

INTRODUCTION

An important part of any bicycle and pedestrian master plan is ensuring that the existing and proposed improvements are cared for and maintained. One of the most important reasons to properly maintain the facilities within the system is to maximize safety while minimizing the local landowners concerns regarding liability. Planning for the maintenance and management of the bicycle and pedestrian system will ensure safety and will prolong the life of the facilities within the system. Budgeting and planning for the maintenance of the existing and proposed facilities is imperative for the long-term success of the system.

The operations and maintenance plan for the Richmond Bicycle and Pedestrian Master Plan provides guidance for tasks that need to be undertaken by the managing agencies and project partners. This plan provides a series of work items that need to be completed in order to maintain the system as an attractive, safe and enjoyable amenity. The following defines key aspects of facility management beginning with operational policies, followed by facility assessment, maintenance, maintenance costs, management, safety and liability policies, and funding alternatives for the operations and maintenance tasks.

OPERATIONS

The operation of the bicycle and pedestrian systems includes day-to-day management of the system. This includes law enforcement, map and brochure updates, marketing, conducting special events, and other functional tasks.

Hours of Operations Policy

With many of the existing and proposed facilities within the system being incorporated into the living and working areas of the City, there will be no specific hours of operation for these facilities. However, the greenway and trail facilities will be operated as a non-lighted (except where existing lights exist and are maintained) system of facilities and shall be open from dawn to dusk, 365 days a year. Where users are found using the non-lighted portions of the greenways or rail-trail, they can be deemed in violation of these hours and may be subject to fines. The City will need to coordinate with the Police Department on the level of enforcement and methods to enforce this policy.

Care and Management Policy

Richmond Parks and Recreation Department and the Richmond Street Department will be responsible for the care and upkeep of the facilities and the surrounding land, drainage features, signage, fencing, bridges, trail heads, landscape plantings and facility amenities such as benches and trash receptacles. A management and maintenance policy detailing the responsibilities of each department in terms of bicycle and pedestrian facility care shall be implemented to avoid overlap or gaps in maintenance. Gaps in care are the largest complaint of residents with existing facilities across the nation.

Fencing and Vegetative Screening Policy

The City of Richmond will work with adjacent landowners on an individual basis to determine where fencing and screening is needed to buffer adjacent land from the bicycle and pedestrian facilities. In rare occasions, fencing and screening may be provided outside of the property owned by the City of Richmond. Private landowners will be responsible for maintaining these elements when they are located on private property. This should be part of the design consideration when installing these elements outside of the public right-of-way.

Trail Users

One of the goals when planning the bicycle and pedestrian system was to provide facilities and routes that would accommodate all users. However, there may be occasions where multiple users are not appropriate. In such instances, such as with bike trails and hiking trails, the City may want to limit the user type allowed on the trail with signage. Although enforcing these limits may not be possible on a regular schedule, providing signage will reduce the number of conflicting users on the facility.

Established guidelines provide for the following policy recommendations concerning users on the system:

Multi-use Trails

- Bicyclists should yield to pedestrians
- Access for motorized vehicles on trails is limited to authorized vehicles such as maintenance vehicles and emergency response vehicles
- Unauthorized motorized vehicles such as dirt bikes and ATV's are prohibited on multi-use trails
- Wheelchairs are allowed on multi-use trails when used solely for use by a mobility impaired person.



Environmental Resources Policy

Habitat enhancement and control can improve aesthetics, help prevent erosion, and provide for wildlife habitat. Habitat control involves mitigation of damage caused by wildlife. Where possible, environmental preservation and restoration should be included in the bicycle and pedestrian facility design, especially along greenways and naturalized trails. Policy measures to enhance environmental resources include:

- Plant vegetation, such as trees and shrubs
- Take preventative measures to protect environmental features from wildlife, such as installing fencing around sensitive or newly planted materials.
- Apply herbicide to eliminate any problem plant species, such as poison ivy or crown vetch.
- Apply herbicide to maintain facility edges and prevent encroaching vegetation, such as along trails and sidewalks.
- Deter interaction between users and wildlife such as feeding the wildlife and people gathering wildflowers.
- Prohibit and sign litter and dumping along facilities. Users violating the littering laws may be issued a citation.
- Dogs should be kept on leashes at all times.

Emergency Response

Emergency services to the trails and facilities will be provided by various agencies depending on location. In many cases, the closest public safety agency will respond, which might include county sheriffs, town police or parks department personnel.

Closure Policy

There will be times when specific facilities will need to be closed for repair or during emergencies such as flooding. When the facilities are closed signs shall be posted and information regarding the closing shall be posted on the City and Parks Department websites. Alternate routes shall be designated and signed. Barriers shall be installed to prevent access to the closed portion of the facility. Due to safety and liability issues, individuals who are found using the facilities while they are closed are subject to fines and prosecution.

ASSESSMENT

Create a Facility Assessment and Repair Sheet

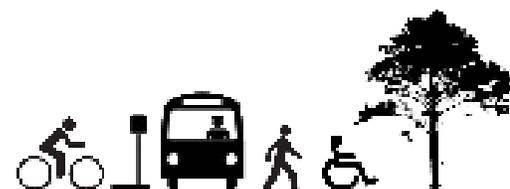
A facility assessment process should be conducted to ensure all facilities are inventoried and the condition documented prior to performing maintenance tasks. A facility assessment and repair sheet should be developed to keep this process consistent across facility types and through the years as facilities age. The form should include information needed to document needed maintenance and repair locations and types of repair. Items to be included on the form include: maintenance issue description, strategies to repair, notes on the trail or facility condition, space for sketches of the problem and/or solution, and action to be taken. The assessment and repair sheet should be completed on-site and should include the date conducted and name of person conducting the assessment. Preliminary training should be given to ensure consistency between staff members conducting the assessments.

Walk or Ride the Bicycle and Pedestrian Facility

Assessment of the facilities should include walking and riding the facility. Facilities should be inspected on a routine basis to identify current conditions, drainage issues, erosion, and other areas of needed repair. In addition, amenities such as fences, restrooms, kiosks, and wayfinding should be assessed. Walking or riding the facility will allow the person conducting the assessment to perform a more accurate assessment in terms of facility use and safety.

Coordinate with Land Owners

When possible, discuss any proposed repairs or maintenance with adjacent land owners to the facilities prior to scheduling the repair work. The assessment sheet will help describe the problems to the adjacent land owners and describe the repairs that will take place.



Work Crews

Special training should be provided to maintenance crews responsible for maintaining the facilities including how to identify potential hazards, most efficient methods of repair, and types of repairs that can be performed by in-house staff. Issues identified by the maintenance crews should be included in the overall maintenance and repair budget and schedule for the City Departments.

MAINTENANCE

The maintenance of the bicycle and pedestrian system includes many activities involved in keeping the facilities in a safe and usable condition. This includes several tasks ranging from mowing and brush removal to repair and reconstruction of facilities. Lifetime maintenance will place ongoing costs on the different agencies maintaining the system and should be considered when planning and funding new and existing projects.

A guideline for the most commonly performed tasks should be developed by the agency responsible for performing for both annual and seasonal maintenance. The recommendations should be reviewed on an annual basis and adjusted as experience determines more or less frequent applications are needed. Maintaining safe facilities will be the determining factor when scheduling tasks as outlined below.

Mowing and Spraying

Mowing along trails and other facilities should occur on a regularly scheduled basis. Mowing can be used to maintain certain types of vegetation such as turf and invasive species control. Schedule mowing and spraying regularly, based on knowledge of how fast such growth occurs to that facility so that it is not significantly inhibited. With some types of fast-growing species, it may be necessary to consider the use of herbicides. Special precaution and certified training must be included with any spraying operations. Environmentally safe weed removal methods should be used, especially along waterways. Facilities with mowed areas should have four (4) feet mowed from the edge of the facility.

Tree and Brush Trimming

Trimming is performed to maintain clearance for users of the bike and pedestrian facilities. Workers performing the pruning must be trained in proper pruning to provide aesthetic treatments while

protecting the health of the vegetation. Such work is usually done with clippers, string trimmers, and chainsaws. In some situations, it may be necessary to clear root systems or remove embedded plant material with more industrial equipment. Operators must have proper training and education to operate machinery in a safe manner. Limbs should be trimmed four (4) feet back from the facility. In high use sections of trail or pathway use, dead or dying trees that have the possibility of falling on the facility should be removed.

Debris Removal

Removal of debris is one of the fundamental needs of the bike and pedestrian system and is necessary to provide safe facilities while extending their life expectancy. Keeping the facilities clear of mud and sediment, fallen leaves, branches and fallen trees will increase use while providing a safe environment for users.

Drainage Control

Proper drainage protects the bicycle and pedestrian system facilities from erosion damage. Facilities should be routinely inspected to ensure that all culverts, dips, bridges, low water crossings, drainage ditches, and open box culverts are free of debris and ready to function in the proper manner especially during the rainy season in the spring. Routine maintenance is not only necessary but valuable in terms of labor, material, and money saved on emergency repairs, and in the number of days the facility is useable. Erosion repairs should be made as quickly as possible to prevent further damage to the facility.

Signs and Other Amenities

Signs, benches, kiosks, bollards and fencing need to be kept clear to provide safe and aesthetically pleasing elements along the trail, path or sidewalk. Amenities that fall into disrepair are more susceptible to vandals. Prompt repairs are essential to keep vandalism from becoming a recurring problem. These items also have life-cycle limits which should be considered in the annual maintenance budget.

Signs provide both safety and information for users. They provide users with their location, where they are going, and the rules to safely use the facilities. Upkeep of the signage along the system should be a high priority.



Graffiti Removal

Prompt removal of graffiti will deter additional graffiti and other destructive acts to the facilities within the system. Once graffiti has been reported, it should be removed as soon as possible. Providing a system free of graffiti will increase usership by increasing the perception of safety.

Facility Repair or Replacement

All of the facilities will require repair or replacement at some time. Repair and replacement should be closely tied to the inspection schedule. Setting priorities for the repairs will be a part of the inspection process. The time between observation and the repair or replacement will depend on the nature of the issue. If the problem requiring the repair is deemed to be a hazard, and will affect the safety of the user a higher priority will be set. The time delay will also depend on whether the repair can be performed by in-house maintenance staff or if it is so extensive that it will require an outside entity. Some repairs are minor enough in nature that they can be done with other capital projects such as resurfacing a bike lane at the same time as repaving an adjacent street. When repairs are required, they should meet or exceed the original construction specifications.

Seasonal Maintenance

Seasonal maintenance tasks should be performed as needed and include leaf, snow, and ice removal. When conditions cannot be improved to provide for safe use, the facility should be closed to prevent the risk of injury to the user. Designated maintenance crews shall remove leaf debris, snow and ice from the facilities. Leaf debris can be hazardous when wet and special attention should be given to facilities with higher usage. Ice and snow removal is necessary for user safety but also to prevent damage caused to the facility from the freeze-thaw cycle.

- Leaf removal should be done through raking, blowing and mulching as needed to provide a clear and safe facility for users and to prevent any storm water drainage or erosion issues.
- Remove snow and ice from the facilities by shoveling, picking, salt and sand as soon as possible after a storm.

COST OF OPERATIONS AND MAINTENANCE

Operations and maintenance budgets should take into account annual and long-range maintenance over the life cycle of the facility. Annual operations and maintenance costs vary depending on the facility to be maintained, level of use, location, and standard of maintenance. The following estimates should be used for reference only as these costs will fluctuate depending on actual conditions of the facilities within the town. The estimates include field labor, materials, equipment and administrative costs and are based on national industry standards.

Paved Shared-use Path

Annual: Depending on the intensity of use and development, the number of associated amenities and the standard of care the typical cost to maintain a paved shared-use path ranges from \$4,000 to \$15,000 per mile. Volunteers may absorb all or part of this cost.

Long-Range: Asphalt pathways usually have a 10-12 year life. An overlay is usually required at this time with a complete resurfacing after 20-25 years. Concrete paths have a life cycle of twice as long.

Natural Surface Path

Annual: Maintenance costs range from \$200 to \$2,000 per mile per year depending on usage and level of development. Volunteers are valuable in reducing this maintenance cost and can perform many of the required tasks.

Long-Range: The day-to-day maintenance performed on natural surface trails is usually adequate for even the long-range maintenance of the trail. Volunteers can also provide much of the maintenance needed over the life of the trail. There may be some administrative costs associated with the natural trails but long-range maintenance costs are negligible.

Greenway Trail

Annual: Crew sizes can range from 1 to 5 full time employees once the system is fully developed. This cost varies widely depending on the level of maintenance for not only the trail but also adjacent



properties including stream banks and floodways. The maintenance costs can range from \$3,000 to \$20,000 per mile per year to maintain. Day-to-day maintenance and monitoring of greenway facilities should be divided between volunteers and maintenance crews when possible to lessen the impact of these fees.

Long-Range: The majority of greenway trails will be either asphalt or concrete. As such, they will require the same long-range maintenance as the paved shared-use path. Greenway trails which experience regular flooding should be analyzed for a shorter life cycles.

On-road Bicycle Facility

Annual: It is assumed that the Richmond Street Department and INDOT will maintain the on-road bicycle facility system. Additional sweeping will be required where bike lanes are installed. Additional attention should be paid to any potholes or other pavement damage. Regular inspections should occur every year to assess the condition of roadways with bike lanes. Maintenance for these facilities can be included as a part of street maintenance with costs up to \$250 per mile per year.

Long-range: Long-range maintenance tasks for on-road bicycle facilities include repaving and restriping when roadway improvements are implemented. Pavement markings include bicycle lane lines, bicycle stencil markings, and edge lines. This work should be included with current street maintenance and would have negligible costs.

Sidewalks

Annual: Typically sidewalks are maintained by adjacent property owners with major repairs done by the maintaining agency. 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. Sidewalk maintenance costs up to \$100 per mile per year.

Long-range: Sidewalks will be constructed with concrete which requires replacement every 50-75 years.

FUNDING OPERATIONS AND MAINTENANCE

Identifying current and future funding sources specifically for the maintenance and management of the bicycle and pedestrian system must be done to ensure the longevity of the facilities. Development of new facilities should only occur when a plan has been completed for maintenance of the facility. Several types of funding sources should be identified and used in combination to fund the maintenance rather than relying on one source of funding. This will lessen the impact when one source has a short-fall. The following are potential sources for funding the operations and maintenance of facilities within the system.

Budget Allocations

The most common source is through budget allocations of existing departments. As facilities are added to the system these budgets should be increased to plan for the continued maintenance and repair of the facilities. This is usually the base revenue for the operations and maintenance of the facilities.

Public/Private Partnerships

The development of the new facilities will serve many public and private entities providing benefits for multiple departments including floodway and ditch maintenance, street maintenance, utility access, and enhancement of adjacent properties such as with new sidewalk and cycle track development in the downtown area. These shared benefits may present the opportunity to share funding for tasks associated with the up-keep of the facilities. This may include business and residential association partnerships with the city.

In-kind Services

In-kind services can be an important tool in funding the maintenance of the bicycle and pedestrian facilities. These services might include routine maintenance performed by volunteers, youth groups, student labor and seniors. Services might also include donations of materials and labor.

Revenue from Programming

The Richmond Parks and Recreation Department should work to capture and direct fees and revenues that are obtained from facility events and activities into a fund that can be dedicated to operating and maintaining the system. Programming events such as fun-runs, bicycle races and other races can generate revenues for the bicycle and pedestrian system.



MANAGEMENT

Richmond Metropolitan Development Department

The Richmond Metropolitan Development Department shall act as the lead agency for implementing the plan. Duties for the Metropolitan Development Department include carrying out the recommendations of this plan including applying for funding and managing the construction of projects. Metropolitan Development Department staff will also be responsible for proposing future alternative routes and working with adjacent communities to coordinate linkages. The Richmond Planning Department will be responsible for creating and updating GIS layers of all network facilities. Planning Department staff shall provide guidance to developers when implementing new projects in the town to incorporate proposed facilities when appropriate.

Richmond Parks and Recreation Department

The Richmond Parks and Recreation Department shall act as the lead agency for coordinating maintenance tasks for the bicycle and pedestrian network. Duties for the Parks Department include conducting routine maintenance of greenways, naturalized trails and other bicycle and pedestrian facilities located on Parks Department property, and overseeing the safety and operations of all facilities through Parks Department property. Parks Department staff will also be responsible for updating and publishing maps, coordinating community events utilizing the new facilities and running parks programs to help supplement the facilities.

Richmond Street Department

The Richmond Street Department shall continue to oversee the construction, day-to-day maintenance tasks, and seasonal maintenance tasks of the multi-use trails adjacent to roadways, sidewalks, bike lanes and any other bicycle and pedestrian facilities located within or next to the street right-of-ways.

Indiana Department of Transportation (INDOT)

INDOT should continue to design and build on-road facilities along with maintaining all pedestrian and bicycle facilities within the road right-of-ways that are owned by the state. This includes paved shoulders, bike lanes, crosswalks, pedestrian

signals, and sidewalks along state roads. Richmond Metropolitan Development Department should coordinate with INDOT anytime new projects are proposed, or when repairs on existing facilities are scheduled, to implement facilities as proposed on the master plan.

Richmond Police Department

The Richmond Police Department shall act as the lead agency for enforcement issues regarding the bicycle and pedestrian system. Law enforcement along new facilities should be dealt with in the same manner as on any other public or private land within Richmond. 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 Indiana. Safe use of the facilities will depend largely on enforcement of policies identified for the network especially on infrastructure in the outlying areas with less exposure to surrounding traffic. The Metropolitan Development Department and the Parks and Recreation Department should work with the Police Department to assess current needs and availability for assisting in enforcement of network facility rules.

Volunteers

Volunteers can provide services to help offset or reduce the costs of construction and maintenance for the system of facilities. The use of volunteer citizen groups are especially valuable for a variety of activities such as: trail construction and maintenance, trash and litter control, exotic vegetation removal, safety patrols, and educational outreach. Volunteer groups can work with the City of Richmond and stakeholders to promote growth and maintenance of the system. By developing an organized volunteer program, it will allow people to get involved with implementation and upkeep of the system. The Parks Department and the Street Department shall organize/coordinate volunteer groups for the facilities maintained by each respectively. Volunteer opportunities might include:

- Civic groups, youth organizations, or businesses might want to adopt a section of a trail or greenway and assume responsibility for litter patrol and light maintenance.



- Youth corps can provide assistance for a variety of labor-intensive projects including trail construction, stream bank restoration, habitat improvement, and tree planting.
- Schools and historical societies could help create and manage web pages, interpretive materials, curriculum guides, etc.
- High school and college students seeking recreation or conservation internships could be recruited to provide a somewhat long-term commitment maintaining facilities within the network.
- Law enforcement agencies could train volunteer 'trail stewards' to assist with enforcement of trail policies and rules.
- High school and middle school students wishing to perform community service might assist in a trail clean-up day.

SAFETY AND LIABILITY ISSUES

Safety

The owner of a bicycle and pedestrian facility must provide a safe facility for those that use it. The basic components of a risk management program include identification, evaluation, and treatment.

- **Identification** – regular inspections shall be conducted to identify potential risks and hazards.
- **Evaluation** – evaluating the risk to determine the likelihood of an accident due to the age of the facility, amount of use, or poor design.
- **Treatment** – treating the risk or notifying the user. Treating the risk can include repair, redesign, increased maintenance or reducing the use of the facility. Treatment also might include prohibiting use of the area. Notifying the user can include posting signs notifying the user of the danger, or by obtaining waivers from users of the facilities. Implementation of such risk management programs will minimize safety problems.

Liability

The public operating agency of the bicycle and pedestrian facilities should fully understand the liability associated with the specific types of facilities and verify that insurance is adequate.

Some techniques which can help limit liability issues include:

- Implement a volunteer program to report problems and safety issues.
- Limit facilities to bicycles and pedestrians,

prohibiting motorized use.

- Educate users and adjacent land owners concerning private property rights through signage, brochures and outreach.
- Provide private property buffers such as vegetative screens and fencing where possible.
- Notify adjacent property owners of any development plans or changes in policy.
- Keep the lines of communication open between public agencies and adjacent property owners.

Conflict Reduction

When a facility serves multiple user groups there will be inherent conflicts that will arise. The bicycle and pedestrian system shall work to reduce these conflicts where possible. Some conflict reduction methods include:

- Recognize the different goals of different users such as hikers and mountain bikers and separate facilities where feasible
- Plan and design to reduce conflicts between users and adjacent property owners. Post rules and regulations concerning reckless and unsafe behavior, trespassing, littering and disturbances.
- Provide user education through signage, brochures and media.
- Provide contact information for user input to report problems, complaints and concerns.
- Promote facility user etiquette
- Develop a plan to respond to any illegal or disturbing activity quickly.
- Avoid excessive regulatory signage while providing adequate signage to inform facility users.

