and for improvements in energy efficiency. Section 7 of the funding announcement states that these grants provide opportunities for the development and implementation of transportation programs to conserve energy used in transportation including development of infrastructure such as bike lanes and pathways and pedestrian walkways. Although the current grant period has passed, more opportunities may arise in the future.

For more information: <http://www1.eere.energy.gov/wip/eeecbg.html>

### **COMMUNITY TRANSFORMATION GRANTS**

Community Transformation Grants administered through the Center for Disease Control support community-level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease.

More info: <http://www.cdc.gov/communitytransformation/>

### **LAND AND WATER CONSERVATION FUND (LWCF)**

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The program is administered by the South Carolina Department of Parks, Recreation & Tourism as a grant program. Any Trails and Greenways Plan projects located in future parks could benefit from planning and land acquisition funding through the LWCF. Trail corridor acquisition can be funded with LWCF grants as well.

More information: <http://www.tn.gov/environment/recreation/grants.shtml>

### **ADDITIONAL FEDERAL FUNDING**

The landscape of federal funding opportunities for bicycle and pedestrian projects and programs is always changing. A number of Federal agencies, including the Bureau of Land Management, the Department of Health and Human Services, the Department of Energy, and the Environmental Protection Agency have offered grant programs inclusive of bicycle and pedestrian planning and implementation.

For up-to-date information about grant programs through all federal agencies, see: <http://www.grants.gov>



## NEW YORK STATE FUNDING SOURCES

Several specific New York State funding sources are detailed below. The best means of applying for state funding is the consolidated funding application (CFA). The CFA is typically due in August of each year and the application is valid for a variety of state programs and funding.

### NYSDOS - LOCAL WATERFRONT REVITALIZATION PROGRAM (LWRP)

The Department of State works with communities through the LWRP to promote community revitalization and resource protection through community-based plans and projects. The Department of State provides funding through the Environmental Protection Fund for projects that enhance public access to waterways and state lands, promote sustainable economic development, protect and improve water quality, and revitalize hamlets and downtowns. Eligible activities include planning, feasibility, design and construction of trails, and streetscape enhancements.

For more information: <http://www.dos.ny.gov/opd/programs/lwrp.html>

### CONSOLIDATED LOCAL STREET AND HIGHWAY IMPROVEMENT PROGRAM (CHIPS)

A New York State-funded program administered through the NYSDOT to assist localities in financing the construction, reconstruction or improvement of local highways, bridges, highway-railroad crossings and other local facilities. Eligible CHIPS bicycle and pedestrian projects include: bike lanes and wide curb lanes,

shoulder improvements, roundabouts, new signs, new or upgraded traffic signals and traffic calming installations.

For more information: <http://www.dot.ny.gov/programs/chips>

### NYS DEPARTMENT OF HEALTH - PREVENTIVE HEALTH AND HEALTH SERVICES (PHHS) BLOCK GRANT

The Preventive Health and Health Services (PHHS) Block Grant provides funding for health problems in the state of New York that range from tuberculosis to adult physical activity. PHHS Block Grant dollars fund a total of 19 different New York State health programs, including the Healthy Heart Program. PHHS Block Grant funds are used to promote and evaluate increases in the number of adults participating in regular sustained physical activity. From 1995-2004, nearly 1.2 million New York State residents received help from local HHP contractors to increase their physical activity levels.

For more information: [http://www.health.ny.gov/funding/grants/block\\_grant.htm](http://www.health.ny.gov/funding/grants/block_grant.htm)

## LOCAL GOVERNMENT FUNDING SOURCES

Municipalities often plan for the funding of pedestrian and bicycle facilities or improvements through development of Capital Improvement Programs (CIP). CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding

mechanisms include the capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each category is described below. A variety of possible funding options available to New York jurisdictions for implementing pedestrian and bicycle projects are also described below. However, many will require specific local action as a means of establishing a program, if not already in place.

### CAPITAL RESERVE FUND

Municipalities have statutory authority to create capital reserve funds for any capital purpose, including trail facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants, and donations for the specified use.

### LOCAL IMPROVEMENT DISTRICT (LID)

Local Improvement Districts (LIDs) are most often used by cities to construct localized projects such as streets, sidewalks, or bikeways. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as traffic trip generation.

### TAX INCREMENT FINANCING

Project Development Financing bonds, also known as Tax Increment Financing (TIF), is a relatively new tool allowing localities to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., trail improvements) is constructed, surrounding property values generally increase and encourage surrounding

development or redevelopment. The increased tax revenues are then dedicated to finance the debt created by the original public improvement project. Tax Increment Financing typically occurs within designated development financing districts that meet certain economic criteria that are approved by a local governing body. TIF funds are generally spent inside the boundaries of the TIF district, but they can also be spent outside the district if necessary to encourage development within it.

### OTHER LOCAL FUNDING OPTIONS

- Bonds/Loans
- Taxes
- Impact fees
- Exactions
- Installment purchase financing
- In-lieu-of fees
- Partnerships

### PRIVATE AND NON-PROFIT FUNDING SOURCES

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are several examples of private funding opportunities available.

### THE CONSERVATION FUND GRANT PROGRAMS

The Conservation Fund regularly teams with corporate partners to offer grants for land conservation and the planning, design, and development of greenways. In the past, The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$250 to \$2,000) for greenway efforts nationwide. These grants have been used for activities such as mapping, conducting ecological assessments, surveying

land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Similar grant programs are ongoing and can be found on The Conservation Fund website. Grants cannot be used for academic research, institutional support, lobbying, or political activities.

For more information: [www.conservationfund.org](http://www.conservationfund.org)

### **NATIONAL TRAILS FUND**

American Hiking Society created the National Trails Fund in 1998, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. 73 million people enjoy foot trails annually, yet many of our favorite trails need major repairs due to a \$200 million backlog of badly needed maintenance. National Trails Fund grants help give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. To date, American Hiking has granted more than \$240,000 to 56 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project.

Projects the American Hiking Society will consider include:

- Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements.

- Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage.
- Constituency building surrounding specific trail projects - including volunteer recruitment and support.

For more information: <http://www.americanhiking.org/national-trails-fund/>

### **THE ROBERT WOOD JOHNSON FOUNDATION**

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972 and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To ensure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles
- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

For more specific information about what types of projects are funded and how to apply, visit [www.rwjf.org/applications/](http://www.rwjf.org/applications/)

### **THE CONSERVATION ALLIANCE**

The Conservation Alliance is a non-profit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their

efforts to protect wild and natural areas. Grants are typically about \$35,000 each. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to environmental groups across the nation, saving over 34 million acres of wild lands. The Conservation Alliance Funding Criteria includes:

- The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation.
- The Alliance does not look for mainstream education or scientific research projects, but rather for active campaigns.
- All projects should be quantifiable, with specific goals, objectives, and action plans and should include a measure for evaluating success.
- The project should have a good chance for closure or significant measurable results over a fairly short term (one to two years).
- Funding emphasis may not be on general operating expenses or staff payroll.

For more information: <http://www.conservationalliance.com/grants>

### **NATIONAL FISH AND WILDLIFE FOUNDATION (NFWF)**

The National Fish and Wildlife Foundation (NFWF) is a private, non-profit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants, and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation awards matching grants under its Keystone Initiatives to achieve measurable

outcomes in the conservation of fish, wildlife, plants, and the habitats on which they depend. Awards are made on a competitive basis to eligible grant recipients, including federal, tribal, state, and local governments, educational institutions, and non-profit conservation organizations. Project proposals are received on a year-round, revolving basis with two decision cycles per year. Grants generally range from \$50,000-\$300,000 and typically require a minimum 2:1 non-federal match.

Funding priorities include bird, fish, marine/coastal, and wildlife and habitat conservation. Other projects that are considered include controlling invasive species, enhancing delivery of ecosystem services in agricultural systems, minimizing the impact on wildlife of emerging energy sources, and developing future conservation leaders and professionals.

For more information: <http://www.nfwf.org/whatwedo/grants/Pages/home.aspx>

### **THE TRUST FOR PUBLIC LAND**

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the TPL is the only national non-profit working exclusively to protect land for human enjoyment and well-being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities.

For more information: <http://www.tpl.org>

### **ALLIANCE FOR BIKING & WALKING: ADVOCACY ADVANCE GRANTS**

Bicycle and pedestrian advocacy organizations play the most important role in improving and increasing biking and walking in local communities. Advocacy Advance Grants enable state and local bicycle and pedestrian advocacy



organizations to develop, transform, and provide innovative strategies in their communities. With sponsor support, the Alliance for Biking & Walking has awarded more than \$500,000 in direct grants, technical assistance, and scholarships to advocacy organizations across North America since the Advocacy Advance Grant program's inception. In 2009 and 2010, these one-year grants were awarded twice annually to startup organizations and innovative campaigns to dramatically increase biking and walking. The Advocacy Advance Partnership with the League of American Bicyclists also provides necessary technical assistance, coaching, and training to supplement the grants.

For more information, visit: <http://www.bikewalkalliance.org/>

#### **LAND AND WATER CONSERVATION FUND**

The Land and Water Conservation Fund (LWCF) of the National Park Service provides matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities (as well as funding for shared federal land acquisition and conservation strategies). In 2014, the LWCF distributed a total of \$43 million nationwide and \$2 million to New York State for state-identified outdoor recreation and conservation projects, including greenway trails.

For more information: <http://www.nps.gov/lwcf/>

#### **WALMART STATE GIVING PROGRAM**

The Walmart Foundation financially supports projects that create opportunities for better living. Grants are awarded for projects that support and promote education, workforce development/economic opportunity, health and wellness, and environmental sustainability. Both programmatic and infrastructure projects are eligible for funding. State Giving Program grant amounts range from \$25,000 to \$250,000. Each state has two opportunities per year to apply.

Online resource: <http://foundation.walmart.com/apply-for-grants/state-giving>

#### **RITE AID FOUNDATION GRANTS**

The Rite Aid Foundation is a foundation that supports projects that promote health and wellness in the communities that Rite Aid serves. Award amounts vary and grants are awarded on a one year basis to communities in which Rite Aid operates. A wide array of activities are eligible for funding, including infrastructural and programmatic projects.

Online resource: <https://www.riteaid.com/about-us/rite-aid-foundation>

#### **BANK OF AMERICA CHARITABLE FOUNDATION, INC.**

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grants program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community

Development Programs, and specifically the Program Related Investments. This program targets low and moderate income communities and serves to encourage entrepreneurial business development.

For more information: [www.bankofamerica.com/foundation](http://www.bankofamerica.com/foundation)

### LOCAL TRAIL SPONSORS - "ADOPT A TRAIL" PROGRAM

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies. A local trail sponsorship program is also useful as a community building effort for long-term trail maintenance and operations.

### CORPORATE DONATIONS

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

### PRIVATE INDIVIDUAL DONATIONS

Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Municipalities typically create funds to facilitate and simplify a transaction from an

individual's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

### FUNDRAISING/CAMPAIGN DRIVES

Organizations and individuals can participate in a fundraiser or a campaign drive. It is essential to market the purpose of a fundraiser to rally support and financial backing. Often times fundraising satisfies the need for public awareness, public education, and financial support.

### VOLUNTEER WORK

It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community workdays. Volunteers can also be used for fund-raising, maintenance, and programming needs.